

*Astragalus dasyanthus*



*Helix lucorum*

*Lasaeola tristis*

*Megalephyphantes pseudocollinus*

*ans Charpentier, 1840*

*Poecilimon intermedius*

*a rhodopensis*

*Misgurnus foss*

*na dalmatina Fitzinger, 1838*

*Rana dalma*

*Lacerta viridis*

*Tetrao tetrax*

*Arvicola scherman*

**CARPATHIAN RED LIST  
OF FOREST HABITATS  
AND SPECIES  
CARPATHIAN LIST OF  
INVASIVE ALIEN SPECIES  
(DRAFT)**

**THE STATE NATURE CONSERVANCY  
OF THE SLOVAK REPUBLIC**

**2014**



**CARPATHIAN RED LIST  
OF FOREST HABITATS AND SPECIES  
CARPATHIAN LIST OF  
INVASIVE ALIEN SPECIES  
(DRAFT)**

**PUBLISHED BY  
THE STATE NATURE CONSERVANCY OF THE SLOVAK REPUBLIC**

**2014**

© Štátna ochrana prírody Slovenskej republiky, 2014

Editor: Ján Kadlečík

Available from: Štátna ochrana prírody SR  
Tajovského 28B  
974 01 Banská Bystrica  
Slovakia

ISBN 978-80-89310-81-4



This publication was elaborated within BioREGIO Carpathians project supported by South East Europe Programme and was financed by a Swiss-Slovak project supported by the Swiss Contribution to the enlarged European Union and Carpathian Wetlands Initiative.

## Table of contents

Draft Red Lists of Threatened Carpathian Habitats and Species and Carpathian List of Invasive Alien Species . . . . .	5
Draft Carpathian Red List of Forest Habitats . . . . .	20
Red List of Vascular Plants of the Carpathians . . . . .	44
Draft Carpathian Red List of Molluscs (Mollusca). . . . .	106
Red List of Spiders (Araneae) of the Carpathian Mts. . . . .	118
Draft Red List of Dragonflies (Odonata) of the Carpathians. . . . .	172
Red List of Grasshoppers, Bush-crickets and Crickets (Orthoptera) of the Carpathian Mountains. . . . .	186
Draft Red List of Butterflies (Lepidoptera: Papilionoidea) of the Carpathian Mts. . . . .	200
Draft Carpathian Red List of Fish and Lamprey Species . . . . .	203
Draft Carpathian Red List of Threatened Amphibians (Lissamphibia) . . . . .	209
Draft Carpathian Red List of Threatened Reptiles (Reptilia) . . . . .	214
Draft Carpathian Red List of Birds (Aves). . . . .	217
Draft Carpathian Red List of Threatened Mammals (Mammalia). . . . .	221
Draft List of Invasive Alien Species of the Carpathian Region . . . . .	228

# DRAFT RED LISTS OF THREATENED CARPATHIAN HABITATS AND SPECIES AND CARPATHIAN LIST OF INVASIVE ALIEN SPECIES

Ján Kadlečík (editor)

## 1. Introduction

The Carpathian Mountains, ranging across seven countries from the Czech Republic, Poland, Slovakia, Ukraine, Hungary, Romania and the small part of Serbia, are Europe's last great natural area with rich biodiversity and diversified landscapes<sup>1</sup>. They host a unique natural and cultural diversity, exceptional at the European scale and are recognized as one of the biodiversity hotspots. Ongoing socioeconomic changes and environmental impacts influence this sensitive ecological system in the region and call for further joint action<sup>2</sup>.

This publication is result of the activities of the Work Package 3 of the project *Integrated management of biological and landscape diversity for sustainable regional development and ecological connectivity in the Carpathians*<sup>3</sup> ("BioREGIO Carpathians") funded from the South East Europe Transnational Cooperation Programme. The activity was lead during 2011 – 2014 by the State Nature Conservancy of the Slovak Republic as a partner of the project. The publication was prepared in cooperation with the other project *Development of nature conservation and protected areas in Slovak Carpathians* funded from the Swiss-Slovak Cooperation Programme<sup>4</sup> and provides first draft lists of threatened habitats and species native to the Carpathians and the list of invasive alien species in the Carpathian region as a basis for further consultation and finalization for final approval by the Carpathian Convention bodies and following activities.

Assessment was made for selected taxonomic groups for which we expected to have sufficient data to synthesise and communicate on the conservation status (mammals,

birds, reptiles, amphibians, fishes, butterflies, orthoptera, dragonflies, spiders, molluscs and vascular plants), using IUCN Red List categories and criteria (version 3.1) (IUCN 2012a). The innovative approach was used when developing the Red List for habitats for which there are still only draft guidelines prepared by IUCN. Because of delays in contracting the specialists for the Red List of non-forest habitats, in this publication only Red List of forest habitats is included. The Red List of non-forest habitats will be available on the relevant web sites of the projects.

Red Lists are lists of animal and plant species, plant communities, habitats and habitat complexes that are either collapsed, extinct, have disappeared or are endangered. The Red List is a tool to inform and catalyse action for biodiversity conservation and policy change, critical to protecting the natural resources. It provides information on population size and trends, geographic range and habitat needs of species<sup>5</sup>.

For the purposes of regional conservation assessments there are important reasons to assess species' extinction risk and publish Red Lists within specific geographically defined areas and special guidelines were produced by IUCN to assist in the application of the IUCN Red List Categories and Criteria at regional levels (IUCN 2012b).

The Red Lists have many uses in conservation including:

- Conservation planning – informing species-based conservation actions and identifying important sites for conservation.
- Decision-making – influencing conservation decisions at multiple scales, from environmental impact assessments to international multilateral environmental

<sup>1</sup> [http://wwf.panda.org/what\\_we\\_do/where\\_we\\_work/black\\_sea\\_basin/danube\\_carpathian/blue\\_river\\_green\\_mtn/](http://wwf.panda.org/what_we_do/where_we_work/black_sea_basin/danube_carpathian/blue_river_green_mtn/)

<sup>2</sup> <http://www.bioregio-carpathians.eu/>

<sup>3</sup> <http://www.bioregio-carpathians.eu/>

<sup>4</sup> <http://www.sopsr.sk/web/?cl=10705>

<sup>5</sup> [http://www.iucn.org/about/work/programmes/species/our\\_work/the\\_iucn\\_red\\_list/](http://www.iucn.org/about/work/programmes/species/our_work/the_iucn_red_list/)

agreements.

- Monitoring – indicating the current status of species and revealing trends in their extinction risk over time, to track progress towards biodiversity targets<sup>6</sup>.

To assess current and potential future threats to the biological diversity, ecosystems, habitats or species of the Carpathians caused by introduction or release of invasive alien species (IAS) within the national territory of each Party and to prevent introduction or release of IAS or to harmonize and coordinate measures and common actions it is necessary first to identify such species which are likely to have adverse environmental impacts that could affect the biological diversity, ecosystems, habitats or species of the Carpathians. Therefore the first List of Invasive Alien Species was elaborated for further consultation and development.

This initiative:

- makes a contribution to the implementation of provisions of the Carpathian Convention;
- makes a contribution to the Global and European Red Lists by adding Carpathian species and habitats, and to the European Lists of Invasive Alien Species;
- provides the basis for a consolidated Carpathian lists as a baseline for monitoring the success of future conservation action;
- is a mechanism for species conservation and management of invasive species in the region; and
- communicates the best possible consensus information on habitats and species status to Conventions and governments to promote conservation action on the ground.

The initiative tried to mobilize existing knowledge on species status which is sometimes dispersed or unpublished, and to make it available for conservation purposes. Unfortunately from different reasons we could not ensure full participation of all appropriate experts and scientists, but with support from about 100 specialists from all Carpathian countries we received the good basis for further development of lists of threatened habitats, threatened species and of invasive alien species in the Carpathian Mountains.

## 2. Assessments

### 2.1 Objectives of the assessment

The objectives of regional assessments can be defined e.g. according to FREYHOF & BROOKS (2011):

- To contribute to regional conservation planning through the provision of a baseline dataset describing the conservation status of the regions species.
- To identify those geographic areas and habitats that

need conservation measures to prevent extinctions and ensure that species reach and maintain a favourable conservation status.

