

RED BOOK OF FAUNA

OF THE REPUBLIC OF KOSOVO

Halil Ibrahimi, Agim Gashi, Daut Rexhepaj, Ferdije Zhushi Etemi, Linda Grapci Kotori, Zoltán Fehér, Taulant Bino, Lucija Šerić Jelaska, Gabor Mesaroš, Philippe Théou

Prishtina, 2019

RED BOOK OF FAUNA

OF THE REPUBLIC OF KOSOVO

Halil Ibrahimi, Agim Gashi, Daut Rexhepaj, Ferdije Zhushi Etemi, Linda Grapci Kotori, Zoltán Fehér, Taulant Bino, Lucija Šerić Jelaska, Gabor Mesaroš, Philippe Théou

Prishtinë, 2019

MINISTRY OF ENVIRONMENT ANS SPATIAL PLANNING
KOSOVO ENVIRONMENTAL PROTECTION AGENCY
KOSOVO INSTITUTE FOR NATURE PROTECTION

AMMK

Red Book of Fauna of the Republic of Kosovo

Publisher:
Ministry of Environment and Spatial Planning
Kosovo Institute for Nature Protection,

Editor in chief:
Halil Ibrahimi

Reviewers:
Dr. sc. Valentina Slavevska Stamenković, University of Skopje
Dr. sc. Hakan Bozdoğan, Ahi Evran University

Proofreader:
Sheremet Krasniqi

Authors:
Dr. sc. Halil Ibrahimi, University of Prishtina
Dr. sc. Agim Gashi, University of Prishtina
Dr. sc. Daut Rexhepaj, University of Prishtina
Dr. sc. Ferdije Zhushi Etemi, University of Prishtina
Dr. sc. Linda Grapci Kotori, University of Prishtina
Dr. sc. Zoltán Fehér, Hungarian Museum of Natural History
Dr. sc. Taulant Bino, Universitety POLIS
Dr. sc. Lucija Šerić Jelaska, University of Zagreb
Dr. sc. Gabor Mesaroš
Dr. sc. Philippe Théou, University of Tirana

Graphic Design:
Tesa Gashi

Maps created:
Florian Isufi

Print:

Circulation:

ISBN:

Prishtina, 2018

® Unauthorized publication and reproduction without the permission of the Ministry of Environment and Spatial Planning is forbidden.

Project Title:	Kosovo Environmental Programme (KEP)
Financing:	Swedish International Development Cooperation Agency (Sida)
Reference No:	2016/07076
Starting Date	4 July 2016
End Date (Duration)	3 July 2020
Contract Number:	C00045
Contracting Authority:	Embassy of Sweden in Pristina Mr. Fatos MULLA, Programme Officer Str. Perandori Justinian, No. 111, Pejton – 10000 Pristina Tel.: +381-(0)38-245795, ext.8221 Fax: +381-(0)38-245791 Email: fatos.mulla@gov.se
Beneficiaries	Ministry of Environment and Spatial Planning (MESP) of Kosovo Environmental Protection Department Mr. Muhamet MALSIU, Director and Project Coordinator Relindja Building, 15th Floor – 10000 Prishtina (Kosovo) Tel.: +381-(0)38-20033222 Fax: +381-(0)38-517558 Email: Muhamet.Malsiu@rks-gov.net Interministerial Water Council (IMWC) of Kosovo Mr. Baton BEGOLLI, Advisor Prime Minister Building – 10000 Prishtina (Kosovo) Tel.: +377-(0)44-503914 Email: Baton.Begolli@rks-gov.net
Contractor:	FCG Swedish Development (Lead Company) Mr. Per GIERTZ Dalagatan 7 – 11123 Stockolm (Sweden) Tel.: +46-(0)8-4067627 / Mob.: +46-(0)70-6749191 Fax: +46-(0)8-210269 Email: per.giertz@fcgsweden.se In Consortium with: EPTISA Servicios de Ingenieria S.L. (Partner) Mr. Juan RUANO MOHALES Emilio Muñoz, 35-37 – 28037 Madrid (Spain) Tel.: +34-915-949500 Fax: +34-914-465546 Email: jruano@eptisa.com
Project Director:	JJorge MALUENDA FCG Swedish Development Dalagatan 7 – 11123 Stockholm (Sweden) Tel.: +46-(0)8-4067627 Fax: +46-(0)8-210269 Email: Jorge.Maluenda@fcgsweden.se
Programme Manager / Contractor Representative:	Mr. Giuseppe RAZZA c/o Ministry of Environment and Spatial Planning of Kosovo Relindja Building, 15th floor – 10000 Pristina (Kosovo) Tel.: +377-(0)44-908421 Email: giuseppe.razza@yahoo. It / grazza@eptisa.com / Giuseppe.razza@fcgsweden.se
Title of the Report	Red Book of Animal Species in Kosovo [C2-A2.02-D2.02.03]
Date of preparation	17 March 2019
Author of the Report	Mr. Halil IBRAHIMI, Senior National Short-Term Expert (SNSTE)
Quality check	Mr. Fadil BAJRAKTARI, Director of Kosovo Institute for Nature Protection (KINP) Z. Giuseppe RAZZA, Programme Team Leader

TABLE OF CONTENTS

PREFACE 2

1 INTRODUCTION 4

1.1 The Red Book of Fauna of the Republic of Kosovo and the Protection of the Biodiversity 4
1.2 Methodology of Work 5

1.2.1 Classification of Fauna Based on IUCN Categories 5
1.2.2 Definition of the terms used in the Red Book of Fauna 6
1.2.3 Classification of Habitats 6
1.2.4 Classification of Threats 6
1.2.5 Classification of Conservation Actions and Research Needed 6
1.2.6 Using the Ramas Red List Software 7
1.2.7 Photos of the species 7

1.3 Findings of the Red Book of Fauna 7
1.4 Conclusions 9

A1 Annexes to Introduction 10

A1.1 IUCN Categories (according to IUCN Red List Categories & Criteria: Version 3.1-2012) 10
A1.2 Summary of the five Criteria (A-E) used to evaluate if a Taxon belongs in an IUCN Red List Threatened Category (Critically Endangered, Endangered Vulnerable) 11
A1.3 Definitions of terms related to the criteria used for species evaluation (according to the IUCN Red List Categories and Criteria: Version 3.1-2012) 12
A1.4 Habitat Classification Scheme (Version 3.1) 14
A1.5 Threats Classification Scheme (Version 3.2) 16
A1.6 Conservation Actions Classification Scheme (Version 2.0) 18
A1.7 Research Needed Classification Scheme (Version 2.0) 18

2 CRITICALLY ENDANGERED (CR) SPECIES 20

2.1 Insecta 21
2.2 Actinopterygii 43
2.3 Aves 45
2.4 Mammalia 49

3 ENDANGERED (EN) SPECIES 52

3.1 Bivalvia 53
3.2 Oligochaeta 55
3.3 Insecta 57
3.4 Actinopterygii 69
3.5 Amphibia 71
3.6 Aves 74
3.7 Mammalia 81

4 VULNERABLE (VU) SPECIES 86

4.1 Gastropoda 87
4.2 Malacostraca 99
4.3 Diplopoda 101
4.4 Insecta 105
4.5 Actinopterygii 125
4.6 Amphibia 127
4.7 Reptilia 129
4.8 Aves 131
4.9 Mammalia 137

5 NEAR THREATENED (NT) SPECIES 140

5.1 Gastropoda 141
5.2 Oligochaeta 152
5.3 Insecta 155
5.4 Cyclostomata 199
5.5 Actinopterygii 201
5.6 Reptilia 206
5.7 Aves 215
5.8 Mammalia 220

6 LEAST CONCERN (LC) SPECIES 232

6.1 Oligochaeta 233
6.2 Arachnida 236
6.3 Insecta 238
6.4 Actinopterygii 252
6.5 Amphibia 255
6.6 Reptila 259
6.7 Mammalia 268

7 DATA DEFICIENT (DD) SPECIES 288

7.1 Oligochaeta 289
7.2 Clitellata 297
7.3 Arachnida 300
7.4 Malacostraca 309
7.5 Diplopoda 311
7.6 Insecta 318
7.7 Actinopterygii 354
7.8 Amphibia 360
7.9 Reptilia 368
7.10 Aves 372
7.11 Mammalia 380

References 391

ANCRONYMS	MEANING

A - M

AoK	Assembly of Kosovo
AOO	Area of Occupancy
AR	Assessment Report
BC	Beneficiary Country
BI	Beneficiary Institution
CA	Contracting Authority
CEO	Chief Executive Officer
CR	Critically Endangered (IUCN Category)
CT	Core Team
CTL	Component Team Leader
CSI	Core Set of Indicators
DD	Data Deficient (IUCN Category)
EC	European Commission
EIA	Environmental Impact Assessment
EN	Endangered (IUCN Category)
EoS	Embassy of Sweden
EPWD	Environmental Protection and Water Department
EU	European Union
EUOK	European Union Office in Kosovo
EUR	Euro (European currency)
EW	Extint in the Wild (IUCN Category)
EX	Extint (IUCN Category)
FA	Framework Agreement
FSP	Framework Service Provider
GoK	Government of Kosovo
GS	General Secretary
HOC	Home Office Coordinator
ID	Inspectorate Department
IMWC	Inter Ministerial Water Council
IPA	Instrument for Pre-Accession Assistance
IU	Implementation Unit
IUCN	International Union for the Conservation of Nature
KEP	Kosovo Environmental Programme
KES	Kosovo Environmental Strategy
KEPA	Kosovo Environmental Protection Agency
KHMI	Kosovo Hydro-Meteorological Institute
KNPI	Kosovo Nature Protection Institute
KSEI	Kosovo State Environmental Inspectorate
LC	Least Concerned (IUCN Category)
LTM	Local Team Manager
MAFRD	Ministry of Agriculture, Forestry and Rural Development
MECYS	Ministry of Education, Culture, Youth and Sport
MED	Ministry of Economic Development
MEI	Ministry of European Integration
MESP	Ministry of Environment and Spatial Planning

N - Z

MEANING	ANCRONYMS
Not Applicable (IUCN Category)	**NA**
Not Evaluated (IUCN Category)	**NE**
National Park	**NP**
National Park Information Centre	**NPIC**
National Park Management Plan	**NPMP**
Near Threatened (IUCN Category)	**NT**
Project Director	**PD**
Procurement Expert	**PE**
Programme Facilitation Unit	**PFU**
Procurement Guidelines	**PG**
Project/Programme Management / Programme Manager	**PM** **PMA**
Project monitoring and Audit	**PT**
Project Team	**PTL**
Programme Team Leader	**PSP**
Private Sector Participation	**QA**
Quality Assurance	**QAS**
Quality Assurance Services	**RE**
Regionally Exting (IUCN Category)	**RBF**
Red Book of Fauna	**RBM**
Result Based Management	**SC**
Steering Committee	**SEK**
Swedish Krona (Swedish currency)	**Sida**
Swedish International Development Cooperation Agency	**SPG** **SPI**
Sida Procurement Guidelines	**STE**
Spatial Planning Institute	**TA**
Short Term Expert	**UN**
Technical Assistance	**VU**
United Nations	**WB**
Vulnerable (IUCN Category)	**WP**
World Bank	
Work Plan	

Dear readers and friends of nature



Dr. sc. Ilir Morina,
Chief of KEPA

In many countries around the world, including Kosovo, as a result of the non-implementation of the international conventions for the conservation of biodiversity, there has been considerable loss, including habitat change, extreme use, pollution, and climate change.

Today, there are many environmental organizations in the world that have an important role at national or international level to preserve rare and endangered species. These organizations, in cooperation with the governments of their countries, are making an impact in preventing or at least, slowing the loss and extinction of rare and endangered species.

To preserve the biodiversity of a country of great importance is also the education of the general population, particularly the rural population living nearby the areas rich in biodiversity. It is very important to take measures in the protection of species of national and international importance and to determine the threatening status of these species. This would create a major impact on setting priorities for the protection of certain species.

Based on the data from the field, it is concluded that in Kosovo the main factors affecting the reduction of the area of many animal species are of anthropogenic nature. Different habitats have been destroyed in the world, as well as in Kosovo, and many animal and plant species have gone extinct. There are many scientific data that teach us how to preserve ecosystems, habitats and biodiversity in general. The conservation of these resources creates the conditions for the preservation of plant and animal species.

The Red Book of Fauna of the Republic of Kosovo is important because it focuses the attention of all who deal with the protection of nature. This book is of utmost importance because it provides information that help in drafting national protection policies and enables a more effective co-operation with international organizations dealing with biodiversity protection.

The Republic of Kosovo, although it is a small state (10,908 km²), is quite rich in animal diversity.

Since this is the first Red Book of Fauna worked in the Republic of Kosovo, it will serve scholars, students and policy makers in drafting policies and strategies for fauna protection and future orientation of projects.
On this occasion, on behalf of the KEPA, we express our gratitude to SIDA for financial support and to all the experts engaged in the finalization of this project.

PREFACE

On **16th June 2016** the Embassy of Sweden (EoS) signed a Framework Agreement with ORGUT Consulting AB, then purchased by FCG Sweden, hereinafter simply called "FCG", as Framework Service Provider (FSP) in partnership with EPTISA Servicios de Ingeniería (Spain), simply called "EPTISA", for the implementation of the "***Kosovo Environmental Programme***", also called "the Programme" or "KEP" (document proposed to EoS on June 2015), reference n.2016/07076, funded by the Swedish International Development Cooperation Agency (Sida) and agreed with the Ministry of Environment and Spatial Planning of the Republic of Kosovo (MESP). The Framework Agreement formally started on **4th July 2016** with an overall duration of 4 years until **3rd July 2020**. The aim of the Programme is supporting the development of the capacity of the MESP, the Inter-Ministerial Water Council (IMWC), municipalities, and other stakeholders in environmental monitoring and management. More specifically KEP intends to develop the capacity of implementing the environmental legislation in compliance with EU directives and to support the Kosovo Environmental Protection Agency (KEPA) to enhance knowledge, to protect the biodiversity and to improve the management of trans-boundary protected areas, based on the national priorities deriving from the MESP policy documents, including the Kosovo Environmental Strategy (KES) and the National Environmental Action Plan (NEAP). The Programme aims also at strengthening the knowledge of Kosovo's water resources improving their management and enhancing resilience to environmental and climate change. To achieve these objectives, KEP has been divided in the following Components:

KEP components

1. Strengthening KEPA's capacity for environmental monitoring, assessment and reporting
2. Conservation of bio-diversity through Red Book of animal species in Kosovo
3. Strengthening the management of trans-boundary natural areas
4. Establishment of groundwater monitoring network in Kosovo
5. Strengthening capacity for implementation of environmental legislation at central-local level
6 Groundwater investigation in Drini River Basin
7. River basin management plan for Drini River Basin
8. Support to Inter-Ministerial Water Council
9. Provision of Technical Assistance Services to Programme Facilitation Unit (cross-cutting)

The Component 2 of the Programme is mainly focused on the finalisation of a Red Book of Fauna living or crossing the territory of the Republic of Kosovo through the implementation of the following main tasks and activities:

A2 Conservation of bio-diversity through Red Book of animal species in Kosovo

A2.01 Ofrimi i mjeteve të matshme dhe të vlerësueshme për mbrojtjen dhe ruajtjen e biodiversitetit për Institucionet kryesore

A2.01 *Provision to the key Institutions with measurable and assessable tools on biodiversity protection and conservation*
A2.01.01 *Preparation of a background document for a workshop on the preparation of Red Book of Animal Species*
A2.01.02 *Planning, carringy out and dissemination of the results of the workshop among the participants*
A2.01.03 *Preparation of a baseline report and database on the conservation status and distribution of animal species*
A2.01.04 *Verification of baseline data and collect other relevant information through field inventory*
A2.01.05 *Preparation of a methodology for classification regarding status of animals based on regional and global conservation standards*
A2.01.06 *Provision of guidelines for continuous updating and improvement of the database*
A2.01.07 *Facilitation of participatory planning and analysis activities for data generation/statistics on biodiversity/monitoring conservation*
A2.01.08 *Facilitation of participatory planning on inclusion of Red Data Book of Animal Species data on biodiversity/environment strategies*
A2.01.09 *Preparation and publishing of a first version of the Red Data Book of Animal Species in Kosovo*

A2.02 Training of staff from nature monitoring Institutions on monitoring and conservation techniques for animal groups

A2.02.01 *Carrying out on-the-job training on monitoring of freshwater ecosystems, large carnivores and terrestrial ecosystems*
A2.02.02 *Preparation of standard methodologies and identification of monitoring guidelines and manuals for animal species*
A2.02.03 *Provision of basic logistic facilities for monitoring of animal species*
A2.02.04 *Provision of training on legal perspectives on monitoring, preservation and conservation of animal species*
A2.02.05 *Synchronization and organisation of exchange of the collective research knowledge and expertise in biodiversity conservation*

A2.03 Increasing awareness of NGO's, communities/key institutions on importance/methods of biodiversity protection

A2.03.01 *Organisation of 2 workshops on protection, monitoring and law enforcement related to animal biodiversity in Kosovo*
A2.03.02 *Organisation of 2 workshops on priorities of awareness raising activities and nature protection related to animal biodiversity*
A2.03.03 *Production of a summary version of Red Book of Animal Species, targeting teachers, pupils and students, NGOs and communities*
A2.03.04 *Organisation of a dissemination workshop on the Red Book of Animal Species in Kosovo*
A2.03.05 *Organisation of a training-of-trainers workshop on protection, preservation, conservation and monitoring of animal species*

Such tasks and activities were implemented from 3 January 2017 to 31 December 2018 and the first draft of the Red Book of Animal Species in Kosovo (this document) has been finalised on 31 December 2018.

During this period, a multi-disciplinary group of international, regional and Kosovan experts has been engaged to support the KEPA and KNPI staff in the finalisation of such Component 2 and in the printing of the related Red Book of Animal Species (this study). These 11 experts were:

- Mr. Halil IBRAHIMI (Kosovan and Regional Expert on Red Book of Fauna, and on Fauna of Trichoptera and Plecoptera);
- Mr. Daut REXHEPAJ (Kosovan Expert on Amphibians and Reptiles, and on Mammal Fauna);
- Mr. Agim GASHI (Kosovan Expert on Fauna of Ephemeroptera and Diptera);
- Mrs. Linda GRAPCI KOTORI (Kosovan Expert on Fish Fauna);
- Mr. Ferdije ZHUSHI ETEMI (Kosovan Expert on Fauna of Lepidoptera and Odonata);
- Mr. Zóltan FEHÉR (International Expert on Fauna of Molluscs);
- Mrs. Lucija SERIĆ JELASKA (International Expert on Soil Fauna);
- Mr. Taulant BINO (Regional Expert on Bird Fauna)
- Mr. Philippe THÉOU (Regional Expert on Fauna of Chrioptera);
- Mr. Gabor MESAROŠ (Regional Expert on Fauna of Coleoptera);
- Mrs. Valentina SLAVEVSKA STAMENKOVIĆ (Regional Expert on Red Book Review)

The work of all these Short Term Experts (STEs) was under the direct coordination and supervision of Mr. Fadil BAJRAKTARI, Director of the Kosovo Nature Protection Institute (KNPI) who worked under the direction of Mr. Ilir MORINA, Chief Executive Officer (CEO) of the Kosovo Environmental Protection Agency (KEPA) to implement the overall Component 2 of the KEP, with the assistance of 2 Key Experts: Mr. Giuseppe RAZZA, Programme Team Leader and Team Leader of Components 1÷4 of the KEP and Mr. Tush MARKAJ, Local Team Manager of the same Components.
In addition to the abovementioned experts, the compilation of the Red Book of Fauna was enabled through the precious contribution of the following experts who provided data for species, samples of important and rare species, assessment for species and processing of associated ecological data: Professor Esat DAUTI, Mr. Qenan MAXHUNI, Mr. Astrit BILALLI and Mr. Donard GECI.
The University of Pristina must be particularly thanked as through its academic relations made possible the support of many other people that helped in the compilation of the Red Book of Fauna of the Republic of Kosovo, during the all phases of its realization, by providing data and samples, assisting in sampling and/or observation of different animal species, facilitating and enabling field work, identifying some of the collected faunistic material, etc. Particularly the following other persons provided samples or data for various animal species included in the Red Book: Mr. Bardh XËRXA, Mr. Milaim MUSLIU, Mrs. Eike NEUBERT, Mr. Joseph GREGO, Mr. Miklós SZEKERES, Mr. Marko WANKE, Mr. Miklós SZEKERES, Mr. Z. Gregor WOLF, Mr. Nexhmedin RAMADANI and Mr. Liridon HOXHA.

In addition, the following other professionals were important for their valuable help during the field work and investigations carried out during the project implementation: Mr. Zoltán ERŐSS, Mr. Tamás DELI, Mr. Dejan KULIJER, Mr. Damjan VINKO, Mr. Sami BEHRAMI, Mrs. Nexhmije KAMBERI, Mr. Pajtim BYTYQI, Mrs. Valentina PEJA, Mr. Edison KASUMAJ, Mrs. Delvina HOTI, Mr. Valmir BYTYQI, Mr. Arian MAVRIQI, Mr. Xhavit MALA, Mr. Besim ZOGU, Mr. Jeton MUHAXHIRI, Mr. Myzafer ARIFI, Mr. Bekim BYTYQI, Mr. Raim KURTAJ, Mr. Bujar KRASNIQI, Mr. Granit HYSENI, Mr. Besnik JAKUPI, Mr. Fatos LAJÇI, Mr. Sefer ALICKAJ, Mr. Besim DEMIRI and Mr. Liridon SHALA. The following other experts are thanked for their contribution in providing photos of some of the species, included in the Red Book of Fauna of the Republic of Kosovo: Mr. Jan-Joost MEKKES, Mr. Deajn KULJIER, Mr. Peter GLÖER, Mr. Vladimir PEŠIĆ, Mr. Dávid MURÁNYI, Mr. Liridon HOXHA, Mrs. Nataša STEFANOVSKA, Mr. Tomi TRILAR, Mrs. Nesrine AKKARI, Mr. Jenö KONTSCHÁN, Mr. Mišel JELIĆ, Mrs. Marijana VUKOVIĆ, Mrs. Darija ČALETA, Mr. Roman OZIMEC, Mr. Barna PÁLL-GERGELY and Mr. Besnik FETIU. The following persons provided their precious help in determining some of the collected samples: Mr. Jean-Luc GATTOLLIAT, Mr. Michael SARTORI and Mr. Ignac SIVEC. And finally, the following persons are thanked for providing access to the preserved collections: Mr. Sigrid HOF, Mrs. Anita ESCHNER and Mr. Reshat ZEQIRI.

In addition, the staff of the National Parks of Bjeshkët e Nemuna and Sharr, are thanked for their assistance during the realization of some of the field trips in these protected areas.

1 INTRODUCTION

1.1 The Red Book of Fauna of the Republic of Kosovo and the Protection of the Biodiversity

Despite the importance of biodiversity of all levels (ecosystem, species and genetic), today we are witnessing one of the most dramatic epochs of the disappearance and endangerment of species of living organisms, which otherwise serve as pillars of sustainability of life on Earth. Human activities over the last decades have prompted the rapid growth of the species loss rate.

If in natural conditions, during a year one species disappears, nowadays, the level of species loss has risen up to hundreds of times for some groups, as a result of a change in the way of life of humankind over the last centuries (Chivian & Bernstein 2008). According to the Living Planet Index LPI, between 1970 and 2018, there was a population decline of some of the main vertebrate groups up to 60% (WWF 2018). In addition, freshwater and surrounding ecosystems, known as biodiversity hotspots for many groups of invertebrates and vertebrates, have undergone drastic degradation over these decades, with thousands of species going extinct. During the same period, 1970 - 2018, populations of freshwater organisms globally declined by over 80% (WWF 2018).

Along with this trend of species and habitats loss over the last decades, numerous efforts have been made to raise awareness for preventing activities that cause deterioration of ecosystem and living organisms. One of the conclusions of the UN, from Rio Conference on Environment and Development of 1992, was that the lack of qualitative information on the state of biodiversity at local, national, regional and global levels is one of the main obstacles to nature conservation and preservation. In this context, the red lists and red books, prepared in different countries during the sixties of the twentieth century, were attempts to prevent the loss of species and thus, create policies for their effective protection.

The internationalization of this idea culminated in 1980, when IUCN created the Red Book Unit, where this document was conceived as a guide to the formulation, protection and management of the listed species (Collar 1996). Since then, lots of red books of various groups of organisms have been created at the global, regional, national and local levels, becoming thus, a legal obligation in many countries around the world. Purposes of the red books are summarized in several points such as:

1. Setting priorities,
2. Inclusiveness,
3. Objectivity,
4. Motivation, and
5. Monitoring.

Consequently, their specific goals are: preserving species from extinction, shaping public policies, identifying key habitats, key issues and key areas, fundraising and cost reduction for species management, comprehensive coverage of key organisms and taxonomy-related resources, creation of biodiversity databases, establishment of neutral and independent global standards in the local context, transfer of scientific knowledge to the public domain, promotion and participation of the public in conservation and management, setting up public policies and interactions, as well as the creation of a basis for monitoring species and the basis for measuring progress in conservation (Collar 1996).

At the regional level, Albania has produced so far two versions of the Red Book of Fauna (Misja 2006; REC 1997), in Serbia the Red Book of Amphibians (Kalezić *et al.* 2015), the Red Book of Reptiles (Tomović *et al.* 2015) and the Red Book of Butterflies (Jakšić 2003) were published so far, in Bosnia and Herzegovina the extended Red List of the Fauna of the Federation of Bosnia (Škrijelj *et al.* 2013), while Macedonia and Montenegro still do not have red books of fauna. In this context, the Red Book of Fauna of the Republic of Kosovo is being prepared for the first time. Previously, in 2013 the Red Book of Vascular Flora of Kosovo was published (Millaku *et al.* 2013).

Kosovo is characterized as an important part of the Balkan Peninsula in terms of biodiversity, due to a high number of stenoendemic, endemic, rare and important plant and animal species, but also threatened and endangered ones. However, the country still faces a lack of significant investments in biodiversity conservation, inclusive research, and establishment of biodiversity databases.

The protection of natural areas in Kosovo was initiated during the fifties of the last century, with the designation of some natural reserves such as Kozhnjer, Rusenica, Gubavc etc., with more developments in this direction during the eighties, when the first National Park of the Sharr Mountains was declared. This protected area has been further expanded in 2012. Another national park was announced in 2014, the Bjeshkët e Nemuna Mountains. Currently about 10.9% of Kosovo's territory has the status of legally protected area. However, the protection of these areas and their associated species is still challenging.

Compared with the surrounding countries, the biodiversity research in Kosovo is relatively late and consequently, there is still no systematic inventory. Especially the knowledge of animal diversity is scarce. Most of the faunistic researches until recently were sporadic, related only to certain groups, they were unsystematic and carried out in narrow areas in Kosovo (e.g. Apfelbeck 1907; Csiki 1940; Dauti 1980, 1987; Djorović 1974, 1975, 1992; Gradojević 1930-31; Jakšić 1987, 1988, 1998, 2003, 2006, 2007; Karaman 1968; Koçak 1989; Pasuljevič 1968; Pongrácz 1923; Rebel 1913; 1917; Rebel and Zerny 1931; Šapkarev 1972, 1975, 1980; Weiss 1975). Most of these researches lacked the ecological aspect that would enable undertaking of concrete actions for species' protection and conservation. Only in the last few years some of the animal groups have been researched more intensively (Gashi *et al.* 2015; Gashi & Ibrahimi 2008; Ibrahimi *et al.* 2012a, 2012b, 2013, 2014a, 2014b, 2015a, 2015b, 2016a, 2016b; Grapci Kotori *et al.* 2010; Zhushi Etemi *et al.* 2017a, 2017b; Zhushi *et al.* 2017) which has also produced new species and even new genera for science (e.g. Glöer & Pešić 2014; Grosser *et al.* 2016; Ibrahimi *et al.* 2015, 2016; Olah *et al.* 2013; Perreau 2008).

All these researches, conducted over the decades in Kosovo, and especially those realized within the project of the Red Book of Fauna of the Republic of Kosovo, show that Kosovo, though with relatively small territory, contains a large number of species, which are often limited to narrow areas, and which are important in terms of conservation for the wider European and global context.

Therefore, the importance of the Red Book of Fauna of Kosovo is, that it exposes many of these species out of anonymity and, while prioritizing conservation, also helps initiate other investigations in the country, given that many areas are still unexplored or poorly researched.

1.2 Methodology of Work

The Red Book of Fauna of the Republic of Kosovo has been developed in accordance with the IUCN Red List Category and Criteria Version 3.1 (IUCN 2012). Along with this document, Guidelines for Using the IUCN Red List Categories and Criteria (Version 13, March 2017: IUCN Standards and Petitions Subcommittee 2017) has been used. The IUCN Guidelines for Application of IUCN Red List Criteria at Regional and National Levels, version 4.0 (IUCN 2012a), has been used too. These documents, together with the other accompanying documents, have been used to provide an accurate objective classification framework for species, based on their threatening status.

The scientific names of taxa, as well as other systematic features, are given according to the European Fauna database (Fauna Europaea) (deJong *et al.* 2014), while for other species, such as those newly described for example, or others, the valid corresponding references have been used (e.g. Glöer & Pešić 2014; Grosser *et al.* 2016; Ibrahimi *et al.* 2015, 2016; Olah *et al.* 2013).

The species' names in Albanian and English were used when existed, although a major deficiency was noted in naming a large number of species in Albanian language.

Most of the data included in the Red Book of Fauna of Kosovo comes from research conducted during 2017 and 2018 when the related activities of the Kosovo Environmental Programme (KEP) funded by the Swedish International Development and Cooperation Agency (Sida) were implemented. Nevertheless, many other researches of previous years (published and unpublished) were also used, including data from the literature as well. Further processing of the data was done through the Ramas Red List software.

1.2.1 Classification of Fauna Based on IUCN Categories

Threatened species are all those that are susceptible to extinction or candidate for extinction in the near future, if the threatening factors are increased or not treated on time. The IUCN (International Union for the Conservation of Nature) treats threatened species not as a single category, but as a group of three categories: vulnerable, endangered and critically endangered, depending on the threat degree and intensity. Other categories used by the IUCN, prescribe either the degree of approximation of species with these categories, or the qualification of the species to be assessed against IUCN criteria, or even the extinction of the species itself.

These categories according to the IUCN are: Extinct EX, Extinct in the Wild EW, Regionally Extinct RE, Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), Not Applicable NA and Not Evaluated NE. An explanation of these categories in accordance of IUCN Manual "IUCN Red List Categories and Criteria (Version 3.1)" (obtained from IUCN 2012) is given in Annex A1.1 to this §1 INTRODUCTION.

All species are subject to assessment against IUCN criteria, except for the species considered to belong to the Not Applicable NA category. Some species may not be evaluated at present and these are grouped under the Not Evaluated NE category. It does not mean that species that are in this category are not threatened, but simply that they are not assessed at the moment. All other species are further evaluated for one of the remaining categories.

If the actual data is not sufficient to make an assessment for the categories Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Endangered (EN), Critically Endangered (CR), Regionally Extinct RE and Extinct in the Wild EW, then such species are classified under the Data Deficient (DD) category. For such species more data should be collected in order to be classified later in one of the mentioned categories. Species that are not under a serious extinction risk are classified under the Least Concern (LC) category, whereas other species which are under the threat of extinction, depending on the degree of threat, are placed in the categories Vulnerable (VU), Endangered (EN) and Critically Endangered (CR). Species that are under such threats that may soon qualify for these categories are placed in the Near Threatened (NT) category. Species for which there is evidence of extinction are placed under the Extinct in the Wild (EW), Extinct (EX) or Regionally Extinct (RE).

In **Annex A1.2** to this § **1 INTRODUCTION**, a summary of the five criteria (A-E) used to evaluate if a taxon belongs in an IUCN Red List threatened category (Critically Endangered, Endangered or Vulnerable) is provided.

Such evaluation is valid for a certain period. A subsequent reassessment may result in the change of the status of the species, and the reasons for such moves within the categories may relate to the change in the conditions of the species in nature or change in the dataset for the species. Change in conditions of the species means that since the previous assessment

was done, the threats have increased or decreased and thus the state of the populations have deteriorated or improved. The change of category due to the addition of data implies that since the past evaluation, new reliable data have been collected or the taxonomic status of the species has changed (e.g. populations belonging to a single species have been divided into several subspecies or species, which reduces their spatial distribution and consequently changes the state of the threats that threaten each of the earlier subpopulations of the species that are now populations of new species), or an error has been found in previous data or in previous assessment. In any case, in order to monitor the situation and change in the status of biodiversity, it is essential that the species are re-evaluated periodically, in order to have adequate measures for protection based on the real status of the species, and also to have additions of new species that for variety of reasons previously have not been evaluated against IUCN criteria.

1.2.2 Definition of the terms used in the Red Book of Fauna

In the Red Book of Fauna of the Republic of Kosovo are used terms in the context of the species' assessment and ecology, which in some cases differ from the meaning used in biology, ecology or in everyday vocabulary. The clear definition of these terms is also important in the assessment of species, as IUCN categorization criteria take into account the very understanding behind such terms during this categorization. These terms include, but are not limited to: population, population size, subpopulations, adults, taxa generation, reduction of (sub)population, continuous decline of sub(population), extreme fluctuations, habitat fragmentation, extent of occurrence, area of occupancy, location, site, quantitative analysis of the estimate of the extinction of a taxon, etc.

In Annex A1.3 to this §1 INTRODUCTION, the explanation of this terminology is provided in accordance with the IUCN Red List Category and Criteria manual (Version 3.1) (IUCN 2012).

1.2.3 Classification of Habitats

In the Red Book of Fauna of the Republic of Kosovo, classification of habitats according to the Habitats Classification Scheme (version 3.1) has been used. Habitat types under this scheme are standard terms used to describe the main habitats in which taxa are located. Three levels of hierarchy use habitats that take into account biogeography, latitudinal zoning and depth in case of marine systems.

The inland aquatic habitats are mainly based on the classification system of habitats used by the Ramsar Convention. This habitat classification scheme is given in Annex A1.4 to this §1 INTRODUCTION.
In addition, in most cases more detailed data on habitat characteristics for species have been provided, taking into account specific requirements of species for certain parts of the habitat, both in Kosovo and in the whole species' rang.

1.2.4 Classification of Threats

In the Red Book of Fauna of the Republic of Kosovo the threat categories according to the Threat Classification Scheme (version 3.2) have been used. Direct threats are human activities or processes that have affected, are affecting, or may affect, the status of the taxa that is assessed (e.g. unstable fishing, logging, commercial development, etc.). This threat classification scheme is provided in Annex A1.5 to this §1 INTRODUCTION.

In addition, in most cases, more detailed information on the characteristics of threats to the relevant species was provided. There was a lack of data on the timing of threats, and thus in some cases it was impossible to quantify them in relation to time and magnitude. In this context, in the Red Book of Fauna of the Republic of Kosovo, threats have been used more in terms of factors that have influenced or can affect the status of populations of the species without any direct quantification.

1.2.5 Classification of Conservation Actions and Research Needed

In the Red Fauna Book of the Republic of Kosovo, classification of the conservation actions needed has been used as per Conservation Actions Classification Scheme (version 2.0). In this scheme are included actions that are most urgent, important, and which can actually be reached at a certain future time. In most cases there were no current conservation actions for the respective species.
Hierarchical scheme for needed research activities is also given in accordance with the Research Needed Classification Scheme (Version 2.0).

Here are included research actions that are necessary in order to improve the status of the assessed species and which can be realistically achieved within a certain short-term period.

The Conservation Actions Classification Scheme and the Research Needed Classification Scheme are given in Annexes A1.6 and A1.7 to this §1 INTRODUCTION.

1.2.6 Using the Ramas Red List Software

The data collected for the Red Book of Fauna of Republic of Kosovo have been processed with the Ramas Red List software (Akçakaya and Ferson 2001) in cases where the quantity and quality of data has enabled this. This software program implements threat criteria according to IUCN and operates under three modules: Ramas Red List 3.0, Temporal Analysis Module and Spatial Analysis Module. Ramas Red List 3.0 is the basic module that carries out the assessment of the species.

The Temporal Analysis Module operates according to these parameters: generation length over the years, population reduction, continuous population decline and population fluctuations.

The Temporal Analysis Module operates according to these parameters: extent of occurrence, area of occupancy, trends in extent of occurrence (% per year), trends in area of occupancy, continuous decline of extent of occurrence, continuous decline of area of occupancy, extreme fluctuations in extent of occurrence and extreme fluctuations in area of occupancy.

This software takes also into account number of populations/subpopulations, number of locations main threats, the number of adult individuals, population/subpopulation size (expressed in number of adult individuals), the likelihood of extinction of taxon in nature within certain periods of time, etc.

1.2.7 Photos of the species

For most of the species photos were provided, however not for all, considering the difficulties in documenting animals with photos, as is the case with many other red books of fauna in the region and the world. Species' photos in the Red Book were done either directly into the field, or based on preserved specimens in the laboratory.

Documenting animals through photos remains one of the most difficults tasks, considering the way of life of these organisms, difficulties in observing them, as well as challenges in taking pictures itself. Whenever these circumstances enabled, the photos were provided, while for the rest of the species is needed more time to associate them with particular photos.

1.3 Findings of the Red Book of Fauna

In the Red Book of Fauna of the Republic of Kosovo are included 306 species, belonging to these animal groups: Gastropoda, Bivalvia, Oligochaeta, Hirudinea, Arachnida (Araneae, Mesostigmata), Malacostraca, Diplopoda, Insecta (Ephemeroptera, Plecoptera, Odonata, Coleoptera, Mecoptera, Diptera, Trichoptera, Lepidoptera), Cyclostomata, Actinopterygii, Amphibia, Reptilia, Aves and Mammalia. The number of observed species is much higher, but because of the limited space, only these species are included.

A considerable part of the faunistic material collected during this project is still unidentified due to taxonomic problems and the longer needed time to finalize their identificiation.

During the animal investigations within the implementation of the KEP Programme, a new species for science has been found, belonging to the insects, order Trichoptera, juliani group of the Potamophylax genus, which is endemic of the Balkan Peninsulua.

This species is found in the Lloqan Mountains in the Municipality of Deçan and is in the process of publication, which is not finalized yet, and therefore could not be included in the Red Book (Figure 1.2.1).

A large number of species of Ephemeroptera, Coleoptera, Mollusca, Araneae and others groups are still being identified, and the completion of their determination can produce important results for the fauna of the Republic of Kosovo. The largest number of species included in the Red Book of Fauna of the Republic of Kosovo belongs to the following groups: Insecta (140 species), Mammalia (39), Aves (24), Reptilia (20) and Gastropoda (20), while other groups are represented with the smaller number of species (Table 1.2.1).



Figure 1.2.1: A new species for science, Potamophylax sp. nov., found during the project of the Red Book of Fauna

Tablle 1.2.1: Distribution of species included in the Red Book of Fauna of the Republic of Kosovo in six categories according to IUCN

GROUPS/CATEGORIES	Critically Endangered [CR]	Endangered [EN]	Vulnerable [VU]	Near Threatened [NT]	Least Concern [LC]	Data Deficient [DD]	Totali
Gastropoda			10	10			**20**
Bivalvia		1					**1**
Oligochaeta		1		2	2	7	**12**
Hirudinea						2	**2**
Arachnida					1	8	**9**
Araneae					1	7	**8**
Mesostigmata						1	**1**
Malacostraca			1			1	**2**
Diplopoda			3			6	**9**
Insecta	20	11	19	42	13	35	**140**
Ephemeroptera		4		4	2	2	**12**
Plecoptera	5	1					**6**
Odonata				4	1	7	**12**
Coleoptera			3	2	4	17	**26**
Mecoptera						1	**1**
Diptera						2	**2**
Trichoptera	15	1	7	20	1	2	**46**
Lepidoptera		5	9	12	5	4	**35**
Cyclostomata				1			**1**
Actinopterygii	1	1	1	4	2	5	**14**
Amphibia		2	1		3	7	**13**
Reptilia			1	8	8	3	**20**
Aves	3	6	4	4		7	**24**
Mammalia	1	2	1	9	17	9	**39**
Totali	**25**	**24**	**41**	**80**	**46**	**90**	**306**

The largest number of species included in the Red Book of Fauna of the Republic of Kosovo belongs to the categories: Data Deficient (DD) (90) and Near Threatened (NT) (80), while the smallest number of species belongs to categories Endangered (24) and Critically Endangered (25). These data reflect the factual situation in animal diversity research in Kosovo, where there is still a substantial lack of knowledge for a large number of species in terms of population data, the number of individuals, their trend and the threatening factors. This is an emergency warning to start with monitoring of these species in order to have them assessed against the IUCN criteria, before their situation becomes irreversibly worsened from anthropogenic and other threats.

The largest number of threats to the assessed species belongs to these threat groups: the use of biological resources, natural system modifications, climate change and severe weather, human intervention and disturbance, pollution and residential and commercial development. Logging and forest harvest, unmanaged recreational activities, exploitation of surface waters, especially for agricultural purposes, household and urban wastewater, habitat shifting and alteration, and tourism and recreation areas are the most frequent specific threats that threaten evaluated species.

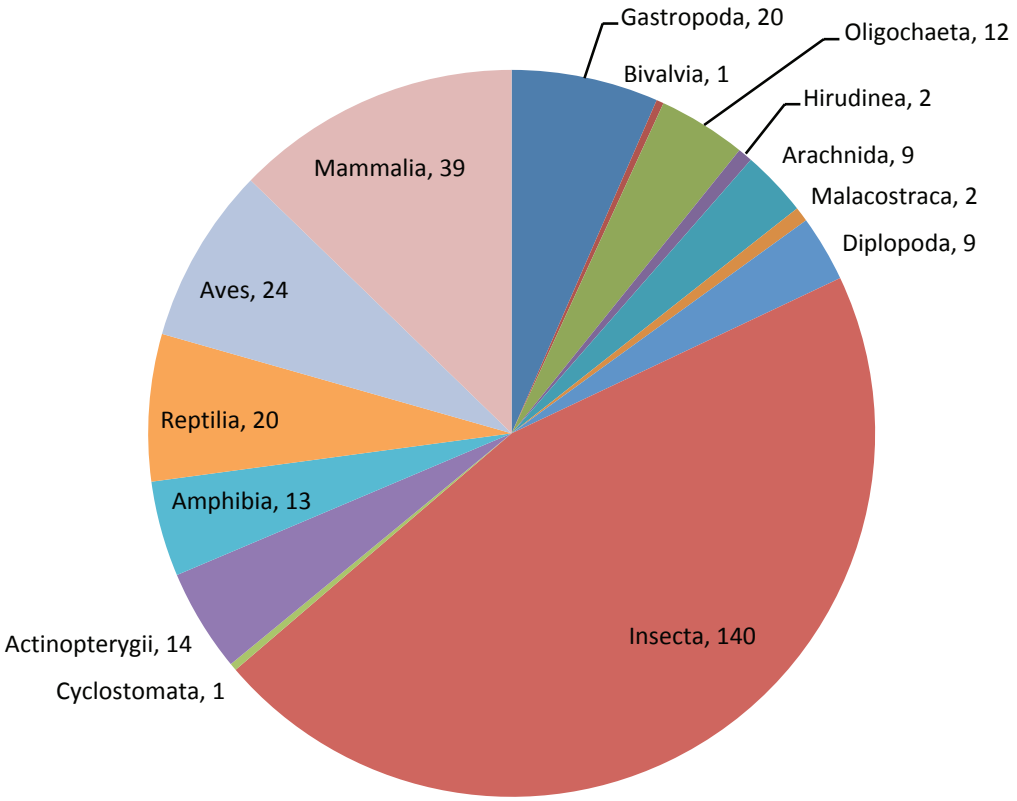


Figure 1.2.2: Number of species within different animal groups included in the Red Book of Fauna of the Republic of Kosovo

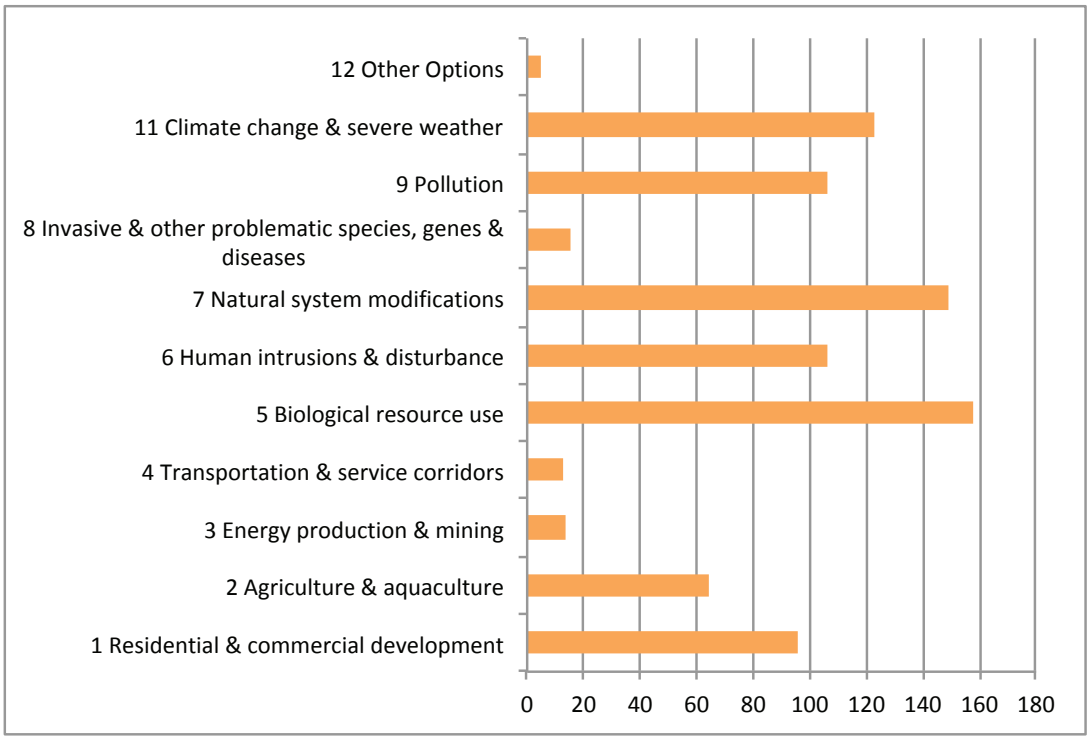


Figure 1.2.3: : Main threat categories that threaten the assessed animal species

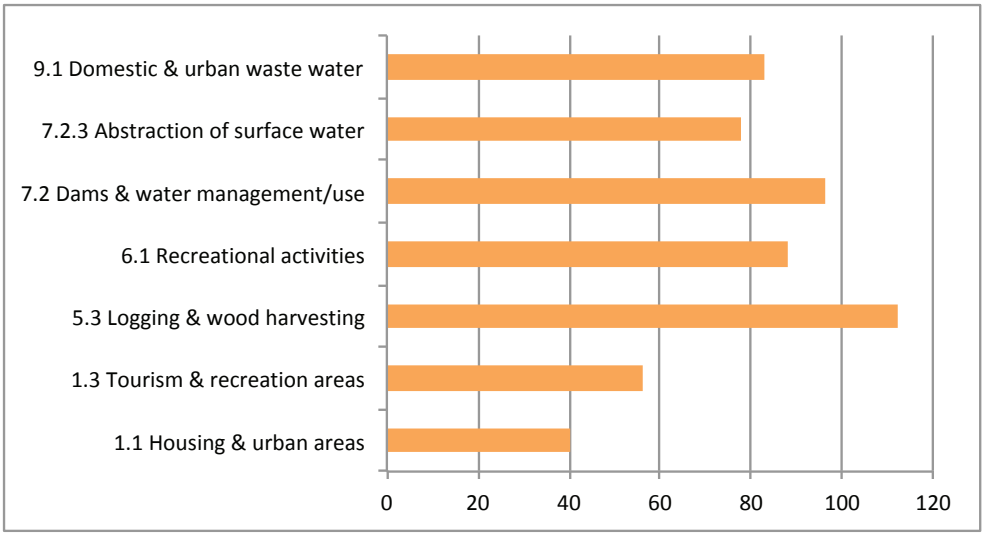


Figure 1.2.4: Key specific threats that threaten the assessed animal species

1.4 Conclusions

The Red Book of Fauna of the Republic of Kosovo is the most important official document produced so far in Kosovo regarding the diversity of fauna, because it provides for the first time qualitative and measurable data about the animal species present in Kosovo, their distribution, aspects of endemism and measures for their protection. Identifying at the same time the threats posed to these species, this document will serve as a guide to protecting species, avoiding threats and creating conservation policies.

The next step is to create monitoring programs for the assessed species and their associated habitats, in accordance with suggested conservation measures, thus contributing to the protection of biodiversity in Kosovo. This document testifies about the high animal diversity in Kosovo, and at the same time, it emphasizes the responsibility of state and academic institutions in protecting these species.

The Red Book of Fauna of the Republic of Kosovo takes biodiversity out of the academic box, by putting these species in responsibility of decision-making bodies, NGOs, educational institutions, as well as the society in general. On the other hand, the responsibility of academic institutions does not cease, but it becomes even more important, especially in the ongoing monitoring of populations of the assessed species, and especially in the evaluation of other species against the same system of criteria, bearing in mind that the species included in this first version of the Red Book constitute only a small percentage of the animal diversity present in the Republic of Kosovo.

A1 Annexes to Introduction

A1.1 IUCN Categories (according to IUCN Red List Categories & Criteria: Version 3.1-2012)

· **EXTINCT (EX):** a taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

· **EXTINCT IN THE WILD (EW):** a taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

· **REGIONALLY EXTINCT (RE):** category for a taxon when there is no reasonable doubt that the last individual potentially capable of reproduction within the region has died or has disappeared from the wild in the region, or when, if it is a former visiting taxon, the last individual has died or disappeared in the wild from the region. The setting of any time limit for listing under RE is left to the discretion of the regional Red List authority, but should not normally pre-date 1500 AD

· **CRITICALLY ENDANGERED (CR):** a taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

· **ENDANGERED (EN):** a taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.

· **VULNERABLE (VU):** a taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.

· **NEAR THREATENED (NT):** a taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

· **LEAST CONCERN (LC):** a taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

· **DATA DEFICIENT (DD):** a taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

· **NOT EVALUATED (NE):** a taxon is Not Evaluated when it has not yet been evaluated against the criteria.

· **NOT APPLICABLE (NA):** category for a taxon deemed to be ineligible for assessment at a regional level. A taxon may be NA because it is not a wild population or not within its natural range in the region, or because it is a vagrant to the region. It may also be NA because it occurs at very low numbers in the region (i.e. when the regional Red List authority has decided to use a "filter" to exclude taxa before the assessment procedure) or the taxon may be classified at a lower taxonomic level (e.g. below the level of species or subspecies) than considered eligible by the regional Red List authority. In contrast to other Red List Categories, it is not mandatory to use NA for all taxa to which it applies; but is recommended for taxa where its use is informative.

A1.2 Summary of the five Criteria (A-E) used to evaluate if a Taxon belongs in an IUCN Red List Threatened Category (Critically Endangered, Endangered Vulnerable)

A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4				
		Critically Endangered	**Endangered**	**Vulnerable**
A1		≥ 90%	≥ 70%	≥ 50%
A2, A3 & A4		≥ 80%	≥ 50%	≥ 30%
A1	Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased	*based on any of the following*;	(a) direct observation *[except A3]* (b) an index of abundance appropriate to the taxon (c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality (d) actual or potential levels of exploitation (e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites	
A2	Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible			
A3	Population reduction projected, inferred or suspected to be met in the future (up to a maximum of 100 years) *[(a) cannot be used for A3]*.			
A4	An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a ma. Of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible			

B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)				
		Critically Endangered	**Endangered**	**Vulnerable**
B1. Extent of occurrence (EOO)		< 100 km^2	< 5,000 km^2	< 20,000 km^2
B2. Area of occupancy (AOO)		< 10 km^2	< 500 km^2	< 2,000 km^2
AND at least 2 of the following 3 conditions:				
(a)	Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b)	Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c)	Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			

C. Small population size and decline				
		Critically Endangered	**Endangered**	**Vulnerable**
Number of mature individuals		< 250	< 2,500	< 10,000
AND at least one of C1 or C2				
C1.	An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future).	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2.	An observed, estimated, projected or inferred continuing decline AND at least 1 of the following 3 conditions			
(a)	(i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
	(ii) % of mature individuals in one subpopulation =	90-100%	95-100%	100%
(b)	Extreme fluctuations in the number of mature individuals			

D. Very small or restricted population				
		Critically Endangered	**Endangered**	**Vulnerable**
D1.	Number of mature individuals	< 50	< 250	< 1,000
D2.	*Only apply to the VU category* Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time			Typically AOO < 20 km^2 or number of locations ≤ 5

E. Quantitative Analysis			
Critically Endangered	**Endangered**	**Vulnerable**	
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

A1.3 Definitions of terms related to the criteria used for species evaluation (according to the IUCN Red List Categories and Criteria: Version 3.1-2012)

Population and Population Size (Criteria A, C and D)

The term 'population' is used in a specific sense in the Red List Criteria that is different to its common biological usage. Population is here defined as the total number of individuals of the taxon. For functional reasons, primarily owing to differences between life forms, population size is measured as numbers of mature individuals only. In the case of taxa obligately dependent on other taxa for all or part of their life cycles, biologically appropriate values for the host taxon should be used.

2. Subpopulations (Criteria B and C)

Subpopulations are defined as geographically or otherwise distinct groups in the population between which there is little demographic or genetic exchange (typically one successful migrant individual or gamete per year or less).

3. Mature individuals (Criteria A, B, C and D)

The number of mature individuals is the number of individuals known, estimated or inferred to be capable of reproduction. When estimating this quantity, the following points should be borne in mind:

- Mature individuals that will never produce new recruits should not be counted (e.g. densities are too low for fertilization).
- In the case of populations with biased adult or breeding sex ratios, it is appropriate to use lower estimates for the number of mature individuals, which take this into account.
- Where the population size fluctuates, use a lower estimate. In most cases this will be much less than the mean.
- Reproducing units within a clone should be counted as individuals, except where such units are unable to survive alone (e.g. corals).
- In the case of taxa that naturally lose all or a subset of mature individuals at some point in their life cycle, the estimate should be made at the appropriate time, when mature individuals are available for breeding.
- Re-introduced individuals must have produced viable offspring before they are counted as mature individuals.

4. Generation (Criteria A, C and E)

Generation length is the average age of parents of the current cohort (i.e. newborn individuals in the population). Generation length therefore reflects the turnover rate of breeding individuals in a population. Generation length is greater than the age at first breeding and less than the age of the oldest breeding individual, except in taxa that breed only once. Where generation length varies under threat, the more natural, i.e. pre-disturbance, generation length should be used.

5. Reduction (Criterion A)

A reduction is a decline in the number of mature individuals of at least the amount (%) stated under the criterion over the time period (years) specified, although the decline need not be continuing. A reduction should not be interpreted as part of a fluctuation unless there is good evidence for this. The downward phase of a fluctuation will not normally count as a reduction.

6. Continuing decline (Criteria B and C)

A continuing decline is a recent, current or projected future decline (which may be smooth, irregular or sporadic) which is liable to continue unless remedial measures are taken. Fluctuations will not normally count as continuing declines, but an observed decline should not be considered as a fluctuation unless there is evidence for this.

7.Extreme fluctuations (Criteria B and C)

Extreme fluctuations can be said to occur in a number of taxa when population size or distribution area varies widely, rapidly and frequently, typically with a variation greater than one order of magnitude (i.e. a tenfold increase or decrease).

8. Severely fragmented (Criterion B)

The phrase 'severely fragmented' refers to the situation in which increased extinction risk to the taxon results from the fact that most of its individuals are found in small and relatively isolated subpopulations (in certain circumstances this may be inferred from habitat information). These small subpopulations may go extinct, with a reduced probability of recolonization.

9. Extent of occurrence (Criteria A and B)

Extent of occurrence is defined as the area contained within the shortest continuous imaginary boundary which can be drawn to encompass all the known, inferred or projected sites of present occurrence of a taxon, excluding cases of vagrancy. This measure may exclude discontinuities or disjunctions within the overall distributions of taxa (e.g. large areas of obviously unsuitable habitat) (but see 'area of occupancy'). Extent of occurrence can often be measured by a minimum convex polygon (the smallest polygon in which no internal angle exceeds 180° and which contains all the sites of occurrence).

10. Area of occupancy (Criteria A, B and D)

Area of occupancy is defined as the area within its 'extent of occurrence' which is occupied by a taxon, excluding cases of vagrancy. The measure reflects the fact that a taxon will not usually occur throughout the area of its extent of occurrence, which may contain unsuitable or unoccupied habitats. In some cases (e.g. irreplaceable colonial nesting sites, crucial feeding sites for migratory taxa) the area of occupancy is the smallest area essential at any stage to the survival of existing populations of a taxon. The size of the area of occupancy will be a function of the scale at which it is measured and should be at a scale appropriate to relevant biological aspects of the taxon, the nature of threats and the available data. To avoid inconsistencies and bias in assessments caused by estimating area of occupancy at different scales, it may be necessary to standardize estimates by applying a scale-correction factor. It is difficult to give strict guidance on how standardization should be done because different types of taxa have different scale-area relationships.

11. Location (Criteria B and D)

The term 'location' defines a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present. The size of the location depends on the area covered by the threatening event and may include part of one or many subpopulations. Where a taxon is affected by more than one threatening event, location should be defined by considering the most serious plausible threat.

12. Quantitative analysis (Criterion E)

A quantitative analysis is defined here as any form of analysis which estimates the extinction probability of a taxon based on known life history, habitat requirements, threats and any specified management options. Population viability analysis (PVA) is one such technique. Quantitative analyses should make full use of all relevant available data. In a situation in which there is limited information, such data as are available can be used to provide an estimate of extinction risk (for instance, estimating the impact of stochastic events on habitat). In presenting the results of quantitative analyses, the assumptions (which must be appropriate and defensible), the data used and the uncertainty in the data or quantitative model must be documented.

A1.4 Habitat Classification Scheme (Version 3.1)

1 Forest
- 1.1 Boreal Forest
- 1.2 Subarctic Forest
- 1.3 Subantarctic Forest
- 1.4 Temperate Forest
- 1.5 Subtropical/Tropical Dry Forest
- 1.6 Subtropical/Tropical Moist Lowland Forest
- 1.7 Subtropical/Tropical Mangrove Forest Vegetation above High Tide Level
- 1.8 Subtropical/Tropical Swamp Forest
- 1.9 Subtropical/Tropical Moist Montane Forest

2 Savanna
- 2.1 Dry Savanna
- 2.2 Moist Savana

3 Shrubland
- 3.1 Subarctic Shrubland
- 3.2 Subantarctic Shrubland
- 3.3 Boreal Shrubland
- 3.4 Temperate Shrubland
- 3.5 Subtropical/Tropical Dry Shrubland
- 3.6 Subtropical/Tropical Moist Shrubland
- 3.7 Subtropical/Tropical High Altitude Shrubland
- 3.8 Mediterranean-type Shrubby Vegetation

4 Grassland
- 4.1 Tundra
- 4.2 Subarctic Grassland
- 4.3 Subantarctic Grassland
- 4.4 Temperate Grassland
- 4.5 Subtropical/Tropical Dry Lowland Grassland
- 4.6 Subtropical/Tropical Seasonally Wet/Flooded Lowland Grassland
- 4.7 Subtropical/Tropical High Altitude Grassland

5 Wetlands (inland)
- 5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]
- 5.2 Seasonal/Intermittent/Irregular Rivers, Streams, Creeks
- 5.3 Shrub Dominated Wetlands
- 5.4 Bogs, Marshes, Swamps, Fens, Peatlands [generally over 8 ha]
- 5.5 Permanent Freshwater Lakes [over 8 ha]
- 5.6 Seasonal/Intermittent Freshwater Lakes [over 8 ha]
- 5.7 Permanent Freshwater Marshes/Pools [under 8 ha]
- 5.8 Seasonal/Intermittent Freshwater Marshes/Pools [under 8 ha]
- 5.9 Freshwater Springs and Oases
- 5.10 Tundra Wetlands [includes pools and temporary waters from snowmelt]
- 5.11 Alpine Wetlands [includes temporary waters from snowmelt]
- 5.12 Geothermal Wetlands
- 5.13 Permanent Inland Deltas
- 5.14 Permanent Saline, Brackish or Alkaline Lakes
- 5.15 Seasonal/Intermittent Saline, Brackish or Alkaline Lakes and Flats
- 5.16 Permanent Saline, Brackish or Alkaline Marshes/Pools
- 5.17 Seasonal/Intermittent Saline, Brackish or Alkaline Marshes/Pools
- 5.18 Karst and Other Subterranean Inland Aquatic Systems

6 Rocky Areas [e.g. inland cliffs, mountain peaks]

7 Caves and Subterranean Habitats (non-aquatic)
- 7.1 Caves
- 7.2 Other Subterranean Habitats

8 Desert
- 8.1 Hot
- 8.2 Temperate
- 8.3 Cold

9 Marine Neritic (Submergent Nearshore Continental Shelf or Oceanic Island)
- 9.1 Pelagic
- 9.2 Subtidal Rock and Rocky Reefs
- 9.3 Subtidal Loose Rock/Pebble/Gravel
- 9.4 Subtidal Sandy
- 9.5 Subtidal Sandy-Mud

- 9.6 Subtidal Muddy
- 9.7 Macroalgal/Kelp
- 9.8 Coral Reef
  - 9.8.1 Outer Reef Channel
  - 9.8.2 Back Slope
  - 9.8.3 Foreslope (Outer Reef Slope)
  - 9.8.4 Lagoon
  - 9.8.5 Inter-Reef Soft Substrate
  - 9.8.6 Inter-Reef Rubble Substrate
- 9.9 Seagrass (Submerged)
- 9.10 Estuaries

10 Marine Oceanic
- 10.1 Epipelagic (0–200 m)
- 10.2 Mesopelagic (200–1,000 m)
- 10.3 Bathypelagic (1,000–4,000 m)
- 10.4 Abyssopelagic (4,000–6,000 m)

11 Marine Deep Ocean Floor (Benthic and Demersal)
- 11.1 Continental Slope/Bathyl Zone (200–4,000 m)
  - 11.1.1 Hard Substrate
  - 11.1.2 Soft Substrate
  - 11.2 Abyssal Plain (4,000–6,000 m)
- 11.3 Abyssal Mountain/Hills (4,000–6,000 m)
- 11.4 Hadal/Deep Sea Trench (>6,000 m)
- 11.5 Seamount
- 11.6 Deep Sea Vents (Rifts/Seeps)

12 Marine Intertidal
- 12.1 Rocky Shoreline
- 12.2 Sandy Shoreline and/or Beaches, Sand Bars, Spits, etc.
- 12.3 Shingle and/or Pebble Shoreline and/or Beaches
- 12.4 Mud Shoreline and Intertidal Mud Flats
- 12.5 Salt Marshes (Emergent Grasses)
- 12.6 Tidepools
- 12.7 Mangrove Submerged Roots

13 Marine Coastal/Supratidal
- 13.1 Sea Cliffs and Rocky Offshore Islands
- 13.2 Coastal Caves/Karst
- 13.3 Coastal Sand Dunes
- 13.4 Coastal Brackish/Saline Lagoons/Marine Lakes
- 13.5 Coastal Freshwater Lakes

14 Artificial - Terrestrial
- 14.1 Arable Land
- 14.2 Pastureland
- 14.3 Plantations
- 14.4 Rural Gardens
- 14.5 Urban Areas
- 14.6 Subtropical/Tropical Heavily Degraded Former Forest

15 Artificial - Aquatic
- 15.1 Water Storage Areas (over 8 ha)
- 15.2 Ponds (below 8 ha)
- 15.3 Aquaculture Ponds
- 15.4 Salt Exploitation Sites
- 15.5 Excavations (open)
- 15.6 Wastewater Treatment Areas
- 15.7 Irrigated Land (includes irrigation channels)
- 15.8 Seasonally Flooded Agricultural Land
- 15.9 Canals and Drainage Channels, Ditches
- 15.10 Karst and Other Subterranean Hydrological Systems (human-made)
- 15.11 Marine Anthropogenic Structures
- 15.12 Mariculture Cages
- 15.13 Mari/Brackish-culture Ponds

16 Introduced Vegetation

17 Other

18 Unknown

A1.5 Threats Classification Scheme (Version 3.2)

1 Residential & commercial development
1.1 Housing & urban areas
1.2 Commercial & industrial areas
1.3 Tourism & recreation areas
2 Agriculture & aquaculture
2.1 Annual & perennial non-timber crops
2.1.1 Shifting agriculture
2.1.2 Small-holder farming
2.1.3 Agro-industry farming
2.1.4 Scale Unknown/Unrecorded
2.2 Wood & pulp plantations
2.2.1 Small-holder plantations
2.2.2 Agro-industry plantations
2.2.3 Scale Unknown/Unrecorded
2.3 Livestock farming & ranching
2.3.1 Nomadic grazing
2.3.2 Small-holder grazing, ranching or farming
2.3.3 Agro-industry grazing, ranching or farming
2.3.4 Scale Unknown/Unrecorded
2.4 Marine & freshwater aquaculture
2.4.1 Subsistence/artisinal aquaculture
2.4.2 Industrial aquaculture
2.4.3 Scale Unknown/Unrecorded
3 Energy production & mining
3.1 Oil & gas drilling
3.2 Mining & quarrying
3.3 Renewable energy
4 Transportation & service corridors
4.1 Roads & railroads
4.2 Utility & service lines
4.3 Shipping lanes
4.4 Flight paths
5 Biological resource use
5.1 Hunting & collecting terrestrial animals
5.1.1 Intentional use (species being assessed is the target)
5.1.2 Unintentional effects (species being assessed is not the target)
5.1.3 Persecution/control
5.1.4 Motivation Unknown/Unrecorded
5.2 Gathering terrestrial plants
5.2.1 Intentional use (species being assessed is the target)
5.2.2 Unintentional effects (species being assessed is not the target)
5.2.3 Persecution/control
5.2.4 Motivation Unknown/Unrecorded
5.3 Logging & wood harvesting
5.3.1 Intentional use: subsistence/small scale (species being assessed is the target) [harvest]
5.3.2 Intentional use: large scale (species being assessed is the target) [harvest]
5.3.3 Unintentional effects: subsistence/small scale (species being assessed is not the target) [harvest]
5.3.4 Unintentional effects: large scale (species being assessed is not the target) [harvest]
5.3.5 Motivation Unknown/Unrecorded
5.4 Fishing & harvesting aquatic resources
5.4.1 Intentional use: subsistence/small scale (species being assessed is the target) [harvest]
5.4.2 Intentional use: large scale (species being assessed is the target) [harvest]
5.4.3 Unintentional effects: subsistence/small scale (species being assessed is not the target) [harvest]
5.4.4 Unintentional effects: large scale (species being assessed is not the target) [harvest]
5.4.5 Persecution/control
5.4.6 Motivation Unknown/Unrecorded
6 Human intrusions & disturbance
6.1 Recreational activities
6.2 War, civil unrest & military exercises
6.3 Work & other activities

7 Natural system modifications
7.1 Fire & fire suppression
7.1.1 Increase in fire frequency/intensity
7.1.2 Suppression in fire frequency/intensity
7.1.3 Trend Unknown/Unrecorded
7.2 Dams & water management/use
7.2.1 Abstraction of surface water (domestic use)
7.2.2 Abstraction of surface water (commercial use)
7.2.3 Abstraction of surface water (agricultural use)
7.2.4 Abstraction of surface water (unknown use)
7.2.5 Abstraction of ground water (domestic use)
7.2.6 Abstraction of ground water (commercial use)
7.2.7 Abstraction of ground water (agricultural use)
7.2.8 Abstraction of ground water (unknown use)
7.2.9 Small dams
7.2.10 Large dams
7.2.11 Dams (size unknown)
7.3 Other ecosystem modifications
8 Invasive & other problematic species, genes & diseases
8.1 Invasive non-native/alien species/diseases
8.1.1 Unspecified species
8.1.2 Named species
8.2 Problematic native species/diseases
8.2.1 Unspecified species
8.2.2 Named species
8.3 Introduced genetic material
8.4 Problematic species/diseases of unknown origin
8.4.1 Unspecified species
8.4.2 Named species
8.5 Viral/prion-induced diseases
8.5.1 Unspecified "species" (disease)
8.5.2 Named "species" (disease)
8.6 Diseases of unknown cause
9 Pollution
9.1 Domestic & urban waste water
9.1.1 Sewage
9.1.2 Run-off
9.1.3 Type Unknown/Unrecorded
9.2 Industrial & military effluents
9.2.1 Oil spills
9.2.2 Seepage from mining
9.2.3 Type Unknown/Unrecorded
9.3 Agricultural & forestry effluents
9.3.1 Nutrient loads
9.3.2 Soil erosion, sedimentation
9.3.3 Herbicides and pesticides
9.3.4 Type Unknown/Unrecorded
9.4 Garbage & solid waste
9.5 Air-borne pollutants
9.5.1 Acid rain
9.5.2 Smog
9.5.3 Ozone
9.5.4 Type Unknown/Unrecorded
9.6 Excess energy
9.6.1 Light pollution
9.6.2 Thermal pollution
9.6.3 Noise pollution
9.6.4 Type Unknown/Unrecorded
10 Geological events
10.1 Volcanoes
10.2 Earthquakes/tsunamis
10.3 Avalanches/landslides
11 Climate change & severe weather
11.1 Habitat shifting & alteration
11.2 Droughts
11.3 Temperature extremes
11.4 Storms & flooding
11.5 Other impacts
12 Other options
12.1 Other threat

A1.6 Conservation Actions Classification Scheme (Version 2.0)

1 Land/water protection
1.1 Site/area protection
1.2 Resource & habitat protection
2 Land/water management
2.1 Site/area management
2.2 Invasive/problematic species control
2.3 Habitat & natural process restoration
3 Species management
3.1 Species management
3.1.1 Harvest management
3.1.2 Trade management
3.1.3 Limiting population growth
3.2 Species recovery
3.3 Species re-introduction
3.3.1 Reintroduction
3.3.2 Benign introduction
3.4 Ex-situ conservation
3.4.1 Captive breeding/artificial propagation
3.4.2 Genome resource bank
4 Education & awareness
4.1 Formal education
4.2 Training
4.3 Awareness & communications
5 Law & policy
5.1 Legislation
5.1.1 International level
5.1.2 National level
5.1.3 Sub-national level
5.1.4 Scale unspecified
5.2 Policies and regulations
5.3 Private sector standards & codes
5.4 Compliance and enforcement
5.4.1 International level
5.4.2 National level
5.4.3 Sub-national level
5.4.4 Scale unspecified
6 Livelihood, economic & other incentives
6.1 Linked enterprises & livelihood alternatives
6.2 Substitution
6.3 Market forces
6.4 Conservation payments
6.5 Non-monetary values

A1.7 Research Needed Classification Scheme (Version 2.0)

1 Research
1.1 Taxonomy
1.2 Population size, distribution & trends
1.3 Life history & ecology
1.4 Harvest, use & livelihoods
1.5 Threats
1.6 Actions
2 Conservation Planning
2.1 Species Action/Recovery Plan
2.2 Area-based Management Plan
2.3 Harvest & Trade Management Plan
3 Monitoring
3.1 Population trends
3.2 Harvest level trends
3.3 Trade trends
3.4 Habitat trends
4 Other

2.1.

CRITICALLY ENDANGERED SPECIES (CR)

2.1 INSECTA

Brachyptera macedonica Ikonomov, 1983

Insecta: Plecoptera: Taeniopterygidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Esat Dauti, Astrit Bilalli

General data

During the larval stage, they live in water for one year. They are on the wing during the spring period. As adults, they live for several days to several weeks, nearby the stream or river where they lived as larvae. The larval stage is an indicator of clean and medium clean waters (Ikonomov 1983).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).
This species is mainly found in small mountain streamlets. It is mostly found in higher altitudes.

General distribution

Endemic of Balkans. It is currently known only from Kosovo and Macedonia.

Distribution in Kosovo

Streamlet in Lugu i Kopilaqës.

Population

Population trend: Unknown
In Kosovo it was found in only 1 site with low number of specimens.

Rationale

This species is assessed as Critically Endangered due to the restricted AOO (4 km²), number of locations, which is 1 and the projected reduction in population size, based on decline of quality of suitable habitats for the species and number of locations. The location where this species was found is under constant pressure from pollution and degradation.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

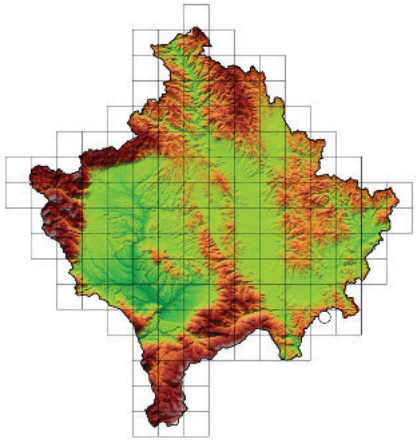
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Ikonomov 1983



Nemoura anas Murányi, 2007

Insecta: Plecoptera: Nemouridae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Esat Dauti, Astrit Bilalli, Halil Ibrahimi

General data

During the larval stage, they live in water for one year. They are on wing during the spring period. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. The larval stage is an indicator of clean waters. There is not enough information about the feeding habits of larvae and their life. This species belongs to the genus *Nemoura* Latreille, 1796, which has a high endemism potential in the Balkan Peninsula, with several new species described during the last years (Murányi 2007).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).
This species is mainly found in small mountain streamlets. It can be found in different altitudes, but mostly above 800 m.

General distribution

Endemic of Balkans. It is currently known only from Albania, Kosovo, Macedonia and Montenegro.

Distribution in Kosovo

Streamlet in Berisha Mountains.

Population

Population trend: Unknown

Rationale

This species is assessed as Critically Endangered due to the restricted AOO (4 km²), number of locations which is 1 and the projected reduction in population size, based on the decline of quality of suitable habitats for the species and number of locations. The location where this species was found is under constant pressure from logging and degradation of freshwater habitats.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

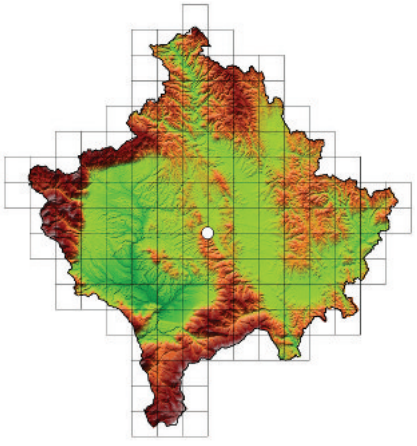
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs. To control, and eventually stop, the logging around the area where this species was found.

References

Murányi 2007



Nemoura asceta Murányi, 2007

Insecta: Plecoptera: Nemouridae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Astrit Bilalli, Esat Dauti, Halil Ibrahimi

General data

During the larval stage, they live in water for one year. They are on wing during the spring period. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. The larval stage is an indicator of clean and medium clean waters. There is not enough information about the way larvae live or feed. This species belongs to the genus *Nemoura*, which has a high endemism potential in the Balkan Peninsula, with several new species described during the last years (Murányi 2007).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
This species is mainly found in small mountain streamlets. It can be found in different altitudes, but mostly above 800 m.

General distribution

Endemic of Balkans. It is currently known only from Albania and Kosovo.

Distribution in Kosovo

Streamlet in Berisha Mountains.

Population

Population trend: Unknown

Rationale

This species is assessed as Critically Endangered due to the restricted AOO (4 km²), number of locations which is 1 and the projected reduction in population size, based on the decline of quality of suitable habitats for the species and number of locations. The location where this species was found is under constant pressure from logging and degradation of freshwater habitats.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].
Main threats for this species are: habitat loss and degradation, deforestation, water pollution, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

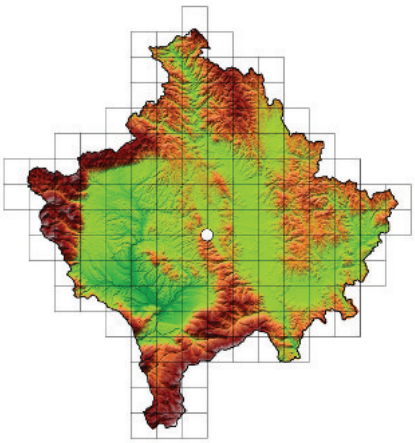
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs. To control, and eventually stop, the logging around the area where this species was found.

References

Murányi 2007





Nemoura vinconi Murányi, 2007

Insecta: Plecoptera: Nemouridae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Astrit Bilalli, Halil Ibrahimi

General data

During the larval stage, they live in water for one year. They are on wing during the spring period. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. The larval stage is an indicator of clean waters. There is not enough information about the way larvae live or feed. This species belongs to the genus *Nemoura*, which has a high endemism potential in the Balkan Peninsula, with several new species described during the last years (Murányi 2007).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).

This species is mainly found in small mountain streamlets. It can be found in different altitudes, but mostly above 800 m.

General distribution

Endemic of Balkans. It is currently known only from Albania and Kosovo.

Distribution in Kosovo

Streamlet in Berisha Mountains.

Population

Population trend: Unknown

Rationale

This species is assessed as Critically Endangered due to the restricted AOO (4 km²), number of locations which is 1 and the projected reduction in population size, based on the decline of quality of suitable habitats for the species and number of locations. The location where this species was found is under constant pressure from logging and degradation of freshwater habitats.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

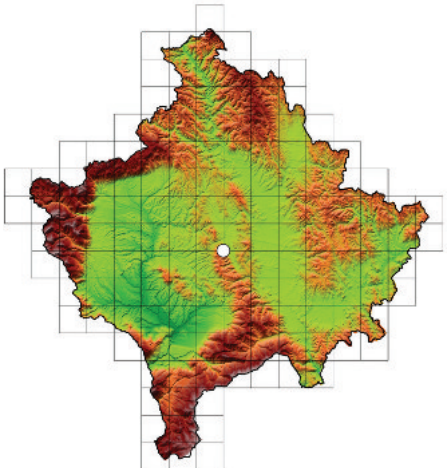
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs. To control, and eventually stop, the logging around the area where this species was found.

References

Murányi 2007



Nemoura zwicki Sivec, 1980

Insecta: Plecoptera: Nemouridae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Esat Dauti, Halil Ibrahimi, Astrit Bilalli

General data

During the larval stage, they live in water for one year. They are on wing during the spring period. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. The larval stage is an indicator of clean waters. It was described as a new species from a locality nearby Brezovicë, in Sharr Mountains in Kosovo (Sivec 1980).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).
This species is mainly found in small mountain streamlets. It is found mostly in altitudes above 1000 m.

General distribution

Endemic of Balkans. It is currently known only from Kosovo and Macedonia.

Distribution in Kosovo

Streamlet in Brezovicë.

Population

Population trend: Unknown
In Kosovo, it is only known from 1 site, which is the site from where it was described.

Rationale

This species is assessed as Critically Endangered due to the restricted AOO (4 km²), number of locations which is 1 and the projected reduction in population size, based on the decline of quality of suitable habitats for the species and number of locations. The location where this species was found is under constant pressure from touristic constructions and recreational activities.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

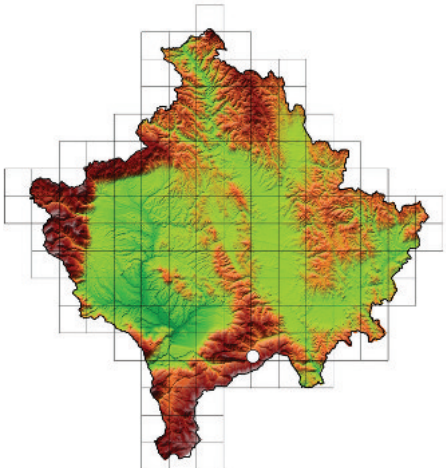
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs. To control and sustainably manage touristic and recreation activities around the site where this species was found.

References

Sivec 1980



Adicella altandroconia Botosaneanu & Novak, 1965

Insecta: Trichoptera: Leptoceridae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 5.5 to 7.5 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing during the May-August period. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. The knowledge about the feeding way and life of larvae is still incomplete (Graf *et al.* 2008; Kumanski 1988).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls)).
It is mainly found in streamlets. The preferred substrate for this species are macrophytes, mosses, living parts of terrestrial plants and fallen branches and leaves from the surrounding vegetation. It is mainly found in lower altitudes, mostly until 600 m (Graf *et al.* 2008).

General distribution

Bulgaria, Greece, Kosovo, Romania, Turkey.

Distribution in Kosovo

Streamlet nearby Badovc Lake.

Population

Population trend: Unknown
This species was found in 1 site only with a low number of individuals.

Rationale

This species is assessed as Critically Endangered due to the restricted AOO (4 km²), number of locations which is 1 and the projected reduction in population size, based on the decline of quality of suitable habitats for the species and number of locations. The site where this species was found is rapidly deteriorating, as it is located inside the inhabited area with a lot of ongoing constructions around the stream.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density. The locality where this species was found has degraded critically during the past years.

Conservation measures in action

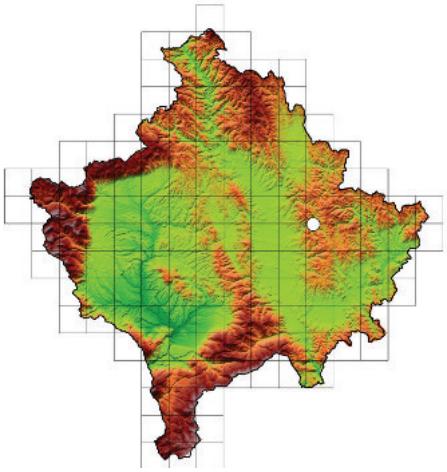
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1988





Chaetopteroides kosovarorum Ibrahimi & Oláh, 2013

Insecta: Trichoptera: Limnephilidae

Kosovar Fly

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 12 to 16 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing during the August-November period. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. This species belongs to the genus *Chaetopteroides* Kumanski, 1968, which is endemic of the Balkan Peninsula, currently known only from a limited number of localities in Bulgaria, Kosovo, Serbia and Macedonia (Oláh *et al.* 2013). The knowledge about the feeding way and life of larvae is still incomplete, as is the case about the adult stage as well.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
It is found mostly in spring areas and upstream segments of mountain streams and rivers. The preferred substrate for larvae is composed by gravel of different size, cobbles and boulders of different size, as well as habitats rich in material of plant origin. It can be encountered at altitudes above 1000 m.

General distribution

Kosovo.

Distribution in Kosovo

Streamlet in Bajgorë.

Population

Population trend: Decreasing
This species was found in 1 site only with few individuals.

Rationale

This species is assessed as Critically Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. The species is known from 1 location only with restricted AOO (4 km²). More than 50% of the forested area around the site where this species was found is cut.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].
Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

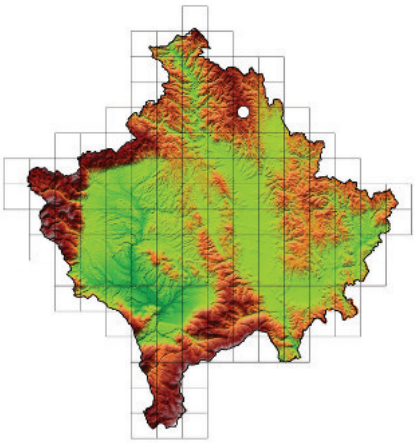
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs. To stop the logging around the area where this species was found.

References

Oláh *et al.* 2013





Drusus dardanicus Ibrahimi, Kučinić & Vitecek, 2015

Insecta: Trichoptera: Limnephilidae

Dardanian fly

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 7 to 9 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing during the May-August period. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. The knowledge about the feeding way and life of larvae is still incomplete, as is the case about the adult stage as well. This species belongs to the subfamily Drusinae, which is known for high endemism potential in Balkans, with several new species described during the past years from Albania, Kosovo, Bosnia and Herzegovina, Macedonia, Montenegro and Serbia (Ibrahimi *et al.* 2015).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).

It is found mostly in spring areas and upstream segments of mountain streams. The preferred substrate for larvae is composed by gravel of different size, cobbles and boulders of different size, as well as habitats rich in material of plant origin. It can be encountered at different altitudes, from 1300 up to over 1700 m.

General distribution

Kosovo.

Distribution in Kosovo

Streamlet in Bollosicë.

Population

Population trend: Decreasing

This species was found in 1 site with a low number of individuals.

Rationale

This species is assessed as Critically Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. The species is known from 1 location only with restricted AOO (4 km²).

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species are: habitat loss and degradation, deforestation, unsustainable management of water, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

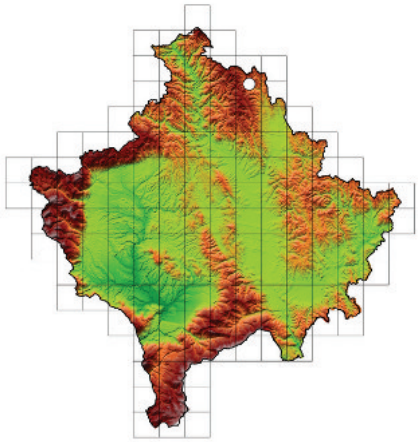
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs. To stop the logging around the area where this species was found.

References

Ibrahimi *et al.* 2015





Drusus schmidi Botosaneanu, 1960

Insecta: Trichoptera: Limnephilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 7 to 9 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing during the spring and beginning of summer. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. The knowledge about the feeding way and life of larvae is still incomplete, as is the case about the adult stage as well. This species belongs to the subfamily Drusinae, which is known for high endemism potential in Balkans (Ibrahimi *et al.* 2015). The population of this species from Kosovo possesses some morphological differences in male genitalia, but it remains to be resolved through the detailed molecular and morphological analysis if it is the same species or a different new species or subspecies.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams and rivers. The preferred substrate for larvae is composed by gravel of different size, cobbles and boulders of different size, as well as habitats rich in material of plant origin. This species prefers higher altitudes.

General distribution

Endemic of Southeastern Europe. Currently is known only from a limited number of localities in Bosnia and Herzegovina, Croatia, Kosovo and Montenegro.

Distribution in Kosovo

Stream in Haxhaj.

Population

Population trend: Decreasing

This species was found in 1 site only with a low number of individuals.

Rationale

This species is assessed as Critically Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. The species is known from 1 location only with restricted AOO (4 km²).

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action, although the site where the species is found is inside the protected area.

Conservation measures needed

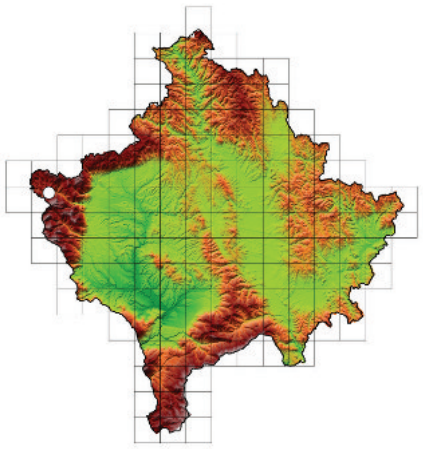
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.1. Taxonomy, 1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Ibrahimi *et al.* 2015





Drusus sharrensis Ibrahimi, Previšić & Vitecek, 2016

Insecta: Trichoptera: Limnephilidae

Sharr fly

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 7 to 9 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing during the May-August period. As adults, they live for several days to several weeks near the stream where they lived as larvae. The knowledge about the feeding way and life of larvae is still incomplete, as is the case about the adult stage as well. This species belongs to the subfamily Drusinae, which is known for high endemism potential in Balkans, with several new species described during the past years (Ibrahimi *et al.* 2016).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).

It is found mostly in spring areas and upstream segments of mountain streams. The preferred substrate for larvae is composed by gravel of different size, cobbles and boulders of different size, as well as habitats rich in material of plant origin. It can be encountered at higher altitudes.

General distribution

Kosovo.

Distribution in Kosovo

Sharr Mountains.

Population

Population trend: Decreasing

Rationale

This species is assessed as Critically Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. The species is known from 1 location only with restricted AOO (4 km²).

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action, although the site where the species is found is inside the protected area.

Conservation measures needed

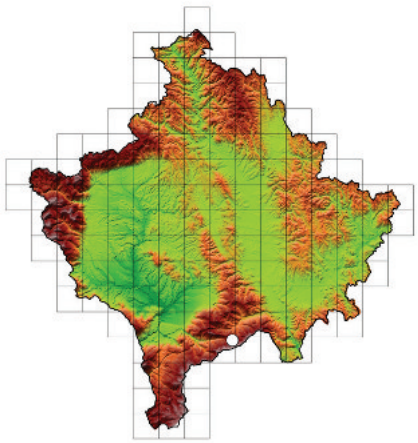
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs. To monitor and control logging around the area where this species is found.

References

Ibrahimi *et al.* 2016





Drusus siveci Malicky, 1981

Insecta: Trichoptera: Limnephilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 7 to 9 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing during the spring and beginning of summer. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. This species belongs to the subfamily Drusinae, which is known for high endemism potential in Balkans, with several new species described during the past years (Ibrahimi *et al.* 2016). The population of this species from Kosovo has some morphological differences in male genitalia and, probably, after the finalization of detailed morphological analysis, these populations will be upgraded to the status of new species.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams and rivers. The preferred substrate for larvae is composed by gravel of different size, cobbles and boulders of different size as well as habitats rich in material of plant origin. This species prefers higher altitudes.

General distribution

Endemic of Balkans. Currently is only known from a limited number of sites from Bosnia and Herzegovina, Kosovo and Montenegro.

Distribution in Kosovo

Stream in Haxhaj, Stream in Lloqan Mountains.

Population

Population trend: Decreasing

Rationale

This species is assessed as Critically Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. The species is known from a small number of locations (2) with restricted AOO = 8 km².

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

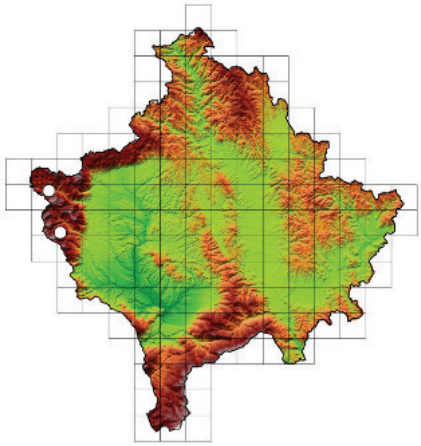
Currently, there is no conservation measure in action. However, both sites where the species was found are inside the protected area.

Conservation measures needed

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs. To monitor and control abstraction of surface water from the site where this species is found in Lloqan Mountains.

References

Ibrahimi *et al.* 2016





Drusus tenellus Klapálek, 1898

Insecta: Trichoptera: Limnephilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 7 to 8 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing during the spring and beginning of summer. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.* 2008; Kumanski 1988). This species belongs to the subfamily Drusinae, which is known for high endemism potential in Balkans, with several new species described during the past years from Albania, Kosovo, Serbia, Bosnia and Herzegovina, Macedonia and Montenegro.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
It is found mostly in spring areas and upstream segments of mountain streams and rivers. The preferred substrate for larvae is composed by gravel of different size, cobbles and boulders of different size, as well as habitats rich in material of plant origin. This species can be found at altitudes from 1300 to 1900 m.

General distribution

Albania, Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro, Romania.

Distribution in Kosovo

Stream in Haxhaj.

Population

Population trend: Decreasing

Rationale

This species is assessed as Critically Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. The species is known from 1 location only, with restricted AOO (4 km²).

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].
Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

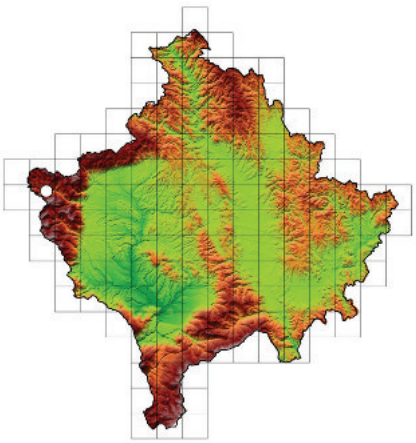
Currently, there is no conservation measure in action although the site where the species was found is inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1988





Ecclisopteryx keroveci Previšić, Graf & Vitecek, 2014

Insecta: Trichoptera: Limnephilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 7 to 10 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing during the May-August period (Ibrahimi *et al.* 2014b). As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae.

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).

It is found mostly in spring areas and upstream segments of mountain streams and rivers. The preferred substrate for larvae is composed by gravel of different size, cobbles and boulders of different size, as well as habitats rich in material of plant origin. This species can be found in altitudes from 800 – 1700 m.

General distribution

Bosnia and Herzegovina, Croatia, Kosovo, Montenegro.

Distribution in Kosovo

Lumbardhi i Pejës River in Kuqishtë.

Population

Population trend: Decreasing

Rationale

This species is assessed as Critically Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. The species is known from 1 location only, with restricted AOO (4 km²).

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

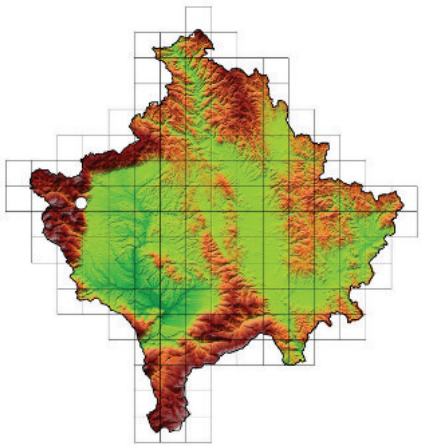
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Ibrahimi *et al.* 2014b





Ernodes skipetarum Malicky, 1986

Insecta: Trichoptera: Beraeidae

Albanian Ernodes

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 4 to 6 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean and medium clean water. They are on wing during the spring and summer. The knowledge about the feeding way and life of larvae is still incomplete. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. It was described as a new species from Çakorr Mountains in Kosovo (Ibrahimi *et al.* 2014b).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).

It is mostly found in mountain streamlets. It prefers higher altitudes.

General distribution

Endemic of Balkans. Currently is only known from Albania and Kosovo.

Distribution in Kosovo

Streamlet in Lloqan.

Population

Population trend: Decreasing

Rationale

This species is assessed as Critically Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. The species is known from 1 location, with restricted AOO = 4 km². This species was not found in type locality during the 2017 sampling, which does not necessarily mean that this subpopulation is extinct. Further investigations are needed to verify.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action, although the site where this species was found, is inside the protected area.

Conservation measures needed

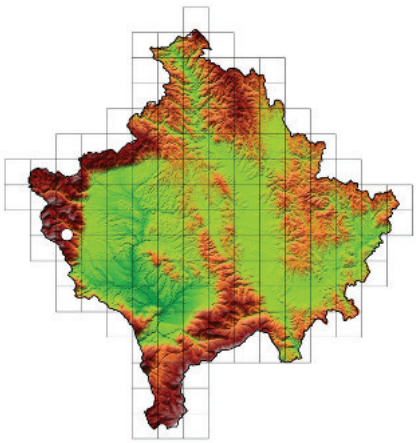
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Ibrahimi *et al.* 2014b



Limnephilus petri Marinkovic-Gospodnetic, 1966

Insecta: Trichoptera: Limnephilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 8 to 10 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing during the May-August period. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. This species is endemic of Sharr Mountains. Data from Serbia and Bulgaria are still not fully verified (Kumanski 1988).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams and rivers. The preferred substrate for larvae is composed by gravel of different size, cobbles and boulders of different size, as well as habitats rich in material of plant origin. It can be encountered at different altitudes from 1300 up to over 1700 m.

General distribution

Kosovo.

Distribution in Kosovo

Brod River in Dragash Municipality.

Population

Population trend: Unknown

Rationale

This species is assessed as Critically Endangered due to the restricted AOO = 4 km², number of locations, which is 1 and the projected reduction in population size, based on the decline of quality of suitable habitats for the species and number of locations. The area where this species is found has been heavily impacted lately from touristic and recreation activities.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action. The site where this species was found is inside the protected area.

Conservation measures needed

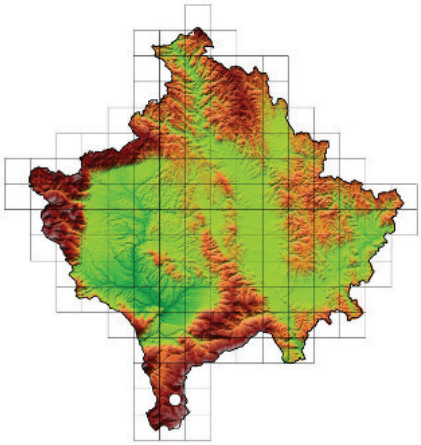
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Kumanski 1988



Notidobia melanoptera Stein, 1963

Insecta: Trichoptera: Sericostomatidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 15 to 18 mm. Adults are characterized by dark-colored wings. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing during the spring period. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.* 2008; Kumanski 1988).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]].
It is mostly found in upstream and midstream segments of rivers with fast flow. It generally prefers habitats of higher altitudes.

General distribution

Endemic of Balkans. Currently is known only from Greece and Kosovo.

Distribution in Kosovo

Midstream area of Lepenc River.

Population

Population trend: Decreasing
This species was found in 1 site only, with a low number of individuals.

Rationale

This species is assessed as Critically Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. The species is known from 1 location only, with restricted A00 = 4 km².

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].
Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

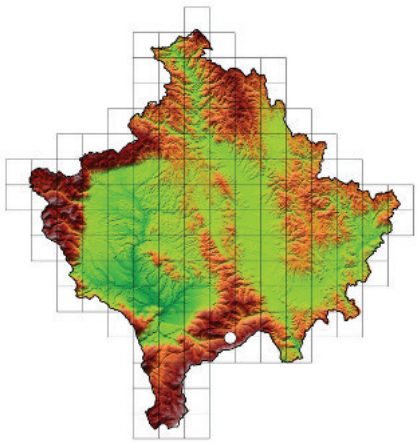
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Graf *et al.* 2008; Kumanski 1988





Odontocerum hellenicum Malicky, 1972

Insecta: Trichoptera: Odontoceridae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 16 to 18 mm. During the larval stage, they live in water for one year. They are on wing during the May – August period. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.* 2008; Kumanski 1988). It is often found in simpatry with the other species of the same genus, *Odontocerum albicorne* (Scopoli, 1763), but it is considerably rarer. There is not enough information about the way larvae live.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
It is mainly found in small mountain streamlets with fast flow. It prefers altitudes from 600 to more than 2000 m.

General distribution

Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo, Macedonia, Romania, Serbia.

Distribution in Kosovo

Streamlet in Bajgorë.