- To identify the major threats and propose mitigating measures and conservation actions to address them.
- To strengthen the network of experts focused on conservation of species in the region, so that the assessments can be kept up-to-date, and expertise be targeted to address the highest conservation priorities.

To work on harmonized policies and measures aiming at the prevention of introduction of invasive alien species (IAS) which are likely to have adverse environmental impacts and to take measures for their control or eradication at regional level, it is crucial to identify those species and assess their potential to affect biological diversity in the region.

### 2.2 Background

The Parties to the Framework Convention on the Protection and Sustainable Development of the Carpathians (Kyiv, Ukraine; 2003 – the “Carpathian Convention”) according to its Article 4 on *Conservation and sustainable use of biological and landscape diversity* agreed to pursue policies aiming at conservation, sustainable use and restoration of biological and landscape diversity throughout the Carpathians. They committed themselves to take appropriate measures to ensure a high level of protection and sustainable use of natural and semi-natural habitats, their continuity and connectivity, and species of flora and fauna being characteristic to the Carpathians, in particular the protection of endangered species, endemic species and large carnivores. The Parties shall pursue policies aiming at the prevention of introduction of alien invasive species, their control or eradication. Another obligation is to develop and/or promote compatible monitoring systems, coordinated regional inventories of species and habitats, coordinated scientific research, and their networking. These provisions are further elaborated in obligatory articles of the Protocol on Conservation and Sustainable Use of Biological and Landscape Diversity to the Carpathian Convention (Bucharest, 2008; the “Protocol”) with objective to enhance the conservation, restoration and sustainable use of biological and landscape diversity of the Carpathians, bringing benefits to present and future generations. To achieve these objectives, the Parties shall harmonise and coordinate their efforts and cooperate on conservation, maintenance and sustainable use of natural and semi-natural habitats and conservation and sustainable use of species of flora and fauna, they should cooperate especially on the development, harmonization and implementation of relevant management plans aimed at

achieving common standards for protection and sustainable use of habitats and species, prevention of introduction of invasive alien species which might threaten ecosystems, habitats or species native to the Carpathians, their control or eradication. Another field is development and/or promotion of compatible biodiversity indicators and monitoring systems, of coordinated regional inventories of species and habitats, development and/or promotion of coordinated scientific research programs and projects, etc.

According to the Article 8 of the Protocol (*Conservation, maintenance, restoration and sustainable use of natural and semi-natural habitats*) and the Article 12 (*Conservation of endangered species including endemic species, and large carnivores of the Carpathians*) the Conference of the Parties shall adopt a list of endangered natural and semi-natural habitat types native to the Carpathians (Carpathian Red List of Habitats) and a list of endangered flora and fauna species native to the Carpathians (Carpathian Red List of Species) based on internationally recognized principles and criteria.

According to the Article 13 (*Prevention of the introduction of invasive alien species and/or genetically modified organisms threatening ecosystems, habitats or species, their control or eradication*) each Party shall pursue policies aiming at the prevention of introduction or release of invasive alien species (IAS) which are likely to have adverse environmental impacts that could affect the biological diversity, ecosystems, habitats or species of the Carpathians, including early warning on occurrence of new invasive alien species on its territory. The Parties shall take measures to prevent introduction or release of IAS and, if need be, control or eradication of such species.

In the Article 18 (*Compatible monitoring and information systems*) the Parties agreed to cooperate to develop a joint information system on biological and landscape diversity in the Carpathians and to support coordinated regional inventories of species and habitats of the Carpathians.

The implementation document for the above mentioned obligations of the Contracting Parties to the Carpathian Convention is the Strategic Action Plan adopted in 2011<sup>8</sup>.

Action 2.1. (*The elaboration of the Carpathian Red List of Habitats*) and Action 3.1. (*Carpathian Red List of Species elaboration*) of the Strategic Action Plan require

- Compile and analyse scientific data, national inventories and maps of natural and semi-natural habitats and concerning flora and fauna species native to the Carpathians, in particular endangered species including endemic species and large carnivores, within the national territory of each Party;
- Elaborate the proposal of the Carpathian Red List of Habitats, including endangered natural and semi-natural habitat types native to the Carpathians, which

either are in danger of disappearance in their natural range, or have a small natural range following their regression or by reason of their intrinsically restricted area, or present outstanding examples of typical characteristics of the Carpathian region - to be adopted by the Conference of the Parties, and revised every twelve years.

- Prepare the proposal of the Carpathian Red List of Species based on compilation and analysis of scientific data and national inventories concerning endangered species, including endemic flora and fauna species native to the Carpathians, and large carnivores and following internationally recognized principles and criteria (e.g. IUCN Red List Criteria) to be adopted by the Conference of the Parties, and revised every twelve years.

Action 5.1. asks to develop national policies and/or strategies targeted at the prevention of introduction or release of invasive alien species which are likely to have adverse environmental impacts that could affect the biological diversity, ecosystems, habitats or species of the Carpathians in the national territory; or, if such policies and/or strategies are already in place - evaluate their effectiveness and implementation up to date.

Action 9.1. requires to cooperate with scientific and other relevant institutions on:

- a) Elaboration of guidelines on harmonisation of environmental monitoring programmes of the Parties in the Carpathians, in particular those concerning habitats and species native to the Carpathians, with the objective to ensure data comparability;
- b) Preparation of the proposals for common monitoring programs to be jointly undertaken in the Carpathians by the Parties, in particular those concerning endangered natural and semi-natural habitat types listed in the Carpathian Red List of Habitats and listed in the Carpathian Red List of Species.

Finally Action 9.2. assesses duties to cooperate to develop a joint information system on the state of biological and landscape diversity in the Carpathians, based on the relevant existing Clearing House Mechanisms, including national results of the public research provided by the Parties and results of the common scientific programs and projects jointly undertaken in the Carpathians by the Parties, a joint biodiversity information system should be established.

These were the reasons why the development of the Carpathian Red List of threatened habitats and species and the List of Invasive Alien Species of the Carpathians were included as important activity to the project “Integrated management of biological and landscape diversity for sustainable regional development and ecological connectivity in the Carpathians” (BioREGIO Carpathians).

<sup>6</sup> [http://www.iucn.org/about/work/programmes/species/our\\_work/the\\_iucn\\_red\\_list/](http://www.iucn.org/about/work/programmes/species/our_work/the_iucn_red_list/)

<sup>7</sup> <http://www.carpathianconvention.org/documents-carpathian-convention.html>

<sup>8</sup> <http://www.carpathianconvention.org/documents-thematic-areas.html>

The activity was coordinated by the Project Partner 9 – the State Nature Conservancy of the Slovak Republic in Banská Bystrica and other relevant project partners were involved (Nature Conservation Agency of the Czech Republic, Szent István University – Hungary, Environmental Information Centre UNEP/GRID Warsaw – Poland, Regional Environmental Protection Agency Sibiu and Iron Gates Natural Park Administration – Romania, National Forest Centre – Slovakia, Public Enterprise Djerdap National Park – Serbia and Carpathian Biosphere Reserve – Ukraine) which engaged about 100 experts working on threatened habitats, species and invasive alien species of plants and animals.

There are not many comprehensive regional Red Lists developed in Europe so far.

IUCN and the European Commission have been working together on an initiative to assess around 6,000 European species according to IUCN regional Red Listing Guidelines. To date, European regional assessments have been completed for mammals, reptiles, amphibians, butterflies, dragonflies, freshwater fishes, freshwater and terrestrial molluscs as well as for selected saproxylic beetles, and vascular plant species. Currently there are assessing also pollinators (bees and bumblebees), priority medicinal plants and marine fishes and reassessing all birds<sup>9</sup>.

The Mediterranean Red List is an on-going process that aims at assessing the conservation status of the fauna and flora of the Mediterranean region considered also as a biodiversity hotspot. This initiative highlights the species that are threatened with extinction at the Mediterranean level (e.g. mammals, reptiles, amphibians, freshwater and marine fishes, freshwater molluscs, dragonflies, and selected groups of vascular plants) – so that appropriate regional and local conservation action can be taken to improve their status<sup>10</sup>.

Another regional Red Lists exist for sea basins - Black Sea Red Data Book<sup>11</sup> and Baltic Sea Red Lists of biotopes<sup>12</sup> and species<sup>13</sup> (HELCOM 2013a, b). All these initiatives have been implemented in specific long-term projects with involvement of a number of specialists and funding from different sources.

The first Carpathian List of Endangered Species was compiled by Z. J. Witkowski, W. Król and W. Solarz (WITKOWSKI et al. eds 2003) and published more than 10 years ago by the Carpathian Ecoregion Initiative, WWF and Institute of Nature Conservation, Polish Academy of Sciences. This Red List also covered only part of the Carpathians' taxonomic groups and compiled information on red listed taxa and valuable plant alliances in particular Carpathian countries without assessment expressed clearly in used criteria on regional level.

Ivan Vološčuk (Vološčuk ed. 1996) compiled lists of threatened plants and vertebrates of 17 Carpathian national parks.

Within limited time, funding, expertise and data available in the BioREGIO project our ambition was to prepare at least first drafts of the Red List of forest habitats and non-forest habitats, Red List of vascular plants, of Vertebrates and selected groups of Invertebrates, and the List of Invasive Alien Species for further improvements and approval by the Carpathian Convention Contracting Parties.

We understand that there is much to be done and to increase the number of species assessed, improving the taxonomic coverage and thus providing a stronger base to enable better conservation and policy decisions in the Carpathian region. Additional projects for further harmonization of data sets and compiling of lists of threatened

Figure 1 Map of the Carpathian eco-region as used in the CBIS.



taxa in the Carpathians are necessary.

The collected data will be integrated in the Carpathian Joint Biodiversity Information System (CJBIS).

## 2.3 Assessment Methodology

### 2.3.1 Geographic scope

The boundaries of the Carpathians as used for the purpose of this assessment are shown in Figure 1. This map was used in previous projects for development of the Carpathian Biodiversity Information System (CBIS)<sup>14</sup>. This includes borders of 309 orographic units (in eastern Czech Republic, south-eastern Poland, most of Slovakia, northern Hungary, western Ukraine, big part of Romania and small part of eastern Serbia), and the organisation of data collection could be compatible with previous Carpathian projects.

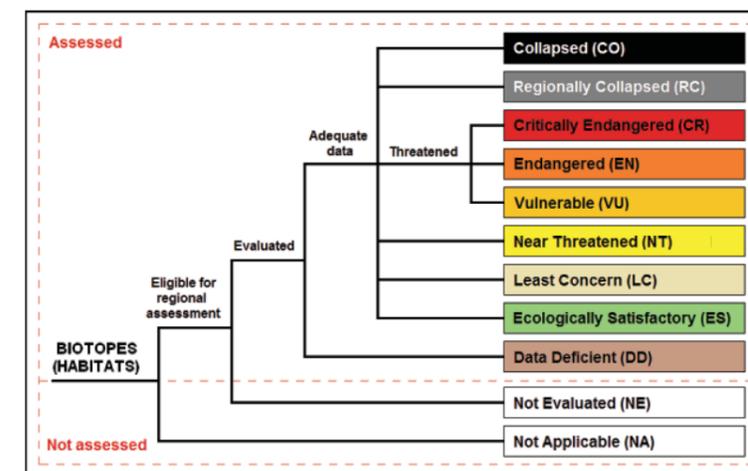
### 2.3.2 Habitats/biotopes assessment

The IUCN Red List of Ecosystems Categories and Criteria (RODRIGUES et al. 2011) were only proposed in the time of developing the Carpathian Red List of habitats. The draft methodology was adapted to the Carpathians to assess the risk of collapse of the forest and non-forest habitat types, or whether they are vulnerable, endangered, or critically endangered, assessing losses in area, degradation or other major changes such as conversion<sup>15</sup>. The present assessment can be considered as a case study to classify and list the ecosystems and document their status and so highlight best practices in ecosystem management.

The proposed IUCN Red List categories for habitats are similar to those used by the IUCN for the assessment of species (IUCN 2001). The structure of the categories and their relation can be found in Fig. 2. The threatened habitats are categorized either as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU). Habitats that just fail to meet the criteria of the threatened categories are classified Near Threatened (NT) and ecosystems that unambiguously meet none of the criteria are Least Concern (LC). Habitats that are in a state of their ecological optima and are without threat, are classified as Ecologically Satisfactory (ES). Analogous to the species categories, an additional category Data Deficient (DD) is given to biotopes (habitats) for which too few data exist to apply any criterion. Biotopes (habitats) that have collapsed throughout their distribution area are categorized Collapsed (CO), which corresponds to the category Extinct in

species assessments. For biotopes (habitats), which would have collapsed only in the region, we allocated category Regionally Collapsed (RC). Biotopes (habitats) in the territory of the Carpathians that have not been evaluated at all belong to the category Not Evaluated (NE). Biotopes (habitats), which are not included in the territory of the Carpathians, are classified Not Applicable (NA) (BARANČOK et al. 2014).

Figure 2 Structure of the proposed IUCN Red List categories for non-forest biotopes (habitats) in the Carpathians by Barančok et al. (unpublished)



In order to create the Carpathian Red List of threatened biotopes (habitats) the development of national red lists of biotopes (habitats) was proposed. The special forms and database were developed for forest and non-forest habitats to collect data from all Carpathian countries with the agreed structure, consistent with the Guidelines for Application of IUCN Red List Criteria at Regional Levels (IUCN 2003) and categories and criteria proposed for use in developing a red list of ecosystems by RODRIGUES et al. (2011).

Biotopes (habitats) in categories CO, RC, CR, EN, VU, NT, LC, ES and DD were selected as a basis for creation of draft Carpathian Red List. Final categorisation of the biotopes (habitats) on Carpathian level was done after common consultations and workshops of expert teams.

### 2.3.3 Species assessment

The conservation status of the Carpathian species at regional level was assessed using the 2001 IUCN Red List Categories and Criteria: Version 3.1 (IUCN 2001, 2012a) and the Guidelines for Application of IUCN Red List Criteria at Regional Levels (IUCN 2003, 2012b).

The structure of IUCN Red List categories at regional level is the following:

<sup>9</sup> <http://www.iucnredlist.org/initiatives/europe>

<sup>10</sup> <http://www.iucnredlist.org/initiatives/mediterranean>

<sup>11</sup> <http://www.grid.unep.ch/bsein/redbook/index.htm>

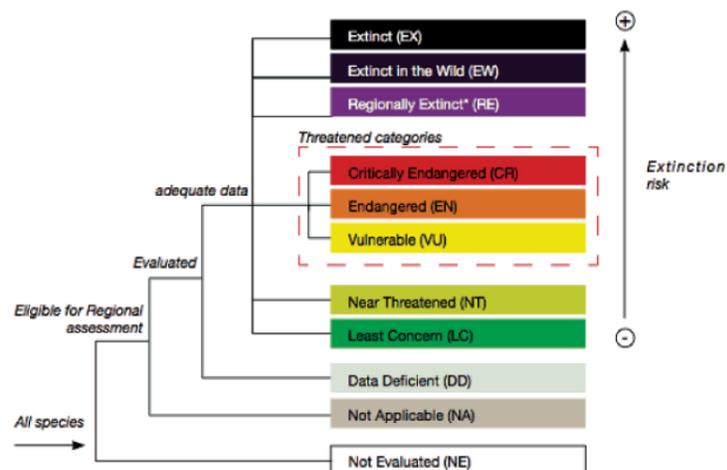
<sup>12</sup> <http://helcom.fi/baltic-sea-trends/biodiversity/red-list-of-biotopes-habitats-and-biotope-complexes/>

<sup>13</sup> <http://helcom.fi/baltic-sea-trends/biodiversity/red-list-of-species/>

<sup>14</sup> [www.carpatians.org/cbis/orogs.html](http://www.carpatians.org/cbis/orogs.html)

<sup>15</sup> <http://www.iucnredlistofecosystems.org/>

Figure 3. IUCN Red List categories for species at regional level (IUCN 2012b).