Population

Population trend: Decreasing
This species was found in Kosovo in 1 site only, with a low number of individuals.

Rationale

This species is assessed as Critically Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. The species is known from 1 location only, with restricted AOO = 4 km².

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].
Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

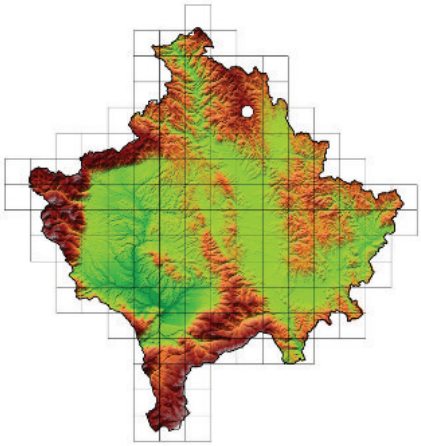
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1988





Polycentropus ierapetra Malicky, 1972

Insecta: Trichoptera: Polycentropodidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 4.5 to 5 mm. During the larval stage, they live in water for one year. They are on wing mostly during the spring. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. There is not enough data about the tolerance values of the larval stage, since the larva is undescribed. The species *P. ierapetra* has several subspecies, mostly distributed in limited areas in Balkans and Turkey. In Kosovo is present the subspecies *Polycentropus ierapetra slovenica* Malicky, 1998 (Graf *et al.* 2008; Kumanski 1985).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls)).
It is mostly found in upstream areas of mountain streams

General distribution

Bosnia and Herzegovina, Bulgaria, Greece, Italy, Kosovo, Rumania, Slovenia, Turkey. The subspecies *P. ierapetra slovenica* until now is only known from Bosnia and Herzegovina, Kosovo and Slovenia.

Distribution in Kosovo

Bjeshkët e Nemuna Mountains.

Population

Population trend: Decreasing
In Kosovo, it was sampled in 1 locality only, with a low number of individuals.

Rationale

This species is assessed as Critically Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. The species is known from 1 location only, with restricted AOO (4 km²).

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

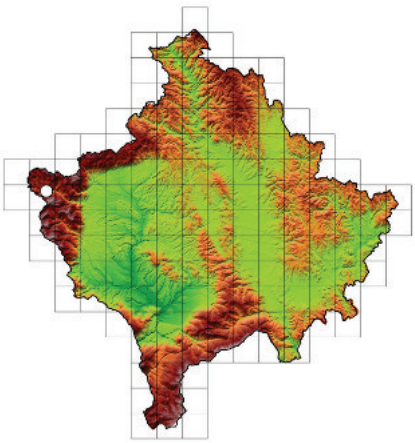
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Rhyacophila trescavicensis Botosaneanu, 1960

Insecta: Trichoptera: Rhyachophilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 7 to 9 mm. The wing color is dark brown. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing from March to May. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
It is mostly found in fast flowing waters. It is usually found in spring areas and upstream segments of mountain streams of different altitudes, from 500 to 2000 m. The favorite substrate of larvae of this species is composed by coarse gravel, cobbles, boulders and bedrock, etc. [Graf *et al.* 2008]

General distribution

Balkan endemic species. Albania, Bosnia and Hercegovina, Kosovo.

Distribution in Kosovo

Vrellë in Istog.

Population

Population trend: Decreasing
This species until now is known only from 1 site, where is characterized by a low number of individuals. In this site was observed a continuous degradation of habitat through a decrease of suitable habitats and pollution.

Rationale

This species is assessed as Critically Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species.

The species is known from 1 location only with AOO = 4 km². During the past several years almost half of the habitat where the species was found, has degraded. Human-driven change in water flow regime during the summer time may endanger the larval stage.

Threats

List of Threats: 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].
Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, as well as the species' limited distribution and low density.

Conservation measures in action

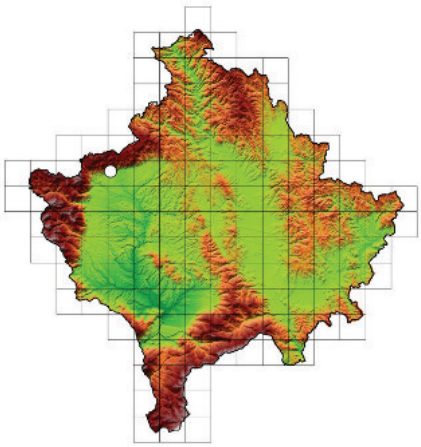
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Graf *et al.* 2008





Synagapetus moselyi Ulmer, 1938

Insecta: Trichoptera: Glossosomatidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A3c; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 5 to 6 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of medium clean water. Larvae belong to the feeding groups of grazers/scrapers and gatherers/collectors. They are on wing mostly during June. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.* 2008; Kumanski 1985).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).

It is found mostly in spring areas and upstream segments of mountain streams. The favorite substrate of larvae of this species is made by gravel and cobbles of different size. It can be found up to 1000 m altitude (Graf *et al.* 2008; Kumanski 1985).

General distribution

Austria, Bulgaria, Czech Republic, Germany, Hungary, Kosovo, Romania, Slovakia.

Distribution in Kosovo

Stream in vicinity of Lipjan.

Population

Population trend: Unknown

This species is currently known only from 1 site in Kosovo and with only 1 specimen.

Rationale

This species is assessed as Critically Endangered due to the suspected reduction in population size in the future, based on the decline of quality of suitable habitats for the species. The species is known from 1 location only, with restricted AOO (4 km²). The species is one of the rarest in the region as well. The quarry operating in the near vicinity of the location where this species was found, will most probably cause long term severe damage to the habitat.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, as well as the species' limited distribution and low density. Nearby the locality where this species was found, a quarry is operating and causing disturbances in the habitat.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

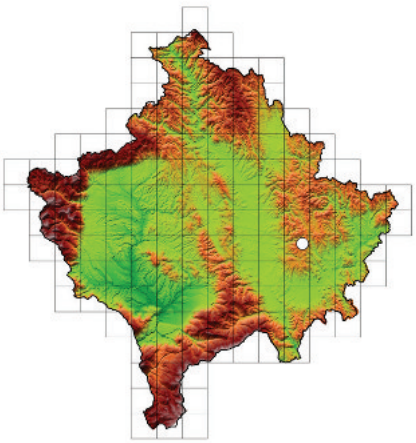
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs. To monitor the activity of quarry which is operating nearby the location where this species was found.

References

Graf *et al.* 2008; Kumanski 1985





2.2 ACTINOPTERYGII

Anguilla anguilla (Linnaeus, 1758)

Actinopterygii: Anguilliformes: Anguillidae

European Eel

Threat category in Europe (according to IUCN)

Critically Endangered, CR

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori

General data

This is a typical migratory species with catadromic migration. It is a territorial and solitary species. It is a predatory fish that feeds on a wide range of food and this allows it to live in different ecological conditions, and with a large geographical distribution. They can reach a length of up to 122 cm. It is reported that it can reach the age of up to 88 years (Freyhoff and Kottelat 2008).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]].

This species is characteristic for freshwater ecosystems, but can also be found in marine environments. Usually, it is found only in those freshwater ecosystems that are connected to the marine systems, where they migrate to reproduce.

General distribution

Europe, Northern Africa.

Distribution in Kosovo

Drini i Bardhë River in Mirushë, Drini i Bardhë River at Ura e Shenjtë.

Population

Population trend: Në rënie.

Rationale

This species is assessed as Critically Endangered, due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. The species is known from only 2 locations, with AOO = 8 km². In the past, subpopulations of this species have been abundant in the Drini i Bardhë River, but today due to the construction of the dam on the Albanian side and because of climate changes, they are rapidly declining.

Threats

List of Threats: 7 Natural system modifications [7.2 Dams & water management/use: 7.2.10 Large dams]]; 9 Pollution [9.1 Domestic & Urban Waste Water, 9.4 Garbage & Solid Waste]; 11 Climate change & severe weather [11.2 Droughts].

Main threats for this species are the construction of dams, water management and use, garbage and solid waste, as well as droughts.

Conservation measures in action

The species is protected [Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species].

Conservation measures needed

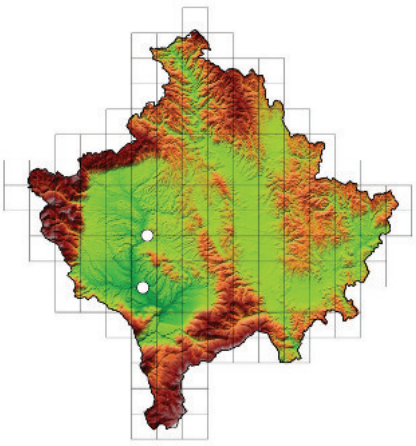
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Freyhoff and Kottelat 2008





2.3 AVES

Aquila chrysaetos (Linnaeus, 1758)

Aves: Accipitriformes: Accipitridae

Golden Eagle

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR D

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni, Nexhmedin Ramadani.

General data

Size of this species is 66–90 cm, male weights 2,840–4,550 g, female 3,630–6,665 g (exceptionally up to 7,200 g), and the wingspan is 180–234 cm. Female averages 10% larger and up to 50% heavier than male. Adults are usually sedentary and only juveniles migrate during the first few years. They prey on mammals, birds, reptiles, amphibians, fish, insects etc. (BirdLife International 2016f).

Habitat

Habitat Type: 1 Forest (1.4. Temperate Forest); 3. Shrubland (3.8. Mediterranean-type Shrubby Vegetation); 4. Grassland (4.4. Temperate Grassland); 6. Rocky areas (eg. inland cliffs, mountain peaks).
The species occupies a wide range of flat or mountainous, largely open habitats, often above the tree line, from sea level to 4000 m (BirdLife International 2016f).

General distribution

The species is present all over the northern hemisphere.

Distribution in Kosovo

Zaplluxhë, Bajgorë, Gropa e Erenikut.

Population

Population trend: Unknown

Rationale

This species is assessed as Critically Endangered due to the fact that deliberate and indeliberate poisoning is reducing the native population of the species. The population of this species is very small. The number of mature individuals is ≤ 50.

Threats

List of Threats: 2 Agriculture & aquaculture (2.2 Wood & pulp plantations); 3 Energy production & mining (3.3 Renewable energy); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target), 5.1.3 Persecution/control, 5.3 Logging & wood harvesting: 5.3.3 Unintentional effects: subsistence/small scale (species being assessed is not the target) [harvest]; 12 Other options (12.1 Other threat (poisoning)).

Conservation measures in action

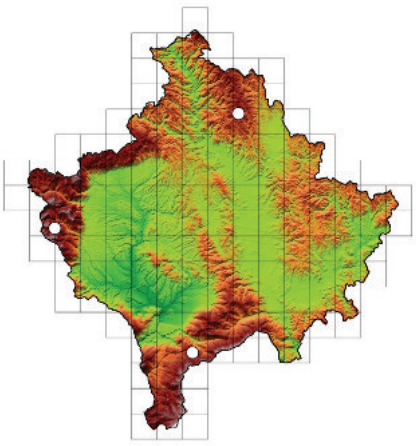
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species). Major areas of incidence designated as protected areas.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
Prevention and control of poisoning activities.

References

BirdLife International 2016f





Ardea cinerea (Linnaeus, 1758)

Aves: Pelecaniformes: Ardeidae

Grey Heron

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR B2ab(iv)

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni,

General data

Size of this species is 90–98 cm, weight 1020–2073 g, and the wingspan is 175–195 cm. Most of the Palearctic populations are fully migratory while only some southern populations tend to be sedentary. They are mostly fed on fish, eels, small birds, small rodents etc. (BirdLife International 2016d).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1. Permanent Rivers/Streams/Creeks (includes waterfalls), 5.4. Bogs, Marshes, Swamps, Fens, Peatlands, 5.5. Permanent Freshwater Lakes (over 8ha), 5.6. Seasonal/Intermittent Freshwater Lakes (over 8ha), 5.7.Permanent Freshwater Marshes/Pools (under 8ha), 5.8. Seasonal/Intermittent Freshwater Marshes/Pools (under 8ha); 15. Artificial/Aquatic (15.2. Ponds (below 8ha), 15.3. Aquaculture Ponds, 15.7. Irrigated Land (includes irrigation channels), 15.9. Canals and Drainage Channels, Ditches).

It occurs from sea-level up to 1000 m. The species commonly nests in colonies (BirdLife International 2016d).

General distribution

In most of Palearctic, and thinly through Africa, India and Sri Lanka

Distribution in Kosovo

Vërmicë, Henc, Vasilevë, Kaçanik, Bishtazhin, Partesh, Badovc, Kamenicë, Liqeni i Radoniqit.

Population

Population trend: Unknown

Rationale

This species is assessed as Critically Endangered because of the geographic range during breeding which is very restricted (AOO = 4 km²), the number of locations, which is 1 and the projected reduction in population size, based on the decline of number of locations. It was observed in several sites, but only 1 breeding colony is reported up to now from Kosovo and the colony is susceptible to further decline.

Threats

List of Threats: 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use)); 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops).

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

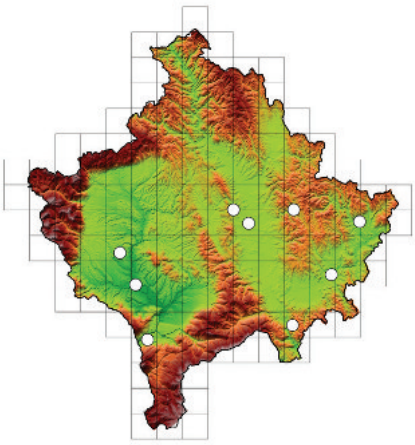
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

Freshwater habitats need to be sustainably managed. Establish non-intrusion zones and stop logging around colonies.

References

BirdLife International 2016d





Gyps fulvus (Hablizl, 1783)

Aves: Accipitriformes: Accipitridae

Griffon Vulture

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR D

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni, Nexhmedin Ramadani.

General data

Size of this species is 93–110 cm, weight 6000–10000 g, and the wingspan is 234–270 cm. Some are migratory, while some other populations are residents. They feed mainly on large mammal carrion (BirdLife International 2018d).

Habitat

Habitat Type: 4. Grassland (4.4. Temperate Grassland); 6. Rocky areas (eg. inland cliffs, mountain peaks).
It is a species of expansive open areas in a wide array of environments, from mountains to semi-desert, and is recorded regularly from sea level up to approximately 3000 m (BirdLife International 2018d).

General distribution

NW Africa, Iberian Peninsula, S France E through Mediterranean Basin (including Mallorca, Sardinia, Crete and Cyprus), Balkans, Turkey, Middle East, Arabia and Iran to Pamirs and S & E Kazakhstan.

Distribution in Kosovo

Restelicë.

Population

Population trend: Unknown

Rationale

This species is assessed as Critically Endangered because, once present all over the country, today the population of this species is very small. The number of mature individuals is ≤ 50.

Threats

List of Threats: 2 Agriculture & aquaculture (2.3 Livestock farming & ranching: 2.3.2 Small-holder grazing, ranching or farming); 3 Energy production & mining (3.3 Renewable energy); 4 Transportation & service corridors (4.2 Utility & service lines); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target); 5.1.3 Persecution /control); 12 Other options (12.1 Other threat (poisoning)).

Conservation measures in action

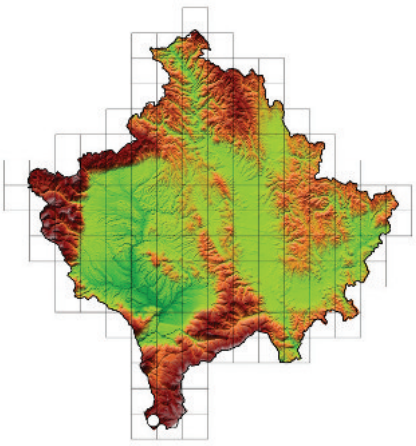
The species is protected in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
Species readily capable of recovery, if efficiently protected, with reliable food sources accessible.

References

BirdLife International 2018d





2.4 MAMMALIA

Lynx lynx balcanicus Buresh, 1941

Mammalia: Carnivora: Felidae

Balkan Lynx

Threat category in Europe (according to IUCN)

Critically Endangered, CR

Threat category in Kosovo (IUCN criteria)

Critically Endangered, CR A2ac; C2a(i)

Year of assessment

2018

Assessor(s)

Daut Rexhepaj

General data

The outer appearance of lynx is similar to the wild and domestic cat but is differentiated primarily by its larger size. The body length is from 80 to 130 cm and body weight about 32 kg. The male is larger than the female. The body is covered with soft and dense hair. During the summer, the body color is brighter, yellow or shades of gold, while during the winter it is darker and with nuances of red. It is very vigilant species, it moves at night, but also during the day, within 25 km of territory, which is marked by feces. It feeds on mammals but also with birds. This species lives up to 18 years.

Habitat

Habitat Type: 1. Forest [1.4. Temperate Forest]; 3. Shrubland [3.4. Temperate Shrubland]; 4. Grassland [4.4. Temperate Grassland].

It inhabits mountainous alpine areas, ranging from 700 m up to 2500 m and is adapted to the boreal climate. This species prefers rocky and sloppy places, quiet and away from settlements.

General distribution

Balkan lynx is Balkan endemic. Albania, Kosovo, Macedonia and Montenegro [Breitenmoser-Würsten & Obexer-Ruff 2003].

Distribution in Kosovo

Reka e Allagës, Koshutan, Above Boge village, Nearby the Hydropower in Deçan

Population

Population trend: Decreasing

Populations of this species are declining across the entire range

Rationale

This species is assessed as Critically Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. The observed continuing decline is based on the number of mature individuals which is below 50.

Threats

List of Threats: 4 Transportation & service corridors [4.1 Roads & railroads]; 5 Biological resource use [5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target), 5.3 Logging & wood harvesting]. 6 Human intrusions & disturbance [6.2 War, civil unrest & military exercises]; 7 Natural system modifications [7.2 Dams & water management/use]; 8 Invasive & other problematic species, genes & diseases; [8.3 Introduced genetic material].

Main threats for this species are small population, limited prey, degradation of habitat and illegal hunting. Logging is another threat for population of this species.

Conservation measures in action

The species is protected [Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species].

Conservation measures needed

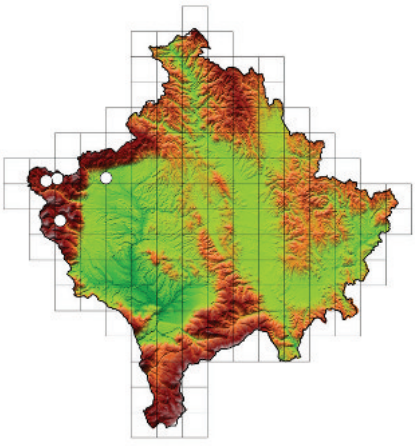
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Breitenmoser-Würsten & Obexer-Ruff 2003





ENDANGERED SPECIES (EN)

3.1 BIVALVIA

Unio crassus Philipsson, 1788

Bivalvia: Unionida: Unionidae

Threat category in Europe (according to IUCN)
Endangered, EN

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(i,ii,iii,iv)

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell dark, almost black, sometimes with greenish streaks, short and elliptical (posterior margin on upper side rounded, not straight), most solid parts located behind the embryonic shell, which is usually corroded, lower margin straight, not curved, the main tooth is steeply conical and pointed. Size 25-45 x 40-70 x 20-28 mm. Juveniles are extremely sensitive against any kind of water pollution and need high oxygen contents, adults cannot reproduce in nitrate polluted waters. This is a Natura 2000 indicator species.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1. Permanent Rivers/Streams/Creeks [includes waterfalls], 5.5. Permanent Freshwater Lakes [over 8ha]].
This species is confined to lowlands, inhabits rivers (prefers their middle sections) and smaller running waters, somewhere lake margins. Prefers sandy and stony substrates and avoids contaminated muddy substrate.

General distribution

Europe.

Distribution in Kosovo

Suharekë.

Population

Population trend: Unknown
The population trend of this species in Europe is in decline (Lopes - Lima *et al.* 2014)

Rationale

This is a wide range species but associated with habitat types that are severely imperiled all over the species' range. It is observed that the habitat quality and the number of subpopulations is decreasing in the majority of the range in Europe. In Kosovo, just a very scattered distribution can be assumed. So far only 1 subpopulation is confirmed, i.e. AOO in Kosovo is most probably below 500 km² and number of locations is below 5. Taking this into consideration, as well as a projected reduction in population size based on the decline of the area of occupancy (AOO), quality of suitable habitats for the species and number of locations, it is assessed as Endangered at the country level.

Threats

List of Threats: 7. Natural system modifications (7.2. Dams & water management/use, 7.3. Other ecosystem modifications); 8. Invasive & other problematic species, genes & diseases (8.1. Invasive non-native/alien species/diseases); 9. Pollution (9.1. Domestic & urban waste water, 9.3. Agricultural & forestry effluents).

Conservation measures in action

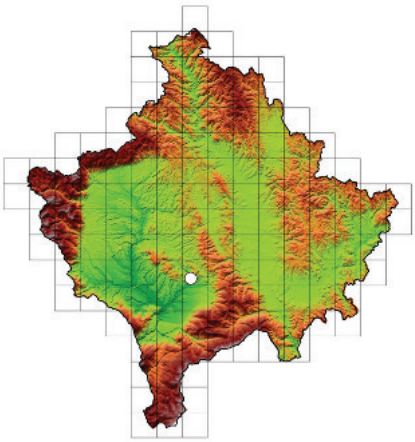
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for the site(s) where occurs.

References

Lopes - Lima *et al.* 2014





3.2 OLIGOCHAETA

Eophila kosowensis (Karaman, 1968)

Oligochaeta: Opistophora: Lumbricidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(iii,iv)

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

Balkan endemic species, described from Kosovo by Karaman (1968). Body cylindrical, size 110-250 mm, body segments from 225–358. Lives deep in the soil, while on the surface can be found in various biotopes (Milutinović *et al.* 2015). First specimens were found in Prishtinë (Karaman 1968) in great numbers (at a depth of over 1.5 m) while digging the city's water supply channels. According to the overall distribution data, the hilly mountainous areas have a very important role for its distribution.

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest); 4 Grassland (4.4 Temperate Grassland); 14 Artificial - Terrestrial (14.2 Pastureland, 14.5 Urban Areas).
Suitable habitats for this species are beech forest, meadows, pastures, anthropogenic biotopes (Stojanović *et al.* 2018).

General distribution

Greece, Kosovo, Montenegro, Serbia.

Distribution in Kosovo

Prishtinë, Ferizaj, Mitrovicë, Pejë (Karaman 1968, Šapkarev 1975; Mršić 1991; Stojanović *et al.* 2008; Milutinović et al 2015).

Population

Population trend: Unknown

Rationale

This species is endemic for Balkans, with a low area of occupancy. It occurs in anthropogenic habitats, as well as forest and pastures that are under intensive management, which may pose a threat to this endemic species with "locus typicus" in Kosovo. The actual incomplete data (AOO = 16 km², EOO = 2102 km², number of locations ≤ 5, habitat quality declining) and the projected reduction in population size, based on the decline of quality of suitable habitats for the species and number of locations, qualify this species as Endangered. The restricted area of occupancy or number of locations with a plausible future threat could drive the taxon to Critically Endangered or Extinct in a very short time.

Threats

List of Threats: 1 Residential & commercial development; 7 Natural system modifications (7.3 Other ecosystem modifications); 11 Climate change & severe weather (11.1 Habitat shifting & alteration, 11.2 Droughts); 12. Other options (12.1 Other threat).

Conservation measures in action

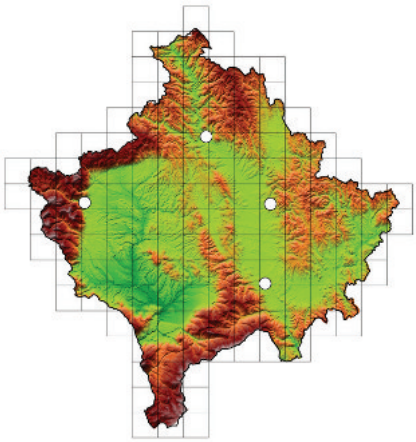
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Karaman 1968; Kerovec & Mršić 1981; Milutinović *et al.* 2015; Mršić 1991; Šapkarev 1975; Stojanović *et al.* 2008, 2018



3.3 INSECTA

Ecdyonurus graecus Braasch, 1984

Insecta: Ephemeroptera: Heptageniidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Agim Gashi, Bardh Xërxa

General data

The forewing size of this species is between 14 - 15 mm. There is not enough data about the way larvae and adults live. Adults were found during September and October (Bauernfeind & Soldan 2012).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
This species is found in freshwater ecosystems of different altitudes until 1000 m.

General distribution

Endemic of Balkans. Currently known only from Greece and Kosovo.

Distribution in Kosovo

Letnicë River in Letnicë, Stream in Korbiliq.

Population

Population trend: I Unknown

Rationale

This species is assessed as Endangered because of the AOO, which is less than 20 km², number of locations ≤ 5 and projected continuing decline of population, based on the quality of habitat and number of locations. The locations where it was found are under continuous pressure from degradation and pollution.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].
Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

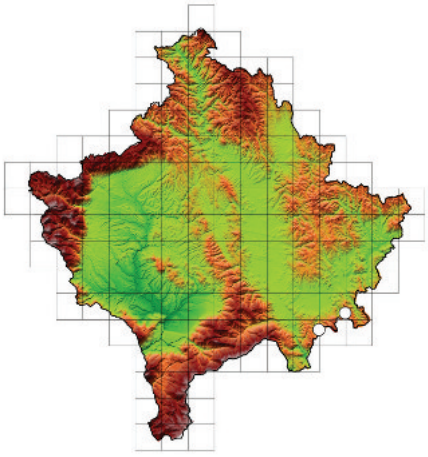
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Bauernfeind & Soldan 2012





Epeorus yougoslavicus (Šamal, 1935)

Insecta: Ephemeroptera: Heptageniidae

Threat category in Europe (according to IUCN)
This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Agim Gashi, Bardh Xërxa

General data

The forewing size of this species is between 11 - 12 mm. There is not enough data about the biological and ecological aspects of this species. They are on wing during the spring and summer (Bauernfeind & Soldan 2012).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
Larvae are cold stenotherms and are mainly found in upstream and downstream segments of streamlets with rocky substrate.

General distribution

Bosnia and Herzegovina, Bulgaria, Greece, Macedonia, Italy, Kosovo, Montenegro, Serbia.

Distribution in Kosovo

Stream in Çakorr.

Population

Population trend: Unknown

Rationale

The actual data in isolation (AOO = 4 km², number of locations is 1, estimated continuing decline of population, based on the quality of habitat and number of locations) qualify this species for Critically Endangered. In addition, the location where it was found is under continuous pressure from degradation and pollution. However, the risk of extinction is less than suggested by these data in isolation since the species is most probably present in more sites in Bjeshkët e Nemuna, however number of locations is not expected to be more than 5. Therefore, the species is downlisted for one category and assessed as Endangered at the country level.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].
Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

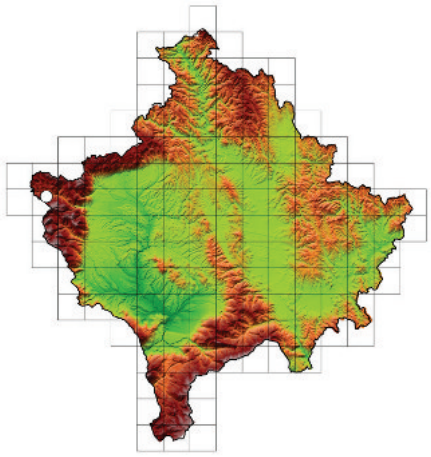
The site where this species was found is inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Bauernfeind & Soldan 2012





Metreletus balcanicus Ulmer, 1920

Insecta: Ephemeroptera: Ameletidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Agim Gashi, Bardh Xërxa

General data

The forewing size of this species is from 9 to 13 mm. The drought period is survived in the egg stadium. This species has one generation per year. The flight period is during May and June (Bauernfeind & Soldan 2012).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.2 Seasonal/Intermittent/Irregular Rivers, Streams, Creeks, 5.9 Freshwater Springs and Oases)).

This species prefers mostly temporary streams at lowlands with or without macrophyte vegetation.

General distribution

Bosnia and Herzegovina, Belgium, Bulgaria, Croatia, France, Kosovo, Macedonia, Luxembourg, Poland, Slovakia.

Distribution in Kosovo

Straem in Keqekollë.

Population

Population trend: Unknown

Rationale

This species is assessed as Endangered because of the AOO = 4 km², number of locations (1), estimated continuing decline of population based on the quality of habitat and number of locations. The location where it was found is under continuous pressure from degradation and pollution. Although the existing incomplete data qualify this species for Critically Endangered category, however, we downlist it for one category because we presume that the species is present in Kosovo in more sites, however number of locations is not expected to be more than 5.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

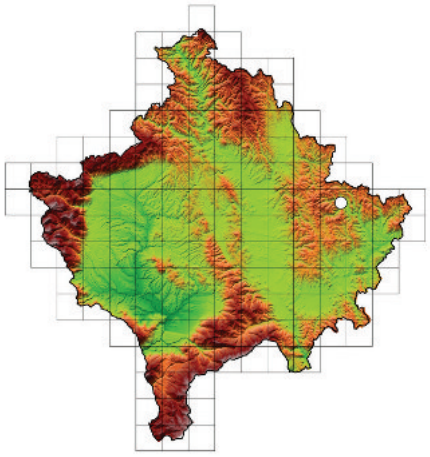
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Bauernfeind & Soldan 2012





Serratella spinosa (Ikonomov, 1961)

Insecta: Ephemeroptera: Ephemerellidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Agim Gashi, Bardh Xërxa

General data

The forewing size of this species is from 7.8 to 9.3 mm. There is not enough data on biological and ecological aspects of this species. The flight period is during July (Bauernfeind & Soldan 2012).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks (includes waterfalls], 5.9 Freshwater Springs and Oases].
Larvae are found in mountain or submontain streams with rocky substrate. They can also be found in small rivers. They prefer clean and oxygenated waters. They can be found at various altitudes, from 500 to 1500 m.

General distribution

Endemic of Balkans. Currently known only from Bosnia & Herzegovina, Greece, Macedonia and Kosovo.

Distribution in Kosovo

Stream in Krilevë.

Population

Population trend: Unknown
There is not enough data about the population trends or its area of distribution

Rationale

The actual data in isolation (AOO = 4 km², number of locations is 1, estimated continuing decline of population, based on the quality of habitat and number of locations) qualify this species for Critically Endangered. In addition, the location where it was found is under continuous pressure from degradation and pollution. However, the risk of extinction is less than suggested by these data in isolation since the species is most probably present in more sites, however number of locations is not expected to be more than 5. Therefore, the species is downlisted for one category and assessed as Endangered at the country level.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather (11.1 Habitat shifting & alteration].
Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

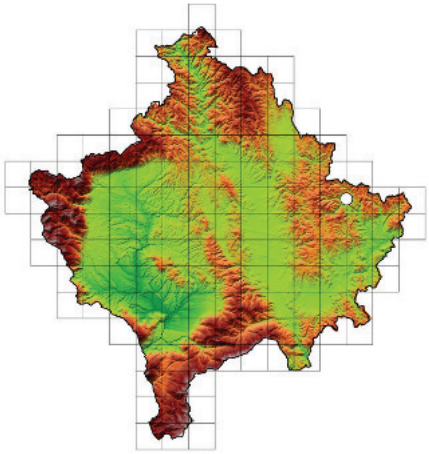
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection]; 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring (3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s] where occurs.

References

Bauernfeind & Soldan 2012





Brachyptera graeca Berthelemy, 1971

Insecta: Plecoptera: Taeniopterygidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Astrit Bilalli

General data

During the larval stage, they live in water for one year. They are on wing during the spring period. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. The larval stage is indicator of clean and medium clean waters.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
This species is mainly found in small mountain streamlets. It is found mostly in altitudes above 1000 m.

General distribution

Bosnia and Herzegovina, Greece, Kosovo, Macedonia.

Distribution in Kosovo

Stream in Çakorr.

Population

Population trend: Unknown
In Kosovo, it was found in only 1 site, with a low number of specimens.

Rationale

This species is assessed as Endangered because of the AOO = 4 km², number of locations (1), estimated continuing decline of population, based on the quality of habitat and number of locations. The location where it was found is under continuous pressure from degradation and pollution. The species may be present in other sites in Bjeshkët e Nemuna as well, however, number of locations is not expected to be more than 5.

Threats

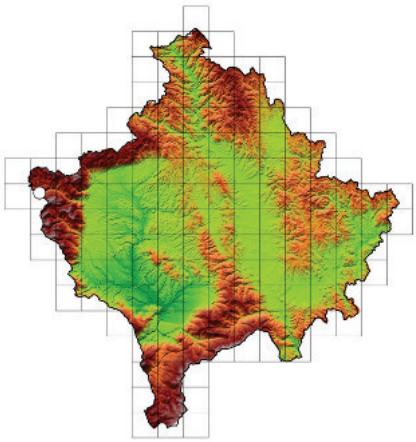
List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].
Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action. The site where this species was found is inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.



Rhyacophila palmeni McLachlan, 1879

Insecta: Trichoptera: Rhyacophilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 13 to 15 mm. The wing color is light brown. During the larval stage, they live in water for one year. Larvae feed mostly as predators. The larval stage is an indicator of clean and medium clean waters. They are on wing from July to August. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. This species has a disjunct distribution in Southeastern Europe, which suggests that subpopulations living in the area from Greece to Kosovo may represent cryptic species, different from populations known from Slovenia and Croatia (Ibrahimi *et al.* 2012).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls)).

It is found mostly in midstream and upstream segments of rivers. The favorite substrate of larvae of this species is composed by coarse gravel, cobbles, boulders and bedrock, etc. In Kosovo, it is encountered in different altitudes, from 1000 to 1600 m.

General distribution

Croatia, Greece, Kosovo and Slovenia.

Distribution in Kosovo

Lumbardhi i Prizrenit River in Sredskë, Lumbardhi i Pejës River in Kuqishtë.

Population

Population trend: Decreasing

In all sites where this species is found in Kosovo, is characterized by a small number of individuals. According to the available information, the trend of subpopulations of this species in Lumbardhi i Prizrenit River in Sredskë is assessed as decreasing, as a result of anthropogenic impact through the development of infrastructure.

Rationale

This species is assessed as Endangered because of the AOO = 8 km², number of locations ≤ 5, estimated continuing decline of population, based on the quality of habitat and number of locations. The locations where it was found are under continuous pressure from degradation and pollution, especially the subpopulation in Lumbardhi i Prizrenit River in Sredskë is in danger of going extinct.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

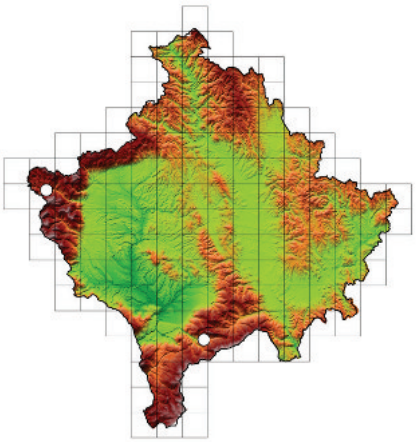
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Ibrahimi *et al.* 2012





Apatura iris (Linnaeus, 1758)

Insecta: Lepidoptera: Nymphalidae

Purple Emperor

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(ii,iii)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is 65 to 80 mm. It has one generation per year. Adults fly from June to August. Larvae feed on plants of the genus *Salix*.

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest).

In Kosovo it is often observed in deciduous forests near the streams or resting along the roads.

General distribution

Central and Southeastern Europe.

Distribution in Kosovo

Bogë, Kaçanik Gorge, Brezovicë, Radavc, Rugovë Gorge (Jakšić 1988, 2003).

Population

Population trend: Decreasing

Subopulations of this species are small and relatively unstable.

Rationale

This species is assessed as Endangered due to the AOO = 20 km², EOO = 1313 km² and a very limited number of locations (5). The species was not observed in Kosovo for several decades. New detailed investigations are needed in localities from where it was reported, in order to identify population trends of this species.

Threats

List of Threats: 4 Transportation & service corridors (4.1 Roads & railroads); 5.Biological resource use (5.3.Logging and wood harvesting); 7 Natural system modifications (7.1 Fire & fire suppression, 7.3 Other ecosystem modifications); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species). Habitats of this species in Bjeshkët e Nemuna and Sharr Mountains national parks are legally protected.

Conservation measures needed

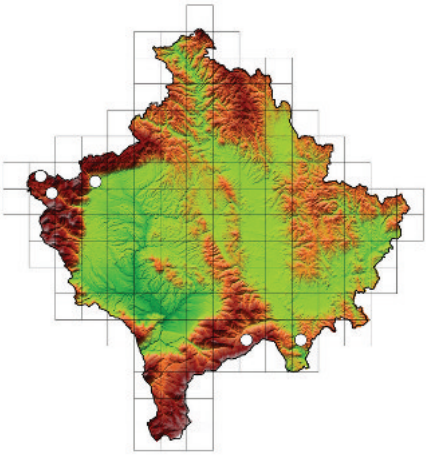
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 1988, 2003





Euphydryas aurinia (Rottemburg, 1775)

Insecta: Lepidoptera: Nymphalidae

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Endangered, EN B2ab(ii,iii)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is 30 – 42 mm. It is arboreal species with one generation per year. Adults fly from April to July. Feeding plants for larvae are species of the following genera: *Succisa, Scabiosa, Lonicera, Gentiana, Digitalis* etc.

Habitat

This species appears in different habitats such as: shady and wet meadows, along the edges of marshes, calcareous grassland, etc.

General distribution

Europe, Africa, Asia.

Distribution in Kosovo

Pashtrik, Koshtovë (Jakšić 1986; Jakšić and Živić 1995-1998).

Population

Population trend: Unknown
There is no data about population trends of this species. The records for this species are from 1987.

Rationale

This species is assessed as Endangered due to the small area of occupancy (AOO = 8 km²) and a very limited number of locations (2). The species was not observed in Kosovo for several decades. New detailed investigations are needed in localities from where it was reported, in order to identify population trends of this species.

Threats

List of Threats: 2. Agriculture & aquaculture); 7 Natural system modifications (7.3 Other ecosystem modifications).
It was observed that this species is affected by the abandonment of managed land.

Conservation measures in action

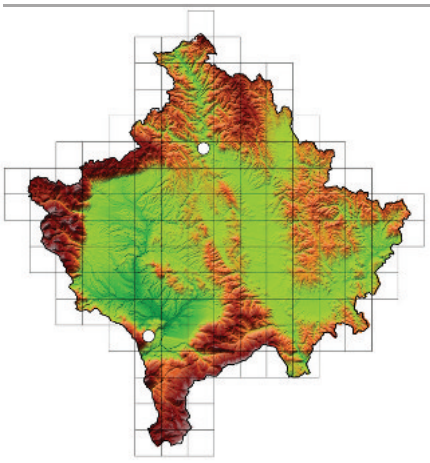
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 1986, Jakšić dhe Živić 1995-1998



Euphydryas maturna (Linnaeus, 1758)

Insecta: Lepidoptera: Nymphalidae
Scarce Fritillary

Threat category in Europe (according to IUCN)
Vulnerable, VU

Threat category in Kosovo (IUCN criteria)
Endangered, EN B2ab(ii,iii)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is 35 – 48 mm. It is arboreal species with one generation per year. Adults fry during the May – July period. Feeding plants for larvae are species of the following genera: *Fraxinus, Salix, Populus, Plantago, Veronica etj.*

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest); 4 Grassland.
Preferred habitats for this species are: broad-leaved deciduous forests, mixed woodland, mesophile grasslands and humid grasslands

General distribution

Austria, Belgium, Czech Republic, France, Germany, Greece, Hungary, Kazakhstan, Kosovo, Lithuania, Luxembourg, Montenegro, Poland, Romania, Russia, Serbia, Sweden.

Distribution in Kosovo

Rugova Gorge, Çakorr (Jakšić 2003).

Population

There are no data about populations of this species during the last years. The latest data are those from material collected during 1996.

Rationale

This species is assessed as Endangered, due to the area of occupancy (AOO = 8 km²) and a very limited number of locations (2). The species was not observed in Kosovo for several decades. New detailed investigations are needed in localities from where it was reported, in order to identify population trends of this species.

Threats

List of Threats: 2. Agriculture & aquaculture; 5.Biological resource use (5.3.Logging and wood harvesting: 5.3.3 Unintentional effects: subsistence/small scale (species being assessed is not the target) [harvest]); 7 Natural system modifications.

Conservation measures in action

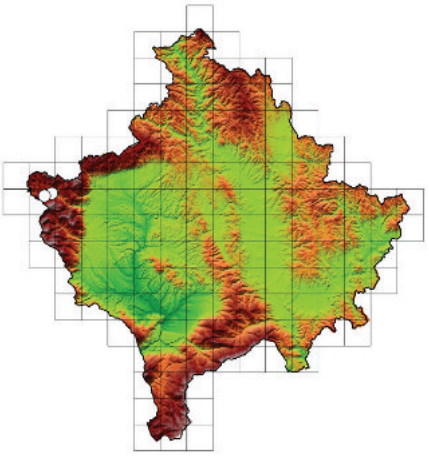
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species). Some of the sites, from where this species was reported, are now inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 2003



Phengaris arion (Linnaeus, 1758)

Insecta: Lepidoptera: Lycaenidae

Large Blue

Threat category in Europe (according to IUCN)

Endangered, EN

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

This is one of the largest blue butterflies, distinguished by a row of black spots on its upper forewing. This species has one generation a year. Feeding plant for larvae are species of the following genera: *Venera*, *Origanum*, and *Thymus*. Adults fly during the June-July period. Larvae are heliophiles and mirmecophiles.

Habitat

Habitat Type: 3 Shrubland; 4 Grassland.
This is arboreal species and is found mostly in dry areas, rich in grass, then woodland clearings and shrublands.

General distribution

From northern Spain and eastwards to Italy, Greece and southern Scandinavia.

Distribution in Kosovo

Shkozë e Malishevës, Rugova Gorge, Lloqan, Junik, Strellc, Qafë e Morinës, Sharr Mountains (Jakšić 2003, Jakšić and Živić 1995-1998, Zhushi *et al.* 2016).

Population

Population trend: Decreasing
This species was observed with subpopulations, with an extremely low number of individuals.

Rationale

This species is assessed as Endangered due to the small number of locations (7), AOO = 28 km², EOO = 1034 km², estimated continuing decline of population, based on the quality of habitat and number of locations, as well as the importance and the rareness of the species at the European level. The locations where it has been found are under constant pressure from degradation and pollution that can cause damage to subpopulations of this species.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & urban areas); 5 Biological resource use (5.2 Gathering terrestrial plants). 7 Natural system modifications (7.3 Other ecosystem modifications).
Amongst the threats for this species was observed to be collection of Thyme plants and abandonment of agricultural lands.

Conservation measures in action

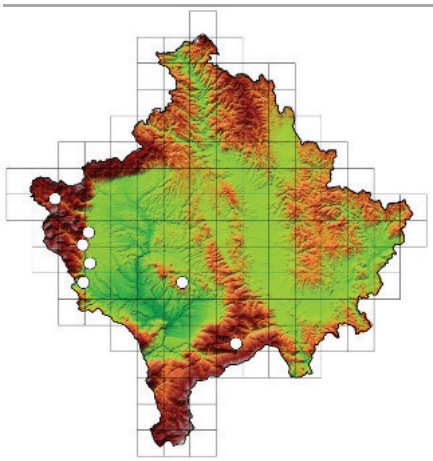
Currently, there is no conservation measure in action. However, some of the sites where this species was found, are inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 2003; Jakšić and Živić 1995-1998; Zhushi *et al.* 2016





Zerynthia polyxena (Denis & Schiffermüller, 1775)

Insecta: Lepidoptera: Papilionidae

Southern Festoon

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is from 46 to 80 mm. It has one generation per year. Adults fly from April to May. Feeding plants for this species are those of *Aristolochia* genus. They lay eggs at the same plant.

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest); 4 Grassland.
Preferred habitats for this species are humid grasslands and tall herb communities, mesophile grasslands, dry siliceous grasslands, and forested areas.

General distribution

From Southern France over Italy and the south-eastern Austria to Greece.

Distribution in Kosovo

Shkozë, Brezovicë, Prizren (Jakšić 1998; Jakšić and Živić 1995-1998; Zhushi *et al.* 2017).

Population

Population trend: Unknown
This species was observed with subpopulations having a small number of individuals.

Rationale

This species is assessed as Endangered due to the small number of locations (3), AOO = 12 km², EOO = 224 km², estimated continuing decline of population, based on the quality of habitat and number of locations, as well as the importance and the rareness of the species at the European level. The growing tendency of activities related to the degradation of the habitat of this species may lead to its disappearance in Kosovo.

Threats

List of Threats: 2. Agriculture & aquaculture (2.3 Livestock farming & ranching: 2.3.2 Small-holder grazing, ranching or farming); 6.Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.1 Fire & fire suppression, 7.3 Other ecosystem modifications).
It was observed that this species is impacted by mowing activities.

Conservation measures in action

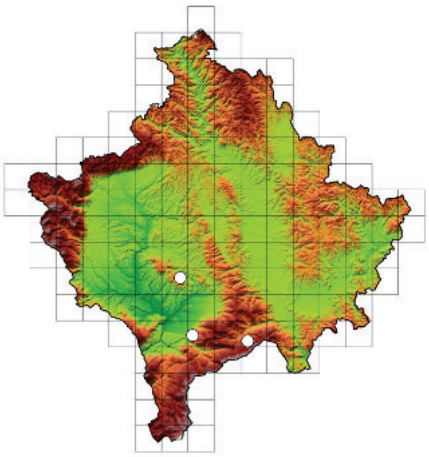
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species). At least one of the sites, from where this species is known, belongs now to the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 1998; Jakšić and Živić 1995-1998; Zhushi *et al.* 2017





3.4 ACTINOPTERYGII

Salmo marmoratus Cuvier, 1829

Actinopterygii: Salmoniformes: Salmonidae

Marble Trout

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori

General data

This species is characterized by its elongated body. Body color is marble, from where it takes the name. It is threatened during the last years due to the hybridization. It can reach a length of 120 cm and live up to 10 years (Maric *et al.* 2010).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.4 Bogs, Marshes, Swamps, Fens, Peatlands, 5.5 Permanent Freshwater Lakes].

Usually, it is found in cold mountain waters, where the temperature does not rise above 15 °C. It can also be encountered in lakes with cold temperature, at high altitudes.

General distribution

Southeastern Europe, Italy.

Distribution in Kosovo

Drini i Bardhë River in Zllakuqan.

Population

Population trend: Decreasing

Population trends of this species are declining during the last years.

Rationale

This species is assessed as Endangered, because of the AOO = 4 km² and the estimated continuing decline of population, based on the quality of habitat and number of locations. Currently, the species is known from 1 site but is expected to be present in the area in more sites, however number of locations is not expected to be more than 5. The site where it was found is under continuous pressure from degradation and pollution.

Threats

List of Threats: 1 Residential & commercial development [1.1 Housing & urban areas]; 9 Pollution [9.1 Domestic & Urban Waste Water, 9.4 Garbage & Solid Waste]; 11 Climate change & severe weather [11.2 Droughts].

Main threats for this species are impacts from settlements and urban areas, the sewage pollution, pollution from solid and other waste, and the drought.

Conservation measures in action

The species is protected [Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species].

Conservation measures needed

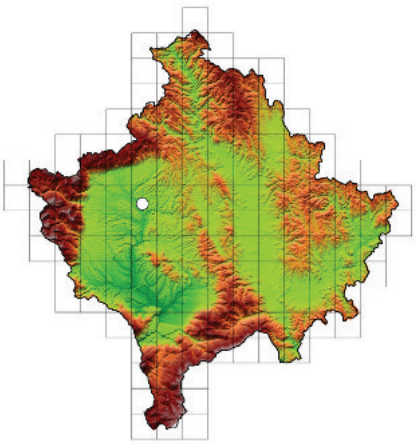
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Maric *et al.* 2010



3.5 AMPHIBIA

Salamandra atra Laurenti, 1768

Alpine salamander

Amphibia: Caudata: Salamandridae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Daut Rexhepaj, Linda Grapci Kotori

General data

This species is widespread in the Alpine region of Europe, while in Kosovo it is relatively rare. It has a cylindrical elongated body, up to 14 cm long. The body is mainly black or brown in color, without spots of other colors. The average lifespan of this species is up to 10 years (Andreone *et al.* 2009).

Habitat

Habitat Type: 1 Forest (1.1 Boreal Forest, 1.4 Temperate Forest); 4 Grassland (4.4 Temperate Grassland).
This is a terrestrial species. It can be encountered at different altitudes, from 400 to 2800 m.

General distribution

Albania, Austria, Bosnia and Herzegovina, Croatia, France, Germany, Italy, Kosovo, Liechtenstein, Montenegro, Serbia, Slovenia, Switzerland.

Distribution in Kosovo

Gurra e Gjatë, Deçani Gorge.

Population

Population trend: Unknown
In some European countries, there is a population decline. There is not enough data about population trends in Kosovo, but observations show that there is a tendency of population decline in Kosovo as well.

Rationale

This species is assessed as Endangered, because of the restricted AOO = 8 km², number of locations ≤ 5, estimated continuing decline of population, based on the quality of habitat and number of locations. The sites where it was found are under continuous pressure from degradation and pollution.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & Recreation Areas); 11. Climate Change & Severe Weather.
The main threatening factors for this species are related to tourism-related activities, recreational activities, habitat change, and climate change and extreme weather.

Conservation measures in action

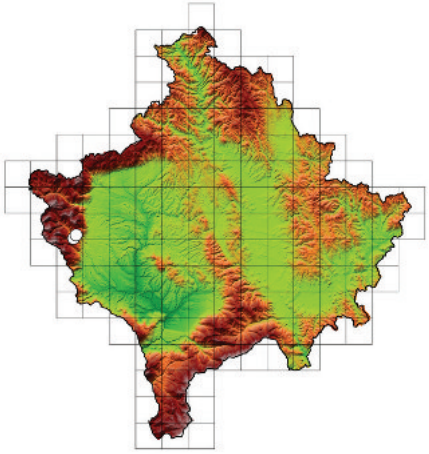
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Andreone *et al.* 2009



Triturus alpestris (Laurenti, 1768)

Amphibia: Caudata: Salamandridae

Alpine newt

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Daut Rexhepaj, Linda Grapci Kotori

General data

The alpine newt has the average body size of 8 to 12 cm, with a relatively large and wide head. Males are smaller than females. The distinctive feature of this species is the orange-red color on the ventral side of the body, while on the dorsal side it has a dark brown color. It is more active during the afternoon and the twilight. Some subspecies are known in Europe, although taxonomic research of different populations is still underway. This species can live for up to 20 years, even though the average is 7 years (Arntzen *et al.* 2009).

Habitat

Habitat Type: 5 Wetlands (inland) [5.11. Alpine Wetlands [includes temporary waters from snowmelt]].

This species can be found in litoral and limnetic zones of lakes. Usually, it is found in alpine areas, but can be encountered at lower altitudes as well.

General distribution

Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, France, Germany, Greece, Hungary, Italy, Kosovo, Liechtenstein, Luxembourg, Macedonia, Montenegro, Netherlands, Poland, Romania, Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine.

Distribution in Kosovo

Leqinat Lake, Gjeravica Lake.

Population

Population trend: Unknown

In some European countries populations of this species are declining. Population trend in Kosovo is not fully known.

Rationale

This species is assessed as Endangered because of the restricted AOO (8 km²), number of locations (2) and estimated continuing decline of population, based on the quality of habitat and number of locations.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & Recreation Areas); 11. Climate Change & Severe Weather.

The main threatening factors for this species are related to tourism-related activities, recreational activities, habitat change, and climate change and extreme weather.

Conservation measures in action

Currently, there is no conservation measure in action. However, sites, where this species is found, are part of a protected area.

Conservation measures needed

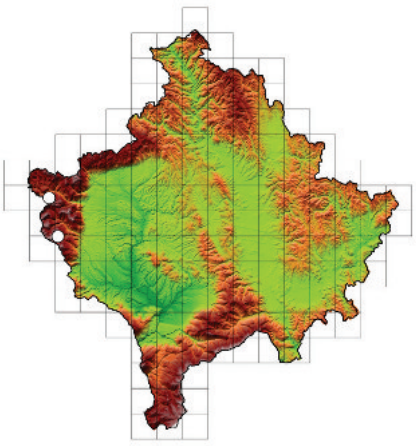
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Arntzen *et al.* 2009





3.6 AVES

Aythya ferina (Linnaeus, 1758)

Aves: Anseriformes: Anatidae
Common Pochard

Threat category in Europe (according to IUCN)
Vulnerable, VU

Threat category in Kosovo (IUCN criteria)
Endangered, EN B2ab(ii)

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni.

General data

Size of this species is 42–49 cm, male weights 585–1240 g, female 467–1090 g, while the wingspan is 72–82 cm. This species feeds on roots, seeds, rhizomes but also aquatic organisms, including insects, mollusks, worms, amphibians and small fish (BirdLife International 2017).

Habitat

Habitat Type: 5. Wetlands (inland) (5.4. Bogs, Marshes, Swamps, Fens, Peatlands, 5.5. Permanent Freshwater Lakes (over 8ha)); 15 Artificial – Aquatic (15.5. Excavations (open)).
This species requires well-vegetated eutrophic to neutral swamps, marshes, lakes and slow-flowing rivers with areas of open water and abundant emergent fringing vegetation. It also breeds on saline, brackish and soda lakes and occasionally even in sheltered coastal bays. The breeding grounds are reoccupied from early March (in the south) to early May (in Siberia) with breeding starting from April-May. During the winter the species frequents similar habitats to those it breeds in, including large lakes, slow-flowing rivers, reservoirs, brackish waters, marshes and flooded gravel pits (BirdLife International 2017).

General distribution

Breeds in W Europe E through C Asia (in band at 40–60° N) to SC Siberia and N China to 120° E. Winters S to N & E Africa, India and S & E Asia.

Distribution in Kosovo

Henc, Obiliq, Graqanicë, Radoniq.

Population

Population trend: Unknown

Rationale

This species is assessed as Endangered during the breeding season because it has a limited area of occupancy (AOO = 16 km²) during the breeding season. The number of breeding spots (locations) is ≤ 5. The AOO is susceptible to further decline.

Threats

List of Threats: 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target), 5.4 Fishing & harvesting aquatic resources: 5.4.4 Unintentional effects: large scale (species being assessed is not the target) [harvest]); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.4 Abstraction of surface water (unknown use)).

Conservation measures in action

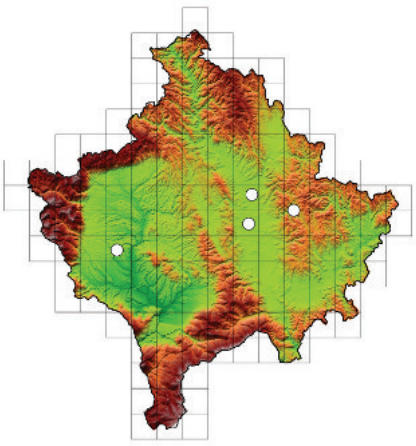
Some areas of distribution are protected. Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
This species would benefit from the protection and maintenance of wetland habitats. Lead shot use should be prohibited and legislation properly enforced. Reduce nutrient run-off from agricultural land.

References

BirdLife International 2017





Aythya nyroca (Güldenstädt, 1770)

Aves: Anseriformes: Anatidae
Ferruginous Duck

Threat category in Europe (according to IUCN)
Near Threatened, NT

Threat category in Kosovo (IUCN criteria)
Endangered, EN B2ab(ii)

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni.

General data

Size of this species is 38–42 cm, male weights 470–730 g, female 464–727 g, and the wingspan is 63–67 cm. It is mainly a migratory species. It is an omnivore species and feeds on different material of plant and animal origin (BirdLife International 2017a).

Habitat

Habitat Type: 5. Wetlands (inland) (5.5. Permanent Freshwater Lakes (over 8ha), 5.7. Permanent Freshwater Marshes/ Pools (under 8ha), 15 Artificial – Aquatic (15.1. Water Storage Areas (over 8ha), 15.3.Aquaculture Ponds).
It shows a strong preference for fresh standing water and is very rarely found on flowing streams or rivers. Shallow eutrophic freshwater pools and marshes with dense abundant submergent, floating, emergent and shoreline vegetation (e.g. reedbeds) are the major breeding habitats. Its habitat requirements outside of the breeding season are similar to those of the breeding season, although it may also frequent large lakes, open lagoons, coastal marshes with reedbeds and shallow coastal bays, straits, and estuaries (BirdLife International 2017a).

General distribution

Fragmented populations breed from C & S Europe and N Africa E to W Mongolia, isolated populations from Algeria E to NE Pakistan and China. Wintering range overlaps with breeding range, and extends also to Sahel, the Middle East and SE Asia.

Distribution in Kosovo

Henc, Obiliq.

Population

Population trend: Unknown

Rationale

This species is assessed as Endangered because it has a restricted area of occupancy (AOO = 8 km²), while the number of locations is ≤ 5. The AOO is susceptible to further decline.

Threats

List of Threats: 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target)); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use).

Conservation measures in action

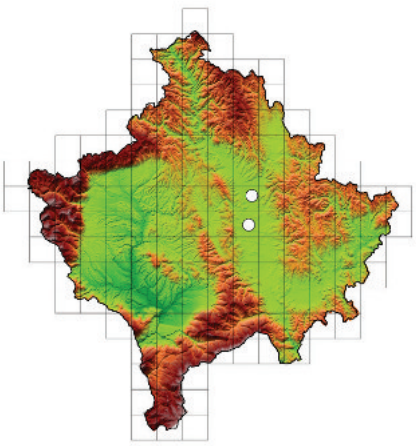
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/ water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 4 Education & awareness; 5 Law & policy (5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
Promote environmentally friendly management of marshes and fishponds, promote adequate protection and management of key sites, promote conservation in the wider environment for the benefit of the species and its habitat, and prevent mortality and disturbance caused by hunting.

References

BirdLife International 2017a





Botaurus stellaris (Linnaeus, 1758)

Aves: Pelecaniformes: Ardeidae

Bittern

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(ii)

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni.

General data

Size of this species is 64–80 cm, male weights 750–2060 g, female 650–1150 g, and the wingspan is 125–135 cm. In places with mild winter this is a sedentary species, while in other areas they are migratory. Diet is different in different seasons, with a preference for fish, amphibians, insects, and spiders (BirdLife International 2016c).

Habitat

Habitat Type: 5. Wetlands (inland) (5.4. Bogs, Marshes, Swamps, Fens, Peatlands); 14. Artificial/Terrestrial (14.1. Arable Land).

Highly restricted habitat requirements during breeding season: quiet, little-disturbed marshes around lakes and rivers with extensive reedbeds (BirdLife International 2016c).

General distribution

Breeds from Sweden, England and Spain through Europe, N Africa, Middle East and C Asia E to Russian Far East, NE China and Japan; winters in C & S Europe, Mediterranean Basin E to S & SE Asia and sub-Saharan Africa.

Distribution in Kosovo

Henc.

Population

Population trend: Unknown

Rationale

This species is assessed as Endangered because it has a limited area of occupancy (AOO < 500 km²). The number of locations is ≤ 5. The AOO is susceptible to further decline.

Threats

List of Threats: 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use)).

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

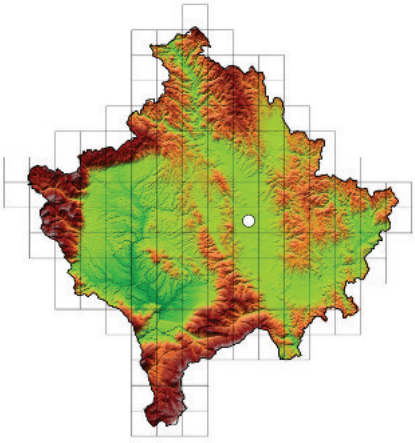
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

BirdLife International 2016c





Himantopus himantopus (Linnaeus, 1758)

Aves: Charadriiformes: Recurvirostridae

Black-winged Stilt

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(ii)

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni.

General data

Size of this species is 35–40 cm, weight 166–205 g (mean of all races), or 112–223 g (nominate). Northern populations are migratory while in more temperate regions they are sedentary or locally dispersive. They feed on aquatic insects, spiders, mollusks, fish and sometimes seeds (BirdLife International 2016e).

Habitat

Habitat Type: 5. Wetlands (inland) (5.5. Permanent Freshwater Lakes (over 8ha), 5.6. Seasonal/Intermittent Freshwater Lakes (over 8ha), 5.7. Permanent Freshwater Marshes/Pools (under 8ha), 5.8. Seasonal/Intermittent Freshwater Marshes/Pools (under 8ha)); 15. Artificial/Aquatic (15.8.Seasonally Flooded Agricultural Land).

General distribution

France and Iberia S to sub-Saharan Africa and Madagascar, and E to C Asia and NC China, Indian Subcontinent (including Sri Lanka), Indochina and Taiwan; winters S to Africa, the Middle East, and S & SE Asia to Borneo and Philippines.

Distribution in Kosovo

Henc, Obiliq, Nosalje.

Population

Population trend: Unknown

Rationale

This species is assessed as Endangered due to a restricted area of occupancy (AOO = 12 km²), while the number of locations is ≤ 5. The AOO is susceptible to further decline.

Threats

List of Threats: 1 Residential & commercial development (1.2 Commercial & industrial areas); 6 Human intrusions & disturbance (6.3 Work & other activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.3 Abstraction of surface water (agricultural use)).

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

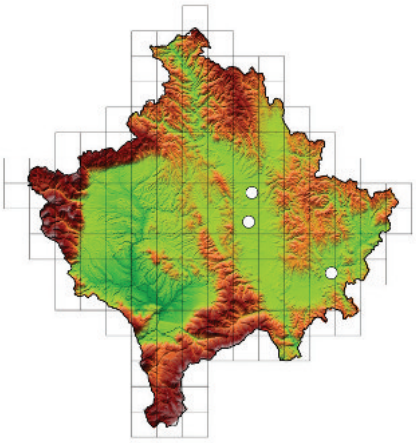
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

Reduce hunting pressure and create awareness campaigns targeted at hunters, about the decline of this species. Develop management schemes to reduce predation.

References

BirdLife International 2016e





Tichodroma muraria (Linnaeus, 1766)

Aves: Passeriformes: Tichodromidae

Wallcreeper

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Endangered, EN B2ab(ii)

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni, Nexhmedin Ramadani

General data

Size of this species is 16.5–17 cm, while the weight is 16.7–19.3 g. This is a short distance and mostly altitudinal migrant. They feed on insects, spiders and other invertebrates (BirdLife International 2018b).

Habitat

Habitat Type: 6. Rocky areas (e.g. inland cliffs, mountain peaks).

This species inhabits a range of rocky regions, typically including steep, rugged cliffs, boulder-strewn slopes, and damp, shady gorges in mountainous areas, with holes and crevices for nesting and roosting. For foraging, areas of mixed sunlight and shade are important. In the winter, similar rocky habitats are favored (BirdLife International 2018).

General distribution

Mountains of Southern and Eastern Europe (N Spain and S France E, including Corsica, to Italy, Balkans, Caucasus, S & E Turkey), E to N Iran (Elburz Mts; perhaps Azerbaijan and Zagros Mts). Non-breeding at lower altitudes.

Distribution in Kosovo

Prizren, Restelicë, Two sites in Pejë.

Population

Population trend: Unknown

Rationale

This species is assessed as Endangered because it has a limited area of occupancy (AOO < 500 km²). The number of locations is ≤ 5. The AOO is susceptible to further decline.

Threats

List of Threats: 4 Transportation & service corridors (4.1 Roads & railroads); 6 Human intrusions & disturbance (6.1 Recreational activities).

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species). Parts of its distribution range in the country designated as Protected Area.

Conservation measures needed

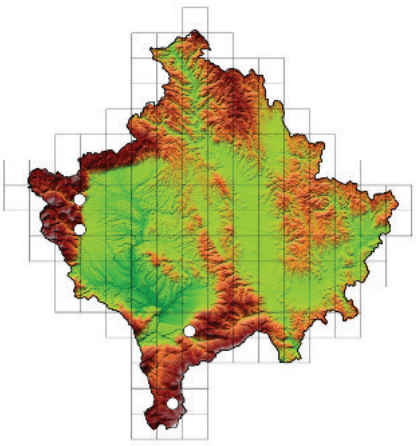
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

Important areas of habitat for this species should be identified and protected from development, as well as restrictions on access put in place.

References

BirdLife International 2018b





Vanellus vanellus (Linnaeus 1758)

Aves: Charadriiformes: Charadriidae
Lapwing

Threat category in Europe (according to IUCN)
Near Threatened, NT

Threat category in Kosovo (IUCN criteria)
Endangered, EN B2ab(ii)

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni.

General data

Size of this species is 28–31 cm, weight 128–330 g, and the wingspan is 82–87 cm. Most populations are migratory. They feed on insects of different orders such as mayflies, dragonflies, butterflies etc. (BirdLife International 2017c).

Habitat

Habitat Type: 4. Grassland (4.4. Temperate Grassland); 14.Artificial/Terrestrial (14.1. Arable Land, 14.2. Pastureland).

General distribution

Europe, Turkey and NW Iran through W Russia and Kazakhstan to S & E Siberia, Mongolia, and N China. Winters from W Europe, E Atlantic islands and N Africa through the Mediterranean, Middle East, and Iran across N India to SE China, Korea and S Japan.

Distribution in Kosovo

Henc, Nosalje.

Population

Population trend: Unknown

Rationale

This species is assessed as Endangered because it has a restricted area of occupancy (AOO = 8 km²) during the breeding season, while the number of breeding spots is ≤ 5. The AOO is susceptible to further decline.

Threats

List of Threats: 1 Residential & commercial development (1.2 Commercial & industrial areas); 6 Human intrusions & disturbance (6.3 Work & other activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.3 Abstraction of surface water (agricultural use).

Conservation measures in action

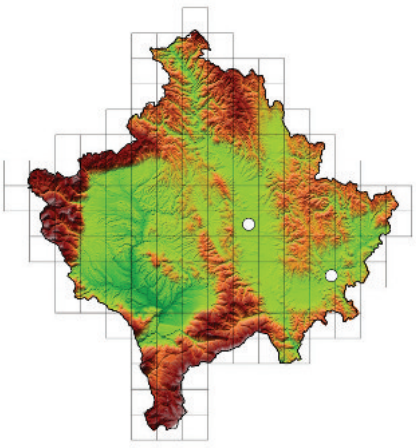
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
Reduce hunting pressure and create awareness campaigns targeted at hunters, about the decline of this species. Develop management schemes to reduce predation.

References

BirdLife International 2017c





3.7 MAMMALIA

Capreolus capreolus (Linnaeus, 1758)

Mammalia: Artiodactyla: Cervidae

Roe Deer

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Endangered, EN A2acd+3cd

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

During the summer, the color of the body is reddish and during the winter dark brown or gray. The body length ranges from 0.9 to 1.3 m, the body height is between 66 – 88 cm and the body weight is 15 - 35 kg. The male possesses horns of 20 to 25 cm long, wrapped with a layer of skin, which are periodically changed. It is mostly active during the night. They do not migrate or hibernate. They feed on a large number of plant species, leaves, seeds, fruits, bulbs, herbs etc. It is the prey of wolf, lynx, fox, etc. They are solitary species but female together with the young individuals lives in larger or smaller family groups, depending on the biotopes and density of the population. The life expectancy of this species is up to 15 years (Danilkin 1996).

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 14. Artificial/Terrestrial.
It can be commonly found in open deciduous or leafy forest areas and with dense plant vegetation. This species prefers places rich in grasses, shrubs, and surfaces with agricultural crops.

General distribution

Europe, Asia.

Distribution in Kosovo

Shkrel, Malaj, Mushtisht, Bjeshkët e Junikut, Kaçandoll, Svilen, Llanisht, Nikoc, Jezerc, Vilan, Tunaj, Bjeshkët e Strellcit, Bjeshkët e Belegut, Kozhnjer.

Population

Population trend: Decreasing
The global trend is stable, but in Kosovo, the subpopulations of this species are declining and under continuous threat.

Rationale

This species is assessed as Endangered due to the observed reduction in population size in the past, where the causes of reduction may not have stopped, based on direct observation, decline of quality of suitable habitats for the species and due to the levels of exploitation. Also, reduction in population size is expected in the future due to the continuous trends that threaten this species. AOO = 56 km² and EOO = 7157 km².

Threats

List of Threats: 8. Invasive and other problematic species, genes & diseases (8.1. Invasive non-native/alien species/diseases, 8.3. Introduced genetic material).
Main threats for this species are habitat degradation and destruction, poaching, shooting and persecution by humans for various purposes. Also, this species, and especially young individuals are threatened by the wolf, the wild boar, the lynx, the fox.

Conservation measures in action

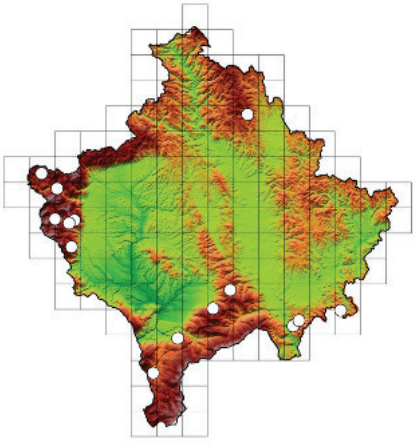
By decision of MESP 04/03 of 23 May 2003, Article 3 this species is protected by law as a rare and endangered species.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Danilkin 1996





Rupicapra rupicapra (Linnaeus, 1758)

Mammalia: Artiodactyla: Bovidae

Chamois

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Endangered, EN A2acd+3cd

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

In Kosovo is present subspecies *Rupicapra rupicapra balcanica* Bolkay, 1925. The body length ranges from 107 to 137 cm and the body height is 70 - 80 cm. Both sexes possess long and curved horns, while in males they are thicker. The body is hazel brown during the spring and summer, and during the autumn and winter, it becomes darker. They live in flocks from 15 to 30 and up to 100 individuals while, males are inclined to live a solitary life, with the exception of the time of sexual activity. They feed on leaves, grass, fruit, and flowers, while in the winter with lichens and mosses, fine branches of trees etc. (Nowak 1999). They are very fast animals and possess special hooves that enable rock reinforcement even in slippery cases.

Habitat

Habitat Type: 1. Forest (1.4. Temperate Forest); 3. Shrubland (3.4. Temperate Shrubland); 4. Grassland (4.4. Temperate Grassland); 14. Artificial/Terrestrial (14.2. Artificial/Terrestrial - Pastureland).

Preferred habitat for this species are rocky mountainous areas at an altitude of 500 to 3000 meters. It can be found in areas rich in a variety of habitats like grasses, meadows, mixed forests and coniferous ones. During the winter they go down to lower places.

General distribution

Rupicapra rupicapra balcanica is endemic of Balkans: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo, Macedonia, Montenegro, Serbia and Slovenia.

Distribution in Kosovo

Mushtisht, Junik Mountains, Kozhnjer, Jabllanicë, Baballoq, Milishevc, Isniq.

Population

Population trend: Decreasing

Rationale

This species is assessed as Endangered, due to the observed reduction in population size in the past, where the causes of reduction may not have stopped, based on direct observation, decline of quality of suitable habitats for the species and due to the levels of exploitation. Also, reduction in subpopulation size is expected in the future, due to the continuous trends that threaten this species. AOO = 28 km², EOO = 1437 km² and number of locations is 7.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & urban areas, 1.2 Commercial & industrial areas); 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops, 2.3 Livestock farming & ranching); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals); 6 Human intrusions & disturbance (6.1 Recreational activities); 8 Invasive & other problematic species, genes & diseases (8.1 Invasive non-native/alien species/diseases, 8.2 Problematic native species/diseases; 8.3 Introduced genetic material, 8.4 Problematic species/diseases of unknown origin, 8.5 Viral/prion-induced diseases).

Main threats for this species are illegal hunting, logging, and habitat degradation. In some countries in the Balkans, hybridization with other subspecies is also a threat. Urbanization and the expansion of human settlements are threats as well.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

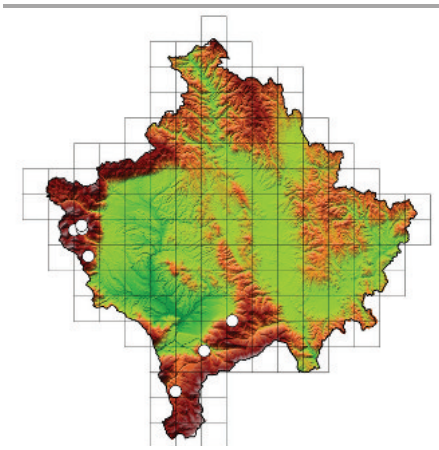
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Nowak 1999





VULNERABLE SPECIES (VU)

4.1 GASTROPODA

Belgrandiella bumasta Schütt, 1960

Gastropoda: Littorinimorpha: Bythinellidae

Threat category in Europe (according to IUCN)

Data Deficient, DD

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell small (height 1.8-2.0 mm, width 1.0-1.2 mm) whitish, rounded-cylindrical with a very obtuse apex. Aperture rounded-triangular (Schütt 1960).

Habitat

Habitat Type: 5. Wetlands (inland) (5.18 Karst and Other Subterranean Inland Aquatic Systems).
This is a subterranean species, inhabiting karstic aquifers and the interstitial water of the underground gravel sediment layer in karstic springs.

General distribution

Kosovo

Distribution in Kosovo

Rugovë

Population

Population trend: Unknown
There are no data about population trend (Seddon 2011a).

Rationale

This species is known only from one location in the Rugova Gorge near Pejë. Due to its hidden life, it is feasible that further subpopulations will be discovered in the future. Nevertheless, it is found within a narrow range, its area of occupancy (AOO) is restricted and lower than 20 km² and probably the number of locations is below 5. Given its restricted distribution and number of locations, it is assessed as Vulnerable.

Threats

No specific threat currently.

Conservation measures in action

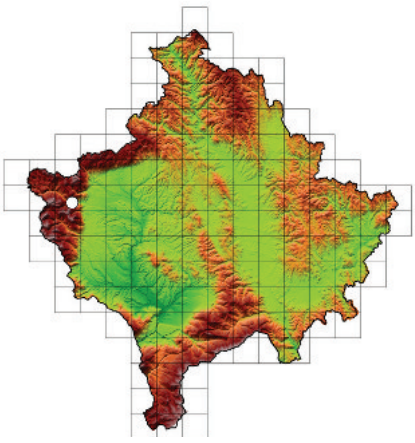
The known population is within a protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection)
Research needed: 1. Research (1.2. Population size, distribution & trends 3. Monitoring (3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the site(s) where occurs.

References

Schütt 1960; Seddon 2011a





Bythinella istoka Glöer & Pešić, 2014

Gastropoda: Littorinimorpha: Bythinellidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell small (height 2.7–2.8 mm, width 1.5–1.6 mm), whitish, cylindrical, with obtuse apex and closed umbilicus. Surface silky and finely striated, aperture oval, peristome thickened at the columella. This species lives in a karstic spring (Glöer & Pešić 2014).

Habitat

Habitat Type: 5. Wetlands (inland) (5.9 Freshwater Springs and Oases, 5.18 Karst and Other Subterranean Inland Aquatic Systems).

This species is found so far in only one high volume karstic spring, where it was found to live in the surface water attached to gravel and stones.

General distribution

Kosovo

Distribution in Kosovo

Vrellë of Istog.

Population

Population trend: Unknown

There is no data about population trend.

Rationale

This species is known only from a large karstic spring at the foot of the Mokna Mountains, near Istog. Based on the current knowledge, it lives within a narrow range, its area of occupancy (AOO) is restricted and lower than 20 km² and probably the number of locations is below 5. Given its restricted distribution and number of locations, it is assessed as Vulnerable.

Threats

No specific threat currently.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

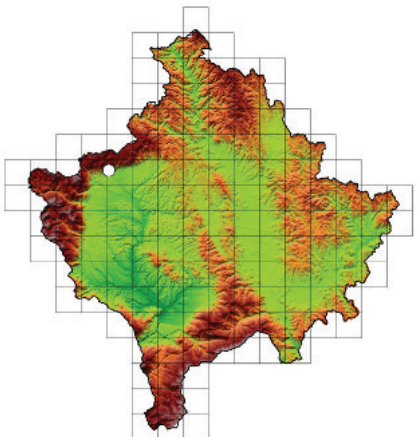
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection)

Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the site(s) where occurs.

References

Glöer & Pešić 2014





Iglica illyrica Schütt, 1975

Gastropoda: Littorinimorpha: Moitessieriidae

Threat category in Europe (according to IUCN)

Data Deficient, DD

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell very small (height 1.5-1.7 mm, weight 0.5-0.6 mm), turriform, thin-walled, transparent-whitish with a relatively small ovoid aperture (Grego *et al.* 2017; Schütt 1975).

Habitat

Habitat Type: 5. Wetlands (inland) (5.18 Karst and Other Subterranean Inland Aquatic Systems).
This species inhabits karstic aquifers and the interstitial water of the underground gravel sediment layer in karstic springs.

General distribution

Kosovo, Montenegro.

Distribution in Kosovo

Drini i Bardhë River in Radavc, Mitrovicë, Deçan.

Population

Population trend: Unknown

Rationale

This species is known only from 4 locations, of which 3 are in Kosovo (Seddon 2011d). Its presence in the type locality was recently confirmed (Grego *et al.* 2017). In Deçan, where was first found in 2014, could not be re-found in 2016, because the stone debris at the sampling site was removed by a flood. In spite of this, the species is supposed to be still present inside the underground waters and in the nearby waterworks installation (Grego *et al.* 2017). Due to the species' hidden life, it is feasible that further subpopulations/locations will be discovered in the future. Nevertheless, this is a rare species, its area of occupancy (AOO) is restricted and lower than 20 km² and probably the number of locations is below 5. Given its restricted distribution and number of locations, it is assessed as Vulnerable.

Threats

List of Threats: 1. Residential & commercial development; 6. Human intrusions & disturbance (6.3 Work & other activities); 7. Natural system modifications (7.2 Dams & water management/use: 7.2.7 Abstraction of ground water [agricultural use]).

Conservation measures in action

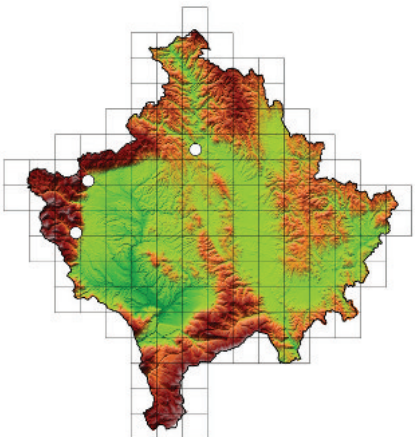
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the site(s) where occurs.

References

Grego *et al.* 2017; Seddon 2011d; Schütt 1975





Monachoides kosovoensis De Winter & Maassen, 1992

Gastropoda: Stylommatophora: Hygromiidae

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell subglobose, pale brown, lighter at the suture, with a light band at the periphery, irregularly striated and finely granulated, 5-6 whorls, periphery weakly angulated or rounded, last whorl weakly descending before aperture, aperture with internal lip, margin reflected at basal and columellar side, umbilicus wide and deep, 1/5 of diameter. Shell height 7-9 mm, width 10-14 mm. This species lives on decaying deadwood or among leaf-litter (De Winter and Maassen 1992; Fehér 2011b).

Habitat

Habitat Type: 1. Forest (1.4. Temperate Forests).
A sylvicol species preferring pine- and mixed pine-beech forest.

General distribution

Kosovo

Distribution in Kosovo

Çakorr.

Population

Population trend: Unknown

Rationale

This species is endemic to the Çakorr Pass area in the Kosovo-Montenegro transboundary area. Though the whole area is not properly investigated, it is presumed a very narrow range species. There are some potential threats related to deforestation. Considering the restricted AOO (less than 20 km²), as well as the potential vulnerability of the habitat, the species is assessed as Vulnerable.

Threats

List of Threats: 5 Biological resource use (5.3. Logging & wood harvesting).

Conservation measures in action

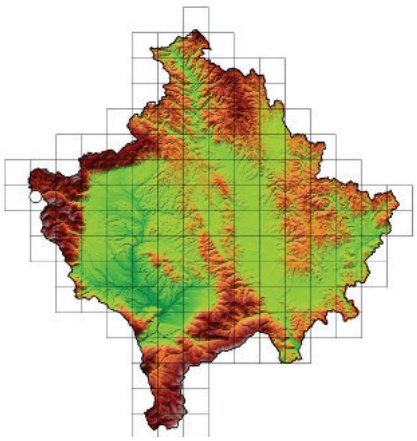
The locality where the species was found is inside the protected area.

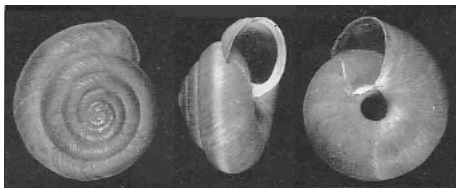
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
According to our present knowledge, the habitat conditions play a key role in the conservation of this species, and hence unless they change, the species survival seems guaranteed. At the same time, the presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the site(s) where occurs.

References

De Winter and Maassen 1992; Fehér 2011b





Montenegrina sporadica H. Nordsieck, 1974

Gastropoda: Stylommatophora: Clausiliidae

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell fusiform, light corneous. Lower whorls smooth, upper ones smooth to indistinctly wrinkled-costate. Neck inflexed, striate. Basal and peripheral crests weak. Peristome attached, ovoid to somewhat angular, with slightly swollen margin. Shell height 13-15 mm, width 3.2-3.7 mm. This is an obligate rock-dwelling species, associated with limestone areas. Usually, it can be found on the bare rock surface, in crevices or at the base of rocks (Fehér and Szekeres 2016; Fehér 2017; Nordsieck 1974).

Habitat

Habitat Type: 6. Rocky Areas (e.g. inland cliffs, mountain peaks).
This species inhabits limestone rock habitats, where they are found in crevices or among and under boulders. Suitable habitats include small to large cliffs, gorges, and rocky forests.

General distribution

Albania, Kosovo. (The nominate species is known only from Kosovo).

Distribution in Kosovo

Deçan.

Population

Population trend: Unknown
Although there are no data about population trend, there is no reason to suppose any extreme fluctuations or declines in the number of mature individuals, because the limestone habitat, where these animals occur is relatively little threatened by human activity.

Rationale

This species is known only from two areas in the Bjeshkët e Nemuna Mountains: the Lumbardhi i Pejës Valley (Kosovo) and the gorge of Tropojë Stream (Albania). It is found within a narrow range, its area of occupancy (AOO) is restricted and lower than 20 km² and probably the number of locations/subpopulations in Kosovo is 1.
On the other hand, it occurs within a protected area and being a rock-dwelling animal there is no reason to suppose that the population, habitat quality or habitat extent of the species are declining or extremely fluctuating right now. Given its very restricted distribution and number of subpopulations, it is assessed as Vulnerable.

Threats

List of Threats: 7 Natural system modifications (7.3. Other ecosystem modifications).

Conservation measures in action

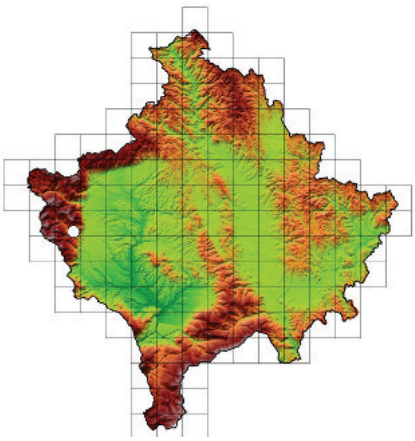
The known population is within a protected area

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
According to our present knowledge, the habitat conditions play a key role in the conservation of this species, and hence unless they change, the species survival seems guaranteed. At the same time, the presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the site(s) where occurs.

References

Fehér and Szekeres 2016; Fehér 2017; Nordsieck 1974





Plagigeyeria gladilini Kuščer, 1937

Gastropoda: Littorinimorpha: Hydrobiidae

Threat category in Europe (according to IUCN)

Vulnerable, VU

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell is conical (height 2.5-3.5 mm, width 1.7-2.0 mm), whitish-translucent, with convex whorls. Aperture ovoid, peristome expands all over evenly (Grego *et al.* 2017; Kuščer 1937).

Habitat

Habitat Type: 5 Wetlands (inland) (5.18 Karst and Other Subterranean Inland Aquatic Systems).
This is a subterranean species inhabiting karstic aquifers and the interstitial water of the underground gravel sediment layer in karstic springs.

General distribution

Kosovo

Distribution in Kosovo

Drini i Bardhë River in Radavc.

Population

Population trend: Unknown
There are no data about population trend.

Rationale

This species is known only from the spring of the Drini i Bardhë River near Pejë. It is found within a narrow range, its area of occupancy (AOO) is restricted and lower than 20 km² and probably the number of subpopulations is below 5 (Georgiev 2010). Therefore, the species is assessed as Vulnerable.

Threats

No specific threat currently.

Conservation measures in action

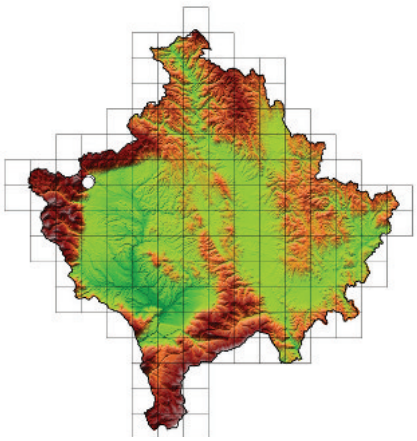
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the site(s) where occurs.

References

Georgiev 2010; Grego *et al.* 2017; Kuščer 1937





Strigilodelima pentheri (A.J. Wagner, 1919)

Gastropoda: Stylommatophora: Clausiliidae

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell fusiform, reddish brown, often with greyish layers, regularly and densely ribbed with 9-11 whorls. Cervix regularly rounded, peristome detached and broadly reflected. Shell height 14-18 mm, width 3.3-3.7 mm. Though this is not an obligate rock-dwelling species, it is associated primarily with limestone areas, where it is usually found under stones or at the base of rocks (Wagner 1919b).

Habitat

Habitat Type: 6 Rocky Areas [e.g. inland cliffs, mountain peaks].
This species inhabits limestone rock habitats, where they are found in crevices or among and under boulders. Suitable habitats include rocky grasslands, boulders at the base of larger cliffs, gorges and rocky forests (Reischütz 2017d).

General distribution

Albania, Kosovo.

Distribution in Kosovo

Pashtrik.

Population

Population trend: Unknown
Although there are no data about population trend, there is no reason to suppose any extreme fluctuations or declines in the number of mature individuals because the limestone habitat, where these animals occur is relatively little threatened by human activity.

Rationale

This species is endemic to the Mount Pashtrik at the border of Kosovo and Albania. Most probably less than 50% of the global population lives in Kosovo. Its area of occupancy (AOO) is below 20 km² and the number of known locations/subpopulations is below 5 which represent the serious plausible threat to the species. Therefore, it is assessed as Vulnerable at the country level.

Threats

No specific threat currently.

Conservation measures in action

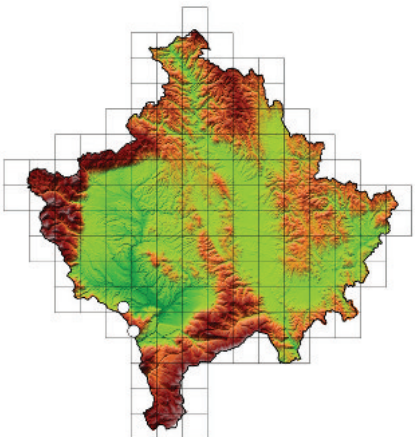
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
According to our present knowledge, the habitat conditions play a key role in the conservation of this species, and hence unless they change, the species survival seems guaranteed. At the same time, the presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the site(s) where occurs.

References

Reischütz 2017d; Wagner 1919b





Terranigra kosovica Radoman, 1978

Gastropoda: Littorinimorpha: Hydrobiidae

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell small (height 1.6-2.2 mm, width 0.8-1.1 mm), colorless, ovoid-cylindrical, with a blunt apex and moderately tumid whorls. Aperture ovoid, rounded at the top, peristome rather thin, umbilicus hardly slit-like or closed (Radoman 1978).

Habitat

Habitat Type: 5. Wetlands (inland) (5.18 Karst and Other Subterranean Inland Aquatic Systems).
According to Radoman (1983), this is a subterranean species inhabiting the interstitial water of the underground sediment layer in karstic springs.

General distribution

Kosovo

Distribution in Kosovo

Two sites in Nerodime e Epërme, Pridvoricë, Caralevë.

Population

Population trend: Decreasing
The species could not be found during research in 2018 on 2 of the 4 published sites. This does not necessarily mean that those subpopulations had gone extinct. This is, however, an indication for the possible decrease in the number of subpopulations.

Rationale

This species is known only from 4 locations in Kosovo and possible further subpopulations/locations will be discovered in the future (Seddon 2011c). However, during a field survey, 2 of the 4 known sites were visited but the presence of the species could not be confirmed. It indicates a probable decrease in the number of subpopulations, though the species is hard to collect due to its hidden life, so it would be too early to say that at least half of the populations had gone extinct. Nevertheless, this is a rare species, its area of occupancy (AOO) is restricted and lower than 20 km² and probably the number of subpopulations/locations is below 5. Moreover, it can be suspected that population trend and the number of locations is decreasing due to the activities related to the habitat of this species. Consequently, it is assessed as Vulnerable.

Threats

List of Threats: 1 Residential & commercial development; 6 Human intrusions & disturbance (6 6.3 Work & other activities); 7 Natural system modifications (7.2 Dams & water management: 7.2.7 Abstraction of ground water (agricultural use)).

Conservation measures in action

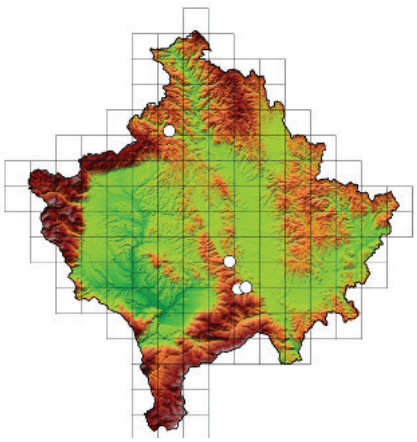
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trend, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the site(s) where occurs.

References

Radoman 1978; Radoman 1983; Seddon 2011c





Triloba sandrii (Küster, 1847)

Gastropoda: Stylommatophora: Clausiliidae

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell robust fusiform, thick-walled, reddish brown, densely striated on upper whorls, smooth on lower whorls, apertural margin connected by a callus on the parietal side. Shell height 22-27 mm, width 5.5-7 mm (Nordsieck 1972).

Habitat

Habitat Type: 1. Forest (1.4 Temperate Forest); 5. Wetlands (inland) (5.1. Permanent Rivers/Streams/Creeks (includes waterfalls)).
This species prefers pristine beech forests, where it is found on decaying dead wood (Dedov 2017b). It is also rarely found along small streams, where it occurs in extremely humid sites among the herbaceous plants and under the leaf litter at the stream-side.

General distribution

Albania, Kosovo (presence shall be confirmed), Macedonia.

Distribution in Kosovo

Pashtrik.

Population

Population trend: Decreasing
Due to extensive wood harvesting activities (mostly in Albania) within the species' range, the area and quality of the suitable habitat type are decreasing. It can be supposed that smaller subpopulations have gone extinct in the recent past.

Rationale

This species occurs in central Albania and the westernmost part of Macedonia, reaching the northernmost occurrence at the Mount Pashtrik area. The AOO of this species in Kosovo is restricted and less than 20 km² and probably the number of locations is below 5. Moreover, the species is associated with pristine beech forests, where it lives on decaying dead-wood. This habitat type is decreasing - both in area and in quality - all over in the region. Therefore, it is assessed as Vulnerable at the country level.

Threats

List of Threats: 5 Biological resource use (5.3. Logging & wood harvesting).

Conservation measures in action

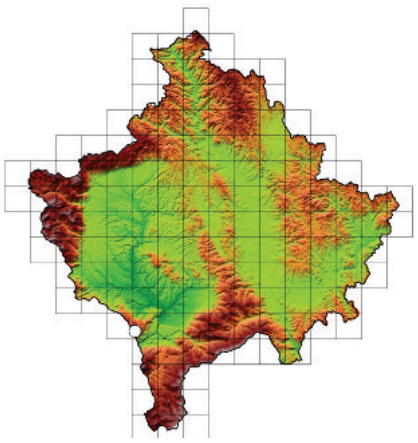
Currently, there is no conservation measure in action.

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the site(s) where occurs.

References

Dedov 2017b; Nordsieck 1972





Vertigo moulinsiana (Dupuy, 1849)

Gastropoda: Stylommatophora: Vertiginidae

Threat category in Europe (according to IUCN)

Vulnerable, VU

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; D2

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell egg-shaped, yellowish or reddish brown, translucent, shiny and almost smooth, with 3.5-4.5 convex whorls. Last whorl very large, accounting for 2/3 of the total height, aperture with 4 narrow folds, peristome sharp, slightly reflected and usually connected by a weak parietal callus. Shell height 2.25-2.75 mm, width 1.3-1.65 mm. This species prefers humid habitats, temporarily covered by water. Hardly tolerates any human disturbance, mowing and grazing. This is a Natura 2000 indicator species.

Habitat

Habitat Type: 5. Wetlands (inland) [5.4 Bogs, Marshes, Swamps, Fens, Peatlands [generally over 8 ha], 5.6 Seasonal/Intermittent Freshwater Lakes [over 8 ha], 5.7 Permanent Freshwater Marshes/Pools [under 8 ha], 5.8 Seasonal/Intermittent Freshwater Marshes/Pools [under 8 ha]].

General distribution

European species. It ranges from Ireland to Russia and south to North Africa, but the main populations are in western and Central Europe. There are only a very few known occurrences in southern Europe and northern Africa, and the southern distribution border is poorly known (Seddon and Holyoak 1993; Welter-Schultes 2012).

Distribution in Kosovo

Drajkoc. The first known subpopulation was found recently (Killien *et al.* 2012).

Population

Population trend: Decreasing

There is evidence for a decline in population size, number of subpopulations and habitat quality in certain parts of the European range of this species.

Rationale

This is a wide range species but associated with habitat types that are severely imperiled all over the species' range.

Reduction in population size is observed in the past, where the causes of reduction may not have ceased, based on direct observation and decline of quality of suitable habitats for the species. Moreover, Kosovo is in the periphery of the range where very scattered distribution can be assumed (so far only 1 subpopulation is known, i.e. AOO is below 20 km²) which is a serious plausible threat. Taking all these into consideration, it is assessed as Vulnerable at the country level.

Threats

List of Threats: 1.Residential & commercial development [1.1 Housing & urban areas, 1.2 Commercial & industrial areas, 1.3 Tourism & recreation areas]; 2. Agriculture & aquaculture [2.1 Annual & perennial non-timber crops, 2.2. Wood & pulp plantations, 2.3 Livestock farming & ranching]; 6. Human intrusions & disturbance [6.1. Recreational activities, 6.3. Work & other activities]; 7. Natural system modifications [7.3. Other ecosystem modifications]; 11. Climate change & severe weather [11.1 Habitat shifting & alteration].

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

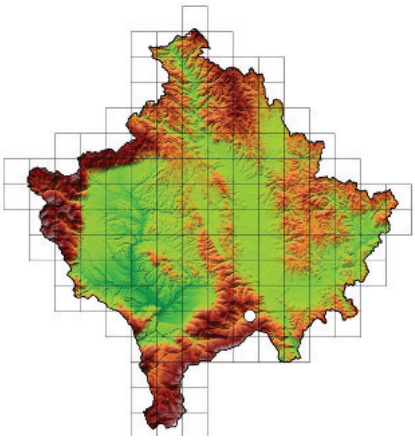
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection].

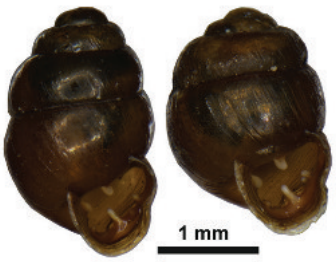
Research needed: 1. Research [1.2. Population size, distribution & trends]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the site(s) where occurs.

References

Killien *et al.* 2012; Seddon and Holyoak 1993; Welter-Schultes 2012





4.2 MALACOSTRACA

Alpioniscus metohicus Pljakic, 1971

Malacostraca: Isopoda: Trichoniscidae

Threat category in Europe (according to IUCN)

This species is not evaluated by IUCN.

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

It is a narrow endemic species. Male body length varies from 4.6 to 7.5 mm, and females are a bit longer, from 5.5 to 7.7 mm. Body color is milky white without ocular pigment (Pljakić 1971).

Habitat

Habitat Type: 7. . Caves and Subterranean Habitats (non-aquatic) (7.1 Caves, 7.2. Other Subterranean Habitats).

General distribution

Kosovo.

Distribution in Kosovo

Radavc Cave (Ćurčić & Decu 2008; Pljakić 1971; Schmalfuss 2003).

Population

Population trend: Unknown

Rationale

This is endemic species. The distribution of this species is limited to only one cave in Radavc, near Pejë. It is assessed as Vulnerable because the population of this species has a very restricted area of occupancy (AOO is below 20 km²) and the number of locations (below 5). The population of this species is very sensible to any significant fluctuation of temperature and humidity. Any disturbance of the habitat (cave) can lead to drastic population loss.

Threats

List of Threats: 6.Human intrusions & disturbance (6.1 Recreational activities); 7. Natural system modifications (7.3 Other ecosystem modifications).

Conservation measures in action

Habitat protected (Permanent protection, 987/66) and classified as Monument in Kosovo; Institution: RCCH –Pejë.

Conservation measures needed

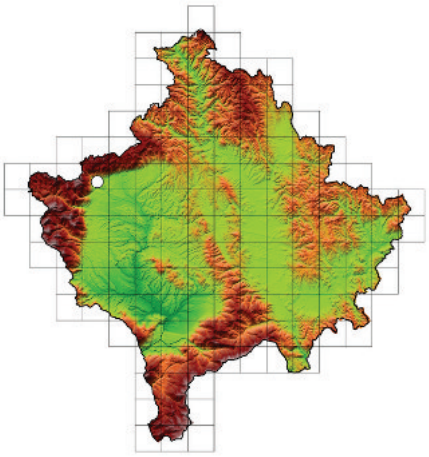
Conservation actions needed: 1. Land/water protection (1.1 Site/area protection) 2. Land/water management (2.1 Site/area management).