In the preparatory phase of the assessment the project partners were asked to use the most recent version of the national Red List or to create / update national Red Lists of Carpathian species using consistent Guidelines for Application of IUCN Red List Criteria at Regional Levels (IUCN 2003, 2012b).

The idea was to make an overview of all taxa (checklists) that are categorised in every Carpathian country. National lists of these taxa from each country were included in the on-line data forms developed specially for this project in order to harmonise data collection and assessment procedure and documentation (Fig. 4).

Figure 4. Structure of the on-line form for species assessment.

Notes for "other" in form of removing

If you have filled in the "other" section for primary forms removed from the wild please write details here

Add new source of specimens in commercial trade

1	Source	Select one
	100 %	<input type="checkbox"/>
	>75 %	<input type="checkbox"/>
	51 - 75 %	<input type="checkbox"/>
	26 - 50 %	<input type="checkbox"/>
	0 - 25 %	<input type="checkbox"/>

a "new source of specimens" will be added only if you select other than "Select one", use the + button to be able add more in one step

Notes for "other" in sources of specimens in commercial trade

If you have filled in the "other" section for source of specimens please put details here

Wild 5 years offtake trend

Trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years

Wild 5 years offtake trend

Trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years

Domestic 5 years offtake trend

Trend in the amount of offtake/harvest produced through domestication/cultivation over the last five years

Threats - general information

Add new Threats

1	Threat	0 - Select one
	past	<input type="checkbox"/>
	present	<input type="checkbox"/>
	future	<input type="checkbox"/>

a "new use threat" will be added only if you select other than "Select one", use the + button to be able add more in one step

Conservation - general information

Mozilla Firefox

http://www.sopsr.sk/symfony-bioregio/botany/new

SquirrelMail 1.4.21 - SOP SR

Info: Dear users, 3.6.2013 - Botany List - new action show, 31.5.2013 - Botany List - column Botany taxon and column Taxon name national - both on click sort ascending/descending. Fauna Europaea - Orthoptera added to lookup table

ABOUT BIOREGIO LOOKUP TABLES NATIONAL LEVEL DATA LOGOUT

Logged in as Feráková (SK)

## New Botany

link to Euro - Med plantbase (In new tab) help links: Primary form removing from the wild Use of taxon Source of specimens in commercial trade

Back to list Save Save and add

Taxon

copy the taxon name from Euro - Med plantbase (see link above), if you do not find a taxon, try find in original data source of PGR Forum like this example "Allium erubescens - PGR Forum"

Taxon name national

scientific name of species, important in country and not occur in Euromed plantbase and occur grouped into another species (e.

Country

SK

select your country, default value - according to country of logged user

Occurrence in country

No choice No occurrence in the country No occurrence in the countrys Carpathian region

Taxon not occur in the country or not occur only in the countrys Carpathian region, No choice - as miss-click correction

No information

No information exist for this species

Red List Status - category

Figure 5. Example of the data evaluated at national level.

Mozilla Firefox

http://www.sopsr.sk/symfony-bioregio/botany

SquirrelMail 1.4.21 - SOP SR

Info: Dear users, 3.6.2013 - Botany List - new action show, 31.5.2013 - Botany List - column Botany taxon and column Taxon name national - both on click sort ascending/descending. Fauna Europaea - Orthoptera added to lookup table

ABOUT BIOREGIO LOOKUP TABLES NATIONAL LEVEL DATA LOGOUT

Logged in as Feráková (SK)

## Botany List

If you have any question contact Mr Pavol Eliáš, e-mail: pavol.elias.jun@gmail.com

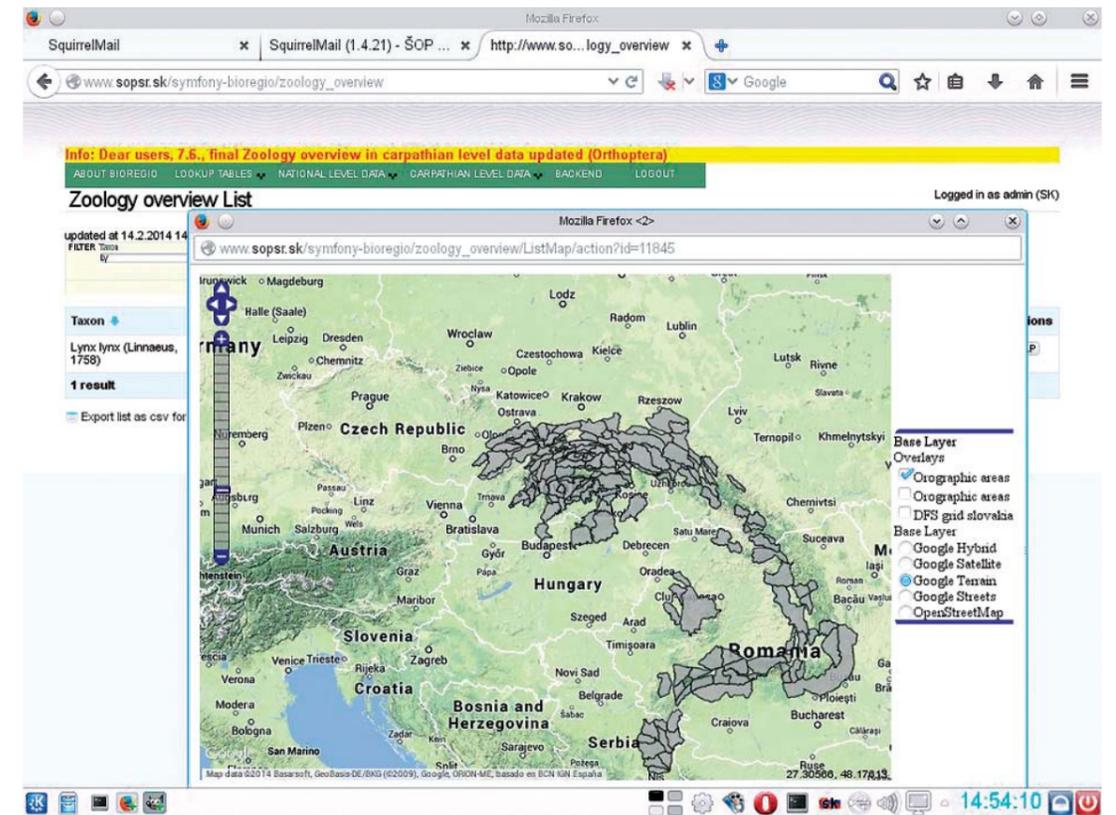
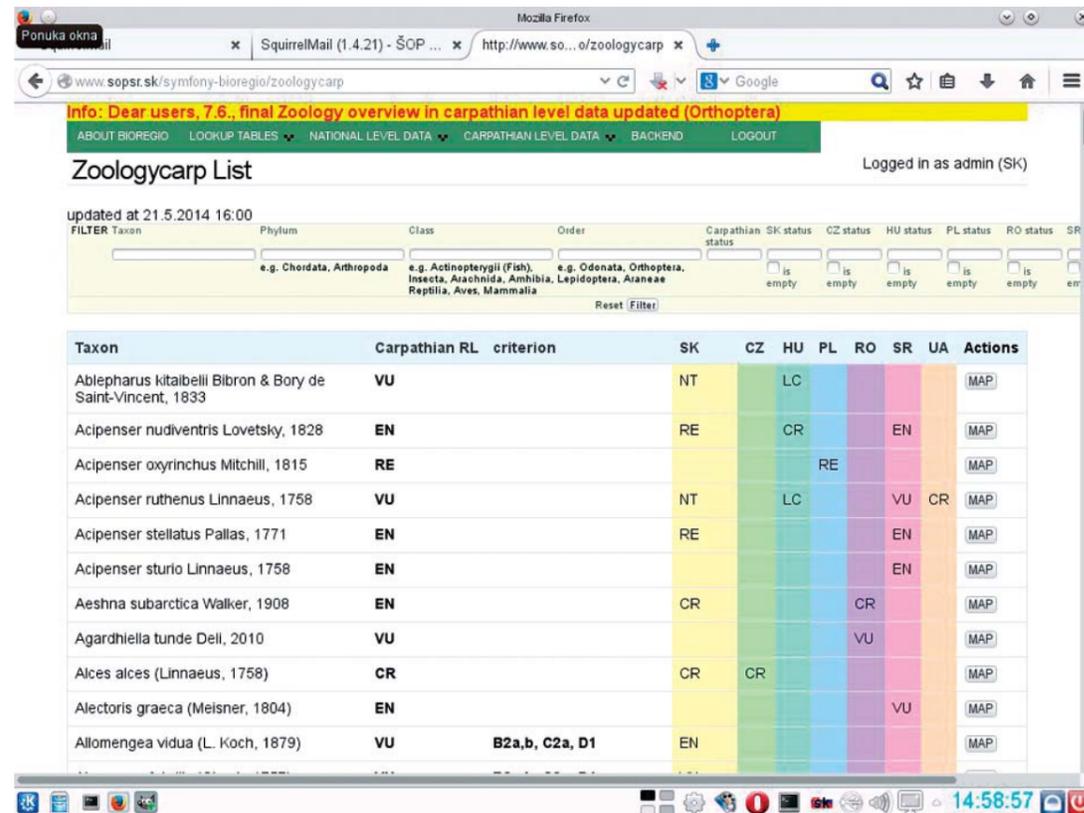
FILTER Botany taxon Country Author Occurrence in country No information Red List Status - category

is empty

Reset Filter

Botany taxon	Taxon name national	Country	Red List Status - category	Red List Status - criteria	Author	Actions
Achillea crithmifolia		HU	NT - Near Threatened		Schmotzer András	Edit Delete Show
Achillea ptarmica		HU	NT - Near Threatened		Schmotzer András	Edit Delete Show
Arabis alpina		HU	EN - Endangered		Schmotzer András	Edit Delete Show
Aconitum variegatum subsp. gracile		HU	VU - Vulnerable		Schmotzer András	Edit Delete Show

Figure 6. The database allows to compare results and to generate maps.



### 2.3.4 Invasive Alien Species assessment

For compiling the Carpathian List of Invasive Alien Species (IAS) were used flora and fauna databases, catalogues or lists of alien species or lists of IAS already existing in the project countries.

For alien species or IAS were used definitions of the Convention on Biological Diversity (CBD) for the purpose of the CBD *Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats or Species* (annexed to CBD Decision VI/23)<sup>18</sup> as follows:

- **alien species:** a species, subspecies or lower taxon, introduced outside its natural past or present distribution, includes any part, gametes, seeds, eggs or propagules of such species that might survive and subsequently reproduce;

- **invasive alien species:** an alien species whose introduction and/or spread threaten biological diversity;
- **introduction:** the movement by human agency, indirect or direct, of an alien species outside of its natural range (past or present). This movement can be either within a country or between countries or areas beyond national jurisdiction.
- **intentional introduction:** the deliberate movement and/or release by human of an alien species outside its natural range
- **unintentional introduction:** all other introductions which are not intentional

For listing a particular species the assessment of the species was done and it took into account its taxonomic identity, time of immigration and invasion status. When

defining the status of a species in a region/country some factors were taken into account: origin status (whether the taxon is native or alien to the region/country), residence status (when was the taxon introduced and what its position is in the invasion process) and invasion status (what is the degree of its naturalization and possible invasion).

The species were assessed in categories as *casual alien species* (not established), *naturalized alien species* (rare and local), and *invasive alien species* (a naturalized species that produces reproductive offspring, often in very large numbers, and thus have the potential to spread over a considerable area<sup>19</sup>).

To establish the database on IAS the on-line form was developed, too.

Assessed were vascular plants, vertebrates and some groups of invertebrates. Species identified as invasive in one of the Carpathian countries were assessed as candidates for the Carpathian List. These were evaluated according to criteria as: number of countries/orographical units and area occupied by the species, impacts on biodiversity (or human health and economy), in some cases invasive potential of the species.

### 3. Results

The assessments were organized by team leaders focu-

sed on forest habitats (Ivor Rizman), non-forest habitats (Peter Barančok), vascular plants (Peter Turis, Pavol Eliáš jun.), molluscs (Ľubomíra Vavrová), spiders (Peter Gajdoš), dragonflies (Dušan Šácha), orthopterans (Anton Krištin), butterflies (Henrik Kalivoda), fish and lamprey species (Ján Koščo), amphibians, reptiles (Peter Urban), birds (Peter Puchala) and mammals (Peter Urban), and on Invasive Alien Species (Ema Gojdičová).

### 3.1. Number of red listed and of invasive alien species

Final versions of the Carpathian Red List and the List of Invasive Alien Species are the result of a scientific consensus reached by participating experts. It will be publicised on BioREGIO and Carpathian Convention websites for following discussion and updating. These are the lists of Carpathian habitats and taxa classified in categories, described by criteria, data on endemism and listings in other Conventions (Bern Convention, Bonn Convention) and EU directives (Habitats Directive, Birds Directive). Documentation to each categorised species and distribution maps (mostly on level of orographic units) in the Carpathians are in the databases. The list of IAS listed the species identified in most of the Carpathian countries as invasive and causing problems.

<sup>16</sup> [www.iucnredlist.org](http://www.iucnredlist.org)

<sup>17</sup> [www.iucnredlist.org/europe](http://www.iucnredlist.org/europe) and <http://ec.europa.eu/environment/nature/conservation/species/redlist>

<sup>18</sup> <http://www.cbd.int/decision/cop/?id=7197>

<sup>19</sup> <http://www.bioregio-carpathians.eu/key-outputs-and-publications.html>

Figure 7. The database helps in compiling statistical data.

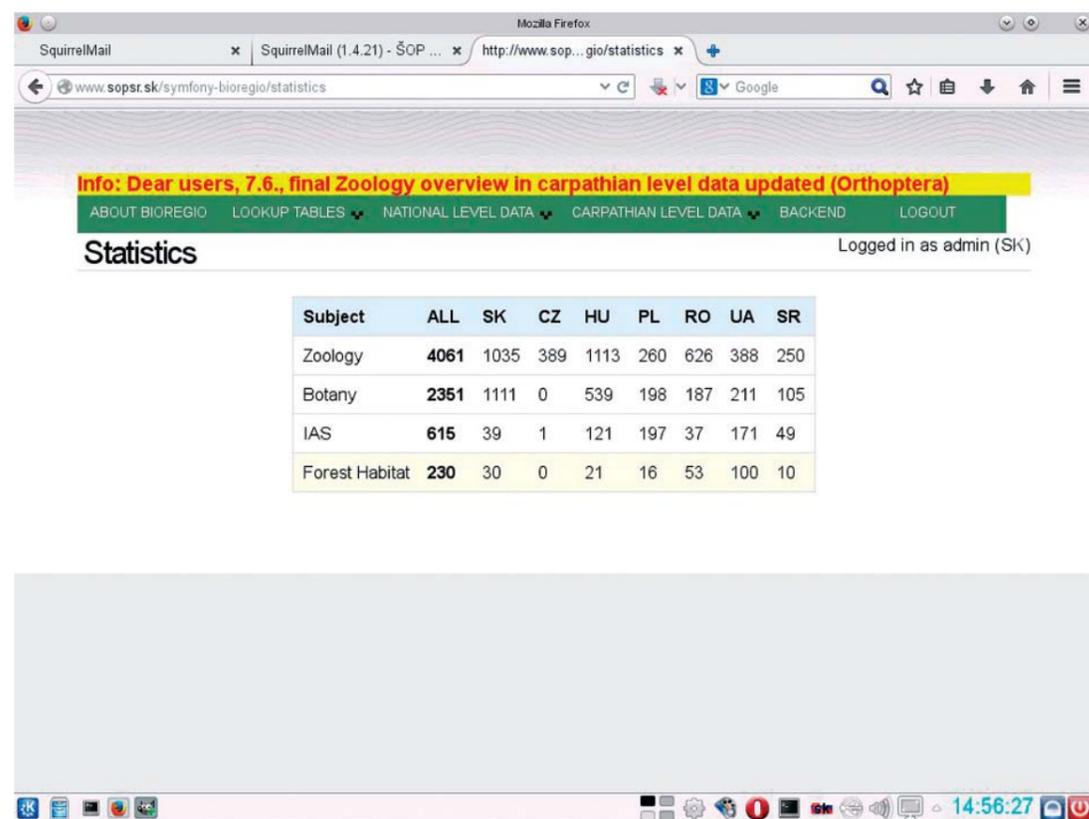


Table 1: Threatened categories of habitats and species assessed in the Carpathians