Research needed: 1. Research (1.2. Population size, distribution & trends; 1.3.Life history & ecology); 3.Monitoring (3.1.Population trends, 3.4. Habitat trends)

In case of touristic evaluation of the cave, make sure that interventions and using of the cave do not lead to a change of microclimate.

References

Ćurčić & Decu 2008; Pljakić 1971; Schmalfuss 2003



4.3 DIPLOPODA

Brachydesmus jalzici Mrsic, 1988

Diplopoda: Polydesmida: Polydesmidae

Threat category in Europe (according to IUCN)

This species is not evaluated by IUCN.

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

Endemic species with locus typicus in Kosovo. It belongs to *vermosanus*-group with endemic species of the Dinaric Karst region of the Balkan Peninsula. It has two strong femoral processes and a split endomerite. Body length is from 10-12.5 mm, with 19 trunk segments (Antić *et al.* 2013; Makarov *et al.* 2004; Mršić 1985; Strasser 2017).

Habitat

Habitat Type: 7. Caves and Subterranean Habitats (non-aquatic) (7.1 Caves, 7.2. Other Subterranean Habitats).

General distribution

Kosovo.

Distribution in Kosovo

Dushi Cave in Klinë (Mršić 1985, 1988)

Population

Population trend: Unknown

Rationale

This is endemic species. Its area of occupancy (AOO) is below 20 km² and the number of locations is below 5, qualifying for Vulnerable category. The population of this species is very sensible to any significant fluctuation of temperature and humidity. Any disturbance of the habitat (cave) can lead to drastic population loss.

Threats

List of Threats: 6. Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.3 Other ecosystem modifications).

Conservation measures in action

Currently, there is no conservation measure in place.

Conservation measures needed

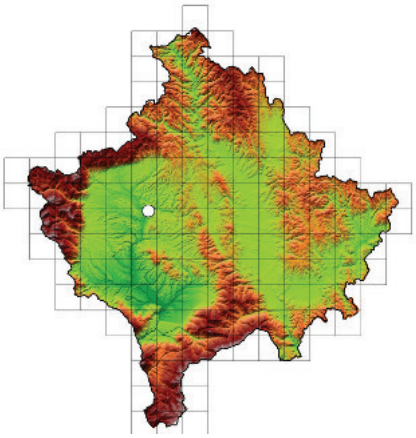
Conservation actions needed: 1. Land/water protection (1.1 Site/area protection) 2. Land/water management (2.1 Site/area management).

Research needed: 1. Research (1.2. Population size, distribution & trends; 1.3.Life history & ecology); 3.Monitoring (3.1.Population trends, 3.4. Habitat trends).

In case of touristic evaluation of the cave, make sure that interventions and using of the cave do not lead to a change of microclimate.

References

Antić *et al.* 2013; Makarov *et al.* 2004; Mršić 1985; Mršić 1988; Strasser 2017





Brachydesmus ljubetensis Attems, 1912

Diplopoda: Polydesmida: Polydesmidae

Threat category in Europe (according to IUCN)

This species is not evaluated by IUCN.

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

It belongs to *ljubetensis*-group in which the gonopodal setal field is situated medially on the caudal side in the border between the prefemur and femur (Antić *et al.* 2013).

Habitat

Habitat Type: 7. Caves and Subterranean Habitats (non-aquatic) (7.1 Caves, 7.2. Other Subterranean Habitats).

General distribution

Kosovo, Macedonia.

Distribution in Kosovo

Luboten, Kaçanik (Attems 1929, Makarov et al 2004, Strasser 1971).

Population

Population trend: Unknown

Rationale

This is endemic species. Its area of occupancy (AOO) is below 20 km² and the number of locations is below 5, qualifying for Vulnerable category. The population of this species is very sensible to any significant fluctuation of temperature and humidity. Any disturbance of the habitat (cave) can lead to drastic population loss.

Threats

List of Threats: 6. Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.3 Other ecosystem modifications).

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

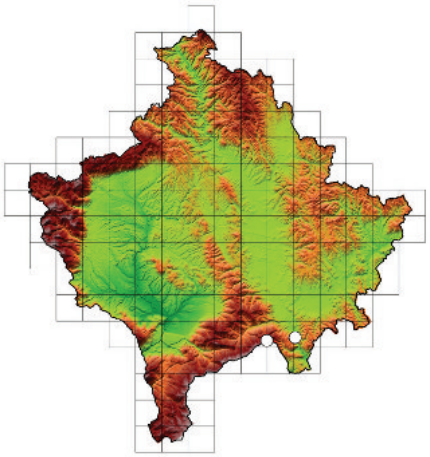
Conservation actions needed: 1. Land/water protection (1.1 Site/area protection) 2. Land/water management (2.1 Site/area management).

Research needed: 1. Research (1.2. Population size, distribution & trends; 1.3.Life history & ecology); 3.Monitoring (3.1.Population trends, 3.4. Habitat trends).

In case of touristic evaluation of the cave, make sure that interventions and using of the cave do not lead to a change of microclimate.

References

Antić *et al.* 2013; Attems 1929; Makarov *et al.* 2004; Strasser 1971



Polydesmus undeviginti Strasser, 1971

Diplopoda: Polydesmida: Polydesmidae

Threat category in Europe (according to IUCN)

This species is not evaluated by IUCN.

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

The species was found near the spring of Drini i Bardhë (Makarov *et al.* 2004, Mršić 1985) and in a cave in Radavac, near Pejë (Strasser 1971a).

Habitat

Habitat Type: 1. Forest (1.4. Temperate Forest); 5. Wetlands (inland) (5.1. Permanent Rivers/Streams/Creeks (includes waterfalls); 7. Caves and Subterranean Habitats (non-aquatic) (7.1 Caves, 7.2. Other Subterranean Habitats).

General distribution

Kosovo.

Distribution in Kosovo

Drini i Bardhë spring, Radavc Cave (Makarov *et al.* 2004; Mršić 1985; Strasser 1971a).

Population

Population trend: Unknown

Rationale

This is endemic species. Its area of occupancy (AOO) is below 20 km² and the number of locations is below 5, qualifying for Vulnerable category. The population of this species is very sensible to any significant fluctuation of temperature and humidity. Any disturbance of the habitat (cave) can lead to drastic population loss.

Threats

List of Threats: 6. Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.3 Other ecosystem modifications).

Conservation measures in action

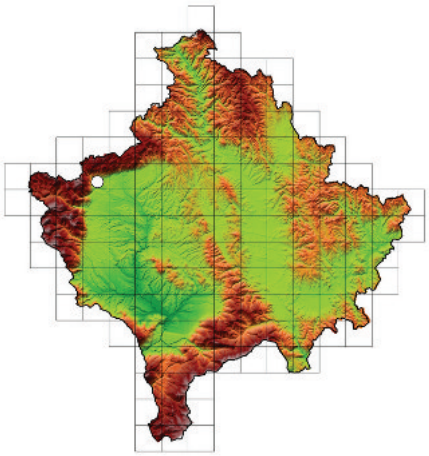
Habitat protected (Permanent protection, 987/66) and classified as Monument in Kosovo; Institution: RCCH –Pejë.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1 Site/area protection) 2. Land/water management (2.1 Site/area management)
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1.Population trends, 3.4. Habitat trends)
In case of touristic evaluation of the cave, make sure that interventions and using of the cave do not lead to a change of microclimate.

References

Makarov *et al.* 2004; Mršić 1985; Strasser 1971a



4.4 INSECTA

Deltomerus (Deltomerus) nopcsai Csiki, 1940

Insecta: Coleoptera: Carabidae

Threat category in Europe (according to IUCN)

The species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU B2ab(iii,iv)

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Moderate sized beetle (9-12 mm). Predaceous species that actively seeks for a pray as adult, as well as the larval stage. Most probably a nocturnal animal.

Habitat

Habitat Type: 4. Grassland [4.4. Temperate Grassland]; 6 Rocky Areas [e.g. inland cliffs, mountain peaks].
Lives in open habitats in subalpine and alpine habitats above the timber line.

General distribution

Kosovo .

Distribution in Kosovo

Koprivnik [Csiki 1940].

Population

Population trend: Unknown

Rationale

The species was recorded on alpine habitats on the highest peaks on the Koprivnik Mountain only, and presents stenoendemic species for Kosovo. This species is assessed as Vulnerable, because of the AOO, which is less than 2000 km², number of locations ≤ 10 and projected continuing decline of population, based on the quality of habitat and number of locations. These areas are suitable for the development of tourism for winter sports and there is a risk of their destruction.

Threats

List of Threats: 1 Residential & commercial development [1.3 Tourism & recreation areas]; 6 Human intrusions & disturbance [6.1 Recreational activities].

Conservation measures in action

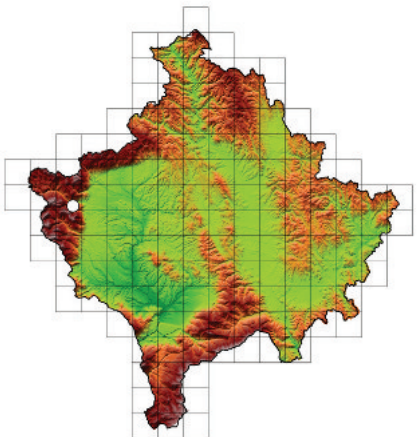
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
Control of the development and construction of touristic infrastructure.

References

Csiki 1940



Pavicevicia comottiorum Giachino, 2006

Insecta: Coleoptera: Leiodidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Very small beetle (2-2,7 mm). Lives in underground environments, scavenging on dead bodies of other animals. Body well adaptive for living in the underground environment: the complete absence of eyes, well developed long antenna and absence of body pigmentation (light brown color of the chitin).

Habitat

Habitat Type: 5 Wetlands (inland) (5.18 Karst and Other Subterranean Hydrological Systems (inland)); 7 Caves and Subterranean Habitats (non-aquatic) (7.1 Caves).
Lives in caves and other underground karstic cavities.

General distribution

Kosovo.

Distribution in Kosovo

Rugovë (Giachino 2006).

Population

Population trend: Unknown

Rationale

The distribution of this species is limited to only one cave in Rugova canyon. This species is assessed as Vulnerable because its area of occupancy (AOO) is below 20 km², probably the number of locations is below 5 and is very sensible to any significant fluctuation of temperature and humidity. Any disturbance of the habitat (cave) can lead to drastic population loss.

Threats

List of Threats: 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.3 Other ecosystem modifications).

Conservation measures in action

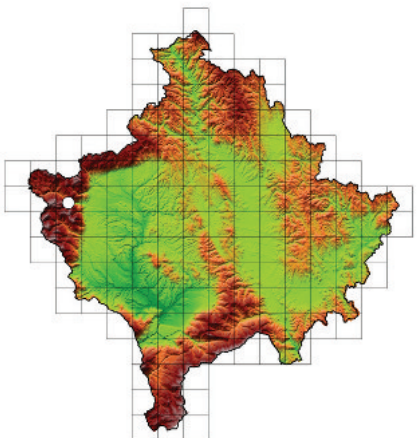
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1 Site/area protection) 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
In case of touristic evaluation of the cave, make sure that interventions and using of the cave do not lead to a change of microclimate.

References

Giachino 2006



Pavicevicia pretneri Perreau, 2008

Insecta: Coleoptera: Leiodidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Very small beetle (1.9-2,3 mm). Lives in underground environments, scavenging on dead bodies of other animals. Body well adaptive for living in the underground environment: complete absence of eyes, well developed extremely long antenna and absence of body pigmentation (light brown color of the chitin).

Habitat

Habitat Type: 5. Wetlands (inland) (5.18 Karst and Other Subterranean Hydrological Systems (inland)); 7 Caves and Subterranean Habitats (non-aquatic) (7.1 Caves).
Lives in caves and other underground karstic cavities.

General distribution

Kosovo.

Distribution in Kosovo

Cave Lazina (Perreau 2008).

Population

Population trend: Unknown

Rationale

The distribution of this species is limited to only one cave in Rugova canyon. This species is assessed as Vulnerable because its area of occupancy (AOO) is below 20 km², probably the number of locations is below 5 and is very sensible to any significant fluctuation of temperature and humidity. Any disturbance of the habitat (cave) can lead to drastic population loss.

Threats

List of Threats: 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.3 Other ecosystem modifications).

Conservation measures in action

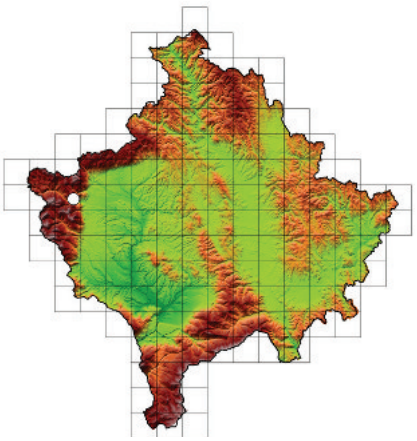
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1 Site/area protection) 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
In case of touristic evaluation of the cave, make sure that intereventions and using of the cave does not lead to change of microclimate.

References

Perreau 2008



Glossosoma discophorum Klapálek, 1902

Insecta: Trichoptera: Glossosomatidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B2ab(iii,iv)

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

The forewing size of this species is from 6.5 to 7 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of medium clean water. Larvae belong to the feeding groups of grazers/scrapers and gatherers/collectors. They are on wing from June to September. As adults, they live for several days to several weeks nearby the stream or river where they lived as a larva (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams. The preferred substrate of larvae of this species is composed of gravel and cobbles of different size, etc. It lives mainly in high altitudes, up to more than 2000 m.

General distribution

Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Kosovo, Macedonia, Montenegro, Romania, Serbia.

Distribution in Kosovo

Lumbardhi i Prizrenit River in Prevallë.

Population

Population trend Decreasing

Rationale

This species is assessed as Vulnerable due to the observed reduction in population size in the past, where the causes of reduction may not have stopped, based on direct observation and decline of quality of suitable habitats for the species. Currently, the number of locations is 1 and AOO is restricted (4 km²), but the species is expected in more locations, however ≤ 10.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

The site where this species was found is inside the protected area.

Conservation measures needed

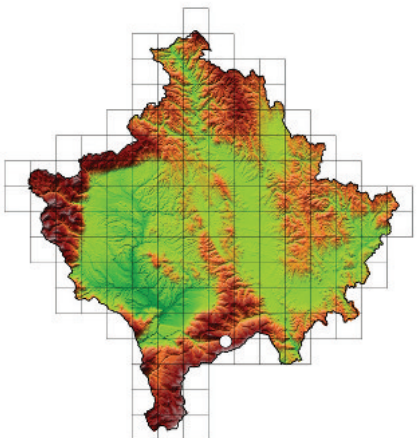
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Plectrocnemia mojkovacensis Malicky, 1982

Insecta: Trichoptera: Polycentropodidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 4.5 to 5 mm. During the larval stage, they live in water for one year. They are on wing mostly during the spring. As adults, they live for several days to several weeks nearby the stream or river where they lived as a larva. There is not enough data about the tolerance values of the larval stage. This species belongs to the group of rare species of the genus *Plectrocnemia* Stephens, 1836 (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).
It is found mostly in upstream areas of mountain streams.

General distribution

Endemic of Balkans. Currently is only known from Bosnia and Hercegovina Kosovo and Serbia.

Distribution in Kosovo

Lloqan Mountains.

Population

Population trend: Decreasing
In Kosovo it was sampled in 1 locality only with a low number of individuals.

Rationale

This species is assessed as Vulnerable due to the observed reduction in population size in the past, where the causes of reduction may not have stopped, based on direct observation and decline of quality of suitable habitats for the species. Currently, the number of locations is 1 and AOO is restricted (4 km²), but is expected from more locations, however ≤10.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

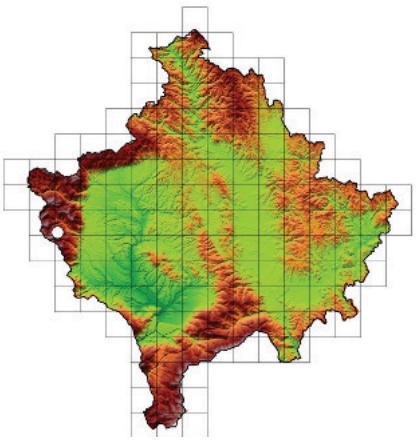
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1985



Psychomyia klapaleki Malicky, 1995

Insecta: Trichoptera: Psychomyiidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 3.5 to 4.5 mm. During the larval stage, they live in water for one year. They are on wing mostly during the spring. As adults, they live for several days to several weeks nearby the stream or river where they lived as a larva. There are not enough data about the tolerance values of the larval stage of this species, but since it is found in midstream sections of rivers, this indicates that they can considerably tolerate water pollution (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]].
It is mostly found in different midstream and downstream segments of big rivers and at a lesser degree in mountain streams.

General distribution

Albania, Bosnia and Herzegovina, Croatia, Italy, Kosovo, Serbia, Slovenia.

Distribution in Kosovo

Ibër River in Koshtovë.

Population

Population trend: Decreasing
In Kosovo it was sampled in 1 site only with a low number of individuals.

Rationale

This species is assessed as Vulnerable due to the observed reduction in population size in the past, where the causes of reduction have not stopped, based on direct observation and decline of quality of suitable habitats for the species. Currently, the number of locations is 1 and AOO is restricted (4 km²) but is expected from more locations, however ≤ 10.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].
Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

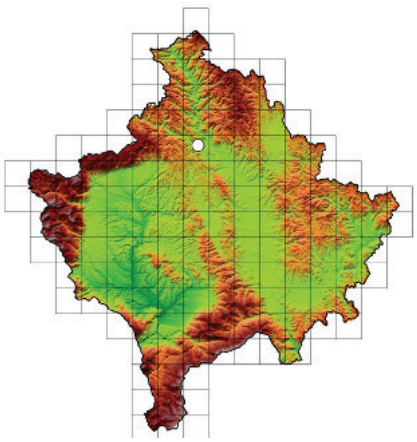
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Rhyacophila bosnica Schmid, 1970

Insecta: Trichoptera: Rhyacophilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B1ab(iii,iv) +2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 7 to 9 mm. The wing color is dark brown. During the larval stage, they live in water for one year. There is a lack of data about the feeding habits of larvae. The larval stage is an indicator of clean water. They are on wing from February to May. As adults, they live for several days to several weeks nearby the stream or river where they lived as a larva. It is one of the first caddisfly species to appear on wing at the beginning of the year (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls], 5.9 Freshwater Springs and Oases).
It is found mostly in spring areas and upstream segments of mountain streams. The preferred substrate of the larva of this species is composed by coarse gravel, cobbles, boulders, and bedrock. This species prefers higher altitudes (Graf *et al.*2008; Kumanski 1985).

General distribution

Balkan endemic species. Until now known only from Albania, Bosnia and Herzegovina, Kosovo and Serbia.

Distribution in Kosovo

Stream in Sharr Mountains, Stream in Bjeshkët e Nemuna Mountains.

Population

Population trend: Decreasing
In all sites where this species is found in Kosovo is characterized by a small number of individuals. In some sites, a decrease of subpopulations was observed because of anthropogenic activities, such as deforestation and degradation of freshwater habitats.

Rationale

This species is assessed as Vulnerable due to the observed reduction in population size in the past, where the causes of reduction may not have stopped, based on direct observation and decline of quality of suitable habitats for the species. Currently, the species is known from a small number of locations (2), with restricted AOO = 8 km², but is expected to be present in the area in more locations, however ≤ 10.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance (6.1 Recreational activities]; 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
Main threats for this species in all localities where it was found in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

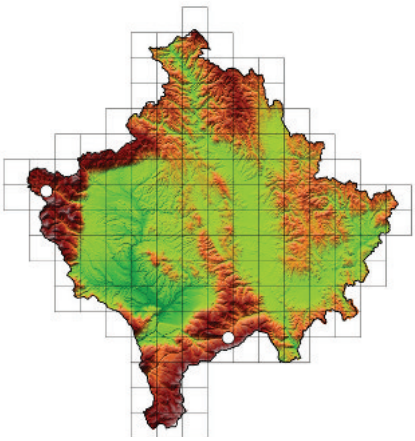
The sites where this species was found are inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection]; 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring (3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s] where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Rhyacophila obtusa Klapálek, 1894

Insecta: Trichoptera: Rhyacophilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B1ab(iii,iv) +2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 7 to 9 mm. The wing color is dark brown. During the larval stage, they live in water for one year. There is a lack of data about the feeding habits of larvae. The larval stage is an indicator of clean water. They are on wing from April to October. As adults, they live for several days to several weeks nearby the stream or river where they lived as larva (Graf *et al.*2008; Ibrahimi *et al.*2012; Kumanski 1985).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls], 5.9 Freshwater Springs and Oases).

It is found mostly in upstream segments of rivers and mountain streams. The preferred substrate of larvae of this species is composed by coarse gravel, cobbles, boulders, and bedrock. It can be encountered at different altitudes, from 300 up to over 1600 m.

General distribution

Albania, Bosnia and Herzegovina, Bulgaria, Greece, Kosovo, Macedonia, Montenegro, Serbia, Turkey.

Distribution in Kosovo

Sharr Mountains, Bjeshkët e Nemuna Mountains.

Population

Population trend: Decreasing

In all sites where this species is found in Kosovo is characterized by a small number of individuals and unstable populations, based on continuous observations.

Rationale

This species is assessed as Vulnerable due to the observed reduction in population size in the past, where the causes of reduction may not have stopped, based on direct observation and decline of quality of suitable habitats for the species. Currently, the species is known from small number of locations (2), with restricted AOO = 8 km², but is expected from more locations, however ≤ 10.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance (6.1 Recreational activities]; 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use], 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species in all localities in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

The sites where this species was found are inside the protected area.

Conservation measures needed

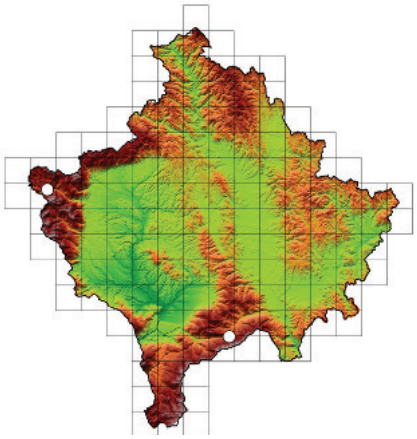
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection]; 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring (3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s] where occurs.

References

Graf *et al.* 2008; Ibrahimi *et al.* 2012; Kumanski 1985





Synagapetus slavorum Botosaneanu, 1960

Insecta: Trichoptera: Glossosomatidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A3c; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is about 4 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of medium clean water. Larvae belong to the feeding groups of grazers/scrapers and gatherers/collectors. They are on wing from June to October. As adults, they live for several days to several weeks nearby the stream or river where they lived as a larva (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is mainly found in different upstream and spring area segments of mountain streams, but also in midstream segments. The preferred substrate for this species is made by gravel and cobbles of different size. It can be found in different altitudes, from 300 to 1200 m.

General distribution

Bosnia and Herzegovina, Bulgaria, Greece, Kosovo, Montenegro, Romania.

Distribution in Kosovo

Stream in Mollopolc.

Population

Population trend: Unknown

Currently, the species is known from 1 site only with only one specimen.

Rationale

This species is assessed as Vulnerable due to the suspected reduction in population size in the future, based on the decline of quality of suitable habitats for the species. Currently, the number of locations is 1 and AOO is restricted (4 km²) but is expected from more locations, however ≤ 10.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

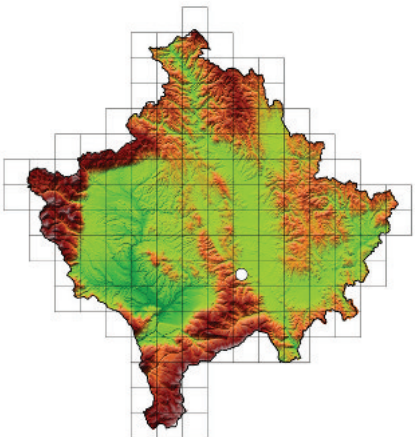
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Tinodes janssensi Jacquemart, 1957

Insecta: Trichoptera: Psychomyiidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 4.5 to 5 mm. During the larval stage, they live in water for one year. There are not enough data about the tolerance value of the larval stage and the way it lives. They are on wing during the June-November period. As adults, they live for several days to several weeks nearby the stream or river where they lived as a larva (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls], 5.9 Freshwater Springs and Oases).

It is found mostly in upstream segments of mountain streams. The preferred substrate for this species is composed by coarse gravel, cobbles and boulders of different size, stream bedrock, and habitats rich in material of plant origin, such as branches and fallen leaves.

General distribution

Endemic of Balkans. Currently it is known from limited number of localities in Albania, Bulgaria, Greece and Kosovo.

Distribution in Kosovo

Streamlet in Blinajë.

Population

Population trend: Decreasing

In Kosovo it was sampled in 1 site only with a low number of individuals.

Rationale

This species is assessed as Vulnerable due to the observed reduction in population size in the past, where the causes of reduction may not have stopped, based on direct observation and decline of quality of suitable habitats for the species. Currently, the number of locations is 1 and AOO is restricted (4 km²) but is expected from more locations, however ≤ 10.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

The site where this species was found is inside the protected hunting reserve.

Conservation measures needed

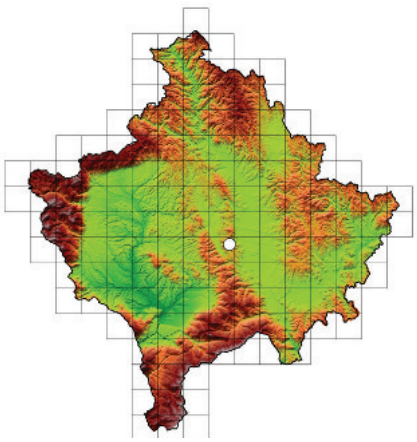
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Carcharodus floccifera (Zeller, 1847)

Insecta: Lepidoptera: Hesperiidae

Tufted skipper

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi, Pajtim Bytyqi

General data

This species has a wingspan of 32 – 35 mm. The basic forewing color is marbled gray-brown, with dark brown and clearer markings. The adults fly from May to June or from July to September in two generations, but at the highest altitudes, there is only one generation from June to August. The larvae feed mainly on plants of the following genera: *Stachys, Marrubium, Thymus*, and *Ballota*.

Habitat

Habitat Type: 1. Forest [1.4 Temperate Forest]; 4 Grassland.
The species usually inhabits the sunny edges and glades of forests and damper areas with grasses and meadows.

General distribution

Spain, France, Italy, the Alps and the Balkans, from southern and central Europe, north to central Germany and east to Macedonia and Bulgaria.

Distribution in Kosovo

Two sites in Mirushë, Shkoza Mountain [Zhushi *et al.*2017], Pashtrik [Jakšić 2007], Berisha Mountain.

Population

Population trend: Decreasing
Subpopulations of this species were observed with a significant number of individuals in most cases, but with a tendency to decline. Also, the habitat degradation tendency has been observed in most cases.

Rationale

This species is assessed as Vulnerable due to the observed population decline in the past, where the causes may not have stopped, based on direct observation and decline of the habitat quality. Currently, the number of locations is 5, AOO = 20 km², EOO = 371 km², but is expected from more locations, however ≤ 10.

Threats

List of Threats: 2 Agriculture & aquaculture [2.3 Livestock farming & ranching: 2.3.2 Small-holder grazing, ranching or farming]; 6. Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.1 Fire & fire suppression].
This species has been observed to be affected by intensive mowing.

Conservation measures in action

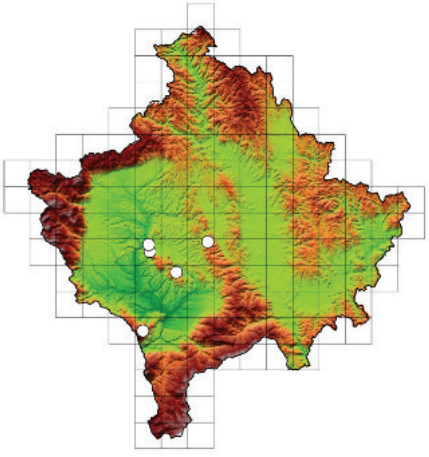
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Jakšić 2007; Zhushi *et al.* 2017





Carterocephalus palaemon (Pallas, 1771)

Insecta: Lepidoptera: Hesperiidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is from 2.5 to 3.2 cm. They have one generation a year. The adults fly from May to June.

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest); 5 Wetlands (inland).
This is arboreal species. It is found often in moisted areas of forests. It can also be found in damp meadows, at the edges of streams and at grassy forest openings.

General distribution

Central, north and east Europe, central and north Asia to Japan and in North America.

Distribution in Kosovo

Jezerc, Rugova Gorge (Jakšić 1987).

Population

Population trend: Decreasing
This species has small subpopulations in Kosovo, with continuous trends of decline.

Rationale

This species is assessed as Vulnerable due to the observed population decline in the past, where the causes may not have stopped, based on direct observation and decline on habitat quality. Currently, the number of locations is low (2) and AOO is restricted (8 km²) but is expected from more locations, however ≤ 10.

Threats

List of Threats: 4 Transportation & service corridors (4.1 Roads & railroads); 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 9 Pollution (9.3 Agricultural & forestry effluents: 9.3.2 Soil Erosion, Sedimentation).

Conservation measures in action

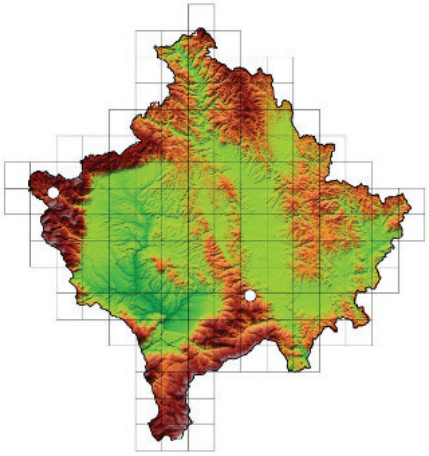
Habitats of this species in Bjeshkët e Nemuna are protected by the Law of National Park.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 1987





Erebia rhodopensis Nicholl, 1900

Nicholl's Ringlet

Insecta: Lepidoptera: Nymphalidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is 19 – 20 mm. On the upperside of forewings dominates the dark brown color. This species has one generation per year. Adults fly during July – August period. There is not enough information about plants used by larvae for feeding.

Habitat

Habitat Type: 4 Grassland.
This species is mostly found in slopes rich in grass, without shrubs or trees. In Kosovo, it is found in high altitudes.

General distribution

Southeastern Europe.

Distribution in Kosovo

Several localities in Sharr Mountins, Rudokë, Gjeravicë, Çakorr (Jakšić 2001, 2003).

Population

Population trend: Stable
This species was found with small subpopulations, but currently stable.

Rationale

This species is assessed as Vulnerable due to the observed population decline in the past, where the causes may not have stopped, based on direct observation and decline on habitat quality. Currently AOO = 24 km², EOO = 2192 km² and number of locations is ≤ 10.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 2 Agriculture & aquaculture (2.3 Livestock farming & ranching: 2.3.2 Small-holder grazing, ranching or farming); 7 Natural system modifications (7.1 Fire & fire suppression, 7.3 Other ecosystem modifications); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
The species was observed to be vulnerable to the practice of mowing of grasslands.

Conservation measures in action

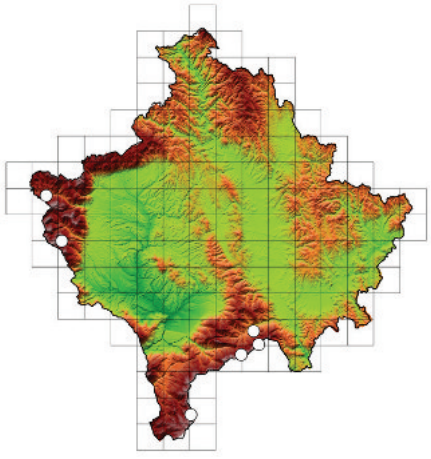
Habitats of this species are protected inside Bjeshkët e Nemuna and Sharr Mountains national parks.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 2001, 2003



Lycaena dispar (Haworth, 1802)

Insecta: Lepidoptera: Lycaenidae

Large Copper

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

This species has coppery-orange wings, fringed with black. It has two generations a year. Adults fly during May and June. Feeding plant of larvae is *Rumex hydrolapathum*. This species is very sensitive to anthropogenic activities that cause habitat degradation.

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest); 4 Grassland.
The preferred habitats for this species are: humid grasslands and tall herb communities, water-fringe vegetation, fens, mesophile grasslands, broad-leaved deciduous forests, dry calcareous grasslands, and steppes. In Kosovo, it is found mainly along the river banks or in moist areas.

General distribution

Europe, Turkey.

Distribution in Kosovo

Nerodime, Vushtrri, Shtërpcë, Two sites in Malishevë, Klinë, Kaçanik Gorge, Kalaja e Prizrenit, Istog, Deçan (Jakšić 2003; Jakšić and Živić 1995-1998, Zhushi *et al.*2016; Zhushi *et al.*2017).

Population

Population trend: Decreasing
This species was observed with subpopulations containing a very low number of individuals. In Europe, as well, and mostly in Northern Europe, a population decline was observed for this species.

Rationale

This species is assessed as Vulnerable due to the observed population decline in the past, where the causes may not have stopped, based on direct observation and decline on habitat quality. Currently, AOO = 40 km², EOO = 3725 km², and the number of locations is 10.

Threats

List of Threats: 2 Agriculture & aquaculture; 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.2 Abstraction of surface water (commercial use), 7.2.8 Abstraction of ground water (unknown use), 7.3 Other ecosystem modifications); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
Amongst the threats for this species was observed also mowing of grasslands.

Conservation measures in action

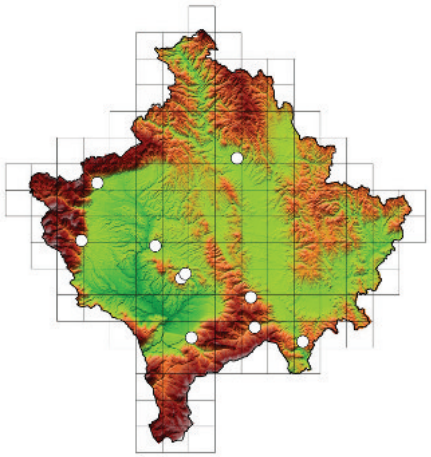
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 2003; Jakšić and Živić 1995-1998, Zhushi *et al.* 2016; Zhushi *et al.* 2017





Nymphalis antiopa (Linnaeus, 1758)

Insecta: Lepidoptera: Nymphalidae

Camberwell Beauty

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

This species has a wingspan of 57 to 101 mm. This species has one generation per year. Adults fly from June to July. It is arboreal species that hibernates in the adult stage in March of the next year. The larvae feed on plants belonging to the following genera: *Salix, Populus, Betula* etc.

Habitat

Habitat Type: 6 Rocky Areas [e.g. inland cliffs, mountain peaks]; 14 Artificial - Terrestrial [14.5 Urban Areas].
This species is encountered at various altitudes. In Podujevë it was observed in cultivated land too.

General distribution

Europe, Asia, South America.

Distribution in Kosovo

Two sites in Podujevë, Kaçanik Gorge, Brezovicë, Two sites in Shtërpcë, Dragash, Rugova Gorge (Jakšić and Živić 1995-1998; Zhushi *et al.*2017).

Population

Population trend: Decreasing
Some of the observed subpopulations of this species are stable, however, in many cases, a decline was observed.

Rationale

This species is assessed as Vulnerable due to the observed population decline in the past, where the causes have not stopped, based on direct observation and decline on habitat quality. Currently, AOO = 28 km², EOO = 6238 km² and the number of locations is ≤ 10.

Threats

List of Threats: 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.3 Persecution/control); 8 Invasive & other problematic species, genes & diseases (8.2 Problematic native species/diseases).
This species is especially vulnerable to the large number of predators and Hymenoptera parasitoids.

Conservation measures in action

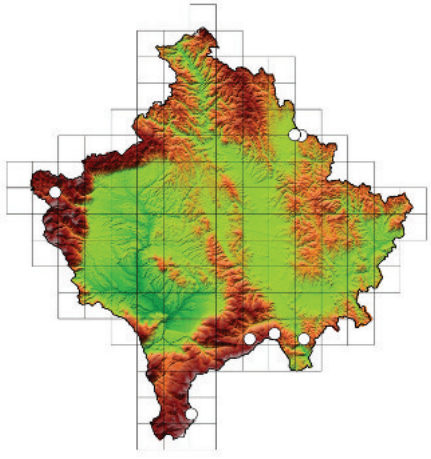
Some of the sites where this species was found are inside protected areas.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić and Živić 1995-1998; Zhushi *et al.* 2017





Parnassius apollo (Linnaeus, 1758)

Insecta: Lepidoptera: Papilionidae

Apollo

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is 32 to 35 mm. It is characterized by white color and black spots on the front wings and red-eye-shaped spots on the hindwings. This species has specific requirements, which include, among other things, cold winters and very sunny summers. This species has one generation per year and adults may appear from May to September, depending on the altitude.

Habitat

Habitat Type: 4. Grassland.
This species is a typical mountain species and prefers mostly pasture areas and alpine grassland.

General distribution

Occurs in most of the large mountainous areas in Europe and Turkey.

Distribution in Kosovo

Bogë, Zhleb, Çakorr, Deçan, Rugova Gorge, Lloqan, Milishevc, Veriq, Strellc, Sharr (Jakšić 2003, Jakšić and Živić 1995-1998).

Population

Population trend: Decreasing
This species is characterized in Kosovo with subpopulations consisting of a low number of individuals.

Rationale

This species is assessed as Vulnerable, because of AOO = 36 km², EOO = 2028 km², low number of locations, which is ≤ 10 and projected continuing decline of population, based on the quality of habitat and number of locations.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & urban areas, 1.3 Tourism & recreation areas); 2 Agriculture & aquaculture (2.3 Livestock farming & ranching 2.3.1 Nomadic grazing); 6 Human intrusions & disturbance (6.1 Recreational activities); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Conservation measures in action

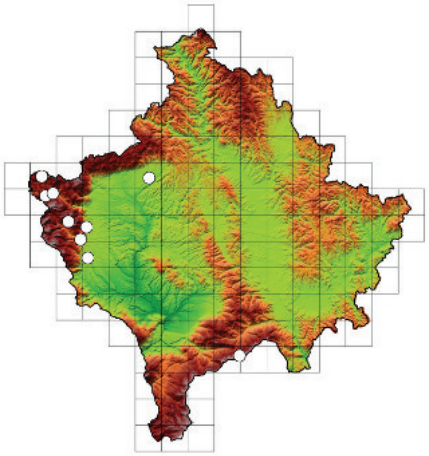
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 2003; Jakšić and Živić 1995-1998





Phengaris alcon (Denis & Schiffermüller, 1775)

Insecta: Lepidoptera: Lycaenidae

Alcon Blue

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

This species has one generation per year. Feeding plants of larvae are those of the genus *Gentiana*. Larvae are micromecophiles. Adults fly during the June – July period. It is a frequent species in dry habitats. Populations of this species in Kosovo are considered to belong to subspecies *rebeli*, which is present in high altitudes. However, the taxonomic status of this subspecies is still not clear.

Habitat

Habitat Type: 5 Wetlands (inland).
This is arboreal species which lives in meadow wetlands, connected with rivers or lakes.

General distribution

In Central Europe, this species is found from the south of Sweden down to the north of Spain and from France eastwards. It is furthermore present in east Turkey and East through Siberia to Mongolia and Altai.

Distribution in Kosovo

Pashtrik, Luboten, Qafa e Morinës (Jakšić and Živić 1995-1998; Rebel and Zerny 1931).

Population

Population trend: Decreasing
This species was observed in Kosovo with subpopulations consisted of a low number of individuals, with the tendency of decline.

Rationale

This species is assessed as Vulnerable due to the observed population decline in the past, where the causes may not have stopped, based on direct observation and decline on habitat quality. Currently, the number of locations is low (3) and AOO is restricted (12 km²) but is expected from more locations, however, ≤ 10.

Threats

List of Threats: 7 Natural system modifications (7.2 Dams & water management/use, 7.3 Other ecosystem modifications); 11 Climate change & severe weather (11.1 Habitat shifting & alteration, 11.2 Droughts).
Amongst the threats for this species is also the abandonment of agricultural lands and parasitism of *Ichneumon eumerus*.

Conservation measures in action

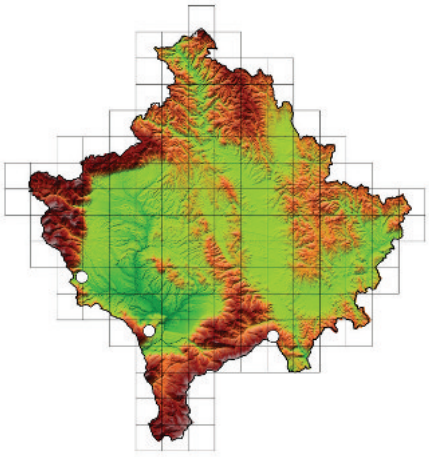
Habitats of this species are protected in Bjeshkët e Nemuna and Sharr Mountains national parks.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić and Živić 1995-1998; Rebel and Zerny 1931





Pyrgus sidae (Esper, 1784)

Insecta: Lepidoptera: Hesperiidae

Yellow-banded Skipper

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is from 32 to 38 mm, which makes it one of the biggest species of this genus in Europe. The species has one generation per year. Adults fly during May – July period. They feed on *Albutilon avicennae*.

Habitat

Habitat Type: 4. Grassland; 6 Rocky Areas [e.g. inland cliffs, mountain peaks].
This species is frequently found on grassy flowery banks, medows, and rocky slopes. Most habitats contain an abundance of flowers of genera *Vicia* and *Achillea*.

General distribution

Bosnia and Herzegovina, Croatia, Greece, France, Italy, Kosovo, Romania, Serbia, Spain, parts of Asia.

Distribution in Kosovo

Several sites in Mirushë, Pashtrik, Kaçaniku Gorge, Several sites in Malishevë, Strellc (Jakšić and Živić 1995-1998).

Population

Population trend: Decreasing
This species has small and fragmented subpopulations in Kosovo with continuous trends of decline.

Rationale

This species is assessed as Vulnerable due to the observed population decline in the past, where the causes may not have stopped, based on direct observation and decline on habitat quality. Currently, AOO = 32 km², EOO = 1314 km², and the number of locations is ≤ 10.

Threats

List of Threats: 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target)]; 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
This species was observed to be affected by the use of pesticides.

Conservation measures in action

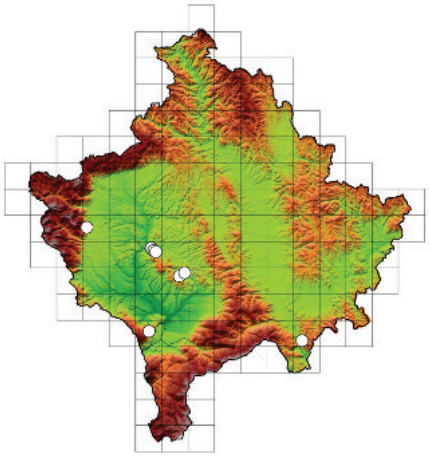
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić and Živić 1995-1998.





Thecla betulae (Linnaeus, 1758)

Insecta: Lepidoptera: Lycaenidae

Brown Hairstreak

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is from 25 to 40 mm. This species has one generation a year. Adults fly from July to September. Feeding plants for larvae are species of *Prunus* and *Betula*.

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest).

This species is frequent in deciduous woodland. In Kosovo, it was observed in woodland clearings rich with *Prunus spinosa*.

General distribution

Europe through Asia to Korea.

Distribution in Kosovo

Reçicë, Shalë Mountains, Shkozë, Pashtrik, Brezovicë (Jakšić 1998; Jakšić 2007; Zhushi *et al.*2016).

Population

Population trend: Unknown

This species was observed with localized subpopulations and with a small number of individuals.

Rationale

This species is assessed as Vulnerable due to the observed population decline in the past, where the causes may not have stopped, based on direct observation and decline on habitat quality. Currently, the number of locations is 5, AOO = 20 km² and EOO = 1900 km² but is expected from more locations, however ≤ 10.

Threats

List of Threats: 1 Residential & commercial development; 2 Agriculture & aquaculture (2.3 Livestock farming & ranching); 8 Invasive & other problematic species, genes & diseases (8.1 Invasive non-native/alien species/diseases).

This species is threatened as well by its natural enemy Ichnemounidea.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

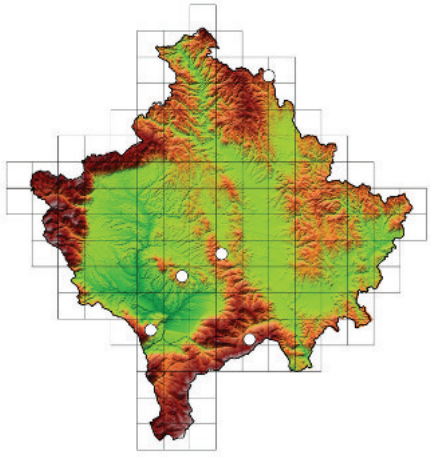
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 1998; Jakšić 2007; Zhushi *et al.* 2016





4.5 ACTINOPTERYGII

Cyprinus carpio Linnaeus, 1758

Common Carp

Actinopterygii: Cypriniformes: Cyprinidae

Threat category in Europe (according to IUCN)

Vulnerable, VU

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A3e

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori

General data

This species lives for up to 50 years. Sexual maturity is reached after the age of 3-5 years. They mainly reproduce from May to June, when the water temperature is up to 18°C. They feed with macroinvertebrate larvae and vegetation (Vukovič and Ivanovič 1971). They are active at dusk and at dawn. They are very tolerant in the reduction of the amount of dissolved oxygen in the water (Simonovič 2001).

Habitat

Habitat Type: 5 Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.4 Bogs, Marshes, Swamps, Fens, Peatlands, 5.5 Permanent Freshwater Lakes).

This species is mainly found in standing waters. Adults are found in slow flowing, warm, deep waters, such as downstream segments or rivers and lakes rich in vegetation.

General distribution

Europe and wider.

Distribution in Kosovo

Drini i Bardhë River, Lumbardhi i Prizrenit River, Drenica River, Llap River, Ibër River and all lakes.

Population

Population trend: Unknown

This species is quite abundant, but due to hybridization with introduced species, it is becoming increasingly difficult to talk about native populations of this species.

Rationale

This species is assessed as Vulnerable, because of the expected reduction in population size in the future, due to the threats from hybridization with introduced species.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & urban areas); 8 Invasive & other problematic species, genes & diseases (8.3 Introduced genetic material); 11 Climate change & severe weather (11.2 Droughts).

Main threats for this species are impacts from settlements and urban areas, the sewage pollution, pollution from solid and other waste, drought and hybridization with introduced species.

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

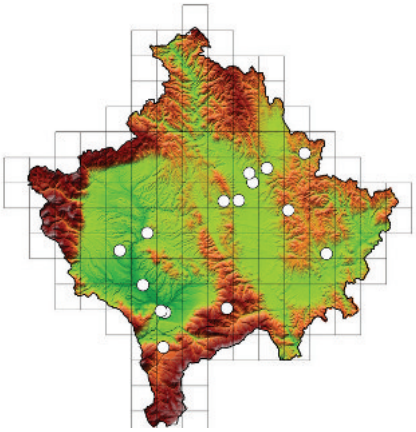
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Simonovič 2001; Vukovič and Ivanovič 1971





4.6 AMPHIBIA

Triturus cristatus (Laurenti, 1768)

Amphibia: Caudata: Salamandridae

Great Crested Newt

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU A2ac; B2ab(iii,iv)

Year of assessment

2017

Assessor(s)

Daut Rexhepaj, Linda Grapci Kotori.

General data

This species is widespread throughout Europe, while in Kosovo it is located mainly in lowlands and standing waters. The average body size is up to 16 cm. The body is slender, while the head is considerably wide. In males, on the ventral side of the body, there is a yellow vertebral stripe, which is absent in females. In some parts of the body, there are white spots. During the mating period, in male there is a raised skin structure, extending along the entire length of the body. Reproduction is done in permanent waters and in semi-flowing waters, such as ponds, seldom in lakes, flooded quarries, irrigation canals and canals. The use of small ponds is typical throughout the range.

Habitat

Habitat Type: 1 Forest [1.1 Boreal Forest, 1.4 Temperate Forest]; 3 Shrubland [3.3 Boreal Shrubland, 3.4 Temperate Shrubland].

This species is found in modified habitats, although it is not considered to be highly adaptable.

General distribution

Austria, Belarus, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Hungary, Kosovo, Latvia, Liechtenstein, Lithuania, Luxembourg, Moldova, Netherlands, Norway, Poland, Romania, Russia, Serbia, Slovakia, Sweden, Switzerland, Ukraine, United Kingdom.

Distribution in Kosovo

Skënderaj, Drenas, Jezerc, Ivajë, Stanet e Dubravës, Viti, Kralan, Cërmjan, Krilevë.

Population

Population trend: Decreasing

In some European countries, there is a population decline. There is not enough data about the subpopulations of this species in Kosovo, but there is a tendency of decline in some of the observed localities.

Rationale

This species is assessed as Vulnerable due to the observed reduction in the size of some subpopulation in the past, where the causes of reduction may not have stopped, based on direct observation and decline of quality of suitable habitats for the species. Currently, AOO = 68 km² and EOO = 3473 km².

Threats

List of Threats: 7 Residential & commercial development [1.1 Housing & Urban Areas, 1.3 Tourism & Recreation Areas]; 5 Biological resource use [5.3 Logging & wood harvesting: 5.3.1 Intentional Use: subsistence/small scale [species being assessed is the target] [harvest]]; 11. Climate Change & Severe Weather

The main threatening factors for this species are: activities that come from households and urban areas, tourism and recreation activities, climate change and extreme weather.

Conservation measures in action

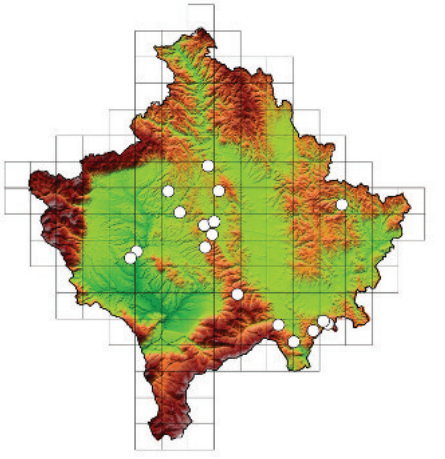
Protected species in Kosovo [Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species].

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for the other important species for protection and for the site(s) where occurs.



4.7 REPTILIA

Vipera ursinii (Bonaparte, 1835)

Reptilia: Squamata: Viperidae

Meadow Viper

Threat category in Europe (according to IUCN)

Vulnerable, VU

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU B2ab(ii,iii)

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This is a widespread species with several known subspecies. In Kosovo is present subspecies Vipera ursinii macrops (Méhely, 1911). This subspecies is distinguished from *Vipera ursinii* by its body length, which is up to 40 cm (Arnold & Ovenden 2002). It belongs to the group of venomous snakes but is harmless to humans, because of the construction of a poisonous apparatus. The ventral side of the body is grey with white spots, while the dorsal side of the body is bright grey with an olive colored strip. It becomes active later in the spring, in mid-April and early May. Females give birth most often to 2 to 5 young individuals by the end of August and the beginning of September. It mainly feeds on shrimp and never uses the poisonous apparatus.

Habitat

Habitat Type: Grassland (4.4. Temperate Grassland); 6. Rocky areas (e.g. inland cliffs, mountain peaks); 14. Artificial/Terrestrial (14.2. Pastureland).

Vipera ursinii and the subspecies *macrops* are typical for mountain regions with an altitude of 1500 to 3000 m. They prefer habitats characterized by high humidity. It can be found also in rocky areas covered with meadows, pastures, and shrubs.

General distribution

Vipera ursinii: Europe, Asia. The subspecies macrops: Albania, Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro, Serbia.

Distribution in Kosovo

Kobilicë, Nearby Guri i Zi, Bellopaqë, Koshutan.

Population

Population trend: Decreasing

At the global level, and also in Balkans, the populations are declining. In Kosovo, as well, was observed a slight decline of populations.

Rationale

This species is assessed as Vulnerable due to the presence in only few locations (≤ 5) (but with the expectancy to be present in more, however, ≤ 10), small AOO = 16 km², EOO = 876 km², as well as due to the continuous observed decline of the area of occupancy and habitat quality.

Threats

List of Threats: 1 Natural system modifications (7.1 Fire & fire suppression); 11 Climate change & severe weather (11.3 Temperature extremes).

Since this species lives in a very small and fragmented area, the main threats are related to damage or destruction of habitats, whether by man or by natural processes. Another threatening factor for this species is extreme temperature, which also negatively affects the quality or existence of their life. This is a stenophagous species, so the insect disappearance (Caelifera and Gryllidae) indirectly endangers them. Another potential threatening factor is the phenomenon of intentional arson of fields and forests, which is common in their living environment.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

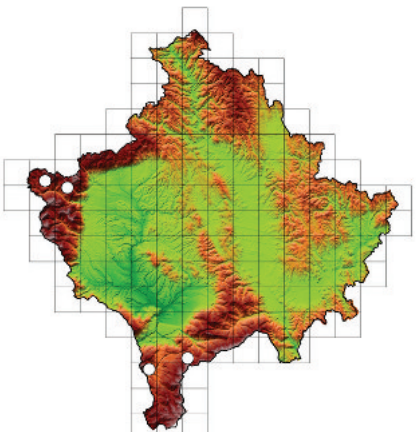
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for the other important species for protection and for the site(s) where occurs.

Population

Arnold & Ovenden 2002



4.8 AVES

Accipiter brevipes (Severtsov, 1850)

Aves: Accipitriformes: Accipitridae

Levant Sparrowhawk

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni

General data

Size of this species is 30–37 cm, male weights 140–275 g, female 183–290 g, and the wingspan is 64–74 cm. This is a migratory species. It feeds mostly on lizards and large insects (BirdLife International 2018a).

Habitat

Habitat Type: 1 Forest (1.4. Temperate Forests); 14. Artificial/Terrestrial (14.3. Plantations).

It inhabits woody plains, often near water, and usually ranges up to 1,000 m (BirdLife International 2018a).

General distribution

SE Europe, E Ukraine and SW Russia E to W Kazakhstan; more locally in Turkey, Caucasus, Iraq and Iran. Thought to winter mainly in E Sahel zone of sub-Saharan Africa.

Distribution in Kosovo

Two sites nearby Gjurgjedell.

Population

Population trend: Unknown

Rationale

The species is assessed as Vulnerable because it is very rare and its breeding habitat is under pressure from uncontrolled logging. Area of occupancy AOO is very restricted (8 km^2) and number of locations is low (≤ 5).

Threats

List of Threats: 2 Agriculture & aquaculture (2.2 Wood & pulp plantations); 3 Energy production & mining (3.3 Renewable energy); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target), 5.1.3 Persecution/control; 5.3 Logging & wood harvesting: 5.3.3 Unintentional effects: subsistence/small scale (species being assessed is not the target) [harvest]); 12 Other options (12.1 Other threat (poisoning)).

Conservation measures in action

The species is protected in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Species Protected and Strictly Protected).

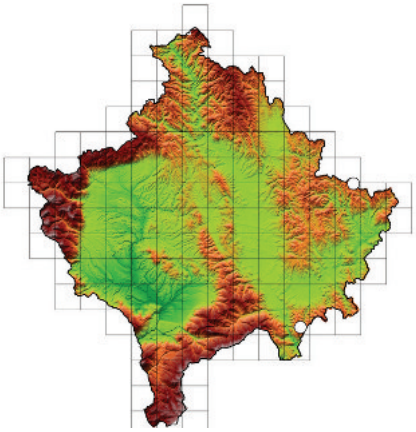
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

BirdLife International 2018a





Alcedo atthis (Linnaeus, 1758)

Aves: Coraciiformes: Alcedinidae

Kingfisher

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU B2ab(iii)

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni

General data

Size of this species is 16–18 cm, male weights 23–35 g and female 30–35 g. In most of its range, it is the only small blue kingfisher. Southern populations are sedentary, while others migrate. They feed on fish, aquatic insects, butterflies, amphibians, shrimps and isopods (BirdLife International 2016i).

Habitat

Habitat Type: 5 Wetlands (inland) (5.1. Permanent Rivers/Streams/Creeks (includes waterfalls), 5.4. Bogs, Marshes, Swamps, Fens, Peatlands, 5.5. Permanent Freshwater Lakes (over 8ha); 15. Artificial/Aquatic (15.2. Ponds (below 8ha), 15.5. Excavations (open), 15.9. Canals and Drainage Channels, Ditches).

It prefers still or gently flowing water with plenty of small fish, and with reeds, rushes or shrubs on the banks for perches. Streams, small rivers, canals, and ditches are favored to open waterbodies, but it also uses lakes and ponds. Suitable banks for nesting required in the breeding season (BirdLife International 2016i).

General distribution

NW Africa and S & E Spain E to Bulgaria, Afghanistan, and NW India, then N to C Siberia and NW China; winters S to Egypt, NE Sudan, Oman and Pakistan.

Distribution in Kosovo

Badovc Lake, Radoniq Lake, Kamenicë, Livoq Lake, Obiliq, Fushë Kosovë.

Population

Population trend: Unknown

Rationale

The species is assessed as Vulnerable because of low number of locations (6) the restricted AOO = 24 km², EOO = 1303 km² and projected population decline, based on the decline in habitat quality. Its breeding habitat is under pressure from uncontrolled logging.

Threats

List of Threats: 3 Energy production & mining (3.2 Mining & quarrying); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target); 6 Human intrusions & disturbance (6.3 Work & other activities).

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Species Protected and Strictly Protected).

Conservation measures needed

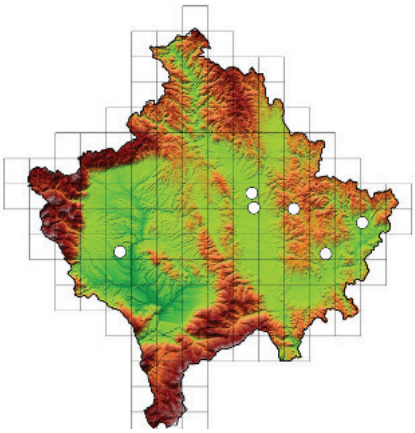
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

Continue monitoring of breeding sites. Preservation of rivers and streams must be mediated through industry, agriculture and water authorities.

References

BirdLife International 2016i





Alectoris graeca (Meisner, 1804)

Aves: Galliformes: Phasianidae

Rock Patridge

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D1+2

Year of assessment

2018

Assessor(s)

Qenan Maxhuni, Taulant Bino

General data

Size of this species is 32–37 cm, male weights 550–850 g, female 410–720 g, while the wingspan is 46–53 cm. It is a monogamous species that feeds mainly on parts of plants, such as seeds, fruits, green stems, and leaves. It makes vertical migrations during the year.

Habitat

Habitat Type: 1 Forest (1.4. Temperate Forest); 3. Shrubland (3.8. Mediterranean-type Shrubby Vegetation).

The species utilizes a variety of habitats and different altitudes, up to 3,000 m in the Alps and almost down to the sea level in Albania. Generally, it prefers open, mountain habitats with grassy patches, low scrub or scattered conifers (BirdLife International 2018).

General distribution

It is endemic to Europe, occurring only in the Alps, the Apennines, Sicily and the Balkans.

Distribution in Kosovo

Mushtishtë, Restelicë, Prush.

Population

Population trend: Unknown

Rationale

The species is assessed as Vulnerable due to the very small number of mature individuals (less than 1,000), restricted AOO (12 km²) and number of locations (3). The serious plausible threat to the population of the species in near future is habitat loss and degradation.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target); 6 Human intrusions & disturbance (6.1 Recreational activities); 11 Climate change & severe weather (11.2 Droughts).

Conservation measures in action

Some areas of distribution are designated as Protected Areas

Conservation measures needed

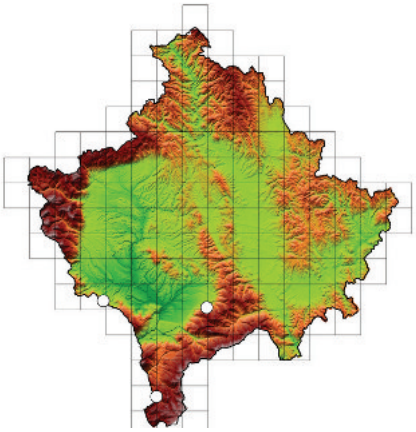
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

Improve knowledge on the effects of hunting on the species. Implement measures to reduce abandonment of traditional agro-pastoral activities. Improve legislation and enforcement to reduce unsustainable hunting and poaching.

References

BirdLife International 2018





Falco biarmicus (Schlegel, 1843)

Aves: Falconiformes: Falconidae

Laner Falcon

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU D2

Year of assessment

2018

Assessor(s)

Taulant Bino

General data

Size of this species is 39–48 cm, male weights 430–600 g, female c. 700–900 g, and the wingspan is 88–113 cm. Most are residents and feed on birds as main prey (BirdLife International 2016k).

Habitat

Habitat Type: 3 Shrubland (3.8. Mediterranean-type Shrubby Vegetation); 4. Grassland (4.4. Temperate Grassland); 6. Rocky areas (e.g. inland cliffs, mountain peaks); 14. Artificial/Terrestrial (14.3. Plantations).

It inhabits a wide variety of habitats, from lowland deserts to forested mountains, and is recorded up to 5,000 m. Small bird makes up most of its diet. Birds usually use the abandoned nests of other raptors, corvids or herons on trees and pylons.

General distribution

Mountains of C, S & SE Europe (except W Carpathians), Tien Shan, NE Korea and N Japan (Hokkaido).

Distribution in Kosovo

Mollig.

Population

Population trend: Unknown

Rationale

The species is assessed as Vulnerable because it is very rare and its breeding habitat is under pressure from uncontrolled logging. The population is very small and area of occupancy is restricted (AOO < 20 km²). The number of locations is 1, however, we expect the species from more locations but not higher than 5.

Threats

List of Threats: 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.2 Unintentional effects (species being assessed is not the target, 5.1.3 Persecution/control, 5.3 Logging & wood harvesting: 5.3.4 Unintentional effects: large scale (species being assessed is not the target) [harvest]).

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

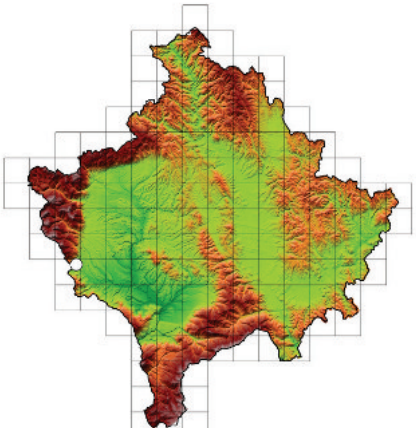
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

Systematic monitoring. Conservation of sites where it occurs. Increase awareness on its protection.

References

BirdLife International 2016k





4.9 MAMMALIA

Rhinolophus blasii Peters, 1866

Mammalia: Chiroptera: Rhinolophidae

Blasius's horseshoe bat

Threat category in Europe (according to IUCN)

Vulnerable, VU

Threat category in Kosovo (IUCN criteria)

Vulnerable, VU B2ab(ii,iii)

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

This species is a medium-sized horsehoe bat, with a length of 46.5- 56 mm, and a weight of between 12 and 15 g. It is considered as a sedentary species. During the winter it hibernates in underground sites. In the Mediterranean region, it typically forages in shrubland and woodland, although it may penetrate to desert habitat (Amr 2000). Summer roosts are situated in natural and artificial underground sites, with attics also being used in some areas (Taylor 2016a).

Habitat

Habitat Type: 1 Forest, 2. Savanna, 3. Shrubland, 7. Caves and Subterranean Habitats (non-aquatic), 8. Desert.

General distribution

Europe, Africa, Asia.

Distribution in Kosovo

Shpella e Banuar Cave, Rugova Gorge, Shpella e Radavcit Cave (Paunović 2016; Presetnik *et al.*2018).

Population

Population trend: Unknown

There is not enough data about population trends of this species in Kosovo. The population trend at the European level is decreasing.

Rationale

This species is assessed as Vulnerable because of the limited number of locations, which is 3, AOO =12 km², EOO = 181 km² and projected population decline, based on AOO and decline in habitat quality. It is expected from more locations, however, ≤ 10.

Threats

List of Threats: 6 Human intrusions & disturbance.

Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use, disturbance and loss of underground habitats and attics.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

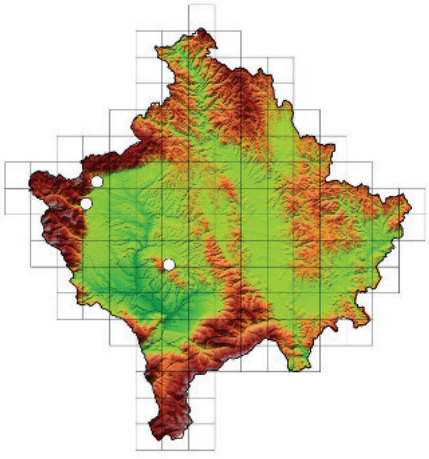
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for the other important species for protection and for the site(s) where occurs.

References

Amr 2000; Paunović 2016; Presetnik *et al.* 2018; Taylor 2016a



NEAR THREATENED SPECIES (NT)

5.1 GASTROPODA

Campylaea ljubetenensis (A.J. Wagner, 1914)

Gastropoda: Stylommatophora: Helicidae

Threat category in Europe (according to IUCN)

This species is not evaluated by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell discoidal, greyish or yellowish white with three brown bands, with 4-5 flattened whorls, upper side nearly flat, lower side convex, the last whorl rounded and deeply descending near the aperture, margin white and slightly thickened, not connected at the parietal side, umbilicus narrow. Shell height 13-18 mm, width 25-35 mm. The Fauna Europaea check-list mentions it as the subspecies of *Cattania trizona* (Rossmässler, 1835), but according to Groenenberg *et al.*(2016) this is a distinct species and belongs to *Campylaea*.

Habitat

Habitat Type: 6 Rocky Areas [e.g. inland cliffs, mountain peaks]

This species inhabits limestone rock habitats. Suitable habitats include small to large cliffs and gorges, where they are found in crevices or among boulders.

General distribution

Kosovo, Macedonia (Dedov 2003).

Distribution in Kosovo

Gllobogicë.

Population

Population trend: Unknown

Although there are no data about population trend, there is no reason to suppose any extreme fluctuations or declines in the number of mature individuals, because the limestone habitat, where these animals occur is not threatened by human activity.

Rationale

This species is endemic to the Luboten area in the eastern part of the Sharr Mountains, at the Kosovo-Macedonia transboundary region (Dedov 2003). In Kosovo, its area of occupancy (AOO) is below 20 km² and the number of locations is below 5. Nevertheless, being a limestone rock-dwelling species, it is not sensitive to ecosystem modification or other realistic threats and therefore, assessed as Near Threatened at the country level. More subpopulations are expected to be found in Kosovo.

Threats

No specific threat currently.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

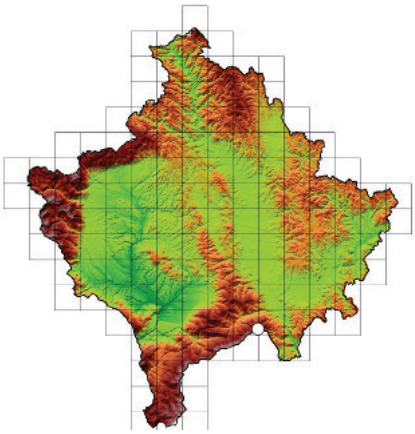
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).

Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

According to our present knowledge, the habitat conditions play a key role in the conservation of this species, and hence unless they change, the species survival seems guaranteed.

References

Dedov 2003; Groenenberg *et al.* 2016





Helix dormitoris Kobelt, 1898

Gastropoda: Stylommatophora: Helicidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell globose, small (compared to its congeners), greyish white with five chestnut brown spiral bands, of which the 2nd and the 3rd are usually fused into one wider band. 3–4 whorls, shell surface smooth, with fine axial riblets and a few subsutural spiral incisions; last whorl only slightly descending towards the periphery; aperture rounded, apertural rim narrow, labial callus weak, cream to white colored, columellar triangle small; umbilicus closed in adult shells. Shell height 33-47 mm, width 30-43 mm.

Habitat

Habitat Type: 1 Forest (1.4. Temperate Forest); 3. Shrubland (3.4. Temperate Shrubland); 4. Grassland (4.4. Temperate Grassland); 6. Rocky areas (e.g. inland cliffs, mountain peaks).
This species is associated with rocky limestone habitats, rocky shrublands, forests and rocky grasslands.

General distribution

Albania, Bosnia-Hercegovina, Kosovo, Macedonia, Montenegro, Serbia.

Distribution in Kosovo

Hajle (Knipper 1939; Neubert 2014).

Population

Population trend: Unknown
Although there are no data about population trend, there is no reason to suppose any extreme fluctuations or declines in the number of mature individuals, because the limestone habitat, where these animals occur is not threatened by human activity (Fehér 2011a).

Rationale

This is a western Balkan species, with some scattered occurrences also in Kosovo. Its area of occupancy (AOO) in Kosovo is below 20 km² and the number of locations is below 5. It is associated to rocky habitats on limestone base rock, which is not threatened by human activity and there is no reason to suppose that AOO, the number of locations, number of subpopulations or the habitat quality are declining or extremely fluctuating. Therefore, it is assessed as Near Threatened at the country level.

Threats

No specific threat currently.

Conservation measures in action

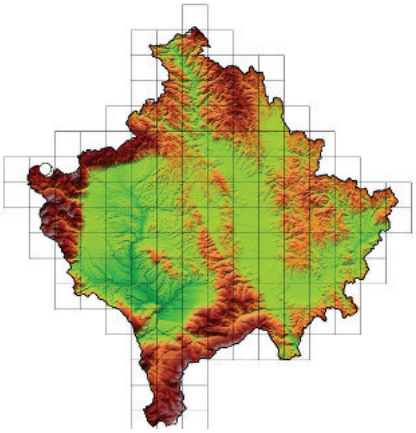
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
According to our present knowledge, the habitat conditions play a key role in the conservation of this species, and hence unless they change, the species survival seems guaranteed.

References

Fehér 2011a; Knipper 1939; Neubert 2014





Herilla illyrica (Moellendorff, 1899)

Gastropoda: Stylommatophora: Clausiliidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell fusiform, with 11-13 whorls. Brown on the body whorl, lighter violetish on earlier whorls, surface almost smooth. Shell height 20-31 mm, width 5-8.5 mm (Nordsieck 1971; Wagner 1919a; Welter-Schultes 2012). This is an obligate rock-dwelling species, associated with limestone areas. Usually, it can be found on the bare rock surface, in crevices or at the base of rocks. Six subspecies are known, one of them, H*erilla illyrica diabasis* (Wagner 1919), was recently discovered in Kosovo.

Habitat

Habitat Type: 6 Rocky Areas [e.g. inland cliffs, mountain peaks].
This species inhabits limestone rock habitats, where they are found in crevices or among and under boulders (Fehér and Erőss 2009). Suitable habitats include small to large cliffs, gorges, and rocky forests.

General distribution

Albania, Bosnia and Herzegovina, Kosovo, Montenegro.

Distribution in Kosovo

Shkozë.

Population

Population trend: Unknown
Although there are no data about population trend, there is no reason to suppose any extreme fluctuations or declines in the number of mature individuals, because the limestone habitat, where these animals occur is not threatened by human activity.

Rationale

This is a western Balkan species (Reischütz 2017a) and the southeastern part of its range extends to Kosovo. In Kosovo, its AOO is below 20 km² and the number of locations is below 5. Being a rock-dwelling species, it is not sensitive to ecosystem modification or other realistic threats. Therefore, there is no reason to suppose that the population, habitat quality or habitat extents of the species are declining or extremely fluctuating. Therefore, the species is assessed as Near Threatened at the country level.

Threats

No specific threat currently.

Conservation measures in action

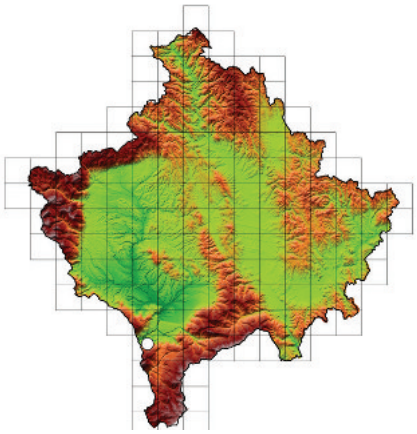
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
According to our present knowledge, the habitat conditions play a key role in the conservation of this species, and hence unless they change, the species survival seems guaranteed.

References

Fehér and Erőss 2009; Nordsieck1971; Reischütz 2017; Wagner 1919a; Welter-Schultes 2012





Macedonica frauenfeldi (Rossmässler, 1856)

Gastropoda: Stylommatophora: Clausiliidae

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Near Threatened, NT

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell slender fusiform, with 10-11 whorls, shiny cherry brown, often with a bluish hue, almost smooth or weakly striated. Shell height 17-24 mm, width 4-5.5 mm. This is an obligate rock-dwelling species, associated with limestone areas. Usually, it can be found on the bare rock surface, in crevices or at the base of rocks (Dedov 2017a; Welter-Schultes 2012). One of the eight known subspecies, *Macedonica frauenfeldi occidentalis* S. H. F. Jaeckel, 1954 occurs in Kosovo (Jaeckel 1954).

Habitat

Habitat Type: 6 Rocky Areas (e.g. inland cliffs, mountain peaks).
This species inhabits limestone rock habitats, where they are found in crevices or among and under boulders. Suitable habitats include small to large cliffs, gorges, and rocky forests.

General distribution

Endemics of Balkans. Bulgaria, Serbia, and Kosovo. Subspecies *occidentalis* is known only from Kosovo.

Distribution in Kosovo

Prizren, Mirushë, Istog.

Population

Population trend: Unknown
Although there are no data about population trend, there is no reason to suppose any extreme fluctuations or declines in the number of mature individuals, because the limestone habitat, where these animals occur is not threatened by human activity.

Rationale

This is a central Balkan species; the southwestern part of its range extends to Kosovo. In Kosovo, its AOO is below 20 km² and the number of locations is below 5. Being a rock-dwelling species, it is not sensitive to ecosystem modification or other realistic threats. Therefore, there is no reason to suppose that the population, habitat quality or habitat extents of the species are declining or extremely fluctuating and therefore the species is assessed as Near Threatened at the country level.

Threats

No specific threat currently.

Conservation measures in action

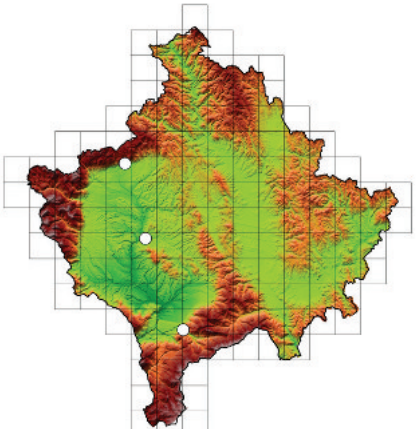
Currently, there is no conservation measure in action. At least one of the known populations is found within a protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
According to our present knowledge, the habitat conditions play a key role in the conservation of this species, and hence unless they change, the species survival seems guaranteed.

References

Dedov 2017a; Jaeckel 1954; Welter-Schultes 2012





Orcula wagneri Sturany, 1914

Gastropoda: Stylommatophora: Orculidae

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell pupiform with broad, conic, rounded apex. Yellowish to reddish horn-colored, with periostracum riblets producing a silky sheen, 7-8 very weakly convex whorls, last whorl slightly ascending, aperture with strong palatal callus, umbilicus very narrow. Shell height 5.3-6.5 mm, width 2.9-3.3 mm (Harl *et al.*2011; Sturany and Wagner 1915). This species is usually found under stones and among tussocks of grasses. Two subspecies are distinguished by the Fauna Europaea, namely *O. w.wagneri* Sturany, 1914 and *O. w. ljubetensis* Sturany, 1914. The relationship between the two alleged subspecies as well as their relationship to *O. schmidtii* (Küster, 1843) needs to be clarified (Harl *et al.*2014).

Habitat

Habitat Type: 4 Grassland (4.4. Temperate Grassland); 6. Rocky areas (e.g. inland cliffs, mountain peaks).

This species inhabits alpine and subalpine meadows (above 1800-2000 m) on limestone substrate and can usually be found under stones and among tussocks of grasses and sometimes near (at the base of) large cliffs.

General distribution

Albania, Greece, Kosovo, Macedonia, Montenegro, Serbia.

Distribution in Kosovo

Luboten, Brezovicë, Rapçe, Radevë, Koshutan.

Population

Population trend: Unknown

Although there are no data about population trend, there is no reason to suppose any extreme fluctuations or declines in the number of mature individuals, because the limestone habitat, where these animals occur is not threatened by human activity.

Rationale

This species occurs sporadically in the higher mountains of some Balkan countries (Páll-Gergely 2011). Its area of occupancy (AOO) is below 20 km² and the number of locations is below 5. This species lives primarily in alpine and subalpine rocky grasslands, under and among stones. Although this habitat is potentially vulnerable to disturbance and ecosystem modifications, there are no current threats affecting the Kosovo subpopulations. Most probably other subpopulations will be found and therefore, it is assessed as Near Threatened at the country level.

Threats

List of Threats: 7 Natural system modifications (7.3. Other ecosystem modifications).

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

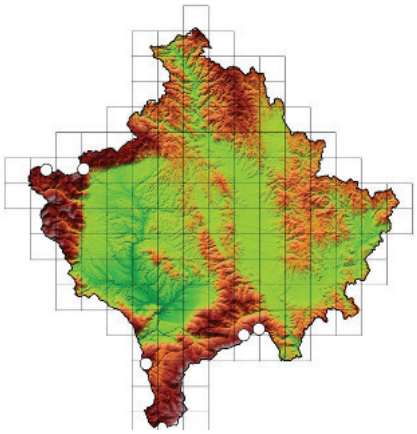
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).

Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

According to our present knowledge, the habitat conditions play a key role in the conservation of this species, and hence unless they change, the species survival seems guaranteed.

References

Harl *et al.* 2011; Harl *et al.* 2014; Páll-Gergely 2011; Sturany and Wagner 1915





Paraegopis mauritii (Westerlund, 1886)

Gastropoda: Stylommatophora: Zonitidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell discoidal, horny brownish, densely and prominently striated on the upper side. Lower side slightly lighter, smooth and shiny. 5-5.5 weakly convex whorls, of which the upper ones are keeled, the last one only shouldered. Aperture with a weak white lip inside, umbilicus wide and perspectival. Shell height 8-14 mm, width 18-28 mm (Riedel 2000).

Habitat

Habitat Type: 6 Shrubland (3.8 Mediterranean-type Shrubby Vegetation); 6 Rocky Areas (e.g. inland cliffs, mountain peaks).
This species is associated with rocky limestone habitats, rocky shrublands, rocky forests, and rocky grasslands.

General distribution

Bosnia and Hercegovina, Croatia, Kosovo, Montenegro, Serbia.

Distribution in Kosovo

Dushkajë.

Population

Population trend: Unknown
Although little specific is known about the current population trend, there is no reason to suppose any extreme fluctuations or declines in the number of mature individuals, because the limestone habitat, where these animals occur is not threatened by human activity (Slapnik 2017).

Rationale

This is a western Balkan species, the southeastern part of its range extends to Kosovo. In Kosovo, its AOO is below 20 km² and the number of locations is below 5. Associated to limestone rocky habitats, it is not sensitive to ecosystem modification or other realistic threats. This species seems to have a transboundary distribution in the Mokna Mountain. Due to the possibility of migration and re-colonization between the subpopulations of the neighboring countries, it is downlisted by one category and assessed as Near Threatened at the country level.

Threats

No specific threat currently.

Conservation measures in action

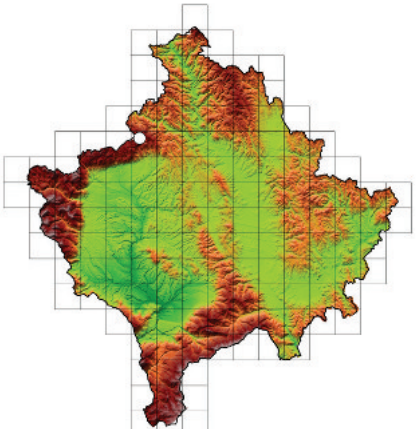
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
According to our present knowledge, the habitat conditions play a key role in the conservation of this species, and hence unless they change, the species survival seems guaranteed.

References

Riedel 2000; Slapnik 2017.





Protoherilla baleiformis (Boettger, 1909)

Gastropoda: Stylommatophora: Clausiliidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell tumid fusiform, horny-brown or olive greenish, weakly striated, with 8-10 moderately convex whorls. Apertural margin slightly reflected, parietal fold short and weak, spiral lamella, lunella, and basal fold are missing, subcolumellar lamella is visible in the aperture. Shell height 9-11 mm, width 3-3.5 mm.

Habitat

Habitat Type: 1 Forest [1.4 Temperate Forest]; 4. Grassland [4.4 Temperate Grassland]; 6 Rocky Areas [e.g. inland cliffs, mountain peaks].

This species inhabits alpine and subalpine grasslands, as well as scree at the base of larger cliffs, where it is usually found under and among stones. This species is associated mostly but not exclusively to limestone base-rock.

General distribution

Albania, Kosovo, Montenegro.

Distribution in Kosovo

Zhleb [Reischütz 2017b; Urbański 1977; Wagner 1921].

Population

Population trend: Unknown

Rationale

This species is endemic to the Bjeshkët e Nemuna Mountains, in the Montenegro-Kosovo-Albania transboundary region. Its area of occupancy (AOO) in Kosovo is below 20 km² and the number of locations is below 5. Although its habitat is potentially vulnerable to disturbance and ecosystem modifications, there are no current threats affecting the Kosovo subpopulations. Additionally, more subpopulations of this species are expected. Therefore, it is assessed as Near Threatened at the country level.

Threats

List of Threats: 7 Natural system modifications [7.3. Other ecosystem modifications].

Conservation measures in action

The known population is found within a protected area.

Conservation measures needed

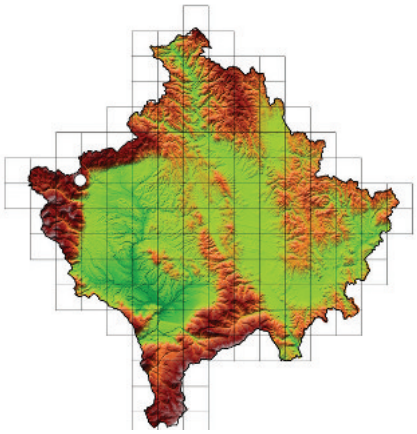
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection].

Research needed: 1. Research [1.2. Population size, distribution & trends]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

According to our present knowledge, the habitat conditions play a key role in the conservation of this species, and hence unless they change, the species survival seems guaranteed.

References

Reischütz 2017b; Urbański 1977; Wagner 1921





Protoherilla pseudofallax (Nordsieck, 1972)

Gastropoda: Stylommatophora: Clausiliidae

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Near Threatened, NT

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell tumid fusiform, horny-brown or olive greenish, weakly ribbed, with 8-10 whorls. Cervix rounded with the weak basal keel, aperture not detached, margin narrow, weakly reflected, not connected at parietal side. Parietalis short, not reaching spiralis, clausilium plate always entirely visible. Shell height 11-14.5 mm, width 3.5-4.5 mm (Nordsieck 1972).

Habitat

Habitat Type: 1. Forest (1.4 Temperate Forest); 4. Grassland (4.4 Temperate Grassland); 6 Rocky Areas (e.g. inland cliffs, mountain peaks).
This species inhabits alpine and subalpine grasslands, as well as scree at the base of larger cliffs, where it is usually found under and among stones. This species is associated mostly, but not exclusively to limestone base-rock.

General distribution

Albania, Kosovo, Montenegro.

Distribution in Kosovo

Kuqishtë, Koshutanë, Strellc i Epërm.

Population

Population trend: Unknown

Rationale

This species is endemic to the Bjeshkët e Nemuna Mountains, in the Montenegro-Kosovo-Albania transboundary region (Reischütz 2017c). Its area of occupancy (AOO) in Kosovo is below 20 km² and the number of locations is below 5. This species lives primarily in alpine and subalpine rocky grasslands, under and among stones. Although this habitat is potentially vulnerable to disturbance and ecosystem modifications, there are no current threats affecting the Kosovo subpopulations. Other subpopulations are expected to be found in Kosovo. Therefore, it is assessed as Near Threatened at the country level.

Threats

List of Threats: 7. Natural system modifications (7.3. Other ecosystem modifications).

Conservation measures in action

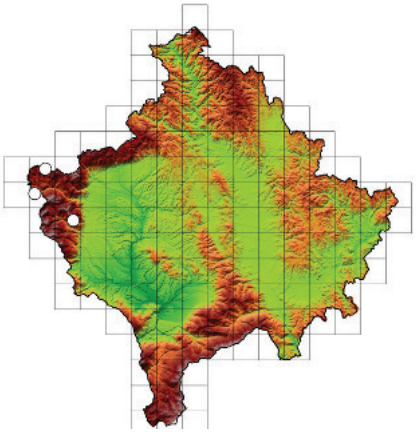
Currently, there is no conservation measure in action. At least one of the known subpopulations is found within a protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
According to our present knowledge, the habitat conditions play a key role in the conservation of this species, and hence unless they change, the species survival seems guaranteed.

References

Nordsieck 1972; Reischütz 2017c.





Saxurinator schlickumi Schütt, 1960

Gastropoda: Littorinimorpha: Hydrobiidae

Threat category in Europe (according to IUCN)

Data Deficient, DD

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell is narrow-conical (height 1.8-2.0 mm, width 0.9-1.0 mm), whitish-translucent, thin-walled with a strongly expanded triangular-ovoid aperture (Grego *et al.*2017; Schütt 1960). The current systematic assignment is based on shell morphology and, therefore, largely doubtful. The possibility that it belongs to another family, e.g. Moitessieriidae, cannot be ruled out either. Hopefully, this will be clarified in the near future by DNA sequence analyses.

Habitat

Habitat Type: 5 Wetlands (inland) [5.18 Karst and Other Subterranean Inland Aquatic Systems].
This is a subterranean species inhabiting karstic aquifers and the interstitial water of the underground gravel sediment layer in karstic springs.

General distribution

Kosovo.

Distribution in Kosovo

Istog, Pejë, Mitrovicë.

Population

Population trend: Unknown
There are no data about population trend (Seddon 2011b).

Rationale

This species is known only from 3 sites in northern Kosovo. It is found within a narrow range, its area of occupancy (AOO) is lower than 20 km², probably the number of subpopulations is below 5, but there are no current threats affecting the population and it is assessed as Near Threatened. Due to its hidden life, it is expected that further subpopulations/locations will be discovered in the future.

Threats

No specific threat currently.

Conservation measures in action

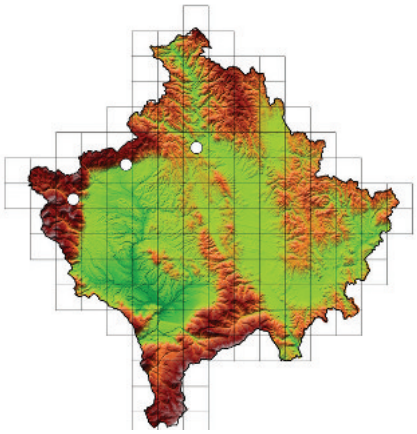
Currently, there is no conservation measure in action. Two subpopulations are within a protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection].
Research needed: 1. Research [1.2. Population size, distribution & trends]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
According to our present knowledge, the habitat conditions play a key role in the conservation of this species, and hence unless they change, the species survival seems guaranteed. At the same time, the presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the site(s) where occurs.

References

Grego *et al.* 2017; Schütt 1960; Seddon 2011b





Vitrea kiliasi L. Pintér, 1972

Gastropoda: Stylommatophora: Pristilomatidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Zoltán Fehér

General data

Shell discoidal, pale whitish, transparent, almost smooth, usually with more than 5 whorls. The last whorl almost twice as wide as a penultimate whorl, umbilicus very wide, perspectival, all whorls well visible inside. Shell height 1.3-1.5 mm, width 3.3-3.5 mm.

Habitat

Habitat Type: 6 Rocky areas [eg. inland cliffs, mountain peaks]; 7.Caves and Other Subterranean Habitats [7.1 Caves, 7.2 Other Subterranean Habitats].

One of the two known records is from a cave the other one is from a forest [Pintér 1972; Walther 2017]. Little is known about the habitat preference of this species, but like most of the congeners, it seems to be associated with limestone rocky habitats. Based on the knowledge about related taxa, this species might be assumed not a cave-dweller in the strict sense, rather a species that lives in the mesovoid shallow substratum [i.e. in fissures and cavities of the rocks, MSS].

General distribution

Bosnia and Herzegovina, Kosovo.

Distribution in Kosovo

Radavc.

Population

Population trend: Unknown

Although there are no data about population trend, there is no reason to suppose any extreme fluctuations or declines in the number of mature individuals, because the limestone habitat, where these animals occur is not threatened by human activity.

Rationale

This species seems to have a very sporadic distribution in the Balkans. The systematic position of the remote subpopulations needs to be clarified, but until then the assessment is done according to the current concept of the species. Its area of occupancy [AOO] is below 20 km² and the number of locations is below 5. The species is presumably associated with limestone rocky habitats, probably lives in the mesovoid shallow substratum [MSS], and therefore is not sensitive to human disturbance and ecosystem modifications. Therefore, it is assessed as Near Threatened at the country level.

Threats

No specific threat currently.

Conservation measures in action

The known population is within a protected area.

Conservation measures needed

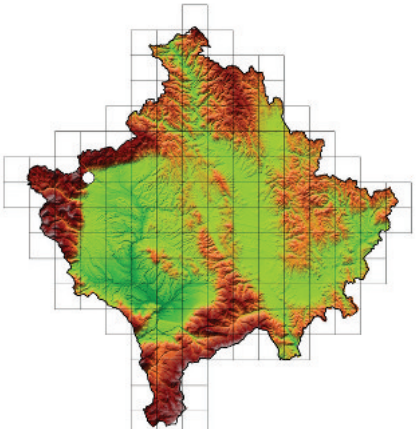
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection].

Research needed: 1. Research [1.2. Population size, distribution & trends]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

According to our present knowledge, the habitat conditions play a key role in the conservation of this species, and hence unless they change, the species survival seems guaranteed.

References

Pintér 1972; Walther 2017





5.2 OLIGOCHAETA

Aporrectodea smaragdina (Rosa, 1892)

Oligochaeta: Opistophora: Lumbricidae

Threat category in Europe (according to IUCN)

This species is not evaluated by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

Epigeic species, hygrophilous, intensive emerald-green color. The body is 40 to 90 mm long, consisting of 65 to 120 segments with tubercula pubertatis across 29, 30 and 32 and 33 segments (Mršić 1991). Alpine-Dinaric-Carpathian distribution.

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest); 4 Grassland (4.4 Temperate Grassland); 5 Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls)); 14 Artificial - Terrestrial (14.1 Arable Land; 14.2 Pastureland; 14.4 Rural Gardens).
This species is frequently found in forest soils, pastures, rivers, limestone rocks and roadside bush (Stojanović *et al.*2018; Szederjesi 2013).

General distribution

Austria, Bosnia and Herzegovina, Croatia, Italy, Kosovo, Macedonia, Montenegro, Poland, Romania, Slovenia, Serbia (Mršić 1991; Rota 2013; Stojanović *et al.*2008).

Distribution in Kosovo

Çakorr (Šapkarev 1975).

Population

Population trend: Unknown

Rationale

Not widespread species, distributed along Alpine-Dinaric-Carpathian area, mainly in forested areas. It does not qualify for the threatened category but could be severely threatened in the future considering the trends of habitat degradation. Therefore, this species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use (5.3. Logging & wood harvesting).

Conservation measures in action

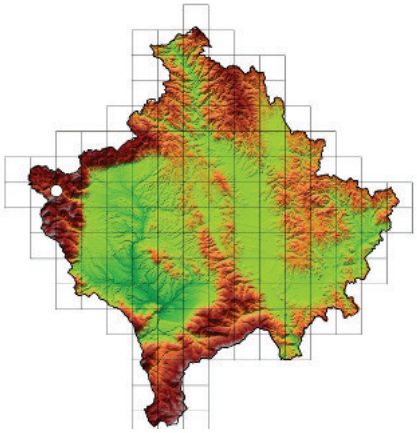
The known population is inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water managementnt (2.1. Site/area management);
Research needed: 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices, with reduced clear cuttings and providing dead wood availability.

References

Mršić 1991; Šapkarev 1975; Stojanović *et al.* 2018; Szederjesi 2013



Dendrobaena alpina (Rosa, 1884)

Oligochaeta: Opistophora: Lumbricidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

This is a polytypic species distributed from France across Central and Southern Europe to Turkey. In the Balkan, subspecies *D. a. popi* and *D. a. clujensis* occur. It is epigeic species found in beech forests (Szederjesi 2013), found in humico-silicatic, rendzina, acid black or podzolic brown soils (Pop *et al.*2007). The body is purple-red, 121 mm long, consisting of 64 to 138 segments. The clitellum extends from segments 26, 27, 28 to 33, 34, and the tubercula pubertatis are present from segments 29, 30 to 1 /2 32 (Mršić 1991).

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest).

Occurs along the subalpine belt of *Mugo* pine and *Juniperus nana*, *Vaccininium* sp. and in the mountain belt of fir tree or of mixed beech-fir forests (Pop *et al.*2007).

General distribution

Kosovo, Macedonia, Montenegro, Near East, Poland, Romania, Serbia, Slovakia, Slovenia, Switzerland, Ukraine and doubtful presence in Germany (Rota 2013).

Distribution in Kosovo

Çakorr (Šapkarev 1975; Mršić 1991).

Population

Population trend: Unknown

Rationale

Not widespread species, distributed along Alpine-Dinaric-Carpathian area, mainly in forested areas. It does not qualify for the threatened category but could be severely threatened in the future, considering the trends in habitat degradation. Therefore, this species is assessed as Near Threatened.

Threats

List of Threats: 5. Biological resource use (5.3. Logging & wood harvesting) 11 Climate change & severe weather (11.1 Habitat shifting & alteration, 11.2 Droughts).

Conservation measures in action

The population is inside the protected area.

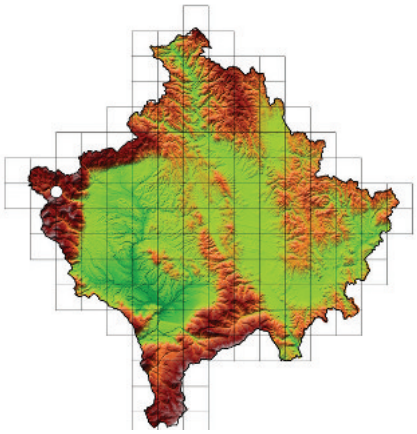
Conservation measures needed

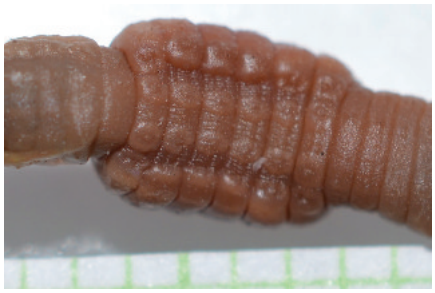
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Mršić 1991; Pop *et al.*2007; Rota 2013; Šapkarev 1975; Szederjesi 2013





5.3 INSECTA

Baetis buceratus Eaton, 1870

Insecta: Ephemeroptera: Baetidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Agim Gashi, Bardh Xërxa

General data

The forewing size of this species is from 7.5 to 11 mm. Sometimes larvae dominate in ß-mesosaprobic conditions of organic pollution. This species has two generations per year. The flight time is during spring, summer and autumn (Bauernfeind & Soldan 2012).

Habitat

Habitat Type: 5 Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls)).
Larvae are mainly found in large field rivers. They prefer medium to high water flow and rocky substrates, but are often found between water vegetation as well.

General distribution

Europe, Asia. Widespread in the western Palearctic.

Distribution in Kosovo

Streamlet in Makovc, Streamlet in Mramor, Streamlet in Slivovë, Streamlet in Zhegër, Lumbardhi i Prizrenit River in Vlashnje.

Population

Population trend: Unknown

Rationale

The actual data in isolation (AOO = 20 km², EOO = 3076 km², number of locations ≤ 10, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

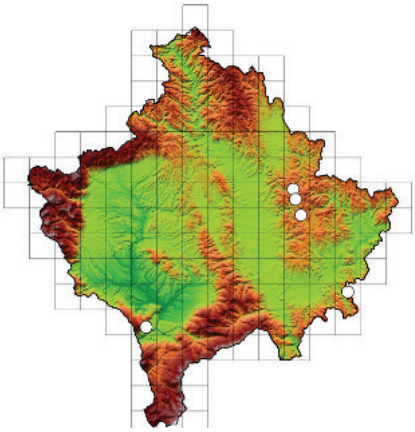
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Bauernfeind & Soldan 2012





Baetis melanonyx Pictet,1843

Insecta: Ephemeroptera: Baetidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Agim Gashi, Bardh Xërxa

General data

The forewing size of this species is from 7.9 to 11.5 mm. It is a summer univoltine species, although in the localities of lower altitudes it is also reported as a bivoltine species. The flight period is from May to the first part of July, but at higher altitudes, the flight period is later, in August or even in October (Bauernfeind & Soldan 2012).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

The larvae are found in rivers and streams of different altitudes from 300 to 1900 m. Larvae prefer upstream and midstream segments.

General distribution

Most part of Europe, Turkey, Israel.

Distribution in Kosovo

Lumbardhi i Prizrenit River in Vlashnje, Lumbardhi i Prizrenit River in Reçan, Stream in Slivovë, Erenik River in Junik, Lumbardhi i Deçanit River in Deçan, Lepenc River in Brod, Lepenc River, Morava e Binçës River in Binçë, Stream in Keqekollë.

Population

Population trend: Unknown

This species is characterized by a small number of individuals.