Groups assessed	IUCN "threatened" categories				
	CO, EX, (EX?)	RC, RE, (RE?)	CR (CR(PE))	EN	VU
Forest habitats	0	0	13	10	17
Non-forest habitats	0	0	10	26	69
Vascular plants	(1)	20 (13)	95 (3)	135	219
Mollusca	0	0	1	6	30
Araneae	0	5	8	44	114
Odonata	0	0	0	4	5
Orthoptera	0	0	0	10	10
Lepidoptera	0	2	0	25	27
Petromyzontes, Osteichthyes	0	2	2	7	16
Amphibia	0	0	0	0	6
Reptilia	0	0	1	3	3
Aves	0	1	5	14	8
Mammalia	1	0	2	3	17

Legend: CO = Collapsed (for habitats); EX = Extinct; EX? = probably extinct (for species); RC = Regionally Collapsed; RE = Regionally Extinct; RE? = probably regionally extinct; CR = Critically Endangered; CR(PE) = Critically Endangered (possibly extinct); EN = Endangered; VU = Vulnerable

This report is the first summary of the draft red lists of habitats and species and of the black list of invasive alien species of the Carpathians on which the Carpathian Convention can build.

The overview of the results of assessments of the risk of collapse/extinction of habitats and species at the regional (Carpathian) level is in the Table 1.

Forty forest habitat types were classified in some of the categories of threat, while 105 non-forest habitat types are threatened in the Carpathian region. 21 vascular plant species already disappeared from the region and 13 species are probably regionally extinct in the Carpathians. Additional about 450 plant species are considered threatened in the region. In the selected groups of invertebrates are threatened 37 species of molluscs, 166 species of spiders

(5 regionally extinct), 9 species of dragonflies, 20 species of orthopterans, 52 species of butterflies (and 2 are regionally extinct). The most threatened group of vertebrates are birds (27 species and 1 regionally extinct), fishes (25 species, 2 regionally extinct), mammals (22 species), for reptiles were identified 7 threatened species and for amphibians 6 species.

This information will help to put national conservation priorities into a Carpathian context, thus maximising the effectiveness of local and national conservation measures, and facilitating the development of integrated regional conservation strategies.

As for the invasive alien species in the final table were included identified vascular plants, molluscs, malacostracans (a group of crustatians), orthopterans, true bugs (Hemiptera), butterflies, beetles, reptiles and mammals.

Table 2: Invasive alien plant and animal species in the Carpathians

Groups assessed	Vascular plants	Mollusca	Malacostraca	Orthoptera	Hemiptera	Lepidoptera	Coleoptera	Osteichthyes	Reptilia	Mammalia
Number of species	37	11	1	1	2	6	4	10	1	4

The list of invasive alien species includes 77 taxa (37 plant species and 40 animal species). From plant species, 32 are herbs and 5 woody plants. Majority of animal species are Invertebrates, 14 arthropods and 11 molluscs are listed. The most numerous group of invasive Vertebrates are fishes (with 10 species on the list).

### 3.2 Major threats identified in the different assessments

Some species and habitat types have naturally restricted range and they occur in low densities with limited dispersal and these are especially sensitive to any change in the habitat structure or in the surrounding areas. Other species or habitats are relatively well distributed but are facing increasing pressure. Main threats to species in the Carpathians are:

- Habitat loss, degradation, destruction, fragmentation or alteration
  - deforestation, intensive logging, decreasing of area of virgin and old-growth forests, removal of dead wood from forests;
  - afforestation of non-forest areas, e.g. dry rocky habitats, wet grasslands, changes in land use, agriculture intensification, overgrazing on one hand and land abandonment on the other, decline in traditional farming and management, grass cutting

and grazing and following succession leading to overgrowing by shrubs and trees, etc.;

- forest fires;
  - changes in character of water bodies and sediments, water regime mismanagement, loss of temporary freshwater habitats, e. g. seasonal ponds and other wetlands, water abstraction building of migration barriers, fragmentation of rivers, dam, hydropower construction;
  - water pollution;
  - degradation of wetlands generally, or some specific habitats, e.g. springs, peat excavation;
  - intensive fish farming;
  - human settlement expansion, infrastructure development;
  - climate change and resulting habitat changes
- Human disturbance – tourism, rock climbing, paragliding, winter sports and infrastructure (roads, hotels etc.);
  - Air pollution;
  - Use of pesticides, especially insecticides and other chemicals, pest control;
  - For many vertebrates road mortality, hunting, animal crime – poaching, illegal shooting, poisoning, deliberate persecution; for birds collisions with electric lines;
  - Introduction and expansion of alien species.

#### 4. Recommendations and conclusions and future challenges

The Red Lists of Carpathian habitats and species are important source of information on the current status of habitat types and populations of threatened species in the region. The list could be an essential guide to conservation efforts focused on threatened habitats and species. As several times mentioned above the present lists are drafts based on recently available data and knowledge that are in many cases not sufficient for objective assessment. Future research should be focused on collecting data necessary for the habitats and species classification according to the IUCN Red List Criteria. It is important to regularly monitor the ecosystems, species, their population size and trends as well as quality of their habitats. Priority should be given to habitats and species classified as threatened (category CR, EN and VU) and those of the European and national importance.

The special consideration should be given to alien species identified as invasive and causing biodiversity, health, economic or other difficulties and impacts.

The presented lists can be very useful guide for common action of all Carpathian countries and for developing of thematically focused strategies on Carpathian level. It would also help to monitor conservation actions and their results.

These assessments are now submitted for review, especially by specialists (e.g. members of IUCN SSC Specialist Groups) and experts with sufficient overview and information on Carpathian-wide or European situation of the groups or species concerned, with the hope that national supporting information can be improved any time in the project database, but the wider regional knowledge is applied. Updating on species distribution, population size and trend and threats are activities we should focus on.

Revision of the compiled red lists and the list of invasive alien species is expected to be done every twelve years<sup>20</sup>, however for some groups it may be too long period when these are under stronger pressure, or are spreading dramatically and would require more frequent review. During the BioREGIO project it was possible to elaborate red lists only for the limited number of animal groups and it is necessary to continue in this work in follow-up projects (at least for other relatively well-studied groups). It is strongly recommended to involve from the very beginning relevant data holders (scientific institutions and experts) with scientific approach and good motivation for the most comprehensive results and using of the as complete data as possible.

During elaboration of red lists there was identified necessity for further work on endemic species. Endemism was one of the attributes considered in assessing the conser-

vation status of Carpathian taxa and compiling the final tables of threatened species. However there is not harmonized approach to and understanding of the endemics in the Carpathian countries and the approaches vary much in the region. So far there is not elaborated comprehensive study on the Carpathian-wide endemic taxa, however compiling and analysis of data concerning endemic species is included as one of the actions (Action 3.1.) of the Strategic Action Plan for the Implementation of the Biodiversity Protocol to the Carpathian Convention.

Increasing recognition of the impact of invasive alien species will lead to developing the indicators of biological invasions (EUROPEAN ENVIRONMENT AGENCY 2012). This case study can help in the development of reliable indicators based on the impact of IAS and in common interpretation of invasiveness and methodological approaches and finally in prioritisation of actions in the Carpathians.

##### 4.1 Prioritizing of efforts for assessing and reassessing species taxonomic groups and habitat types

Carrying out Red List assessments for all species within taxonomic groups that contain many species requires considerable effort and resources. In the near future however there will be necessary to mobilise funds not only for further first assessments for other taxonomic groups characteristic for the Carpathians, but also for reassessments of the submitted groups of species and habitats and this means that this should be the permanent part of the work plan of the Carpathian Convention, but also of its parties. This is vital for using the IUCN Red List as an indicator of biodiversity trends over time. So it is important to design the assessment and reassessment programmes within the Carpathian Convention to be sustainable and cost-effective. To achieve this it will be necessary to establish the permanent working group (sub-group) on Carpathian Red Lists (and on Invasive Alien Species) and to include in the biodiversity strategy and work plan request to continue in assessing published literature (scientific and popular) and unpublished reports on Carpathian habitats and species, to involve key experts (e.g. through workshops, by email, and/or open-access web-based discussion fora) in these processes, analysing monitoring datasets to determine population trends, assessing remote-sensing data to determine rates of habitat loss, promoting, advocating, supporting and or/funding fieldwork to gather new relevant data on threatened habitats, species, but also on invasive alien species.

##### **Acknowledgments**

We would like to thank all experts who provided data on habitats and species in their countries, commented the lists or organized work of specialists (their names are in-

cluded in respective articles of this publication), to habitats and taxonomic groups team leaders for compiling the lists which you can find in the following parts and to my colleagues from the Slovak State Nature Conservancy for their technical and organisation help and support, namely Alexander Kürthy and Tereza Thompson.

##### **References**

- BARANČOK, P., KOLLÁR, J., BARANČOKOVÁ, M. & KRAJČÍ, J. (2014). Red List of the Carpathian Non-forest Biotores (Habitats). Draft methodology (Ms)
- EUROPEAN ENVIRONMENT AGENCY (2012). The impacts of invasive alien species in Europe. EEA, Copenhagen, 114 pp.
- FREYHOF, J. & BROOKS, E. (2011). European Red List of Freshwater Fishes. Luxembourg: Publication Office of the European Union.
- HELCOM (2013). Red List of Baltic Sea underwater biotopes, habitats and biotope complexes. Baltic Sea Environmental Proceedings No. 138.
- HELCOM (2013). HELCOM Red List of Baltic Sea species in danger of becoming extinct. Balt. Sea Environ. Proc. No. 140.
- IUCN (2001). IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, U.K. ii + 30pp. Downloadable from [http://www.iucnredlist.org/documents/redlist\\_cats\\_crit\\_en.pdf](http://www.iucnredlist.org/documents/redlist_cats_crit_en.pdf)
- IUCN (2003). Guidelines for Application of IUCN Red List Criteria at Regional Levels: Version 3.0. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.
- IUCN (2012a). IUCN Red List Categories and Criteria: Version 3.1. Second edition. Gland, Switzerland and Cambridge, UK: IUCN. Available at [www.iucnredlist.org/technical-documents/categories-and-criteria](http://www.iucnredlist.org/technical-documents/categories-and-criteria)
- IUCN (2012b). Guidelines for Application of IUCN Red List Criteria at Regional Levels: Version 4.0. Gland, Switzerland and Cambridge, UK: IUCN. Available at [www.iucnredlist.org/technical-documents/categories-and-criteria](http://www.iucnredlist.org/technical-documents/categories-and-criteria)
- KEITH, D.A., RODRÍGUEZ, J.P., RODRÍGUEZ-CLARK, K.M., AAPALA, K., ALONSO, A., ASMUSSEN, M., BACHMAN, S., BASSETT, A., BARROW, E.G., BENSON, J.S., BISHOP, M.J., BONIFACIO, R., BROOKS, T.M., BURGMAN, M.A., COMER, P., COMÍN, F.A., ESSL, F., FABER-LANGENDOEN, D., FAIRWEATHER, P.G., HOLDAWAY, R.J., JENNINGS, M., KINGSFORD, R.T., LESTER, R.E., MAC NALLY, R., MCCARTHY, M.A., MOAT, J., NICHOLSON, E., OLIVEIRA-MIRANDA, M.A., PISANU, P., POULIN, B., RIECKEN, U., SPALDING, M.D. & ZAMBRANO-MARTÍNEZ, S. (2012). Updated IUCN Red List criteria for ecosystems and their proposed adaptation to the HELCOM Red List assessments. Introduction

to the IUCN Red List criteria for ecosystems and their proposed adaptation to the HELCOM Red List assessments. Scientific foundations for an IUCN Red List of Ecosystems. Unpublished.

RODRÍGUEZ J.P., RODRÍGUEZ-CLARK, K.M., BAILLIE, J.E.M., ASH, N., BENSON, J., BOUCHER, T., BROWN, C., BURGESS, N.D., COLLEN, B., JENNINGS, M., KEITH, D.A., NICHOLSON, E., REVENGA, C., REYERS, B., ROUGET, M., SMITH, T., SPALDING, M., TABER, A., WALPOLE, M., ZAGER, I. & ZAMIN, T. (2011). Establishing IUCN Red List Criteria for Threatened Ecosystems. Conservation Biology, Volume 25, No. 1, 21–29.

VOLOŠČUK, I. (ed.) (1996). Red data book, Lists of threatened plants and animals of the Carpathian National Parks and reserves. ACANAP, Tatranská Lomnica.

WITKOWSKI Z. J., KRÓL W. & SOLARZ W. (eds) (2003). Carpathian List of Endangered Species. WWF and Institute of Nature Conservation, Polish Academy of Sciences, Vienna-Krakow, 64 pp.

<sup>20</sup> Action 3.1.d) of the Strategic Action Plan for the Implementation of the Protocol on Conservation and Sustainable Use of Biological and Landscape Diversity to the Framework Convention on the Protection and Sustainable Development of the Carpathians

# DRAFT CARPATHIAN RED LIST OF FOREST HABITATS

Compiled by Ivor Rizman

Contributors to the compiling of the Red List: Réka Aszalos (Hungary), Wojciech Mróz, Monika Szweczyk (Poland), Iovu Biris (Romania), Ivor Rizman, Ľudovít Vaško (Slovakia), Dejan Bakovic (Serbia), Myroslav Kabal, Mykola Voloshchuk (Ukraine)

## Methodology for compiling the Carpathian Forest Habitats “Red List”

To establish the Red List of Forest Habitats we adopted proposed methodology of IUCN and published by RODRIGUEZ et al. (2011) (Table 1). For considering only Carpathians level on Criterion D we lower the world limits proportionally. For non-endemic habitats we lower the limits twice and for endemic ones we use the limits from the proposed Rodriguez limits. Criterion C we did not use.

For Criterion A Short-term decline (in distribution or ecological function) were used only estimations and data of country experts, because no real data exist in these countries. The Natura 2000 habitat mapping and monitoring is only starting in these years and the local (mostly short time) studies are not fully usable for country level estimation.

For Criterion B Historical decline (in distribution or ecological function) we collected data for current distribution of all EUNIS habitat types occurred in the countries and for historical data we used the country maps of potential vegetation. We are aware that this is not the same as the habitats distribution 500 years ago, but it considers the overall decline, through human influence. Especially in the Carpathians, where mostly forest communities would potentially occurred, this approach is good for considering total historical decline.

For sub-criteria which deal with a reduction or likely reduction of ecological function we collected the data about current status of forest habitats. Under status A (the best status of habitat) we consider virgin forests and old growth forests. In some types there are no residues of such types of forests at all. This fact reflects strong reduction of ecological function. In some types, experts also considered the fact of forest health status (Picea forests, Pinus forest etc.) Experts also consider spreading of invasive and alien species in floodplain forests.

For collecting data about threats we used the list of threats of Natura 2000 Standard Data Form.

Not all countries provided the data into database. There are missing data for the Czech Republic at all, and from some countries we have only partial data without distribu-

tion. But for establishing the preliminary list we consider the collected data as sufficient (the full data-sets from Romania, Hungary, and Slovakia, partly from Poland, Ukraine and Serbia).

The collected list of forest EUNIS habitats (communities) was merged to appropriate upper level of EUNIS catalogue. So similar units were merged into one unit when it was possible, and lower units were included into the same IUCN status category.

Weaknesses of this Red List (methodological approaches and results):

The data about all distribution (past, current future) are only experts opinions, in most countries there was no real vegetation mapping. The monitoring of habitats only started in some countries and there are no exact data about short time decline and about the decline in function at all.

Our approach mostly considers the data about total historical decline.

We did not consider the fact that some habitats are (strictly) protected by law currently and included into some category of protected areas.

We also did not consider that some forest habitats are protected against human influence, because they are included into protective forest category and also the fact that forest cover and status is regulated and “protected” also by forestry law.