Rationale

The actual data in isolation (AOO = 32 km², EOO = 4779 km², number of locations is 9, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

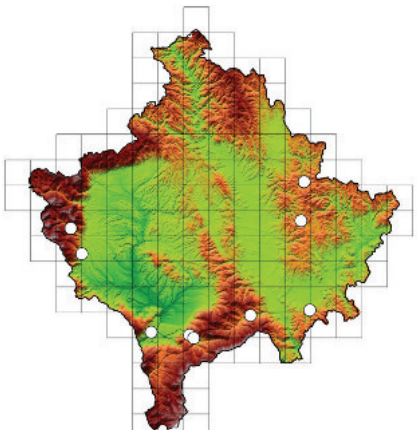
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Bauernfeind & Soldan 2012





Ecdyonurus vitoshensis Jacob & Braasch, 1984

Insecta: Ephemeroptera: Heptageniidae

Threat category in Europe (according to IUCN)
This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Agim Gashi, Bardh Xërxa

General data

The forewing size of this species is between 11-13 mm. There is not enough data on biological and ecological aspects of the species. The flight period is from May to August (Bauernfeind & Soldan 2012).

Habitat

Habitat Type: 5 Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).
Larvae are found mainly in spring areas and upstream segments of different streams with rocky substrate. It can be found at various altitudes, from 400 to 1200 m.

General distribution

Bulgaria, Croatia, Greece, Kosovo, Romania, Serbia.

Distribution in Kosovo

Stream in Keçekollë, Letnicë River, Nerodime River, Stream in Lugu i Kopilaçës.

Population

Population trend: Unknown
In all sites where it is found in Kosovo, this species is characterized by a small number of individuals.

Rationale

The actual data in isolation (AOO = 16 km², EOO = 1201 km², number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

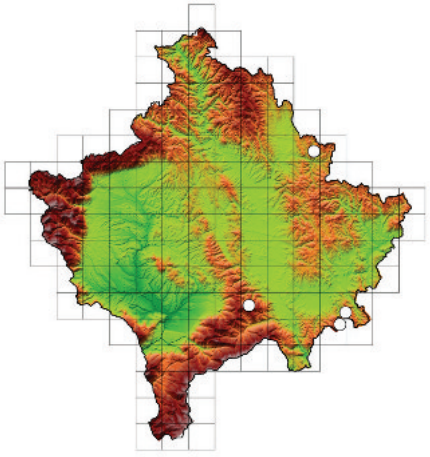
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Bauernfeind & Soldan 2012





Ephemera parnassiana Demoulin, 1958

Insecta: Ephemeroptera: Ephemeridae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Agim Gashi

General data

The forewing size of this species is from 14 - 22 mm. There is not enough data about the biological and ecological aspects of this species. Flight period is during the spring (Bauernfeind & Soldan 2012).

Habitat

Habitat Type:
There is no information about the preferred habitat of this species.

General distribution

Endemic of Balkans. Currently known only from Kosovo and Greece.

Distribution in Kosovo

Different streams in Prishtinë Municipality, Different streams in Viti Municipality, Ferizaj, Istog.

Population

Population trend: Stable

Rationale

The actual data in isolation (AOO = 40 km², EOO = 4655 km², number of sites is 12, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

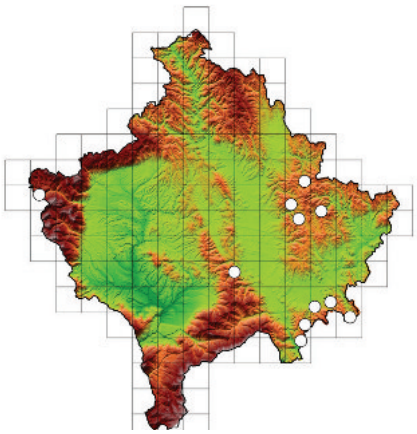
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Bauernfeind & Soldan 2012





Cordulegaster bidentata Selys, 1843

Insecta: Odonata: Cordulegastridae

Two-toothed Goldenring

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Ferdije Zhushi Etemi

General data

The body length of this species is 69 to 78 mm. The development of the larvae lasts between 3 and 5 years but may last even longer if climatic conditions cause freezing of water. The adults fly from May to August.

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

Larvae of this species live mostly in mountain springs and streams. In Kosovo, this species is encountered in rivers and open streams, as well as in streams with rocky substrate and fast flow.

General distribution

Europe

Distribution in Kosovo

Prishtina River in Makovc, Tributary of Llap River in Marincë, Lumbardhi i Prizrenit River in Prevallë.

Population

Population trend: Unknown

Subpopulations of this species are small.

Rationale

The actual data in isolation [AOO = 12 km², EOO = 963 km², number of locations ≤ 10, habitat quality declining] qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.3 Agricultural & Forestry Effluent]; 11 Climate change & severe weather [11.2 Droughts].

Conservation measures in action

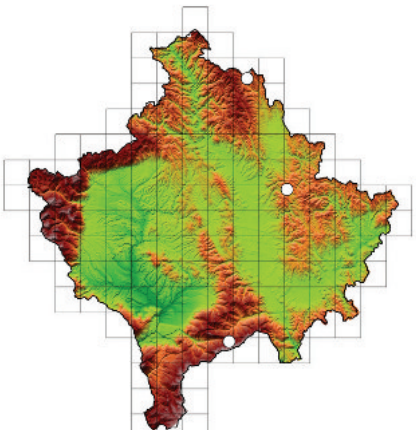
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.





Cordulegaster heros Theischinger, 1979

Insecta: Odonata: Cordulegastridae

Balkan Goldenring

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

It is the largest *Cordulegater* Selys, 1843 species, which is also distinguished by yellow rings on their, otherwise, black bodies. In Balkans *C.heros* replaces C.boltoni (Donovan, 1807). The male body size is 77-84 mm, the female 88-96.

Habitat

Habitat Type: 5 Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).

Larvae of this species inhabit shaded streams in mountains and hills, with sandy and rocky bottom.

General distribution

It is a central and southeastern European endemic taxon, ranging from Austria and Slovakia to a large part of the Balkans.

Distribution in Kosovo

Prishtina River in Makovc, Llap River in Brecë.

Population

Population trend: Unknown

Rationale

The actual data in isolation (AOO = 8 km², number of locations ≤ 10, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.3 Agricultural & Forestry Effluent); 11 Climate change & severe weather (11.2 Droughts).

Conservation measures in action

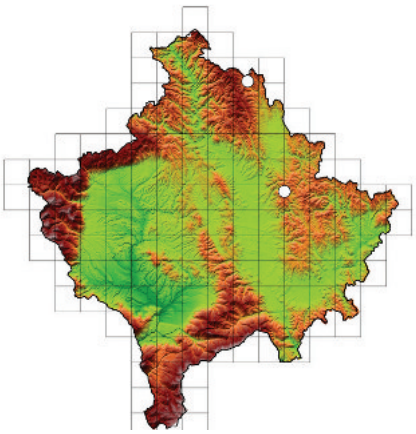
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.





Gomphus vulgatissimus (Linnaeus, 1758)

Insecta: Odonata: Gomphidae

Common Clubtail

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Ferdije Zhushi Etemi

General data

Adults fly from April to August. There is not enough data about the biology and ecology of this species.

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

Larvae of this species prefer rivers and streams with slow water flow with sandy substrates. Usually, occurs in the midstream and downstream segments of the rivers, as well as in the lakes.

General distribution

Europe.

Distribution in Kosovo

Sitnica River in Lumadh, Lepenc River in Nikë [Zhushi Etemi 2005].

Population

Population trend: Unknown

Rationale

The actual data in isolation [AOO = 8 km², number of locations ≤ 10, habitat quality declining] qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 9 Pollution [9.1 Domestic & urban waste water, 9.3 Agricultural & Forestry Effluent].

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

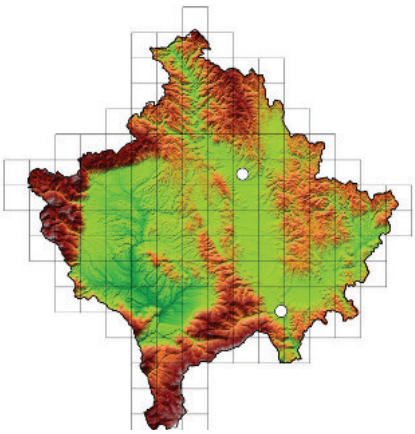
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the site(s) where occurs.

References

Zhushi Etemi 2005





Onychogomphus forcipatus (Linnaeus, 1758)

Insecta: Odonata: Gomphidae

Small Pincertail

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

Completion of the life cycle from egg to adult lasts 3 - 5 years. Adults fly from June to September, but in some cases, it has been noted that they may appear as early as April.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
Larvae of this species live mainly in clean waters with fast flow and rocky substrate. In rare cases, it can be found in large rivers.

General distribution

Europe, Africa, Asia.

Distribution in Kosovo

Letnicë River in Letnicë, Two sites in Blinajë, Stream in Mollopolc, Stream in Carralevë.

Population

Population trend: Unknown.

Rationale

The actual data in isolation (AOO = 20 km², EOO = 389 km², number of locations ≤ 10, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 localities in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. Due to these arguments, the species is assessed as Near Threatened.

Threats

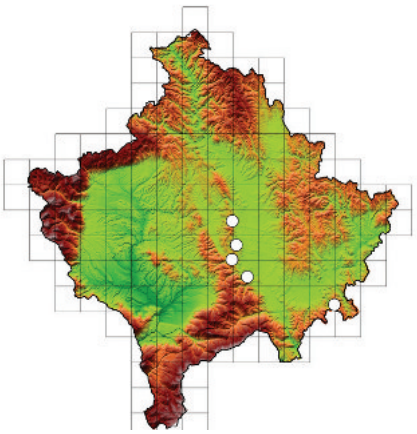
List of Threats: 3 Energy production & mining [3.2 Mining & quarrying]; 9 Pollution [9.1 Domestic & urban waste water].

Conservation measures in action

Currently, there is no conservation measure in action. Subpopulation in Blinajë is inside the protected hunting reserve.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.



Ceruchus chrysomelinus Hochenwarth, 1785

Insecta: Coleoptera: Lucanidae

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Medium sized beetle (11-16 mm). An obligate saproxylic species whose larvae develop almost exclusively in lying, damp, decayed logs, less often in stumps and standing trunks. The development cycle lasts from 3 to 4 years.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits different deciduous and coniferous forests, but always with old veteran trees and forests from which the dead logs and branches are not removed.

General distribution

Europe.

Distribution in Kosovo

Rugovë.

Population

Population trend: Unknown

Rationale

Although this species has a relatively wide distribution, it is found only in a very specific type of habitat. The AOO of this species on Kosovo may not be much greater than 2,000 km². The rate of loss of suitable habitat in Kosovo has not been quantified, but it is obvious, and it may potentially exceed 20% in the next ten years. Therefore, the species is assessed as Near Threatened.

Threats

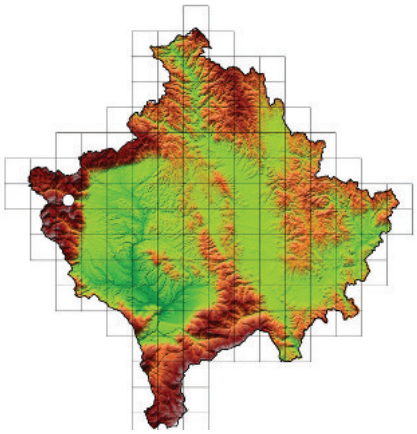
List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

The site where this species was found is inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices, with reduced clear cuttings and providing dead wood availability.





Prostomis mandibularis Fabricius, 1801

Insecta: Coleoptera: Prostomidae

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Small beetle (5-6 mm) with elongated parallel sided and flattened body; color red to reddish-brown; a prognathic head having large, robust and strongly projecting mandibles. The body is flattened, both at imago and larvae, as an adaptation for living under the bark. Imago is xylophagous, feeding 'mudguts' (advanced stage of decay of the inner heartwood) of rotting wood lying undisturbed on forest floors. Entirely dependent upon veteran trees as it inhabits decaying heartwood, a very specific habitat type which is already highly fragmented and subject to continuing significant decline in Europe. It is a relic of primeval forests from a warm postglacial period.

Habitat

Habitat Type: 1 Forest (1.4 Temperate forest).
Prefers veteran trees and standing logs in deciduous and coniferous forests.

General distribution

Europe, Iran, Turkey.

Distribution in Kosovo

Kuqishtë.

Population

Population trend: Unknown

Rationale

Although this species has a relatively wide distribution, it is only found in a very specific type of habitat. The AOO of this species may not be much greater than 2,000 km². The rate of loss of suitable habitat in Kosovo has not been quantified, but it is obvious because of forest utilization and development of tourist infrastructure. It may potentially exceed 20% in the next ten years. Therefore, the species is assessed as Near Threatened.

Threats

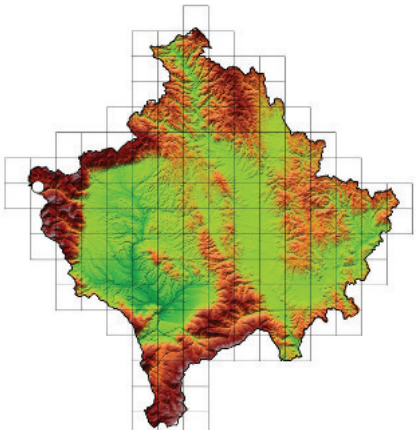
List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices, with reduced clear cuttings and providing dead wood availability.





Agapetus delicatulus McLachlan, 1884

Insecta: Trichoptera: Glossosomatidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 4.5 to 6 mm. The wing color is light brown. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. Larvae belong to the feeding groups of grazers/scrapers and gatherers/collectors. They are on wing from June to July. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 1. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]; 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams. The favorite substrate of larvae of this species is composed by coarse gravel, cobbles, boulders and bedrock, etc.

General distribution

Albania, Austria, Belgium, Great Britain, Czech Republic, France, Germany, Greece, Hungary, Italy, Kosovo, Luxembourg, Poland, Portugalia, Romania, Slovakia, Slovenia, Spain, Turkey.

Distribution in Kosovo

Stream in vicinity of Prishtinë, Uppstream of Kujavqe River.

Population

Population trend: Stable

In all sites where this is characterized by a small number of individuals, but subpopulations are mainly stable.

Rationale

The actual incomplete data [AOO = 8 km², the number of locations ≤ 5, habitat quality declining] qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in all localities where it was found in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, as well as the species' limited distribution and low density. Especially deforestation in both localities where this species was found is increasing during the past years.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

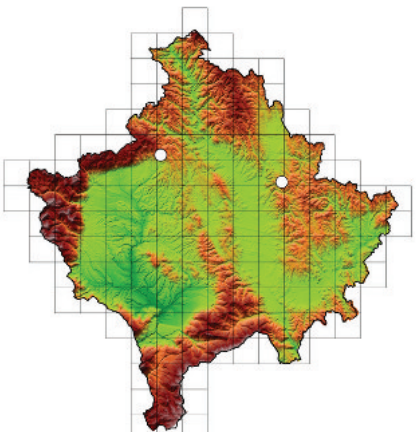
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Agapetus laniger (Pictet, 1843)

Insecta: Trichoptera: Glossosomatidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 3.8 to 5 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of medium clean water. Larvae belong to the feeding groups of grazers/scrapers and gatherers/collectors. They are on wing from June to October. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]].

It is found mostly in upstream and midstream segments of rivers. The favorite substrate of larvae of this species is composed by coarse of different size, cobbles of different size etc. This species prefers lower altitudes.

General distribution

Albania, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Kosovo, Luxembourg, Montenegro, Macedonia, Russia, Poland, Portugalia, Romania, Slovakia, Slovenia, Spain, Switzerland, Netherland, Serbia, Turkey.

Distribution in Kosovo

Drini i Bardhë River.

Population

Population trend: Stable

Rationale

The actual incomplete data (AOO = 8 km², the number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

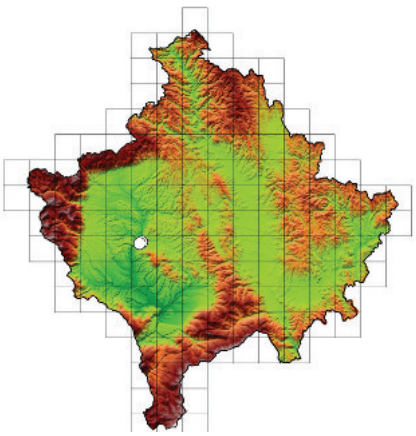
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Agapetus ochripes Curtis, 1834

Insecta: Trichoptera: Glossosomatidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 4 to 5 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. Larvae belong to the feeding groups of grazers/scrapers and gatherers/collectors. They are on wing from June to August. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams. The favorite substrate of larvae of this species is composed of gravel and cobbles of different size etc. It mainly lives in altitudes above 500 m.

General distribution

Andorra, Austria, Belgium, Bosnia and Hercegovina, Great Britain, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Kosovo, Latvia, Liechtenstein, Lithuania, Luxembourg, Montenegro, Norway, Poland, Rumania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Netherland, Serbia.

Distribution in Kosovo

Kaçandoll River in Kaçandoll.

Population

Population trend: Stable

Rationale

The actual incomplete data (AOO = 4 km², the number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data.

The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

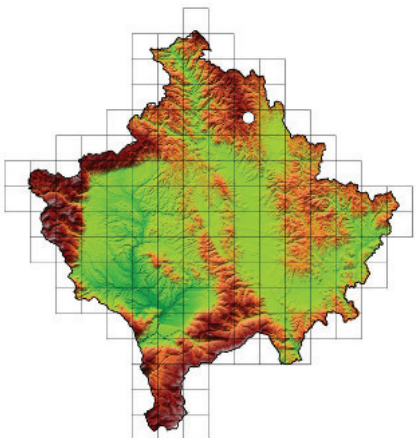
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Graf *et al.* 2008; Kumanski 1985



Annitella triloba Marinkovic-Gospodnetic, 1957

Insecta: Trichoptera: Limnephilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 8.5 to 14 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. There is not enough information about the feeding habits of larvae. They are on wing during the autumn. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1988).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams and rivers. It can be encountered at different altitudes, from 800 up to over 2300 m, although it prefers higher altitudes.

General distribution

Endemic of Balkans: Albania, Bosnia and Herzegovina, Bulgaria, Greece, Kosovo, Montenegro.

Distribution in Kosovo

Bjehkët e Nemuna Mountains, Brod River in Brod.

Population

Population trend: Stable

Rationale

The actual incomplete data (AOO = 8 km², the number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in all localities where it was found in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action. However, one of the subpopulations is inside the protected area.

Conservation measures needed

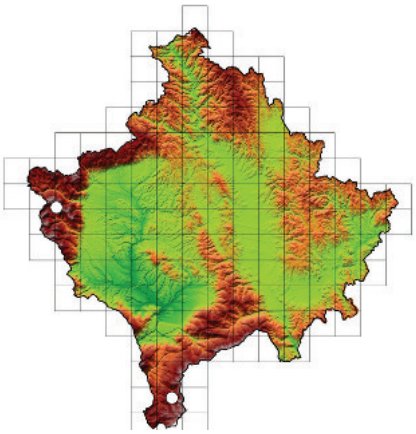
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Graf *et al.* 2008; Kumanski 1988





Chaetopteryx bosniaca Marinkovic-Gospodnetic, 1959

Insecta: Trichoptera: Limnephilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 9 to 13 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing during the autumn and winter. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. Females are almost brachypterous and mostly walk, rather than flying (Graf *et al.*2008; Kumanski 1988).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams and rivers. The preferred substrate for larvae is composed by gravel of different size, cobbles and boulders of different size, as well as habitats rich in material of plant origin. It can be encountered at different altitudes, from 400 up to over 1500 m.

General distribution

Endemic of Balkans: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo, Montenegro, Poland, Serbia.

Distribution in Kosovo

Llapi River in Murgull, Stream in Blinajë.

Population

Population trend: Stable

Rationale

The actual incomplete data (AOO = 8 km², the number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in all localities where it was found in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action. The subpopulation in Blinajë is inside the protected hunting reserve.

Conservation measures needed

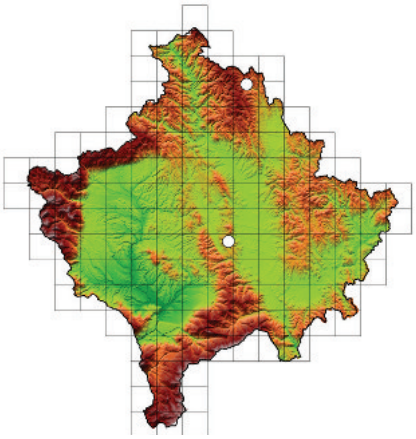
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1988





Chaetopteryx stankovici Marinkovic, 1966

Insecta: Trichoptera: Limnephilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 8.5 to 14 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing during the autumn. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1988).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams and rivers. The preferred substrate for larvae is composed by gravel of different size, cobbles and boulders of different size, as well as habitats rich in material of plant origin. It can be encountered at different altitudes from 800 up to over 2300 m, although it prefers higher altitudes.

General distribution

Endemic of Balkans: Albania, Bosnia and Herzegovina, Bulgaria, Greece, Kosovo, Montenegro, Serbia.

Distribution in Kosovo

Streamlet in Zaplluxhë.

Population

Population trend: Unknown

Rationale

The actual incomplete data [AOO = 4 km², number of locations = 1, habitat quality declining] qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in all localities where it was found in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

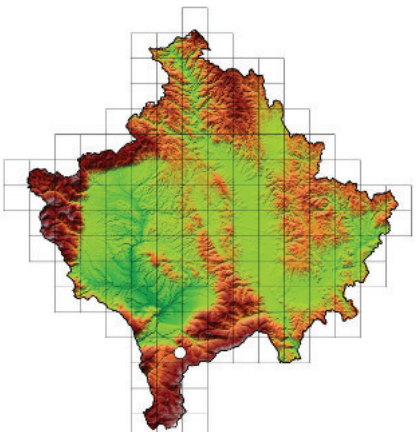
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Graf *et al.* 2008; Kumanski 1988





Drusus krusniki Malicky, 1981

Insecta: Trichoptera: Limnephilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 7 to 9 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing during the February - November period. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. This species belongs to the subfamily Drusinae which is known for high endemism potential in Balkans, with several new species described during the past years from Albania, Kosovo, Serbia, Bosnia and Herzegovina, Macedonia and Montenegro (Ibrahimi *et al.*2014).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks (includes waterfalls], 5.9 Freshwater Springs and Oases).

It is found mostly in spring areas and upstream segments of mountain streams and rivers. The preferred substrate for larvae is composed by gravel of different size, cobbles and boulders of different size as well as habitats rich in material of plant origin. It can be encountered at different altitudes from 600 up to over 2000 m.

General distribution

Endemic of Balkans. Currently is known only from limited number of localities in Albania, Kosovo and Montenegro.

Distribution in Kosovo

Several streams in Bjeshkët e Nemuna Mountains.

Population

Population trend: Stable

Rationale

The actual incomplete data (AOO = 16 km², EOO = 991 km², number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these incomplete data. The species is expected to be present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. Preliminary data show that this species is present in spring areas and upstream segments of many streams and rivers in Bjeshkët e Nemuna. In addition to this, the population trend for this species is stable and population reduction was not observed. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration).

Main threats for this species in all localities where it was found in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action. However, most of the subpopulations are inside the protected area.

Conservation measures needed

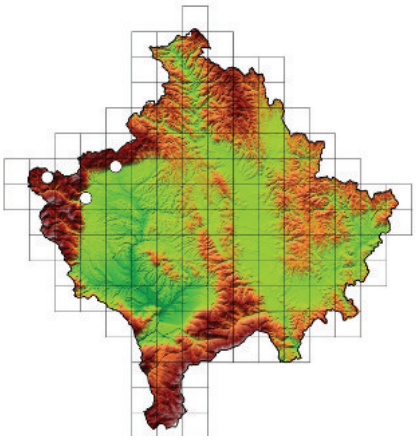
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Ibrahimi *et al.* 2014





Hydropsyche modesta Navás, 1925

Insecta: Trichoptera: Hydropsychidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 10 to 13 mm. During the larval stage, they live in water for one year. Larval stage can tolerate considerable water pollution. The larval stage belongs to the following feeding groups: grazer/scrapers, filterers and predators. They are on wing during the spring. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]].

It is found mostly in different midstream and downstream segments of streams and rivers. The preferred substrate of larvae is composed by gravel of different size, cobbles of different size, than macrophytes, mosses, woody debris, twigs, roots, and logs. It can be encountered in altitudes up to 700 m.

General distribution

Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, France, Greece, Hungary, Kosovo, Italy, Macedonia, Poland, Romania, Slovakia, Slovenia, Switzerland, Serbia, Spain, Turkey.

Distribution in Kosovo

Stream in Kuzhnin.

Population

Population trend: Stable

Rationale

The actual incomplete data (AOO = 4 km², the number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

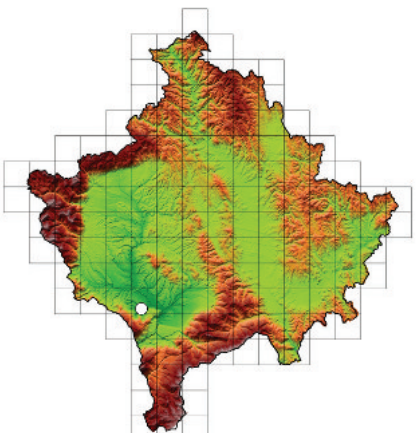
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Micropterna fissa McLachlan, 1875

Insecta: Trichoptera: Limnephilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 17 to 22 mm. The wing color is light brown. During the larval stage, they live in water for one year. They are on wing from May to October. The larval stage is an indicator of clean water. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. There is not enough information about the feeding habits of larvae (Graf *et al.*2008; Kumanski 1988).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams. The favorite substrate of larvae of this species is composed by gravel of different size, cobbles and boulders of different size, as well as the material of plant origin. It can be encountered at different altitudes, from 200 up to over 1000 m.

General distribution

Albania, Bulgaria, Croatia, Germany, Greece, Italy, Crete, Kosovo, Portugal, Spain, Switzerland, Turkey.

Distribution in Kosovo

Stream in Kuzhnin.

Population

Population trend: Unknown

Rationale

The actual incomplete data (AOO = 4 km², number of locations is 1, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these incomplete data. The species is expected to be present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

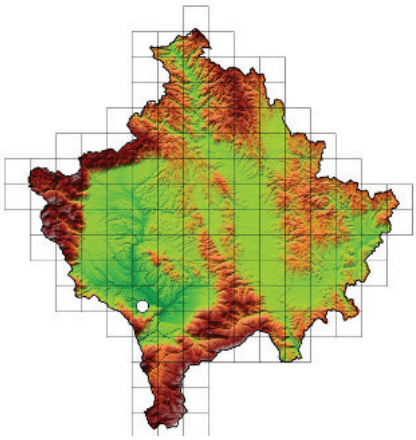
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Graf *et al.* 2008; Kumanski 1988





Philopotamus variegatus (Scopoli, 1763)

Insecta: Trichoptera: Philopotamidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 8 to 10.5 mm. The wing color is with different nuances of brown. During the larval stage, they live in water for one year. The larval stage is an indicator of medium clean water. They are on wing from March to October. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1985). Together with the species *Philopotamus montanus* (Donovan, 1813), they are the only two species of this genus present in Kosovo. In some localities they can be both present in sympatry, but unlike *P. montanus*, this species has narrower distribution.

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams. The preferred substrate of this species is composed by gravel and cobbles of different size, as well as habitats rich in plant material, such as fallen leaves and branches.

General distribution

Albania, Andorra, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Corsica, Croatia, Czech Republic, Crete, France, Germany, Greece, Hungary, Italy, Kosovo, Liechtenstein, Luxembourg, Macedonia, Poland, Portugalia, Romania, Sardinia, Slovakia, Slovenia, Spain, Switzerland, Serbia, Turkey.

Distribution in Kosovo

Stream in the vicinity of Prishtinë, Streamlet in Drelaj, Kujavqe.

Population

Population trend: Stable

Rationale

The actual incomplete data (AOO = 12 km², EOO = 956 km², number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in all localities where it was found in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

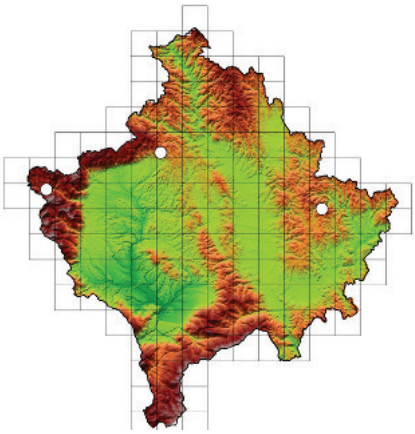
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Rhadicoleptus macedonicus Botosaneanu & Riedel, 1965

Insecta: Trichoptera: Limnephilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 11 to 15 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. They are on wing from June to October. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. There is not enough information about the way larvae feed or live. Until 2015 it was considered as subspecies of *Rhadicoleptus alpestris* (Kolenati, 1848) and because of morphological differences, mainly in male genitalia, it was erected to the species level (Oláh *et al.*2015).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams. The favorite substrate of larvae of this species is composed by gravel of different size and cobbles and boulders of different size. It can be encountered mainly at higher altitudes.

General distribution

Endemic of Balkans.

Distribution in Kosovo

Stream in Lloqan Mountains.

Population

Population trend: Stable

Rationale

The actual incomplete data [AOO = 4 km², number of locations is 1, habitat quality declining] qualify this species for a threatened category. However, the risk of extinction is less than suggested by these incomplete data. The species is expected to be present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable and population reduction was not observed. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action. However, the subpopulation of this species is inside the protected area.

Conservation measures needed

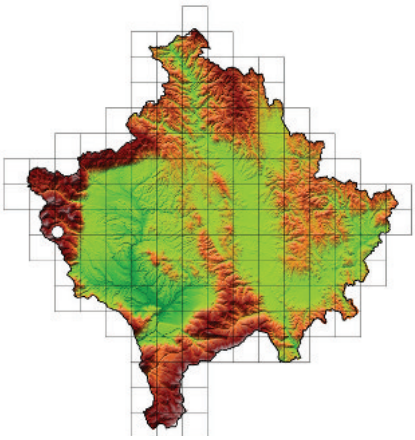
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Oláh *et al.* 2015





Rhyacophila armeniaca Guerin, 1834

Insecta: Trichoptera: Rhyacophilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 15 to 17.5 mm. The wing color is light brown. During the larval stage they live in water during one year. There is not enough information about the feeding habits of larvae. Larval stage is an indicator of clean waters. They are on wing from May to August. As adults they live for several days to several weeks nearby the stream or river where they lived as a larva (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]; 5.9 Freshwater Springs and Oases].

It is mostly found in spring areas and upstream segments of mountain streams. The favorite substrate of larvae of this species is composed by coarse gravel, cobbles, boulders, and bedrock, etc. It can be encountered at different altitudes, from 700 up to over 2000 m, although it prefers higher altitudes (Graf *et al.*2008; Kumanski 1985).

General distribution

Albania, Bulgaria, Greece, Kosovo, Macedonia, Montenegro, Romania, Serbia.

Distribution in Kosovo

Kaçandoll River in Kaçandoll, Stream in the vicinity of Prishtinë, Stream in Brezovicë, Lumbardhi i Prizrenit River in Prevallë, Grykë e Rugovës, Lumbardhi i Pejës River in the vicinity of Pejë, Stream in Lloqan Mountain.

Population

Population trend: Stable

This species is characterized by a small number of individuals in all sites where is found in Kosovo, but subpopulations are mainly stable. In the Kaçandoll River it has been collected several times during the past years, but with a very small number of individuals. In the Bjeshkët e Nemuna Mountains and the Sharr Mountains, the subpopulations are slightly bigger than in Kaçandoll.

Rationale

The actual incomplete data (AOO = 28 km², EOO = 5016 km², number of locations ≤ 10, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species in all localities where it occurred in Kosovo, and especially in Bjeshkët e Nemuna and Sharr Mountains, are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density. In Prishtinë, water pollution, water abstraction for agriculture and logging are the major threats.

Conservation measures in action

Currently, there is no conservation measure in action. Some subpopulations are inside protected areas.

Conservation measures needed

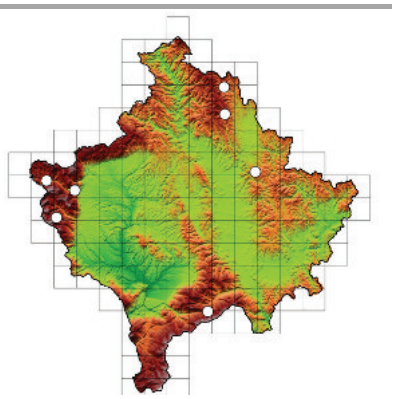
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Rhyacophila balcanica Radovanovic, 1953

Insecta: Trichoptera: Rhyacophilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 15 to 18 mm. The wing color is light brown. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. There is a lack of data about the feeding habits of larvae. They are on wing from May to August. As adults, they live for several days to several weeks nearby the stream or river where they lived as a larva (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is mostly found in spring areas and upstream segments of mountain streams. The favorite substrate of the larva of this species is composed by coarse gravel, cobbles, boulders, and bedrock, etc. They are usually present at higher altitudes (Kumanski 1985).

General distribution

Balkan endemic species: Albania, Bosnia and Hercegovina, Croatia, Kosovo, Macedonia, Montenegro, Serbia.

Distribution in Kosovo

Two sites in Bjeshkët e Nemuna Mountains.

Population

Population trend: Stable

Rationale

The actual incomplete data (AOO = 8, the number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in all localities where it was found in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action. However, subpopulations are inside the protected area.

Conservation measures needed

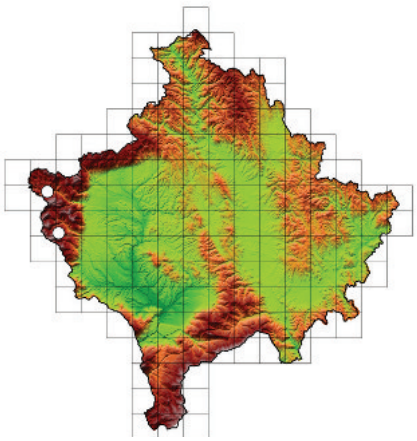
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where it occurs.

References

Graf *et al.* 2008; Kumanski 1985





Rhyacophila fischeri Botosaneanu, 1957

Insecta: Trichoptera: Rhyacophilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 11 to 12 mm. The wing color is light brown towards dark brown. During the larval stage they live in water for one year. There is a lack of data about feeding habits of larvae. Larval stage is an indicator of clean water. They are on wing from April to September. As adults they live for several days to several weeks nearby the stream or river where they lived as larva (Kumanski 1985).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases).

It is found mostly in spring areas and upstream segments of mountainous streamlets. The favourite substrate of larvae of this species is: coarse gravel, cobbles, boulders and bedrock, etc. It can be encountered at different altitudes from 300 m up to the subalpine area.

General distribution

Albania, Bulgaria, Greece, Kosovo, Montenegro, Romania, Serbia.

Distribution in Kosovo

Bajgorë, Prishtinë, Llap River, Sharr Mountains, Bjeshkët e Nemuna Mountains.

Population

Population trend: Stable

Rationale

The actual incomplete data (AOO = 32 km², EOO = 5365 km², number of locations ≤ 10, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences.

In addition to this, the population trend for this species is stable and population reduction was not observed. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration).

Main threats for this species in all localities where it was found in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density. In Prishtinë, water pollution, water abstraction for agriculture and logging are the major threats.

Conservation measures in action

Currently, there is no conservation measure in action. Some subpopulations are inside the protected area.

Conservation measures needed

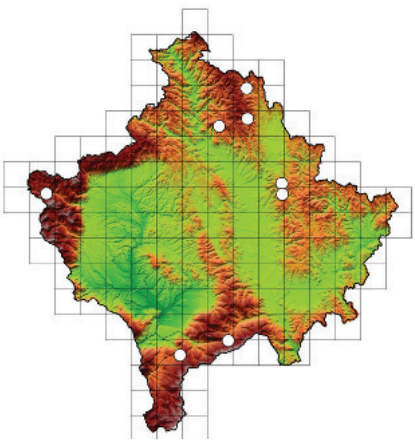
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Kumanski 1985





Rhyacophila laevis Pictet, 1834

Insecta: Trichoptera: Rhyacophilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 7 to 7.5 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean water. Larvae feed as shredders with food of plant origin. They are on wing during the spring, mostly June. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams. The favorite substrate of larvae of this species is composed by coarse gravel, cobbles, boulders, and bedrock, etc. It can be encountered at different altitudes, from 700 up to over 2000 m, although it prefers higher altitudes.

General distribution

Austria, Bosnia and Herzegovina, Bulgaria, Croatia, France, Germany, Greece, Hungary, Italy, Kosovo, Montenegro, Poland, Romania, Slovakia, Slovenia, Switzerland, Serbia, Spain.

Distribution in Kosovo

Stream in the vicinity of Prishtinë, Streamlet in Marec, Lumbardhi i Pejës River in Kuqishtë.

Population

Population trend: Stable

In all sites where this species is found in Kosovo is characterized by a small number of individuals. In the site in the vicinity of Prishtinë, it was observed a slight decrease of subpopulation because of anthropogenic activities.

Rationale

The actual incomplete data (AOO = 12 km², EOO = 565 km², number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these incomplete data. The species is expected to be present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable and significant population reduction was not observed. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in all localities where it was found in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density. In Prishtinë, water pollution water abstraction for agriculture and logging are the major threats.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

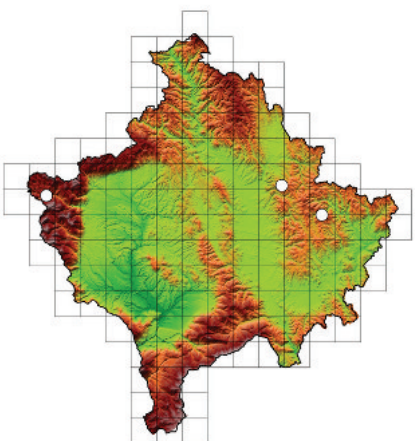
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Rhyacophila mocsaryi Klapálek, 1894

Insecta: Trichoptera: Rhyacophilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 15 to 17.5 mm. The wing color is light brown. Larvae feed mostly as predators, although there is a lack of data about feeding habits of larvae. During the larval stage, they live in water for one year. They are on wing mainly during June and July. The larval stage is an indicator of clean water. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae. There are two known subspecies of *Rhyacophila mocsaryi*. In Kosovo is present the nominal subspecies (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5 Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).

It is found mostly in spring areas and upstream segments of mountain streams. The favorite substrate of larvae of this species is composed by coarse gravel, cobbles, boulders, and bedrock. It can be encountered at different altitudes, from 700 up to over 1600 m, although it prefers higher altitudes (Graf *et al.*2008; Kumanski 1985).

General distribution

The nominal subspecies is Balkan endemic and is found in a limited number of localities in Albania, Bosnia and Herzegovina, Bulgaria, Kosovo. Macedonia and Montenegro.

Distribution in Kosovo

Streamlet in the vicinity of Brezovicë, Lumbardhi i Pejës River in Kuqishtë.

Population

Population trend: Stable

Rationale

The actual incomplete data (AOO = 8 km², the number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these incomplete data.

The species is expected to be present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species in all localities where it was found in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action. However, at least one of the subpopulations is inside the protected area.

Conservation measures needed

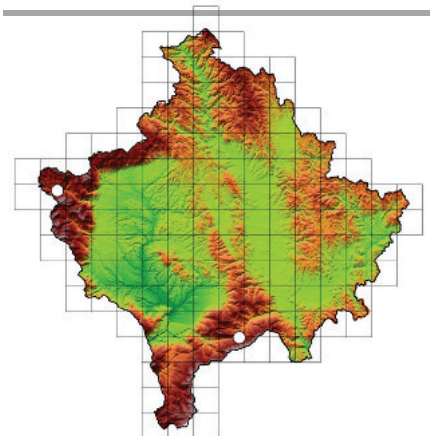
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Rhyacophila obliterata McLachlan, 1863

Insecta: Trichoptera: Rhyacophilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 12 to 14mm. The wing color is light brown. During the larval stage, they live in water for one year. Larvae feed as predators. They are on wing from August to November. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5 Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls)).

It is found mostly in upstream and midstream segments of rivers. It can be encountered at different altitudes, from 700 up to over 2000 m. The favorite substrate of larvae of this species is coarse gravel, cobbles, boulders, and bedrock (Graf *et al.*2008; Kumanski 1985).

General distribution

Albania, Austria, Bosnia and Herzegovina, Belgium, Bulgaria, Great Britain, Croatia, Czech Republic, Finland, France, Germany, Greece, Hungary, Kosovo, Latvia, Lithuania, Luxembourg, Macedonia, Montenegro, Poland, Portugalia, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland.

Distribution in Kosovo

Sharr Mountains, Bjeshkët e Nemuna Mountains.

Population

Population trend: Stable

Rationale

The actual incomplete data (AOO = 12 km², EOO = 317 km², number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these incomplete data. The species is expected to be present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend is stable and population reduction was not observed. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species in all localities where it was found in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action. However, subpopulations are inside the protected areas.

Conservation measures needed

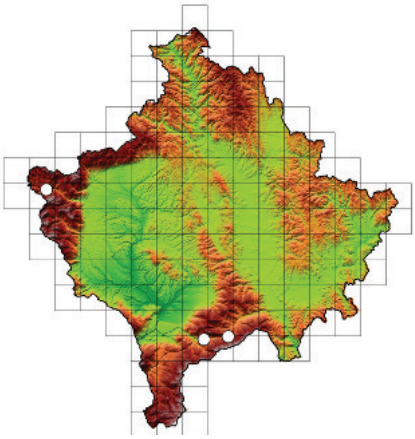
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Tinodes braueri McLachlan, 1878

Insecta: Trichoptera: Psychomyiidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 4.5 to 5 mm. During the larval stage, they live in water for one year. The larval stage belongs to the following feeding groups: grazer/scrapers, gatherer/collectors and filterers. They are on wing during the spring and summer. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]].

It is found mostly in midstream sections of rivers, but in different segments of mountain streams as well.

General distribution

Endemic of Southeastern Europe. Currently, it is only known from a limited number of localities in Albania, Bosnia and Herzegovina, Croatia, Greece, Kosovo and Serbia.

Distribution in Kosovo

Stream in Kuzhnin.

Population

Population trend: Stable

Rationale

The actual incomplete data (AOO = 4 km², the number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

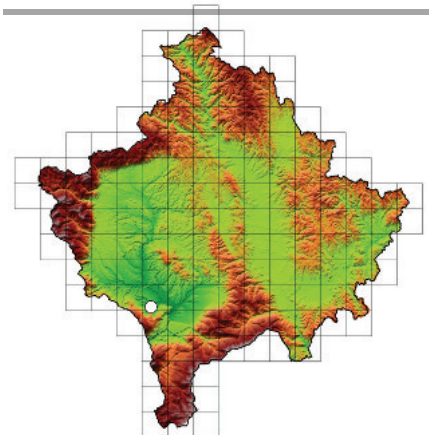
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Graf *et al.* 2008; Kumanski 1985





Wormaldia pulla (Mclachlan, 1878)

Insecta: Trichoptera: Philopotamidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 5 to 6 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of clean to medium clean water. Larvae belong to the feeding group of filterers. They are on wing from June to August. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).

It is found mostly in spring areas and upstream segments of mountain streams. The preferred substrates of this species are gravel and cobbles of different size. It lives in different altitudes, mainly from 100 to 1500 m.

General distribution

Austria, Bulgaria, Bosnia and Herzegovina, Czech Republic, France, Germany, Greece, Italy, Kosovo, Macedonia, Poland, Romania, Slovakia, Slovenia, Spain, Switzerland, Serbia.

Distribution in Kosovo

Kaçandoll River in Kaçandoll.

Population

Population trend: Unknown

Rationale

The actual incomplete data (AOO = 4 km², the number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species in Kosovo are habitat loss and degradation, deforestation, water pollution, and unsustainable management, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

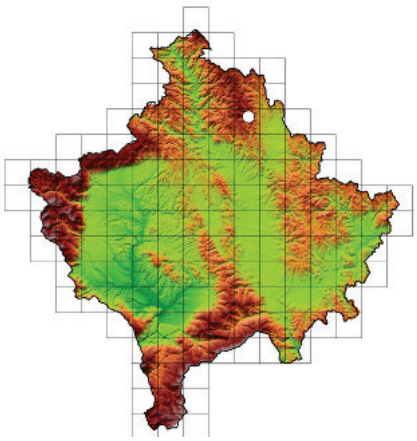
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1985



Wormaldia subnigra McLachlan, 1865

Insecta: Trichoptera: Philopotamidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 5.5 to 6.5 mm. During the larval stage, they live in water for one year. The larval stage is an indicator of medium clean water. Larvae belong to the feeding group of filterers. They are on wing from June to July. As adults, they live for several days to several weeks near the stream or river (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).

It is found mostly in different segments of mountain streams. The preferred substrates of this species are gravel and cobbles of different size. It mainly lives in different altitudes up to 1000 m.

General distribution

Albania, Austria, Belgium, Bosnia and Herzegovina, Great Britain, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Kosovo, Crete, Latvia, Lithuania, Luxembourg, Poland, Russia, Norway, Slovenia, Romania, Spain, Sweden, Switzerland, Netherland, Serbia, Turkey.

Distribution in Kosovo

Stream in vicinity of Prishtinë, Drini i Bardhë River in Mrasor.

Population

Population trend: Stable

Rationale

The actual incomplete data (AOO = 8 km², the number of locations ≤ 5, habitat quality declining) qualify this species for a threatened category. However, the risk of extinction is less than suggested by these data. The species is most probably present in much more than 10 sites in Kosovo, considering the presence of potential habitats for the species and knowing its distributional preferences. In addition to this, the population trend for this species is stable. Due to these arguments, the species is assessed as Near Threatened.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density. Sand extraction in Drini i Bardhë River in Mrasor is a threat to the species.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

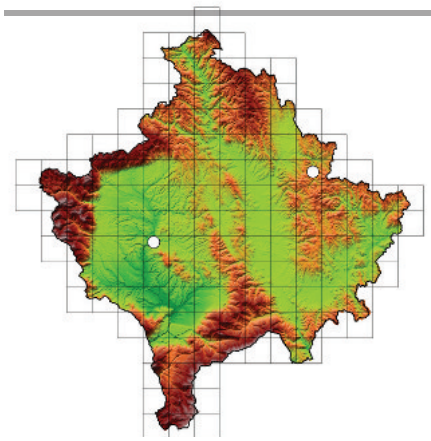
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality and eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Graf *et al.* 2008; Kumanski 1985



Aricia anteros (Freyer, 1838)

Blue Argus

Insecta: Lepidoptera: Lycaenidae

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is from 30 to 34 mm. Males are characterized by their shining bright blue color. This species has one generation per year, but in some high altitude areas, they may have two generations. Adults fry from May to July.

Habitat

Habitat Type: 3 Shrubland; 4 Grassland
This species is mostly found on open grassy flowery places, sometimes bushy places or clearings in light woodland, usually on limestone.

General distribution

Balkan, Iran, Turkey, Ukraine.

Distribution in Kosovo

Brezovicë, Çakorr (Jakšić 2003; Jakšić and Živić 1995-1998).

Population

Population trend: Stable
This species is characterized by small subpopulations in Kosovo.

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. Even though the low number of locations (2) qualifies this species for a threatened category, however, based on the presence of potential habitats in Kosovo and knowledge from neighboring countries, we presume that there are other subpopulations present in Kosovo.

Threats

List of Threats: 2 Agriculture & aquaculture; 7 Natural system modifications (7.1 Fire & fire suppression; 7.3 Other ecosystem modifications).

Conservation measures in action

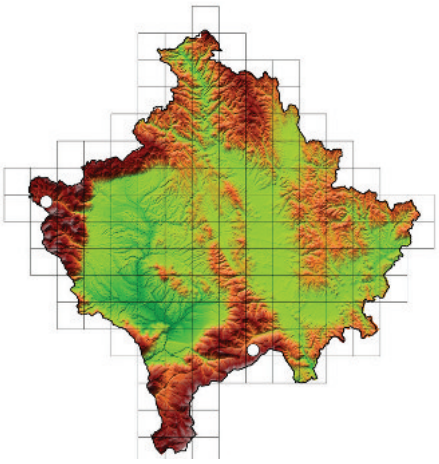
Currently, there is no conservation measure in action. Some subpopulations are inside the protected areas.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 2003; Jakšić and Živić 1995-1998





Carcharodus lavatherae (Esper, 1783)

Marbled Skipper

Insecta: Lepidoptera: Hesperiidae

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is 28–34 mm. The upper side of forewings is green or yellow towards brown, with dark marblings. The species has one generation per year and flies from May to July, depending on the location. The larvae feed on *Stachys recta* and *Sideritis scordioides*.

Habitat

Habitat Type: 6 Rocky Areas [e.g. inland cliffs, mountain peaks].
Adults can be observed in dry, hot, rocky places.

General distribution

From Central and Southern Europe to Caucasus, Transcaucasia, and Asia Minor.

Distribution in Kosovo

Rugova Gorge, Strellc, Pashtrik (Jakšić and Živić 1995-1998).

Population

Population trend: Unknown

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. Even though the low number of localities (3), AOO = 12 km² and EOO = 101 km² qualify this species for threatened category, however, based on presence of potential habitats in Kosovo and knowledge from neighboring countries, we presume that there are other subpopulations present in Kosovo and consequently the threat is at a lesser degree.

Threats

List of Threats: 7 Natural system modifications (7.1 Fire & fire suppression, 7.3 Other ecosystem modifications); 11 Climate change & severe weather (11.2 Droughts).
This species has been observed to be affected by intensive mowing.

Conservation measures in action

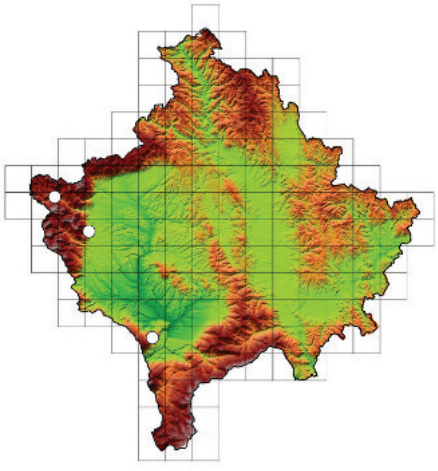
Habitats of this species in Bjeshkët e Nemuna are protected

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić and Živić 1995-1998





Chazara briseis (Linnaeus, 1764)

Insecta: Lepidoptera: Nymphalidae
The Hermit

Threat category in Europe (according to IUCN)
Near Threatened, NT

Threat category in Kosovo (IUCN criteria)
Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi, Pajtim Bytyqi

General data

Adults of this species fly from July to October. Larvae feed on plants of the following genera *Sesleria, Festuca, Stipa, Poa, Brachypodium,* and *Lolium.*

Habitat

Habitat Type: 6. Shrubland; 4 Grassland.
This species in Kosovo is present in dry grasslands and habitats with shrubs and rocks.

General distribution

North Africa, much of Spain, southern France, parts of Italy and Switzerland and southeast Europe, China.

Distribution in Kosovo

Shkozë, Three localities in Mirushë; Kaçanik Gorge. Brezovicë. Foothills of Kopaonik. Pashtrik. Rugovë Gorge (Jakšić and Živić 1995-1998; Rebel and Zerny 1931; Zhushi *et al.*2017).

Population

Population trend: Stable
Subpopulations of this species are mainly stable, but small and fragmented.

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. Even though the low number of locations (9), AOO = 36 km² and EOO = 5475 km² qualify this species for a threatened category, however, based on the presence of potential habitats in Kosovo and knowledge from neighboring countries, we presume that there are other subpopulations present in Kosovo.

Threats

List of Threats: 2 Agriculture & aquaculture (2.3 Livestock farming & ranching: 2.3.2 Small-holder grazing, ranching or farming);7 Natural system modifications (7.3 Other ecosystem modifications); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
It was observed that this species is affected by habitat fragmentation, abandonment of managed land and overgrazing.

Conservation measures in action

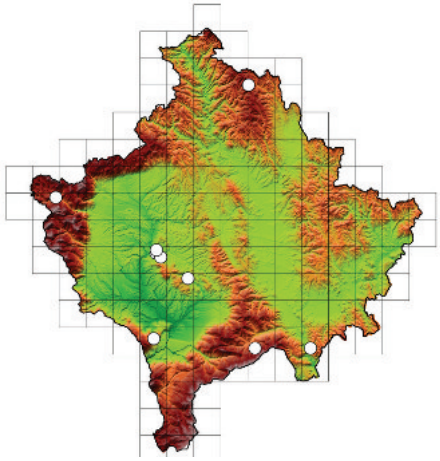
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić and Živić 1995-1998; Rebel and Zerny 1931; Zhushi *et al.* 2017





Cupido decolorata (Staudinger, 1886)

Insecta: Lepidoptera: Lycaenidae

Eastern short-tailed Blue

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi, Pajtim Bytyqi

General data

The wingspan of this species is between 21 and 25 mm. It is a small sized butterfly. The adults appear during the May-August period. In Kosovo, it is mainly found in places with Fabaceae family plants and shrubs, at different altitudes from 300 to 800 m.

Habitat

Habitat Type: 1 Forest [1.4 Temperate Forest]; 14 Artificial - Terrestrial [14.2 Pastureland].
This species is mainly present in mesophyte pastures, and mostly in forests.

General distribution

This species is mostly present in Eastern Europe, but also in Spain, Austria, Slovakia etc.

Distribution in Kosovo

Two localities in Mirushë, Three localities in Shkozë, Kaçanik [Jakšić and Živić 1995-1998; Zhushi *et al.*2017].

Population

Population trend: Stable
This species has stable subpopulations but with a small number of individuals.

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. Even though the low number of locations (6), AOO = 24 km² and EOO = 200 km² qualify this species for threatened categories, however, based on the presence of potential habitats in Kosovo and knowledge from neighboring countries, we presume that there are other subpopulations present in Kosovo.

Threats

This species does not face any direct threat currently in Kosovo, but due to the limited distribution in Eastern Europe, it is important in terms of conservation.

Conservation measures in action

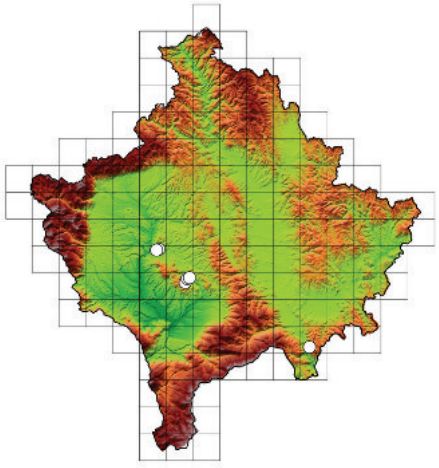
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Jakšić and Živić 1995-1998; Zhushi *et al.* 2017





Hipparchia fagi (Scopoli, 1763)

Insecta: Lepidoptera: Nymphalidae
Woodland Grayling

Threat category in Europe (according to IUCN)
Near Threatened, NT

Threat category in Kosovo (IUCN criteria)
Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

This species has one generation per year. Adults fly from June to September. Larvae feed on different plant species belonging to the following genera: *Brachypodium, Bromus, Festuca, Holcus* etc.

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest).
This species is found in Kosovo at the edges of mountain massifs.

General distribution

From Pyrenean foothills of Spain, through southern France and eastwards, including Italy and the Balkans.

Distribution in Kosovo

Four localities in Malishevë, Kaçanik Gorge (Jakšić and Živić 1995-1998; Zhushi *et al.*2017).

Population

Population trend: Stable
Subpopulations of this species are small but stable

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. Even though the low number of locations (5), AOO = 20 km² and EOO = 846 km² qualify this species for a threatened category, however, based on the presence of potential habitats in Kosovo and knowledge from neighboring countries, we presume that there are other subpopulations present in Kosovo.

Threats

List of Threats: 2 Agriculture & aquaculture;7 Natural system modifications (7.3 Other ecosystem modifications); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
It was observed that this species is affected by pasture abandonment and habitat fragmentation.

Conservation measures in action

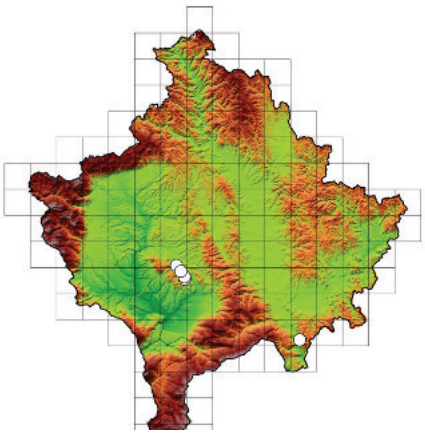
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the site(s) where occurs.

References

Jakšić and Živić 1995-1998; Zhushi *et al.* 2017



Hipparchia statilinus (Hufnagel, 1766)

Insecta: Lepidoptera: Nymphalidae

Tree Grayling

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

This species has one generation per year. Adults fly from June to October. Larvae feed on different plant species belonging to families Poaceae and Cyperaceae.

Habitat

Habitat Type: 1 Forest [1.4 Temperate Forest]; 6 Rocky Areas [e.g. inland cliffs, mountain peaks].

In Kosovo it can often be encountered along the roads or low altitudes, often stopping on rocks with wings folded in order to warm up.

General distribution

Europe, North Africa, Turkey.

Distribution in Kosovo

Two localities in Malishevë, Llapqevë, Rugova Gorge, Ibri Gorge, Prizren Castle (Jakšić and Živić 1995-1998; Zhushi *et al.*2017)

Population

Population trend: Unknown

Subpopulations of this species are isolated and fragmented.

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. Even though the low number of locations (6), AOO = 24 km² and EOO = 2059 km² qualify this species for a threatened category, however, based on the presence of potential habitats in Kosovo and knowledge from neighboring countries, we presume that there are other subpopulations present in Kosovo.

Threats

List of Threats: 2. Agriculture & aquaculture; 7 Natural system modifications (7.3 Other ecosystem modifications); 9 Pollution (9.1 Domestic & urban waste water: 9.1.2 Run-off); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

It was observed that this species is affected by the abandonment of pastures, fragmentation, and isolation of habitats and use of fertilizers.

Conservation measures in action

At least one subpopulation is inside the protected area.

Conservation measures needed

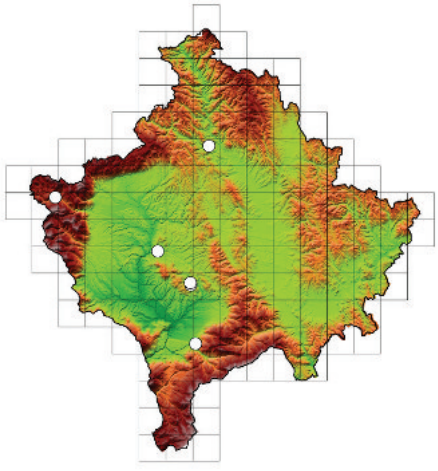
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić and Živić 1995-1998; Zhushi *et al.* 2017



Hipparchia volgensis (Mazochin-Porshnjakov, 1952)

Insecta: Lepidoptera: Nymphalidae

Delattin's Grayling

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The length of male wings from base to top is 27 – 28 mm. They have one generation per year. Adults fly from June until August. It is an arboreal species.

Habitat

Habitat Type: 1 Forest [1.4 Temperate Forest]; 3 Shrubland; 4 Grassland; 6 Rocky Areas [e.g. inland cliffs, mountain peaks].
This species can be found in dry and warm places rich in shrubs, rocky places in or near deciduous or coniferous forests, as well as on sunny rocky slopes.

General distribution

Balkan, South Russia.

Distribution in Kosovo

Mitrovicë, Several localities in Mirushë, Malishevë, Pashtrik, Lloqan, Rugova Gorge, Pejë, Gërmi, Sredskë, Ibri Gorge, Foothills of Kopaonik [Jakšić and Živić 1995-1998; Zhushi *et al.*2017]

Population

Population trend: Unknown
Subpopulations of this species are fragmented and isolated.

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo.

Threats

List of Threats: 2 Agriculture & aquaculture [2.3 Livestock farming & ranching: 2.3.2 Small-holder grazing, ranching or farming]; 5.Biological resource use [5.3.Logging and wood harvesting]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Conservation measures in action

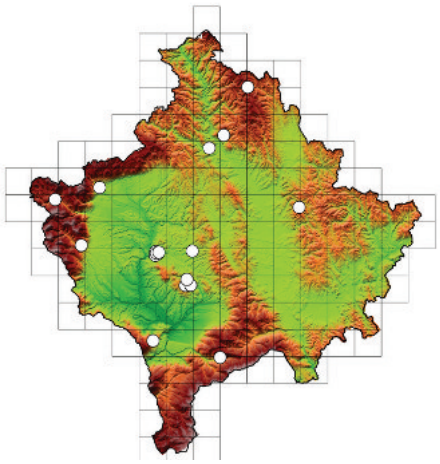
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Jakšić and Živić 1995-1998; Zhushi *et al.* 2017



Papilio machaon Linnaeus, 1758

Insecta: Lepidoptera: Papilionidae

Swallow tail

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is 65 to 75 mm. It is a Palearctic arboreal species. Adults fly from April to August. It has two generations per year. Feeding plants for larvae are several species belonging to the following genera: *Aegopodium, Anethum, Carum, Daucus, Falcaria,* and *Foeniculum.*

Habitat

Habitat Type: 5 Wetlands (inland) [5.4 Bogs, Marshes, Swamps, Fens, Peatlands [generally over 8 ha]]; 14 Artificial - Terrestrial [14.1 Arable Land].

Occurs in a broad variety of open and half open habitats. It is also found on larger clearings.

General distribution

Europe, Africa, Asia, North America.

Distribution in Kosovo

Lloqan, Pashtrik, Oshlak, Prizren Castle, Rugova Gorge, Brezovicë, Four localities in Mirushë [Jakšić 1999, Jakšić and Živić 1995-1998; Rebel and Zerny 1931]

Population

Population trend: Unknown

This species was observed with very small subpopulations.

Rationale

This species is assessed as Near Threatened because of the increasing tendency of activities that could threaten this species in Kosovo. Even though the low number of locations (10), AOO = 36 km² and EOO = 1324 km² qualify this species for a threatened category, however, based on the presence of potential habitats in Kosovo and knowledge from neighboring countries, we presume that there are other subpopulations present in Kosovo.

Threats

List of Threats: 2. Agriculture & aquaculture [2.3 Livestock farming & ranching: 2.3.2 Small-holder grazing, ranching or farming7 Natural system modifications [7.1 Fire & fire suppression, 7.3 Other ecosystem modifications].

It was observed that this species is affected by the abandonment of managed land.

Conservation measures in action

Few subpopulations are inside the protected areas.

Conservation measures needed

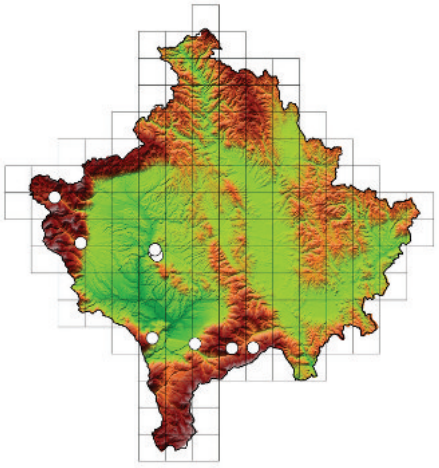
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 1999; Jakšić and Živić 1995-1998; Rebel and Zerny 1931





Plebejus pylaon (Fischer von Waldheim, 1832)

Insecta: Lepidoptera: Lycaenidae

Zephyr blue

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

This species has a wingspan of 28 to 34 mm. It has one generation per year. The color of forewings in males in upperside is violet towards blue. Feeding plants for larvae of this species are those of the genus *Astralagus*. Larvae are mirmecophiles. Adults fly from May to July.

Habitat

Habitat Type: 4 Grassland; 6 Rocky Areas [e.g. inland cliffs, mountain peaks].
This species is often found in flower-rich grassland, on rocky slopes and sometimes on a scrub or at the edges of woods. It also occurs on steppes and dry sandy areas, exceptionally, damp woodland clearings.

General distribution

From Spain, across southern Europe, Hungary, the Balkans, southern Russia, and the Middle East to Iran.

Distribution in Kosovo

Gërmi, Brezovicë, Koshtovë [Jakšić 1987; Jakšić and Živić 1995-1998].

Population

Population trend: Stable
This species was observed with stable subpopulations but with a small number of individuals.

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. Even though the low number of locations (3) qualifies this species for a threatened category, however, based on the presence of potential habitats in Kosovo and knowledge from neighboring countries, we presume that there are other subpopulations present in Kosovo.

Threats

List of Threats: 2 Agriculture & aquaculture; 7 Natural system modifications (7.2 Dams & water management/use, 7.3 Other ecosystem modifications); 5 Biological resource use (5.1 Hunting and collecting terrestrial animals: 5.1.2 Unintentional effects (species being assessed is not the target); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Conservation measures in action

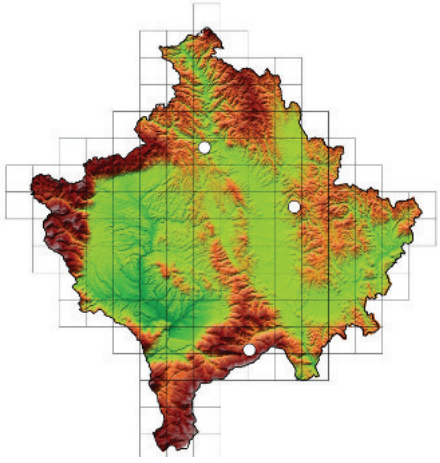
At least one subpopulation is inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 1987; Jakšić and Živić 1995-1998



Pseudophilotes bavius (Eversmann, 1832)

Insecta: Lepidoptera: Lycaenidae

Bavius Blue

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is 24 – 30 mm. This species has two generations a year. Adults fly during the period April – May and then again during June – July. Feeding plants for larvae belong to species of genus *Salvia*. Larvae are mirmecophiles.

Habitat

Habitat Type: 6 Rocky Areas [e.g. inland cliffs, mountain peaks].
This species occurs in Kosovo in rocky slopes and calcareous soils.

General distribution

Greece, Kosovo, Macedonia, Romania, Serbia. It is also found in Crimea, Turkey, the Caucasus and Northwest Africa.

Distribution in Kosovo

Prizren Castle, Dikance, Gërmi, Rugova Gorge (Jakšić and Živić 1995-1998).

Population

Population trend: Stable
This species was observed with subpopulations consisting of a low number of individuals, but with stable trends.

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. Even though the low number of locations (4), AOO = 16 km² and EOO = 3385 km² qualify this species for a threatened category, however, based on the presence of potential habitats in Kosovo and knowledge from neighboring countries, we presume that there are other subpopulations present in Kosovo.

Threats

List of Threats: 2. Agriculture & aquaculture (2.3 Livestock farming & ranching: 2.3.2 Small-holder grazing, ranching or farming); 7 Natural system modifications (7.1 Fire & fire suppression, 7.3 Other ecosystem modifications); 8 Invasive & other problematic species, genes & diseases (8.1 Invasive non-native/alien species/diseases).
Larvae of this species are attacked by parasite species *Apanteles lycaena* which belongs to the order Diptera. Another threat is change in land use due to agriculture.

Conservation measures in action

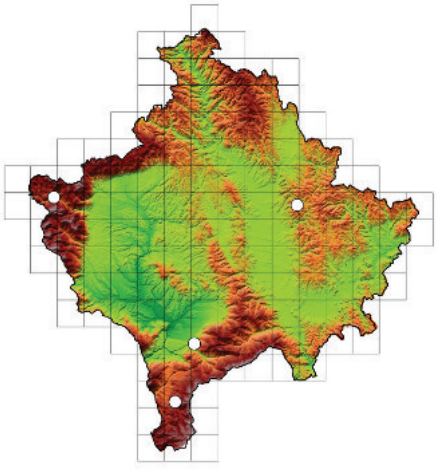
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić and Živić 1995-1998



Thymelicus acteon Rottemburg, 1775

Insecta: Lepidoptera: Hesperiidae

Lulworth Skipper

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi, Pajtim Bytyqi.

General data

The wingspan of this species is from 24 to 28 mm. The male is darker in color, while the female is distinguished by the pale orange crescent on forewings, which is either lacking or flint in the male. The primary larval food plant is *Brachypodium pinnatum*. It is a locally widespread species.

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest); 4 Grassland.

The species is found in dry calcareous grasslands and steppes, mesophile grasslands, dry siliceous grasslands, broad-leaved deciduous forests, and sclerophyllous scrub.

General distribution

Europe, North Africa, Asia.

Distribution in Kosovo

Shkozë, Bistrë (Etemi-Zhushi and Bytyqi 2016; Jakšić 1998).

Population

Population trend: Unknown

Subopulations of this species are small and with low number of individuals.

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. Even though the low number of locations (2) qualifies this species for a threatened category, however, based on the presence of potential habitats in Kosovo and knowledge from neighboring countries, we presume that there are other subpopulations in Kosovo and thus, the threat to this species is lower than suggested by current incomplete data.

Threats

List of Threats: 2 Agriculture & aquaculture (2.3 Livestock farming & ranching: 2.3.2 Small-holder grazing, ranching or farming); 7 Natural system modifications (7.3 Other ecosystem modifications).

This species was observed to be affected by the change in agricultural activities and overgrazing.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

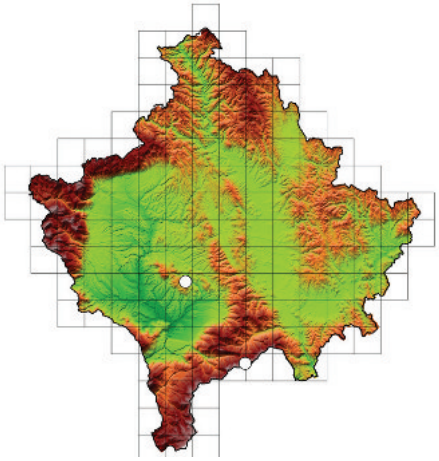
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Etemi-Zhushi and Bytyqi 2016; Jakšić 1998





Zerynthia cerisy (Godart, 1824)

Insecta: Lepidoptera: Papilionidae

Eastern Festoon

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is 52 – 62 mm. Adults fry during April and May, but in higher altitudes during June and July as well. Feeding plant for this species are species of *Aristolochia* genus.

Habitat

Habitat Type: 3. Shrubland; 4 Grassland; 16 Introduced Vegetation.
This species is mainly encountered in semi-open habitats.

General distribution

Southeastern Europe, Turkey.

Distribution in Kosovo

Reçicë, Two localities in Hani i Elezit, Prizren, Vratnicë (Jakšić 1998; Zhushi *et al.*2017).

Population

Population trend: Stable
This species was observed with small subpopulations but with relatively stable trends.

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. Even though the low number of locations (5), AOO = 20 km² and EOO = 2325 km² qualify this species for a threatened category, however, based on the presence of potential habitats in Kosovo and knowledge from neighboring countries, we presume that there are other subpopulations present in Kosovo.

Threats

List of Threats: 1. Residential & commercial development; 7 Natural system modifications (7.3 Other ecosystem modifications); 9 Pollution (9.3 Agricultural & Forestry Effluents: 9.3.3 Herbicides and Pesticides).
It was observed that this species is affected by the abandonment of agricultural lands.

Conservation measures in action

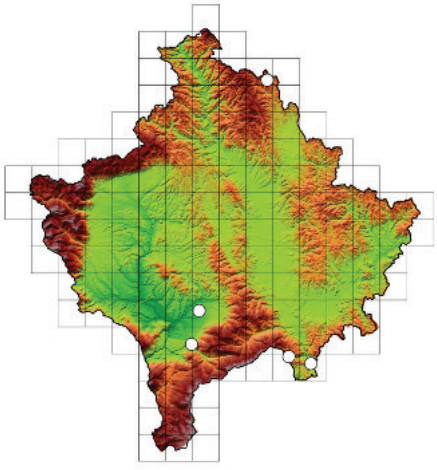
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakšić 1998; Zhushi *et al.* 2017



5.4 CYCLOSTOMATA

Eudontomyzon stankokaramani Karaman, 1974

Drin Brook Lamprey

Cyclostomata: Petromyzontiformes: Petromyzontidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori

General data

This species is mainly inhabiting clean waters. It is a nonpredatory species. The size of adult individuals is approximately 20 cm (Holčik and Šorić 2004). Metamorphosis is performed from November to April. There is no significance in terms of fishing (Freyhoff and Kottelat 2007).

Habitat

Habitat Type: 5 Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
It is predominantly found in mountainous and nearby areas and in small aquatic streams, rich in oxygen. Larvae of this species, amocytes, live on the stream bottom rich with detritus and fine gravel.

General distribution

Endemic of Balkans. Currently known only from Ohër Lake, Shkodra Lake and Drini i Bardhë.

Distribution in Kosovo

Lumbardhi i Pejës River in Grabanicë, Erenik River in Prroni i Necit, Erenik River in Trava.

Population

Population trend: Unknown
In Kosovo, it was found in only a few sites with a considerable number of individuals. However, in some of the sites, we observed activities that significantly jeopardize the habitat of this species.

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. The current number of locations (3), AOO = 12 km² and EOO = 121 km² qualify this species for a threatened category, however, we expect the species to be more widespread in Kosovo than currently known. The impact from small dams in the Drini i Bardhë basin on subpopulations of this species should be assessed.

Threats

List of Threats: 7 Natural system modifications [7. 2 Dams and water management/use: 7.2.9 Small Dams, 7.3 Other Ecosystem Modifications]; 9 Pollution [9.1 Domestic & Urban Waste Water, 9.4 Garbage & Solid Waste]; 11 Climate change & severe weather [11.2 Droughts].
Main threats for this species are the construction of dams, various ecosystem modifications, sewage pollution, pollution from solid and other waste, and the drought.

Conservation measures in action

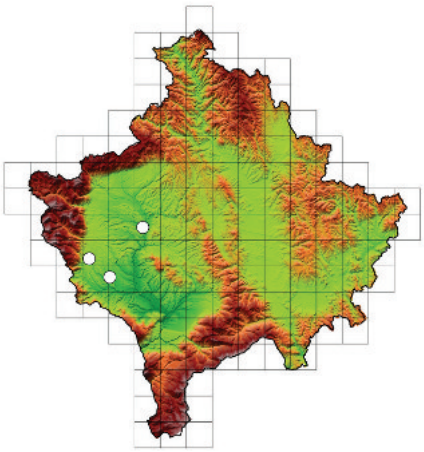
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Holčik and Šorić 2004; Freyhoff and Kottelat 2008





5.5 ACTINOPTERYGII

Barbus rebeli Koller, 1926

Western Balkan Barbel

Actinopterygii: Cypriniformes: Cyprinidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori

General data

This species, although widespread and locally abundant, is very vulnerable to habitat changes, especially in streams that may dry during the summer. It reaches the size up to 25 cm (Kottelat and Freyhof 2007).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.4 Bogs, Marshes, Swamps, Fens, Peatlands, 5.5 Permanent Freshwater Lakes].
This species can be found in rivers and lakes. It prefers segments with clean water.

General distribution

Endemic of Balkans.

Distribution in Kosovo

Adriatic Sea basin, Black Sea basin, Aegean Sea basin.

Population

Population trend: Unknown
Populations of this species are abundant but fragmented. It is used very much in the fishery.

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, being endemic species of the Balkan Peninsula, as well as the factors that could threaten this species in Kosovo, such as overfishing and fragmented distribution. The species is still widespread in the Drini i Bardhë basin in Kosovo.

Threats

List of Threats: 1 Residential & commercial development [1.1 Housing & urban areas]; 9 Pollution [9.1 Domestic & Urban Waste Water, 9.4 Garbage & Solid Waste]; 11 Climate change & severe weather [11.2 Droughts].
Main threats for this species are impacts from settlements and urban areas, the sewage pollution, pollution from solid and other waste, and the drought.

Conservation measures in action

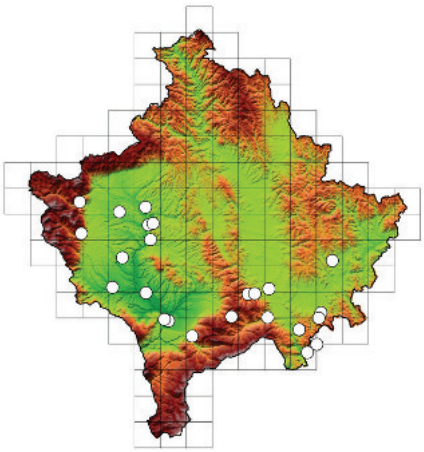
Currently, there is no conservation measure in action.

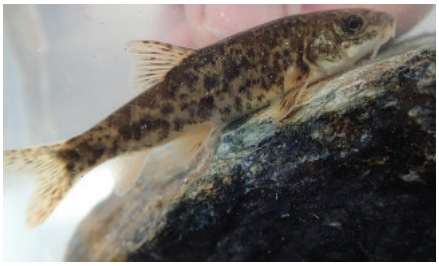
Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Kottelat and Freyhof 2007





Carassius carassius (Linnaeus, 1758)

Actinopterygii: Cypriniformes: Cyprinidae

Crucian Carp

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori

General data

This species is characterized by adult forms that can survive at high temperatures and at very low concentrations of oxygen during the summer, while in the winter season it is found under the ice cover. They can live up to 10 years and reach length up to 64 cm. They dive in the mud during the dry season or during the winter. They can also tolerate significant amounts of organic pollutants in the water. Usually, they are not common for waters where there are many fish species (Kottelat and Freyhoff 2006).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.4 Bogs, Marshes, Swamps, Fens, Peatlands, 5.5 Permanent Freshwater Lakes).

This species is characteristic for shallow ponds, rich vegetation lakes, and slow running rivers.

General distribution

Europe.

Distribution in Kosovo

Badovc Lake.

Population

Population trend: Decreasing

Populations of this species are fragmented and with the decreasing tendency.

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level as well as the increasing tendency of activities that could threaten this species in Kosovo. The current number of locations (1) qualifies this species for a threatened category, however, we expect it to be more widespread in Kosovo than currently known.

Threats

List of Threats: 1Residential & commercial development (1.1 Housing & urban areas); 8 Invasive & other problematic species, genes & diseases (8.3 Introduced genetic material);11 Climate change & severe weather (11.2 Droughts).

Main threats for this species are: impacts from settlements and urban areas, the sewage pollution, pollution from solid and other waste, drought and hybridization with introduced species.

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

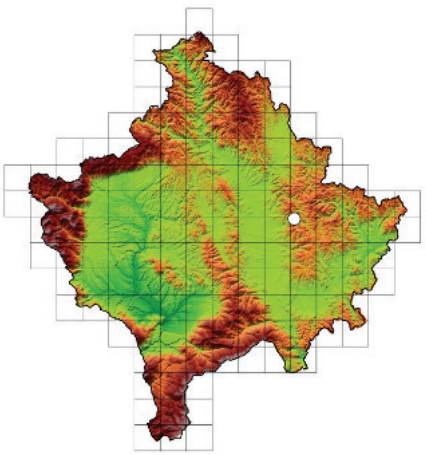
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Kottelat and Freyhoff 2006





Pachychilon pictum (Heckel & Kner, 1858)

Actinopterygii: Cypriniformes: Cyprinidae
Albanian Roach

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Near Threatened, NT

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori

General data

This species is mainly fed with plankton organisms, insect larvae, and other macrozoobenthos, as well as on other fish and periphyton. It is reproduced in the spring when the water temperature rises above 12 °C. The body size is up to 20 cm and weights up to 70 gr (Frayhof 2006; Marič 1995).

Habitat

Habitat Type: 5. Wetlands (inland) [5.4 Bogs, Marshes, Swamps, Fens, Peatlands, 5.5 Permanent Freshwater Lakes, 5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]].
This species lives in freshwater ecosystems, mostly in those with medium or slow water flow, including lakes.

General distribution

Endemic species of Balkans. Introduced in other parts of Europe such as France, Italy, etc.

Distribution in Kosovo

Lumbardhi i Pejës River, Drini i Bardhë River, Erenik River, Lumbardhi i Prizrenit River, Lumbardhi i Deçanit River.

Population

Population trend: Stable
Populations of this species are usually abundant in localities of the Adriatic Sea basin. However, in some of the sites the trend of the habitat degradation has been observed in recent years.

Rationale

This species is assessed as Near Threatened because of the rarity and importance of the species at the European level as well as the increasing tendency of activities that could threaten this species in Kosovo. The current number of locations (9) qualifies this species for the threatened category; however, we expect the species to be more widespread in Kosovo than currently known.

Threats

List of Threats: 9 Pollution [9.1 Domestic & Urban Waste Water, 9.4 Garbage & Solid Waste]; 11 Climate change & severe weather [11.2 Droughts].
Main threats for this species are: the sewage pollution, pollution from solid and other waste, and the drought.

Conservation measures in action

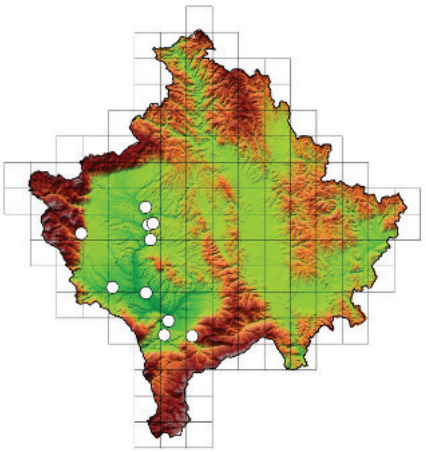
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site[s] where occurs.

References

Frayhof 2006; Marič 1995



Rhodeus amarus (Bloch, 1782)

Actinopterygii: Cypriniformes: Cyprinidae
European Bitterling

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Near Threatened, NT

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori, Qenan Maxhuni

General data

The reproduction in this species begins immediately after the first year of life. The size of adult individuals can reach up to 30-35 cm. This species lives up to 5 years, but most individuals do not survive their first year of reproduction, so the size of populations varies considerably over the years (Freyhoff and Kottelat 2008). It is reproduced during April and August. It is mainly fed with plants, but to a lesser extent with worms, crabs and insect larvae. It is characteristic for placing its eggs in the cavity of the *Unio* shell.

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.4 Bogs, Marshes, Swamps, Fens, Peatlands, 5.5 Permanent Freshwater Lakes).
It is mainly found in areas with slow flow of water and standing waters as well, often with a muddy bottom. It is abundant in vegetation-rich environments.

General distribution

Europe and wider.

Distribution in Kosovo

Drenica River in Çikatovë, Drenica River in Grabovc.

Population

Population trend: Unknown
Data about distribution and population trends of this species are still insufficient, but population fluctuations have been observed since most individuals do not survive the first year of their life.

Rationale

This species is assessed as Near Threatened because of the rareness and importance of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. The current number of locations (2) and AOO = 8 km² qualify this species for a threatened category, however, we expect it to be more widespread in Kosovo than currently known.

Threats

List of Threats: 8 Invasive & other problematic species, genes & diseases (8.1 Invasive Non-Native/Alien Species/Diseases); 9 Pollution (9.1 Domestic & Urban Waste Water, 9.4 Garbage & Solid Waste); 11 Climate change & severe weather (11.2 Droughts).
Main threats for this species are diseases that may come from alien and/or non-autochthonous species, urban and household pollution, pollution with garbage and droughts.

Conservation measures in action

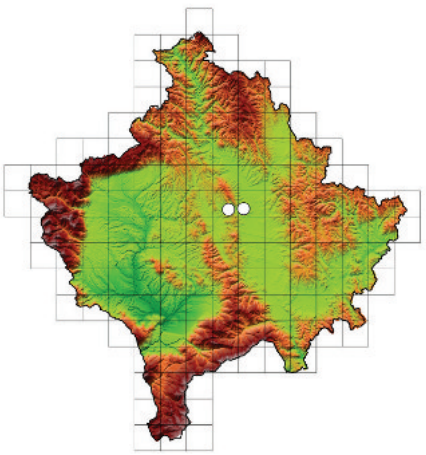
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. ,Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Freyhoff and Kottelat 2008





5.6 REPTILIA

Ablepharus kitaibelii Bibron & Bory St. Vincent, 1833

Juniper Skink

Reptilia: Squamata: Scincidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This species has a body length of 10 to 11 cm. The small head passes through the neck without any clear boundary. The body ends with a thin, long tail. The color of the body is quite variable and can be gray, olive, brown or bronze, while the ventral side is brighter. It is fed with different species of spiders, flies, beetles, butterflies and other invertebrates. It is an oviparous species. The females become sexually mature at the age of two and produce 2 to 5 eggs at the end of May or early June, from which emerge young individuals of up to 4 mm long, at the end of July or early August (Bohme *et al.*2009).

Habitat

Habitat Type: 1 Forest; 3. Shrubland; 4. Grassland; 14. Artificial/Terrestrial.
The preferred habitats for this species are dry areas rich with leaves and small plants.

General distribution

Albania, Bulgaria, Croatia, Greece, Hungary, Kosovo, Macedonia, Romania, Serbia, Slovakia, Turkey.

Distribution in Kosovo

Prizren, Novo Bërdë, Radavc, Gazimestan, Zatra.

Population

Population trend: Decreasing
The global population trend is stable. In Kosovo, subpopulations of this species are fragmented and unstable.

Rationale

Population trend for this species in Kosovo is decreasing. However, the number of subpopulations is expected to be more than currently known. For the time being, this species does not qualify for the threatened category, but if the threatening activities intensify, it can be significantly jeopardized. Therefore, the species is assessed as Near Threatened.

Threats

List of Threats: 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops: 2.1.1 Shifting agriculture); 5 Biological resource use (5.3 Logging & wood harvesting); 7 Natural system modifications (7.1 Fire & fire suppression); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).
Main threats for this species are: habitat fragmentation as a result of the development of intensive agriculture, the change of the destination of agricultural crops and the creation of new areas requiring new infrastructure. Possible threatening factors are also: the mismanagement of forest environments, fires in fields, pastures and forests, uncontrolled urban constructions and openings of new roads, with accompanying infrastructure. Populations of this species also depend on the dynamics of the development of some invertebrate species on whom they feed, but also the dynamics of development of some birds and mammals species.

Conservation measures in action

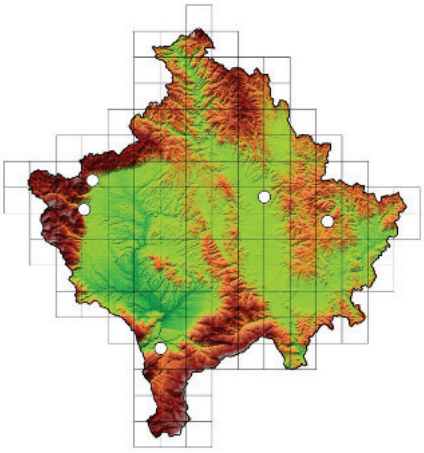
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Bohme *et al.* 2009





Coronella austriaca Laurenti, 1768

Reptilia: Squamata: Colubridae

Smooth Snake

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This is a slow and non-venomous species. Body length is 80-90 cm. The body is covered with smooth shining scales. The male on the dorsal side is characterized by a dark gray or yellowish toward reddish color, whereas in females dominates the gray color. This species is fed with other reptiles and small mammals. It is an ovoviviparous species. In September, females usually give birth to 5 to 8 young individuals, but sometimes up to 15.

Habitat

This species is mainly found in rocky dry hillsides close to forests, but also in high mountainous areas up to 2000 m above sea level.

General distribution

Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Finland, France, Georgia, Germany, Greece, Iran, Italy, Kazakhstan, Kosovo, Latvia, Lithuania, Luxembourg, Macedonia, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russis, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom.

Distribution in Kosovo

Muzhevinë, Osojan, Matiqan, Caralevë, Rapçe, Kërstec, Dobërdol, Gërmi, Nerodime e Epërme, Maja e Zezë, Zatra, Leposaviq, Shutman.

Population

Population trend: Decreasing

The global population trend is declining. In Kosovo, subpopulations of this species also have a negative trend.

Rationale

Population trend for this species in Kosovo is decreasing. However, the number of subpopulations is still high and several others are expected. For the time being, this species does not qualify for the threatened category, but if the threatening activities intensify, it can be significantly jeopardized. Therefore the species is assessed as Near Threatened.

Threats

List of Threats: 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops: 2.1.1 Shifting agriculture); 5 Biological resource use (5.3 Logging & wood harvesting); 7 Natural system modifications (7.3 Other ecosystem modifications).

The main threatening factors for this species are: degradation and fragmentation of the habitat through the mismanagement of forest areas, the burning of forests, shrubs, and vegetation, but also the intensification of agriculture and the change of destination for agricultural crops, as well as the opening of new areas for crops that require specific climatic conditions.

Conservation measures in action

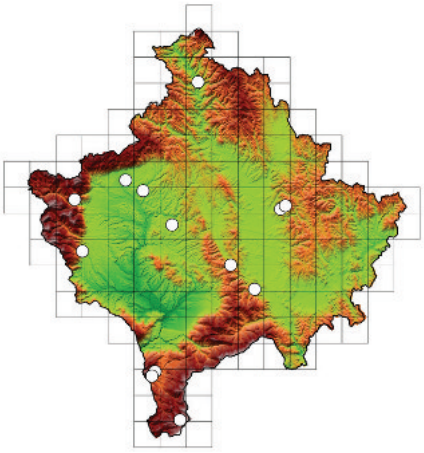
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.





Darevskia praticola (Eversmann, 1834)

Reptilia: Squamata: Lacertidae

Meadow Lizard

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

In this species there is a large heterogeneity of the scales in terms of their number and size. The body length is between 12 and 15 cm. The dorsal side of the body is gray, brown or olive. The ventral side in the male is green and yellow. It is an oviparous species. Females produce 4 to 6 eggs in May or April from which new forms emerge in July or August. The life expectancy of this species is up to 6 years.

Habitat

Habitat Type: 1. Forest; 4. Grassland; 14. Artificial/Terrestrial.

This species is found in hilly mountain areas rich in grasses, shrubs and old tree trunks. In addition to the low altitudes, it can be found at altitudes up to 1700 m.

General distribution

Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Iran, Kosovo, Romania, Russia, Serbia, Turkey.

Distribution in Kosovo

Osojan, Gërmi, Banjskë, Breznicë.

Population

Population trend: Unknown

The global population trend is declining. In Kosovo, there is not enough information about population trends. However, it was observed with a low number of individuals in some sites during the past years.

Rationale

Population trend for this species in Kosovo is not totally stable, although not completely known. However, the number of subpopulations is expected to be more than currently known. For the time being, this species does not qualify for the threatened categories but if the threatening activities intensify, it can be significantly jeopardized. Therefore the species is assessed as Near Threatened.

Threats

List of Threats: 1 Residential & commercial development (1.2 Commercial & industrial areas); 4 Transportation & service corridors (4.1 Roads & railroads); 6 Human intrusions & disturbance (6.1 Recreational activities; 6.2 War, civil unrest & military exercises).

Main threats for this species are the fragmentation, loss, and destruction of habitats, as a result of the development of infrastructure, tourism and urbanization, then the extreme climatic conditions. The war in Kosovo, namely the movement of heavy military vehicles, seems to have significantly damaged this species as well. Another factor that endangers this species are recreational activities.

Conservation measures in action

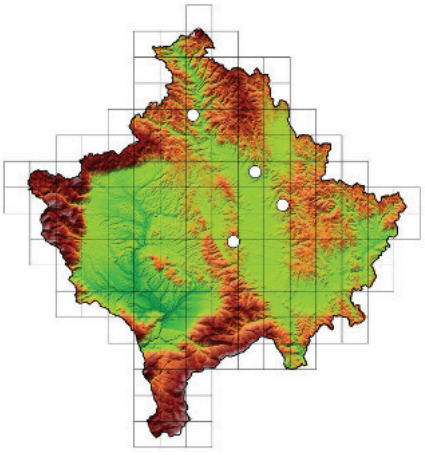
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.





Emys orbicularis (Linnaeus, 1758)

Reptilia: Testudines: Emydidae

European Pond Turtle

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body length of this species can range from 20 to 30 cm (Arnold & Ovenden 2002). Carapace is dark in color with yellow spots in the form of a mosaic. During the day it stays in the water and near the water, while at night it leaves at a certain distance. It feeds on fish, frogs and their larvae, invertebrates and in some cases plants (Ficetola & De Bernardi 2006). Fertilization is carried out in the water during May and after a month the female usually produces 6 to 10, or rarely up to 20 eggs, that are placed in a pit near the water. The eggs overwinter in the pits and then, after a few months in the spring from them emerge young individuals.

Habitat

Habitat Type: 5.Wetlands (inland); 15. Artificial/Aquatic & Marine.

This species can be mainly found in standing waters or in slow-moving waters rich in vegetation.

General distribution

Southern Europe, Middle Europe, From east up to the Caspian Sea and Aral, Southwestern Africa.

Distribution in Kosovo

Krushë e Vogël, Gjakovë, Krushë e Madhe, Komoran, Prizren-Dragash road nearby Drini i Bardhë, Gjurakoc.

Population

Population trend: Decreasing

The global population trend is declining. In Kosovo, subpopulations of this species also have a negative trend.

Rationale

Population trend for this species in Kosovo is decreasing. However, the number of subpopulations is still high and several others are expected. For the time being, this species does not qualify for the highest threat categories, but if the threatening activities intensify, it can be significantly jeopardized. Therefore, the species is assessed as Near Threatened.

Threats

List of Threats: 1Residential & commercial development (1.2 Commercial & industrial areas 1.3 Tourism & recreation areas); 4 Transportation & service corridors (4.1 Roads & railroads); 7 Natural system modifications (7.2 Dams & water management/use); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage, 9.1.2 Run-off); 11 Climate change & severe weather (11.2 Droughts).

Main threats for this species are the fragmentation and degradation of the habitats. Since this species lives in standing localized waters close to fertile soils, it is threatened by changing these surfaces by drying them, either under the influence of extreme temperatures or by draining them through different channels. This species is often also endangered by impacts on river beds, due to the use of sand, then river pollution and sewage containing pesticides.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

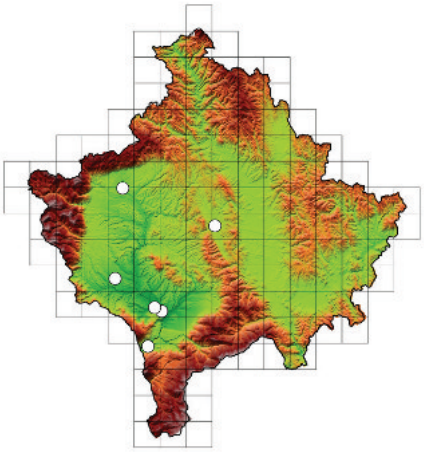
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Arnold & Ovenden 2002; Ficetola & De Bernardi 2006





Natrix natrix (Linnaeus, 1758)

Reptilia: Squamata: Colubridae
Grass snake

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Near Threatened, NT

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This is a harmless and non-venomous snake. It is very easily identifiable from other snakes due to the presence of two crescent spots white or yellow in color, which are located on both back sides of the head. The color of the body is different. On the dorsal side, it can usually be grayish, green, olive or sprinkled with black or brown spots, while the abdomen is completely bright and only towards the tail with black spots. They mainly feed on frogs, fish, and larvae, as well as on other small animals. It is an oviparous species. Females produce 15-20 eggs, while older ones up to 35. After a month and a half or two, young individuals emerge and feed on fish and amphibian larvae.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 5. Wetlands (inland); 14. Artificial/Terrestrial; 15. Artificial/Aquatic & Marine.
It is usually found in/or nearby standing and flowing waters, then in canals, river basins but also in places up to 2000 m.

General distribution

Europe, North Africa, Western Asia.

Distribution in Kosovo

Pogragjë, Tucep, Veriq, Mramor, Nerodime e Epërme, Drajkoc, Nedakovc, Moknë, Ujmirë.

Population

Population trend: Decreasing
At the global level, the population trend is declining. In Kosovo, as well, was observed a slight decline.

Rationale

This species is assessed as Near Threatened because of the population trends of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. For the time being, this species does not qualify for the threatened category but if the threatening activities intensify, it can be significantly jeopardized. The species is currently known from 9 sites and can be expected from few more.

Threats

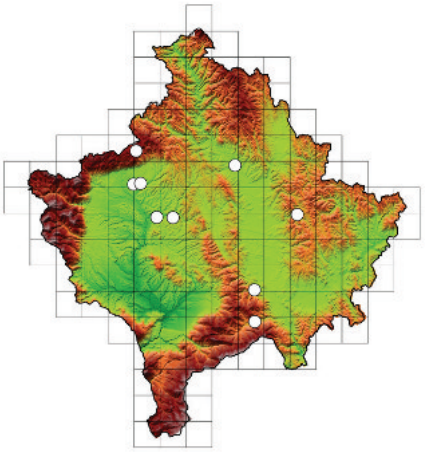
List of Threats: 1 Residential & commercial development (1.1 Housing & urban areas); 4 Transportation & service corridors (4.1 Roads & railroads); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.3 Persecution/control).
The main threatening factors for this species are anthropogenic activities causing degradation, fragmentation, modification or complete loss of habitats. This species is significantlly threatened by developments that come through urbanization, such as road construction and road infrastructure, as well as the intensification of agriculture. Persecution by humans is also another threatening factor.

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.





Podarcis tauricus (Pallas, 1814)

Reptilia: Squamata: Lacertidae

Balcan Wall Lizard

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This species is characterized by a slender body and beautiful colors, making it one of the most attractive lizards. The small head passes through the body without any clear boundary. The total length of the body is 16 - 18 cm. The dorsal side of the body is green in color, splashed with black spots aligned in three lines on both sides of the body, and with two white stripes between them. In males, the ventral side of the body is orange or reddish, and in females white or green. They reach sexual maturity at two years of age (Chondropoulos & Lykakis 1983). Female produces 2 to 10 eggs twice a year, from mid-May until June and from mid-June to mid-July. They feed on different invertebrates.

Habitat

Habitat Type: 3. Shrubland; 4. Grassland; 14. Artificial/Terrestrial.

This species is mainly found in open areas, meadows, fields, as well as sandy lands. Also, they can often be observed in dry and sunny places, then in low hilly areas with poor vegetation. It can be found at altitudes up to 2000 m.

General distribution

Southeastern Europe from Danube up to Crimea and in south up to Mediterranean Sea.

Distribution in Kosovo

Kievë, Gllarevë, Gërmi, Mirushë, Zhur, Caralevë, Potok, Bozhevce.

Population

Population trend: Decreasing

The global population trend is stable. In Kosovo, subpopulations of this species are fragmented and unstable.

Rationale

Population trend for this species in Kosovo is decreasing. However, the number of subpopulations is expected to be more than currently known.

For the time being, this species does not qualify for the threatened category, but if the threatening activities intensify, it can be significantly jeopardized. Therefore, the species is assessed as Near Threatened.

Threats

List of Threats: 1 Residential & commercial development; 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops: 2.1.1 Shifting agriculture); 7 Natural system modifications 7.1 Fire & fire suppression; 9 Pollution.

Main threats for this species are degradation, fragmentation, and loss of habitats as a result of the intensification of agriculture, the opening of new areas and change of the destination of agricultural crops. Other threatening factors include the use of various agrochemicals, intentional fires on fields, pastures, and forests.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

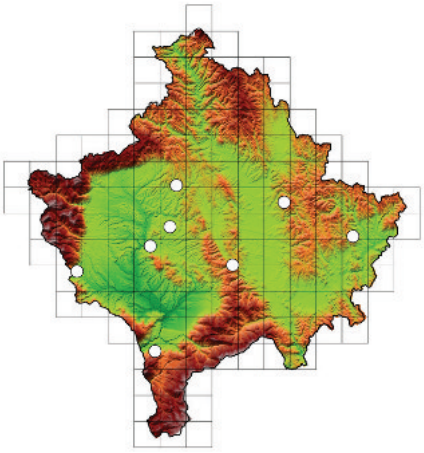
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Chondropoulos & Lykakis 1983





Testudo hermanni (Gmelin, 1789)

Reptilia: Testudines: Testudinidae

Hemann's Tortoise

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This is a herbivorous species but sometimes feeds on insects as well. The body length is between 20 and 25 cm. The color of the body on the dorsal side is yellow with black spots. Females are larger than males. They produce 6 to 8 eggs from May to July, while the incubation time is 60 to 90 days.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 14. Artificial/Terrestrial.

This species can be found mainly in dry and rocky habitats, covered with grass and shrubs, then near roads, fields, and orchards, in altitudes up to 500 m. In the Balkans, this species can be found in altitudes over 1300 m (Bertolero *et al.*2011).

General distribution

Albania, Bosnia and Herzegovina, Bulgaria, Croatia, France, Greece, Italy, Kosovo, Montenegro, Romania, Serbia, Spain, Turkey.

Distribution in Kosovo

Potok, Batushë, Morinë, Firajë, Mramor, Marec, Qabiq, Gjurgjevik i Madh, Veriq, Osojan, Zhur, Krushë e Vogël, Malishevë, Tifek, Gajre, Rahovec, Nerodime e Epërme, Nerodime e Poshtme, Malishevë, Lipa, Zhazhë, Baks, Prejlep.

Population

Population trend: Decreasing

At the global level, the population trend is declining. In Kosovo, as well, subpopulations of this species are declining.

Rationale

Population trend for this species in Kosovo is decreasing. However, the number of subpopulations is still high and several others are expected. For the time being, this species does not qualify for highest threat categories, but if the threatening activities intensify, it can be significantly jeopardized. Therefore, the species is assessed as Near Threatened.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & urban areas ,1.3 Tourism & recreation areas); 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops: 2.1.1 Shifting agriculture); 4 Transportation & service corridors (4.1 Roads & railroads); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.2 Unintentional effects (species being assessed is not the target), 5.1.3 Persecution/control); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.1 Fire & fire suppression); 11 Climate change & severe weather.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

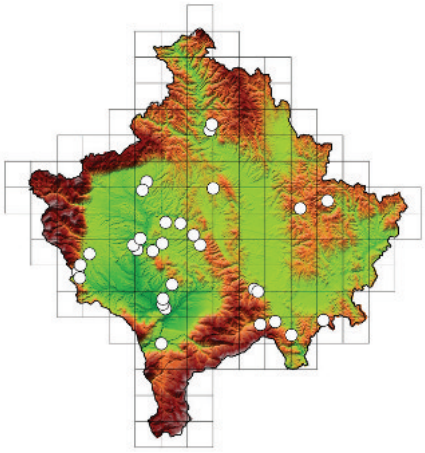
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Bertolero *et al.* 2011





Zootoca vivipara (Jacquin, 1787)

Reptilia: Squamata: Lacertidae

Viviparous Lizard

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

On the outward appearance, this species resembles the wall lizard. The body length ranges from 14 to 16 cm. The color of the body on the dorsal side is dark brown or gray, sparkled with black spots and white dots. The ventral side in the male is yellow towards orange, with black spots, while in females it is gray or green. It becomes active early in the spring. Fertilization occurs in May, while females give birth to 5-8 young individuals in August. Representatives of this species living in northern areas are viviparous, while those from the southern regions are oviparous (Mayer *et al.*2000). The males reach maturity at the age of 2 and the females later. The young individuals immediately become independent, one day after birth. The average life expectancy is 5 to 6 years.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 5. Wetlands (inland); 14. Artificial/Terrestrial.

This species can be found in high mountain ranges of 100 to 3000 m altitudes. It is mainly limited to grassland. It is also often found around freshwater ecosystems.

General distribution

Almost all Palearctic, from south up to Pirinees, and in the east Mongolia and Sakhalin islands.

Distribution in Kosovo

Pllajnik, Peri Breg, Shtëpia e Stojkut.

Population

Population trend: Decreasing

The population trend globally is decreasing. In Kosovo, as well, subpopulations of this species are in decline.

Rationale

Population trend for this species in Kosovo is decreasing. However, the number of subpopulations is expected to be more than currently known.

For the time being, this species does not qualify for the highest threat categories, but if the threatening activities intensify, it can be significantly jeopardized. Therefore, the species is assessed as Near Threatened.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 6 Human intrusions & disturbance (6.1 Recreational activities, 6.3 Work & other activities); 11 Climate change & severe weather (11.2 Droughts, 11.3 Temperature extremes).

Main threats for this species are degradation and destruction of habitats due to the intensive development of agriculture, infrastructure, agro-industrial facilities, and in high mountainous areas development of tourism and recreational activities. The war in Kosovo, namely the movement of heavy military vehicles, seems to have significantly damaged this species. Another factor that endangers this species are recreational activities.

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

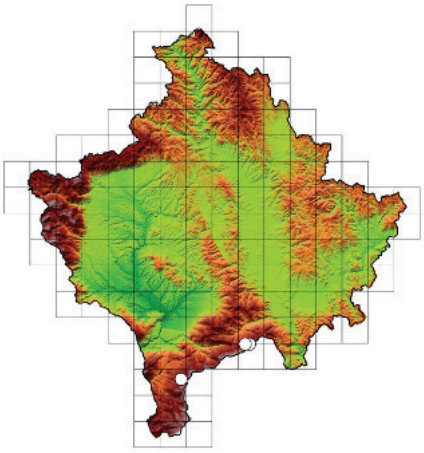
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Mayer *et al.* 2000





5.7 AVES

Acrocephalus palustris (Bechstein, 1798)

Aves: Passeriformes: Acrocephalidae

Marsh Warbler

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni

General data

Size of this species is 13 cm and the weight 10–13 g (mean 11.9 g). This is a migratory species, feeding mostly on insects, arachnids, snails, and berries (BirdLife International 2016m).

Habitat

Habitat Type: 5. Wetlands (inland) (5.4. Bogs, Marshes, Swamps, Fens, Peatlands). This species favors rank, tufty, and fairly tall herbage, especially nettles (*Urtica*), meadowsweet (*Filipendula*), brambles (*Rubus fruticosus*) and others, often in the vicinity of taller bushes or trees. It also occurs in corn fields and other agricultural land surrounded with a belt of low bushes or hedgerows, as well as in wasteland with tall grass, herbs, and small bushes, in tall herbaceous vegetation along ditches, in marsh vegetation at edges of swamps, in reeds on dry ground and even in gardens (BirdLife International 2016m).

General distribution

S England (local), S Scandinavia, N & E France and N Italy E to NW Kazakhstan, S to N Balkans, E Turkey and NW Iran; winters in SE Africa.

Distribution in Kosovo

Henc.

Population

Population trend: Unknown

Rationale

This species has limited distribution range in Kosovo based on current knowledge and is under the threats that could endanger it in near future. However, the species does not qualify for the threatened category, since we presume that its distribution in Kosovo is wider than currently known. Therefore, we assess it in the Near Threatened category.

Threats

List of Threats: 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops) 11 Climate change & severe weather (11.1 Habitat shifting & alteration)

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

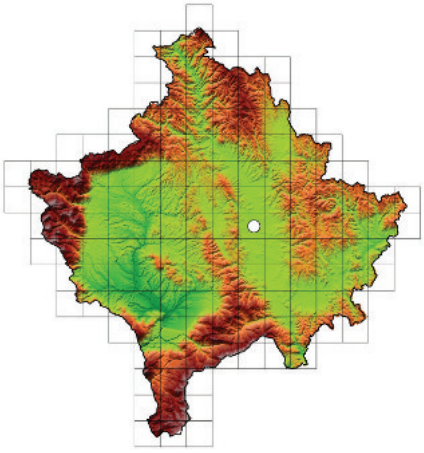
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. ,Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

BirdLife International 2016m





Anas crecca (Linnaeus, 1758)

Aves: Anseriformes: Anatidae

Teal

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni

General data

Size of this species is 34–38 cm, male weights 250–450 g, female 200–400 g, while the wingspan is 58–64 cm. In the northern part of its distribution, it is a migratory species, while in temperate regions it is sedentary. During the breeding time, it feeds mainly on the food of animal origin, while during the winter it feeds on seeds of aquatic plants (BirdLife International 2016a).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1. Permanent Rivers/Streams/Creeks (includes waterfalls), 5.5. Permanent Freshwater Lakes (over 8ha), 5.7. Permanent Freshwater Marshes/Pools (under 8ha), 5.8. Seasonal/Intermittent Freshwater Marshes/Pools (under 8ha)).

The species shows a preference for shallow permanent waters in the breeding season, especially those in the vicinity of woodlands, with fairly dense herbaceous cover available nearby for nesting. Small freshwater lakes and shallow marshes with abundant emergent vegetation are preferred to open water, as are small water bodies forming part of a larger wetland. Other suitable habitats include small ponds, pools and slow-flowing streams. Outside of the breeding season, the species frequents similar habitats. During the winter, the species shows a preference for marshes with mud flats (BirdLife International 2016a).

General distribution

It breeds in most of North & Central Palearctic; winters in Central & South Eurasia and Africa.

Distribution in Kosovo

Henc, Obiliq.

Population

Population trend: Unknown

Rationale

This species has limited number of mature individuals during the breeding season and its nesting habitats are endangered. However, we consider these data in isolation to be incomplete and expect this species to be more widespread in Kosovo than currently known. Taking this into consideration, we assess it as Near Threatened.

Threats

List of Threats: 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target)); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use)

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

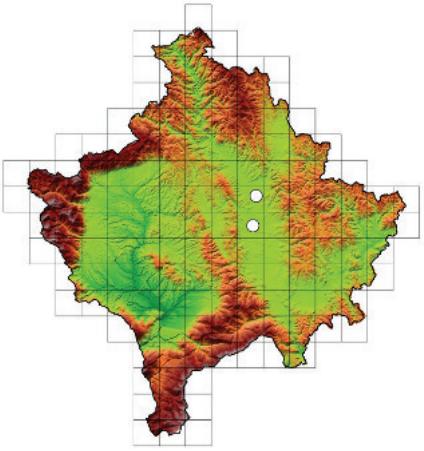
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. ,Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

Habitat management measures that provide safe and food-rich shallow wetlands are beneficial for this species.

References

BirdLife International 2016a





Picoides tridactylus (Brehm, 1831)

Aves: Piciformes: Picidae
Three-toed Woodpecker

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Near Threatened, NT

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni

General data

Size of this species is 20–24 cm (Eurasia). The species is found commonly in places where disturbance, such as fire, has caused local outbreaks of insects (BirdLife International 2016j).

Habitat

Habitat Type: 1 . Forest (1.4. Temperate Forests).
The species inhabits mature conifer forests, particularly spruce *Picea* spp.

General distribution

Mountains of C, S & SE Europe (except W Carpathians), Tien Shan, NE Korea and N Japan (Hokkaido).

Distribution in Kosovo

Kuqishtë, Junik, Deçan.

Population

Population trend: Unknown

Rationale

This species has limited distribution range in Kosovo and is under the threats that could endanger it in near future. However, the species does not qualify for the threatened category since we presume that its distribution in Kosovo is wider than currently known. Therefore, we assess it in the Near Threatened category.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting: 5.3.4 Unintentional effects: large scale (species being assessed is not the target) [harvest]).

Conservation measures in action

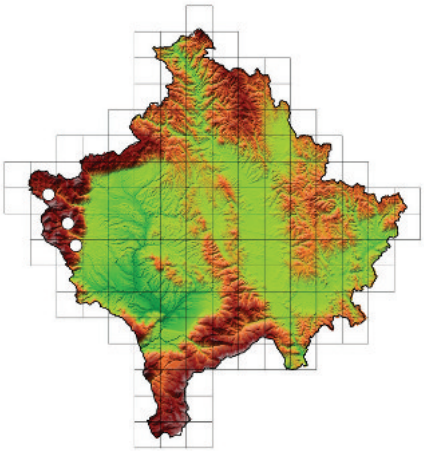
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species). The main distribution area is designated as National Park.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. ,Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
Intensive management of preferred habitats of this species, such as old spruce- or fir-dominated forest with abundant dead wood in mountains or damp lowlands should be avoided. Within intensively managed mature forests, dying or dead trees should be left. If there is insufficient dead wood, then cutting single mature trees to around 10 m and leaving to decay, may provide suitable nest sites.

References

BirdLife International 2016a





Tetrao urogallus (Linnaeus, 1758)

Aves: Galliformes: Phasianidae

Western Capercaillie

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Qenan Maxhuni, Taulant Bino

General data

Size of this species is 80–115 cm, female much smaller, 59–64 cm, male weights 3,300–4,300 g (up to 6,500 g), female 1,440–2,500 g. It feeds on pine needles, leaves, stems and berries, while chicks also feed with insects. It is mainly a sedentary species with some movements in winter (BirdLife International 2016).

Habitat

Habitat Type: 1. Forest (1.4. Temperate Forests).

The species inhabits forest and woodland, mainly coniferous or mixed coniferous-deciduous. It prefers extensive areas of old, shady forest often with damp soil and interspersed with bogs, areas of peat or glades, and with a dense undergrowth of ericaceous plants, but with canopy, neither too open or closed (BirdLife International 2016).

General distribution

The species has an extremely large distribution range including Europe and Northern part of Asia.

Distribution in Kosovo

Junik, Mushtisht.

Population

Population trend: Unknown

Rationale

Habitats of this species are endangered by forest logging and the species is endangered by poaching. Although data in isolation suggest this species to be placed in a threatened category, however, we presume that the species is more widespread in Kosovo than currently known, also based on knowledge from surrounding countries. Taking this into consideration, we asses it as Near Threatened.

Threats

List of Threats: 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target, 5.3 Logging & wood harvesting: 5.3.3 Unintentional effects: subsistence/small scale (species being assessed is not the target) [harvest]); 6 Human intrusions & disturbance (6.3 Work & other activities).

Conservation measures in action

Protected species (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species). Part of its distribution range is designated as a protected area.

Conservation measures needed

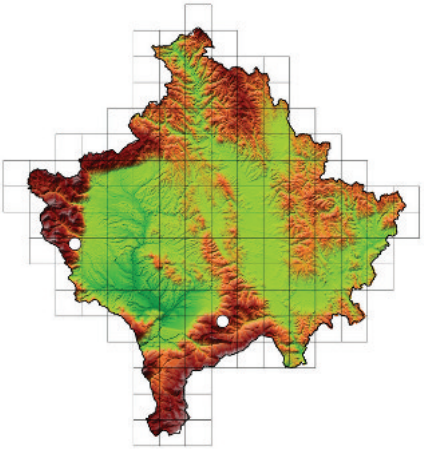
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. ,Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

Improve knowledge about the effects of hunting on this species. Implement measures to reduce abandonment of traditional agro-pastoral activities. Improve legislation and enforcement to reduce unsustainable hunting and poaching.

References

BirdLife International 2016





5.8 MAMMALIA

Felis silvestris Schreber, 1777

Mammalia: Carnivora: Felidae

Wildcat

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body is covered with dense, short-colored hair similar to their habitat, which makes it difficult to be distinguished. The color of the body may be gray or brown with spots and signs black in color. The length of the body is 51-71 cm, the tail is 21 - 35 cm and the body weight is 2.7 - 7 kg. It is a carnivore species and feeds on mammals, birds and their eggs, reptiles, amphibians, and insects. It is very successful in protecting itself from predators that are several times bigger. Usually, they are active during the night in search of food. They do not migrate or hibernate. They live 13 to 15 years (Weigle 2005).

Habitat

Habitat Type: 1. Forest; 3. Shrubland.
This species can be found in a wide variety of habitats, ranging from forest, shrub areas rich in vegetation and open rocky areas, but avoiding areas where people are concentrated.

General distribution

Europe, Asia, Africa.

Distribution in Kosovo

Svilen, Bjeshkët e Junikut, Kërstec, Stanaj, Rahovë, Kaçandoll, Mushtisht.

Population

Population trend: Decreasing
The global population trend of this species is declining. In Kosovo, as well, population decline was observed.

Rationale

This species is assessed as Near Threatened because of the number of subpopulations, population trends of the species, as well as the increasing tendency of activities that could threaten this species in Kosovo. For the time being, this species does not qualify for the threatened category, but if the threatening activities intensify, it can be significantly jeopardized.

Threats

Main threats for this species are: habitat loss, degradation, and fragmentation, hybridization with the domestic cats, then shooting due to the hostile attitude and damage of birds from them etc.

Conservation measures in action

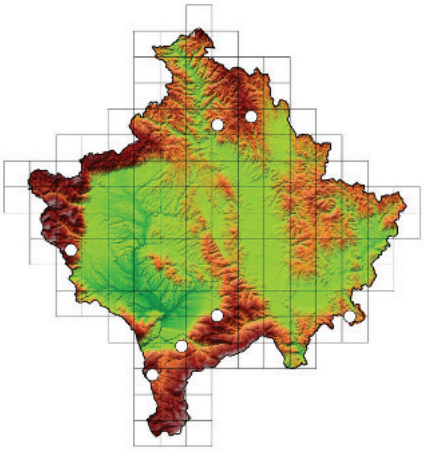
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Weigle 2005





Lutra lutra (Linnaeus, 1758)

Mammalia: Carnivora: Mustelidae

Eurasian Otter

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This is a semi-aquatic species. Their body is covered by a fur which is resistant to the water, bright brown in color and with shining spots. They have a thick and very muscular tail. Their body length is 57-95 cm, while the tail is 35-45 cm. Their body weight may be from 7 to 24 kg. Males are usually larger than females. It is a carnivorous species and feeds on fish, crabs, frogs, snails, insects, but also with mammals and birds (Heggberget & Moseid 1994). Usually, it is active during the night, while during the day they remain in a nest built of tree roots. It is prey of wolves, lynx, predatory birds and humans. They do not migrate or hibernate. There are several known subspecies.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 5. Wetlands (inland); 15. Artificial/Aquatic & Marine.

They can be mainly found in unpolluted waters, such as rivers, lakes, swamps etc., which are rich in aquatic animals and fish.

General distribution

Europe, Asia, North Africa.

Distribution in Kosovo

Mjak, Samakovë, Kralan, Deçan, Broliq, Grabanicë, Istog.

Population

Population trend: Decreasing

Rationale

This species is assessed as Near Threatened, because of the population trends of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. For the time being, this species does not qualify for the threatened category, since more subpopulations are expected from Kosovo, but if the threatening activities intensify, it can be significantly jeopardized in future.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & urban areas, 1.2 Commercial & industrial areas 1.3 Tourism & recreation areas); 2 Agriculture & aquaculture (2.4 Marine & freshwater aquaculture); 3 Energy production & mining (3.1 Oil & gas drillin, 3.2 Mining & quarrying 3.3 Renewable energy); 4 Transportation & service corridors (4.1 Roads & railroads, 4.3 Shipping lanes); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals, 5.2 Gathering terrestrial plants; 5.4 Fishing & harvesting aquatic resources); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use); 9 Pollution.

Main threats for this species are human activities in water systems and surrounding areas, such as pollution, logging, plant cleaning around river banks, dam construction, wetland drainage, and marsh drying, habitat change, expansion of settlements etc.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

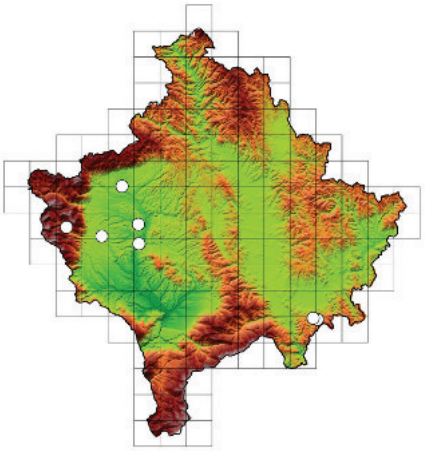
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Heggberget & Moseid 1994



Miniopterus schreibersii (Kuhl, 1817)

Mammalia: Chiroptera: Vespertilionidae

Schreiber's Bent-winged Bat

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

It forages in a variety of open and semi-open natural and artificial habitats, including suburban areas. It feeds mainly on moths, and occasionally on flies. It is a colonial species that roosts mostly in caves and mines (although it can also be found in man-made tunnels, ruins, and other buildings), often in large mixed colonies with other cave-dwelling bat species. In winter it hibernates in underground sites (usually large caves with a constant microclimate). It is a migrant species which changes its roosts several times during the year; long-distance movements occur occasionally (Hutterer *et al.*2005; Hutson *et al.*2007h).

Habitat

Habitat Type: 1. Forest, 3. Shrubland, 4. Grassland 7. Caves and Subterranean Habitats (non-aquatic), 14. Artificial/Terrestrial.

General distribution

Europe, Africa, Asia.

Distribution in Kosovo

Ostrovicë, Shpella e Banuar Cave, Dush Cave, Radavc Cave, Rugova Gorge, Lumbardhi i Pejës River in Pejë, Shpella e Kusarit Cave, Shpella e Kishnarekës Cave (Paunović 2016; Presetnik *et al.*2018).

Population

Population trend: Unknown

There is not enough data about population trends of this species in Kosovo. The population trends at the European level are decreasing.

Rationale

This species is assessed as Near Threatened, because of the population trends of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. For the time being, this species does not qualify for threat categories, but if the threatening activities intensify, it can be significantly jeopardized.

Threats

List of Threats: 1. Residential & commercial development; 6. Human intrusions & disturbance; 9. Pollution.

Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use, disturbance and loss of underground habitats.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

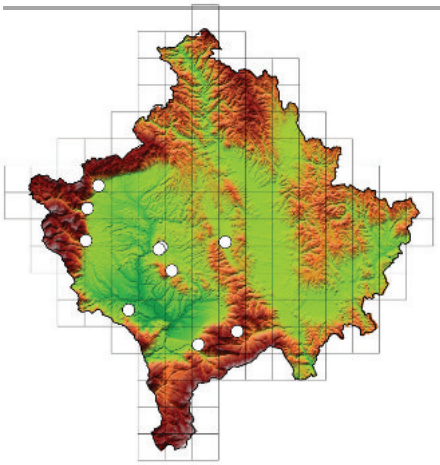
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Paunović 2016; Presetnik *et al.* 2018; Hutson *et al.* 2007h





Myotis blythii (Tomes, 1857)

Mammalia: Chiroptera: Vespertilionidae
Lesser Mouse-eared Myotis

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Near Threatened, NT

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

This is a relatively large sized bat, 62–70 mm long and 16–26 grams weight. It is mainly found in caves, old building, but also mines. It is a winter hibernating species and an occasional migrant. It forages in scrub and grassland habitats, including farmland and gardens. Pollution, change of land management and especially noise pollution has significantly reduced populations of this species in some areas in Europe during the last years (Hutson *et al.*2007e).

Habitat

Habitat Type: 4. Grassland; 3. Shrubland, 7. Caves and Subterranean Habitats (non-aquatic), 14. Artificial/Terrestrial.

General distribution

Europe, Asia.

Distribution in Kosovo

Dush Cave, Shpella e Banuar Cave, Mirushë, Ura e Terzive, Shpella e Kusarit Cave, Radavc Cave, Shpella e Kishnarekës Cave (Dundarova 2017; Presetnik *et al.*2018).

Population

Population trend: Unknown
There is not enough data about population trends of this species in Kosovo. Few individuals have been observed only. The population trends at the European level are decreasing.

Rationale

This species is assessed as Near Threatened, because of the population trends of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. The species may be more widespread in Kosovo. For the time being, this species does not qualify for the threatened category but if the threatening activities intensify, it can be significantly jeopardized.

Threats

List of Threats: 1. Residential & commercial development; 2. Agriculture & aquaculture; 5. Biological resource use; 6. Human intrusions & disturbance; 9. Pollution.
Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use.

Conservation measures in action

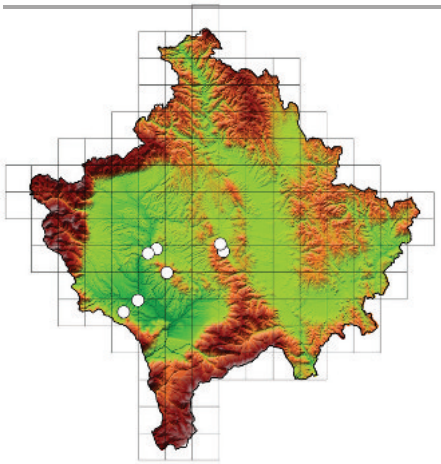
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Dundarova 2017; Hutson *et al.* 2007e; Presetnik *et al.* 2018



Myotis myotis (Borkhausen, 1797)

Mammalia: Chiroptera: Vespertilionidae
Greater Mouse-eared Bat

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Near Threatened, NT

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

This species weights up to 45 g. It forages over the deciduous woodland edge, open deciduous woodland and pasture. It preys on large, ground-dwelling arthropods such as beetles, crickets, and spiders, gleaning them from the ground and not by capturing them through echolocation. In much of its range, this bat roosts in underground sites all year, while in northern parts of its range it uses also buildings (loft-spaces) during summer. Occasionally it forms small colonies on trees. It is an occasional migrant; the longest recorded movement is 436 km (Hutson *et al.*2007d; Simon *et al.*2004).

Habitat

Habitat Type: 1. Forest, 3. Shrubland, 7. Caves and Subterranean Habitats (non-aquatic), 14. Artificial/Terrestrial.

General distribution

Europe, Asia.

Distribution in Kosovo

Lumbardhi i Prizrenit River in Prizren, Shpella e Banuar Cave, Dush Cave, Radavc Cave, Mirushë, Ura e Terzive, Shpella e Kusarit Cave, Shpella e Peshterit Cave, Shpella e Kishnarekës Cave (Paunović 2016; Presetnik *et al.*2018).

Population

Population trend: Unknown
There is not enough data about population trends of this species in Kosovo. The population trends at the European level are stable.

Rationale

This species is assessed as Near Threatened because of the increasing tendency of activities that could threaten this species in Kosovo. The species may be more widespread in Kosovo. For the time being, this species does not qualify for the threatened category, but if the threatening activities intensify, it can be significantly jeopardized.

Threats

Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas and loss of insects due to pesticide use.

Conservation measures in action

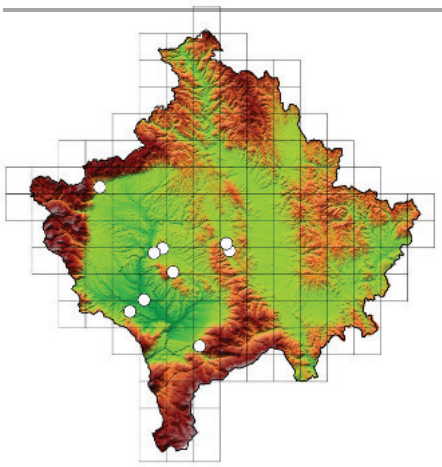
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Hutson *et al.* 2007d; Paunović 2016; Presetnik *et al.* 2018; Simon *et al.* 2004



Rhinolophus euryale Blasius, 1853

Mammalia: Chiroptera: Rhinolophidae
Mediterranean horseshoe bat

Threat category in Europe (according to IUCN)
Vulnerable, VU

Threat category in Kosovo (IUCN criteria)
Near Threatened, NT

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

The head and body of this species are normally between 43 and 58 mm, tail between 22–30 mm and the wingspan between 300 and 320 mm. It feeds on moths and other insects. There is not enough information about the reproductive cycle of this species. It is mostly known as a sedentary species with the longest known traveled distance of about 130 km (Heymer 1964 in Hutterer *et al.*2005). In winter it hibernates in underground sites, such as caves (Hutson *et al.*2007a).

Habitat

Habitat Type: 1. Forest, 3. Shrubland, 7. Caves and Subterranean Habitats (non-aquatic), 14. Artificial/Terrestrial.

General distribution

Europe, Africa, Asia.

Distribution in Kosovo

Prizren, Rugova Gorge, Shpella e Banuar Cave, Radavc Cave, Shpella e Qiriut Cave, Shpella e Peshterit Cave (Paunović 2016; Presetnik *et al.*2018).

Population

Population trend: Unknown
There is not enough data about population trends of this species in Kosovo. The population trend at the European level is decreasing.

Rationale

This species is assessed as Near Threatened because of the population trends of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. For the time being, this species does not qualify for the threatened category, but if the threatening activities intensify, it can be significantly jeopardized.

Threats

List of Threats: 5. Biological resource use; 6. Human intrusions & disturbance; 9. Pollution.
Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use, disturbance and loss of underground habitats and attics.

Conservation measures in action

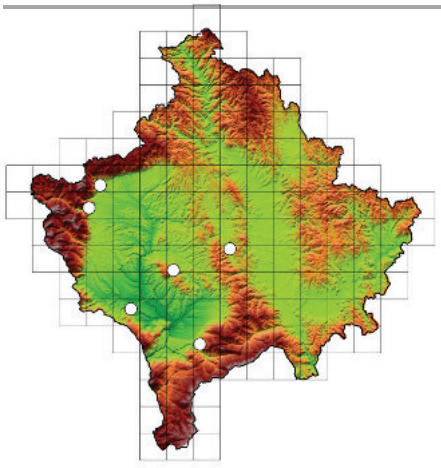
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. ‚Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Hutterer *et al.* 2005; Hutson *et al.* 2007a; Paunović 2016; Presetnik *et al.* 2018





Rhinolophus ferrumequinum (Schreber, 1774)

Mammalia: Chiroptera: Rhinolophidae

Greater horseshoe bat

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

This species is the largest horseshoe bat in Europe. It is between 57–71 mm long, with a 35–43 mm tail and a 350–400 mm wingspan. It feeds mostly on moths and beetles, but other insects as well. Summer roosts are located in a warm natural and artificial underground sites, and attics in some places. The species will use caves all year, but in some areas, it uses buildings for summer maternity colonies as well. In winter it hibernates in cold underground sites, mostly caves (Hutson *et al.*2007). Females of this species become sexually mature at the age of three years and the males at the age of two. The young are born during the June-July period (Hutson *et al.*2007).

Habitat

Habitat Type: 1. Forest, 3. Shrubland, 4. Grassland, 7. Caves and Subterranean Habitats (non-aquatic), 14. Artificial/Terrestrial.

General distribution

Europe, Africa, Asia.

Distribution in Kosovo

Istog, Novosellë, Lubinje e Epërme, Shpella e Banuar, Dush Cave, Klinë, Radavc Cave, Cërmjan, Shpella e Kusarit Cave, Shpella e Qiriut Cave, Shpella e Peshterit Cave (Budinski *et al.*2015; Paunović 2016; Presetnik *et al.*2018).

Population

Population trend: Unknown

There is not enough data about population trends of this species in Kosovo. The population trend at the European level is decreasing

Rationale

This species is assessed as Near Threatened because of the population trends of the species at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. For the time being, this species does not qualify for the threatened category but if the threatening activities intensify, it can be significantly jeopardized.

Threats

List of Threats: 2. Agriculture & aquaculture; 7. Natural system modifications; 8. Invasive and other problematic species, genes & diseases; 9. Pollution.

Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use, disturbance and loss of underground habitats and attics.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

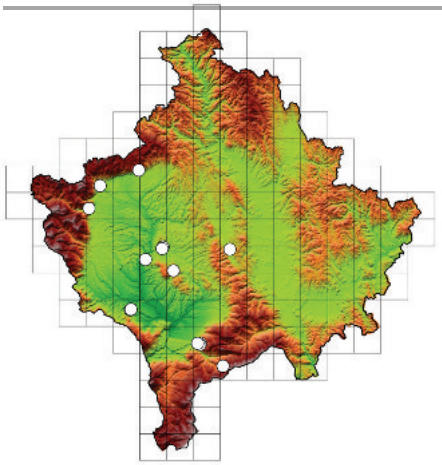
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. ‚Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Budinski *et al.* 2015; Hutson *et al.* 2007; Paunović 2016; Presetnik *et al.* 2018





Rhinolophus hipposideros (Bechstein, 1800)

Mammalia: Chiroptera: Rhinolophidae
Lesser Horseshoe Bat

Threat category in Europe (according to IUCN)
Near Threatened, NT

Threat category in Kosovo (IUCN criteria)
Near Threatened, NT

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

This species is one of the smallest bats, weighing 5 to 9 g, with a wingspan of 192–254 mm and a body length of 35–45 mm. It is a sedentary species. Its favorite type of pray includes different groups of insects, such as midges, moths, and craneflies. Foraging activities take place nearly exclusively within woodland areas, while open areas are avoided (Lino *et al.*2014; Zahn *et al.*2008). They mate in autumn with the female giving birth to one pup usually during the June-July period. Breeding colonies are found in natural and artificial underground sites as well as in attics and buildings. It hibernates during the winter in underground sites (Taylor 2016).

Habitat

Habitat Type: 1. Forest, 3.Shrubland, 4. Grassland 7. Caves and Subterranean Habitats (non-aquatic), 14. Artificial/Terrestrial.

General distribution

Europe, Africa, Asia

Distribution in Kosovo

Several localities in: Malishevë, Istog, Prizren, Rahovec, Drenas, Pejë, Lipjan (Dundarova 2017; Paunović 2016; Presetnik *et al.*2018).

Population

Population trend: Unknown
There is not enough data about subpopulation trends of this species in Kosovo. The population trend at the European level is decreasing.

Rationale

This species is assessed as Near Threatened because of the population trends at the European level, as well as the increasing tendency of activities that could threaten this species in Kosovo. For the time being, this species does not qualify for the threatened category, but if the threatening activities intensify, it can be significantly jeopardized.

Threats

List of Threats: 2. Agriculture & aquaculture; 7. Natural system modifications; 8. Invasive and other problematic species, genes & diseases; 9. Pollution.
Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use, disturbance and loss of underground habitats and attics.

Conservation measures in action

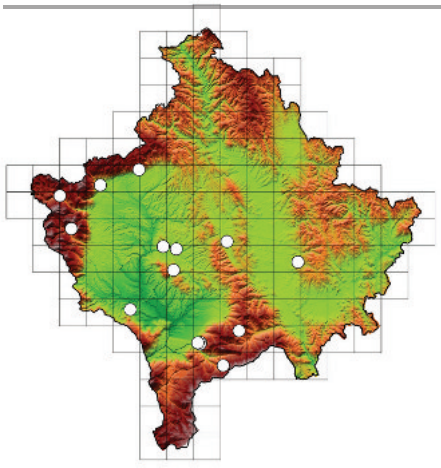
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. ,Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Dundarova 2017; Lino *et al.* 2014; Paunović 2016; Presetnik *et al.* 2018; Taylor 2016; Zahn *et al.* 2008





Ursus arctos Linnaeus, 1758

Mammalia: Carnivora: Ursidae

Brown Bear

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Near Threatened, NT

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body of this species is covered with fur, usually brown in color or reddish towards yellow. The length and the density of the hair vary from the seasons and depends on the geographical position where they live. The body length ranges from 1.4 to 2.8 m, the body height is about 1.5 m, the tail is relatively short 10 to 22 cm, while the body weight is 150 to 250 kg, but can be even greater (Jakubiec 1999). They are active during the day and night. Brown bear is a generally non-social animal, but can sometimes be encountered in groups, especially when they find large amounts of food. The life expectancy of this species is up to 25 years.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 5. Wetlands (inland); 6. Rocky areas (eg. inland cliffs, mountain peaks); 14. Artificial/Terrestrial.

This species is mainly found in mountainous areas rich in forests and shrubs and in semi-open and closed places, where herbal vegetation provides protection and food.

General distribution

Europe, Asia, America, Africa.

Distribution in Kosovo

Kusendin, Svilen, Bjeshkët e Junikut, Debëlldeh, Jezerc, Stanqiq, Hakanishte, Radishevë, Isniq, Mushtisht, Shtërpcë, Reka e Allagës, Drelaj, Budakovë.

Population

Population trend: Decreasing

Subpopulations of this species in Kosovo were observed with considerable decline.

Rationale

This species is assessed as Near Threatened because of the increasing tendency of activities that could threaten this species in Kosovo. For the time being, this species does not qualify for the threatened category since a large number of subpopulations still ensures sustainability, but if the threatening activities intensify, it can be significantly jeopardized in the near future.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & urban areas, 1.2 Commercial & industrial areas 1.3 Tourism & recreation areas); 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops, 2.3 Livestock farming & ranching); 3 Energy production & mining (3.1 Oil & gas drilling, 3.2 Mining & quarrying, 3.3 Renewable energy); 4 Transportation & service corridors (4.1 Roads & railroads, 4.2 Utility & service lines); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals, 5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities, 6.2 War, civil unrest & military exercises, 6.3 Work & other activities); 7 Natural system modifications (7.1 Fire & fire suppression, 7.2 Dams & water management/use); 9 Pollution (9.4 Garbage & Solid Waste); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Main threats for this species are: illegal hunting, forest cutting and habitat degradation. Also, urbanization and the expansion of human settlements are threats to subpopulations of this species.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

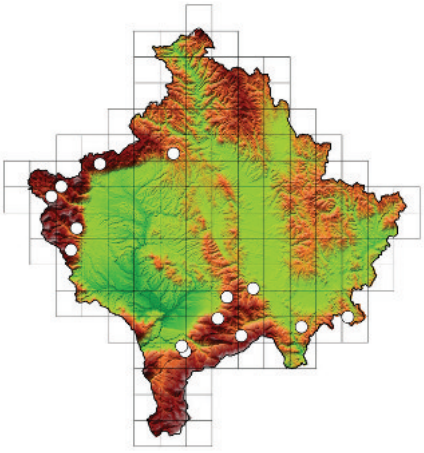
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

The presence of the species is a good indicator of proper habitat quality. Eventual species-level protection might provide an umbrella effect for other important species and for the protection of site(s) where occurs.

References

Jakubiec 1999





LEAST CONCERN SPECIES (LC)

6.1 OLIGOCHAETA

Allolobophora chlorotica (Savigny, 1826)

Oligochaeta: Opistophora: Lumbricidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

This is endogeic species, a soil-feeding earthworm who makes horizontal burrows up to 20 cm beneath the soil surface. It is a medium-sized earthworm, an adult is approximately 50 mm in length. The adult has a yellowish ring near its head and it is unique in that it has three pairs of sucker-like discs on alternate segments on the underside of its clitellum (Mršić 1991). Var. *kosovensis* was described by Šapkarev (1975) on one specimen found in Kllokot area near the bank of Morava River, in a meadow, distinguishing from typical form mainly by tubercula pubertatis and body size (106 mm body length, 2.5 mm diameter). According to Mršić (1991) clitellum has been positioned on segments 1/3 29 to 37 and tubercula pubertatis on segments 31, 32, 33, 34 and 35 (small sucker-like discs).

Habitat

Habitat Type: 1. Forest (1.4. Temperate Forest); 4. Grassland (4.4. Temperate Grassland); 14. Artificial/Terrestrial (14.1 Arable Land, 14.2 Pastureland).
Valley meadows, anthropogenic biotopes, forest soils, cultivated soils, meadows (Šapkarev, 1980).

General distribution

Europe, Asia north of the foothills of the Himalayas, North Africa, and the northern and central parts of the Arabian Peninsula (Mršić 1991; Rota 2013).

Distribution in Kosovo

Zhegër, Kllokot, Gërmi, Ferizaj, Pejë, Mitrovicë, Gjakovë.

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern due to the considerably high number of sites where it is found and stable subpopulations.

Threats

List of Threats: 1 Residential & commercial development; 2. Agriculture & aquaculture; 9. Pollution (9.1. Domestic & urban waste water, 9.3. Agricultural & forestry effluents).

Conservation measures in action

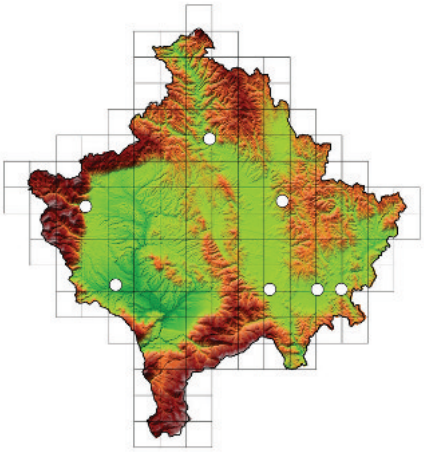
Currently, there is no conservation measure in action.

Conservation measures needed

Research needed:3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Due to habitat preferences, it is recommended to maintain wet meadows and keep some forest areas with non-intense forestry activities.

References

Mršić 1991; Rota 2013; Šapkarev 1975; Šapkarev 1980





Aporrectodea caliginosa (Savigny, 1826)

Oligochaeta: Opistophora: Lumbricidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

Its front end of the body is colored in three distinct shades. Endogeic species, occurring mostly at arable and grassland sites with low soil organic matter content, but also in forest soil. Typical adult size is about 6 cm in length, when not moving.

Habitat

Habitat Type: 1 Forest [1.4 Temperate Forest]; 4 Grassland [4.4 Temperate Grassland]; 5 Wetlands [inland] [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]]; 14 Artificial - Terrestrial [14.1 Arable Land, 14.4 Rural Gardens, 14.5 Urban Areas].
It lives in non-permanent horizontal burrows in topsoil. It has been found in wet soil in meadows and river banks, and rarely can be found in leaf litter.

General distribution

This is a Peregrine species native to the Palearctic but introduced all over the world [Csuzdi & Zicsi 2003].

Distribution in Kosovo

Zhegër, Kllokot, Gërmi, Ferizaj, Rahovec, Suharekë, Deçan, Gjakovë, Mitrovicë [Šapkarev 1975; Mršić 1991]

Population

Population trend: Unknown

Rationale

Its habitat preferences are connected with wet habitats that could be under intensive management activities [agriculture, etc.]. Habitat loss due to urbanization and industrial pollution may pose some threats to this species in Kosovo. Still, it is assessed as Least Concern due to the considerably high number of sites where it is found and stable subpopulations. More subpopulations are expected from Kosovo.

Threats

List of Threats: 2. Agriculture & aquaculture; 9. Pollution [9.1. Domestic & urban waste water; 9.3. Agricultural & forestry effluents].

Conservation measures in action

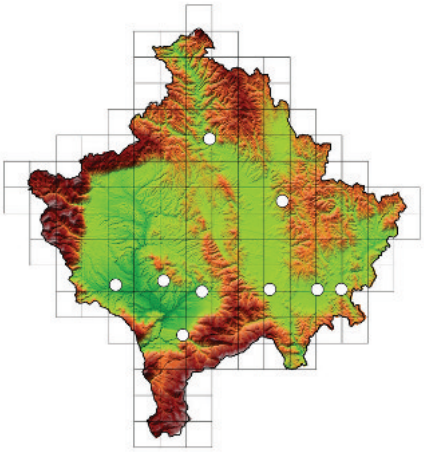
Currently, there is no conservation measure in action.

Conservation measures needed

Research needed:3. Monitoring [3.1. Population trends; 3.4. Habitat trends].
To maintain wet meadows, non intense forestry activities, sustainable agriculture, to reduce sources of soil and water pollution.

References

Csuzdi & Zicsi; A 2003; Mršić 1991; Šapkarev 1975





6.2 ARACHNIDA

Oxyopes lineatus Latreille, 1806

Arachnida: Araneae: Oxyopidae

Lynx spider

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

The female is 6-8 mm in size and male 4-5 mm. This family does not build nets to catch the prey, but they actively hunt insects or other small animals (Roberts 1996). The poison of this species contains the toxic peptide called oxytoxin.

Habitat

Habitat Type: 4 Grassland (4.5 Dry Lowland Grassland), 14.Artificial – Terrestrial (14.4 Rural Gardens).

General distribution

Albania, Austria, Belgium, Bulgaria, Croatia, France, Georgia, Germany, Hungary, Italy, Kosovo, Macedonia, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Switzerland, Turkey, Ukraine, Central Asia.

Distribution in Kosovo

Junik, Istog, Deçan.

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern due to the stable subpopulations in Kosovo and its presence in a large number of sites in the surrounding countries. Given the distribution of the species in neighboring countries and the presence of suitable habitats for this species, it can be assumed that in Kosovo it is more widespread than it is currently known.

Threats

List of Threats: 1. Residential & commercial development (1.1 Housing & urban areas, 1.3 Tourism & recreation areas); 7 Natural system modifications (7.1 Fire & fire suppression).

Conservation measures in action

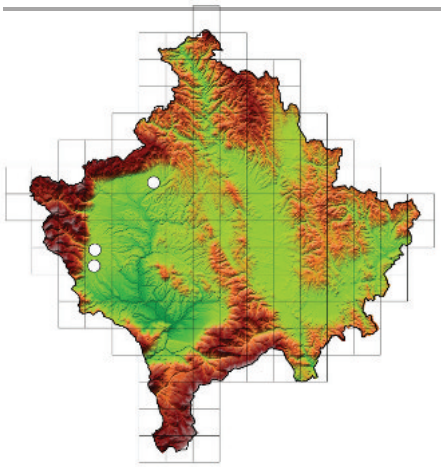
Currently, there is no conservation measure in action.

Conservation measures needed

Research needed:1. Research (1.2. ,Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Roberts 1996





6.3 INSECTA

Baetis alpinus Pictet, 1843

Insecta: Ephemeroptera: Baetidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Agim Gashi, Bardh Xërxa

General data

The forewing size of this species is from 7.5 to 11.5 mm. Larvae are cold stenotherm. The number of generations per year depends largely on water temperature and altitude (Bauernfeind & Soldan 2012).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.5 Permanent Freshwater Lakes, 5.9 Freshwater Springs and Oases).

The larvae are predominantly found in the spring areas and upstream segments of rivers and mountain streams. Larvae prefer high or at least average speed of water flow. Often they can be found in mountain lakes or glacial lakes. They prefer rocky substrates.

General distribution

Most part of Europe, Turkey, Israel, Lebanon.

Distribution in Kosovo

Lumbardhi i Prizrenit River in Reçan, Nerodime River in Nerodime e Epërme, Prishtina, Erenik River in Junik, Stream in Lugu i Kopilaçës in Viti, Stream in Zhegër, Stream in Blinajë, Drini i Bardhë River in Radavc, Lepenc River in Brod Morava e Binçës in Binçë.

Population

Population trend: Stable

This species is characterized by stable subpopulations in all sites.

Rationale

This species is assessed as Least Concern as it is widespread and abundant in Kosovo with stable trend of subpopulations.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Conservation measures in action

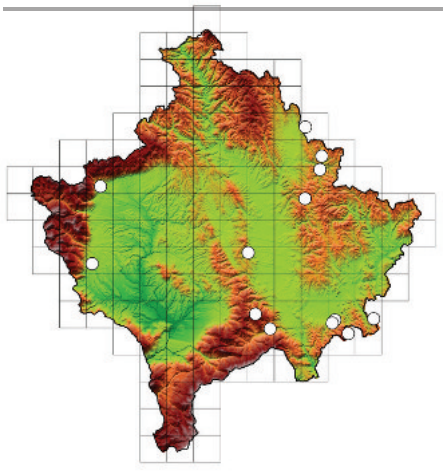
Currently, there is no conservation measure in action. The subpopulation in Blinajë is inside the protected hunting reserve.

Conservation measures needed

Research needed:1. Research (1.2. ,Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Bauernfeind & Soldan 2012





Habroleptoides confusa Sartori & Jacob, 1986

Insecta: Ephemeroptera: Leptophlebiidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Agim Gashi, Bardh Xërxa

General data

The forewing size of this species is from 8 – 12 mm. The flight period is from March to July, although in some cases it may start earlier, for example in February or extend later during the summer (Bauernfeind & Soldan 2012).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
The larvae are mainly found in spring areas until midstream segments of rivers and streams, at different altitudes, from 200 to 1400 m. Larvae prefer gravel substrate, where they live between sand grains.

General distribution

Most part of Europe, Azerbaijan, Turkey.

Distribution in Kosovo

Upstream area of Erenik River, Several streams in Prishtinë, Ferizaj.

Population

Population trend: Stable
This species is characterized by stable subpopulations in all sites where it is found.

Rationale

This species is assessed as Least Concern as it is widespread and abundant in Kosovo, with stable trend of subpopulations.

Threats

Currently, there are no threats to populations of this species.

Conservation measures in action

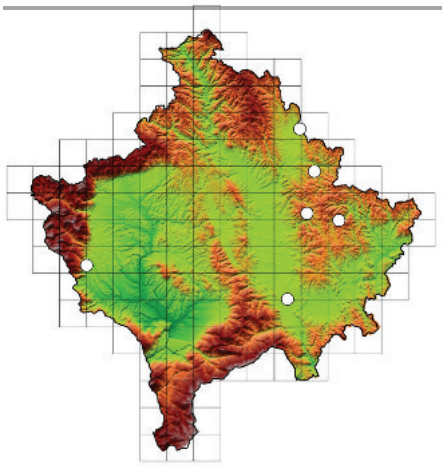
Currently, there is no conservation measure in action.

Conservation measures needed

Research needed:1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Bauernfeind & Soldan 2012





Calopteryx splendens (Harris, 1782)

Insecta: Odonata: Calopterygidae
The Banded Damoiselle

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Least Concern, LC

Year of assessment

2018

Assessor(s)

Ferdije Zhushi Etemi

General data

This is a large species of a dragonfly with a body size up to 48 mm. The larval stage lasts two years. Larvae can tolerate considerable levels of water pollution. They overwinter deep into the water substrate. The flight time of adults is from April to October (Zhushi Etemi 2005).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
This species can be found in a number of different habitats and particularly in rivers and open streams.

General distribution

Europe, Asia.

Distribution in Kosovo

Badovc Lake, Henc, Several sites in Sitnica River, Llap River in Zhiti, Drenica River in Grabovc, Morava e Binçës River in Viti, Mollopolc, Rubovc.

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern due to the considerably high number of sites where it is found and stable subpopulations.

Threats

List of Threats: 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.3 Agricultural & Forestry Effluent]; 11 Climate change & severe weather [11.2 Droughts].

Conservation measures in action

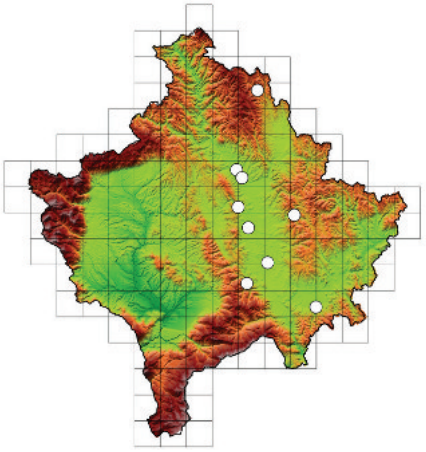
Currently, there is no conservation measure in action.

Conservation measures needed

Research needed:1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Zhushi Etemi 2005





Carabus (Chaetocarabus) intricatus Linnaeus, 1761

Insecta: Coleoptera: Carabidae

Blue ground beetle

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Significantly large beetle (24–35 mm), with metallic purple or blue color and roughly surfaced elytra. Nocturnal active carnivore, at both larval and adult stage, adapted on feeding on slugs, thanks to the elongated head and mandibles. Wings are reduced, so it is flightless. It is thought that it may take two years to complete its life cycle. Active during vegetation season, except in a prolonged period of drought (mainly in August).

Habitat

Habitat Type: 1. Forest (1.4. Temperate); 4. Grassland (4.4. Temperate grassland); 6 Rocky Areas (e.g. inland cliffs, mountain peaks).

Adults are found under bark on dead wood and under rocks. They prefer deciduous forests on calcareous soils but, can be also found in coniferous forests, even in open habitats in high altitudes.

General distribution

The nominal subspecies is distributed in most of the Europe.

Distribution in Kosovo

Kuqishtë, Lumbardhi i Deçanit, Brod, Kullë Rozhajë, Vataj, Prevallë, Luboten, Nebregoste, Prizren.

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern due to the considerably high number of sites where it is found and stability of the population. The number of sites is even expected to be increased in Kosovo with new investigations.

Threats

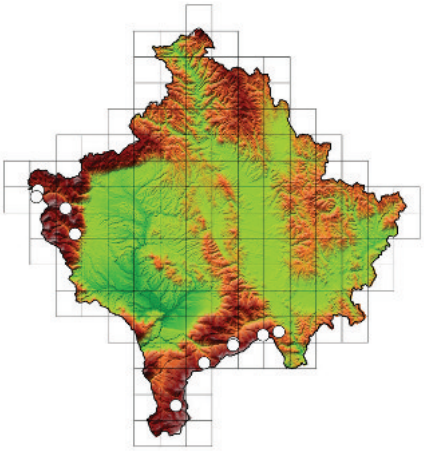
List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed:1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).





Lucanus cervus Linnaeus, 1758

Insecta: Coleoptera: Lucanidae

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Least Concern, LC

Year of assessment

2018

Assessor(s)

Ferdije Zhushi Etemi

General data

Very large beetle whose size can vary from 25 up to an astonishing 75 mm. The species is characterized by a conspicuous sexually dimorphism, the males have enlarged mandibles and are larger than the females. Although the male's mandibles seem threatening, they are too weak to be harmful. The mandibles are used in battles between males for copulation with females. An obligatory saproxylic species whose larvae develop in rotting hardwood different species of broadleaved trees, especially oaks - *Quercus*. The larvae go through several instar stages, taking 4 to 6 years to become pupae. The adults, because of the modification of their mandibles feed by licking juices that emerge on wounded places of living trees, primarily oak.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits broadleaf forests with domination and/or presence of different oak species.

General distribution

Widespread in Europe.

Distribution in Kosovo

Gërmi, Zhleb, Koprivnik, Pejë, Gjakovë, Brezovicë.

Population

Population trend: Stable

Rationale

The species is categorized as Least Concern in the Red list of Saproxylic Beetles of Europe (Nieto and Alexander 2010). For Kosovo, this species is assessed as Least Concern too, due to the considerably high number of sites where it is found and stable populations. The species is probably more widespread in Kosovo than currently known.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

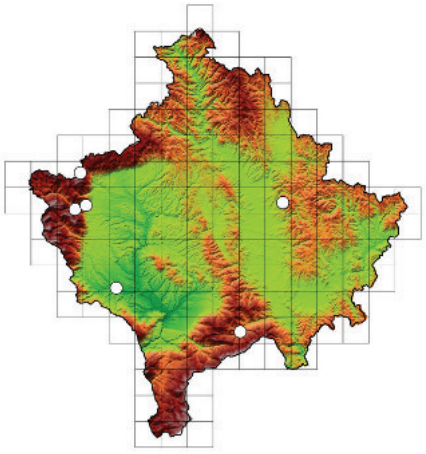
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed:1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).

References

Nieto and Alexander 2010





Morimus funereus Mulsant, 1862

Insecta: Coleoptera: Cerambycidae

Threat category in Europe (according to IUCN)
Vulnerable, VU

Threat category in Kosovo (IUCN criteria)
Least Concern, LC

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Significantly variable in size, but rather large beetle from 15 up to 40 mm. Adults are flightless and, compared to other longhorn beetles, with a very limited dispersal capacity. An obligate saproxylic species. Developed adults appear around mid-May and are met until August. They lead a secretive lifestyle active at dusk and at night. Larval development takes place in the roots, root collar and in the lower part of the tree trunks weakened or dying, also in the uncoated stumps and trunks lying on the ground. Larvae are polyphagous. Development of the larvae takes place in different broad-leafed and coniferous tree species. It is believed that the development of the larvae in natural conditions can last three or four years.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits deciduous and mixed forests up to 1200 m a.s.l.

General distribution

Mainly in southeastern Europe, reaching north to parts of western, middle and eastern Europe up to south-western Ukraine.

Distribution in Kosovo

Runik (Csiki, 1940), Zhleb (Csiki, 1940), Pejë (Csiki, 1940), Gjakovë (Csiki, 1940), Luboten, (Apfelbeck 1907), Brezovicë.

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern due to the considerably high number of sites where it is found on Kosovo and stable subpopulations. The species is probably more widespread in Kosovo than currently known.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

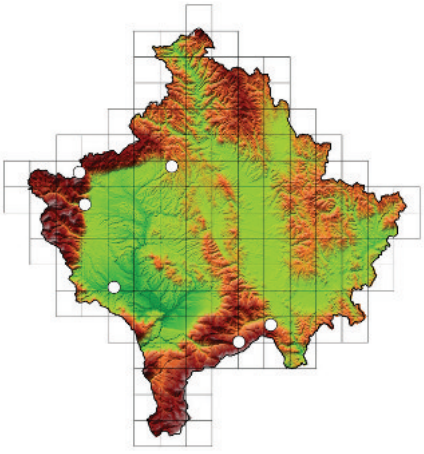
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed:1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).

References

Apfelbeck 1907; Csiki 1940





Protaetia (Potosia) fieberi Kraatz, 1880

Insecta: Coleoptera: Scarabaeidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2018

Assessor(s)

Ferdije Zhushi Etemi

General data

Large saproxylic beetle (20-23 mm). The larva develops in caverns of humid rotting trunks and stumps. The adult beetles are sworn in sunny, warm weather, mostly around the oak foliage.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits dry, thermophilous deciduous forests dominated by oak - *Quercus*.

General distribution

Spread mainly in southern and eastern, and locally in central Europe.

Distribution in Kosovo

Gërmi, Shtërpcë.

Population

Population trend: Stable

Rationale

For Kosovo, this species is assessed as Least Concern due to the considerably stable subpopulations and absence of any direct threat. The species may be more widespread in Kosovo than it is currently known.

Threats

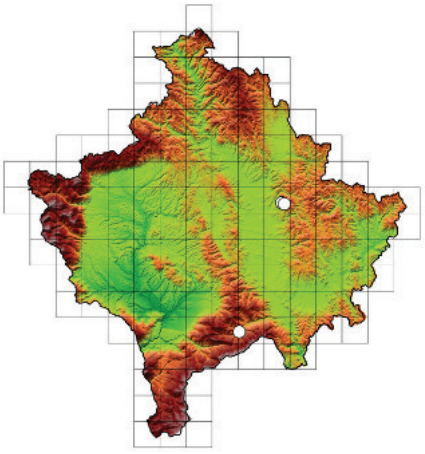
List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

Research needed:1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).



Rhyacophila tristis Pictet, 1834

Insecta: Trichoptera: Rhyacophilidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 8 to 10 mm. The wing color is dark brown. During the larval stage, they live in water for one year. Larvae mostly feed as predators. The larval stage is an indicator of clean water. They are on wing from April to October. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1985).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is found mostly in spring areas and upstream segments of mountain streams. The favorite substrate of larvae of this species is composed by coarse gravel, cobbles, boulders, and bedrock, etc. It can be found in different altitudes.

General distribution

Albania, Belgium, Bosnia and Herzegovina, Bulgaria, Corsica, Croatia, Czech Republic, Turkey, France, Germany, Greece, Hungary, Italy, Kosovo, Luxembourg, Macedonia, Montenegro, Poland, Portugalia, Romani, Slovakia, Slovenia, Spain, Switzerland, Serbia.

Distribution in Kosovo

All over Kosovo.

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern as it is widespread and abundant in Kosovo, with stable trend of subpopulations.

Threats

Currently there is no direct threat for population of this species in Kosovo.

Conservation measures in action

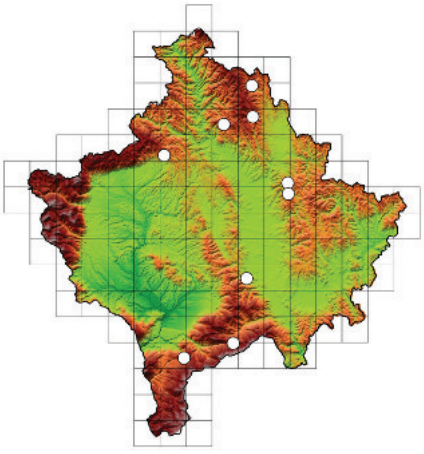
Currently, there is no conservation measure in action.

Conservation measures needed

Research needed:1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Graf *et al.* 2008; Kumanski 1985



Carcharodus alceae (Esper, 1780)

Insecta: Lepidoptera: Hesperiidae

Mallow Skipper

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2018

Assessor(s)

Ferdije Zhushi Etemi, Pajtim Bytyqi.

General data

The wingspan of this species is from 28 to 32 mm. Adults fry from April to August. In some areas, this species has two or more generations per year.

Habitat

Habitat Type: 6 Rocky Areas [e.g. inland cliffs, mountain peaks]; 14 Artificial - Terrestrial [14.1 Arable Land, 14.4 Rural Gardens].
This is a common species that prefers hot, rocky dry terrain. It is common in warm ruderal areas and gardens up to 1100 m.

General distribution

Southern and Central Europe, Asia, South Africa.

Distribution in Kosovo

Three sites in Malishevë, Lloqan, Kalaja e Prizrenit, Brezovicë [Jakšić 2003; Jakšić and Živić 1995-1998].

Population

Population trend: Stable
Subpopulations of this species are small but stable.

Rationale

This species is assessed as Least Concern due to the considerably high number of sites where it is found and stable subpopulations. More subpopulations are expected from Kosovo, considering the presence of potentially suitable habitats for the species and knowing distribution of the species in neighboring countries.

Threats

Currently, there is no threat to this species in Kosovo.

Conservation measures in action

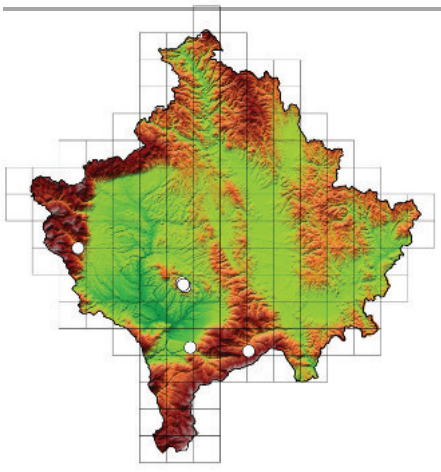
Currently, there is no conservation measure in action.

Conservation measures needed

Research needed:1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Jakšić 2003; Jakšić and Živić 1995-1998





Erebia euryale (Esper, 1805)

Insecta: Lepidoptera: Nymphalidae

Large Ringlet

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

This species has a wingspan of 20 – 23 mm. On upperside of forewings dark brown color dominates, with an orange towards the red line. This species has one generation per year. It overwinters the first year as an egg and then during the second year as a caterpillar. Adults fly from June to September.

Habitat

Habitat Type: 1 Forest [1.4 Temperate Forest]; 4 Grassland.
Preferred habitats for this species are forest clearings, glades, slopes, subalpine meadows and damp meadows at an elevation of 500–2,600 m above sea level.

General distribution

Alps, Cantabrian, Pyrenees, Carpathians, Balkans, in northern Europe from Finland to the Urals and in Altai.

Distribution in Kosovo

Bogë, Lloqan, Rugova Gorge, Kurvallë, Sharr, Luboten, Istog [Jakšić 2003].

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern due to the stable populations and expectation that it is present in Kosovo in much more sites than currently known.

Threats

List of Threats:5. Biological resource use [5.3.Logging and wood harvesting].

Conservation measures in action

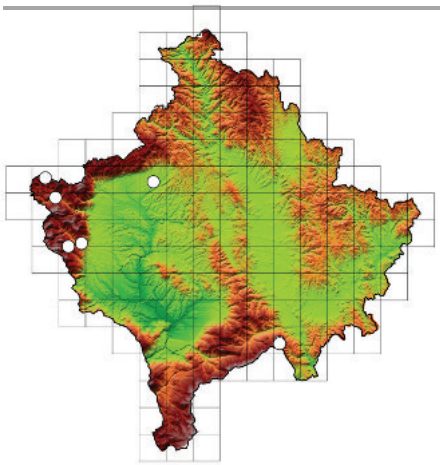
Habitats of this species are protected inside Bjeshkët e Nemuna and Sharr Mountains national parks.

Conservation measures needed

Research needed:1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Jakšić 2003



Hesperia comma (Linnaeus, 1758)

Insecta: Lepidoptera: Hesperiidae

Silver-spotted Skipper

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi, Pajtim Bytyqi.

General data

The wingspan of this species is from 29 to 37 mm. Females are usually larger than males. This species is distinguished by its remarkable white spots underside of the forewings, from where it takes the name as well. The species has one generation per year and adults fly from June to September.

Habitat

Habitat Type: 1 Forest [1.4 Temperate Forest]; 14 Artificial - Terrestrial [14.2 Pastureland].

This species is mostly found in open sunny areas, including open areas inside forests, forest edges, grassland etc.

General distribution

Holarctic.

Distribution in Kosovo

Shtërpcë, Brezovicë, Bogë, Qyqavicë, Vushtrri, Pashtrik, Lloqan, Sredskë, Radavc, Luboten [Jakšić 1988; Jakšić 2003; Rebel and Zerny 1931].

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern due to the considerably high number of sites where it is found and stable subpopulations. More subpopulations are expected from Kosovo, considering the presence of potentially suitable habitats for the species and knowing distribution of in neighboring countries.

Threats

Currently there are no threats for populations of this species.

Conservation measures in action

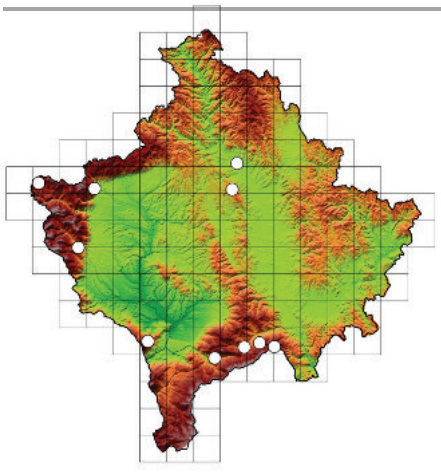
Some subpopulations are inside the protected areas.

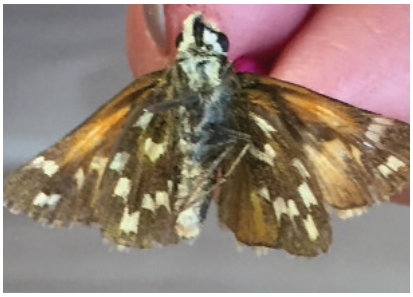
Conservation measures needed

Research needed:1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology], 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Jakšić 1988; Jakšić 2003; Rebel and Zerny 1931





Ochlodes sylvanus (Esper, 1777)

Insecta: Lepidoptera: Hesperiidae

Large Skipper

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is from 29 – 36 mm. Adults mostly fly during the spring. In some areas in Europe it has one generation per year, but in some other areas, in Europe as well, it can have more than one generation.

Habitat

Habitat Type: 1 Forest [1.4 Temperate Forest]; 4 Grassland; 5 Wetlands [inland] [5.4 Bogs, Marshes, Swamps, Fens, Peatlands [generally over 8 ha]].
This species is mostly found in sunny areas, woodland margins and is mostly associated with moisted areas rich in ferns.

General distribution

Europe, Turkey, temperate Asia to China and Japan.

Distribution in Kosovo

Bollosicë, Nerodime, Samakovë, Two sites in Sharr Mountains, Shkozë Mountain, Stermnicë, Mrasor, Prizren [Jakšić 2003].

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern due to the considerably high number of sites where it is found and stable subpopulations. More subpopulations are expected from Kosovo, considering the presence of potentially suitable habitats for the species and knowing distribution of the species in neighboring countries.

Threats

Currently, there is no threat to this species in Kosovo

Conservation measures in action

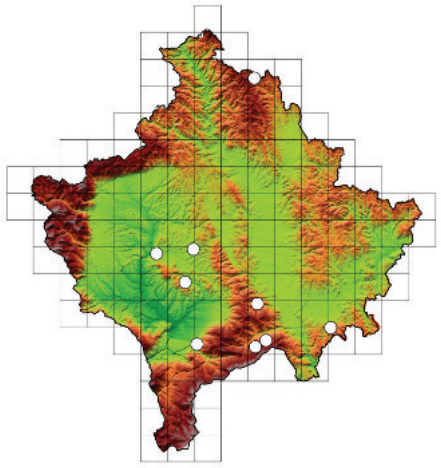
Some of subpopulations are inside the protected areas.

Conservation measures needed

Research needed:1. . Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Jakšić 2003



Spialia orbifer (Hübner, 1823)

Insecta: Lepidoptera: Hesperiidae

Orbed Red Underwing Skipper

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi, Pajtim Bytyqi.

General data

The wingspan of this species is from 19 to 26 mm. They have a fast flight near the surface. The eggs are placed on small flowers of Sanguisorba minor and, in Eastern Europe, possibly also in *S. officinalis*. There are two generations a year and they hibernate at the stage of the caterpillar.

Habitat

Habitat Type: 1 Forest [1.4 Temperate Forest]; 4 Grassland; 14 Artificial – Terrestrial; [14.1 Arable Land].
Main habitats for this species are dry flowery meadows across the roads, forest edges, abandoned agricultural land, grassy slopes and along the dry riverbeds.

General distribution

Europe, Asia.

Distribution in Kosovo

Llapqevë, Hulaj, Mrasor, Radavc, Strellc Mountain, Prizren Castle, Rugova Gorge, Sredskë [Jakšić and Živić 1995-1998].

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern due to the considerably high number of sites where it is found and stable subpopulations. More subpopulations are expected from Kosovo, based on the presence of potential habitats for the species and knowledge from neighboring countries.

Threats

List of Threats: 2. Agriculture & aquaculture [2.3 Livestock farming & ranching: 2.3.2 Small-holder grazing, ranching or farming]; 7 Natural system modifications [7.3 Other ecosystem modifications].

Conservation measures in action

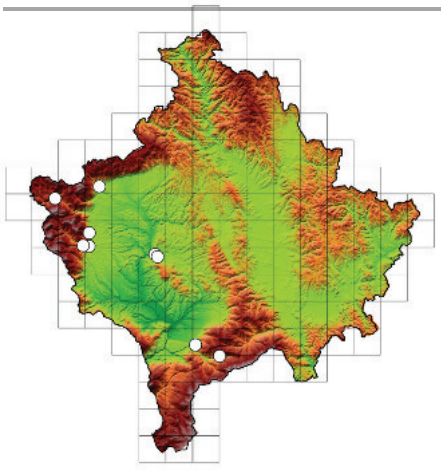
Some of subpopulations are inside the protected areas.

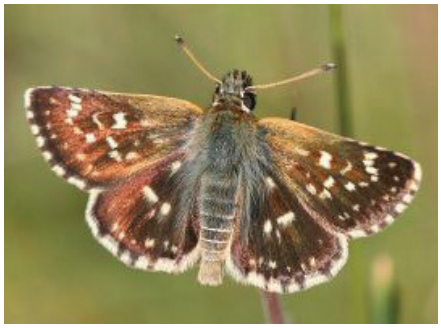
Conservation measures needed

Research needed:1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Jakšić and Živić 1995-1998





6.4 ACTINOPTERYGII

Barbus balcanicus Kotlík, Tsigenopoulos, Ráb & Berrebi, 2002

Actinopterygii: Cypriniformes: Cyprinidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Qenan Maxhuni, Linda Grapci Kotori

General data

This species is very difficult to be morphologically distinguished from other barbel species. They mostly feed on macrozoobenthos, but algae as well. They reproduce from May to July. They reach a body size up to 17.5 cm (Kottelat and Freyhof 2007).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.4 Bogs, Marshes, Swamps, Fens, Peatlands, 5.5 Permanent Freshwater Lakes].
This species lives in medium or fast running waters with gravel substrate. It can be found in small rivers but also mountainous streams.

General distribution

Balkans, Some European countries.

Distribution in Kosovo

Three sites in the Drenica River, Four sites in the Ibër River.

Population

Population trend: Stable
Populations of this species are abundant.

Rationale

This species is assessed as Least Concern due to the stable population trends and absence of any direct immediate threat to their populations or habitat in Kosovo. The species is expected to be present in more sites in Drenica River and Ibër River basins.

Threats

List of Threats: 1 Residential & commercial development [1.1 Housing & urban areas]; 9 Pollution [9.1 Domestic & Urban Waste Water, 9.4 Garbage & Solid Waste]; 11 Climate change & severe weather [11.2 Droughts].
Main threats for this species are the sewage pollution, pollution from solid and other waste, and the drought.

Conservation measures in action

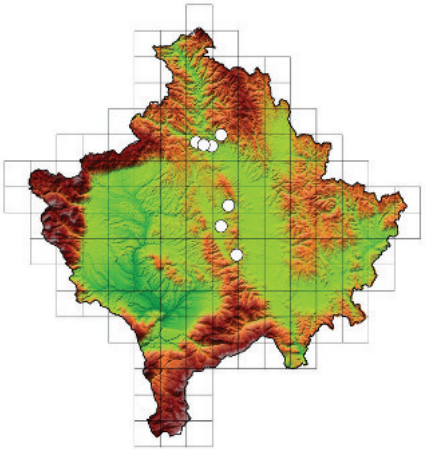
The species is protected [Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species].

Conservation measures needed

Research needed:1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Kottelat and Freyhof 2007



Scardinius erythrophthalmus (Linnaeus, 1758)

Actinopterygii: Cypriniformes: Cyprinidae
Common Rud

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Least Concern, LC

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori

General data

This species is mainly fed with plankton, flying insects and vegetation. They usually drop their egg nearby vegetation, such as the roots of the trees. They can adapt to changing living conditions. They can reach a length up to 61.7 cm and live up to 19 years (Freyhoff and Kottelat 2008).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.4 Bogs, Marshes, Swamps, Fens, Peatlands, 5.5 Permanent Freshwater Lakes].
This species can be found in freshwater benthopelagic waters and with potamodrome migration. It is usually present in standing waters or those with slow flow, rich in vegetation.

General distribution

Eurasia.

Distribution in Kosovo

Badovc Lake, Batllavë Lake, Radoniq Lake, Llap River, Ibër River, Drenica River, Drini i Bardhë River.

Population

Population trend: Stable
Subpopulations of this species in Kosovo are fragmented but stable.

Rationale

This species is assessed as Least Concern due to the stable subpopulations and absence of any direct immediate threat to the species or its habitat in Kosovo.

Threats

List of Threats: 9 Pollution [9.1 Domestic & Urban Waste Water, 9.4 Garbage & Solid Waste]; 11 Climate change & severe weather [11.2 Droughts].

Conservation measures in action

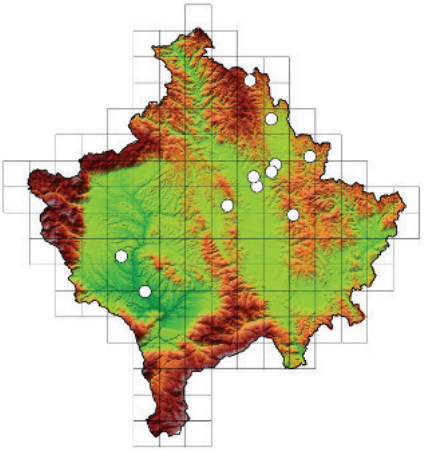
Currently, there is no conservation measure in action.

Conservation measures needed

Research needed:1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Freyhoff and Kottelat 2008



6.5 AMPHIBIA

Bombina variegata (Linnaeus, 1758)

Amphibia: Anura: Bombinatoridae
Yellow-bellied toad

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Least Concern, LC

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori

General data

The body size of this species reaches 28-56 mm, while the weight between 2.3 and 12 g. Based on this characteristic, these frogs are placed among the smallest members of the Bombinatoridae family. On the dorsal side of the body, the skin is dark brown to brown, often with colored and bright spots. Females produce up to 300 eggs a year. Since this species does not have vocal blades, then during the breeding period, males emit a quiet voice in order to attract females to pairing. Because of the rapid movement of juvenile forms, they often expand into large areas.

Habitat

Habitat Type: 1 Forest [1.4 Temperate Forest]; 3 Shrubland [3.3 Boreal Shrubland, 3.4 Temperate Shrubland]; 4 Grassland [4.4 Temperate Grassland]; 5 Wetlands [inland] [5.2 Seasonal/Intermittent/Irregular Rivers, Streams, Creeks, 5.3 Shrub Dominated Wetlands]; 15 Artificial – Aquatic [15.3 Aquaculture Ponds, 15.7 Irrigated Land [includes irrigation channels]]. They are usually found along rivers and watercourses, but also in clay and gravel pits. They can be found in various environments of altitudes ranging from 100 to 2100 m.

General distribution

Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Kosovo, Liechtenstein, Luxembourg, Macedonia, Montenegro, Netherlands, Poland, Romania, Serbia, Slovakia, Slovenia, Switzerland, Ukraine.

Distribution in Kosovo

Klinë, Gjakovë, Prizren, Drenas, Prishtinë, Podujevë, Kamenicë, Kaçanik, Viti, Ferizaj.

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern due to the stable subpopulations and prediction that it is more widespread than currently known, based on knowledge from neighboring countries.

Threats

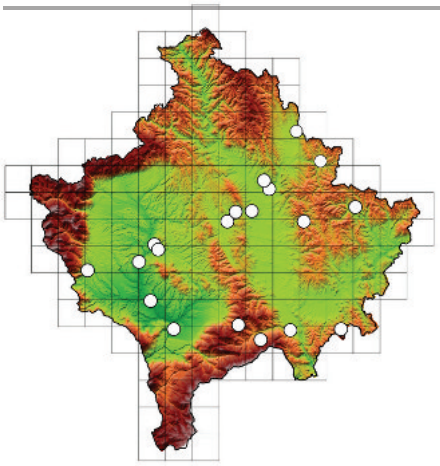
List of Threats: 1 Residential & commercial development [1.1 Housing & Urban Areas, 1.3 Tourism & Recreation Areas]; 5 Biological resource use [5.3 Logging & wood harvesting: 5.3.1 Intentional Use: subsistence/small scale [species being assessed is the target] [harvest]]; 11. Climate Change & Severe Weather.

Conservation measures in action

The species is protected [Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species].

Conservation measures needed

Research needed:1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].



Pelophylax ridibundus (Pallas, 1771)

Amphibia: Anura: Ranidae

Marsh frog

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj, Linda Grapci Kotori

General data

This species can reach a maximum body length of 17 centimeters, but males always remain smaller in size (about 12 cm). The head is proportionally large and the back legs are long, giving them excellent jumping skills. There is a wide variation in body color, ranging from dark green to brown or gray, sometimes with a few light green stripes. Their food consists of dragonflies and other insects, spiders, and earthworms. Adult individuals are fed with small rodents and sometimes amphibians and small fish (Pasuljević 1968).

Habitat

Habitat Type: 3. Shrubland (3.3 Boreal Shrubland, 3.4 Temperate Shrubland); 5 Wetlands (inland) (5.3 Shrub Dominated Wetlands); 7 Caves and Subterranean Habitats (non-aquatic) (7.1 Caves); 14.Artificial – Terrestrial (14.4 Rural Gardens).
This species is mainly associated with standing waters.

General distribution

Afghanistan, Armenia, Austria, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Bulgaria, China, Croatia, Czech Republic, Denmark, France, Georgia, Germany, Greece, Hungary, Iran, Iraq, Kazakhstan, Kosovo, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Netherlands, Poland, Romania, Russia, Saudi Arabia, Serbia, Slovakia, Slovenia, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan.

Distribution in Kosovo

Podujevë, Zubin Potok, Skënderaj, Istog, Drenas, Ferizaj, Dragash, Shtërpcë, Kaçanik, Viti, Malishevë, Gjakovë.

Population

Population trend: Stable

Rationale

This species is assessed in the Least Concern category due to the sustainability of subpopulations and absence of any factor that directly endangers this species or its habitat in Kosovo.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & Urban Areas, 1.3 Tourism & Recreation Areas); 5 Biological resource use (5.3 Logging & wood harvesting: 5.3.1 Intentional Use: subsistence/small scale (species being assessed is the target) [harvest]); 11. Climate Change & Severe Weather

Conservation measures in action

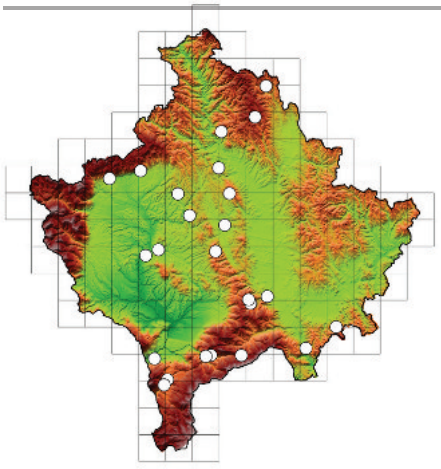
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

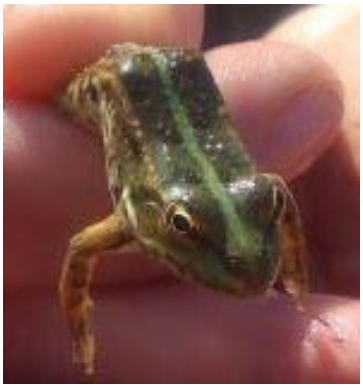
Conservation measures needed

Research needed:1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Pasuljević 1968





Triturus vulgaris (Linnaeus, 1758)

Amphibia: Caudata: Salamandridae
Smooth newt

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj, Linda Grapci Kotori

General data

This species has great adaptation abilities and is, therefore, found in numerous water environments, such as wetlands, irrigation channels etc. The body size is on average up to 10 cm. In the breeding period, males have darker coloration than females (Atlas of Amphibians 1997).

Habitat

Habitat Type: 5 Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.2 Seasonal/Intermittent/Irregular Rivers, Streams, Creeks, 5.3 Shrub Dominated Wetlands).
This is a species widely prevalent in aquatic environments. It is located at various altitudes up to about 2150 m.

General distribution

Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Kosovo, Latvia, Luxembourg, Macedonia, Moldova, Montenegro, Netherlands, Norway, Poland, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Sweden, Switzerland, Turkey, Ukraine, United Kingdom.

Distribution in Kosovo

Velat e Livadhit të Madh in Gjakovë, Krena River in Gjakovë, Several localities in Prizren, Gurra e Gjatë in Deçan, Deçan Gorge.

Population

Population trend: Stable
At the European level, populations of this species are stable. There is insufficient data on subpopulations status in Kosovo, but based on broad adaptive skills and wide distribution, it can be concluded that the subpopulations' in Kosovo are stable as well.

Rationale

This species is assessed as Least Concern due to the relatively high number of localities where it is found and stable subpopulations, as well as the prediction that it is more widespread than currently known, based on knowledge from neighboring countries as well.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & Recreation Areas); 11. Climate Change & Severe Weather

Conservation measures in action

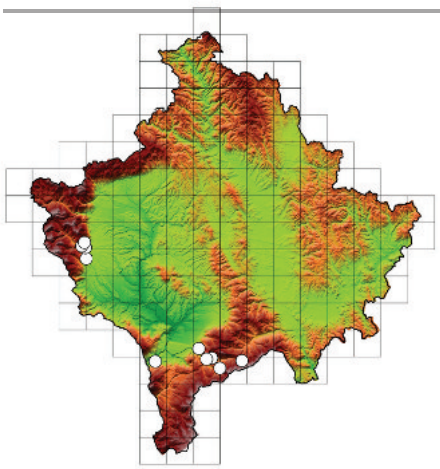
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed:1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Atlas of Amphibians 1997



6.6 REPTILA

Algyroides nigropunctatus (Duméril & Bibron, 1839)

Reptilia: Squamata: Lacertidae
Blue-throated Keeled Lizard

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body length of this species is between 14 and 18 cm. Body is covered with rhombic scales, which possess a longitudinal thickening, while the lateral scales are much slender. The dorsal side of the body is grayish or reddish brown, or even wholly black in new forms. The ventral side is dominated by red color. In females, the abdomen is yellow or olive in color. They mainly feed on insects and spiders. It is an oviparous species. The female produces 2 - 3 eggs, during the spring, but also in early autumn (Bressi 2004)

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 6. Rocky areas (eg. inland cliffs, mountain peaks); 14. Artificial/ Terrestrial.
The preferred habitats for this species are rocky places with mild Mediterranean and sub-mediterranean climates. They are often found in areas with low vegetation but with mild climate, then in degraded mountainous areas, shrubs and plantations. It can be also often found nearby the river valleys, but also at altitudes up to 1500 m

General distribution

Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, Kosovo, Macedonia, Montenegro, Serbia, Slovenia.

Distribution in Kosovo

Right side of Lumbardhi i Prizrenit River in Prizren, Radavc, Ura e Shenjtë, Vërmicë.

Population

Population trend: Stable
There is not enough information about population trends of this species at global level. In Kosovo subpopulations are fragmented but stable.

Rationale

This species is assessed as Least Concern due to the considerably high number of sites where it is found and stable subpopulations.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & urban areas): 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.1 Fire & fire suppression).
The main threats for this species are: degradation, fragmentation and loss of habitats as a result of urbanization and development of infrastructure, construction of touristic and recreational facilities in areas of high altitudes, but also near rivers, intentional fires on pastures and forests. This species is also threatened by predators such as: snakes, birds and some mammals

Conservation measures in action

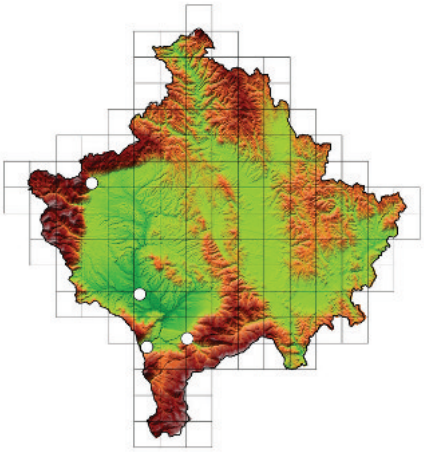
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed:1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends)

References

Bressi 2004



Anguis fragilis Linnaeus, 1758

Reptilia: Squamata: Anguidae

Slow worm

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This species looks like a snake, with a cylindrical and prolonged body and with completely missing extremities. Throughout its life, the body color varies, but the dominant color is metallic gray or silver with visible shades. Laterally there is present a black line. The ventral side of the body is uniformly bright, sprinkled with blue towards black dots. It moves by sliding. They feed on worms, snails etc. They become active late in the spring. It is an ovoviviparous species. The female after three months of fertilization gives birth to 5-26 young individuals that have gold or reddish color and a black line along the back and sides of the body. The life expectancy of this species is up to 30 years.

Habitat

This species mainly occurs in places rich in vegetation such as meadows, bushes, lowlands and mountainous hills up to 2400 m above sea level.

General distribution

Most of Europe, Asia Minor, Africa: Algeria, Tunisia.

Distribution in Kosovo

Rapçe, Brezovicë, Kosh, Gërmi, Kukli Beg, Nerodime e Epërme, Zatra.

Population

Population trend: Stable

The global population trend is stable. In Kosovo, according to the current data, the subpopulations are stable too.

Rationale

This species is assessed as Least Concern due to the considerable stability of subpopulations and prediction that more subpopulations are expected to be found, based on potential habitats of the species and knowing its distribution in the neighboring countries.

Threats

List of Threats: 5 Biological resource use; 6 Human intrusions & disturbance; 7 Natural system modifications (7.1 Fire & fire suppression); 11 Climate change & severe weather (11.4 Storms & flooding).

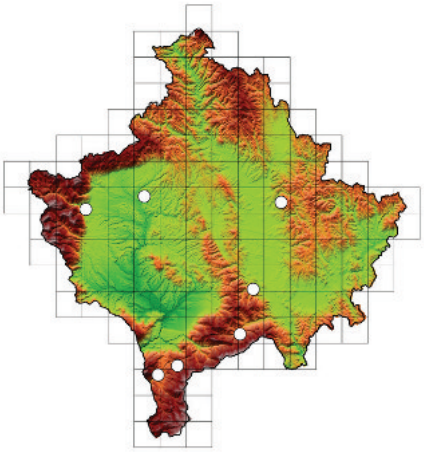
Main threats for this species are related to the intensification of agriculture, fragmentation, isolation, and loss of habitats, destruction of hibernation sites as a result of changing agricultural practices and urban infrastructure development. Another indirect threat for this species is attack by young people or farmers, due to misinformation, and perceiving them as snakes, then arson, floods, etc. This species is also prey to other mammals, birds, but also domestic animals.

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed:1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).





Lacerta viridis (Laurenti, 1768)

Reptilia: Squamata: Lacertidae

European Green Lizard

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This is a very active species with long cylindrical body of up to 30-40 cm. The color of the body is usually green, from which it is named. The head has dark green olive color with yellow spots. In females, the dorsal side of the body has spots of dark or black color and the yellow longitudinal yellow lines. They feed on insects, but also on young lizards or snakes. It is oviparous species. Females produce in June 13 eggs and rarely up to 25. Eggs are placed in a pit and are covered with soil and leaves, from which youngs emerge in August. Sexual maturity is reached at age 2. The life expectancy of this species can reach up to 15 years (Arnold *et al.*2002).

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 14. Artificial/Terrestrial.

This species prefers dry and sunny places rich in low vegetation such as fields and shrubs, open forests, tree trunks, places along the roads as well as areas with agricultural crops.

General distribution

South Europe, Central Europe, from the west it includes Asia up to Persia, from south Balkans, Pyrenees and Apennines.

Distribution in Kosovo

Gërmi, Badovc, Shën Jovan in Kamenicë, Brezovicë, Llukavc i Thatë, Osojan, Qafë Duhël, Tuneli i Parë, Rapçe, Zabërxhë, Cabër.

Population

Population trend: Stable

The global population trend is declining. In Kosovo, this species has stable subpopulations based on current knowledge.

Rationale

This species is assessed as Least Concern due to stable subpopulations and prediction that more subpopulations will be found, based on potential habitats of the species and knowing its distribution in the neighboring countries.

Threats

List of Threats: 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops: 2.1.1 Shifting agriculture, 2.1.2 Small-holder farming); 6 Human intrusions & disturbance (6.1 Recreational activities); 9 Pollution.

Main threats for this species are loss of habitats and the population decline, as a result of intensive farming activities. This species is also threatened by other anthropogenic activities such as field fires, and use of pesticides and agrochemicals in agriculture and livestock. This species may be also threatened by outdoor recreational activities in nature.

Conservation measures in action

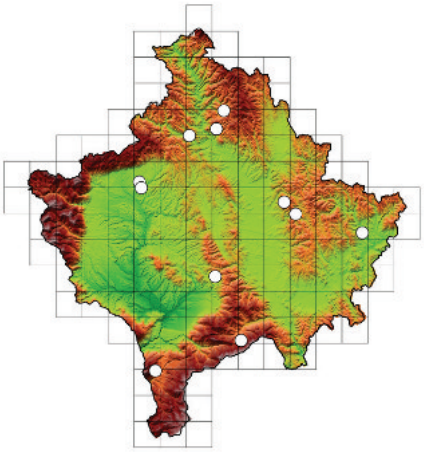
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed:1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Arnold *et al.* 2002





Natrix tessellata (Laurenti, 1768)

Reptilia: Squamata: Colubridae

Dice snake

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This is a venomous species. In this species, the yellow or white spots on both sides at the back of the head are missing. The body is covered with scales that are equipped with a ridge on the dorsal side, which is especially pronounced on the tail region. Body length is between 1 and 1.20 cm, where the tail is as one-fifth of the body length. The female is larger than the male. The color of the body is constant. The dorsal side is olive towards green in color, or bright brown and, laterally with several yellow spots, sprinkled with dark spots. It mainly feeds on fish, frogs, insect larvae and other small aquatic animals. In late June and early July females produce 5 to 25 eggs in a shallow pit, where youngs emerge after ten weeks.

Habitat

Habitat Type: 4. Grassland; 5. Wetlands (inland); 14. Artificial/Terrestrial; 15. Artificial/Aquatic & Marine.

This species lives near fast flowing waters. In some cases, it is also encountered near lakes rich in fish.

General distribution

Middle Europe, South Europe, Egypt, Western Asia.

Distribution in Kosovo

Sllatinë e Ibrit, Leposaviq, Vërmicë, Pograxhë, Radavc, Dumnicë e Poshtme, Drenica River in Drenas, Krushevë, Jezerc, Viti, Doganaj, Rakovinë, Rahovec, Prizren.

Population

Population trend: Stable

At the global level, there is a population decline. In Kosovo was observed a slight decline, however, subpopulations are still stable.

Rationale

This species is assessed as Least Concern due to the considerably high number of sites where it is found and stable subpopulations.

Threats

List of Threats: 7 Natural system modifications (7.2 Dams & water management/use: 7.2.11 Dams (size unknown), 7.3 Other ecosystem modifications); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage, 9.1.2 Run-off).

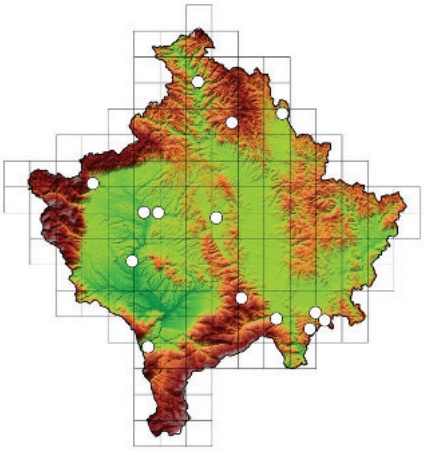
The main threatening factors for this species are related to activities that hamper release of eggs, wintering of the species, the location of the radiation, hunting and the movements at the time of mating. In this context, the main factors are the construction of canals, dams, infrastructure, and pollution from urban and agricultural discharges.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).





Podarcis muralis (Laurenti, 1768)

Reptilia: Squamata: Lacertidae

Common Wall Lizard

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body length of this species is 16 - 18 cm. The tail is longer than the body. This species becomes active early in the spring and continues the activity until late autumn, when winter lethargy starts. It's an insectivorous species. The female produces 5 to 8 eggs in June or July, of which youngs emerge in August. The maximum lifetime registered is up to 10 years.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 6. Rocky areas (eg. inland cliffs, mountain peaks); 14. Artificial/Terrestrial.
The preferred habitats for this species are dry hillside mountainous terrains, then habitats near the roads and inhabited places, as well as abandoned homes. Beside lowlands, it can be found at high altitudes up to 1500 m.

General distribution

Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Kosovo, Liechtenstein, Luxembourg, Macedonia, Montenegro, Romania, Serbia, Slovakia, Slovenia, Spain, Switzerland, Turkey, United Kingdom.

Distribution in Kosovo

Gllarevë, Kijevë, Zabërxhë, Mitrovicë, Veriq, Badovc, Leskoc, Suhadoll, Radavc, Carralevë, Jabllanicë, Prizren, Gornje Sello, Prizren, Gërmi, Mirushë, Rapçe, Bishtazhin, Gerqinë, Gjakovë, Letnicë, Drejkoc, Lëbushë.

Population

Population trend: Stable
At the global level, the population trend is stable. In Kosovo, as well, it was observed to have stable subpopulations.

Rationale

This species is assessed as Least Concern due to the considerably high number of sites where it is found and stable subpopulations.

Threats

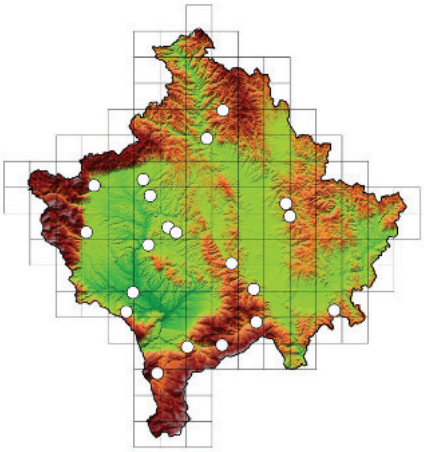
List of Threats: 1 ZhResidential & commercial development (1.2 Commercial & industrial areas); 8 Invasive & other problematic species, genes & diseases (8.1 Invasive non-native/alien species/diseases); 11 Climate change & severe weather (11.3 Temperature extremes)
Main threats for this species are related to the anthropogenic activities causing destruction or degradation of the habitat through agroindustry and economy, then impact from invasive species, as well as the natural effects of extreme temperatures, fires, and floods.

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed:1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).





Vipera ammodytes (Linnaeus, 1758)

Reptilia: Squamata: Viperidae

Long-nosed viper

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This species is easily distinguished from other related species because of the presence of the horn on the snout. This horn consists of small scales. Usually, this species reaches body length from 60 to 80 cm and sometimes up to 90 cm (Arnold & Ovenden 2002). There is a visible sexual dimorphism in this species. The color of the body may be different, for example, gray or brown towards green, while male has a black stripe on the dorsal side. It is mainly fed on small mammals, then lizards, birds etc. It is ovoviviparous species. The female gives birth to 4 to 20 young individuals. Their lifespan is up to 22 years.

Habitat

Habitat Type: 1. Forest (1.4. Temperate Forest): 3. Shrubland (3.4. Temperate Shrubland, 3.8. Mediterranean-type Shrubby Vegetation); 6. Rocky areas (eg. inland cliffs, mountain peaks); 14. Artificial/Terrestrial (14.1. Arable Land, 14.2. Pastureland, 14.3. Plantations, 14.4. Rural Gardens).

This species is mainly found in rocky and sunny slopes, along the roads, walls and mountain hills. It can be found at various altitudes, basically from sea level to 2500 m.

General distribution

Albania, Austria, Bosnia and Herzegovina, Caucasus, Croatia, Greece, Italy, Kosovo, Macedonia, Serbia, Slovenia, Syria, Turkey.

Distribution in Kosovo

Bollosicë, Zupç, Çabër, Koshtovë, Klinë, Istog, Skënderaj, Drenas, Prizren, Dragash, Ferizaj, Kaçanik, Viti, Gjakovë, Mirushë, Krilevë, Kamenicë.

Population

Population trend: Stable

At the global level, the population trend is declining (Agasyan *et al.*2009), whereas in Kosovo in all observed sites subpopulations are stable.

Rationale

This species is assessed as Least Concern due to the high number of sites where it was found and stable subpopulations.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & urban areas); 3 Energy production & mining (3.2 Mining & quarrying); 4 Transportation & service corridors (4.1 Roads & railroads); 5 Biological resource use (5.1.3 Persecution/control).

Since, in most cases, this species is encountered in xerothermic areas, then the main threatening factors are related to the anthropogenic activities such as the opening of new roads, sewerage, quarries, and related infrastructure, construction of touristic facilities, but, to a lesser extent also activities in the agro-industrial sphere. They are threatened from other predators, but also by the hostile attitude of humans since the species is considered a venomous animal.

Conservation measures in action

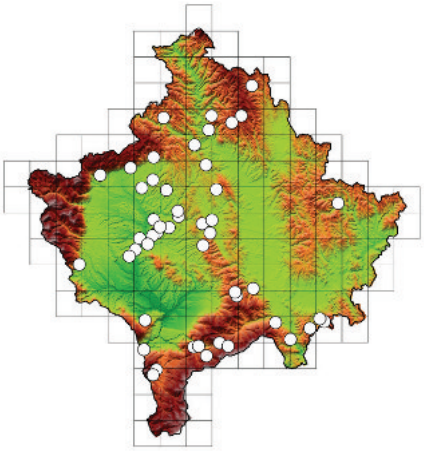
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Agasyan *et al.*2009; Arnold & Ovenden 2002





Vipera berus (Linnaeus, 1758)

Reptilia: Squamata: Viperidae
Common European viper

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This species lacks the horn on the snout. Their body is relatively thick. The length of the body reaches up to 60 cm (Arnold & Ovenden 2002). They are active in the evening, when they hunt small mammals, small birds, eggs, lizards, frogs and in some cases they also feed on invertebrates. The male is usually smaller than the female, and the color of the dorsal side of the body is usually grey, sparkled with nuances of brown, while on the ventral side the color is bright yellow. The phenomenon of melanistic individuals is very frequent in this species (Nilson *et al.*2005). It is a viviparous species. Females give birth to 3 to 18 young, depending on age, season and nutrition. The male reaches sexual maturity at the age of 3 to 4 years, and the female at the age of 4 to 5 years.

Habitat

Habitat Type: 1. Forest (1.4. Temperate Forest); 3. Shrubland (3.4. Temperate Shrubland, 3.8. Mediterranean-type Shrubby Vegetation); 4. Grassland (4.4. Temperate Grassland); 6. Rocky areas (eg. inland cliffs, mountain peaks).
This species has a heterogeneous areal and can be found in rocky areas, shrubs, forests, grasslands, and wet places. It can be found up to 3000 m above sea level.

General distribution

Distributed in almost all of Europe, starting from the western side with Great Britain and France, from east to Sahalin islands in Asia and up to North Korea and Japan, and from north up to Greece, and from the south up to Korea.

Distribution in Kosovo

Dragash, Prevallë, Beroc, Shtërpcë.

Population

Population trend: Stable
At the global level, but also in the Balkans, the population trend is declining. In Kosovo, there has also been a slight decline in some subpopulations of this species, but they are still stable enough.

Rationale

This species is assessed as Least Concern due to the considerably high number of sites where it is found and stable subpopulations.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops: 2.1.1 Shifting agriculture); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.3 Persecution/control).
The narrow and fragmented areal represents the main potentially threatening factor for this species. In mountainous areas, main threats are from human activities such as: the construction of hotel facilities and accompanying tourist infrastructure, while in the lower areas is threatened by agricultural activities, such as the establishment of new agricultural areas, joining of parcels, passing into intensive agriculture activities, by which their habitats are destroyed and isolated. The significant threat comes from predators as well, but also from humans, because of their hostile attitude by considering it as venomous animal.

Conservation measures in action

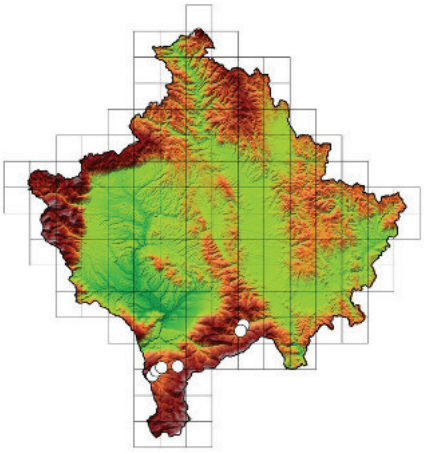
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed:1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Arnold & Ovenden 2002; Nilson *et al.* 2005





Zamenis longissimus (Laurenti, 1768)

Reptilia: Squamata: Colubridae

Aesculapian Snake

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This is a non-venomous species, with very powerful musculature. The body length reaches up to 2 meters. The scales have a metallic shine. The color of the body is different, but usually dark brown, on ventral side white towards yellow with dark spots. The phenomenon of albinism is also present. They feed on small rodents, lizards, birds, and their eggs, as well as with different arthropods. Females usually produce 5 to 10 cylindrical or elongated eggs, which are put in places where organic decomposition occurs. Approximately eight weeks afterwards, young individuals emerge. This species lives 25 to 30 years (Pasuljević 1968).

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 6. Rocky areas (e.g. inland cliffs, mountain peaks); 14. Artificial/Terrestrial.

This species can be found in deciduous forests, areas rich in meadows and grasslands surrounded by bushes, then around the walls of houses and abandoned huts, near agricultural economies but also in areas up to 2000 m.

General distribution

Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, France, Georgia, Germany, Greece, Hungary, Italy, Kosovo, Macedonia, Moldova, Montenegro, Romania, Serbia, Slovakia, Slovenia, Spain, Switzerland, Turkey, Ukraine.

Distribution in Kosovo

Istog, Zllatar, Gërmi, Sredskë, Banjskë, Brezovicë, Rugovë, Llokvicë, Zubin Potok.

Population

Population trend: Stable

The population trend at the global level is not well known, although in many countries populations are fragmented. In Kosovo subpopulations are stable.

Rationale

This species is assessed as Least Concern due to the considerably high number of sites where it is found and stable subpopulations. Several other subpopulations are expected to be found, considering the suitable habitats and knowing the distribution of the species in neighboring countries.

Threats

List of Threats: 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops: 2.1.1 Shifting agriculture); 4 Transportation & service corridors (4.1 Roads & railroads); 6 Human intrusions & disturbance (6.3 Work & other activities); 9 Pollution (9.1 Domestic & urban waste water 9.1.1 Sewage 9.1.2 Run-off).

Main threats for this species are habitat degradation and fragmentation, as a result of anthropogenic activities such as: intensification of agriculture, change of destination of agricultural crops, opening of new areas, construction of new roads and accompanying infrastructure, pollution from the use of chemicals in agriculture, damage of eggs and juvenile forms, etc. A factor that endangers this species is also intentional or unintentional assault by humans, especially during the mating period.

Conservation measures in action

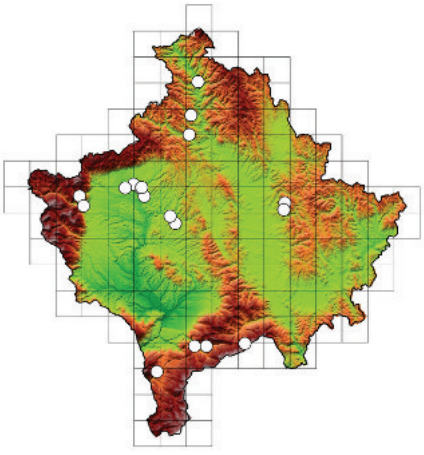
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Pasuljević 1968





6.7 MAMMALIA

Apodemus flavicollis (Melchior, 1834)

Mammalia: Rodentia: Muridae
Yellow-necked Wood Mouse

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body length ranges from 8.8 to 13 cm and the tail is 9.2 to 13.4 cm long. The body weight in males is up to 50 grams and in females up to 44 grams. It is mainly fed with seeds and fruits, green plants and insects. It is the prey of some birds, foxes, orchards and other carnivores as well as reptiles. It is active mainly at night, but sometimes during the dusk and early in the morning. It is a very agile animal, easily climbs in trees up to 23 m high, where it uses bird nests and tree holes. During the winter it uses for shelter closed spaces, stables, underground channels and walls. The life expectancy of this species is 2 to 4 years (Wilson & Reeder 2005).

Habitat

Habitat Type: 1. Forest.
This species prefers forests and parks. It can be mainly found in deciduous and mixed forests, where phytocoenological composition ensures a high yield of seeds and fruits for food.

General distribution

Europe, Asia.

Distribution in Kosovo

Nën Kala, Duhël, Shalë, Lipjan, Korbliq, Rekë, Pouskë, Zhur, Batushë, Ujmir.

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern due to the stability of subpopulations and absence of any direct threatening factor for this species or its habitats. More subpopulations are to be expected from Kosovo.

Threats

Main threats that could endanger this species are habitat loss and degradation and usage of chemicals in agriculture.

Conservation measures in action

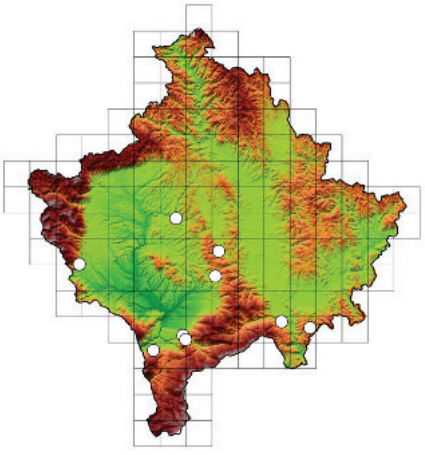
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Wilson & Reeder 2005



Apodemus sylvaticus (Linnaeus, 1758)

Mammalia: Rodentia: Muridae

Long-tailed Field Mouse

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

It is a small mouse, with big eyes and ears and long and thin tail. The senses of sighting and hearing are pretty well developed in this species. The body is covered with soft hair, which is brown to yellow in color from the dorsal side and white or gray from the ventral side. It is mainly fed with seeds, fruits, bark, plants, and insects. It is active during the night and rarely during the day. It is prey of foxes, birds, cats, orchards etc. It prepares the nest in the trunk or on the ground, but also uses nests of other birds. They open underground tunnels of 3 cm and depth of approximately 20 cm. They do not migrate, nor hibernate. The life expectancy of this species is 1 - 2 years.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 14. Artificial/Terrestrial.
This species is encountered in different habitats such as forests, shrubs, pastures, cultivated agricultural areas or even wasteland and inhabited areas.

General distribution

Europe, North Africa.

Distribution in Kosovo

Reçan, Dobërdolan, Debëlldeh, Pllanjan, Zhur, Pobergjë, Radishevë, Dersnik, Sinejë.

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern due to the stability of subpopulations and absence of any direct threat for this species or its habitats. More subpopulations are to be expected from Kosovo.

Threats

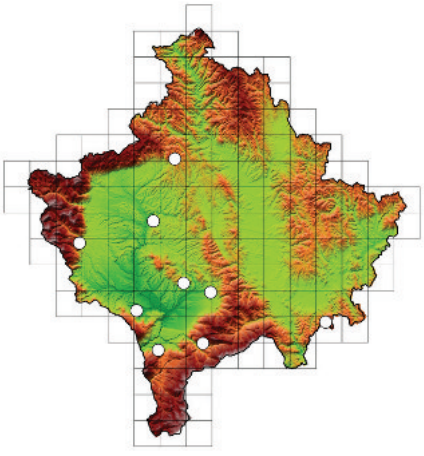
Main potential threats for this species are habitat loss and degradation and usage of chemicals in agriculture.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).





Canis aureus Linnaeus, 1758

Mammalia: Carnivora: Canidae

Golden Jackal

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

Outwardly this species is similar to the wolf and the fox. The body is covered with short thick hair, grey reddish or hazel in color with dark spots. The body's ventral side has a brighter color. The body length in males ranges from 71 to 85 cm and in females from 69 to 73 cm, body height 45 to 50 cm and body weight of 6 to 14 kg. It is an omnivorous species and feeds on birds and their eggs, rodents, reptiles, amphibians, fish, insects and fruits. Excessive food is stored in the pits covered with soil. Usually, it moves during the night, out of human sight. but occasionally can move during the day as well. It does not hibernate and does not migrate. They are mainly monogamous animals. Maturity occurs after the first year of life. Life expectancy is about 13 years, but in some cases up to 18 (Jhala & Moelan 2004).

Habitat

Habitat Type: 5. Wetlands (inland); 14. Artificial/Terrestrial.
This species is mainly found around villages and inhabited areas, mountainous hilly areas rich in pastures etc.

General distribution

Europe, Asia, Africa.

Distribution in Kosovo

Gremnik, Berishë, Mushtisht, Debëlldeh, Rapçe, Grykë, Jezerc, Belle, Kotorr, Maxherre, Bajgorë, Uçe, Tunaj.

Population

Population trend: Stable
Global population trends for this species are increasing. At European level and in Kosovo populations are stable.

Rationale

This species is assessed as Least Concern due to the stability of subpopulations and absence of any direct threat for this species or its habitats.

Threats

List of Threats: 2. Agriculture & aquaculture (2.1. Annual & perennial non-timber crops: 2.1.3. Agro-industry farming).
Main potential threats for this species are development of intensive agriculture, industrialization, urbanization, and infrastructure.

Conservation measures in action

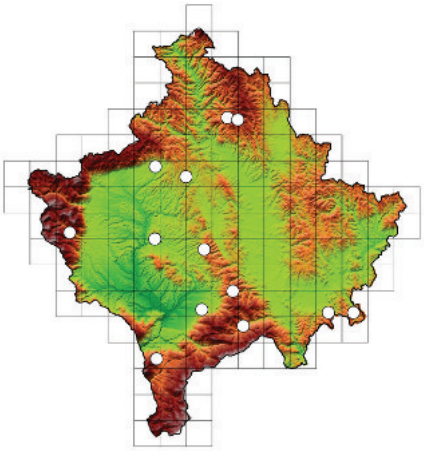
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Jhala & Moelan 2004





Canis lupus Linnaeus, 1758

Mammalia: Carnivora: Canidae

Wolf

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This species has a body length of 105-160 cm, the height of 80-85cm, tail of 29-50 cm and body weight of 12-80 kg (Foresman 2012). In females, these sizes are smaller. It is a social animal and rarely can be found lonely, mainly during the summer. Members of the group typically range from 5 to 40. They live in social groups led by the alpha male with the female. It is a fast and powerful animal. They develop heavy fighting for territory and their mortality in battles ranges from 14 to 65%. Their main foods are ungulates weighing 20 to 100 kg. Life expectancy reaches up to 16 years.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 5. Wetlands (inland); 6. Rocky areas (e.g. inland cliffs, mountain peaks); 14. Artificial/Terrestrial.

This species can be found in different habitats. During the winter they mainly prefer lower altitudes, but they can be found in high mountainous areas, open fields, grasslands, etc.

General distribution

This is the most widespread mammal in the world. It is found along the northern hemisphere north of 15° in North America and 12° N in India.

Distribution in Kosovo

Pouska, Junik Mountains, Gajre, Nerodime e Ulët, Sedenicë, Sukë, Tunaj, Sukë e Prapë, Novëbërdë, Tërpezë, Malishevë, Dërsnik, Klinë, Qyqavicë, Potok, Qabiq, Zijaq, Zhiti, Sinejë, Koritnik, Llanisht.

Population

Population trend: Stable

Subpopulations of this species are stable in Kosovo and surrounding countries.

Rationale

This species is assessed as Least Concern due to the relatively high number of sites where it is found and stability of subpopulations. There are probably several other subpopulations to be expected in Kosovo.

Threats

There are no current threats for this species in Kosovo

Conservation measures in action

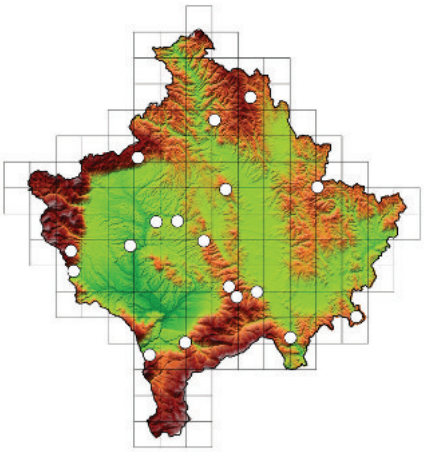
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Foresman 2012





Erinaceus roumanicus Barrett-Hamilton, 1900

Mammalia: Eulipotyphla: Erinaceinae
Northern White-breasted Hedgehog

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body is covered with spines, whose base is white in color, the medium part dark brown and the tip is lighter. It is distinguished by the European hedgehog for its lighter color and coloration of the chest area. This species is omnivorous, preferring insects but also feeding on snails, snakes, lizards, frogs, birds and bird eggs, small rodents, fruits, and seeds. It is a solitary species. Socialization occurs only during the mating time. The time of lethargy begins in October and lasts until April. It does not migrate and reproduces once or twice a year. They live for up to 10 years (Jones *et al.*2005).

Habitat

It is widespread in diverse habitats such as open forests, fields, shrubs, cultivated areas, peripheral suburban habitats, gardens, and rarely in parks, wetlands and high altitude conifer forests.

General distribution

Southeastern Europe, Asia.

Distribution in Kosovo

Gllamnik, Qabër, Runikë, Ujmirë, Drenoc, Tërpezë, Nerodime e Ulët, Ostrozub, Reshtan, Kralan, Potok, Strellc, Vataj, Smirë, Grabanicë, Rakovinë, Fortesë, Krushë e Madhe, Berishë, Gremnikë, Turjakë, Veriq, Demjan.

Population

Population trend: Stable

Rationale

This species is assessed as Least Concern due to the relatively high number of sites where it is found, the stability of subpopulations as well as the absence of any direct threat to its habitat in Kosovo.

Threats

Main potential threats for this species are: the transformation of fields and pastures into agricultural land, use of chemicals that damage its prey, then road infrastructure which causes habitat fragmentation and traffic threats (especially for young ones).

Conservation measures in action

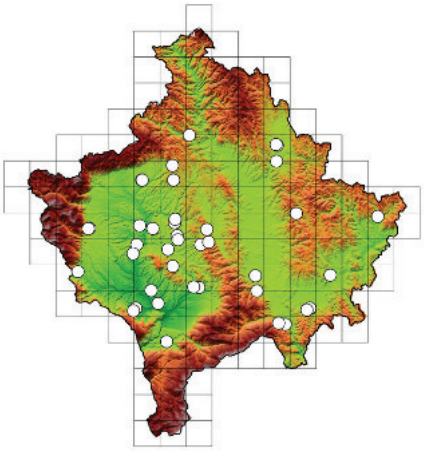
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Jones *et al.* 2005





Glis glis (Linnaeus, 1766)

Mammalia: Rodentia: Gliridae

Edible Dormouse

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

From the outer appearance, this species resembles squirrel due to its tail, but is smaller in size. The body is covered with soft and thick hair. The dorsal side of the body is gray or dark brown in color, while the ventral side is white. The body length is 130-190 mm and the tail up to 168 mm. They feed on seeds and fruits, eggs, birds, insects etc. It does not migrate but falls into hibernation from autumn to spring. During this time of hibernation, they wake up several times to consume the food they have deposited earlier. They move mainly at night. They live up to 12 years (Krystufek 2007).

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 14. Artificial/Terrestrial.

It is an arboreal species mainly inhabiting coniferous and mixed forests. It can also be found in low areas such as gardens, plantations, shrubs, and rocky areas.

General distribution

Europe, Asia.

Distribution in Kosovo

Hoqë, Mushtisht, Maqitevë, Mjak, Plavë, Voksh.

Population

Population trend: Unknown

Rationale

This species is assessed as Least Concern due to the absence of any direct threatening factor for this species or its habitats. More subpopulations are to be expected from Kosovo.

Threats

List of Threats: 5. Biological resource use (5.1. Hunting & trapping terrestrial animals, 5.3. Logging & wood harvesting).

Main potential threats for this species are habitat change, fragmentation and loss, hunting etc.

Conservation measures in action

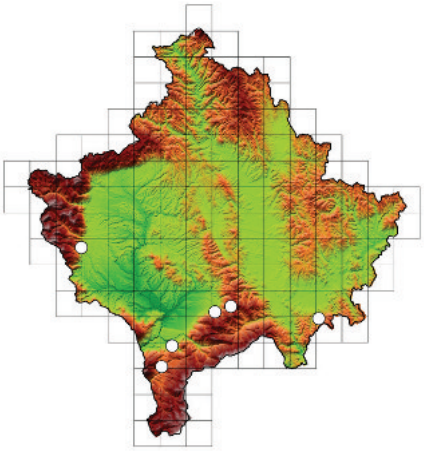
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Krystufek 2007



Lepus europaeus Pallas, 1778

Mammalia: Lagomorpha: Leporidae

Brown Hare

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body is covered with fur, which is brown or reddish on the dorsal side, and white in color on the ventral side. Body color during the winter season is generally darker. They have a body length of 52-68 cm, a tail 8-12 cm and a body weight of 2.5 to 7 kg. They feed on a large number of plants and agricultural crops. They move mainly during the night, but also by day, but the degree of movement in certain areas is very limited. They do not migrate and do not hibernate. It is a solitary species but can live in groups during the mating period or around the food. They are prey of foxes, wolves, jackals, birds, wild cat and are also persecuted by humans.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 14. Artificial/Terrestrial.

This species can be encountered in a wide range of habitats such as agricultural lands, pastures, low and high vegetation areas, and mainly in open areas. It can also be present in high mountain areas up to 1500 m.

General distribution

Palearctic

Distribution in Kosovo

Kuçicë, Koshtovë, Zhazhe, Majac, Mramor, Osojan, Pograxhë, Vrellë, Kuzhnin, Bjeshkët e Junikut, Ivajë, Nerodime e Epërme, Stanaj, Prishtinë, Përqevë, Klinë, Zabërxhe, Dërsnik, Turjakë, Zatriq, Gllobogicë, Qyqavicë, Krojmir.

Population

Population trend: Stable

The global population trend is declining. Even in Europe during the last decade there has been a decline. In Kosovo, subpopulations of this species are stable.

Rationale

This species is assessed in the Least Concern category due to the sustainability of the subpopulations and a high number of sites where it is found.

Threats

List of Threats: 1 Residential & commercial development [1.1 Housing & urban areas]; 2 Agriculture & aquaculture [2.1 Annual & perennial non-timber crops]; 8 Invasive & other problematic species, genes & diseases [8.2 Problematic native species/diseases]; 9 Pollution [9.3. Agricultural & forestry effluents].

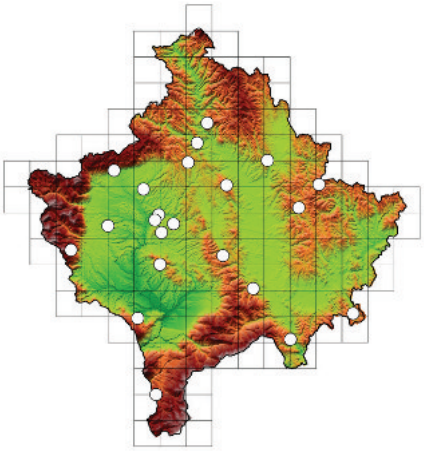
Main threats for this species are related to intensification of agriculture, application of fertilizers, pesticides and agricultural machinery and hunting. Another threat for this species during the recent years is the so-called European brown hare syndrome.

Conservation measures in action

Protected species in Kosovo [Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species].

Conservation measures needed

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].





Martes foina (Erxleben, 1777)

Mammalia: Carnivora: Mustelidae

Stone Marten

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body is covered with dark brown hair, while in the young individuals the hair color is bright gray. The sore area is white in color. Body length is 4-55 cm and body weight 1 - 2.3 kg. They have long extremities and tail. It is an omnivorous species and feeds with invertebrates and small vertebrates, while during the summer and autumn with plant products. It is a prey of fox and birds. It is a predominantly solitary species. During the mating period, they are encountered up in trees and rarely down. They do not hibernate or migrate. Their lifespan ranges from 3 to 8 years (Grizimek 1990).

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 6. Rocky areas (eg. inland cliffs, mountain peaks); 14. Artificial/Terrestrial.

This species is mainly found in deciduous forests, but also in open rocky hillsides and in the periphery of inhabited areas.

General distribution

Europe, Asia.

Distribution in Kosovo

Guri i Hajdarit, Korbiliq, Kërstec, Vllahi, Belle, Ratishë, Llanisht, Drelaj, Lubozhdë, Stanqiq, Pleqe.

Population

Population trend: Stable

Rationale

This species is assessed in the Least Concern category due to the sustainability of the subpopulations and relatively high number of locations where it is found. More subpopulations are to be expected from Kosovo.

Threats

Main threats for this species are persecution by different methods because of their fur and skin and because of the conviction that they cause damage.

Conservation measures in action

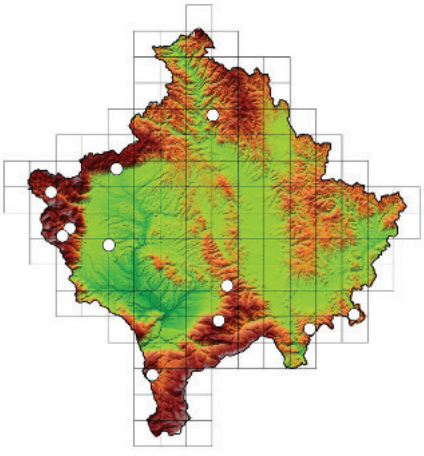
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Grizimek 1990





Martes martes (Linnaeus, 1758)

Mammalia: Carnivora: Mustelidae

Pine Marten

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body of this species is covered with bright brown hair during the summer and with long dark brown hair in the winter. The sore area is yellowish orange in color. The body length ranges from 45 to 58 cm, the tail is 16 to 28 cm long and the body weight is 0.8 to 2.4 kg. Usually, males are larger than females. They eat nuts, birds and eggs, insects, snails, reptiles as well as seeds and fruits during the summer season. It is a prey of the fox and birds. They do not hibernate and do not migrate. They spend a solitary life. They build their own nests, but can use nests of other animals as well. They become active during the dusk and dawn.

Habitat

Habitat Type: 1. Forest; 3. Shrubland.
They can be mainly found in coniferous or mixed forests, rich in old trees, as well as in open rocky areas, even outside thick vegetation forests (Overskaug *et al.*1994).

General distribution

Europe, Asia.

Distribution in Kosovo

Llabjan, Pograxhë, Junik Mountains, Nerodime e Epërme, Sukë, Dushkajë, Tunaj, Rahovë, Pleqe, Pllamjan, Mushtisht, Busovat, Guri i Hajdarit.

Population

Population trend: Stable

Rationale

This species is assessed in the Least Concern category due to the sustainability of the subpopulations and relatively high number of locations where it is found. More subpopulations are to be expected from Kosovo.

Threats

Threats kryesore: 5. Biological resource use (5.3. Logging & wood harvesting); 7. Natural system modifications (7.3. Other ecosystem modifications).
Main threats for this species are persecution by different methods for their fur and skin, then habitat loss and fragmentation, as well as increased predator densities.

Conservation measures in action

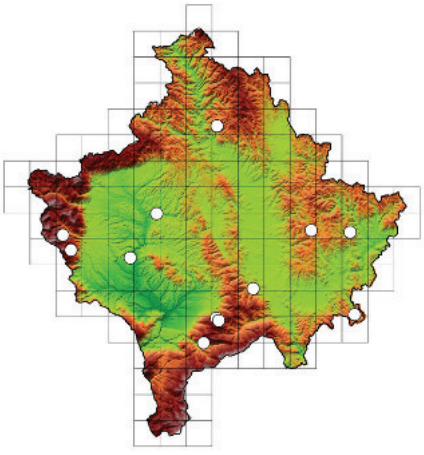
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends)

References

Overskaug *et al.*1994





Meles meles (Linnaeus, 1758)

Mammalia: Carnivora: Mustelidae

Badger

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body of this species is covered with long gray or silvery hair on the dorsal side, while on the ventral side hair is short, soft and dense, white in color. The body length is from 56 to 90 cm, the tail between 12 to 24 cm and the body weight between 8 to 17 kg. Preferred food for this species are: earthworms, seeds, fruits, bulbs, cereals, nuts, mushrooms, bird eggs, hedgehogs, squirrels, rabbits, etc. (Delahay *et al.*2008). There are no real natural predators other than human, but the lynx, the wolf, the dog, and the bear pose a considerable danger. They are usually active during the twilight, night and day. They live in a group of 2-23 individuals, but in the absence of food, they are solitary. The life expectancy of this species is up to 18 years.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 14. Artificial/Terrestrial.

The preferred habitats for this species are: deciduous or conifer mountain areas with dense vegetation, but also open areas, grasslands, as well as areas planted with agricultural crops such as cereals, vegetables and orchards.

General distribution

Europe, Asia.

Distribution in Kosovo

Junik Mountains, Viti, Jezerc, Bistricë, Dushkajë, Rapçe, Stanaj, Maxherre, Hakanishtë, Kabash, Deçan Mountains, Novosellë, Kuqishtë, Mushtisht.

Population

Population trend: Stable

The subpopulation trends for this species are stable in Europe and Kosovo.

Rationale

This species is assessed in the Least Concern category due to the sustainability of subpopulations and the absence of any factor that directly threatens this species or its habitats in Kosovo.

Threats

Main potential threats for this species are anthropogenic activities such as reduction and loss of habitats, hunting, and persecution for commercial purposes or hostile activities due to their damage on crops, orchards, and cereals.

Conservation measures in action

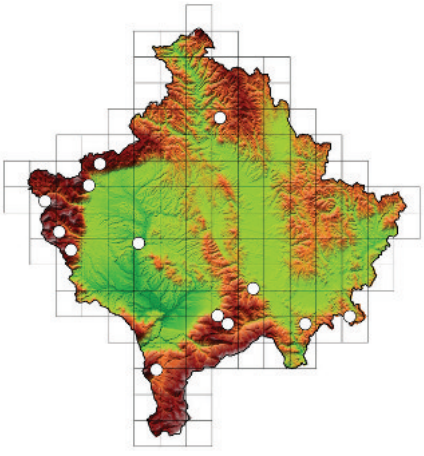
Currently, there is no conservation measure in action.

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Delahay *et al.* 2008





Mustela erminea Linnaeus, 1758

Mammalia: Carnivora: Mustelidae

Stoat

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This species has an elongated body and short legs. They have triangularly shaped head, long neck, bright eyes, and long mustaches. The fur is reddish-brown on the dorsal side and completely white on the ventral side. The 4.5 - 10 cm long tail ends in black color. Body length ranges from 17 to 30 cm and body weight ranges from 340 to 400 gr. Males are usually bigger than females. They feed on mice, rabbits, bird eggs, invertebrates, amphibians, snakes and lizards. They are able to kill the victim several times bigger than themselves, which is than stored in their nest. They are prey to foxes, cats, rabbits, birds, etc. They do not hibernate and do not migrate. The life expectancy of this species is up to 7 years.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 5. Wetlands (inland); 14. Artificial/Terrestrial.
This species can be encountered in a wide variety of habitats such as: coniferous and mixed forests, shrubs, grasslands, road edges, river banks, and gardens, as well as in populated areas. This species is present in lowlands but also in altitudes up to over 4000 m.

General distribution

Europe, Asia, North America.

Distribution in Kosovo

Zhur, Budakovë, Gaçkë, Pozhoran, Përlepnicë, Novobërdë, Vllahi, Koshtovë, Klinë e Epërme, Turiqevc, Shushicë, Maxhunaj, Pobergjë, Osdrim, Krushevë, Zabergjë.

Population

Population trend: Stable
The population trend is stable at the European level and in Kosovo as well.

Rationale

This species is assessed in the Least Concern category due to the sustainability of subpopulations and relatively high number of locations.

Threats

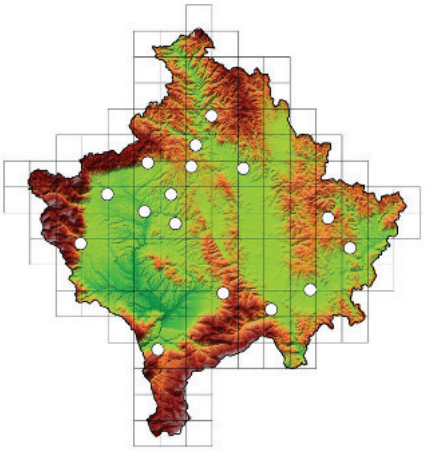
Main threats for this species are habitat loss and fragmentation as a result of the intensification of agriculture and urbanism, burning of pastures and forests, human persecution due to fur and hostile attitude towards it.

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).



Mustela nivalis Linnaeus, 1766

Mammalia: Carnivora: Mustelidae

Least Weasel

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body of this species is long and slender, covered with the fur which is brown on the dorsal side and totally white on the ventral side. Male body length ranges from 13 to 26 cm, while in the female it is 11-20 cm. Male body weight is from 26 to 250 grams and in female 29 to 117 grams. This species is specialized in hunting small rodents but in their absence, they feed on bird eggs, insects, lizards, snakes, little rabbits, etc. (King & Powell 2007). They are prey of foxes, birds etc. They build their nest under the ground and use it for rest, growth of young individuals and for storing the food. They do not hibernate and do not migrate. Their activity is during the night and day. Their lifespan is 7 to 8 years.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 14. Artificial/Terrestrial.
This species can be found in a variety of habitats such as open forests, fields, shrubs, parks and residential areas.

General distribution

Europe, Asia, North America, North Africa, New Zeeland, Azores, Crete, Malta.

Distribution in Kosovo

Korbiliq, Kërstec, Celinë, Skivjan, Zabërxhë, Krushevë, Nabërgjan, Llaushë, Bellopojë, Baballoq, Smolicë, Pleshinë, Zhegër, Maxhunaj, Miresh, Busovatë, Novobërdë, Prapashticë.

Population

Population trend: Unknown
Population trend at European level is not well known. In Kosovo, as well, there is not enough information about population trends.

Rationale

This species is assessed as Least Concern due to the high number of subpopulations. Most probably this species is widely distributed than currently known, based on knowledge from surrounding countries of Kosovo.

Threats

List of Threats: 5.Biological resource use (5.1. Hunting & trapping terrestrial animals: 5.1.2. Unintentional effects (species is not the target)); 7. Natural system modifications (7.3. Other ecosystem modifications).
Main threats for this species are: application of various chemicals in agriculture, the transformation of extensive agricultural areas into intensive ones, as well as the change of agricultural practices that have been preferable for this species. In general, this species is of no interest for hunting.

Conservation measures in action

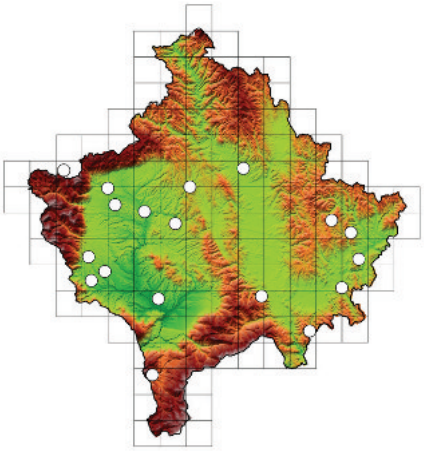
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

King & Powell 2007



Mustela putorius Linnaeus, 1758

Mammalia: Carnivora: Mustelidae

European Polecat

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This species has a thin, elongated body, wide head, and short extremities. Males are bigger than females. Body length of male ranges from 35 to 46 cm and the tail from 11.5 to 17 cm, while in female body length is 29 to 40 cm and the tail 8.4 to 15 cm. Body weight is between 1 - 2.5 kg. The preferred prey for this species are: rodents, birds and their eggs, rabbits, amphibians, insects, worms etc. This species is prey of foxes, canines, wild cats and domestic cats. They are solitary animals and are active at night or early at dawn. Their territory is protected against the individuals of the same sex by marking it with a very heavy fragrance secreted by the anal glands. They do not migrate and do not hibernate. They live for up to 6 years.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 5. Wetlands (inland); 14. Artificial/Terrestrial.

They can be mainly found in low forest areas, grasslands, agricultural crop areas, inhabited areas and around them, but also near the river banks and swamps.

General distribution

Europe, Western Asia.

Distribution in Kosovo

Korbiliq, Nerodime e Epërme, Kqiq i Madh, Çabër, Uçe, Veriq, Dobrushë, Strellc, Patok, Demjan, Zabërxhë, Turjakë, Studençan, Krojmir, Tërstenik, Vërban, Firajë, Pograxhë, Rahovë, Tërpezë, Përqevë.

Population

Population trend: Stable

The global population trend is decreasing. In Kosovo, this species has stable subpopulations.

Rationale

This species is assessed in the Least Concern category due to the sustainability of the subpopulations and relatively high number of locations where it is found.

Threats

Main Threats: 5. Biological resource use (5.1. Hunting & trapping terrestrial animals: 5.1.2. Unintentional effects (species is not the target)); 8. Invasive and other problematic species, genes & diseases (8.1. Invasive non-native/alien species/diseases: 8.1.2. Named species, 8.2. Problematic native species/diseases: 8.2.1. Unspecified species).

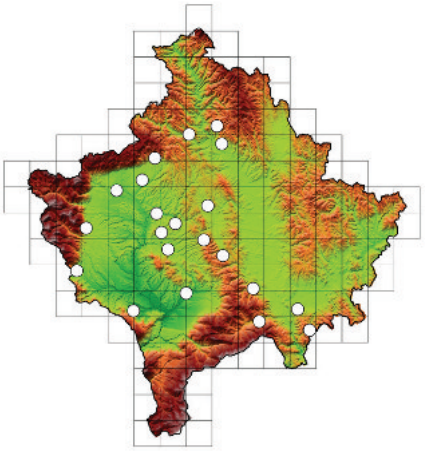
Main threats for this species are habitat modification and destruction, application of intensive agriculture and use of chemicals in agriculture, development of infrastructure near the inhabited areas, and persecution by humans, because of hostile sentiment or even for commercial purposes.

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).



Sciurus vulgaris Linnaeus, 1758

Mammalia: *Rodentia: Sciuridae*

Red Squirrel

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This species is very skillfull and vigilant. The color of the body varies in different seasons. During the summer the fur is reddish, gray or brown, while during the winter dark colors dominate. The abdomen is white. Body length is 18 - 24 cm, tail 14 - 20 cm and body weight 220 - 435 gr. They are fed mainly with seeds and fruits, as well as with mushrooms, and sometimes with bird eggs. They are active during the day early in dawn and in the sunset. Most of the time they stay in trees. They live on average between 2 and 7 years (Gumell & Wanters 1999).

Habitat

Habitat Type: 1. Forest; 14. Artificial/Terrestrial.

Preferred habitats for this species are mixed and coniferous mountainous areas, but also peripheral areas of gardens and parks.

General distribution

Palearctic.

Distribution in Kosovo

Svilen, Korbiliq, Nerodime e Epërme, Hakanisht, Kozmaq, Sharr Mountains, Shkrel, Shtupeq i Vogël, Zhazhe, Qyqavicë, Shtërpcë, Mushtisht, Isniq.

Population

Population trend: Stable

The global population trend for this species is increasing. In Kosovo subpopulations are stable.

Rationale

This species is assessed in the Least Concern category due to the sustainability of subpopulations and relatively high number of locations. More subpopulations are to be expected in Kosovo.

Threats

Main threats for this species are destruction and degradation of habitats, viral diseases and interspecific competition. In some cases, hunting may be a threat as well.

Conservation measures in action

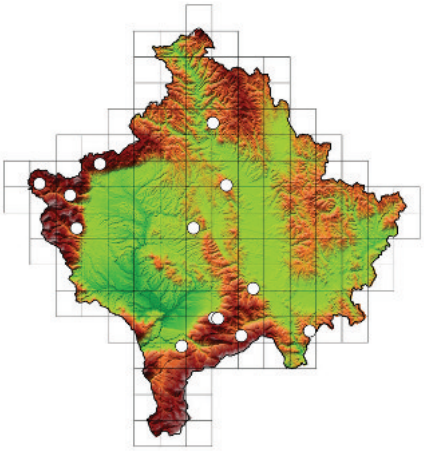
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

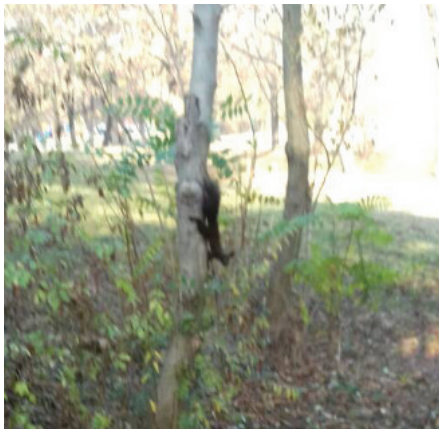
Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Gumell & Wanters 1999





Sus scrofa Linnaeus, 1758

Mammalia: Artiodactyla: Suidae

Wild Boar

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body of this species is covered with thick black, reddish or white hair, with a crest on the back. Body length is 153 - 240 cm, height up to 0.9 m and body weight 66 - 350 kg. Males are usually larger than females. They feed on seeds, fruits, plant bulbs, insects and small vertebrates such as reptiles, birds, and mammals. They are prey of wolves and lynx in our country, and in other places of lion, leopard, crocodile, python, etc. They move mainly at night and early dawn, but also during the day. They live in groups of 6 to 20 individuals or more. Only the females take care for young. They live up to 20 years (Graves 1984).

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 14. Artificial/Terrestrial.

This species can be found in a wide variety of habitats such as low and high forest areas that do not face extreme temperatures and which are rich in dense vegetation and shrubs. It is also encountered in cereal crop areas.

General distribution

All continents, except Antarctica.

Distribution in Kosovo

Papaz, Svilen, Junik Mountain, Stane Du, Prroni i Azemit, Kërstec, Stanaj, Duhël, Debëlldeh, Gremnik, Berishë, Koshutan, Radishevë, Strellc, Isniq Mountain, Mushtisht, Uglare.

Population

Population trend: Increasing

The population trend is stable and increasing in Europe and Kosovo.

Rationale

This species is assessed as Least Concern due to the relatively high number of sites where it is found and stability of subpopulations.

Threats

Main threats for this species are degradation and destruction of habitats, persecution by humans for commercial purposes, then interspecific competition, as well as viral diseases that are easily transmitted to humans and other animals.

Conservation measures in action

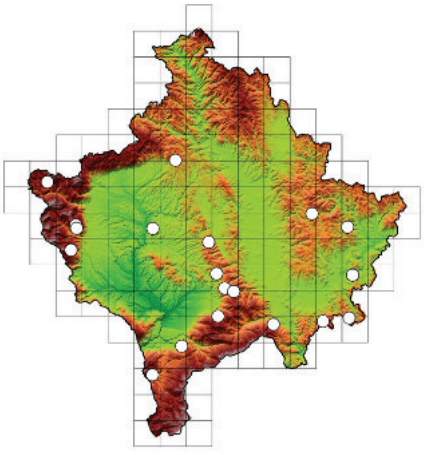
Currently, there is no conservation measure in action.

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Graves 1984





Talpa caeca Savi, 1822

Mammalia: Eulipotyphla: Talpidae

Blind Mole

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The body of this species is covered with soft, dense and shiny hair. Their body is dark gray towards black in color. It is similar to other moles, but in this species, eyes are covered with a permanent membrane that causes the animal to be completely blind. Extremities have powerful ends, suitable for scavenging. It is fed mainly with invertebrates such as soil worms, which make up about 90% of its diet, then with insect larvae, snails, etc. Their lifespan is around 5 years.

Habitat

Habitat Type: 1. Forest; 4. Grassland; 14. Artificial/Terrestrial.

This species can be found in meadows, pastures, gardens, then in mountainous hilly areas and rarely in subalpine and alpine areas up to 2000 m.

General distribution

Endemic species of Europe, present in Turkey as well.

Distribution in Kosovo

Zabërxhë, Bubavec, Peçan, Poslisht, Demjan, Strellc, Veriq, Plemetin, Llapushnik, Koshare, Biçec, Smirë, Cërnicë, Hogosht, Gllamnik, Bellopojë, Mramor, Kllodernicë.

Population

Population trend: Stable

The subpopulation trend of this species is stable, although not fully known in some areas.

Rationale

This species is assessed as Least Concern due to the relatively high number of sites where it is found and stability of subpopulations.

Threats

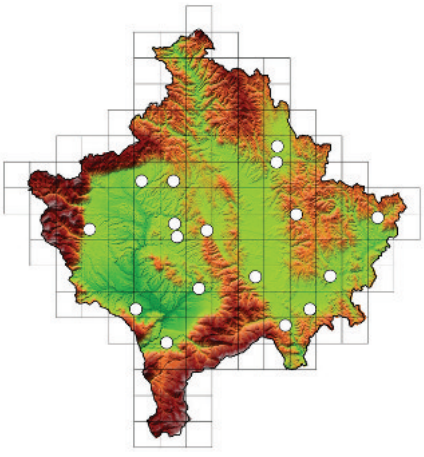
The main threat for this species is direct persecution by humans on agricultural lands using different traps or poisons, although it is assumed that this does not represent a serious threat to their population.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).





Vulpes vulpes (Linnaeus, 1758)

Mammalia: Carnivora: Canidae

Red Fox

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Least Concern, LC

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

They are characterized with an elongated body, long tail and short extremities. Body is covered with fluffy soft and dense hair. The color of the body is reddish, brown or yellow, while the tip of the tail and the ventral part of the head and neck are white, and the extremities, the paws and the outer parts of the ears are black. Body length is 50 - 90 cm, tail 30 - 60 cm and body weight 3 - 14 kg. Usually, males are larger than females. They are omnivores and feed on rodents, rabbits, insects, and fruits. They are specialized in hunting mice. Life expectancy of this species is up to 10 years (Jones & Theberge 1982; Mc Donald 2001; Mc Donald & Reynolds 2005).

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 5. Wetlands (inland); 14. Artificial/Terrestrial.
This species can be found in different habitats such as forests, shrubs, agricultural areas, nearby inhabited places, etc.

General distribution

This species consists of several subspecies and is present in Europe, North Africa, Asia, North America, Australia, Canada, Mexico etc.

Distribution in Kosovo

Sharr Mountains, Malishevë, Qabiq, Dollc, Vllahi, Rahovë, Qyqavicë, Debëllde, Svilen, Pouska, Junik Mountains, Stanedub, Nerodime e Poshtme, Shushicë, Dushkajë, Nishevc.

Population

Population trend: Stable
Subpopulations of this species are stable in Kosovo and surrounding countries.

Rationale

This species is assessed as Least Concern due to the relatively high number of sites where it is found and stability of subpopulations.

Threats

There are no current threats for this species in Kosovo.

Conservation measures in action

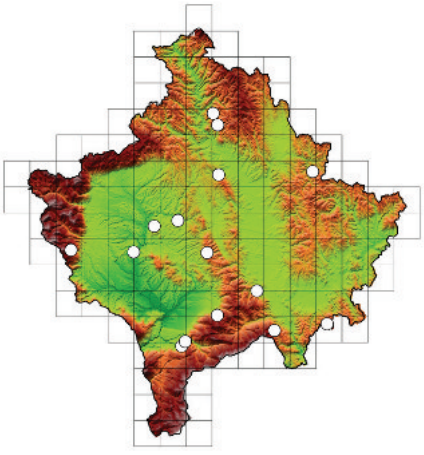
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Jones & Theberge 1982; Mc Donald 2001; Mc Donald & Reynolds 2005





DATA DEFICIENT SPECIES (DD)

7.1 OLIGOCHAETA

Allolobophora leoni Michaelsen, 1891

Oligochaeta: Opistophora: Lumbricidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

It is a species with Trans-Aegean distribution. The body consists of 149 to 180 segments, from 88 to 149 mm long. The prostomium is proepilobous. The male aperture with a small glandular atrium lies on the 15th segment. The clitellum extends from 26–34 segments; tubercles are on 30th and 32nd segments, with two pairs of scale-like protuberances (Csuzdi & Zicsi 2003; Mršić 1991).

Habitat

Habitat Type: 1. Forests, (1.4. Temperate Forests); 4. Grassland; 14 Artificial - Terrestrial (14.1 Arable Land, 14.5 Urban Areas).
It inhabits beech and oak forests, as well as wet meadows (Stojanović *et al.*2018).

General distribution

Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, Italy, Kosovo, Macedonia, Moldova, Romania, Slovakia (Rota 2013).

Distribution in Kosovo

Ferizaj, Prishtinë (Šapkarev 1975).

Population

Population trend: Unknown

Rationale

Since the records for this species originate from wet meadows in urban areas, and its habitat preferences are connected with beech and oak forest, and wet meadows that could be under management activities, habitat loss due to urbanization, intensive forest management, industrial pollution or global warming might pose some threats to this species in Kosovo. Due to the lack of data for direct or indirect assessment for Kosovo, it is strongly suggested to have further studies. Therefore, this species is classified as Data Deficient.

Threats

List of Threats: 1. Residential & commercial development (1.1. Housing & urban areas, 1.2. Commercial & industrial areas); 5. Biological resource use (5.3. Logging & wood harvesting).

Conservation measures in action

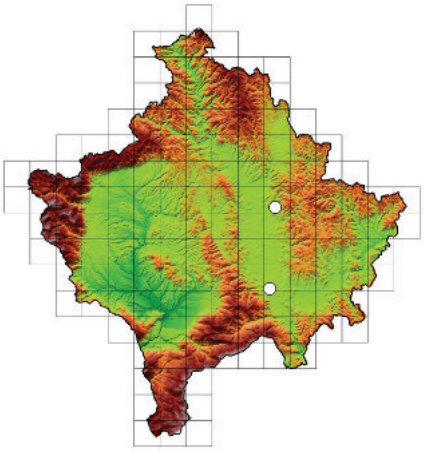
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation Actions needed: 1. Land/water protection (1.1. Site/area protection).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
Maintenance of wet meadows; non intense forestry activities.

References

Csuzdi & Zicsi 2003; Mršić 1991; Rota 2013; Šapkarev 1975; Stojanović *et al.* 2018





Aporrectodea georgii (Michaelsen, 1890)

Oligochaeta: Opistophora: Lumbricidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

It is an Atlanto-Mediterranean endogeic species that lives in the mineral soil layer; inhabits beech and oak forests, valley meadow in moist clayey soils and river banks (Csuzdi & Zicsi 2003). The body is pale, unpigmented, 38 to 80 mm long, 2–4 mm in diameter, consisting of 98–150 segments. The clitellum extends from the segments 28, 29 to 35, 1/2 36, and two pairs of tubercles are sucker-like, present on 31, 33 segments (Mršić 1991).

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest); 4 Grassland (4.4 Temperate Grassland); 5 Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls)); 14 Artificial - Terrestrial (14.1 Arable Land; 14.2 Pastureland; 14.4 Rural Gardens 14.5 Urban Areas); 7. Caves and Subterranean Habitats (non-aquatic).
This species is encountered in pastures, caves, beach forest and oak forest, cultivated soils, and meadows (Šapkarev 1980; Stojanović *et al.*2018).

General distribution

Europe (except Northern Europe), Syria, Palestine.

Distribution in Kosovo

Prishtinë (Šapkarev 1975).

Population

Population trend: Unknown

Rationale

Due to the lack of data for direct or indirect assessment for Kosovo (distribution and abundance, old record in the urban habitat of the capital of Kosovo with high anthropogenic pressure (building constructions, tourism, etc.)), this species is classified as Data Deficient. It has a Vulnerable status in the neighboring Serbia and thus, it is strongly suggested to have further studies.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.2 Abstraction of surface water (commercial use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage).

Conservation measures in action

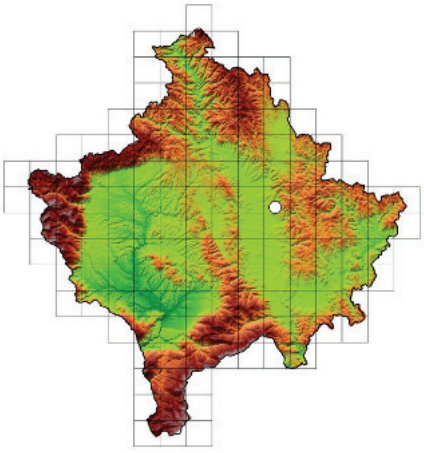
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Csuzdi & Zicsi 2003; Mršić 1991; Šapkarev 1975; Šapkarev 1980; Stojanović *et al.* 2018)





Aporrectodea jassyensis (Michaelsen, 1891)

Oligochaeta: Opistophora: Lumbricidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

This is a Trans Aegean species. It belongs to the endogeic earthworms, living and feeding in the mineral soil layer. Body is pale, without pigmentation, 60–100 mm long, 2–4 mm in diameter, consisting of 100–140 segments. Head is epilobous. Clitellum is saddle-shaped, extends on segments 28, 29–35. Tubercula pubertatis is in the form of a band on segments 31, 32–34, and 35. The male pore is on the 15th segment, with large glandular papillae covering partly the neighboring segments as well (Mršić 1991).

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest); 4 Grassland (4.4 Temperate Grassland); 5 Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls)); 14 Artificial – Terrestrial.

General distribution

Trans-Aegean (from Switzerland towards south-east Europe to the Middle East) (Rota 2013).

Distribution in Kosovo

Prishtinë, Prizren, Suharekë (Mršić 1991; Šapkarev 1975, 1972; Zicsi 1968).

Population

Population trend: Unknown

Rationale

Due to the lack of data and old records (some of them in urban areas and near river banks, both habitats with high anthropogenic pressure), it is strongly suggested to have further studies. Therefore, this species is assessed as Data Deficient.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.2 Abstraction of surface water (commercial use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage).

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

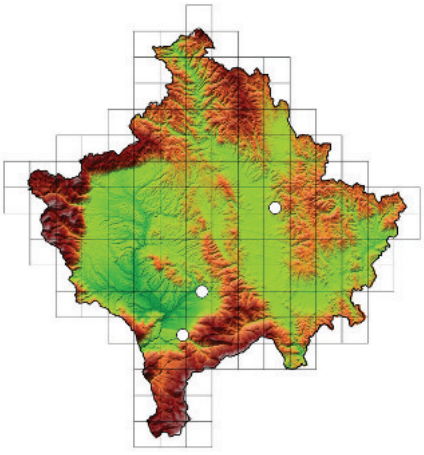
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

To maintain wet meadows, non intense forestry activities, sustainable agriculture, to reduce sources of soil and water pollution

References

Mršić 1991; Rota 2013; Šapkarev 1972; Šapkarev 1975; Zicsi 1968





Dendrobaena serbica Karaman, 1973

Oligochaeta: Opistophora: Lumbricidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

In this species the body is dark violet, from 12 to 21 mm long, consisting of 58 to 81 segments. The prostomium is prolobous. The clitellum extends from segments 29 to 33, 34, and the tubercula pubertatis are absent (Mršić 1991).

Habitat

Habitat Type: 4 Grassland (4.4 Temperate Grassland); 14 Artificial - Terrestrial (14.2 Pastureland).
It has been recorded in meadows and pastures (Karaman 1973; Šapkarev 1980; Stojanović *et al.*2018; Trakić *et al.*2016).

General distribution

Kosovo, Serbia.

Distribution in Kosovo

Çakorr (Karaman 1973; Mršić 1991).

Population

Population trend: Unknown

Rationale

Balkans endemic species. The data about distribution and population status are deficient, with inadequate information to make a direct or indirect assessment of its risk of extinction. Therefore, the species is classified in the category Data Deficient.

Threats

List of Threats: 2. Agriculture & aquaculture (2.3 Livestock farming & ranching); 5 Biological resource use (5.3 Logging & wood harvesting); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Conservation measures in action

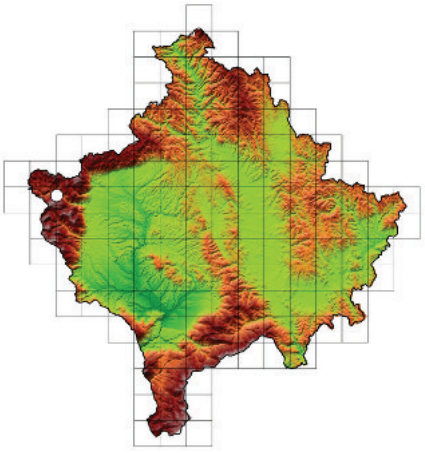
The site where this species was found is inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Karaman 1973; Mršić 1991; Šapkarev 1980; Stojanović *et al.* 2018; Trakić et al 2016



Dendrobaena zicsi Karaman, 1973

Oligochaeta: Opistophora: Lumbricidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

Length 130-160 mm, diameter 6-7 mm with light grey to brown color. Narrow range Balkan endemic species (known only from the type locality).

Habitat

Habitat Type: 4 Grassland (4.4 Temperate Grassland); 14 Artificial - Terrestrial (14.2 Pastureland).
It has been recorded in mountain pastures (Karaman 1973).

General distribution

Kosovo.

Distribution in Kosovo

Rahovec, Çakorr (Kerovec & Mršić 1981; Šapkarev 1975).

Population

Population trend: Unknown

Rationale

Narrow endemic species. Although small and restricted AOO (less than 20 km²), the distribution data are deficient, with inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status. Therefore, the species is classified in the category Data Deficient.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Conservation measures in action

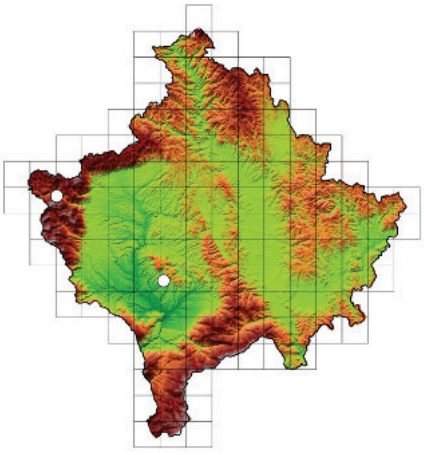
One of the subpopulations is inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 3 Species management (3.4. Ex situ management).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Karaman 1973; Kerovec & Mršić 1981; Šapkarev 1975



Eisenia lucens (Waga, 1857)

Oligochaeta: Opistophora: Lumbricidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

It is a Central European species, epigeic, dark violet with alternating stripes of darker segmental with yellowish intersegmental areas. Head is epilobous. It inhabits beech forests, where can be found under the bark of decaying logs and under fallen leaves, in mountains at higher elevations. When irritated, the worm expels coelomic fluid through pores in its body wall, exhibiting blue-green bioluminescence. Body length is from 45 to 180 mm, diameter 4–6 mm, 60–130 segments. Saddle-shaped clitellum extends on segments (24), 25, 26, 27–33, 34. Tubercles are usually on 28, 29–31, 1/2 32, 33 segments (Mršić 1991).

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest).
It inhabits deciduous forests living in organic soil layer of decomposing wood.

General distribution

Europe.

Distribution in Kosovo

Luboten (Šapkarev 1975).

Population

Population trend: Unknown

Rationale

Narrow endemic species. Although small and restricted AOO (less than 20 km^2), the distribution data are deficient, with inadequate information to make a direct or indirect assessment of its risk of extinction, based on its distribution and/or population status. Therefore, the species is classified in the category Data Deficient.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use 5.3 Logging & wood harvesting; 11. Climate change & severe weather (11.2. Droughts, 11.3. Temperature extremes)

Conservation measures in action

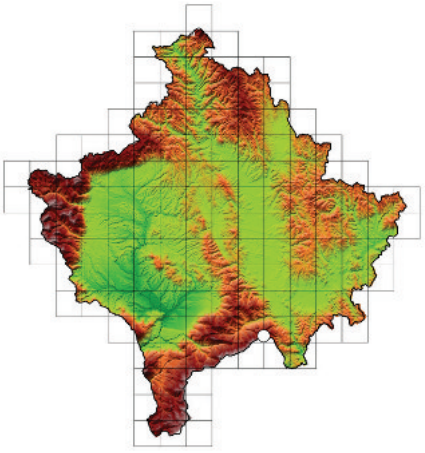
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area managemennt).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
Conserve mountain forest by conservation-oriented forestry management by providing dead wood availability; conserve mountain streams and lakes maintaining areas of high soil moisture.

References

Mršić 1991; Šapkarev 1975



Proctodrilus tuberculatus (Černosvitov, 1935)

Oligochaeta: Opistophora: Lumbricidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

It is a Central European species. It belongs to the endogeic group, living, and feeding in the mineral soil layer. It prefers moist soils, but its drought tolerance is somewhat higher than that of *P. antipai*. Body length is 45–60 mm, with diameter 1–2.5 mm and 89–130 segments, pale color without pigment. Clitellum extends across segments 25 (26)–33. Two pairs of scale-like tubercles are intersegmental, in 30/31 and 31/32. Male pores are on the 15th segment, covering the neighboring segments as well (Mršić 1991).

Habitat

Habitat Type: 4 Grassland (4.4 Temperate Grassland); 14 Artificial - Terrestrial (14.1 Arable Land).
It inhabits meadows and cultivated land.

General distribution

Europe.

Distribution in Kosovo

Mitrovicë, Prishtinë (Šapkarev 1975).

Population

Population trend: Unknown

Rationale

The taxon is classified as Data Deficient due to the inadequate information to make a direct, or indirect assessment of its risk of extinction based on its distribution and/or population status. More information is required to confirm its distribution in Kosovo and we acknowledge the possibility that future research will show that threatened classification is appropriate.

Threats

List of Threats: 2. Agriculture & aquaculture (2.3. Livestock farming & ranching).

Conservation measures in action

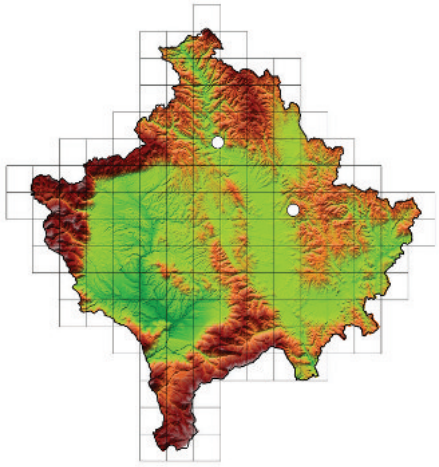
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Mršić 1991; Šapkarev 1975



7.2 CLITELLATA

Dina prokletijaca Grosser & Pešić 2016

Clitellata: Arhynchobdellida: Erpobdellidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Halil Ibrahimi, Astrit Bilalli

General data

Body length of this species is 23 mm, width 4,5 mm; the dorsal surface bright greyish with two wide and dark paramedian longitudinal stripes. Lives in watercourses in deciduous forests, dominated by the common beech (*Fagus sylvatica* L.) (Grosser *et al.*2016).

Habitat

Habitat Type: 5. (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).
This species is mainly found in small mountain streamlets (659 m – 1599 m asl).

General distribution

Kosovo.

Distribution in Kosovo

Bjeshkët e Nemuna Mountains.

Population

Population trend: Unknown

Rationale

The distribution of this species is not fully known. The population trend is unknown. Due to the lack of data, this species is classified as Data Deficient.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Conservation measures in action

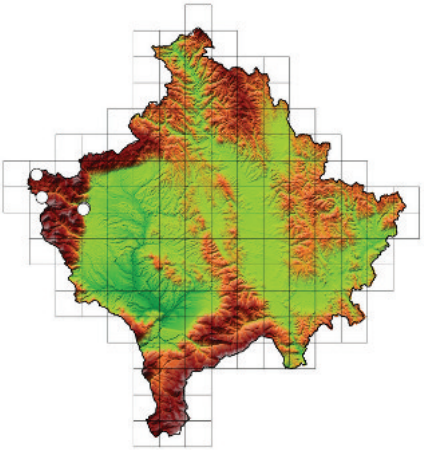
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Grosser *et al.* 2016





Glossiphonia balcanica Grosser & Pešić 2016

Clitellata: Rhynchobdellida: Glossiphoniidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Astrit Bilalli

General data

This species is up to 10 mm long and 8 mm wide. The body is dorsoventrally flattened, oval in shape and with a slightly bulbous head. The color of the dorsal surface in living specimens is bright brownish (amber-coloured) (Grosser *et al.*2016).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).
This species is mainly found in small, medium and large waters (Utevsky *et al.*2013).

General distribution

Endemic of Balkans. It is currently known only from Kosovo and Montenegro.

Distribution in Kosovo

Deçan.

Population

Population trend: Unknown

Rationale

The known distribution of this species is discontinuous, but probably this is a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is classified as Data Deficient.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Conservation measures in action

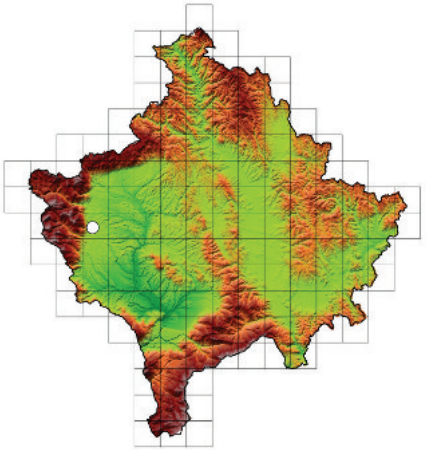
Currently, there is no conservation measure in action.

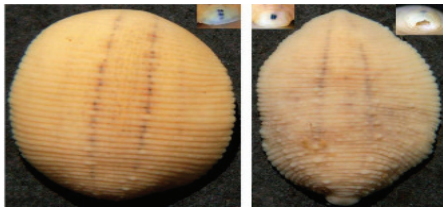
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Grosser *et al.* 2016; Utevsky *et al.* 2013





7.3 ARACHNIDA

Asagena meridionalis Kulczyński, 1894

Arachnida: Araneae: Theridiidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Donard Geci

General data

Male body length 4-6 mm, while in females 4.9 – 5.6 mm. Male palp with longish process accompanying the embolus. Prosoma body color deep black. Legs shining orange. Male can be seen in spring and autumn (Nentwig *et al.*2018).

Habitat

Habitat Type: 1. Forest (1.4 Temperate Forest).
Opened oak and pine forest.

General distribution

Bulgaria, Czech Republic, Georgia, Greece, Hungary, Kosovo, Macedonia, Montenegro, Serbia, Slovakia, Ukraine.

Distribution in Kosovo

Parku Karagaç.

Population

Population trend: Unknown

Rationale

The distribution of this species is not known as a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient.

Threats

List of Threats: 1. Residential & commercial development (1.1 Housing & urban areas 1.3 Tourism & recreation areas); 7 Natural system modifications (7.1 Fire & fire suppression).

Conservation measures in action

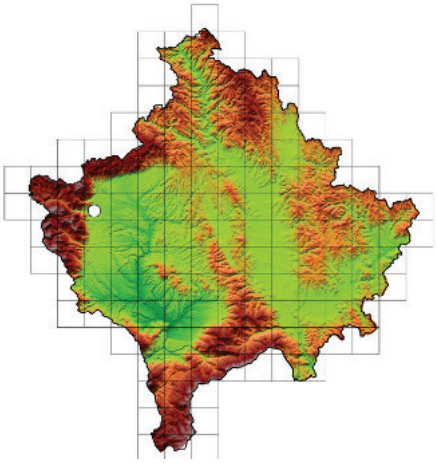
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Nentwig *et al.* 2018



Callilepis cretica (Roewer, 1928)

Arachnida: Araneae: Gnaphosidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Donard Geci

General data

Male has chestnut brown prosoma, covered with light hairs. Prosoma length is 1.4 mm. Sternum is brown. Legs black-brown, except tarsi reddish yellow. Opisthosoma black. Female similar to male (Nentwig *et al.*2018).

Habitat

Habitat Type: 1. Forest (1.4 Temperate Forest).
Preferred habitats of this species are the oak and pine forests.

General distribution

Algeria, Bulgaria, Greece, Kosovo, Macedonia, Turkey.

Distribution in Kosovo

Gërmi.

Population

Population trend: Unknown

Rationale

The distribution of this species is not known as a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient.

Threats

List of Threats: 1. Residential & commercial development (1.1 Housing & urban areas 1.3 Tourism & recreation areas); 7 Natural system modifications (7.1 Fire & fire suppression).

Conservation measures in action

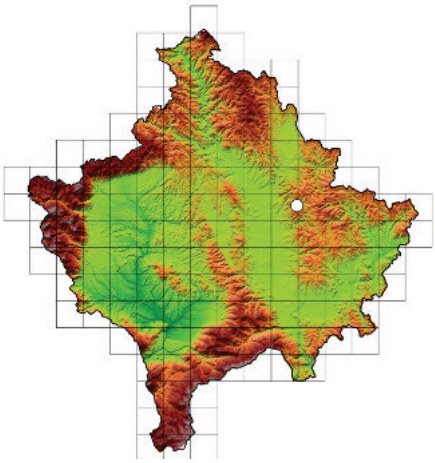
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends)

References

Nentwig *et al.* 2018





Lycosa tarantula (Linnaeus, 1758)

Arachnida: Araneae: Lycosidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Donard Geci

General data

It is the largest species of Lycosidae family. Female size is about 30 mm, while the male is about 25 mm. The basic color of the male is white towards gray, and yellow or orange in females. This species does not build nets, as many species of this family do to catch their prey, but tunnels on the ground. Like the other species of this family, the number of eggs in their egg sac is around 100. Female lives 4 or more years, while male less, one of the reasons is cannibalism by females. In the winter they hibernate in tunnels opened during the summer (Bellmann 2016).

Habitat

Habitat Type: 4. Grassland (4.4 Temperate Grasslands); 6. Rocky Areas (e.g. inland cliffs, mountain peaks).
It is mostly found in sunny areas and rocky areas.

General distribution

Bosnia and Herzegovina, Croatia, Italy, Kosovo, Macedonia, Turkey.

Distribution in Kosovo

Krevenikë.

Population

Population trend: Unknown

Rationale

The distribution of this species is not known as a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient.

Threats

List of Threats: 1. Residential & commercial development (1.1 Housing & urban areas, 1.3 Tourism & recreation areas); 7. Natural system modifications (7.1 Fire & fire suppression).

Conservation measures in action

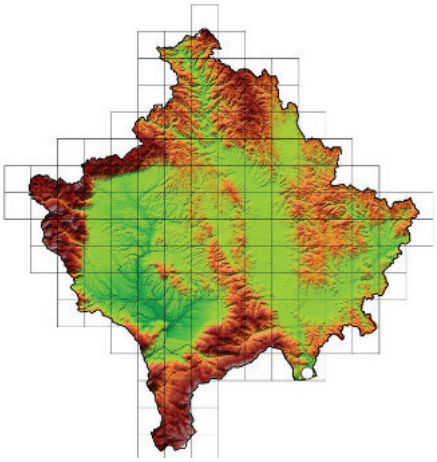
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Bellmann 2016





Nemesia pannonica Herman, 1879

Arachnida: Araneae: Nemesidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Donard Geci

General data

Male's prosoma is 5 mm in length. Prosoma light brown, opisthosoma grey-brown with a vague, irregular pattern. Female's prosoma reddish brown with a dark pattern. Prosoma length: 6.2 mm. Opisthosoma brownish, with a dark pattern. This species builds tunnels up to 30 cm (Nentwig *et al.*2018). Males and females appear from March to April. They are nocturnal organisms Nentwig *et al.* 2018.

Habitat

Habitat Type: 1. Forest [1.4 Temperate Forest]; 3.Shrubland [3.4 Temperate Shrubland].

General distribution

Albania, Austria, Croatia, Hungary, Italy, Kosovo, Montenegro, Romania, Serbia, Slovenia.

Distribution in Kosovo

Ozdrim.

Population

Population trend: Unknown

Rationale

The distribution of this species is not known as a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient.

Threats

List of Threats: 1. Residential & commercial development [1.1 Housing & urban areas, 1.3 Tourism & recreation areas]; 7 Natural system modifications [7.1 Fire & fire suppression].

Conservation measures in action

Currently, there is no conservation measure in action.

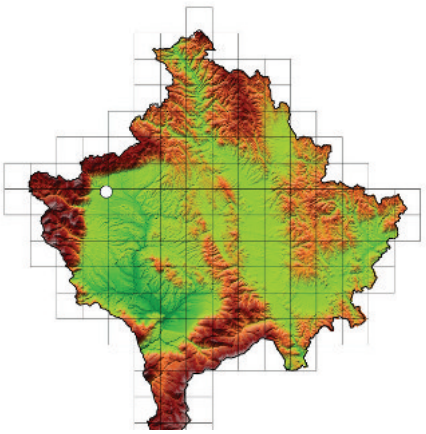
Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Nentwig *et al.* 2018





Steatoda paykulliana (Walckenaer, 1806)

Arachnida: Araneae: Theridiidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Donard Geci

General data

Male has dark brown to black prosoma. Legs yellow-brown. Body length 4.5-8.4 mm. Female has dark purplish brown to black prosoma. Sternum dark brown. Legs brown. Body length in female: 8-13 mm (Nentwig*et al.*2018).

Habitat

Habitat Type: 6. Rocky Areas [e.g. inland cliffs, mountain peaks].

General distribution

Albania, Austria, Azerbaijan, Belgium, Bosnia and Herzegovina, Croatia, Bulgaria, France, Germany, Greece Gorgia, Hungary, Italy, Kosovo, Macedonia, Portugal, Romania, Russia, Serbia Switzerland, Slovenia, Spain, Turkey.

Distribution in Kosovo

Livadhi i Madh in Junik, Prilep.

Population

Population trend: Unknown

Rationale

The distribution of this species is not known as a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient.

Threats

List of Threats: 1. Residential & commercial development (1.1 Housing & urban areas 1.3 Tourism & recreation areas); 7. Natural system modifications (7.1 Fire & fire suppression).

Conservation measures in action

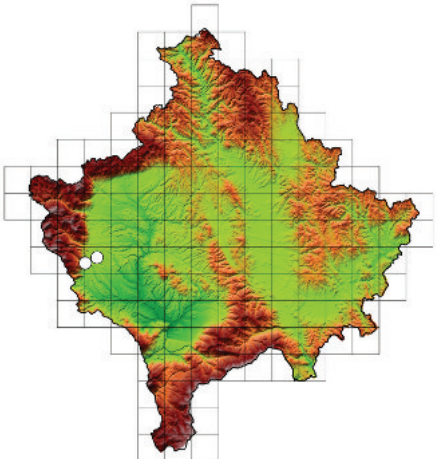
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Nentwig *et al.* 2018





Uroctea durandi (Latreille, 1809)

Arachnida: Araneae: Oecobiidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Donard Geci

General data

Female has black or dark red-brown prosoma. It is 4.1 mm long. Anterior media eyes are very large, while posterior media eyes much farther from each other. Opisthosoma is black in color with 5 yellow spots. Body length 15 mm. Male is similar to the female, but smaller; 6-10 mm. Females can be seen all year long, while males in spring, autumn, and winter (Nentwig *et al.*2018).

Habitat

Habitat Type: 1. Forest [1.4 Temperate Forest]; 6.Rocky Areas [e.g. inland cliffs, mountain peaks].

General distribution

Albania, Austria, Bulgaria, Croatia, France, Hungary, Italy, Kosovo, Macedonia, Portugal, Spain, Turkey.

Distribution in Kosovo

Krevenikë.

Population

Population trend: Unknown

Rationale

The distribution of this species is not known as a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient.

Threats

List of Threats: 1. Residential & commercial development [1.1 Housing & urban areas 1.3 Tourism & recreation areas]; 7 Natural system modifications [7.1 Fire & fire suppression].

Conservation measures in action

Currently, there is no conservation measure in action.

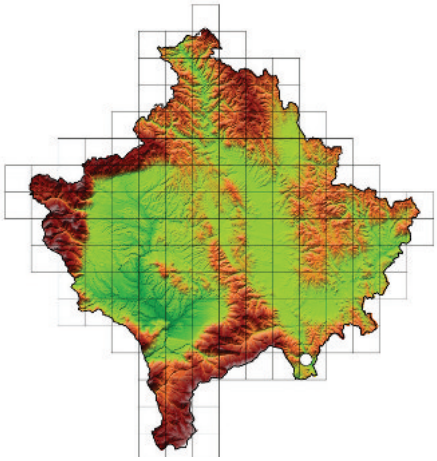
Conservation measures needed

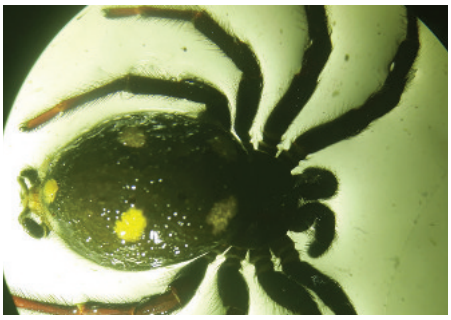
Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Nentwig *et al.* 2018





Zygiella keyserlingi (Ausserer, 1871)

Arachnida: Araneae: Araneidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Donard Geci

General data

Female size is 6-8 mm. Prosoma is light brown. The opisthosoma is silver-colored with brownish nuances, on the abdomen with a line on each side. The legs have the same color. Male has the same color as the female but is smaller, about 6 mm (Nentwig *et al.*2018).

Habitat

Habitat Type: 4. Grassland (4.4 Temperate Grasslands)

General distribution

Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Hungary, Italy, Kosovo, Macedonia, Montenegro, Portugal, Serbia, Slovenia, Turkey, Ukraine.

Distribution in Kosovo

Junik, Pejë (finding in Pejë needs confirmation (Deltshev *et al.*2003))

Population

Population trend: Unknown

Rationale

The distribution of this species is not known as a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient.

Threats

List of Threats: 1. Residential & commercial development (1.1 Housing & urban areas, 1.3 Tourism & recreation areas); 7 Natural system modifications (7.1 Fire & fire suppression).

Conservation measures in action

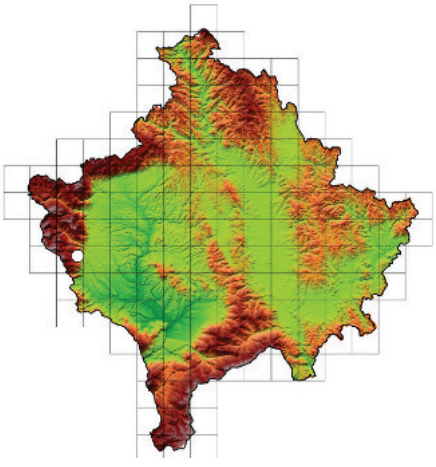
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Deltshev *et al.* 2003; Nentwig *et al.* 2018





Zercon kosovina Kontschán 2006

Arachnida: Mesostigmata: Zerconidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Donard Geci

General data

Endemic species with locus typicus in Kosovo. Female is 410–415 µm in length and 365–370 µm wide (n = 3) (Kontschán 2006).

Habitat

Habitat Type: 1. Forests (1.4. Temperate Forest forests).
It can be found in mountain beech forests, in the litter layer.

General distribution

Kosovo

Distribution in Kosovo

Bjelluhë, Çakorr (Kontschán 2006).

Population

Population trend: Unknown

Rationale

The taxon is Data Deficient with inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status.

Threats

List of Threats: 5. Biological resource use (5.3. Logging & wood harvesting); 11.Climate change & severe weather (11.2.Droughts, 11.3. Temperature extremes).

Conservation measures in action

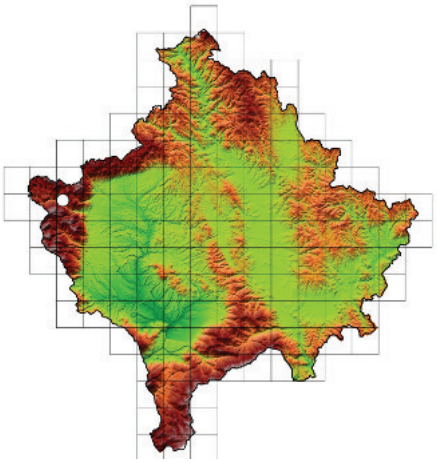
Current records (NP Bjeshkët e Nemuna) originate from protected areas were certain habitat protection measures have been employed.

Conservation measures needed

Conservation Actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends; 1.3.Life history & ecology); 3.Monitoring (3.1.Population trends; 3.4. Habitat trends).

References

Kontschán 2006



7.4 MALACOSTRACA

Microcharon profundalis Karaman, 1940

Malacostraca: Isopoda: Microparasellidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

The species inhabits wet underground habitats and can be found in wells. In Kosovo is present subspecies *Microcharon profundalis kosovensis* Karaman, 1940. It is characterized by the remarkable shape of the tip of the male's 1st pleopod. Stanko Karaman (1940) called this new form after the plain of Kosovo as subsp. *kosovensis* (Karaman 1940).

Habitat

It inhabits underground wet habitats (wells).

General distribution

Kosovo, Macedonia, Montenegro (Boxshall 2013).

Distribution in Kosovo

Mitrovicë (Karaman 1940).

Population

Population trend: Unknown

Rationale

The taxon is Data Deficient with inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status.

Threats

List of Threats: 1 Residential & commercial development (1.1. Housing & urban areas, 1.2.Commercial & industrial areas); 7. Natural system modifications (7.2. Dams & water management/use: 7.2.2 Abstraction of Surface Water (commercial use), 7.2.3 Abstraction of Surface Water (agricultural use)); 9. Pollution (9.1. Domestic & urban waste water; 9.2. Industrial & military effluents; 9.3. Agricultural & forestry effluents; 9.4. Garbage & solid waste).

Conservation measures in action

Currently, there is no conservation measure in action.

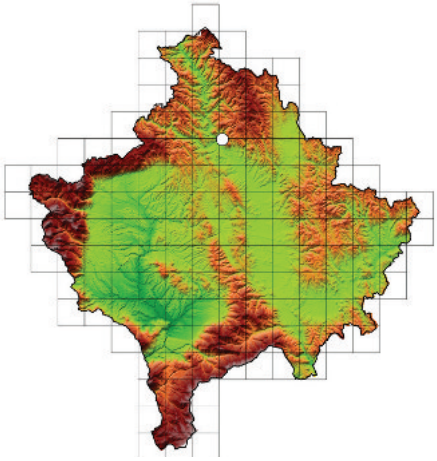
Conservation measures needed

Conservation Actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management).

Research needed: 1. Research (1.2. Population size, distribution & trends; 1.3.Life history & ecology); 3.Monitoring (3.1.Population trends; 3.4. Habitat trends).

References

Boxshall 2013; Karaman 1940



7.5 DIPLOPODA

Dyocerasoma drimicum Mrsic, 1985

Diplopoda: Chordeumatida: Craspedosomatidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

Body with brown color, around 15 mm long, body trunk composed of 30 segments. Head flat, slightly curved. Eyes triangular. A detailed description was provided by Mršić (1985). It is known only from type locality, Drini i Bardhë, in Kosovo (Makarov *et al.*2004).

Habitat

Habitat Type: 1. Forests. 1.4. Temperate Forest (mountain forests).
It occurs in mountains near springs.

General distribution

Kosovo.

Distribution in Kosovo

Drini i Bardhë (Mršić 1985).

Population

Population trend: Unknown

Rationale

The taxon is Data Deficient with inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status.

Threats

List of Threats: 5. Biological resource use (5.3. Logging & wood harvesting); 7.Natural system modifications (7.2.Dams & water management/use: 7.2.3. Abstraction of Surface Water (commercial use).

Conservation measures in action

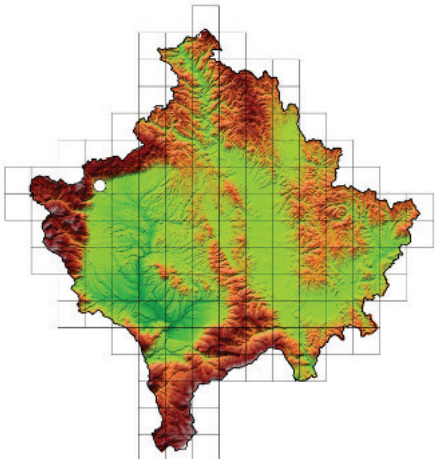
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends; 1.3.Life history & ecology); 3.Monitoring (3.1.Population trends; 3.4.Habitat trends).
Non intense forestry activities.

References

Makarov *et al.* 2004; Mršić 1985



Leptoiulus macedonicus (Attems, 1927)

Diplopoda: Julida: Julidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

It is a Balkan endemic species, preferring high altitude areas (Beron 2008; Makarov *et al.*2004).

Habitat

Habitat Type: 1. Forests (1.4. Temperate Forest forests).
It inhabits mountain and alpine beech forests, in litter layer and under stones (Attems 1929; Kime & Enghoff 2017).

General distribution

Albania, Greece, Kosovo, Macedonia.

Distribution in Kosovo

Luboten (Attems 1929; Makarov *et al.* 2004; Mršić 1987, 1988).

Population

Population trend: Unknown

Rationale

This species is classified in the category: Insufficient Data, because current data are inadequate to directly or indirectly assess the risk of extinction of the species, based on its distribution and / or population status.

Threats

List of Threats: 5. Biological resource use (5.3. Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities)

Conservation measures in action

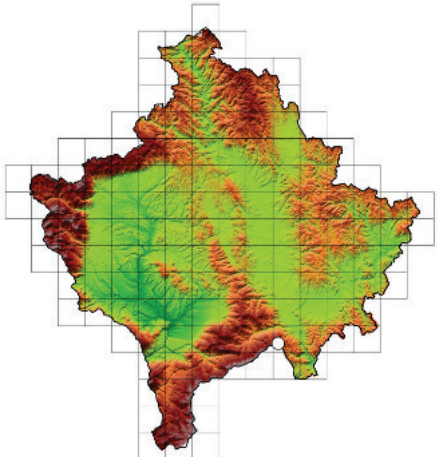
Current records (NP Sharri) originates from protected areas were certain habitat protection measures have been employed

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends; 1.3.Life history & ecology); 3.Monitoring (3.1.Population trends; 3.4.Habitat trends).
Non intense forestry activities.

References

Attems 1929; Beron 2008; Kime and Enghoff 2017; Makarov *et al.* 2004; Mršić 1987, 1988





Megaphyllum crassum (Attems, 1929)

Diplopoda: Julida: Julidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

This species belongs to Euro-Ponto-Mediterranean genus *Megaphyllum* Verhoeff, 1894, one of the most diverse and taxonomically complex genera in the family Julidae (Lazányi *et al.*2017).

Habitat

Habitat Type: 1.Forests 1.4. Temperate Forest forests).
It inhabits mountain forests.

General distribution

Kosovo, Macedonia.

Distribution in Kosovo

Luboten, Kaçanik (Attems 1929; Kime & Enghoff 2017; Makarov *et al.*2004; Strasser 1971).

Population

Population trend: Unknown

Rationale

The taxon is Data Deficient, with inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status.

Threats

List of Threats: 5. Biological resource use (5.3. Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities).

Conservation measures in action

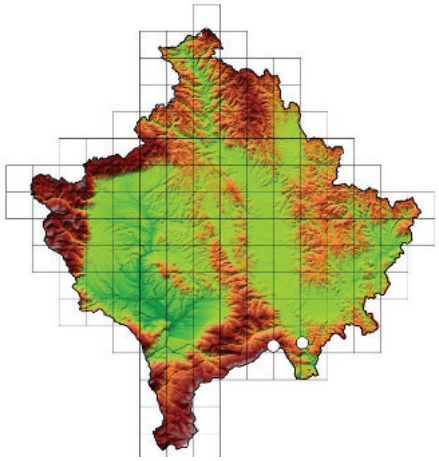
Some records (NP Sharri) originate from protected areas, were certain habitat protection measures have been employed.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2.Resource & habitat protection). 2. Land/water management (2.1. Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends; 1.3.Life history & ecology); 3.Monitoring (3.1.Population trends; 3.4.Habitat trends).
Non intense forestry activities.

References

Attems 1929; Kime and Enghoff 2017; Lazanyi *et al.* 2012; Makarov *et al.* 2004; Strasser 1971



Onychoglomeris herzogowinensis (Verhoeff, 1898)

Diplopoda: Glomerida: Glomeridae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

Its body size varies from 13-24 mm in length and from 7-11 mm in width, with female typically somewhat larger than male. Body terga are blackish with the usual pale lateral and caudal margins, only very seldom are pale red-yellowish-brown (Attems 1929).

Habitat

Habitat Type: 1. Forests (1.4. Temperate Forest (mountain forests).
It is epigeic species found in mountain forests, in the litter and under stones (Mauries et al 1997).

General distribution

Albania, Bosnia and Herzegovina, Croatia, Greece, Kosovo, Montenegro.

Distribution in Kosovo

Deçan (Čurčić *et al.* 1999 në Makarov *et al.* 2004).

Population

Population trend: Unknown

Rationale

The taxon is Data Deficient, with inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status.

Threats

List of Threats: 5. Biological resource use (5.3. Logging & wood harvesting).

Conservation measures in action

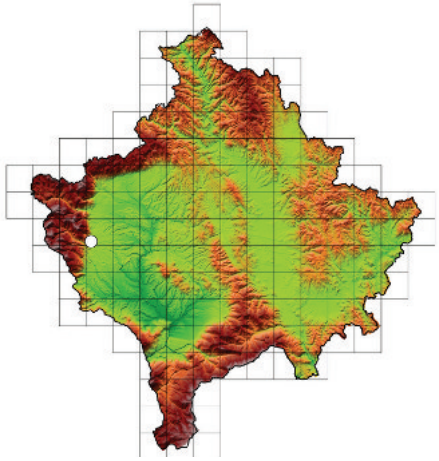
Some records (NP Bjeshkët e Nemuna) originate from protected areas were certain habitat protection measures have been employed.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends; 1.3.Life history & ecology); 3.Monitoring (3.1.Population trends; 3.4.Habitat trends).
Non intense forestry activities.

References

Attems 1929; Makarov *et al.* 2004; Mauries *et al.* 1997



Typhloglomeris ljubetensis (Attems, 1929)

Diplopoda: Glomerida: Glomeridae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

This is epigean well-pigmented species. Head shield has dark brown ground, with fine pale yellow marbled coloration (Attems 1929).

Habitat

Habitat Type: 1. Forest (1.4. Forest - Temperate forests).
This species is found in mountain forests (beech), in the litter and under stones (Attems 1929).

General distribution

Kosovo, Macedonia.

Distribution in Kosovo

Luboten (Attems 1929; Makarov *et al.*2004; Strasser 1971).

Population

Population trend: Unknown

Rationale

The taxon is Data Deficient, with inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status.

Threats

List of Threats: 5. Biological resource use (5.3. Logging & wood harvesting); 6. Human intrusions & disturbance (6.1 Recreational activities).

Conservation measures in action

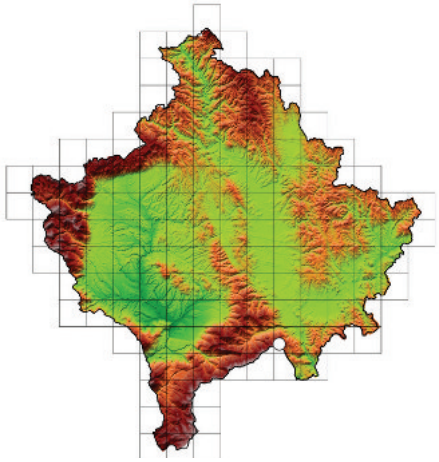
The site where this species was found is inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2.Resource & habitat protection). 2. Land/water management (2.1. Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends; 1.3.Life history & ecology); 3.Monitoring (3.1.Population trends; 3.4.Habitat trends).
Non intense forestry activities.

References

Attems 1929; Makarov *et al.* 2004; Strasser 1971





Typhloiulus albanicus Attems, 1929

Diplopoda: Julida: Julidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Lucija Šerić Jelaska

General data

It is cavernicolous and above ground species. Labrum with a row of 16 setae. Male legs in the anterior part of the body with a small, but pronounced, adhesive pad at tibia; pads missing from the femur (Vagalinski *et al.*2015).

Habitat

Habitat Type: 1. Forests (1.4. Temperate Forest); 7. Caves and Subterranean Habitats (non-aquatic) (7.1 Caves, 7.2. Other Subterranean Habitats).
It lives in beech forests and caves, as well as other subterranean habitats (Attems 1929).

General distribution

Kosovo, Macedonia.

Distribution in Kosovo

Luboten, Kaçanik (Attems 1929; Makarov *et al.* 2004).

Population

Population trend: Unknown

Rationale

The taxon is Data Deficient with inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status.

Threats

List of Threats: 5. Biological resource use (5.3. Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities).

Conservation measures in action

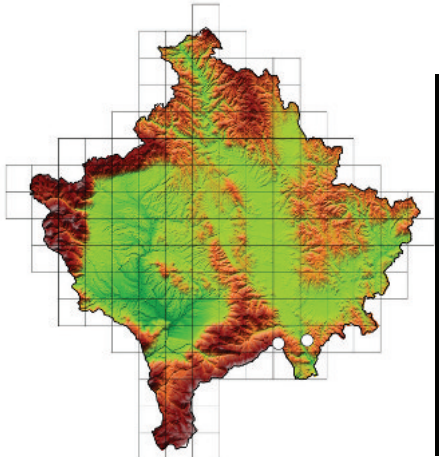
Some records (NP Sharri) originate from protected areas were certain habitat protection measures have been employed.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends; 1.3.Life history & ecology); 3.Monitoring (3.1.Population trends; 3.4.Habitat trends).
Non intense forestry activities.

References

Attems 1929; Makarov *et al.* 2004; Vagalinski *et al.* 2015





7.6 INSECTA

Baetis nexus Navàs, 1918

Insecta: Ephemeroptera: Baetidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Agim Gashi, Bardh Xërxa

General data

The forewing size of this species is from 8 - 11.6 mm. It is a winter bivoltine species. They are on wing from May to August (Bauernfeind & Soldan 2012; Sartori 2006).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases]; 15 Artificial - Aquatic [15.9 Canals and Drainage Channels, Ditches].
Larvae are commonly found in aquatic ecosystems of low altitudes, mainly in rivers, but can also be encountered in channels with very low water flow. They prefer places where there is submerged water vegetation.

General distribution

Most part of Europe, Turkey.

Distribution in Kosovo

Streamlet in Slivovë.

Population

Population trend: Unknown

Rationale

The national distribution of this species is unknown as a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient, because it could not be assessed as per the IUCN criteria.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Conservation measures in action

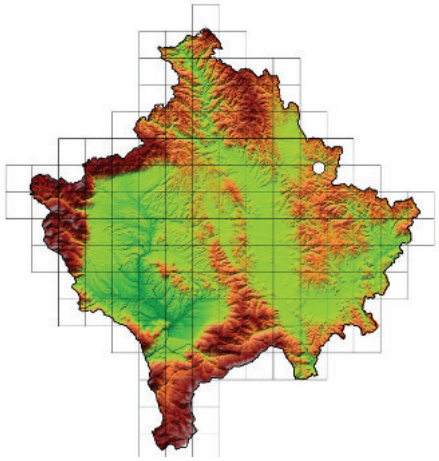
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Bauernfeind & Soldan 2012; Sartori 2006



Habrophlebia eldae Jacob & Sartori, 1984

Insecta: Ephemeroptera: Leptophlebiidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Agim Gashi, Bardh Xërxa

General data

The forewing size of this species is from 5.5 to 8 mm. Biological and ecological aspects of this species are still not well-known. The flight period is from May to July. This species has one generation per year and is subjected to larvae diapause during the winter (Bauernfeind & Soldan 2012).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
Larvae prefer rivers and streams with a substrate made of gravel, cobbles, and boulders. This species can be found at different altitudes, from 20 to 1200 m.

General distribution

Bulgaria, Greece, France, Italy, Kosovo, Spain.

Distribution in Kosovo

Stream in Blinajë.

Population

Population trend: Unknown

Rationale

The national distribution of this species is unknown as a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is classified as Data Deficient because it could not be assessed as per IUCN criteria.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Conservation measures in action

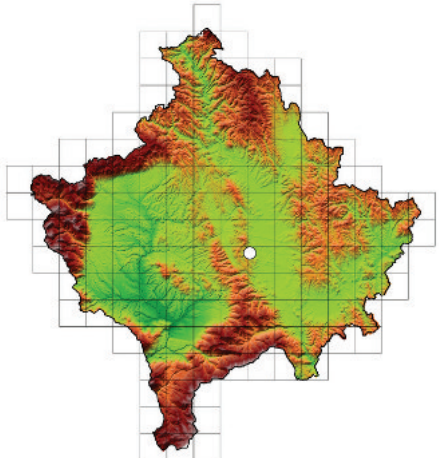
The site where this species was found is inside the protected hunting reserve.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Bauernfeind & Soldan 2012





Caliaeschna microstigma Schneider,1845

Insecta: Odonata: Aeshnidae

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Ferdije Zhushi Etemi

General data

This is a small Aeshnidae with a total body size of 50-60 mm.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]].
Larvae of this species inhabit fast-flowing streams that are partly shaded.

General distribution

An East Mediterranean species extending from the Balkans to Asia Minor, the Levant, and Iran, Turkmenistan.

Distribution in Kosovo

Stream nearby Vërmica Lake, Mirusha River.

Population

Population trend: Unknown

Rationale

This species is assessed as Data Deficient because there are not enough data about its distribution in Kosovo or population trends.

Threats

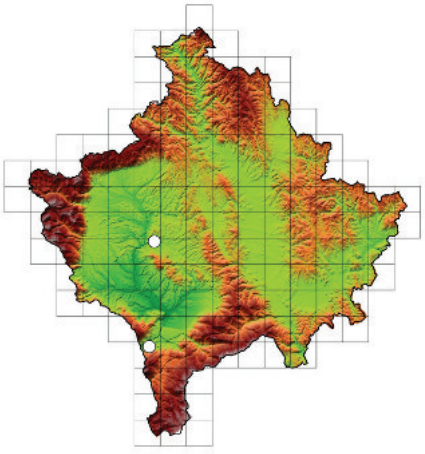
List of Threats: 7 Natural system modifications [7.2.3 Abstraction of surface water (agricultural use)].

Conservation measures in action

The species is protected [Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species].

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].





Coenagrion ornatum Selys,1850

Insecta: Odonata: Coenagrionidae

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Ferdije Zhushi Etemi

General data

It has a typical body length 30-31 mm. Flight period from May to August.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]; 5.9 Freshwater Springs and Oases].
This species is confined to seepage spring waters with a thin water film and small sunny brooks, streamlets, and ditches with organic mud and dense hygrophilous herbaceous vegetation.

General distribution

This species ranges from West, Northwest and Central mainland Europe, to East and Southeast Europe as well as to Asia Minor and Caucasus countries.

Distribution in Kosovo

Streamlet nearby Badovc Lake.

Population

Population trend: Unknown
There is not enough data about the population status of this species. It is found in 1 location only with only three individuals (Zhushi Etemi 2005).

Rationale

This species is assessed as Data Deficient because there are not enough data about its distribution in Kosovo or population trends.

Threats

There are not enough data about threats to this species.

Conservation measures in action

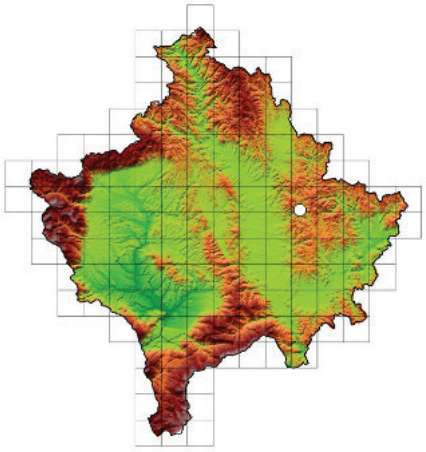
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Zhushi Etemi 2005



Erythromma viridulum (Charpentier, 1840)

Insecta: Odonata: Coenagrionidae

Small Red-eyed Damselfly

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Ferdije Zhushi Etemi

General data

This is a large species with body size up to 29 mm. The larval stage lasts one year. The flight period of adults is from May to September.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]], 5.4 Bogs, Marshes, Swamps, Fens, Peatlands, 5.9 Freshwater Springs and Oases]; 15 Artificial - Aquatic [15.9 Canals and Drainage Channels, Ditches].

This species lives in a number of habitats such as marshes, wetlands canals, or streams with sufficient silt substrate.

General distribution

Europe, Asia, Africa.

Distribution in Kosovo

Sitnica River in Vragoli.

Population

Population trend: Unknown

There is not enough data about population status of this species. It is found with only three individuals in only one locality (Zhushi Etemi 2005).

Rationale

This species is assessed as Data Deficient because there are not enough data about its distribution in Kosovo or population trends.

Threats

There are not enough data about threats to this species.

Conservation measures in action

Currently, there is no conservation measure in action.

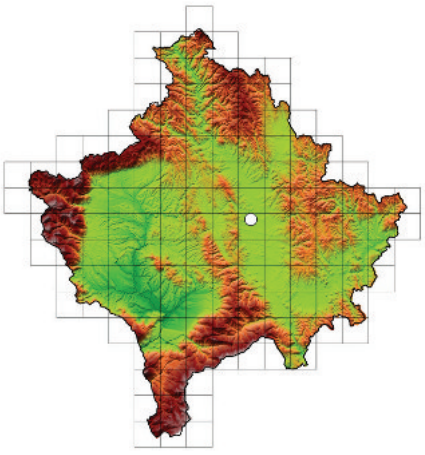
Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Zhushi Etemi 2005





Orthetrum brunneum (Fonscolombe, 1837)

Insecta: Odonata: Libellulidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Ferdije Zhushi Etemi

General data

The size of adults is up to 45 mm. Adults fly from June to August. Larvae of this species are predators. The whole life cycle lasts for two to three years.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]]; 15 Artificial - Aquatic [15.9 Canals and Drainage Channels, Ditches].
This species prefers small streams and canals with shallow fast warming water.

General distribution

Europe, Asia, North Africa.

Distribution in Kosovo

Henc.

Population

Population trend: Unknown

Rationale

This species is assessed as Data Deficient because there are not enough data about its distribution in Kosovo or population trends.

Threats

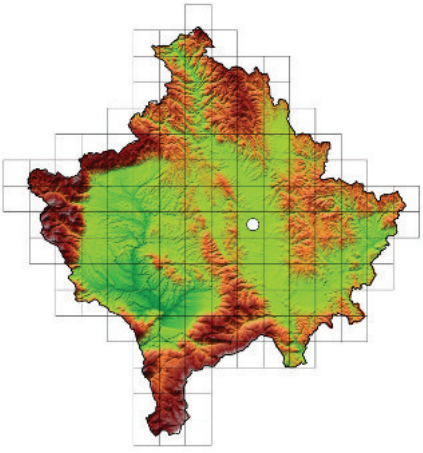
List of Threats: 2 Agriculture & aquaculture [2.1 Annual & perennial non-timber crops]; 9 Pollution [9.3 Agricultural & Forestry Effluent, 9.3.1 Nutrient Loads].
This species was observed to be affected by the use of fertilizers.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].





Pyrrhosoma nymphula (Sulzer, 1776)

Insecta: Odonata: Coenagrionidae

Large Red Damselfly

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Ferdije Zhushi Etemi

General data

This is a large dragonfly with a body size up to 36 mm. The larval stage lasts two years. Adults fly from April to September and are usually among the first species of dragonflies that appear early in the spring.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.4 Bogs, Marshes, Swamps, Fens, Peatlands].
This species is usually found in small swamps and in some cases in rivers with slow flow. Usually, they are not found in fast-flowing waters.

General distribution

Europe, Asia, Africa.

Distribution in Kosovo

Sitnica River in Vragoli.

Population

Population trend: Unknown
There is not enough data about population status of this species. It is found with a small number of specimens (Zhushi Etemi 2005).

Rationale

This species is assessed as Data Deficient because there are not enough data about its distribution in Kosovo or population trends.

Threats

There are not enough data about threats to this species.

Conservation measures in action

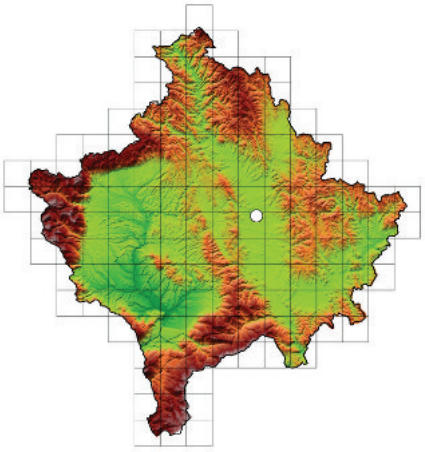
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Zhushi Etemi 2005





Somatochlora meridionalis Nielsen, 1935

Insecta: Odonata: Corduliidae

Balkan Emerald

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Data Deficient, DD

Year of assessment

2018

Assessor(s)

Ferdije Zhushi Etemi

General data

Body length of this species is 50- 55cm. Adults fly from June to August.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
Larvae of this species mainly live in well-shaded streams, although in some cases in high altitudes they live in open streams.

General distribution

Europe, Turkey.

Distribution in Kosovo

Blinajë.

Population

Population trend: Unknown

Rationale

This species is assessed as Data Deficient because there are not enough data about its distribution in Kosovo or population trends.

Threats

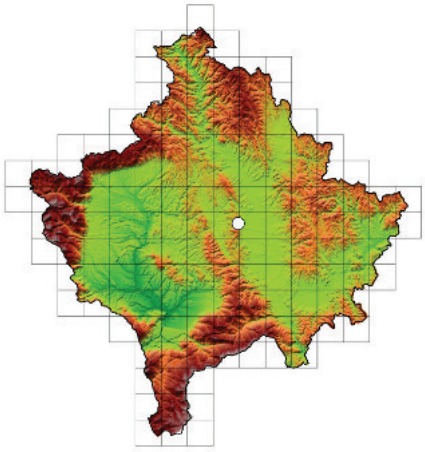
List of Threats: 11 Climate change & severe weather [11.2 Droughts].

Conservation measures in action

The site where this species was found is inside the protected hunting reserve.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].





Sympetrum depressiusculum (Selys, 1841)

Insecta: Odonata: Libellulidae

Southern Skimmer

Threat category in Europe (according to IUCN)
Vulnerable, VU

Threat category in Kosovo (IUCN criteria)
Data Deficient, DD

Year of assessment

2018

Assessor(s)

Ferdije Zhushi Etemi

General data

This is the most localized and poorly dispersing *Sympetrum* species. Body size is 29-34 mm. Flight period is from May to August.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]]; 15 Artificial - Aquatic [15.9 Canals and Drainage Channels, Ditches].
This species needs unshaded, often shallow and warm waters.

General distribution

From Europe to the Pacific coast of Asia.

Distribution in Kosovo

Drini i Bardhë River at Ura e Shenjtë.

Population

Population trend: Unknown
Population of this species is small.

Rationale

This species is assessed as Data Deficient because there are not enough data about its distribution in Kosovo or population trends. Most probably this species is distributed in Kosovo widely than currently known, based on data from surrounding countries.

Threats

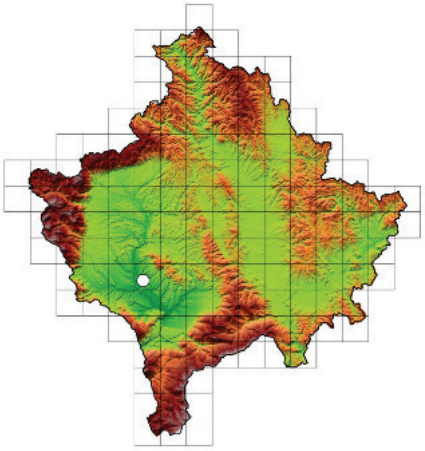
List of Threats: 1 Residential & commercial development [1.3 Tourism & Recreation Areas]; 7. Natural System Modifications [changes in water management]; 11 Climate change & severe weather [11.1 Habitat Shifting & Alteration].

Conservation measures in action

The species is protected [Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species].

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].





Ampedus (Ampedus) aethiops Lacordaire, 1835

Insecta: Coleoptera: Elateridae

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Moderately saproxylic sized beetle (9.5-11.5 mm). It is biologically associated with dead conifer wood. The larvae inhabit the stumps and trunks and logs, lying on the ground, mainly spruces, less often firs and mountain pine, feeding on dead wood. The generation lasts 3-4 years. Adults appear from mid-May to July. Usually, they can be found under the protruding bark, in the crevices of rotting wood, on the lower branches of conifers and during the flight, on the edges of the forest and on the mid-forest clearing.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits cold and humid environments in mountainous coniferous forests.

General distribution

Central Europe, Southeastern Europe, Turkey.

Distribution in Kosovo

Koprivnik (Csiki 1940).

Population

Population trend: Unknown

Rationale

The presence in Kosovo is based on historic data from 1917 and further data is needed for the assessment of this species. Due to the lack of data, this species is assessed as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

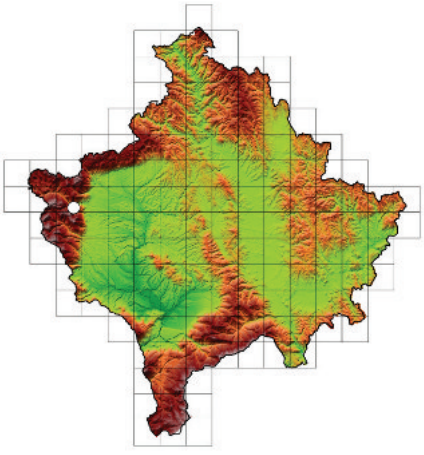
The site where this species was found is inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.

References

Csiki 1940



Ampedus (Ampedus) nigroflavus Goeze, 1777

Insecta: Coleoptera: Elateridae

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Moderately sized saproxylic beetle (9-13 mm). Larvae feed in white, yellow or brownish rot, mostly of standing, live trees (less often in dead wood of lying trunks and logs, but never in stumps) of poplar - *Populus*, willow - *Salix*, linden - *Tila*, elm - *Ulmus*, birch - *Betula*, alder - *Alnus*, beech - *Fagus*, oak - *Quercus*, hornbeam - *Carpinus* and fruit trees - *Prunus*.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest)
Inhabits deciduous forests of various types.

General distribution

Europe, North Africa, Asia.

Distribution in Kosovo

Deçan (Csiki 1940).

Population

Population trend: Unknown

Rationale

This species is included into the Red List of Saproxylic Beetles of Europe under the Least Concern category. The presence in Kosovo is based on historic data from the beginning of the last century (1917) and further data is needed for assessment of this species. Due to the lack of data this species is assessed as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

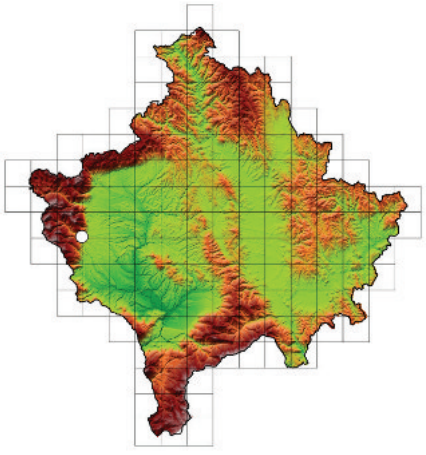
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).

References

Csiki 1940



Ampedus (Ampedus) sanguineus Linnaeus, 1758

Insecta: Coleoptera: Elateridae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Moderate to large sized beetle (13-17.5 mm) with bright red colored elytre. The larva inhabits stumps or trunks of cut or fallen trees in all species of conifers, especially their stumps left in the ground on sunlit places. The female lays eggs in the sidewalks and tunnels of saproxylic beetles where the larvae live a predatory and saprophagic lifestyle. The generation under favorable conditions lasts for 4 years but can be extended up to 5-6 years.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits coniferous forests in mountainous areas.

General distribution

Palearctic.

Distribution in Kosovo

Kuqishtë.

Population

Population trend: Unknown

Rationale

This species is included into the Red List of Saproxylic Beetles of Europe under the Least Concern category. Its presence in Kosovo is registered only once recently (2018) and further data is needed for assessment of this species. Due to the lack of data, this species is assessed as Data Deficient.

Threats

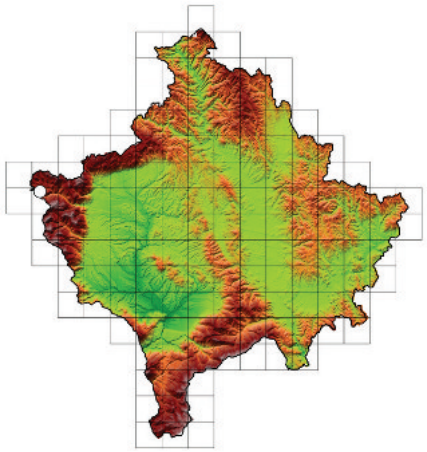
List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

The locality where this species was found is inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.



Ampedus (Ampedus) sanguinolentus Schrank, 1776

Insecta: Coleoptera: Elateridae

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Moderately sized saproxylic beetle (9-11.5 mm), elytra bright red with characteristic longitudinal black decoration in the middle. The larva lives in damp, rotting, soft wood, stumps, fallen logs, and even in dead roots of deciduous trees, especially in alder, oak, linden, and birch. The generation varies and in average lasts for four years.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabit deciduous forests of different broad-leafed tree species.

General distribution

Europe, Asia.

Distribution in Kosovo

Runik (Csiki 1940).

Population

Population trend: Unknown

Rationale

This species is included into the Red List of Saproxylic Beetles of Europe under the Least Concern category. The presence in Kosovo is based on historic data from 1917. Further data is needed for assessment of this species; therefore it is assessed as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

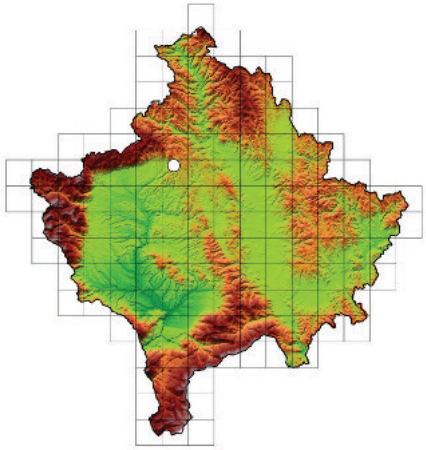
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.

References

Csiki 1940



Cerambyx (Cerambyx) miles Bonelli, 1823

Insecta: Coleoptera: Cerambycidae

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Large beetle (41-55 mm), very similar and frequently occurs together with great capricorn beetle (Cerambyx cerdo), from which differs only in a few characteristics, but it is much rarer. Larval development takes place in living broadleaf trees with special preference to Quercus but also in *Amygdalus, Prunus, Malus, Pyrus, Crataegus, Carpinus* and even *Vitis*. The total development of the larvae takes 3-5 years and depends on the position, climatic conditions and quality of the wood.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest)
It is found on forested hills at low altitudes, presumably oak forests.

General distribution

Albania, Azerbeijan, Armenia, Bosnia and Hercegovina, Bulgaria, Croatia, France, Georgia, Greece, Hungary, Italia, Kosovo, Macedonia, Poland, Romania, Serbia, Slovakia, Slovenia, Switzerland, Turkey, Ukraine.

Distribution in Kosovo

Skivjan (Csiki 1940).

Population

Population trend: Unknown

Rationale

The presence of this species in Kosovo is based on historic data from 1917. Further data is needed for the assessment of this species. Therefore, the species is assessed as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

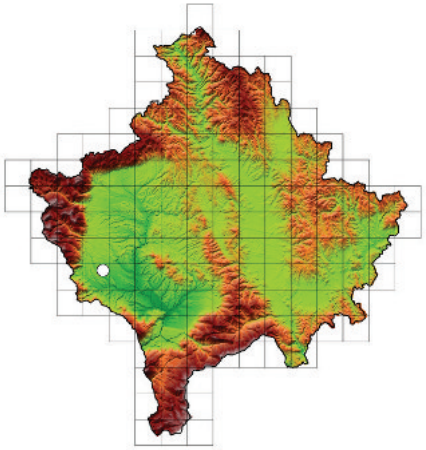
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.

References

Csiki 1940



Isorhipis melasoides Laporte, 1835

Insecta: Coleoptera: Eucnemidae

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Moderately sized saproxylic beetle (6.5-11 mm). Larvae feed on hard, damp wood in stumps, in damaged places on trunks of living or recently fallen trees, mostly beech, hornbeam, and linden, less often oak. The peak of activity of adult beetles takes place in June-July when the beetles can be seen on logs or shrubs in the vicinity of host trees.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits different types of deciduous forests.

General distribution

Austria, Bosnia and Hercegovina, Bulgaria, Croatia, Czech Republik, France, Germany, Hungary, Italy, Kosovo, Poland, Romania, Serbia, Slovakia, Sweden, Turkey.

Distribution in Kosovo

Gërmi.

Population

Population trend: Unknown

Rationale

This species is included into the Red List of Saproxylic Beetles of Europe under Least Concern category. The presence in Kosovo is based on only one recent occurrence (2018) and further data is needed for assessment of this species. Due to the lack of data, this species is assessed as Data Deficient.

Threats

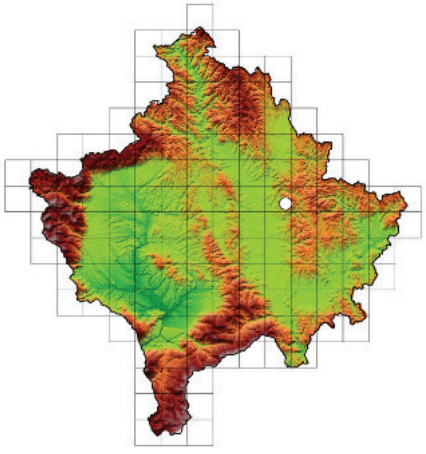
List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.



Lichenophanes varius Illiger, 1801

Insecta: Coleoptera: Bostrichidae

Threat category in Europe (according to IUCN)
Near Threatened, NT

Threat category in Kosovo (IUCN criteria)
Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Medium sized beetle, 8-12 mm. Imago appears in May and June and keeps a secretive way of life during the day, hiding in the crevasses of trees, under the protruding bark or in the sidewalks of other beetles. Their saproxylophagous larvae develop in the dead wood of various species of trees. Females lay eggs in the crevices of dead deciduous wood, especially old beeches, oaks, poplar, and lime. The larvae feed in hard and rotten wood, drilling pavements in various directions to a depth of about 2 cm. After wintering, they pupate at the end of April and in May. The pupae stage lasts for two weeks.

Habitat

Habitat Type: 1. Forest [1.4 Temperate forest].
Lives in old-growth or at least in well preserved, broadleaved forests.

General distribution

Distributed in most of Europe, North Africa, Asia.

Distribution in Kosovo

Gjakovë [Csiki 1940].

Population

Population trend: Unknown

Rationale

This species is assessed as Data Deficient because there is not enough data about its distribution in Kosovo or population trends. There is only one old occurrence from the vicinity of Gjakovë based on data from 1917, without recent findings.

Threats

List of Threats: 1 Residential & commercial development [1.3 Tourism & recreation areas] 5 Biological resource use [5.3 Logging & wood harvesting].

Conservation measures in action

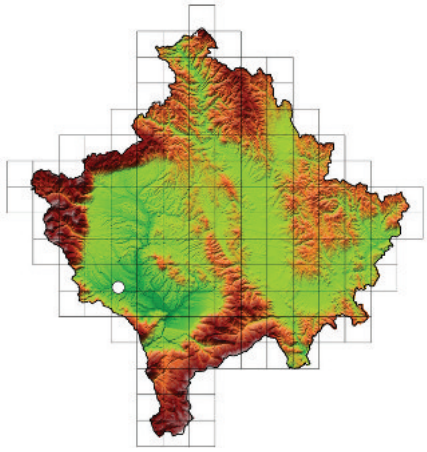
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.2 Resource & habitat protection]; 2. Land/water management [2.1 Site/area management].
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.

References

Csiki 1940



Molorchus (Molorchus) kiesenwetteri Mulsant & Rey, 1861

Insecta: Coleoptera: Cerambycidae

Threat category in Europe (according to IUCN)
Data Deficient, DD

Threat category in Kosovo (IUCN criteria)
Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Small beetle (5-7 mm). It is a saproxylic species, whose larvae develop in thin branches of different deciduous and even green tree species. Adults are active from May to July on branches of deciduous and coniferous trees, but also on umbelliferous inflorescences.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest)
It is found inside forests and forest cuttings in broadleafed and coniferous forests from the lowland up to 1800 m.

General distribution

Central Europe, Southeastern Europe, reaching east to the Southern Urals and Central Asia.

Distribution in Kosovo

Mitrovicë (Csiki 1940).

Population

Population trend: Unknown

Rationale

The species is included into the Red List of Saproxylic Beetles of Europe under Data Deficient category (Nieto and Alexander 2010). The presence in Kosovo is based on historic data from 1917. Further data is needed for the assessment of this species. Therefore, the species is classified as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

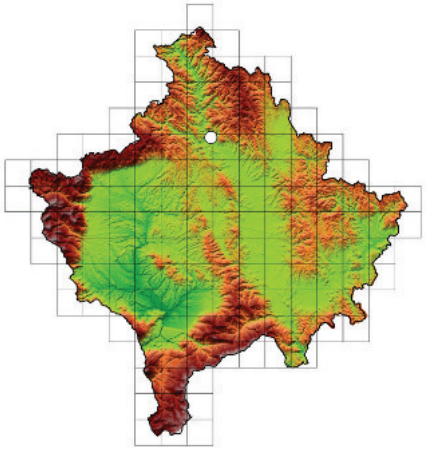
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.

References

Csiki 1940; Nieto and Alexander 2010



Mycetophagus (Ulolendus) atomarius Fabricius, 1787

Insecta: Coleoptera: Mycetophagidae

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Small beetle (4-4.5 mm). Imago can be found on the fruiting bodies of arboreal mushrooms (*Daldinia concentrica, Kretzschmaria deusta, Ganoderma applanatum, Pluteus cervinus* etc.) that are growing on dead trunks and stumps of different broad-leafed and coniferous tree species.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits deciduous and coniferous forests in mountains.

General distribution

Europe, Turkey.

Distribution in Kosovo

Zhleb (Csiki 1940).

Population

Population trend: Unknown

Rationale

This species is included into the Red List of Saproxylic Beetles of Europe under the Least Concern category. It is assessed as Data Deficient as its presence in Kosovo is based on historic data from 1917 and further data is needed for assessment.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

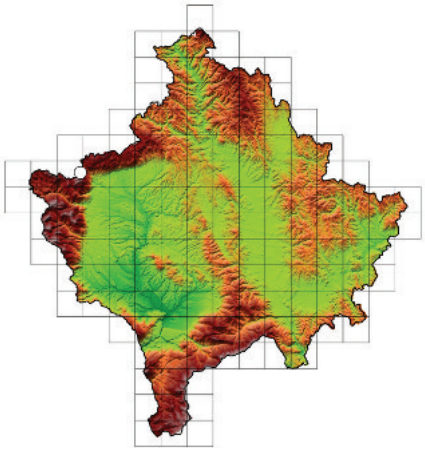
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.

References

Csiki 1940



Osmoderma barnabita Motschulsky, 1845

Insecta: Coleoptera: Scarabaeidae

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Rather a large beetle (28-32 mm), an obligate saproxylic species. It is restricted to decaying heartwood that is found only in large, old veteran trees of a variety of broad-leaved species (including oak - *Quercus*, willow - *Salix*, beech - *Fagus*, fruit trees like *Malus*, *Prunus* and *Pyrus*, and lime - *Tilia*) in both relatively open old-growth woodland and traditional cultural landscapes. This species has very poor dispersal capacity (it is a weak flier), and consequently, linear habitat features are critically important for retaining connectivity and viable populations. Development of larvae normally takes two years to develop but it can last longer if conditions are not optimal.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits old veteran trees of broadleaf tree species with hollows inside deciduous forests, mainly beech.

General distribution

Widely distributed in Europe.

Distribution in Kosovo

Pejë (Mikšič 1955).

Population

Population trend: Unknown

Rationale

The assessment for Kosovo is based on only one finding from the 1950s. During the field studies in 2018, it was not found but, a number of hollow living trees (main habitat for larvae) were noticed in Bjeshkët e Nemuna and Sharr National Parks. This type of habitat in Kosovo is under high pressure, and therefore it is necessary to pay attention to this species in the future. Due to the lack of data, this species is assessed as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

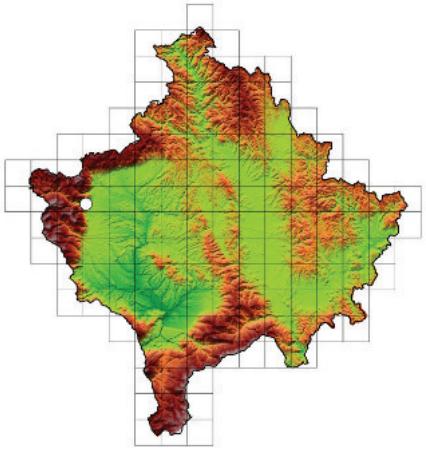
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.

References

Mikšič 1955





Peltis grossa Linnaeus, 1758

Insecta: Coleoptera: Trogossitidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Large (11-19 mm), dark brown to black beetle. Its larvae live in the soft, decaying wood of standing trees, both coniferous and deciduous, infested with fungi, e.g. in the lower parts of old trees or their snags. Their development takes 2-3 years.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits different forest habitats (deciduous, mixed and coniferous) with an abundance of decaying wood of standing trees.

General distribution

European species occurring from Spain to western Siberia and from Scandinavia to Turkey and Transcaucasia.

Distribution in Kosovo

Luboten (Procházka *et al.* 2017).

Population

Population trend: Unknown

Rationale

The presence in Kosovo is based on historic data from 1930. Further data is needed for assessment of this species. Therefore, this species is classified as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

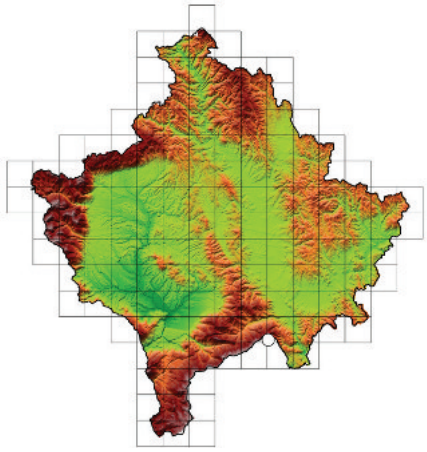
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.

References

Procházka *et al.* 2017



Penichroa fasciata Stephens, 1831

Insecta: Coleoptera: Cerambycidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Small beetle (6-15 mm). Saproxylic species. The larva develops in branches of a number of deciduous trees species (*Juglans, Ficus, Populus, Prunus, Castanea, Ceratonia, Quercus*). The generation lasts for 2-3 years.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits thermophile deciduous and mixed forests.

General distribution

Widely distributed in the western Palaearctic.

Distribution in Kosovo

Pejë (Csiki 1940).

Population

Population trend: Unknown

Rationale

The species is included into the Red List of Saproxylic Beetles of Europe under the Least Concern category. The presence in Kosovo is based on historic data from 1917. Further data is needed for the assessment of this species. Therefore, the species is classified as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

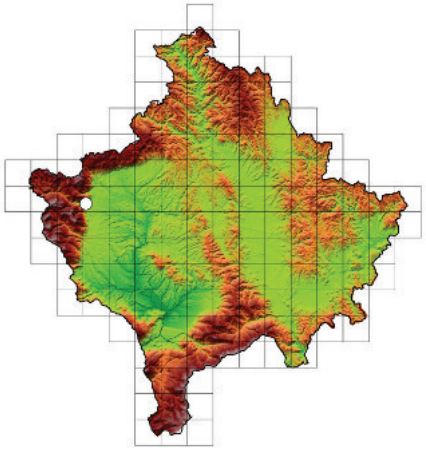
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.

References

Csiki 1940



Protamaurops serbicus Karaman, 1961

Insecta: Coleoptera: Staphylinidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Very small sized beetle (slightly longer of 2 mm). Ecology unknown.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Lives in decaying litter of beech forests.

General distribution

Kosovo.

Distribution in Kosovo

Kaçanik (Karaman 1961).

Population

Population trend: Unknown

Rationale

This species was found and described from Kaçanik gorge in 1961 and never found again. In catalogues it is treated as a Kosovo stenoendemit. Due to the lack of data, this species is assessed as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

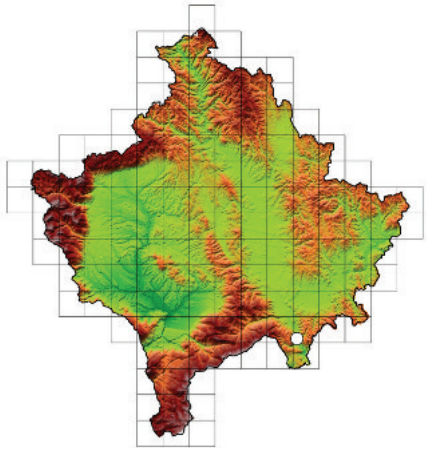
Currently, there is no conservation measure in action.

Conservation measures needed

Research needed: 1. Research (1.2. Population size, distribution & trends; 1.3. Life history & ecology); 3. Monitoring (3.4. Habitat trends).

References

Karaman 1961



Rosalia (Rosalia) alpina Linnaeus, 1758

Insecta: Coleoptera: Cerambycidae

Threat category in Europe (according to IUCN)

Vulnerable, VU

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

This large (18-38 mm) beautifully colored beetle occurs mainly in old mountain beech forests. It is an obligate saproxylic species. It is generally present everywhere but rarely and on dispersed sites in low abundance. A development cycle of the larvae (that takes place in the dead, rotting wood of old, and living or dying beech trees - *Fagus*) longs for at least three years. The adults appear in warm and sunny weather from mid-June until the beginning of September, with the highest intensity occurring in July and August when they can be seen in flight. Larvae feed in a dead, decaying wood

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
It is found in mountainous beech forest reaching up to a height of about 1500 m above sea level

General distribution

Europe, North Africa, Asia.

Distribution in Kosovo

Koprivnik, Brezovicë.

Population

Population trend: Unknown

Rationale

There are some recent data about this species from Kosovo, but further data is needed for reliable assessment. Therefore, it is currently assessed as Data Deficient.

Threats

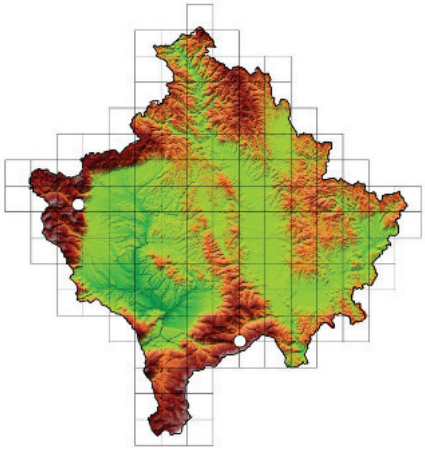
List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management)
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability





Triplax aenea Schaller, 1783

Insecta: Coleoptera: Erotylidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Small beetle (3.3-4.3 mm). The larvae and imago live in fungi (i.e. oyster mushroom – *Pleurotus corticatus, Hoof* fungus – *Fomes fomentarius*) that are developing on barks of trunks and branches of beech, oak, elm, poplar, willow, limes, and fruit trees. Sometimes it can be found in fungi that attack conifers.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits deciduous and mixed forests in the mountainous.

General distribution

Palearctic.

Distribution in Kosovo

Zhleb (Csiki 1940).

Population

Population trend: Unknown

Rationale

This species is included in the Red List of Saproxylic Beetles of Europe under the Least Concern category. The presence in Kosovo is based on historic data from 1917. Further data is needed for assessment of this species; therefore it is classified as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

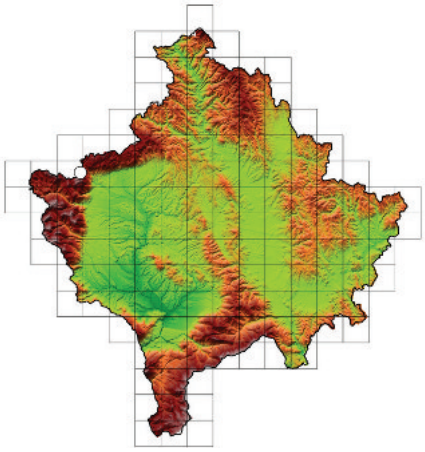
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.

References

Csiki 1940



Triplax scutellaris Charpentier, 1825

Insecta: Coleoptera: Erotylidae

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

Small beetle (4.5-5.5 mm). Inhabits bodies of parasitic fungi that grow on old beeches, maples, and birches.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits deciduous forests of different broad-leafed tree species.

General distribution

Palearctic.

Distribution in Kosovo

Gërmi.

Population

Population trend: Unknown

Rationale

This species is included into the Red List of Saproxylic Beetles of Europe under the Least Concern category. The presence in Kosovo is based on only one recent occurrence (2018) and further data is needed for assessment of this species. Due to the lack of data this species is assessed as Data Deficient.

Threats

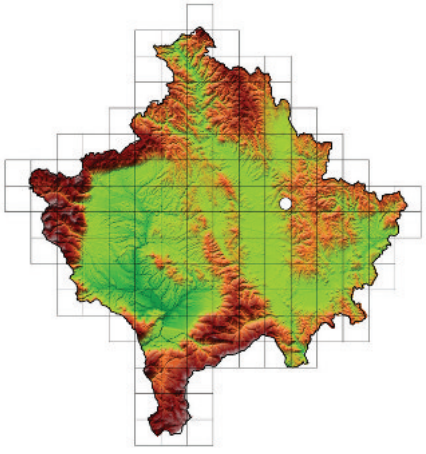
List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.



Xylotrechus (Xylotrechus) arvicola Olivier, 1795

Insecta: Coleoptera: Cerambycidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Gabor Mesaroš

General data

The size of imago is highly influenced by the conditions for the development of the larvae. It can be from 8 up to 20 mm. It is a saproxylic species. The larvae develop on the trunks and branches of damaged or diseased trees. As the host trees in the literature are mentioned: oak - *Quercus*, beech - *Fagus*, elm - *Ulmus*, limes - *Tilia*, poplar - *Populus*, hornbeam - *Carpinus*, pear and plum trees - *Pirus*, chestnut - *Castanea* and hawthorn - *Crataegus*. The generation lasts for two years.

Habitat

Habitat Type: 1. Forest (1.4 Temperate forest).
Inhabits deciduous forests of various types.

General distribution

Europe, Turkey, North Africa.

Distribution in Kosovo

Koprivnik (Csiki 1940).

Population

Population trend: Unknown

Rationale

This species is included into the Red List of Saproxylic Beetles of Europe under the Least Concern category. The presence in Kosovo is based on historic data from 1917. Further data is needed for the assessment of this species. Therefore it is assessed as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 5 Biological resource use (5.3 Logging & wood harvesting).

Conservation measures in action

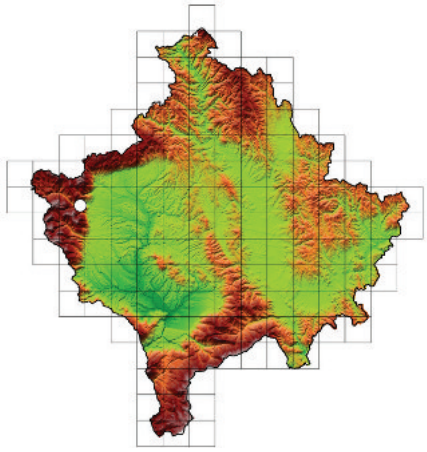
The site where this species was found is inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.2 Resource & habitat protection); 2. Land/water management (2.1 Site/area management).
Research needed: 1. Research (1.2. Population size, distribution & trends); 3. Monitoring (3.1. Population trends; 3.4. Habitat trends).
Promote conservation-oriented forestry use management practices with reduced clear cuttings and providing dead wood availability.

References

Csiki 1940



Boreus westwoodi Hagen, 1866

Insecta: Mecoptera: Boreidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Halil Ibrahimi, Astrit Bilalli

General data

This species belongs to a small family of Mecoptera, notorious for their activity during the winter months and presence in high altitudes of the Northern Hemisphere. Their wings are reduced to bristles or absent. Feeds on mosses during the larval and adult stages (Ibrahimi *et al.*2016).

Habitat

Habitat Type: 1. Forest (1.4. Temperate forest).

General distribution

Bosnia and Herzegovina, Croatia, Czech Republic, Finland, Germany, Italy, Kosovo, Lithuania, Norway, Poland, Russia, Slovakia, Slovenia, Sweden.

Distribution in Kosovo

Brezovicë.

Population

Population trend: Unknown
In Kosovo, it was found in 1 site only with 2 individuals.

Rationale

The distribution of this species is not sufficiently known. The population trend is unknown. Due to the lack of data, this species is classified as Data Deficient.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Conservation measures in action

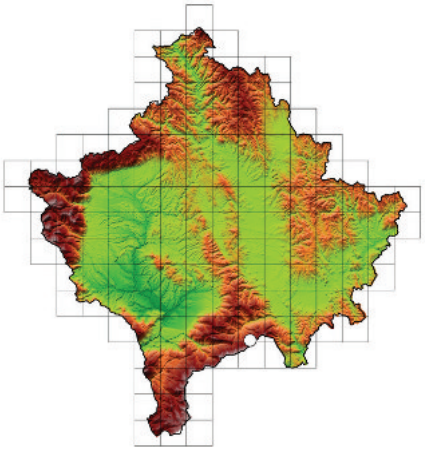
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Ibrahimi *et al.* 2016





Rhypholophus bifurcatus Goetghebuer, 1920

Insecta: Diptera: Limoniidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Agim Gashi, Astrit Bilalli, Halil Ibrahimi

General data

Larvae grow in rotten trees, in moist soil along watercourses and under leaf wastes. Adult forms are encountered from the end of the summer and throughout the autumn in vegetation along the watercourse. There is not enough data about biology and ecology of this species. It is a rare species with limited distribution (Oosterbroek & Dek 2013).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

General distribution

Austria, Belgium, Bulgaria, Czech Republic, France (incl. Corsica), Germany, Great Britain, Greece, Hungary, Ireland, Italy, Kosovo, Lithuania, Netherlands, Russia, Slovakia, Switzerland, Ukraine.

Distribution in Kosovo

Streamlet in Stanqiq, Gajre.

Population

Population trend: Unknown
In Kosovo, it was found in only one site with a low number of specimens.

Rationale

The known distribution of this species is discontinuous, but probably this is a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is classified as Data Deficient. Most probably this species is distributed in Kosovo widely than currently known.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Conservation measures in action

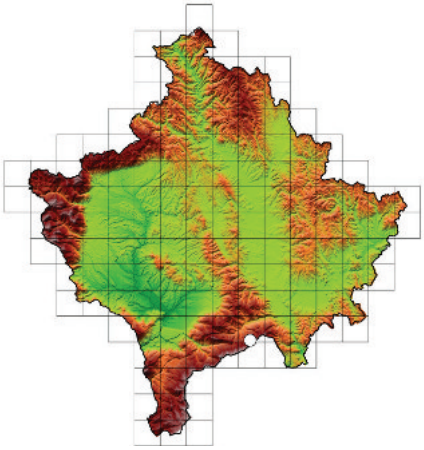
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Oosterbroek & Dek 2013



Tipula (Savtshenkia) benesignata Mannheims, 1954

Insecta: Diptera: Tipulidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Agim Gashi, Astrit Bilalli, Halil Ibrahimi

General data

The species has long extremities and wings gold in color. Body color is brown hatched. Larvae feed on mosses living under the forest cover while adult forms live in wet forests (Savchenko 1964).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.9 Freshwater Springs and Oases).
It is mostly found in wet forested areas with dense vegetation along the riverbed.

General distribution

Austria, Belgium, Croatia, Czech Republic, Finland, France Germany, Greece, Hungary, Italy, Kosovo, Luxembourg, Montenegro, Norway, Romania, Russia Slovakia, Slovenia, Sweden, Switzerland, Ukraine.

Distribution in Kosovo

Streamlet in Dërmjak, Streamlet in Gajre.

Population

Population trend: Unknown
In Kosovo, it was found in only 1 site with a low number of specimens.

Rationale

The known distribution of this species is discontinuous, but probably this is a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is classified as Data Deficient. Most probably this species is distributed in Kosovo widely than currently known.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting); 6 Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)); 9 Pollution (9.1 Domestic & urban waste water: 9.1.1 Sewage); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Conservation measures in action

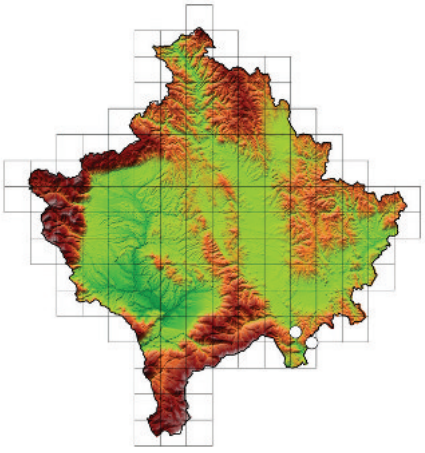
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Savchenko 1964



Agrypnia varia Fabricius, 1793

Insecta: Trichoptera: Phrygaenidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 12 to 19 mm. It is one of the biggest caddisflies in Balkans. During the larval stage, they live in water for one year. It has a wide ecological valence. Larvae feed as grazers, scrapers, and predators. They are on wing during the spring. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1985). It is the only species of the Phrygaenidae family known from Kosovo.

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].

It is a limnobiont and is found in lentic and lotic habitats. The preferred substrate for larvae of this species is gravel of different size, silt, and organic particles.

General distribution

Austria, Belgium, Bulgaria, Bosnia and Herzegovina, Great Britain, Russia, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Iran, Ireland, Italy, Kosovo, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Moldova, Norway, Poland, Portugal, Rumania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Netherland, Serbia, Turkey.

Distribution in Kosovo

Ibër River in Koshtovë.

Population

Population trend: Unknown

Rationale

The distribution of this species is not sufficiently known. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient. Most probably this species is distributed in Kosovo widely than currently known, based on data from surrounding countries.

Threats

List of Threats: 5 Biological resource use [5.3 Logging & wood harvesting]; 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use), 7.2.3 Abstraction of surface water (agricultural use)]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

Main threats for this species in Kosovo are: habitat loss and degradation, deforestation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

Currently, there is no conservation measure in action.

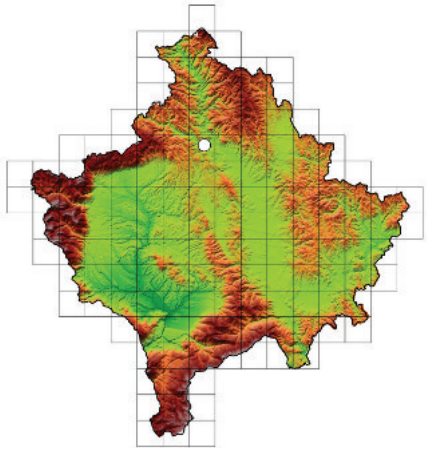
Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Graf *et al.* 2008; Kumanski 1985





Beraea pullata (Curtis, 1834)

Insecta: Trichoptera: Beraeidae

Threat category in Europe (according to IUCN)

This species is not assessed by IUCN.

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Halil Ibrahimi

General data

The forewing size of this species is from 5 to 6 mm. During the larval stage, they live in water for one year. Larvae feed as grazers/scrapers. They are on wing during the May-August period. As adults, they live for several days to several weeks nearby the stream or river where they lived as larvae (Graf *et al.*2008; Kumanski 1988).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.9 Freshwater Springs and Oases].
It is mainly found in small mountain streamlets. The preferred substrate for this species are edges of stream banks and nearby moist habitats. It is mainly found in higher altitudes.

General distribution

Albania, Austria, Bulgaria, Belarus, Belgium, Bosnia and Herzegovina, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Kosovo, Montenegro, Netherland, Latvia, Lithuania, Luxembourg, Poland, Portugal, Russia, Norway, Romania, Slovakia, Slovenia, Sweden, Switzerland, Spain.

Distribution in Kosovo

Streamlet in Lloqan Mountains.

Population

Population trend: Unknown
In Kosovo, it was found in 1 site only with a low number of individuals.

Rationale

The distribution of this species is unknown but probably this is a result of insufficient research. The population trend is unknown. Most probably this species is distributed in Kosovo widely than currently known, based on data from surrounding countries. Due to the lack of data, this species is assessed as Data Deficient.

Threats

List of Threats: 6 Human intrusions & disturbance [6.1 Recreational activities]; 7 Natural system modifications [7.2 Dams & water management/use: 7.2.1 Abstraction of surface water [domestic use], 7.2.3 Abstraction of surface water [agricultural use]]; 9 Pollution [9.1 Domestic & urban waste water: 9.1.1 Sewage]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].
Main threats for this species are: habitat loss and degradation, water pollution and unsustainable management, unsustainably managed touristic and recreational activities, as well as the species' limited distribution and low density.

Conservation measures in action

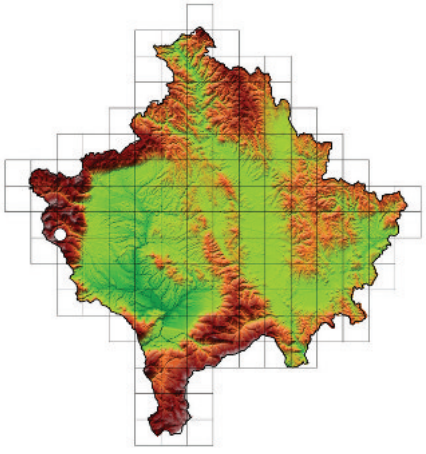
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Graf *et al.* 2008; Kumanski 1988



Brenthis ino (Rottemburg, 1775)

Insecta: Lepidoptera: Nymphalidae

Lesser Marbled Fritillary

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

This is a medium-sized species. The wingspan is 34 to 42 mm. The upperside of forewings is dominated by the orange color. This species has one generation per year. Adults fly during June-July. Larvae feed on plants belonging to the following genera: *Filipendula, Rubus, Aruncus,* and *Sanguisorba.*

Habitat

Habitat Type: 1 Forest [1.4 Temperate Forest]; 4 Grassland; 5 Wetlands [inland] [5.4 Bogs, Marshes, Swamps, Fens, Peatlands [generally over 8 ha]].

This species can be encountered at different altitudes, from sea level up to over 2000 meters. In Kosovo, it is mostly found in shaded places nearby rivers.

General distribution

Europe, Asia.

Distribution in Kosovo

Bogë.

Population

Population trend: Unknown

Currently, there are not enough data about population trends of this species.

Rationale

This species is assessed as Data Deficient because there are not enough data about its distribution in Kosovo or population trends. Most probably this species is distributed in Kosovo widely than currently known, based on data from surrounding countries.

Threats

List of Threats: 2. Agriculture & aquaculture; 7 Natural system modifications [7.3 Other ecosystem modifications]; 11 Climate change & severe weather [11.1 Habitat shifting & alteration].

This species was observed to be vulnerable to agricultural land abandonment and habitat fragmentation.

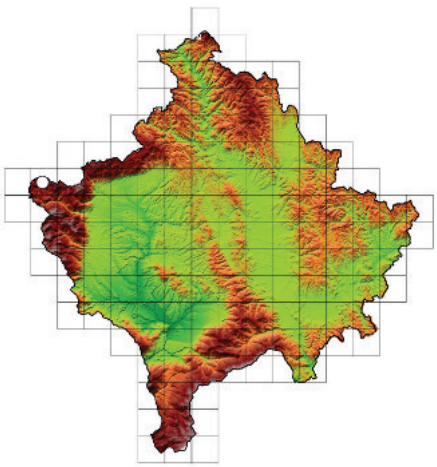
Conservation measures in action

Habitats of this species are protected inside Bjeshkët e Nemuna and Sharr Mountains national parks.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].



Limenitis populi (Linnaeus, 1758)

Insecta: Lepidoptera: Nymphalidae

Poplar Admiral

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

It's a relatively large butterfly. The wingspan is 57 to 90 mm. Like most Limenitis species, this species has black forewings with white spottings. This species has one generation per year. The adults fly from May to June. The larvae feed on plants belonging to the genus *Populus*. Larvae overwinter in hibernaculum.

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest).

General distribution

Europe, partly Asia.

Distribution in Kosovo

Kaçanik Gorge, Milishevc (Jakšić 1998; Jakšić 2003).

Population

Population trend: Unknown

There is no enough information about population trends of this species.

Rationale

This species is assessed as Data Deficient because there is not enough data about its distribution in Kosovo or trends of its populations. Most probably, this species is distributed in Kosovo widely than currently known, based on data from surrounding countries.

Threats

List of Threats: 2. Agriculture & aquaculture (2.3 Livestock farming & ranching: 2.3.2 Small-holder grazing, ranching or farming); 5.Biological resource use (5.3.Logging and wood harvesting); 11 Climate change & severe weather (11.1 Habitat shifting & alteration, 11.2 Droughts).

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species). Habitats of this species are protected in Bjeshkët e Nemuna and Sharr national parks

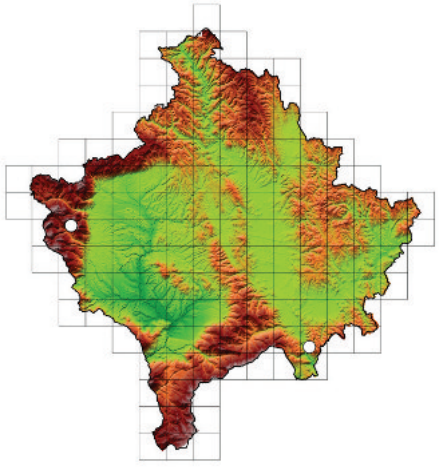
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Jakšić 1998; Jakšić 2003



Melitaea aurelia Nickerl, 1850

Insecta: Lepidoptera: Nymphalidae

Nickerl's Fritillary

Threat category in Europe (according to IUCN)

Near Threatened, NT

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

Length from base to top of the male forewing is 14 – 16 mm. Upperside of forewings is dark brown with nuances of black and white. This species has one generation per year. Adults fly during June – July period. Larvae feed on *Plantago lanceolata.*

Habitat

Habitat Type: 3. Shrubland; 4 Grassland. This species is frequent in Kosovo in grasslands rich in flowers.

General distribution

Central and East Europe, Turkey, Transcaucasus, South Urals, N Kazakhstan, W Siberia to the Tian Shan.

Distribution in Kosovo

Mirushë, Gërmi (Jakšić 1998; Jakšić 2003; Zhushi *et al.*2017).

Population

Population trend: Unknown
Single individuals of this species were sampled only.

Rationale

This species is assessed as Data Deficient because there are not enough data about its distribution in Kosovo. Most probably this species is distributed in Kosovo widely than currently known, based on data from surrounding countries.

Threats

List of Threats: 2 Agriculture & aquaculture (2.3 Livestock farming & ranching: 2.3.2 Small-holder grazing, ranching or farming); 7 Natural system modifications (7.3 Other ecosystem modifications).
This species was observed to be impacted from abandoned land and mowing.

Conservation measures in action

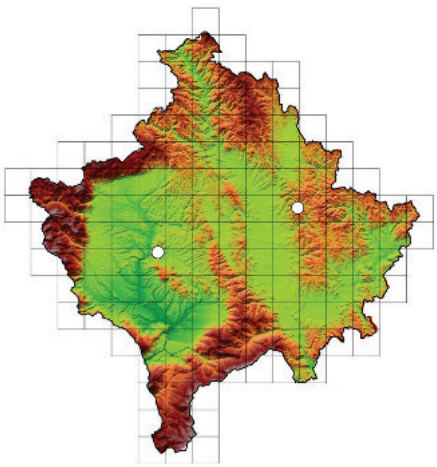
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Jakšić 1998; Jakšić 2003; Zhushi *et al.* 2017



Neptis sappho (Pallas, 1771)

Insecta: Lepidoptera: Nymphalidae

Common Glider

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

The wingspan of this species is between 44 – 48 mm. This species has 2 to 4 generations during a year. Development occurs very fast during the summer. Adults fly during the April - September period.

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest).
In Kosovo, it was found frequently in deciduous forests and especially in the vicinity of freshwater ecosystems.

General distribution

This species occurs in Eastern Europe: from the northeast of Italy and the south of Austria eastwards to Romania and locally in the south of the Balkans to the north of Greece.

Distribution in Kosovo

Drenica Mountain, Rugova Gorge.

Population

Population trend: Stable
Subpopulations of this species are small but stable in Kosovo.

Rationale

This species is assessed as Data Deficient because there are not enough data about its distribution in Kosovo. Most probably this species is distributed in Kosovo widely than currently known, based on data from surrounding countries.

Threats

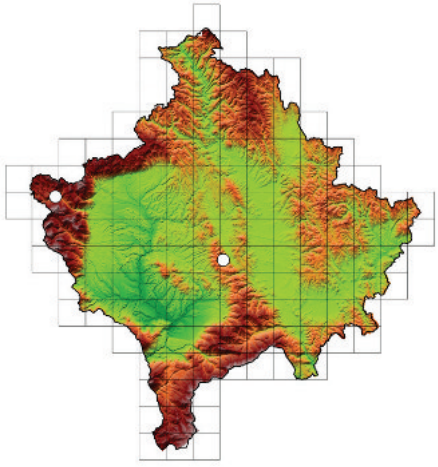
List of Threats: 5. Biological resource use (5.3.Logging and wood harvesting); 6. Human intrusions & disturbance (6.1 Recreational activities); 7 Natural system modifications (7.1 Fire & fire suppression); 11 Climate change & severe weather (11.1 Habitat shifting & alteration).

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).



7.7 ACTINOPTERYGII

Gobio bulgaricus Drensky, 1926

Actinopterygii: Cypriniformes: Cyprinidae

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Data Deficient, DD

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori

General data

This species was described from Bulgaria, from where it bears its name as well. Later was found in other places in Europe and wider. It reaches a body size of 9 cm (Freyhoff and Kottelat 2008).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]].
This species is found mostly in slow flowing waters with a gravel substrate.

General distribution

Europe,Turkey.

Distribution in Kosovo

Nerodime River close to bifurcation.

Population

Population trend: Unknown

Rationale

The known distribution of this species is incomplete as a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is classified as Data Deficient.

Threats

List of Threats: 9 Pollution [9.1 Domestic & Urban Waste Water, 9.4 Garbage & Solid Waste]; 11 Climate change & severe weather [11.2 Droughts].

Conservation measures in action

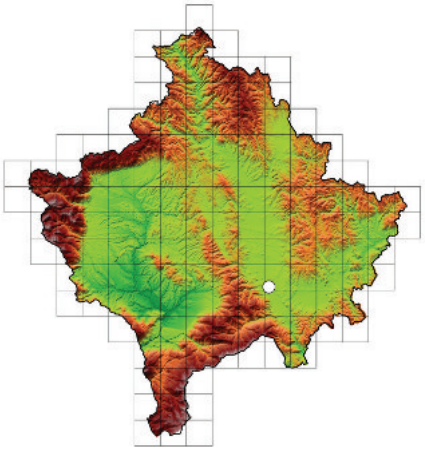
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Freyhoff and Kottelat 2008



Leucaspius delineatus (Heckel, 1843)

Actinopterygii: Cypriniformes: Cyprinidae

Sunbleak

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Ferdije Zhushi Etemi

General data

This species has a prolonged body, slightly pressed dorsoventrally. They have characteristic inflated lips. Their body is silver in color and grows up to 12 cm. They feed with the material of plant origin but also with insect larvae and small shrimps. It is relatively tolerant to temperature changes and decrease of oxygen concentration. It is reproduced during June and July. They live for up to 2 years (Kottelat and Freyhof 2007).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.4 Bogs, Marshes, Swamps, Fens, Peatlands, 5.5 Permanent Freshwater Lakes].

They are mainly found in downstream segments of rivers and lakes rich in vegetation. It is frequent in marshes, steep lakes and water bodies that are not connected with rivers.

General distribution

Europe.

Distribution in Kosovo

Drenica River in Drenas, Drenica River in Çikatovë, Drenica River in Grabovc, Drenica River in Vragoli, Badovc Lake, Radoniq Lake, Batllava Lake, Llap River in Murgull, Llap River in Bajqinë, Llap River in Lupq, Llap River in Barilevë, Llap River in Millosheve, Llap River in Lummadh.

Population

Population trend: Unknown

Rationale

The known distribution of this species is incomplete as a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is classified as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development [1.1 Housing & urban areas]; 9 Pollution [9.1 Domestic & Urban Waste Water, 9.4 Garbage & Solid Waste]; 11 Climate change & severe weather [11.2 Droughts].

Conservation measures in action

The species is protected [Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species].

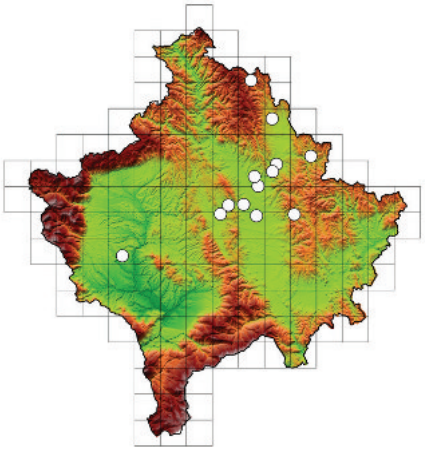
Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Kottelat and Freyhof 2007





Rhodeus meridionalis Karaman, 1924

Actinopterygii: Cypriniformes: Cyprinidae

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori

General data

This species is characteristic for freshwater ecosystems and is mainly encountered in large or medium-sized rivers. It is a relatively confusing species, since the morphological characteristics are similar to *R. amarus* and *R. seratus*, and therefore, there is a need for genetic analysis. It is distinguished from *R. amarus* because it possesses the terminal tooth rostral cap which covers the upper part of the upper lips. The size of adult individuals is up to 9.5 cm (Freyhoff and Kottelat 2008).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.4 Bogs, Marshes, Swamps, Fens, Peatlands, 5.5 Permanent Freshwater Lakes).

This species is mainly found in rivers of different size, from big sized to average ones, but can also be encountered in standing waters such as lakes, marshes, and canals. In rivers, they prefer parts with a slower flow. It can be often found in waters with the presence of Anadonta and Unio.

General distribution

Endemic of Balkans.

Distribution in Kosovo

Erenik River in Gjakovë (Wanke 2018).

Population

Population trend: I panjohur

Në Kosovë është konstatuar në vetëm 1 lokalitet, por të dhënat për përhapjen e tij dhe trendet e nënPopulationve janë akoma të pamjaftueshme.

Rationale

The known distribution of this species is incomplete, as a result of insufficient research. The population trend is unknown. Due to the lack of data this species is classified as Data Deficient.

Threats

List of Threats: 9 Pollution (9.1 Domestic & Urban Waste Water, 9.4 Garbage & Solid Waste); 11 Climate change & severe weather (11.2 Droughts).

Conservation measures in action

Currently, there is no conservation measure in action.

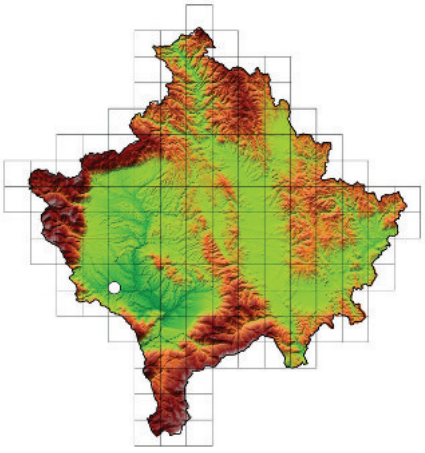
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Freyhoff and Kottelat 2008; Wanke 2018



Sabanejewia balcanica (Karaman, 1922)

Actinopterygii: Cypriniformes: Cobitidae

Threat category in Europe (according to IUCN)
Least Concern, LC

Threat category in Kosovo (IUCN criteria)
Data Deficient, DD

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori.

General data

This species is reproduced during the spring. Adults can be often observed during the day digging nests in sand or even on the pebble substrate in steep hilly streams. Its distribution and ecological features in the Balkans are still not well-known. The adults can reach length up to 9 cm. This species is very vulnerable to habitat changes (Freyhoff and Kottelat 2008).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]].
This species prefers hilly habitats with constant and clean water. They are also found in slow flowing waters with few plants, in the water depth of 1.5 m. They are also observed in large rivers.

General distribution

Europe.

Distribution in Kosovo

Erenik River in Retushë (Wanke 2018).

Population

Population trend: Unknown

Rationale

The known distribution of this species is incomplete, as a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is classified as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development [1.1 Housing & urban areas]; 9 Pollution [9.1 Domestic & Urban Waste Water, 9.4 Garbage & Solid Waste]; 11 Climate change & severe weather [11.2 Droughts].

Conservation measures in action

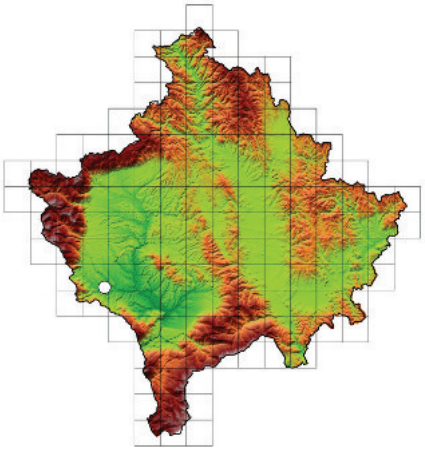
The species is protected [Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species].

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Freyhoff and Kottelat 2008; Wanke 2018





Salmo macedonicus (Karaman, 1924)

Actinopterygii: Salmoniformes: Salmonidae

Threat category in Europe (according to IUCN)
Data Deficient, DD

Threat category in Kosovo (IUCN criteria)
Data Deficient, DD

Year of assessment

2017

Assessor(s)

Linda Grapci Kotori

General data

This species can reach a length of up to 40 cm. There is not enough data about the ecological aspects of this species (Maric *et al.*2010).

Habitat

Habitat Type: 5. Wetlands (inland) [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]].
This species prefers fast-flowing freshwater ecosystems, and especially segments where small waterfalls are created.

General distribution

Kosovo, Macedonia.

Distribution in Kosovo

Lepenc River.

Population

Population trend: Unknown

Rationale

The known distribution of this species is incomplete as a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is classified as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development [1.1 Housing & urban areas]; 9 Pollution [9.1 Domestic & Urban Waste Water, 9.4 Garbage & Solid Waste]; 11 Climate change & severe weather [11.2 Droughts].

Conservation measures in action

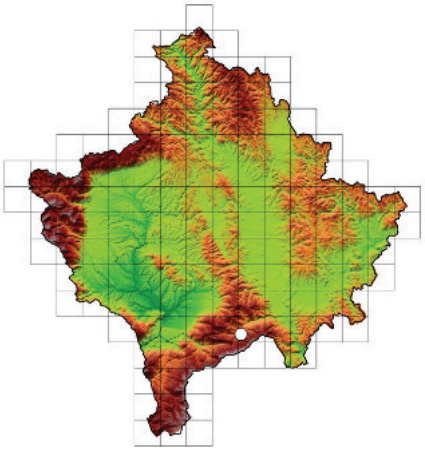
Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].

References

Maric *et al.* 2010



7.8 AMPHIBIA

Bufo bufo (Linnaeus, 1758)

Amphibia: Anura: Bufonidae

Common toad

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Daut Rexhepaj, Linda Grapci Kotori

General data

This is a highly adaptable species in different environments. The body size is up to 15 cm. They are usually found in humid areas with dense vegetation, while large and open spaces are generally avoided. Usually, they stay hidden during the day and become active at dusk and at night when they also begin to hunt different invertebrates. It is a solitary species, while during the mating season a large number of individuals pass into certain water basins, where males attract females for mating. Development is through metamorphosis. After several months of growth and development, the juveniles emerge from the water and remain mainly into terrestrial areas for the rest of their lives.

Habitat

Habitat Type: 1 Forest [1.4 Temperate Forest]; 3 Shrubland [3.3 Boreal Shrubland, 3.4 Temperate Shrubland]; 4 Grassland [4.4 Temperate Grassland]; 5 Wetlands [inland] [5.2 Seasonal/Intermittent/Irregular Rivers, Streams, Creeks, 5.3 Shrub Dominated Wetlands]; 14 Artificial – Terrestrial [14.4 Rural Gardens, 14.5 Urban Areas].

General distribution

Albania, Algeria, Andorra, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Gibraltar, Greece, Hungary, Italy, Kazakhstan, Kosovo, Latvia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Macedonia, Moldova, Monaco, Montenegro, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Russia, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Syria, Tunisia, Turkey, Ukraine, United Kingdom.

Distribution in Kosovo

Badovc Lake, Batllavë Lake, Krojmir, Komoran, Erenik River in Gjakovë, Gllaviçicë, Grabanicë.

Population

Population trend: Unknown

Rationale

The known distribution of this species is discontinuous, but probably this is a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient. Most probably this species is distributed in Kosovo widely than currently known, based on data from surrounding countries.

Threats

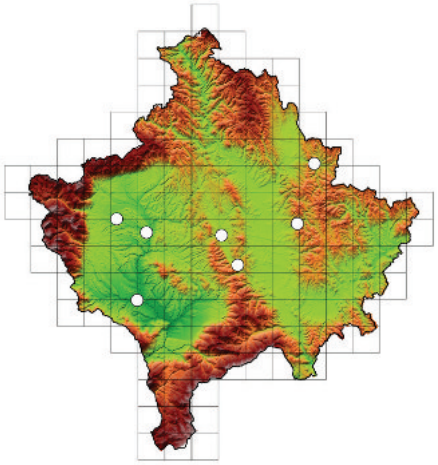
List of Threats: 1 Residential & commercial development [1.1 Housing & Urban Areas, 1.3 Tourism & Recreation Areas]; 5 Biological resource use [5.3 Logging & wood harvesting: 5.3.1 Intentional Use: subsistence/small scale [species being assessed is the target] [harvest]]; 11. Climate Change & Severe Weather.

Conservation measures in action

Protected species in Kosovo [Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species].

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].





Bufotes viridis (Laurenti, 1768)

Amphibia: Anura: Bufonidae

Green toad

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Daut Rexhepaj, Linda Grapci Kotori.

General data

This species has a body size of 4.5 to 12 cm. A special feature of this species is that they have very pronounced parotid glands which are located immediately after the eyes. The skin on the dorsal side is provided with glandular structures olive green in color with a few red spots on the lateral side of the extremities. The ventral side of the body is bright gray in color. During the reproduction period, females receive more pronounced green color. This is a very widespread species from the high altitudes to the lower areas.

Habitat

Habitat Type: 1 Forest [1.4 Temperate Forest]; 3 Shrubland [3.3 Boreal Shrubland, 3.4 Temperate Shrubland]; 4 Grassland [4.4 Temperate Grassland]; 5 Wetlands [inland] [5.3 Shrub Dominated Wetlands]; 14 Artificial – Terrestrial [14.4 Rural Gardens, 14.5 Urban Areas]; 15 Artificial – Aquatic [15.3 Aquaculture Ponds].
The preferred habitats for this species are forests, forest steppes, steppes, and deserts. It can also be found in humid and dry places.

General distribution

Albania, Austria, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, France, Germany, Greece, Hungary, Italy, Kazakhstan, Kosovo, Latvia, Lithuania, Moldova, Montenegro, Poland, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine.

Distribution in Kosovo

Podujevë, Pejë, Klinë, Prizren, Gjakovë, Istog, Ferizaj, Deçan.

Population

Population trend: Unknown

Rationale

The known distribution of this species is discontinuous but probably this is a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient.

Threats

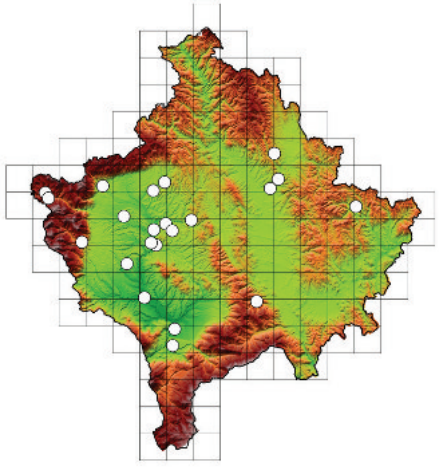
List of Threats: 1 Residential & commercial development [1.1 Housing & Urban Areas, 1.3 Tourism & Recreation Areas]; 5 Biological resource use [5.3 Logging & wood harvesting: 5.3.1 Intentional Use: subsistence/small scale [species being assessed is the target] [harvest]]; 11. Climate Change & Severe Weather.

Conservation measures in action

Currently, there is no conservation measure in action.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].





Hyla arborea (Linnaeus, 1758)

Amphibia: Anura: Hylidae

Europaean tree frog

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Daut Rexhepaj, Linda Grapci Kotori

General data

This species has relatively small body size. In males, the body size ranges between 3 and 4 cm, while females reach the size of 4 to 5 cm. They have slender bodies and long legs. On the dorsal side of the body they have smooth skin, while on the ventral side the body skin is granular. The color of the skin on the dorsal side can be green or grey, depending on the temperature and the amount of moisture, while on the ventral side the skin has a white color. At the tip of their fingers, they have special disks by which they climb to trees (Pasuljevič 1968).

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest); 3 Shrubland (3.3 Boreal Shrubland, 3.4 Temperate Shrubland); 4 Grassland (4.4 Temperate Grassland); 5 Wetlands (inland) (5.3 Shrub Dominated Wetlands); 14 Artificial – Terrestrial (14.4 Rural Gardens, 14.5 Urban Areas); 15 Artificial – Aquatic (15.3 Aquaculture Ponds).

This species mainly prefers low altitudes, although it was encountered up to 2300 m. It is generally associated with forests, shrubs, meadows, gardens, vineyards, orchards, parks, lakes and low open, well-lit vegetation. Dark and dense forests are usually avoided. They can tolerate periods of dryness and may thus also be encountered in dry habitats.

General distribution

Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, France, Georgia, Germany, Greece, Hungary, Italy, Kosovo, Liechtenstein, Lithuania, Luxembourg, Macedonia, Moldova, Montenegro, Netherlands, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine.

Distribution in Kosovo

Radavc, Gërmi.

Population

Population trend: Unknown

In many European countries the populations of this species are fragmented and in decline. There are not enough data from Kosovo about the population trends of this species.

Rationale

The known distribution of this species is discontinuous, but probably this is a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient. Most probably this species is distributed in Kosovo widely than currently known, based on data from surrounding countries.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & Recreation Areas); 11. Climate Change & Severe Weather

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

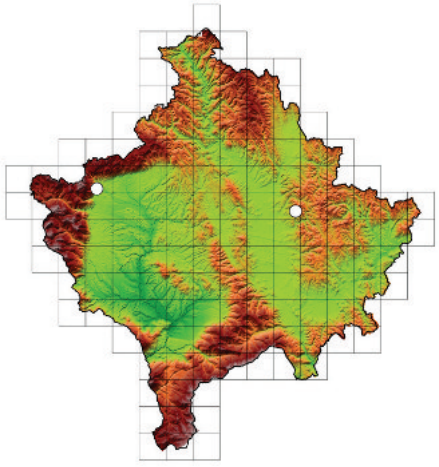
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Pasuljevič 1968



Rana dalmatina Bonaparte, 1840

Amphibia: Anura: Ranidae

Agile frog

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Daut Rexhepaj, Linda Grapci Kotori.

General data

This species is characterized by the slender body with long extremities. On their head there is a kind of soft snout. Males reach body size up to 6.5 cm, while females can grow up to 8 cm. The color of the body is mostly brown or reddish brown on the dorsal side, while on the ventral side it has brighter colors and no visible spots. The back legs are extremely long, which allow this species to jump more than other similar frogs - it is known that they can jump in distance up to two meters. The reproductive period is during 20 days of March, but it may be delayed depending on the climatic conditions (Kaya *et al.*2009).

Habitat

Habitat Type: 1 Forest (1.4 Temperate Forest); 4 Grassland (4.4 Temperate Grassland); 5 Wetlands (inland) (5.3 Shrub Dominated Wetlands, 5.11 Alpine Wetlands (includes temporary waters from snowmelt)); 15 Artificial – Aquatic (15.3 Aquaculture Ponds).

This species can be encountered up to 1700 m altitudes. This species is found in leafy forests, mainly of oak and/or beech, elm, etc. These forests often contain a thick layer of leaf waste.

General distribution

Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, France, Germany, Greece, Hungary, Italy, Kosovo, Luxembourg, Macedonia, Montenegro, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom.

Distribution in Kosovo

Patok, Lëbush, Badovc.

Population

Population trend: Unknown

Rationale

The known distribution of this species is discontinuous, but probably this is a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient. Most probably this species is distributed in Kosovo widely than currently known, based on data from surrounding countries.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & Urban Areas, 1.3 Tourism & Recreation Areas); 5 Biological resource use (5.3 Logging & wood harvesting: 5.3.1 Intentional Use: subsistence/small scale (species being assessed is the target) [harvest]); 11. Climate Change & Severe Weather.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

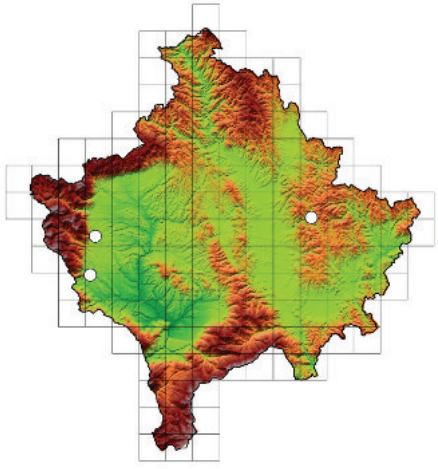
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Kaya *et al.* 2009



Rana graeca Boulenger, 1891

Amphibia: Anura: Ranidae

Greek stream frog

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Daut Rexhepaj, Linda Grapci Kotori

General data

This is a brown frog and has a body size of 5 to 8 cm. Legs are long. They have a short nose. The dorsal side of the body is smooth and brown. There are usually no spots on the body but often some bright spots similar to mold can appear. The ventral side is bright, while the color of the throat region becomes darker. Males have internal vocal pockets and during the reproductive period, they emit a voice. It is reproduced from February to April, depositing gelatinous tubules of 200-2000 eggs in the bedrock of running water.

Habitat

Habitat Type: 1 Forest [1.1 Boreal Forest]; 4 Grassland [4.4 Temperate Grassland]; 5 Wetlands [inland] [5.1 Permanent Rivers, Streams, Creeks [includes waterfalls], 5.11 Alpine Wetlands [includes temporary waters from snowmelt]]; 14 Artificial – Terrestrial.

In most cases, it is related to small and cold river habitats. It is also often found around streamlets and springs inside mixed forests. It is also found around glacial lakes.

General distribution

Albania, Bosnia and Herzegovina, Bulgaria, Greece, Kosovo, Macedonia, Montenegro, Serbia.

Distribution in Kosovo

Spring area of Lumbardhi i Prizrenit River, Prizren, Brod, Deçan Gorgre, Prelep.

Habitat

Population trend: Unknown

Rationale

The known distribution of this species is discontinuous, but probably this is a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient. Most probably this species is distributed in Kosovo widely than currently known, based on data from surrounding countries.

Threats

List of Threats: 1 Residential & commercial development [1.1 Housing & Urban Areas, 1.3 Tourism & Recreation Areas]; 5 Biological resource use [5.3 Logging & wood harvesting: 5.3.1 Intentional Use: subsistence/small scale [species being assessed is the target] [harvest]]; 11. Climate Change & Severe Weather.

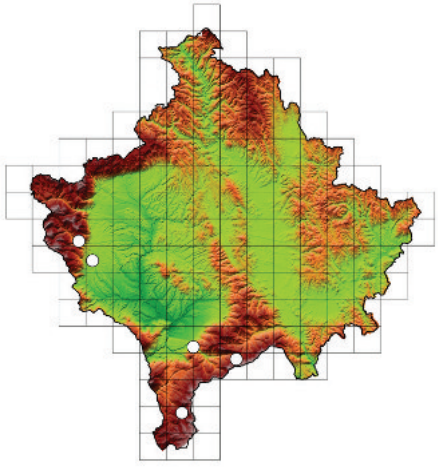
Conservation measures in action

At least one of the subpopulations is inside the protected area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].

Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].





Rana temporaria Linnaeus, 1758

Amphibia: Anura: Ranidae

Europaean common frog

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Daut Rexhepaj, Linda Grapci Kotori.

General data

This species has a medium-sized type of body, from 6 to 9 cm. The dorsal and extremity regions are olive green in color. However, tones of color may vary depending on the environment where it is located. Albino types are also found amongst this species. During the reproduction period, males tend to turn the color of the body into dark blue. They have long back legs that allow them to move by bouncing. They are active during the day throughout the year. For reproduction, they use shallow and clean waters. This period is mostly from March to the end of June.

Habitat

Habitat Type: 1 Forest [1.1 Boreal Forest, 1.4 Temperate Forest]; 3 Shrubland [3.3 Boreal Shrubland, 3.4 Temperate Shrubland]; 4 Grassland [4.4 Temperate Grassland]; 5 Wetlands [inland] [5.3 Shrub Dominated Wetlands, 5.11 Alpine Wetlands [includes temporary waters from snowmelt]]; 14 Artificial – Terrestrial [14.4 Rural Gardens, 14.5 Urban Areas]; 15 Artificial – Aquatic [15.3 Aquaculture Ponds].
It can be encountered at different altitudes up to 2700 m. This species is encountered in diverse habitats such as deciduous, coniferous and mixed forests, where it can live both in dry and humid areas.

General distribution

Austria, Belarus, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Kosovo, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Montenegro, Netherlands, Norway, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom.

Distribution in Kosovo

Leqinat Lake, Brod, Prevallë, Gurra e Gjatë, Deçan Gorge, Shutman Lake, Badovc Lake.

Population

Population trend: Unknown

Rationale

The known distribution of this species is discontinuous, but probably this is a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient. Most probably this species is distributed in Kosovo widely than currently known, based on data from surrounding countries.

Threats

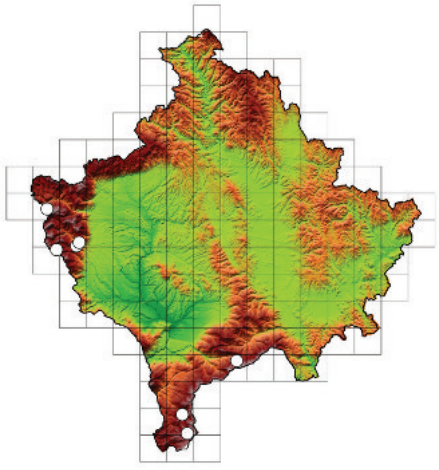
List of Threats: 1Residential & commercial development [1.1 Housing & Urban Areas, 1.3 Tourism & Recreation Areas]; 5 Biological resource use [5.3 Logging & wood harvesting: 5.3.1 Intentional Use: subsistence/small scale [species being assessed is the target] [harvest]]; 11. Climate Change & Severe Weather.

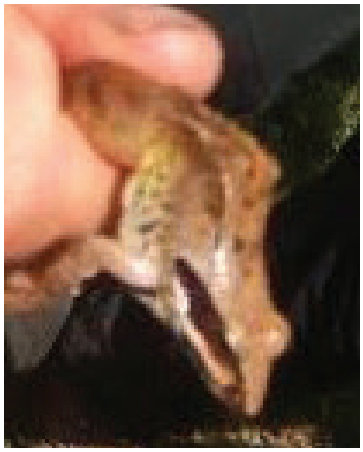
Conservation measures in action

The species is protected [Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species].

Conservation measures needed

Conservation actions needed: 1. Land/water protection [1.1. Site/area protection]; 5. Law & policy [5.2. Policies and regulations, 5.4 Compliance and enforcement].
Research needed: 1. Research [1.2. Population size, distribution & trends, 1.3. Life history & ecology]; 3. Monitoring [3.1. Population trends, 3.4. Habitat trends].





Salamandra salamandra (Linnaeus, 1758)

Amphibia: Caudata: Salamandridae

Fire salamander

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Daut Rexhepaj, Linda Grapci Kotori

General data

This is a relatively widespread species. The body size is 250 to 300 mm. Females are usually larger than males but are characterized by shorter extremities. This species is characterized by the presence of the tail that is shorter than the body. On the dorsal and lateral side of the body, it is black in color with yellow spots. The abdomen is mainly black. It possesses the ability to adapt to changes in the environment (Gasc *et al.*1997).

Habitat

Habitat Type: 1 Forest (1.1 Boreal Forest, 1.4 Temperate Forest); 4 Grassland (4.4 Temperate Grassland); 5 Wetlands (inland) (5.1 Permanent Rivers, Streams, Creeks (includes waterfalls), 5.2 Seasonal/Intermittent/Irregular Rivers, Streams, Creeks, 5.3 Shrub Dominated Wetlands).
The main habitats for this species are mainly wetlands and forests, but it can also be found in lawns, rivers, and lakes. This species prefers microhabitats covered with dense leaves and mosses. It prefers different altitudes up to 2500 m.

General distribution

Albania, Andorra, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Greece, Hungary, Italy, Kosovo, Liechtenstein, Luxembourg, Macedonia, Montenegro, Netherlands, Poland, Portugal, Romania, San Marino, Serbia, Slovakia, Slovenia, Spain, Switzerland, Ukraine.

Distribution in Kosovo

Deçan, Sharr Mountains, Zupç, Koshtovë, Këpuz, Gurrat e Bardha, Dubovë, Bjeshkët e Nemuna Mountaians.

Habitat

Population trend: Unknown
Until recently, salamander populations have been stable, but in recent years, due to forest degradation and river flow erosion, a slight decrease in population size has been observed. There is a need for more detailed research to determine the trend of this decline.

Rationale

The known distribution of this species is discontinuous, but probably this is a result of insufficient research. The population trend is unknown. Due to the lack of data, this species is assessed as Data Deficient.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & Urban Areas, 1.3 Tourism & Recreation Areas); 5 Biological resource use (5.3 Logging & wood harvesting: 5.3.1 Intentional Use: subsistence/small scale (species being assessed is the target) [harvest]; 11. Climate Change & Severe Weather.

Conservation measures in action

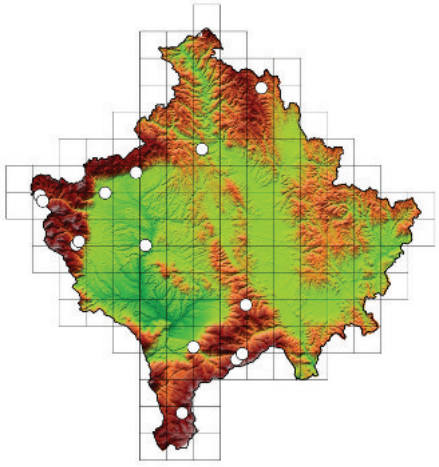
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Gasc *et al.* 1997



7.9 REPTILIA

Dolichophis caspius (Gmelin, 1789)

Reptilia: Squamata: Colubridae

Large Whip Snake

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This is a powerful, non-venomous, fast and aggressive snake. It has a body length up to 2.5 m. The body is covered with large and smooth scales, whose rendering does not resemble tiles on the roof. The dorsal side of the body is dark brown towards grey or completely dark brown, while the ventral side is bright yellow toward orange. The male is larger than the female. It feeds on small vertebrates, such as mammals, birds, and reptiles (Kreiner 2007). During the movement it is very fast, it keeps its head high above the substrate, causing great panic. It is an oviparous species. Towards the middle of June and the beginning of July, the female produces 6 to 18 eggs from which new forms emerge in early September. The life expectancy of this species is up to 10 years.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 6. Rocky areas (eg. inland cliffs, mountain peaks); 14. Artificial/Terrestrial.
This species can be found in mountainous hills rich in grass and shrubs, then near inhabited places, roads, gardens, and areas planted with agricultural crops. This species can also be found in areas with mixed plants up to 1000 m.

General distribution

Albania, Bulgaria, Croatia, Georgia, Greece, Hungary, Kazakhstan, Kosovo, Macedonia, Moldova, Montenegro, Romania, Russia, Serbia, Turkey, Ukraine.

Distribution in Kosovo

Bardhaniq, Gërnqar, Leposaviq, Vërbicë, Zhur, Banjskë, Berivojcë.

Habitat

Population trend: Unknown
The population trend for many European countries is stable except for the northwestern countries, which are characterized by fragmented populations and negative trends. In our country, according to the current data, it is rather rare, and there are not enough data about population trends.

Rationale

This species is assessed as Data Deficient because there are not enough data about its distribution in Kosovo or subpopulation trends. Most probably this species is distributed in Kosovo widely than currently known, based on data from surrounding countries.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & urban areas, 1.2 Commercial & industrial areas); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.3 Persecution/control); 6 Human intrusions & disturbance.
The main threatening factors for this species are loss and degradation of the habitat, primarily through the change of destination of agricultural crops and transition from extensive to intensive ones, then the development of industry, urbanization, infrastructure, etc. This species is often the target of humans, due to its rapid movement which causes panic.

Conservation measures in action

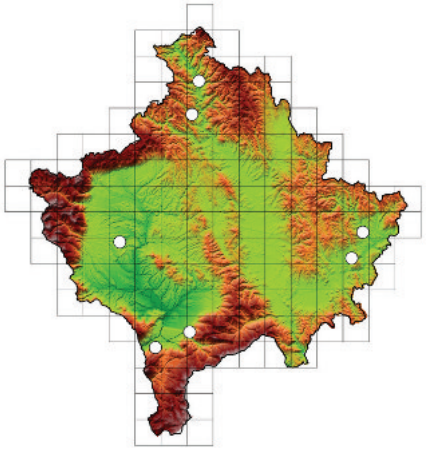
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Kreiner 2007



Lacerta agilis Linnaeus, 1758

Reptilia: Squamata: Lacertidae

Sand Lizard

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

This species is an extremely passive lizard so it can be easily captured by hand. It has short extremities and long tail, approximately 1.5 times the length of the body. In the male, dorsal side is green in color spotted with white dots, while in the female it is dark gray with dark spots. The ventral side in the male is green in orange and in the female is brighter. The intensity of colors is much more pronounced during sexual activity. It is fed with a variety of invertebrates including insects, spiders, and locusts. Fertilization occurs in the middle of April and the beginning of May when males become extremely aggressive. In June or early July, the female produces 4 to 14 eggs, from which youngs emerge in August. The life expectancy of this species is up to 12 years.

Habitat

Habitat Type: 1. Forest; 3. Shrubland; 4. Grassland; 14. Artificial/Terrestrial.
This species can be found in dry mountainous hilly areas, in porous soils, meadows, and valleys with rich vegetation (Nemes *et al.*2006).

General distribution

Europe, Siberia, Middle Asia.

Distribution in Kosovo

Gjakovë, Prizren.

Habitat

Population trend: Unknown
The global population trend is declining. It was not observed during the last years in Kosovo and there are not enough data about population trends.

Rationale

This species is assessed as Data Deficient, due to the scarce knowledge about its distribution and population trends. This species is likely to be more widely spread than currently known, based on data from countries around Kosovo.

Threats

List of Threats: 1 Residential & commercial development (1.1 Housing & urban areas); 5 Biological resource use (5.1.3 Persecution/control); 6 Human intrusions & disturbance; 9 Pollution (9.4 Garbage & Solid Waste).
Main threats for this species are: degradation of habitat through urbanization, then pollution and waste collection, movement of humans and animals into their habitats, fragmentation of habitat through the construction of roads and channels which become an effective barrier to distribution and communication of this species, intensification of agriculture, opening of new plantations, and development of tourist and recreation centers.

Conservation measures in action

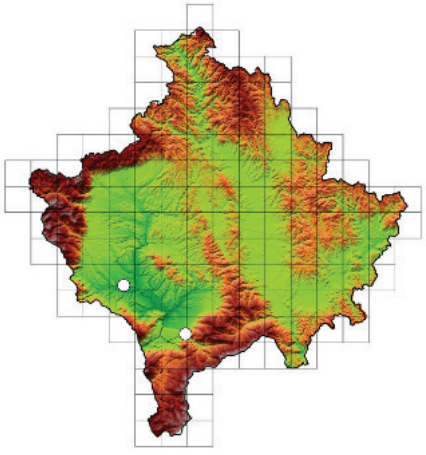
The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Nemes *et al.* 2006





Podarcis erhardii (Bedriaga, 1876)

Reptilia: Squamata: Lacertidae

Erhard's Wall Lizard

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2017

Assessor(s)

Daut Rexhepaj

General data

The total body length of this species is up to 20 cm. The color of the body on dorsal side is greenish and covered by two strips of black spots, where along the medial line extends a bright area and on both sides of the body, beneath this black strip, also stretches the bright area. The ventral side coloration is uniform and can be white, yellow or orange. It is an oviparous species. The females produce 1-5 eggs, from which emerge young individuals from mid-July and September. Sexual maturation is reached around 1.5 to 2 years of age. They are fed mainly with insects. Their lifespan is up to 5 years (Arnold & Oveden 2002; Valakos 1990).

Habitat

Habitat Type: 3. Shrubland; 6. Rocky areas (eg. inland cliffs, mountain peaks); 14. Artificial/Terrestrial.

This species is mainly found in dry rocky and sandy areas rich in low vegetation, along the roads and walls of settlements.

General distribution

Albania, Bulgaria, Greece, Macedonia, Kosovo, Serbia.

Distribution in Kosovo

Mirushë, Gërmi, Blinajë.

Habitat

Population trend: Unknown

The global population trend for this species is stable. In Kosovo, there is not enough information about population trends.

Rationale

This species is assessed as Data Deficient, due to the scarce knowledge about its distribution and population trends. This species is likely to be more widely spread than currently known, based on data from countries around Kosovo.

Threats

List of Threats: 1 Residential & commercial development; 6 Human intrusions & disturbance (6.1 Recreational activities); 11 Climate change & severe weather.

Main threats for this species are degradation, fragmentation, and destruction of habitats from anthropogenic activities such as urbanization, infrastructure, tourism and recreation. This species is also very sensitive to climate change. A limiting factor for this species is the production of a small number of eggs.

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

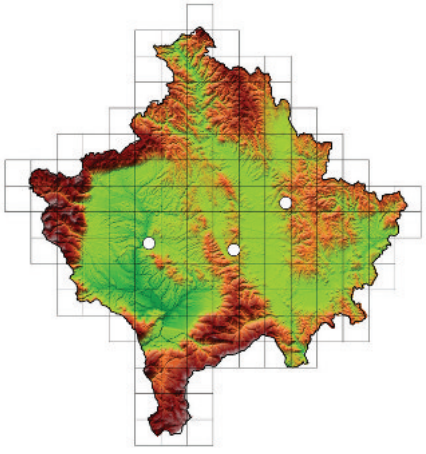
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Arnold & Ovenden 2002; Valakos 1990





7.10 AVES

Aquila fasciata (Vieillot, 1822)

Aves: Accipitriformes: Accipitridae

Bonelli's Eagle

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Taulant Bino

General data

Size of this species is 55–67 cm male weights 1,400–2,240 g, female 2,100–3,025 g, and the wingspan is 143–176 cm. Adults are usually residents and only juveniles migrate within a short distance. They feed on birds, mammals, reptiles, insects etc. (BirdLife International 2016g).

Habitat

Habitat Type: 1. Forest (1.4. Temperate Forest); 4. Grassland (4.4. Temperate Grassland); 5. Wetlands (inland) (5.4. Bogs, Marshes, Swamps, Fens, Peatlands, 5.5. Permanent Freshwater Lakes (over 8ha)); 6. Rocky areas (eg. inland cliffs, mountain peaks).

It occupies mountainous, rocky, arid to semi-moist habitat, from sea level to 1500 m, but up to 3000 m in Africa and 3750 m in the Himalayan foothills. It generally occurs in open areas but also occupies woodland. Juveniles often occupy areas near large water bodies.

General distribution

NW Africa and the Iberian Peninsula E through the Mediterranean, the Middle East, and Arabia to Afghanistan, Pakistan and India, and on through N Indochina to SE China; winter visitor in NW Africa S to N Senegal.

Distribution in Kosovo

Junik, Dragash.

Habitat

Population trend: Unknown

Rationale

This species is assessed as Data Deficient because there is a lack of information about distribution and population trend of this species.

Threats

List of Threats: 2 Agriculture & aquaculture (2.2 Wood & pulp plantations); 3 Energy production & mining (3.3 Renewable energy); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target), 5.1.3 Persecution/control, 5.3 Logging & wood harvesting: 5.3.3 Unintentional effects: subsistence/small scale (species being assessed is not the target) [harvest]); 12 Other options (12.1 Other threat (poisoning)).

Conservation measures in action

The species is protected in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

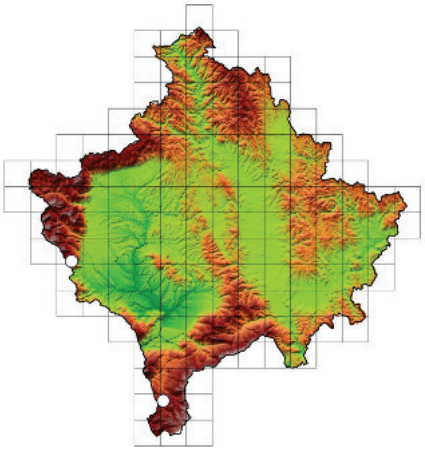
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 4 Education & awareness; 5 Law & policy (5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

Prevention and control of poisoning efforts. Dangerous electricity pylons should be modified or buried. Game crops should be used to enhance prey populations, extensive pastoral farming should be maintained and hedges bordering fields preserved. Undertaking education campaigns with the active involvement of hunting associations and the continuation of research and monitoring would help preserve the species.

References

BirdLife International 2016g





Buteo rufinus (Cretzschmar, 1827)

Aves: Accipitriformes: Accipitridae

Long-legged Buzzard

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni

General data

Size of this species is 43–62 cm male weights 590–1,281 g, female 945–1,760 g; while the wingspan is 112–160 cm. In Africa, they are residents, while in Eurasia they migrate. They feed mainly on small mammals (BirdLife International 2017e).

Habitat

Habitat Type: 1. Forest (1.4. Temperate Forest); 3 Shrubland (3.8. Mediterranean-type Shrubby Vegetation); 4. Grassland (4.4. Temperate Grassland); 14. Artificial/Terrestrial (14.1. Arable Land).
It is a species of open areas, particularly steppe and semi-desert, and has been recorded up to 3,500 m (BirdLife International 2017e).

General distribution

SE Europe, Turkey and Israel E through Transcaucasia, Iran, Afghanistan, and C Asia to NW China, and S to N Pakistan and NW India (Kashmir); winters to NE Africa, Middle East, Pakistan and N India to Bangladesh.

Distribution in Kosovo

Prizren.

Habitat

Population trend: Unknown

Rationale

Species is very rare in Kosovo, although being part of its distribution range. We assess it as Data Deficient because its distribution or population trends are still not fully known.

Threats

List of Threats: 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops: 2.1.3 Agro-industry farming; 2.3.2 Small-holder grazing, ranching or farming, 2.2 Wood & pulp plantations: 2.2.2 Agro-industry plantations); 3 Energy production & mining (3.2 Mining & quarrying; 3.3 Renewable energy); 5 Biological resource use (5.3 Logging & wood harvesting - Unintentional effects: (subsistence/small scale) [harvest]).

Conservation measures in action

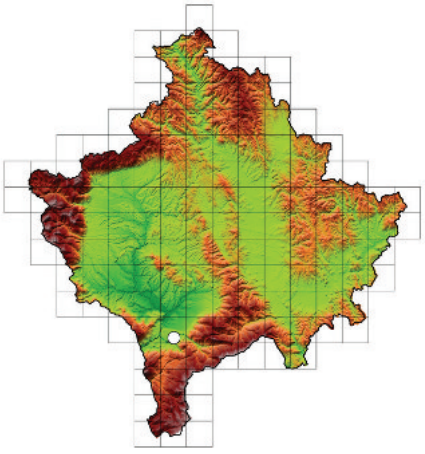
The species is protected in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

BirdLife International 2017e





Ciconia nigra (Linnaeus, 1758)

Aves: Ciconiiformes: Ciconiidae

Black Stork

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni

General data

Size of this species is 95–100 cm, c. weights on average 3 kg and the wingspan is 144–155 cm. Male averages larger. It is mostly a migratory species going along very defined routes. It mainly feeds on fish, but also on amphibians, insects, crabs, reptiles and other birds as well (BirdLife International 2017b).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1. Permanent Rivers/Streams/Creeks (includes waterfalls), 5.4. Bogs, Marshes, Swamps, Fens, Peatlands, 5.7. Permanent Freshwater Marshes/Pools (under 8ha)).
The species inhabits old, undisturbed, open forests from sea-level up to mountainous regions (e.g. 2,000-2,500 m in altitude). It forages in shallow streams, pools, marshes, swampy patches, damp meadows, flood-plains, pools in dry riverbeds and occasionally grasslands, especially where there are stands of reeds or long grass. It generally avoids large bodies of water and dense forest.

General distribution

Breeds across Palearctic, mostly c. 40°–60° N; also in scattered populations from Malawi and Namibia to South Africa. Winters in NE, sub-Saharan and S Africa, and from W India (Gujarat) E through N India and N Indochina to SE & E China, Taiwan, and South Korea; some individuals (few hundred) residents in SW Spain.

Distribution in Kosovo

Koretinë.

Habitat

Population trend: Unknown

Rationale

This is a very discrete species. Its breeding habitats are under human pressure. Currently, the species is assessed as Data Deficient, because there is no exact information about distribution or subpopulation size in Kosovo.

Threats

List of Threats: 5 Biological resource use (5.3 Logging & wood harvesting: 5.3.3 Unintentional effects: subsistence/small scale (species being assessed is not the target) [harvest]); 6 Human intrusions & disturbance (6.3 Work & other activities); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use)).

Conservation measures in action

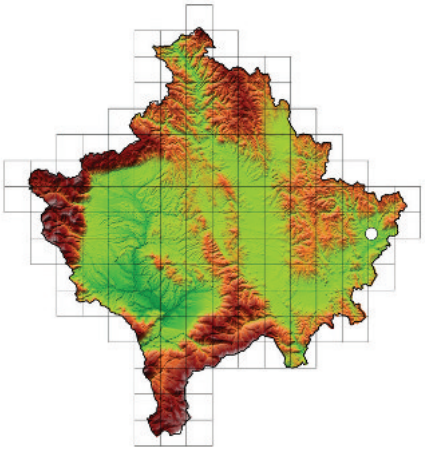
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
Monitor breeding, migrating, age composition and ecological changes at key sites. Sustainably manage rivers and small streams. Establish non-intrusion zones around potential nest locations. Protect nesting trees (also in plantations) and rocks. Bury power-lines or replace with more visible cable. Prevent poaching and overexploitation of fish.

References

BirdLife International 2017b





Falco cherrug (Gray, 1834)

Aves: Falconiformes: Falconidae

Saker Falcon

Threat category in Europe (according to IUCN)

Endangered, EN

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Taulant Bino

General data

Size of this species is 45–57 cm; male weights 730–990 g, female 970–1,300 g; and the wingspan is 97–126 cm. Depending on the food they are sedentary, partly or fully migratory. They hunt mostly mid-sized terrestrial rodents (BirdLife International 2017f)

Habitat

Habitat Type: 4. Grassland (4.4. Temperate Grassland); 14. Artificial/Terrestrial (14.1. Arable Land; 14.2. Pastureland).
It prefers open grassy landscapes such as desert edge, semi-deserts, steppes, agricultural and arid montane areas.

General distribution

C Europe E through Ukraine and SW Russia to SC Siberia, N Kazakhstan, Asia Minor, and Iran; winters from S Europe and N Africa E to SW Asia.

Distribution in Kosovo

Krushevë.

Habitat

Population trend: Unknown

Rationale

The species is assessed as Data Deficient, due to the lack of knowledge about the distribution and population size of this species.

Threats

List of Threats: 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops: 2.1.1 Shifting agriculture; 2.2 Wood and pulp plantations: 2.2.2 Agro-industry plantations); 3 Energy production & mining; (3.3 Renewable energy); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target)]; 7 Natural system modifications (7.3 Other ecosystem modifications).

Conservation measures in action

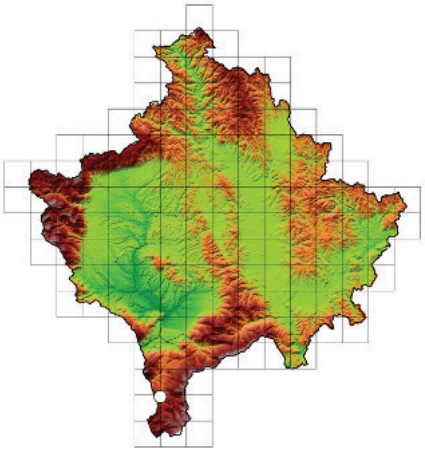
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
Ensure that new and fully reconstructed electric lines are safe for birds. Raise the awareness of stakeholders about the risks of bird - power line interactions.

References

BirdLife International 2017f





Hieraaetus pennatus (Gmelin, 1788)

Aves: Accipitriformes: Accipitridae

Booted Eagle

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Taulant Bino

General data

Size of this species is 42–51 cm, male weights 510–770 g, female 840–1,250 g, and the wingspan is 113–138 cm. This is a mainly migratory species. They feed mainly on small birds (BirdLife International 2016h).

Habitat

Habitat Type: 1. Forest (1.4. Temperate Forest).
It is a species of open woodland, preferring patches of forest interspersed with open areas; it is recorded up to 3,000 m.

General distribution

SW Europe and NW Africa through E Europe, Asia Minor and Caucasus to C Asia, NE to Mongolia, L Baikal area and Transbaikalia (perhaps E to NE China), and SE to N & W Pakistan, N India and Nepal; also S South Africa (Western Cape and Eastern Cape) and N Namibia. Winters mostly in Africa S of Sahara, and in S Asia, mostly Indian Subcontinent.

Distribution in Kosovo

Junik, Dragash.

Habitat

Population trend: Unknown

Rationale

This species is assessed as Data Deficient because there is a lack of information about distribution and population trend of this species.

Threats

List of Threats: 2 Agriculture & aquaculture (2.2 Wood & pulp plantations); 3 Energy production & mining (3.3 Renewable energy); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target), 5.1.3 Persecution/control, 5.3 Logging & wood harvesting: 5.3.3 Unintentional effects: subsistence/small scale (species being assessed is not the target) [harvest]); 12 Other options (12.1 Other threat (poisoning)).

Conservation measures in action

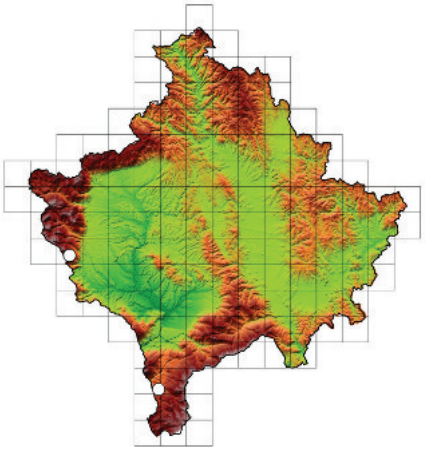
The species is protected in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 4 Education & awareness; 5 Law & policy (5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).
Prevention and control of poisoning efforts. Dangerous electricity pylons should be modified or buried. Game crops should be used to enhance prey populations, extensive pastoral farming should be maintained and hedges bordering fields preserved. Undertaking education campaigns with the active involvement of hunting associations and the continuation of research and monitoring would help preserve the species.

References

BirdLife International 2016h





Monticola saxatilis (Linnaeus, 1766)

Aves: Passeriformes: Muscicapidae

Rock Thrush

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Taulant Bino, Qenan Maxhuni

General data

Size of this species is 16–19 cm and the weight 40–65 g. This species feeds on insects, fruits and berries. It is a migratory species (BirdLife International 2017g)

Habitat

Habitat Type: 6. Rocky areas (eg. inland cliffs, mountain peaks).
The species breeds on wild rocky mountainsides and high hills with scattered shrubs and sporadic grass cover, rocky heaths, extensive limestone screes, lava flows, eroded canyons, crags, open riverbeds, scrubby river gorges, boulder-strewn alpine meadows, upland farmland with stone walls and buildings, rocky ravines and valleys with stunted trees (BirdLife International 2017g).

General distribution

Mountains from S & C Europe and NW Africa E to SW & C Asia (E to L Baikal, Inner Mongolia and C China); winters in sub-Saharan Africa.

Distribution in Kosovo

Prizren, Bajgorë.

Habitat

Population trend: Unknown

Rationale

This species is assessed as Data Deficient, due to its limited distribution range in Kosovo, although ornithological information largely missing.

Threats

List of Threats: 1 Residential & commercial development (1.3 Tourism & recreation areas); 2 Agriculture & aquaculture (2.3 Livestock farming & ranching: 2.3.2 Small-holder grazing, ranching or farming) 7 Natural system modifications (7.3 Other ecosystem modifications)

Conservation measures in action

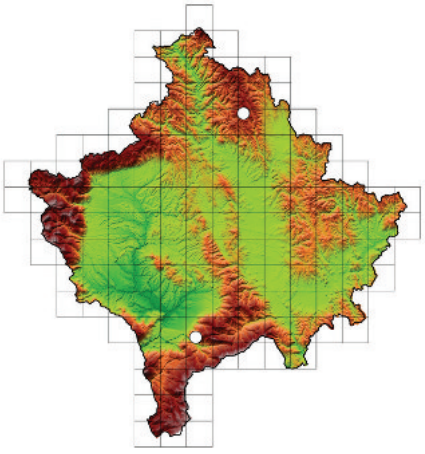
Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Species Protected and Strictly Protected). Parts of its distribution range in the country designated as Protected Area.

Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).
Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends)

References

BirdLife International 2017g





Panurus biarmicus (Linnaeus, 1758)

Aves: Passeriformes: Acrocephalidae

Least Concern, LC

Threat category in Europe (according to IUCN)

Data Deficient, DD

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Taulant Bino

General data

Size of this species is 14.5–17 cm, while the weight 11–20.8 g. Populations in Europe are relatively sedentary with wintering movements sometimes. They mostly feed on invertebrates and vegetables (BirdLife International 2016l).

Habitat

Habitat Type: 5. Wetlands (inland) (5.1. Permanent Rivers/Streams/Creeks (includes waterfalls), 5.4. Bogs, Marshes, Swamps, Fens, Peatlands, 5.5. Permanent Freshwater Lakes (over 8ha)).

This species is found in extensive reedbeds (Phragmites) and is associated with dense non-woody vegetation in and beside fresh and brackish water, or immediately adjoining marshes and swamps. It breeds in stems of reeds, sedges, and other marsh vegetation.

General distribution

Locally from Great Britain, France and S & E Spain E to S Norway, Denmark, S Sweden, S Finland, SW Russia, Balkans, W & S Turkey and, perhaps this race, Azerbaijan; non-breeding also S to Cyprus.

Distribution in Kosovo

Henc.

Habitat

Population trend: Unknown

Rationale

The species is assessed as Data Deficient due to the lack of knowledge about distribution and population trends.

Threats

List of Threats: 2 Agriculture & aquaculture (2.1 Annual & perennial non-timber crops); 5 Biological resource use (5.1 Hunting & collecting terrestrial animals: 5.1.1 Intentional use (species being assessed is the target)); 7 Natural system modifications (7.2 Dams & water management/use: 7.2.1 Abstraction of surface water (domestic use)).

Conservation measures in action

Protected species in Kosovo (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

Conservation measures needed

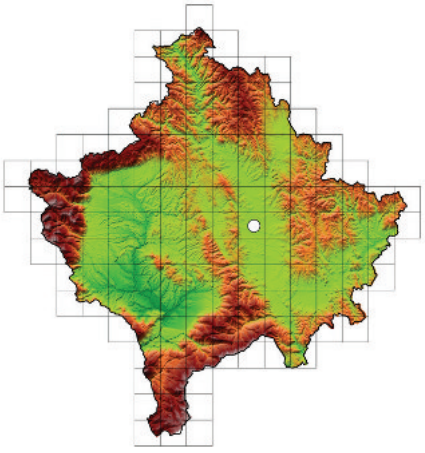
Conservation actions needed: 1. Land/water protection (1.1. Site/area protection; 1.2. Resource & habitat protection); 2. Land/water management (2.1. Site/area management); 5 Law & policy (5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

Better monitoring and preservation of reedbeds. It uses nestboxes, particularly when nest sites are in short supply. The maintenance of reedbeds large enough to sustain populations of this species is necessary and new reedbeds should be created.

References

BirdLife International 2016l





7.11 MAMMALIA

Myotis capaccinii (Bonaparte, 1837)

Mammalia: Chiroptera: Vespertilionidae

Long-fingered bat

Threat category in Europe (according to IUCN)

Vulnerable, VU

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

The length of this species is from 47-53 mm and the weight up to 7-13 gr. The hind feet ranges from 10–13 mm long. It feeds on insects, mostly aquatic insects, but fish as well. This species depends on aquatic habitats. It generally roosts in underground habitats. In the Balkans, it is confined to karst areas. Movements between summer and winter colonies are mostly within a distance of 50 km and a maximum of 140 km (Hutterer *et al.*2005; Paunović 2016a).

Habitat

Habitat Type: 5. Wetlands (inland); 3. Shrubland; 7. Caves and Subterranean Habitats (non-aquatic).

General distribution

Europe, Asia, Africa.

Distribution in Kosovo

Dushi Cave, Radavc Cave, Mirushë (Dundarova 2017; Paunović 2016).

Habitat

Population trend: Unknown

There is not enough data about population trends of this species in Kosovo. The population trend at the European level is decreasing.

Rationale

This species is assessed in the Data Deficient category because there are insufficient data about the distribution of this species in Kosovo and populations trends. This species is likely to be more widely spread than currently known, based on data from countries around Kosovo.

Threats

List of Threats: 1. Residential & commercial development; 7. Natural system modifications; 9. Pollution.

Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use, disturbance and loss of underground habitats and attics.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

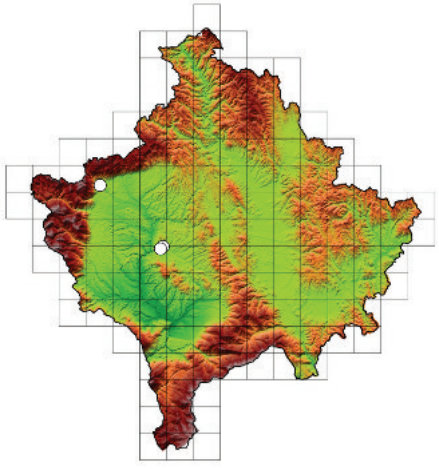
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Dundarova 2017; Hutterer *et al.* 2005; Paunović 2016; Paunović 2016a





Myotis daubentonii (Kuhl, 1817)

Mammalia: Chiroptera: Vespertilionidae

Daubenton's Myotis

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

This species is between 45 to 55 mm long, with a wingspan of 240 to 275 mm, and weight between 7 and 15 g. It feeds on aquatic insects, than Lepidoptera, Diptera, and Hemiptera. It forages over natural and artificial water bodies (including fjords), sometimes in woodland or scrub. It winters in a wide range of underground habitats. The longest recorded distance of moving during seasonal movements is 257 km. (Hutterer *et al.*2005). Mating occurs during the autumn and fertilization takes place the following spring (Hutson *et al.*2007b).

Habitat

Habitat Type: 1. Forest, 3. Shrubland; 5. Wetlands (inland); 6. Rocky areas (eg. inland cliffs, mountain peaks), 7. Caves and Subterranean Habitats (non-aquatic), 14. Artificial/Terrestrial; 15. Artificial/Aquatic & Marine; 9. Marine Neritic.

General distribution

Europe, Asia.

Distribution in Kosovo

Sharr Mountains, Radavc Cave, Lumbardhi i Pejës River in Pejë, Mirushë (Paunović 2016).

Habitat

Population trend: Unknown

There is not enough data about population trends of this species in Kosovo. The population trend at the European level is increasing.

Rationale

This species is assessed in the Data Deficient category because there are insufficient data about the distribution of this species in Kosovo and subpopulation trends. This species is likely to be more widely spread than currently known, based on data from countries around Kosovo.

Threats

Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use, disturbance and loss of underground habitats and attics.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

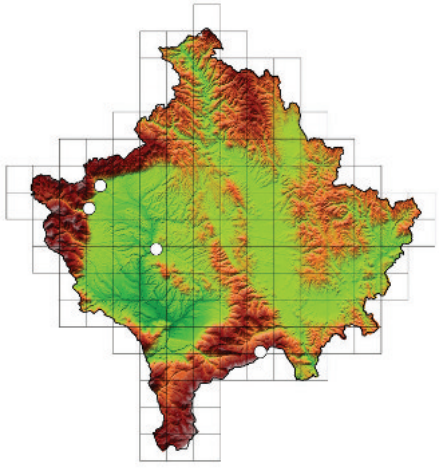
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Hutterer *et al.* 2005; Hutson *et al.* 2007b; Paunović 2016





Myotis mystacinus (Kuhl, 1817)

Mammalia: Chiroptera: Vespertilionidae

Whiskered Myotis

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

This species is commonly sighted in parks, gardens, and villages. It is an occasional migrant. It roosts in colonies, living in trees, amongst rocks, and in livestock pens, and is also known to roost in caves, living there year round, and moving further back into the cave to hibernate during winter (Dulamtseren *et al.*1989). Summer maternity roosts are typically sited in trees, buildings, and bird and bat boxes. It hibernates in small groups in underground sites (caves, mines, and cellars). It is a nocturnal species emerging to hunt at sunset but has occasionally been sighted hunting during daylight hours. It hunts exclusively near inland waters but feeds on non-aquatic flying insects, such as mosquitoes. Young individuals are born in June/July (Hutson *et al.*2007c)

Habitat

Habitat Type: 1. Forest, 3. Shrubland; 4. Grassland; 7. Caves and Subterranean Habitats (non-aquatic); 14. Artificial/Terrestrial; 8. Desert.

General distribution

Europe, Asia.

Distribution in Kosovo

Pejë (Paunović 2016).

Habitat

Population trend: Unknown

There is not enough data about population trends of this species in Kosovo. The population trends at the European level are also not fully known.

Rationale

This species is assessed in the Data Deficient category because there are insufficient data about the distribution of this species in Kosovo or population trends.

Threats

Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use, disturbance and loss of roosts.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

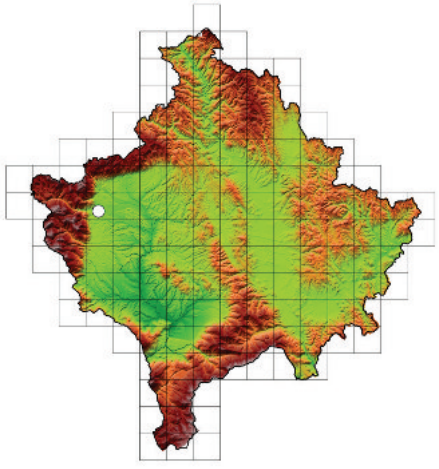
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Dulamtseren *et al.* 1989; Hutson *et al.* 2007c; Paunović 2016



Myotis nattereri (Kuhl, 1817)

Mammalia: Chiroptera: Vespertilionidae

Natterer's Bat

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

This is a medium-sized species and can reach a body length of 44 to 51 mm. It is a sedentary and insectivorous species. It forages in woodland (including Mediterranean pine and oak forest: Amr 2000), shrubland and parkland, sometimes over water, pasture, and road verges. It occurs in humid areas, and in dry areas, it is dependent on water bodies. Summer roosts are in hollow trees, buildings and occasionally underground sites. It hibernates in underground habitats.

Habitat

Habitat Type: 1. Forest, 3. Shrubland, 4. Grassland, 5. Wetlands (inland), 7. Caves and Subterranean Habitats (non-aquatic); 14. Artificial/Terrestrial.

General distribution

Europe, Asia.

Distribution in Kosovo

Prizren, Shpella e Banuar Cave (Presetnik *et al.*2018).

Habitat

Population trend: Unknown

There is not enough data about subpopulation trends of this species in Kosovo. Only a few specimens have been observed. The population trends at the European level are also not fully known.

Rationale

This species is assessed in the Data Deficient category because there are insufficient data about the distribution of this species in Kosovo or population trends. Most probably this species is more widespread in Kosovo than currently known, based on the knowledge from surrounding countries too.

Threats

Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas, as well as loss of insects due to pesticide use.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

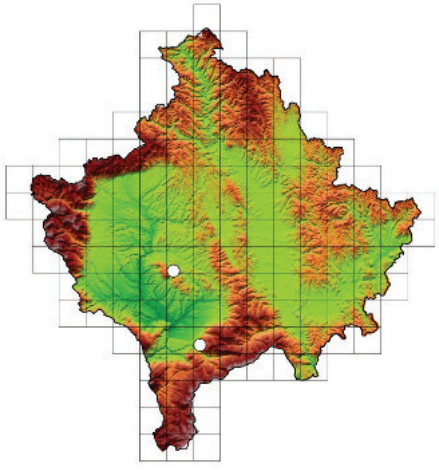
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Amr 2000; Hutson *et al.* 2008; Presetnik *et al.* 2018



Pipistrellus pipistrellus (Schreber, 1774)

Mammalia: Chiroptera: Vespertilionidae

Common Pipistrelle

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

This is relatively small sized species of bat, being only 3.5–5.2 cm long along the head-and-body and with the tail adding 2.3–3.6 cm. The body mass is between 3.5 to 8.5 g. It forages in open woodland and woodland edges, Mediterranean shrubland, semi-desert, farmland, rural gardens, and urban areas. Usually, it feeds on small insects, mostly moths. Summer roosts are mainly found in buildings and trees. Most winter roost sites are located in crevices in buildings, although cracks in cliffs and caves and possibly holes in trees may also be used. Usually, it is not a migratory species (Hutson *et al.*2007f).

Habitat

Habitat Type: 1. Forest; 3. Shrubland, 14. Artificial / Terrestrial.

General distribution

Europe, Africa, Asia.

Distribution in Kosovo

Kuqishtë, Lumbardhi i Pejës River, Prizren (Paunović 2016).

Habitat

Population trend: Unknown

There is not enough data about subpopulation trends of this species in Kosovo. Few individuals have been observed only. The population trends at the European level are not fully known.

Rationale

This species is assessed in the Data Deficient category because there are insufficient data about the distribution of this species in Kosovo or subpopulations trends.

Threats

Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use and disturbance and loss of roosts.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

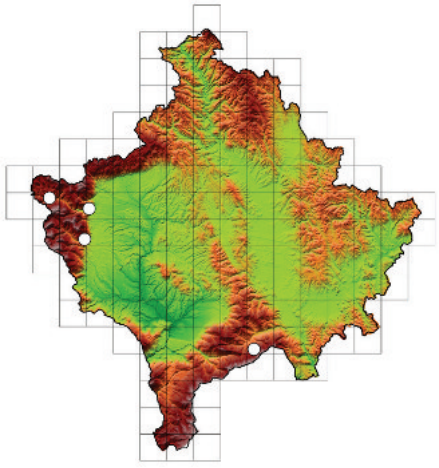
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Hutson *et al.* 2007f; Paunović 2016



Pipistrellus pygmaeus (Leach, 1825)

Mammalia: Chiroptera: Vespertilionidae

Soprano Pipistrelle

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

This species was separated from Pipistrellus pipistrellus a few years ago, based on their different-frequency echolocation calls, but on other morphological characteristics as well. It forages around woodland and wetlands and is more closely associated with water than *P. pipistrellus*. It feeds on insects and mainly aquatic diptera. Maternity colonies are located in hollow trees, rock crevices, and buildings. No specific data are available on *P. pygmaeus* winter roost sites, but presumably, they are similar to those used by *P. pipistrellus* (Hutson *et al.*2007g).

Habitat

Habitat Type: 1. Forest; 5. Wetlands (inland), 14. Artificial/Terrestrial.

General distribution

Europe, Turkey, Iran

Distribution in Kosovo

Radavc Cave, Deçan.

Habitat

Population trend: Unknown

There is not enough data about subpopulation trends of this species in Kosovo. Few individuals have been observed only. The population trends at the European level are not fully known.

Rationale

This species is assessed in the Data Deficient category, because there are insufficient data about the distribution of this species in Kosovo and populations trends. This species is likely to be more widely spread than currently known, based on data from countries around Kosovo.

Threats

Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use, disturbance and loss of roosts.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

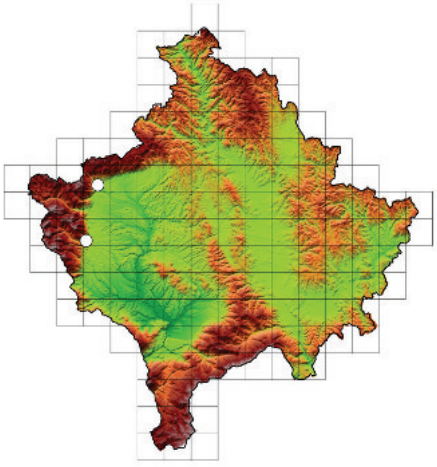
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Hutson *et al.* 2007g



Plecotus auritus (Linnaeus, 1758)

Mammalia: Chiroptera: Vespertilionidae

Brown Big-eared Bat

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

This species has a distinctive ears, long and with a distinctive fold. An adult has a body length of 4.5-4.8 cm, a tail of 4.1-4.6 cm, a forearm length of 4-4.2 cm and the ears 3.3-3.9 cm in length. It feeds mainly on moths and flies. It forages in the vicinity of the roost in deciduous and coniferous woodlands, along hedgerows, and in isolated trees in parks and gardens. In summer it roosts in colonies in buildings (attics, barns, and drainage channels), tree holes, and bat boxes. Solitary animals also roost in underground sites. In winter it hibernates in caves, mines, buildings and occasionally trees. It is a sedentary species (Hutson *et al.*2008a).

Habitat

Habitat Type: 1. Forest, 3. Shrubland, 7. Caves and Subterranean Habitats (non-aquatic); 14. Artificial/Terrestrial.

General distribution

Europe, Asia

Distribution in Kosovo

Two localities in Sharr Mountains (Paunović 2016; Presetnik *et al.*2018).

Habitat

Population trend: Unknown

There is not enough data about subpopulation trends of this species in Kosovo. Few individuals have been observed only. The population trends at the European level are not fully known.

Rationale

This species is assessed in the Data Deficient category because there are insufficient data about the distribution of this species in Kosovo or subpopulation trends. This species is likely to be more widely spread than currently known, based on data from countries around Kosovo.

Threats

Main threats include change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use, disturbance and loss of roosts.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

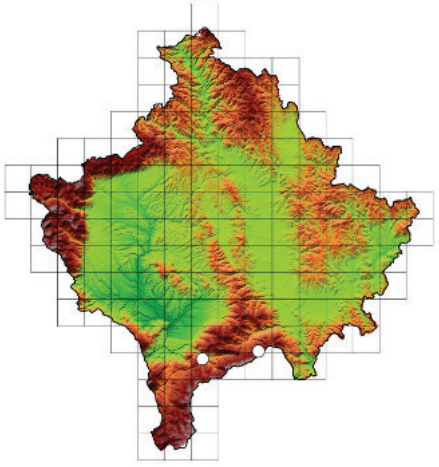
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Hutson *et al.*2008a; Paunović 2016; Presetnik *et al.*2018



Plecotus austriacus (Fischer, 1829)

Mammalia: Chiroptera: Vespertilionidae

Grey long-eared bat

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

This is a fairly large bat species. It forages in lowland valleys and open agricultural landscapes, but also in other habitats. It feeds mainly on moths. In summer it typically roosts in buildings (attics, fissures, cavities, old castles), although solitary animals may roost in underground sites. In winter it hibernates in buildings, mines, and caves. It is mostly a sedentary species (Juste *et al.*2008).

Habitat

Habitat Type: 1. Forest 3. Shrubland, 4. Grassland, 5. Wetlands (inland), 7. Caves and Subterranean Habitats (non-aquatic), 8. Desert, 14. Artificial/Terrestrial.

General distribution

Europe.

Distribution in Kosovo

Lumbardhi i Prizrenit in Prizren (Presetnik *et al.*2018).

Habitat

Population trend: Unknown

There is not enough data about subpopulation trends of this species in Kosovo. Few individuals have been observed only. The population trends at the European level are not fully known.

Rationale

This species is assessed in the Data Deficient category because there are insufficient data about the distribution of this species in Kosovo and subpopulation trends.

Threats

List of Threats: 2. Agriculture & aquaculture; 11. Climate change & severe weather. Main threats include change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use, as well as disturbance and loss of roosts.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

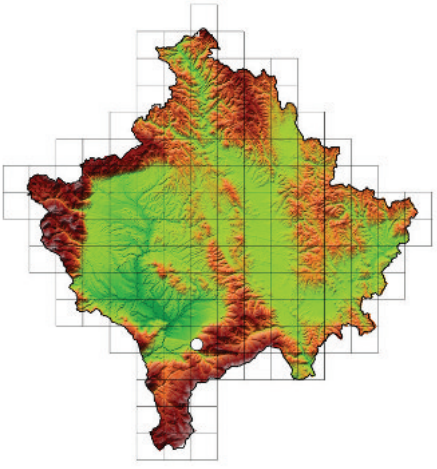
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Juste *et al.* 2008; Presetnik *et al.* 2018



Vespertilio murinus Linnaeus, 1758

Mammalia: Chiroptera: Vespertilionidae

Parti-coloured bat

Threat category in Europe (according to IUCN)

Least Concern, LC

Threat category in Kosovo (IUCN criteria)

Data Deficient, DD

Year of assessment

2018

Assessor(s)

Philippe Théou

General data

This species has a body size of 4.8–6.4 cm, wingspan of 26–33 cm, and a weight of 11–24 g. Its name is derived from its fur, which has two colors. Its dorsal side is red to dark-brown in color, with silver-white-frosted hair and the ventral side is white or grey. It usually feeds on moths and other insects such as beetles. It is mostly a sedentary species, but in some cases migration has been recorded. This nocturnal species appears late in the evening, sleeping in narrow crevices during the day. It lives in small colonies and often single individuals are sighted. It hibernates throughout the winter. Young individuals are born in June/July (Coroiou 2016).

Habitat

Habitat Type: 1.Forest; 2. Shrubland; 4. Grassland; 6. Rocky areas (eg. inland cliffs, mountain peaks); 7. Caves and Subterranean Habitats (non-aquatic), 8. Desert; 14. Artificial/Terrestrial.

General distribution

Europe, Asia

Distribution in Kosovo

Radavc Cave.

Habitat

Population trend: Unknown

There is not enough data about subpopulation trends of this species in Kosovo. Few individuals have been observed only. The population trends at the European level are not fully known.

Rationale

This species is assessed in the Data Deficient category because there are insufficient data about the distribution of this species in Kosovo or subpopulation trends.

Threats

Main threats include fragmentation and isolation of habitats, change of management regime of deciduous forests and agricultural areas, loss of insects due to pesticide use, as well as disturbance and loss of roosts.

Conservation measures in action

The species is protected (Administrative Instruction No.18/2012 for Proclamation of Wild Protected and Strictly Protected Species).

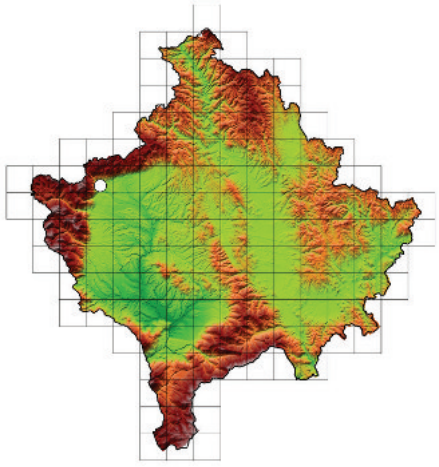
Conservation measures needed

Conservation actions needed: 1. Land/water protection (1.1. Site/area protection); 5. Law & policy (5.2. Policies and regulations, 5.4 Compliance and enforcement).

Research needed: 1. Research (1.2. Population size, distribution & trends, 1.3. Life history & ecology); 3. Monitoring (3.1. Population trends, 3.4. Habitat trends).

References

Coroiou 2016



References

[1] Agasyan A., Avci A., Tuniyev B., Crnobrnja Isailovic J., Lymberakys P., Orlov N., Podloucky R., Tuniyev S., Kaya U., Sindaco R., Bohme W., Ajtic R., Tok V., Ugyrtas I. H., Sevinc M., Tomovic L., Crochet P. A., Haxhiu I., Joger U., Sterijovski B., Nilson G. & Jelic D. 2009. Vipera ammodytes. In: IUCN Red List of Threatened Species. Version 2013.2.
[2] Akçakaya H. R. & Ferson S. 2001. RAMAS® Red List: Threatened Species Classifications under Uncertainty. Version 2.0. Applied Bio mathematics, New York.
[3] Amr Z. S. 2000. Mammals of Jordan. United Nations Environment Programme, Amman.
[4] Antić D. Ž., Ćurčić B. P. M., Mitić B. M., Tomić V. T., Lučić L. R., Dudić B. D., Stojanović D. Z. & Makarov S. E. 2013. A new cave diplopod of the genus Brachydesmus Heller, 1858 from southwest Serbia (Diplopoda: Polydesmida: Polydesmidae). Archives of Biological Sciences 65 (2): 745-750.
[5] Apfelbeck V. 1907. Bericht über die im Jahre 1906 durchgeführte zoologische Reise nach Ost-Albanien in das Gebiet des Schar Dagh. Jahresbericht des naturwissenschaftlichen Orient-Vereines in Wien 12: 31-36.
[6] Arnold E. N. & Ovenden D. 2002. A field guide to the Reptiles and Amphibians of Britain and Europe. Collins, London, pp. 288.
[7] Arntzen J. W., Denoël M., Kuzmin S., Ishchenko V., Beja P., Andreone F., Jehle R., Nyström P., Miaud C., Anthony B., Schmidt B., Ogro dowczyk A., Ogielska M., Bosch J., Vogrin M. & Tejedo M. 2009. Ichthyosaura alpestris (Alpine Newt). The IUCN Red List of Endan gered Species. International Union for Conservation of Nature and Natural Resources. Retrieved 27 February 2017.
[8] Attems C. M. T. Graf von. 1929. Die Myriopodenfauna von Albanien und Jugoslavien. Zoologische Jahrbücher, Abteilung für System atik, Ökologie und Geographie der Tiere 56: 269-356.
[9] Bauernfeind E. & Soldán T. 2012. The mayflies of Europe (Ephemeroptera), Denmark: Apollo Books, Ollerup, pp.781.
[10] Bellmann H. 2016. Der Kosmos Spinnenfuehrer. Stutgard: Franck-KosmHos Verlags- Gmb., pp. 180-181.
[11] Beron P. 2008. High Altitude Isopoda, Arachnida and Myriapoda in the Old World. Pensoft & National Museum of Natural History, Sofia–Moscow: pp.556.
[12] Bertolero A., Chelyan A. M., Hailey A., Livoreil B. & Willemsen R. E. 2011. Testudo hermanii Gmelin, 1789-Hermanns tortoise. In: Rho din A. G. J., Pritchard, P. C. H., Saumure R. A., Buhlmann K.A., Iverson J. B., Mittermeier R. A. Conversation Biology of freshwater Turtles and Tortoises.
[13] BirdLife International 2016d. Ardea cinerea. The IUCN Red List of Threatened Species 2016: Downloaded on 25 November 2018.
[14] BirdLife International 2016g. Aquila fasciata. The IUCN Red List of Threatened Species 2016: Downloaded on 25 November 2018.
[15] BirdLife International 2016l. Panurus biarmicus. The IUCN Red List of Threatened Species 2016: Downloaded on 25 November 2018.
[16] BirdLife International 2016m. Acrocephalus palustris. The IUCN Red List of Threatened Species 2016: Downloaded on 25 November 2018.
[17] BirdLife International 2017. Aythya ferina (amended version of 2016 assessment). The IUCN Red List of Threatened Species 2017: Downloaded on 25 November 2018.
[18] BirdLife International 2017a. Aythya nyroca. The IUCN Red List of Threatened Species 2017: Downloaded on 25 November 2018.
[19] BirdLife International 2017b. Ciconia nigra (amended version of 2016 assessment). The IUCN Red List of Threatened Species 2017: Downloaded on 25 November 2018.
[20] BirdLife International 2017c. Vanellus vanellus (amended version of 2016 assessment). The IUCN Red List of Threatened Species 2017: Downloaded on 25 November 2018.
[21] BirdLife International 2017d. Gyps fulvus (amended version of 2016 assessment). The IUCN Red List of Threatened Species 2017: Downloaded on 25 November 2018.
[22] BirdLife International 2017e. Buteo rufinus (amended version of 2017 assessment). The IUCN Red List of Threatened Species 2017: Downloaded on 25 November 2018.
[23] BirdLife International 2017f. Falco cherrug (amended version of 2016 assessment). The IUCN Red List of Threatened Species 2017: Downloaded on 25 November 2018.
[24] BirdLife International 2017g. Monticola saxatilis (amended version of 2016 assessment). The IUCN Red List of Threatened Species 2017: Downloaded on 25 November 2018.
[25] BirdLife International 2018. Alectoris graeca. The IUCN Red List of Threatened Species 2018: e.T22678684A131902869. Downloaded on 25 November 2018.
[26] BirdLife International 2018a. Accipiter brevipes. The IUCN Red List of Threatened Species 2018: e.T22695499A131936047. Downloaded on 25 November 2018.
[27] BirdLife International 2018b. Tichodroma muraria. The IUCN Red List of Threatened Species 2018: e.T22711234A132095740. Downloaded on 25 November 2018.
[28] BirdLife International 2016. Tetrao urogallus. The IUCN Red List of Threatened Species 2016: Downloaded on 25 November 2018.
[29] BirdLife International 2016b. Anas crecca. The IUCN Red List of Threatened Species 2016: Downloaded on 25 November 2018.
[30] BirdLife International 2016c. Botaurus stellaris. The IUCN Red List of Threatened Species 2016: Downloaded on 25 November 2018.
[31] BirdLife International 2016e. Himantopus himantopus. The IUCN Red List of Threatened Species 2016: Downloaded on 25 November 2018.
[32] BirdLife International 2016f. Aquila chrysaetos. The IUCN Red List of Threatened Species 2016: Downloaded on 25 November 2018.
[33] BirdLife International 2016h. Hieraaetus pennatus. The IUCN Red List of Threatened Species 2016: Downloaded on 25 November 2018.
[34] BirdLife International 2016i. Alcedo atthis. The IUCN Red List of Threatened Species 2016: Downloaded on 25 November 2018.
[35] BirdLife International 2016j. Picoides tridactylus. The IUCN Red List of Threatened Species 2016: Downloaded on 25 November 2018.
[36] BirdLife International 2016k. Falco biarmicus. The IUCN Red List of Threatened Species 2016: Downloaded on 25 November 2018.
[37] Bohme W., Lymberakis P., Ajtic R., Tok V., Ugurtas I. H., Sevinc M., Crochet P., Haxhiu I., Sterijovski B., Krecsak L., Crnobrnja-Isailovic J., Kaska Y., Avzi A. & Jelic D. 2009. Ablepharus kitaibelii IUCN Red List of Threatened Species. Version 2009. 2.
[38] Boxshall G. 2013. Fauna Europaea: Isopoda. Fauna Europaea version 2017.06, https://fauna-eu.org (assesed 29_11_2018).
[39] Breitenmoser Wursten C. & Obexer Ruff G. 2003. Population Genetic of two reintroduced Lynx (Lynx lynx) populations in Switzerland: A molecular evaluation 25 years after translocation. Progress report. Kora Bericht. Bern.
[40] Bressi N. 2004. Algyroides nigropunctatus nigropunctatus in Italy: notes on ecology, habitat selection and conversation (Reptilia, Lacertidae). Italian Journal of Zoology 71: 113-116. [25] BirdLife International 2018. Alectoris graeca. The IUCN Red List of Threatened Species 2018: e.T22678684A131902869. Downloaded on 25 November 2018.

[41] Budinski I., Jojić V., Jovanović V. M., Bjelić Cabrilo O., Paunović M. & Vujošević M. 2015. Cranial variation of the greater horseshoe bat Rhinolophus ferrumequinum (Chiroptera: Rhinolophidae) from the central Balkans. Zoologischer Anzeiger 254: 8–14.
[42] Chivian E. & Bernstein A. (eds.) 2008. Sustaining life: How human health depends on biodiversity. Center for Health and the Global Environment. Oxford University Press, New York.
[43] Chondropoulos B. P. & Lykakis J. J. 1983. Ecology of the Balkan Wall Lizard, Podarcis taurica ionica (Sauria: Lacertidae) from Greece. Copeia 1983(4): 991-1001.
[44] Collar N. J. 1996. The Reasons for Red Data Books. Oryx 30(2): 121-130.
[45] Coroiu I. 2016. Vespertilio murinus. The IUCN Red List of Threatened Species 2016: e.T22947A22071456. http://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T22947A22071456.en. Downloaded on 01 November 2018.
[46] Csiki E. 1940. Csiki Ernö állattani kutatásai Albaniaban. A Magyar Tudományos Akademia Balkán-Kutatásainak Tudományos Eredményei, 1(2): 208-288
[47] Csuzdi Cs. & Zicsi A. 2003. Earthworms of Hungary (Annelida: Oligochaeta: Lumbricidae). In: Csuzdi, C. & Mahunka, S. (Eds.), Pedozoologica Hungarica 1. Hungarian Natural History Museum, pp. 1–271.
[48] Ćurčić B. P. M. & Decu V. 2008. Cave-dwelling invertebrates in Serbia. In: S. E. Makarov & R. N. Dimitrijević (Eds.) Belgrade- Sofia, Monographs, 12: 7-34.
[49] Danilkin A. 1996. Behavioural Ecology of Siberian and European Roe Deer. London: Champan and Hall.
[50] Dauti E. 1980. Faunističko ekološka istraživanja Plecoptera na području Kosova. Doktorska disertacija, PMF Zagreb: 3-60.
[51] Dauti E.D. 1987. Seasonal and regional dynamics of the population density of Perla marginata and Brachyptera seticornis along the Nerodimka River (Yugoslavia). Acta. Biol. Med. Exp. 12: 77-82.
[52] de Jong Y., Verbeek M., Michelsen V., Bjørn PDP., Los W., Steeman F., Bailly N., Besire C., Chylarecki P., Stloukal E., Hagedorn G., Wetzel FT., Glöckler F., Kroupa A., Korb G., Hoffmann A., Häuser C., Kohlbecker A., Müller A., Güntsch A., Stoev P. & Penev L. 2014. Fauna Europaea - all European animal species on the web. Biodiversity Data Journal 2: e4034. doi: 10.3897/BDJ.2.e4034.
[53] De Winter A. J. & Maassen W. J. M. 1992. Two new Hygromiidae from Crna Gora and Kosovo (Gastropoda Pulmonata), with a checklist of the hygromiid species described from western Balkan. Basteria 56: 173-192.
[54] Dedov I. 2003. Contribution to the study of the gastropods (Mollusca, Gastropoda) on Shar Mountain, Republic of Macedonia. Bulletin of the Biology Students' Research Society 3: 39-43.
[55] Dedov I. 2017a. Macedonica frauenfeldi. The IUCN Red List of Threatened Species 2017: e.T171055A1320612. http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T171055A1320612.en. Downloaded on 09 December 2018.
[56] Dedov I. 2017b. Triloba sandrii. The IUCN Red List of Threatened Species 2017: e.T171505A1327333. http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T171505A1327333.en. Downloaded on 09 December 2018.
[57] Dek N. J. & Oosterbroek P. 2013. De steltmug Rhypholophus bifurcatus (Diptera, Limoniidae) nieuw voor Nederland. Entomologische Berichten 73(3): 87-90.
[58] Delahay R., Wilson G., Haris S. & Donald D. Mc. 2008. Badger Meles meles. Pp – 425-436, in S. Harris, D. Jalden, eds. Mammals of the British Isles: Handbook 4th Edition, vol.1, 4th Edition. Southampton, UK: The Mammal Society.
[59] Deltshev C, Ćurčić B. P. M. & Blagoev G. 2003. The spiders of Serbia. Committee for Karst and Speleology – Serbian Academy of Sciences and Arts; Institute of Zoology-Bulgarian Academy of Sciences; Institute of Zoology - Faculty of Biology - University of Belgrade; Institute for Biological Research "Siniša Stanković" (co-publishers), Belgrade - Sofia. pp 833.
[60] Djorović Dj. 1974. Prilog poznavanju nekih vrsta defolijatora hrasta iz familije Arctiidae na Kosovu. Šumarstvo 10-12: 19-23.
[61] Djorović Dj. 1975. Prilog poznavanju moljaca u hrastovim šumama na Kosovu. Zaštita bilja 26 (133): 229-233.
[62] Djorović Dj. 1992. Biocenotički kompleks gusenica hrasta. Priština: Udruženje "Nauka i društvo" AP Kosova i Metohije: pp. 1-191.
[63] Dulamtseren S., Tsendjav D. & Avirmed D. 1989. Mammals of Mongolia. Publishing House of the Academy of Science, Ulaanbaatar.
[64] Dundarova H. 2017. Biospeleological Report. In: Zhalov, A., (Ed.), Kosovo project '2017. Speleological exploration of the Akovan moun`tain. Expedition report. Bulgarian Caving Society, Sofia, Bulgaria: pp. 18-22.
[65] Fehér Z. & Erőss Z. 2009. Checklist of the Albanian mollusc fauna. Schriftenzur Malakozoologie 25: 22-38.
[66] Fehér Z. & Szekeres M. 2016. Taxonomic revision of the rock-dwelling door snail genus Montenegrina Boettger, 1877 (Mollusca: Gastropoda: Clausiliidae). ZooKeys 599: 1-137.
[67] Fehér Z. 2011a. Helix dormitoris. The IUCN Red List of Threatened Species 2011: e.T156360A4932872. http://dx.doi.org/10.2305/IUCN.UK.2011-1.RLTS.T156360A4932872.en. Downloaded on 09 December 2018.
[68] Fehér Z. 2011b. Monachoides kosovoensis. The IUCN Red List of Threatened Species 2011: e.T156315A4925932. http://dx.doi.org/10.2305/IUCN.UK.2011-1.RLTS.T156315A4925932.en. Downloaded on 09 December 2018.
[69] Fehér Z. 2017. Montenegrina sporadica. The IUCN Red List of Threatened Species 2017: e.T96306142A96306432.http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T96306142A96306432.en.
[70] Ficetola G. F. & De Bernardi F. 2006. Is the European "pond" turtle Emys orbicularis strictly aquatic and carnivorous. Amphibia-Reptilia 27: 445-447.
[71] Foresman K. R. 2012. Mammals of Montana. Second edition. Mountain Press Publishing, Missoula, Montana. pp 429.
[72] Freyhof J. & Kottelat M. 2008b. Eudontomyzon stankokaramani. The IUCN Red List of Threatened Species 2008: e.T135530A4139291. http://dx.doi.org/10.2305/ IUCN.UK.2008.RLTS.T135530A413-9291.en. Downloaded on 26 August 2017.
[73] Gasc J. P., Cabela A., Crnobrnja Isailovic J., Dolmen D., Grossenbacher K., Haffner P., Lescure J., Martens H., Martinez Rica J. P., Maurin H., Oliveira M. E., Sofianidou T. S., Vaith M. & Zuiderwijk A. 1997. Atlas of Amphibians and Reptiles in Europe. Societas Europaea Herpetologica and Muséum National d'Histoire Naturelle, Paris.
[74] Gashi A. & Ibrahimi H. 2008. Spatial and temporal distribution of larvae of Trichoptera in the Mirusha River (Kosovo). Ferrantia 55: 57 – 60.
[75] Gashi A., Ibrahimi H., Grapci Kotori L., Sejdiu N. & Bislimi K. 2015. New Records of Drusus siveci Malicky, 1981 (Trichoptera, Limnephilidae, Drusinae) from the Balkan Peninsula, with Ecological Notes. Acta Zoologica Bulgarica 67(2): 259-264.
[76] Gashi A., Shabani E., Grapci Kotori L., Bislimi K., Maxhuni Q. & Ibrahimi H. 2016. Contribution to the knowledge of fish fauna of Kosovo with special note on some invasive species. Turkish Journal of Zoology 40: 64-72.
[77] Georgiev D. 2010. Plagigeyeria gladilini. The IUCN Red List of Threatened Species 2010: e.T156095A4893635. http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T156095A4893635.en. Downloaded on 09 December 2018.
[78] Giachino P. M. 2006. Bathyscidius comottiorum n. sp. del Kosovo (Coleoptera, Cholevidae, Leptodirinae). Rivista del Museo Civico Scienze Naturali "Enrico Caffi" di Bergamo 24: 11-15.

[79] Glöer P. & Pešić V. 2014. Two new species of the genus Bythinella Moquin-Tandon, 1856 (Mollusca: Gastropoda: Hydrobiidae) from the Western Balkan Peninsula. Ecologica Montenegrina 1(4): 249-255.
[80] Gradojević M. 1931. Prilog lepidopterskoj fauni Jugoslavije. Leptirovi Srbije-Diurna. Glasnik Jugoslovenskog Entomološkog Društva V-VI (1-2): 89-96.
[81] Graf W., Murphy J., Dahl J., Zamora Muñoz C. & López Rodríguez J. M. 2008. Trichoptera. In: Distribution and Ecological Preferences of European Freshwater Organisms. Series Ed. Schmidt-Kloiber A. & Hering D. 1: 1-388.
[82] Grapci Kotor L., Zhushi Etemi F., Sahiti H., Gashi A., Škrijelj R. & Ibrahimi H. 2010. The ichtiyofauna of Drini i Bardhë River (Kosovo). Ribarstvo 68 (4): 149-158.
[83] Graves H. 1984. Behavior and ecology of Wild and feral swine (Sus scrofa). Journal of animal science 58: 482-492.
[84] Grego J., Glöer P., Erőss Z. P. & Fehér Z. 2017. Six new subterranean freshwater gastropod species from northern Albania and some new records from Albania and Kosovo (Mollusca, Gastropoda, Moitessieriidae and Hydrobiidae). Subterranean Biology 23: 85-107.
[85] Grizimek B. 1990. Martes foina. Pp. 411-412,416,442 in B Grizimek, ed. Grizimek's Encyclopedia of Mammals, Vol. 3, 6th Edition. Boston, USA: McGraw-Hill.
[86] Groenenberg D. S. J., Subai P. & Gittenberger E. 2016. Systematics of Ariantinae (Gastropoda, Pulmonata, Helicidae), a new approach to an old problem. Contributions to Zoology 85(1): 37-65.
[87] Grosser C., Pešić, V., Berlajolli V. & Gligorović B. 2016. Glossiphonia balcanica n. sp. and Dina prokletijaca n. sp. (Hirudinida: Glossi phoniidae, Erpobdellidae) - two new leeches from Montenegro and Kosovo. Ecologica Montenegrina 8:17-26
[88] Gurnell J. & Wanters L. 1999. Sciurus vulgaris Linnaeus, 1758. The atlas of European Mammals, T &A D. Poyer LTD @Academic Press, London & San Diego, 180-181.
[89] Harl J., Páll Gergely B., Kirchner S., Sattmann H., Duda M., Kruckenhauser L. & Haring, E. 2014. Phylogeography of the land snail genus Orcula (Orculidae, Stylommatophora) with emphasis on the Eastern Alpine taxa: speciation, hybridization and morphological variation. BMC Evolutionary Biology14, 223.doi:10.1186/s12862-014-0223-y.
[90] Harl J., Sattmann H. & Schileyko A. 2011. Types of the extant taxa of the land snail genus Orcula Held 1837 (Gastropoda: Stylommatophora: Orculidae). Archiv für Molluskenkunde 40:175–199.
[91] Heggberget T. & Moseid K. 1994. Prey selection in coastal Eurasian otters Lutra lutra. Ecography 17: 331-338.
[92] Holcik J. & Šoric V. 2004. Redescription of Eudontomyzon stankokaramani (Petromyzontes, Petromyzontidae) – A little known lamprey from the Drin River drainage, Adriatic Sea basin. Folia Zoologica 53 (4): 399-410.
[93] Hutson A. M., Aulagnier S. & Spitzenberger F. 2008. Myotis nattereri. The IUCN Red List of Threatened Species 2008: e.T14135A4405996. http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T14135A4405996.en. Downloaded on 31 October 2018.
[94] Hutson A. M., Spitzenberger F., Aulagnier S., Coroiu I., Karataş A., Juste J., Paunovic M., Palmeirim J. & Benda P. 2008a. Plecotus auritus. The IUCN Red List of Threatened Species 2008: e.T17596A7154745. http://dx.doi.org/10.2305/IUCN.UK.2008. RLTS.T17596A7154745.en. Downloaded on 01 November 2018.
[95] Hutson T., Aulagnier S. & Benda P. 2007h. Miniopterus schreibersii. The IUCN Red List of Threatened Species 2007: e.T13561A4161756. Downloaded on 01 November 2018.
[96] Hutson T., Spitzenberger F., Aulagnier S. & Coroiu I. 2007f. Pipistrellus pipistrellus. The IUCN Red List of Threatened Species 2007: e.T17317A6969409. Downloaded on 01 November 2018.
[97] Hutson T., Spitzenberger F., Aulagnier S. & Nagy Z. 2007d. Myotis myotis. The IUCN Red List of Threatened Species 2007: e.T14133A4404450. Downloaded on 01 November 2018.
[98] Hutson T., Spitzenberger F., Aulagnier S., & Coroiu I. 2007g. Pipistrellus pygmaeus. The IUCN Red List of Threatened Species 2007: e.T136649A4323188. Downloaded on 01 November 2018.
[99] Hutson T., Spitzenberger F., Aulagnier S., & Coroiu I. 2007b. Myotis daubentonii. The IUCN Red List of Threatened Species 2007: e.T14128A4401701. Downloaded on 31 October 2018.
[100] Hutson T., Spitzenberger F., Aulagnier S., & Coroiu I. 2007c. Myotis mystacinus. The IUCN Red List of Threatened Species 2007: e.T14134A4405686. Downloaded on 31 October 2018.
[101] Hutson T., Spitzenberger F., Juste J., Aulagnier S., Alcaldé J. T., Nagy Z. & Coroiu I. 2007e. Myotis blythii. The IUCN Red List of Threatened Species 2007: e.T14124A4397203. Downloaded on 01 November 2018.
[102] Hutson T., Spitzenberger F., Juste J., Aulagnier S., Fernandes M., Alcaldé, J. T. 2007. Rhinolophus ferrumequenum. The IUCN Red List of Threatened Species 2007: e.T19516A8947130. Downloaded on 31 October 2018.
[103] Hutson T., Spitzenberger F., Juste J., Aulagnier S., Fernandes M. & Alcaldé, J. T. 2007a. Rhinolophus euryale. The IUCN Red List of Threatened Species 2007: e.T19516A8947130. Downloaded on 31 October 2018.
[104] Hutterer R., Ivanova T., Meyer Cord Ch. & Rodrigues L. 2005. Bat Migrations in Europe. Naturschutz und Biologische Vielfalt 28: 162.
[105] Ibrahimi H., Devetak D., Pizzigalli C. & Hoxha L. 2018. First record of the genus Boreus Latreille, 1816 from the Republic of Kosovo (Mecoptera). Spixiana 41(1):12.
[106] Ibrahimi H., Gashi A., Bilalli A., Musliu M., Grapci Kotori L. & Etemi Zhushi F. 2014a. Three new country records from the genus Limnephilus Leach, 1815 (Trichoptera: Limnephilidae) from the Republic of Kosovo. Biodiversity Data Journal 2: e4140. doi: 10.3897/BDJ.2.e4140.
[107] Ibrahimi H., Gashi A., Grapci Kotori L. & Kučinić M. 2013. First records of the genus Micropterna Stein, 1873 (Insecta: Trichoptera) in Kosovo with distributional and ecological notes. Natura Croatica 22 (1): 147:155.
[108] Ibrahimi H., Gashi A., Grapci Kotori L., Bilalli A., Musliu M. & Etemi Zhushi F. 2015a. First record of Mesophylax aspersus (Rambur, 1842) from the Republic of Kosovo (Trichoptera Limnephilidae). Biodiversity Journal 6 (1): 3–6.
[109] Ibrahimi H., Gashi A., Grapci Kotori L., Zhushi Etemi F., Bilalli A. & Musliu M. 2016a. New Distribution and Species Records of Caddisflies (Insecta: Trichoptera) from the Republic of Kosovo. Entomological News 125(4): 229-238.
[110] Ibrahimi H., Gashi, A., Grapci Kotori L., Zhushi Etemi F., Bilalli A. & Musliu M. 2016a. New Distribution and Species Records of Caddisflies (Insecta: Trichoptera) from the Republic of Kosovo. Entomological News 125 (4): 229-238.
[111] Ibrahimi H., Kučinić M., Gashi A. & Grapci Kotori L. 2012a. The caddisfly fauna (Insecta, Trichoptera) of the rivers of the Black Sea basin in Kosovo with distributional data for some rare species. Zookeys 182: 71–85. doi: 10.3897/zookeys.182.2485.
[112] Ibrahimi H., Kučinić M., Gashi A. & Grapci Kotori L. 2014b. Trichoptera Biodiversity of the Aegean and Adriatic Sea basins in Kosovo. Journal of Insect Science 14 (209): 1-8. DOI: 10.1093/jisesa/ieu071.
[113] Ibrahimi H., Kučinić M., Gashi A., Grapci Kotori L., Vučković I. & Cerjanec D. 2012b. The genus Rhyacophila Pictet, 1873 (Insecta: Trichoptera) in Kosovo. Aquatic Insects: International Journal of Freshwater Entomology 34 (1), 23-31. doi: 10.1080/01650424.2012.643021.

[114] Ibrahimi H., Kučinić M., Vitecek S., Graf W., Previšić A., Bálint M., Keresztes L. & Pauls S.U. 2015b. New records for the Kosovo caddisfly fauna with description of a new species, Drusus dardanicus sp. nov. (Trichoptera: Limnephilidae). Zootaxa 4032: 551–568. doi: 10.11646/ zootaxa.4032.5.5.
[115] Ibrahimi H., Previšić A., Vitecek S., Graf W., Kučinić M., Bálint M., Keresztes L. & Pauls S. U. 2016. Drusus sharrensis sp.n. (Trichoptera, Limnerphilidae) a new species from Sharr National Park in Kosovo with molecular and ecological notes. ZooKeys 559: 107–124. doi: 10.3897/zookeys.559.6350.
[116] Ikonomov P. 1983. Nouveles espèces de Plécoptères (Insecta, Plecoptera) de Macédoine. III. Fragmenta Balcanica, 11 (18), 175–183.
[117] IUCN 2012. IUCN Red List Categories and Criteria: Version 3.1. Second edition. Gland, Switzerland and Cambridge, UK: IUCN. iv + 32pp.
[118] IUCN 2012a. Guidelines for Application of IUCN Red List Criteria at Regional and National Levels: Version 4.0. Gland, Switzerland and Cambridge, UK: IUCN. iii + 41pp.
[119] IUCN Standards and Petitions Subcommittee. 2017. Guidelines for Using the IUCN Red List Categories and Criteria. Version 13. Prepared bz the Standards and Petitions Subcommittee, pp 108.
[120] Jaeckel S. sen. 1954. Zur Systematik und Faunistik der Mollusken der nördlichen Balkanhalbinsel. Mitteilungen aus dem Zoologischen Museum in Berlin 30: 54-95.
[121] Jakšić P. & Živić N. 1995-98. The butterflies of the Kosovo and Metohija in South Serbia (Hesperioidea and Papilionoidea). Buletin of Natural History Museum Belgrade B49-50: 201-218.
[122] Jakšić P. 1987. Specifični elementi faune Lepidoptera nekih kosovskih klisura. Priroda Kosova 6: 93-107.
[123] Jakšić P. 1988. Privremene karte rasprostranjenosti dnevnih leptira Jugoslavije (Lepidoptera, Rhopalocera) = Provisional distribution maps of the butterflies of Yugoslavia (Lepidoptera, Rhopalocera) Jugoslavensko entomološko društvo, Zagreb.
[124] Jakšić P. 1998. Dnevni leptiri (Lepidoptera: Hesperioidea and Papilionoidea) Sharr planine Zaštita prirode 5: (229-252).
[125] Jakšić P. 1998. Dnevni leptiri (Lepidoptera: Hesperioidea i Papilionoidea) Šar-planine. [The butterflies of Šar-planina Mt. (Lepidoptera: Hesperioidea & Papilionoidea)]. Zaštita prirode 50: 229-252.
[126] Jakšić P. 1999. Distribution of butterfly communities (Lepidoptera: Hesperioidea and Papilionoidea) in plant communities over the Jažinačko jezero lake region on Šar-planina Mt. / Distribucija zajednica dnevnih leptira (Lepidoptera: Hesperioidea & Papilionoidea) u biljnim zajednicama na širem području Jažinačkih jezerana Šar-planini. The University Thought, Nat. Sci. 5(2): 71.
[127] Jakšić P. 2001. The distribution of Erebia rhodopensis Nicholl, 1900 (Lepidoptera: Nymphalidae, Satyrinae) on the Šar-Planina, Prokletije and Rila. Entomologiost's Gazzete 52:83-90.
[128] Jakšić P. 2003. Fauna leptira (Lepidoptera: Zygaenidae, Hesperioidea i Papilionoidea) metohijskih Prokletija (in Prokletije of Metohija the Natural and Culturale heritage).
[129] Jakšić P. 2003a. Red Data Book of Serbian Butterflies: Lepidoptera, Hesperioidea and Papilionoidea, Beograd. pp. 198.
[130] Jakšić P. 2007. Contribution to knowledge of the butterflies of Mt. Pashtrik, Serbia. Acta Entomolgica Serbica 12 (2): 56 - 61.
[131] Jakubiec Z. 1999. Ursus arctos Linnaeus, 1758. The Atllas of European Mammals. Academic Press, London at San Diego, 322-323.
[132] Jhala Y. V. & Moelan P. D. 2004. Golden jackal (Canis aureus), pp.156-160.Status survey and conversation action plan. Switzerland.
[133] Jones C., Moss K. & Sanders M. 2005. Diet of hedgehogs (Erinaceus europeus) in the upper Waitaki. Basin, New Zeland. Journal of Ecology 29: 29-35.
[134] Juste J., Karataş A., Palmeirim J., Paunović M., Spitzenberger F. & Hutson, A. M. 2008. Plecotus austriacus. The IUCN Red List of Threatened Species 2008: e.T17597A7158432. http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T17597A7158432.en. Downloaded on 01 November 2018.
[135] Kalezić M., Tomović L. & Džukić G. 2015. Red Book of Fauna of Serbia: I Amphibians. Beograd, pp 208.
[136] Karaman S. 1940. Die unterirdischen Isopoden Sudserbiens. Glasn. Skops. nauč. Društ. 22: 19–53. Bulletin de la Societe Scientifique de Skopje 22: 19-53.
[137] Karaman S. 1959. Prilog poznavanju Amauropsina Balkana. Jahrbuch der Land-und Forstwirtschaftliche Fakultät der Universität in Skopje 14: 149-169
[138] Karaman S. 1968. Uber eine neue Regenwurm Art aus Serbian, Allolobophora kosowensis n.sp. Zoologischer Anzeiger 181: 50–53.
[139] Karaman S. 1973. Zweiter Beitrag zur Kenntnis der Lumbriciden Serbiens. Zbornik radova PMF 1: 177-182.
[140] Kaya U., Kuzmin S., Sparreboom M., H. Ugurtas I. H., Tarkhnishvili D., Anderson S., Andreone F., Corti C., Nyström P., Schmidt B., Anthony B., Ogrodowczyk A., Ogielska M., Bosch J. & Tejedo M. 2009. Rana dalmatina. The IUCN Red List of Threatened Species. IUCN. 2009: e.T58584A11790570. http://dx.doi.org/10.2305/IUCN.UK.2009.RLTS.T58584A11790570.en. Downloaded on 15 December 2018.
[141] Kerovec M. & Mršić N. 1981. Catalogus Faunae Jugoslaviae. Oligochaeta III/1. Consilium Academiarum Scientarium Rei Publicae Socialisticae Foederativae Jugoslaviae & Academia Scientarium et Artium Slovenica, Ljubljana. pp. 38.
[142] Killeen I., Moorkens E. & Seddon M. 2012. Vertigo moulinsiana. The IUCN Red List of Threatened Species 2012: e.T22939A128409258. Downloaded on 09 December 2018.
[143] Kime R. D. & Enghoff H. 2017. Atlas of European millipedes 2: Order Julida (Class Diplopoda). European Journal of Taxonomy 346: 1–299
[144] King C. M. & Powell R. A. 2007. The natural history of weasels and stoats: ecology, behavior and management. 2nd edition. New York, Oxford University Press. pp. 446.
[145] Knipper H. 1939. Systematische, anatomische, ökologische und tiergeographische Studien an südosteuropäischen Heliciden (Mollusca, Pulmonata). - Zeitschrift für Wissenschaftliche Zoologie, Abteilung B, Archiv für Naturgeschichte (Zeitschrift für Systematische Zoologie) (Neue Folge) 8 (3/4): 327-517.
[146] Kocak A. O. 1989. On the butterflies of Yugoslavia (Lepidoptera). Priamus 5 (1/2):3-22.
[147] Kontschán J. 2006. Some zerconid mites (Acari: Mesostigmata: Zerconidae) from Kosovo (Serbia-Montenegro) with description of Zercon kosovina sp. nov. Zootaxa 1276: 47–53.
[148] Kottelat M. & Freyhof J. 2007. Handbook of European Freshwater Fishes. Publications Kottelat, Cornol, Switzerland.
[149] Kreiner G. 2007. Snakes of Europe, all species from west of the Caucasus Mountains. Chimaira, Frankfurt am Main, pp. 317.
[150] Krystufek B. 2007. Edible dormouse – characteristics and life, pp.43-89. Ekoloski forum LDS. Ljubljana, Slovenia.
[151] Kumanski K. 1985. Trichoptera, Annulipalpia. Fauna Bulgarica 15. Bulgarska Akademi na Naukite, Sofia. pp. 243.
[152] Kumanski K. 1988. Trichoptera, Integripalpia. Fauna Bulgarica 19. Bulgarska Akademi na Naukite, Sofia. pp.354.

[153] Kuščer L. 1937. Zur Kenntnis der Molluskenfauna von Südserbien und Montenegro, I. Beitrag. – Glasnik Skopskog Nautshnog Drushtva [B ulletin de la Société Scientifique de Skoplje] 17: 101-104.
[154] Lazányi E., Vagalinski B. & Korsos Z. 2012. The Millipede genus MegaphyllumVerhoeff, 1894 in the Balkan Peninsula, with description of new species (Myriapoda: Diplopoda: Julida: Julidae). Zootaxa 3228: 1–47.
[155] Lino A., Fonseca C., Goiti U. & Pereira M. J. R. 2014. Prey selection by Rhinolophus hipposideros (Chiroptera, Rhinolophidae) in a modified forest in Southwest Europe. Acta Chiropterologica 16(1): 75-83.
[156] Lopes Lima M., Kebapçi, U. & Van Damme D. 2014. Unio crassus. The IUCN Red List of Threatened Species 2014: e.T22736A42465628. http://dx.doi.org/10.2305/IUCN.UK.2014-1.RLTS.T22736A42465628.en. Downloaded on 11 November 2018.
[157] Makarov S. E., Ćurčić B. P. M., Tomić V. T. & Legakis A. 2004. The Diplopods of Serbia, Montenegro and the Republic of Macedonia. Institute of Zoology, University of Belgrade, Monographs.Vol.9. pp. 440.
[158] Marić D. 1995. Endemic fish species of Montenegro. Biological Conservation 72: 187–194.
[159] Marić S., Bajec S. S., Schöffmann J., Kostov V. & Snoj A. 2017. Phylogeography of stream-dwelling trout in the Republic of Macedonia and a molecular genetic basis for revision of the taxonomy proposed by S. Karaman. Hydrobiologia 785(1): 249-260.
[160] Mauries J. P., Golovatch, S. I. & Stoev P. 1997. The millipedes of Albania: recent data, new taxa; systematical, nomenclatural and faunistical review (Myriapoda, Diplopoda). Zoosystema 19: 255-292.
[161] Mayer W., Bohme W., Tiedemann F. & Bischoff W. 2000. On oviparous populations of Zootoca vivipara (Jacquin, 1787). Herpetozoa 13: 59-69.
[162] Mikšić R. 1955. Fauna insectorum Balcanica – Scarabaeidae. 15. Beitrag zur Kenntnis der Scarabaeiden. In: Godišnjak Biološkog instituta u Sarajevu, 1953. VI/1–2: 49–281.
[163] Millaku F., Rexhepi F., Krasniqi E., Pajazitaj Q., Mala Xh. & Berisha N. 2013. Libri i Kuq i Florës Vaskulare të Republikës së Kosovës, MMPH, pp. 435.
[164] Milutinović T., Milanović J. & Stojanović M. 2015. Threat status and distribution of the endemic species Allolobophora kosowensis kosowensis Karaman, 1968 (Oligochaeta, Lumbricidae) in the Balkans. Journal of Natural History 49 (5–8): 471–481.
[165] Misja K. 2006. Libri i Kuq i Faunës Shqiptare. Ministria e Mjedisit, Pyjeve dhe Administrimit të Ujërave. Tiranë, pp. 256.
[166] Mršić N. 1985. Dyocerasoma (Desultorosoma) drimicum subg. n., sp. n. (Diplopoda: Craspedosomatidae). Biol. vestn. 33 (2): 53-60.
[167] Mršić N. 1987. Attemsiidae (Diplopoda) of Yugoslavia in Razprave IV. Razreda SAZU 27: 101-168.
[168] Mršić N. 1988. Interleptoiulus cernagorans g. n., sp. n. (Diplopoda: Julidae) and a Survey of the Tribus Leptoiulini in Yugoslavia. Biol. vestn. 36 (2): 31-51.
[169] Mršić N. 1991. Monograph on earthworms (Lumbricidae) of the Balkans I, II. Slovenska Akademija Znanosti in Umetnosti Razred za Naravoslovne Vede, Opera, 31, Ljubljana, pp. 757.
[170] Murányi D. 2007. New and little – known stoneflies (Plecoptera) from Albania and the neighbouring countries. Zootaxa 1533(1533):1-40. https://doi.org/10.5281/zenodo.177757.
[171] Nentwig W., Blick T., Gloor D., Hänggi A. & Kropf C. 2018. Online at https://www.araneae.nmbe.ch, accessed on 07/10/2018. doi: 10.24436/1.
[172] Neubert E. 2014. Revision of Helix Linnaeus, 1758 in its eastern Mediterranean distribution area, and reassignment of Helix godetiana Kobelt, 1878 to Maltzanella Hesse, 1917 (Gastropoda, Pulmonata, Helicidae). Contributions to Natural History 26: 1-200.
[173] Nieto A. & Alexander K.N.A. 2010. European Red List of Saproxylic Beetles. Luxembourg: Publications Office of the European Union.
[174] Nilson G. & Andren C. 1997. Vipera berus (Linnaeus, 1758) Pp.388-389. In: Gasc J. P., Cabela A., Crnobrnja - Isailovic J., Dolmen D., Grossenbacher K., Haffner P., Lescure J., Martens H., Martinez Rica J. P., Maurin H., Olivera M. E., Sofianidou T. S., Veith M. & Zuiderwijk A. (eds). Atlas of amphibians and reptiles in Europe. Societas Europea Herpetologica and museum National d' Histoire Naturelle, Paris.
[175] Nordsieck H. 1971. Zur Anatomie und Systematik der Clausilien, IX. DinarischeClausiliidae, III: Das Genus Herilla. Archiv für Molluskenkunde 101 (1/4): 39-88.
[176] Nordsieck H. 1972. Zur Anatomie und Systematik der Clausilien, XI. Neue Formen und taxonomische Revision einiger Gruppen der Alopiinae. Archiv für Molluskenkunde 102 (1/3): 1-51, Taf. 1-5.
[177] Nordsieck H. 1974. Zur Anatomie und Systematik der Clausilien, XV. Neue Clausilien der Balkan-Halbinsel (mittaxonomischer Revision einiger Gruppen der Alopiinae und Baleinae). Archiv für Molluskenkunde 104 (4/6): 123-170.
[178] Novak R. 1999. Walkers Mammals of the World. Baltimore: The Johens Hopkins University Press.
[179] Oláh J., Chvojka T. P., Coppa, G., Godunko R. J., Lodovici O., Majecka K., Majecki J., Szczesny, B., Urbanic G. & Valle M. 2015b. Limnephilid taxa revised by speciation traits: Rhadicoleptus, Isogamus, Melampophylax genera, Chaetopteryx rugulosa, Psilopteryx psorosa species groups, Drusus bolivari, Annitella kosciuszkii species complexes (Trichoptera, Limnephilidae). Opuscula Zoologica Budapest 46(1): 3–117.
[180] Oláh J., Ibrahimi H. & Kovács T. 2013b. The genus Chaetopteroides (Trichoptera, Limnephilidae) revised by fine structure analysis of parameres. Folia historico-naturalia Musei Matraensis 37: 93–108.
[181] Overskaug K., Broseth H. & Knutsen B. 1994. Area and habitat use of pine martens, Martes martes/, in mid-Norway. Lutra 37: 81-88.
[182] Páll Gergely B. 2011. Orcula wagneri. The IUCN Red List of Threatened Species 2011: e.T156852A5007480. http://dx.doi.org/10.2305/IUCN.UK.2011-1.RLTS.T156852A5007480.en. Downloaded on 09 December 2018.
[183] Pasulević V. G. 1968. Prilog poznavanju herpetofaune Kosova i Metohije. Buletini i punimeve shkencore të Fakultetit Filozofik 5: 61 – 67.
[184] Paunović M. 2016. Rasprostranjenje, ekologija i centri diverziteta slepih miševa (Mammalia, Chiroptera) u Srbiji. Doktorska disertacija. Biološki fakultet, Univerzitet u Beogradu. pp. 479.
185] Paunović M. 2016a. Myotis capaccinii. The IUCN Red List of Threatened Species 2016: e.T14126A22054131. http://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T14126A22054131.en. Downloaded on 31 October 2018.
[186] Pavićević D., Pavićević D. M. & Perreau M. (eds.) 2008. Advances in the studies of the fauna of the Balkan Peninsula. Papers ded. , Monograph 22: pp. vii+564.
[187] Perreau M. 2008. Pavicevicia n. gen., a new genus with one new species of Bathyciotina from Kosovo (Coleoptera, Leiodidae, Cholevinae, Leptodirini). Advances in the studies of the fauna of the Balkan Peninsula. Papers dedicated to the memory of Guido Nonveiller 177-182.
[188] Pintér L. 1972. Die Gattung Vitrea Fitzinger, 1833 in den Balkanländern (Gastropoda: Zonitidae). Annales Zoologici 29 (8): 209-315.
[189] Pljakić M. A. 1971. Contribution a la connaisance du genre Macedoniscus (Trichoniscidae) en Serbie - Macedoniscus metohicus sp. n. Glasnik Prirodnjackog Muzeja Beograd 25: 321-328.

[190] Pongrácz S. 1923. Recésszárnyúak. Neuropteroiden. In: Csiki Erno Állattani Kutatásai Albániában. Explorationes zoologicae ab E. Csiki in Albania peractae. IX. A. – Magyar Tudományos Akadémia Balkán-Kutatásainak Tudományos Erdményei 1: 160-166.
[191] Pop A. A., Pop, V. V. & Csuzdi Cs. 2007. An updated viewpoint on the earthworm communities with the Dendrobaena alpina species group (Oligochaeta, Lumbricidae) from the South-Eastern Carpathians. European Journal of Soil Biology 43: 53–56.
[192] Presetnik P., Dundarova H., Fiedler W., Gashi F., Hoxha L., Pavlovic E. & Theou P. 2018. A start of Systematic Bat Survey of Kosovo. REGIONAL SYMPOSIUM "CONSERVATION STATUS OF BATS IN THE CENTRAL EUROPE AND WESTERN BALKAN" Sarajevo, 31. 5. – 1. 6. 2018.
[193] Procházka J., Kment P., Németh T. & Kolibáč J. 2017. New data on the distribution of Peltis grossa and P. gigantea (Coleoptera: Trogossitidae). Acta Musei Moraviae, Scientiae biologicae 102(1): 25-33
[194] Radoman P. 1978. Neue Vertreter der Gruppe Hydrobioidea von der Balkanhalbinsel. Archiv für Molluskenkunde 109 (1/3): 27-44, Taf. 4-5.
[195] Radoman P. 1983. Hydrobioidea a superfamily of Prosobranchia (Gastropoda) I. Systematics. - Srpska Akademija Nauka i Umetnosti, Posebna Izdanja [Serbian Academy of Sciences and Arts, Monographs] (Odeljenje Prirodno-Matematitshkich Nauka [Department of Sciences] 57) 547: 256.
[196] Rebel H. & Zerny H. 1931. Die Lepidopterenfauna Albaniens. Denkschriften der Akademie der Wissenschaften in Wien, Mathematisch-naturwissenschaftliche Klasse.
[197] Rebel H. 1917. Neue Lepidopterenfunde in Nordalbanien, Mazedonien und Serbien. Jahresber. Naturë. Orientverein 21: 17-24.
[198] REC (ed.) 1997. Libri i Kuq (Bimë shoqërime bimore dhe kafshë të rrezikuara). Qendra Rajonale e Mjedisit (REC), Tiranë. pp. 312.
[199] Reischütz A. 2017a. Herilla illyrica. The IUCN Red List of Threatened Species 2017: e.T171490A1327059. http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T171490A1327059.en. Downloaded on 09 December 2018.
[200] Reischütz A. 2017b. Protoherilla baleiformis. The IUCN Red List of Threatened Species 2017: e.T171599A1328707. http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T171599A1328707.en. Downloaded on 09 December 2018.
[201] Reischütz A. 2017c. Protoherilla pseudofallax. The IUCN Red List of Threatened Species 2017: e.T171579A1328400. http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T171579A1328400.en. Downloaded on 09 December 2018.
[202] Reischütz A. 2017d. Strigilodelima pentheri. The IUCN Red List of Threatened Species 2017: e.T171781A1331484. http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T171781A1331484.en. Downloaded on 09 December 2018.
[203] Roberts M. 1996. Collins field guide. In: Spiders of Britain and Northern Europe (pp. 12-18). London: Harper Collins Publishers.
[204] Rota E. 2013. Fauna Europaea: Lumbricidae. Fauna Europaea version 2017.06, https://fauna-eu.org (accessed 16/11/2018)
[205] Šapkarev J. 1972. Beitrage zur Kenntnis der Lumbricidenfauna Jugoslawiens. Arhiv bioloških nauka, Beograd 24 (1-2): 73 - 86.
[206] Šapkarev J. 1975. Contribution to the knowledge the earthworms (Lumbricidae) and leeches (Hirudinea) of Kosovo, Yugoslavia. Annuaire de la Faculté des Sciences de l'Universit de Skopje 27: 39-54.
[207] Šapkarev J. 1980. Prilog poznavanju kišnih glista (Lumbricidae) SR Srbije. Zbornik radova faune Srbije 1: 165-179.
[208] Savchenko S. M. 1964. Do poshyrennya ta biolohiyi palearktychnykh komariv - dovhonohiv Tipula (Savtshenkia) benesignata mnnhs. Ref. Z. Biol. #11e261.
[209] Schmalfuss H. 2003. World catalog of terrestrial isopods (Isopoda: Oniscidea). Stuttgarter Beiträge zur Naturkunde. Serie A, 654: 1-341., available online at http://www-alt.naturkundemuseum-bw.de/stuttgart/pdf/a_pdf/A654.pdf [details].
[210] Schütt H. 1960. Neue Höhlenschnecken aus Montenegro. Archiv für Molluskenkunde 89(4/6): 145–152.
[211] Schütt H. 1975. Die Formen der GattungIglica A.J. Wagner. Archiv für Molluskenkunde 106(1/3): 1–14.
[212] Seddon M. B. & Holyoak D. T. 1993. Land Gastropoda of NW Africa: new distributional and nomenclatural data. Journal of Conchology 34(5): 321-332.
[213] Seddon M. B. 2011a. Belgrandiella bumasta. The IUCN Red List of Threatened Species 2011: e.T155582A4803516. http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T155582A4803516.en. Downloaded on 09 December 2018.
[214] Seddon M. B. 2011b. Saxurinator schlickumi. The IUCN Red List of Threatened Species 2011: e.T155673A4819119. http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T155673A4819119.en. Downloaded on 09 December 2018.
[215] Seddon M. B. 2011c. Terranigra kosovica. The IUCN Red List of Threatened Species 2011: e.T155681A4823068. http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T155681A4823068.en. Downloaded on 09 December 2018.
[216] Seddon M. B. 2011d. Iglica illyrica. The IUCN Red List of Threatened Species 2011: e.T156154A4912228. http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T156154A4912228.en. Downloaded on 09 December 2018.
[217] Simon M., Hüttenbügel S. & Smit Viergutz J. 2004. Ecology and conservation of bats in villages and towns. Schriftenr. Naturschutz und Landschaftspflege 77: 1-264.
[218] Simonovic P. 2001. Ribe Srbije. NNK International, Zavod za zastitut prirode Srbije, Bioloski fakultet. pp. 247.
[219] Sivec I. 1980. Notes on stoneflies (Plecoptera) from south west Yugoslavia, with description of a new Nemoura. Aquatic Insects 2:2: 91-95, DOI: 10.1080/01650428009361012
[220] Škrijelj R., Lelo S., Drešković N., Sofradžija A., Trožić Borovac S., Korjenić E., Lukić Bilela L., Brulić Mitrašinović M., Kotrošan D., Šljuka S., Gajević M. & Karačić J. 2013. Crvena Lista Federacije Bosne i Hercegovine. Sarajevo. pp. 314.
[221] Slapnik R. 2017. Paraegopis mauritii. The IUCN Red List of Threatened Species 2017: e.T171253A1323474. http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T171253A1323474.en. Downloaded on 09 December 2018.
[222] Stojanović M., Milutinović T. & Karaman S. 2008. Earthworm (Lumbricidae) diversity in the Central Balkans: An evaluation of their conservation status. European journal of soil biology 44: 57 – 64.
[223] Stojanović M., Sekulić J. & Trakić T. 2018. Checklist of earthworms (Oligochaeta: Lumbricidae) from Serbia: a review. Zootaxa 4496 (1): 124–155
[224] Strasser K. 1971. Catalogus Faunae Jugoslaviae. III/5. Diplopoda. Ljubljana: Academia Scientarum et Artium Slovenica, Ljubljana. Vol. 3: 3-50.
[225] Strasser K. 1971a. Über Diplopoden Jugoslawiens - Senckenbergiana biologica 52(3-5), pp. 313-345.
[226] Sturany R. & Wagner A. J. 1915. ÜberschalentragendeLandmolluskenausAlbanien und Nachbargebieten. - Denkschriften der kaiserlichen Akademie der Wissenschaften, mathematisch-naturwissenschaftliche Klasse 91: 19-138, Taf. 1-18, 1 Karte. Wien.
[227] Szederjesi T. 2013. New earthworm records from the former Yugoslav countries (Oligochaeta: Lumbricidae). Opuscula Zoologica Budapest 44 (1): 61–76.
[228] Taylor P. 2016. Rhinolophus hipposideros. The IUCN Red List of Threatened Species 2016: e.T19518A21972794. http://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T19518A21972794.en. Downloaded on 30 October 2018.

[229] Taylor P. 2016a. Rhinolophus blasii. The IUCN Red List of Threatened Species 2016: e.T19515A21972073. http://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T19515A21972073.en. Downloaded on 31 October 2018.
[230] Tomović L., Kalezić M. & Džukić G. 2015. Red Book of Fauna of Serbia: II Reptiles, Beograd, pp.266.
[231] Trakić T., Valchovski H. & Stojanović M. 2016. Endemic earthworms (Oligochaeta: Lumbricidae) of the Balkan Peninsula: a review. Zootaxa 4189 (2): 251–274.
[232] Urbański J. 1977. Bemerkenswerte Clausiliiden (Moll., Pulm.) der nördlichen Balkan-Halbinsel. (Systematische, zoogeographische und ökologische Studien über die Mollusken der Balkan-Halbinsel. XV.). - Bulletin de la Société des Amis des Sciences et des Lettres de Poznan (Série D) 17: 235-251, Taf 1-3.
[233] Vagalinski B., Stoev P. & Enghoff H. 2015. A review of the millipede genus Typhloiulus Latzel, 1884 (Diplopoda: Julida: Julidae), with a description of three new species from Bulgaria and Greece. Zootaxa 3999 (3): 334–362.
[234] Valakos E. D. 1990. The ecology of the lizard Podarcis erhardii (Bedriaga, 1882) (Sauria : Lacertidae) in a tipical insular ecosystem in Naxos Island. PhD. thesis, University of Athens.
[235] Vukovič T. & Ivanovič B. 1997. Slatkovodne ribe Jugoslavije, Sarajevo 1997.
[236] Wagner A. 1921. Die Mollusken sammlung des Polnischen Naturhistorischen Staatsmuseums in Warschau. I. Neue Gruppen und Formen der Subfamilie Alopiinae. Prace Zoologiczne Polskiego Panstwowego Muzeum Przyrodniczego [Annales Zoologici Musei Polonici Historiae Naturalis] 1 (1): 41-56.
[237] Wagner A. J. 1919a. Beschreibungen neueroderbisher weniggekannter Clausiliiden (I. Teil). Vorläufige Mitteilungüber die von Dr. A. Penther in den Jahren 1914, 1916 und 1918 in Nordalbanien gesammelten Mollusken. Anzeiger, Akademie der Wissenschaften in Wien, mathematisch-naturwissenschaftliche Klasse 56: 57-64.
[238] Wagner A. J. 1919b. Beschreibungen neueroderbisher weniggekannter Clausiliiden (II. Teil). Vorläufige Mitteilungüber die von Dr. A. Penther in den Jahren 1914, 1916 und 1918 in Nordalbanien gesammelten Mollusken. Anzeiger, Akademie der Wissenschaften in Wien, mathematisch-naturwissenschaftliche Klasse 56: 70-73.
[239] Wanke M. 2018. On the Distribution of Fish Species in Erenik River and its Tributaries (Western Kosovo). Bachelor's thesis, University of Konstanz, Germany.
[240] Weigle R. 2005. Longecity of Mammals in Captivity; from the living Collections of the World.
[241] Weiss J. C. 1975. Neufjours de chasses en Macedoine yougoslave et au Montenegro (9–17 juillet 1971) (Rhopalocera). Alexanor 9: 125–131.
[242] Welter Schultes F. W. 2012. European non-marine molluscs, a guide for species identification - pp. 679, Planet Poster Editions, Göttingen.Riedel, A. 2000. Die Sammlung der paläarktischen Zonitidae sensu lato (Gastropoda, Stylommatophora) in dem Museum und Institutfür Zoologie der PAdW in Warszawa. Folia Malacologica 8 (1): 37-85.
[243] Welter Schultes F. W. 2012. European non-marine molluscs, a guide for species identification. - pp. 679, Planet Poster Editions, Göttingen.Riedel, A. 2000. Die Sammlung der paläarktischen Zonitidaesensulato (Gastropoda, Stylommatophora) in dem Museum und Institut für Zoologie der PAdW in Warszawa. Folia Malacologica 8 (1): 37-85.
[244] Wilson D. E. & Reeder D. M. 2005. Mammal species of the World. A Taxonomic and Geographic Reference (3rd ed). Jons Hopkins University Press, 2:142.
[245] World Wildlife Fund 2018. Living Planet Report - 2018: Aiming Higher. Grooten, M. and Almond, R.E.A.(Eds). WWF, Gland, Switzerland.
[246] Zahn A., Holzhaider J., Kriner E., Maier A. & Kayicgioklu A. 2008. Foraging activity of Rhinolophus hipposideros on the Island of Her renchiemsee, Upper Bavaria. Mammalian Biology 73: 222-229.g
[247] Zhushi Etemi F. 2005. Valorizimi biologjik i ujërave të lumit Sitnice në bazë të përberjës së faunes bentale. Teza e Doktoratures, Uni versiteti i Prishtines, Prishtinë. (Ferdije Zhushi-Etemi: "Biological evaluation of river Sitnica based on composition of bentic fauna" PhD thesisi, FMNS, University of Prishtina, November 2005).
[248] Zhushi Etemi F., Bytyqi P., Musliu M. & Ceka R. 2017. Composition of butterfly fauna (Lepidoptera: Hesperioidea and Papilionoidea) in the protected area "Mirusha Waterfalls" in Kosovo (abstract) European 20th Congres of Lepidopterology Podgora, Croatia 24-30 April 2017.
[249] Zhushi Etemi F., Bytyçi P., Ismaili M., Visoka V. & Musliu, M. 2017a. Contribution to the knowledge of the Lycaenidae fauna of central part of Kosovo Macedonian Journal of Ecology and Environment 18: (2): 29-36.
[250] Zhushi Etemi F., Bytyqi P., Musliu M. & Ceka R. 2017b. Composition of the butterfly fauna (Papilionoidea) in the protected area "Miru sha Waterfalls" in Kosovo. Book of abstracts of the 20th European Congress of Lepidopterology. April 24th - April 30th 2017, Podgora, Croatia. Croatian Natural History Museum, Zagreb. pp. 122.
[251] Zhushi F., Bytyçi P., Ismaili M., & Musliu M. 2017. Contribution to the knowledge of Nymphalidae fauna (Lepidoptera: Rhopalocera) in Kosovo. Trakia Journal of Sciences 2:101-105. DOI: 10.15547/tjs.2017.02.001.
[252] Zicsi A. 1968. Neuere Angaben zur Kenntnis der Lumbriciden- fauna Jugoslawiens. Annales Universitatis Scientiarium Budapestin ensis de Rolando Eötvös Nominatae 9 - 10: 401 - 405.

INDEX TO SCIENTIFIC NAMES OF SPECIES

Ablepharus kitaibelii 207
Accipiter brevipes 132
Acrocephalus palustris 216
Adicella altandroconia 27
Agapetus delicatulus 166
Agapetus laniger 167
Agapetus ochripes 168
Agrypnia varia 348
Alcedo atthis 133
Alectoris graeca 134
Algyroides nigropunctatus 260
Allolobophora chlorotica 234
Allolobophora leoni 290
Alpioniscus metohicus 100
Ampedus (Ampedus) aethiops 328
Ampedus (Ampedus) nigroflavus 329
Ampedus (Ampedus) sanguineus 330
Ampedus (Ampedus) sanguinolentus 331
Anas crecca 217
Anguilla anguilla 44
Anguis fragilis 261
Annitella triloba 169
Apatura iris 64
Apodemus flavicollis 269
Apodemus sylvaticus 270
Aporrectodea caliginosa 235
Aporrectodea georgii 291
Aporrectodea jassyensis 292
Aporrectodea smaragdina 153
Aquila chrysaetos 46
Aquila fasciata 373
Ardea cinerea 47
Aricia anteros 186
Asagena meridionalis 301
Aythya ferina 75
Aythya nyroca 76
Baetis alpinus 239
Baetis buceratus 156
Baetis melanonyx 157
Baetis nexus 319
Barbus balcanicus 253
Barbus rebeli 202
Belgrandiella bumasta 88
Beraea pullata 349
Bombina variegata256
Boreus westwoodi 345
Botaurus stellaris 77
Brachydesmus jalzici 102
Brachydesmus ljubetensis 103
Brachyptera graeca 62
Brachyptera macedonica 22
Brenthis ino 350
Bufo bufo 361
Bufotes viridis 362
Buteo rufinus 374
Bythinella istoka 89
Caliaeschna microstigma 321
Callilepis cretica 302
Calopteryx splendens 241
Campylaea ljubetenensis 142
Canis aureus 271
Canis lupus 272
Capreolus capreolus 82
Carabus (Chaetocarabus) intricatus 242
Carassius carassius 203
Carcharodus alceae 247
Carcharodus floccifera 116
Carcharodus lavatherae 187
Carterocephalus palaemon 117
Cerambyx (Cerambyx) miles 332
Ceruchus chrysomelinus 164
Chaetopteroides kosovarorum 28
Chaetopteryx bosniaca 170
Chaetopteryx stankovici 171
Chazara briseis188
Ciconia nigra 375
Coenagrion ornatum 322
Cordulegaster bidentata 160
Cordulegaster heros 161
Coronella austriaca 208
Cupido decolorata 189
Cyprinus carpio 126
Darevskia praticola 209
Deltomerus (Deltomerus) nopcsai 106
Dendrobaena alpina 154
Dendrobaena serbica 293
Dendrobaena zicsi 294
Dina prokletijaca 298
Dolichophis caspius 369
Drusus dardanicus 29
Drusus krusniki 172
Drusus schmidi 30
Drusus sharrensis 31
Drusus siveci 32
Drusus tenellus 33
Dyocerasoma drimicum 312
Ecclisopteryx keroveci 34
Ecdyonurus graecus 58
Ecdyonurus vitoshensis 158
Eisenia lucens 295
Emys orbicularis 210
Eophila kosowensis 56
Epeorus yougoslavicus 59
Ephemera parnassiana 159
Erebia euryale 248
Erebia rhodopensis 118
Erinaceus roumanicus 273
Ernodes skipetarum 35
Erythromma viridulum 323
Eudontomyzon stankokaramani 200
Euphydryas aurinia 65
Euphydryas maturna 66
Falco biarmicus 135
Falco cherrug 376
Felis silvestris 221
Glis glis 274
Glossiphonia balcanica 299
Glossosoma discophorum 109
Gobio bulgaricus 355
Gomphus vulgatissimus 162
Gyps fulvus 48
Habroleptoides confusa 240
Habrophlebia eldae 320
Helix dormitoris 143
Herilla illyrica 144
Hesperia comma 249
Hieraaetus pennatus 377
Himantopus himantopus 78
Hipparchia fagi 190
Hipparchia statilinus 191
Hipparchia volgensis 192
Hydropsyche modesta 173
Hyla arborea 363
Iglica illyrica 90

Isorhipis melasoides 333
Lacerta agilis 370
Lacerta viridis 262
Leptoiulus macedonicus 313
Lepus europaeus 275
Leucaspius delineatus 356
Lichenophanes varius 334
Limenitis populi 351
Limnephilus petri 36
Lucanus cervus 243
Lutra lutra 222
Lycaena dispar 119
Lycosa tarantula 303
Lynx lynx balcanicus 50
Macedonica frauenfeldi 145
Martes foina 276
Martes martes 277
Megaphyllum crassum 314
Meles meles 278
Melitaea aurelia 352
Metreletus balcanicus 60
Microcharon profundalis 310
Micropterna fissa 174
Miniopterus schreibersii223
Molorchus (Molorchus) kiesenwetteri 335
Monachoides kosovoensis 91
Montenegrina sporadica 92
Monticola saxatilis 378
Morimus funereus 244
Mustela erminea 279
Mustela nivalis 280
Mustela putorius 281
Mycetophagus (Ulolendus) atomarius 336
Myotis blythii 224
Myotis capaccinii 381
Myotis daubentonii 382
Myotis myotis 225
Myotis mystacinus 383
Myotis nattereri 384
Natrix natrix 211
Natrix tessellata 263
Nemesia pannonica 304
Nemoura anas 23
Nemoura asceta 24
Nemoura vinconi 25
Nemoura zwicki 26
Neptis sappho 353
Notidobia melanoptera 37
Nymphalis antiopa 120
Ochlodes sylvanus 250
Odontocerum hellenicum 38
Onychoglomeris herzogowinensis 315
Onychogomphus forcipatus 163
Orcula wagneri 146
Orthetrum brunneum 324
Osmoderma barnabita 337
Oxyopes lineatus 237
Pachychilon pictum 204
Panurus biarmicus 379
Papilio machaon 193
Paraegopis mauritii 147
Parnassius apollo 121
Pavicevicia comottiorum 107
Pavicevicia pretneri 108
Pelophylax ridibundus 257
Peltis grossa 338
Penichroa fasciata 339
Phengaris alcon 122
Phengaris arion 67
Philopotamus variegatus 175
Picoides tridactylus 218
Pipistrellus pipistrellus 385
Pipistrellus pygmaeus 386
Plagigeyeria gladilini 93
Plebejus pylaon 194
Plecotus auritus 387
Plecotus austriacus 388
Plectrocnemia mojkovacensis 110
Podarcis erhardii 371
Podarcis muralis 264
Podarcis tauricus 212
Polycentropus ierapetra 39
Polydesmus undeviginti 104
Proctodrilus tuberculatus 296
Prostomis mandibularis 165
Protaetia (Potosia) fieberi 245
Protamaurops serbicus 340
Protoherilla baleiformis 148
Protoherilla pseudofallax 149
Pseudophilotes bavius 195
Psychomyia klapaleki 111
Pyrgus sidae 123
Pyrrhosoma nymphula 325
Rana dalmatina 364
Rana graeca 365
Rana temporaria 366
Rhadicoleptus macedonicus 176
Rhinolophus blasii 138
Rhinolophus euryale 226
Rhinolophus ferrumequinum 227
Rhinolophus hipposideros 228
Rhodeus amarus 205
Rhodeus meridionalis 357
Rhyacophila armeniaca 177
Rhyacophila balcanica 178
Rhyacophila bosnica 112
Rhyacophila fischeri 179
Rhyacophila laevis 180
Rhyacophila mocsaryi 181
Rhyacophila obliterata 182
Rhyacophila obtusa 113
Rhyacophila palmeni 63
Rhyacophila trescavicensis 40
Rhyacophila tristis 246
Rhypholophus bifurcatus 346
Rosalia (Rosalia) alpina 341
Rupicapra rupicapra 83
Sabanejewia balcanica 358
Salamandra atra 72
Salamandra salamandra 367
Salmo macedonicus 359
Salmo marmoratus 70
Saxurinator schlickumi 150
Scardinius erythrophthalmus 254
Sciurus vulgaris 282
Serratella spinosa 61
Somatochlora meridionalis 326
Spialia orbifer 251
Steatoda paykulliana 305
Strigilodelima pentheri 94
Sus scrofa 283
Sympetrum depressiusculum 327
Synagapetus moselyi 41
Synagapetus slavorum 114

Talpa caeca 284
Terranigra kosovica 95
Testudo hermanni 213
Tetrao urogallus 219
Thecla betulae 124
Thymelicus acteon 196
Tichodroma muraria 79
Tinodes braueri 183
Tinodes janssensi 115
Tipula (Savtshenkia) benesignata 347
Triloba sandrii 96
Triplax aenea 342
Triplax scutellaris 343
Triturus alpestris 73
Triturus cristatus 128
Triturus vulgaris 258
Typhloglomeris ljubetensis 316
Typhloiulus albanicus 317
Unio crassus 54
Uroctea durandi 306
Ursus arctos 229
Vanellus vanellus 80
Vertigo moulinsiana 97
Vespertilio murinus 389
Vipera ammodytes 265
Vipera berus 266
Vipera ursinii 130
Vitrea kiliasi 151
Vulpes vulpes 285
Wormaldia pulla 184
Wormaldia subnigra 185
Xylotrechus (Xylotrechus) arvicola 344
Zamenis longissimus 267
Zercon kosovina 308
Zerynthia cerisy 197
Zerynthia polyxena 68
Zootoca vivipara 214
Zygiella keyserlingi 307