The list should be considered as very preliminary Red List, which should be commented and revised according to new data and adapted list of limits and criteria and sub criteria. The list was created with respect of precautionary principle of the Carpathians Convention.

Collected data from countries can be found in the database and after two expert meetings in Banska Bystrica merged and evaluated data were filled in also for the Carpathian level in this structure:

1. Potential area of distribution in hectares according to maps of potential vegetation for forest habitats (alliances) or estimated area of distribution 500 years ago.
2. Estimated area 50 years ago

Table 1: Used Criteria and Sub-criteria for Red List Status<sup>a</sup> (RODRIGUEZ et al. 2011)

Criterion	Sub-criterion - Status <sup>b</sup>
<b>A: Short-term decline (in distribution or ecological function) on the basis of any sub-criterion</b>	<b>1. observed, estimated, inferred or suspected decline in distribution of</b> ≥80% - <b>CR</b> , ≥50% - <b>EN</b> , or ≥30% - <b>VU</b> over the last 50 years.
	<b>2. projected or suspected decline in distribution of</b> ≥80% - <b>CR</b> , ≥50% - <b>EN</b> , or ≥30% - <b>VU</b> within the next 50 years.
	<b>3. observed, estimated, inferred, projected, or suspected decline in distribution of</b> ≥80% - <b>CR</b> , ≥50% - <b>EN</b> , or ≥30% - <b>VU</b> over any 50-year period, where the period must include both the past and the future
	<b>4. relative to a reference state appropriate to the ecosystem, a reduction or likely reduction of ecological function that is</b> (a) very severe, in at least one major ecological process, throughout ≥80% of its extant distribution within the last or next 50 years - <b>CR</b> ; (b1) very severe, throughout ≥50% of its distribution within the last or next 50 years - <b>EN</b> (b2) severe, in at least one major ecological process, throughout ≥80% of its distribution within the last or next 50 years - <b>EN</b> ; (c1) very severe, in at least one major ecological process, throughout ≥30% of its distribution within the last or next 50 years - <b>VU</b> (c2) severe, in at least one major ecological process, throughout ≥50% of its distribution within the last or next 50 years - <b>VU</b> (c3) moderately severe, in at least one major ecological process throughout ≥80% of its distribution within the last or next 50 years - <b>VU</b>
<b>B: Historical decline (in distribution or ecological function) on the basis of either sub-criterion 1 or 2</b>	<b>1. estimated, inferred, or suspected decline in distribution of</b> ≥90% - <b>CR</b> , ≥70% - <b>EN</b> , or ≥50% - <b>VU</b> in the last 500 years
	<b>2. relative to a reference state appropriate to the ecosystem, a very severe reduction in at least one major ecological function over</b> ≥90% - <b>CR</b> , ≥70% - <b>EN</b> , or ≥50% - <b>VU</b> of its distribution in the last 500 years.
<b>C: Small current distribution and decline (in distribution or ecological function) or very few locations on the basis of either sub-criterion 1 or 2</b>	<b>1. extent of occurrence estimated to be</b> ≤100 km <sup>2</sup> - <b>CR</b> , ≤5,000 km <sup>2</sup> - <b>EN</b> , or ≤20,000 km <sup>2</sup> - <b>VU</b> and at least one of the following: (a) observed, estimated, inferred, or suspected continuing decline in distribution, (b) observed, estimated, inferred, or suspected severe reduction in at least one major ecological process, (c) ecosystem exists at only one location - <b>CR</b> , 5 or fewer locations - <b>EN</b> , or 10 or fewer locations - <b>VU</b> or

	<p><b>2. area of occupancy estimated to be</b>  <math>\leq 10 \text{ km}^2</math> - <b>CR</b>,  <math>\leq 500 \text{ km}^2</math> - <b>EN</b>, or  <math>\leq 2000 \text{ km}^2</math> - <b>VU</b>  and at least one of the following:  (a) observed, estimated, inferred, or suspected continuing decline in distribution,  (b) observed, estimated, inferred, or suspected severe reduction in at least one major ecological process,  (c) ecosystem exists at only one location - <b>CR</b>,  5 or fewer locations - <b>EN</b>, or  10 or fewer locations - <b>VU</b></p>
<b>D: Very small current distribution</b>	$\leq 5 \text{ km}^2$ - <b>CR</b> , $\leq 50 \text{ km}^2$ - <b>EN</b> , or $\leq 100 \text{ km}^2$ - <b>VU</b> , and serious plausible threats, but not necessarily evidence of past or current decline in area or function.

a) Based on the IUCN Red List (IUCN 2001) and other systems proposed to date (Nicholson et al. 2009).  
b) Abbreviations: CR, critically endangered; EN, endangered; VU, vulnerable.  
c) See IUCN (2001, 2010b) for guidelines on measuring extent of occurrence and area of occupancy.  
[Correction added after publication 5 November 2010: Errors in the second column of Criterion D were amended.]

3. Estimated area 10 years ago
4. Current area
5. Status A – area (in forest the area of primeval (virgin) forest)
6. Estimated trend in the next 10 years
  - - Trend negative
  - -- accelerated negative within the last 10 years
  - +/- Trend largely stable
  - + Trend positive
  - ++ accelerated positive in the next 10 years
  - ? Trend cannot be determined
7. Estimated trend in the next 10 years
8. Evaluating of regenerability
  - N - Not regenerable
  - M - Minimal regenerability (> 150 years)
  - V - Very limited regenerability (15-150 years)
  - L - Limited regenerability (up to 15 years)
  - X - Ranking not meaningful
9. Endemic Alliance in the Carpathians
  - Y - yes
  - N - no
10. Negative Threats to the area or status – maybe possible to fill more than one but according to some possible (prepared) values
11. Proposed IUCN Category in the Country (not for Orographic unit)
12. Used sub criterion by Rodriguez
13. Name of the national expert

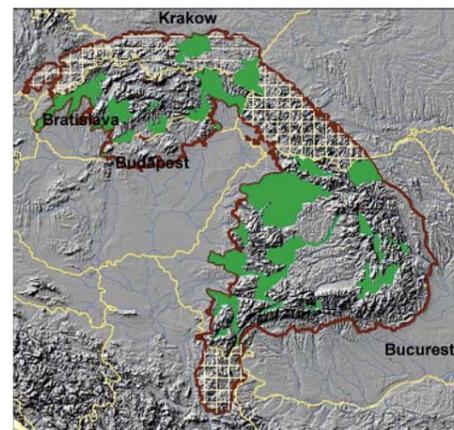
### Carpathian Endangered Forest Habitats

#### G1.1112 - Eastern European poplar-willow forests

Red List Status: CR  
Criterion: B1  $\geq 90$ , B2  $\geq 90$  %, A3  $\geq 50$  %, A2  $\geq 50$  %, A4a, D  $\leq 2500$  ha

Arborescent galleries of tall *Salix alba*, *Salix fragilis*, *Salix x rubens*, *Populus nigra* and sometimes *Populus alba*, lining lowland, hill or submontane rivers of nemoral and boreo-nemoral Eastern Europe and of eastern and southeastern Central Europe, including eastern Germany, the Baltic States, Poland, the Czech Republic, Slovakia, the nemoral parts of Danubian and Balkan states, nemoral Belarus, the Ukraine and Russia, east to Bashkiria.

#### Geographical distribution in the Carpathians



Endemic habitat: no  
Current area (PL, RO, SK): 900 ha  
Primeval virgin forest: 0 ha

#### Assessment rationale and causes of endangerment

The few remaining semi-natural floodplain forests, particularly in complex with natural accompanying vegetation, are very endangered and worthy of protection.

Estimated trend in the next 10 years: - Trend negative  
The main threats are direct devastation of the alluvial vegetation during any works connected with river bed regulation, flood prevention, dams and roads construction, drainage, expansion of invasive alien species and non-native tree species, wood plantations.

#### Required measures for protection and restitution

Cease cultivation, safeguard the water balance; protection of semi-natural stands.

#### G1.1141 - Pannonic willow and poplar-willow galleries

Red List Status: EN  
Criterion: B1  $\geq 70$ %, D  $\leq 2500$  ha

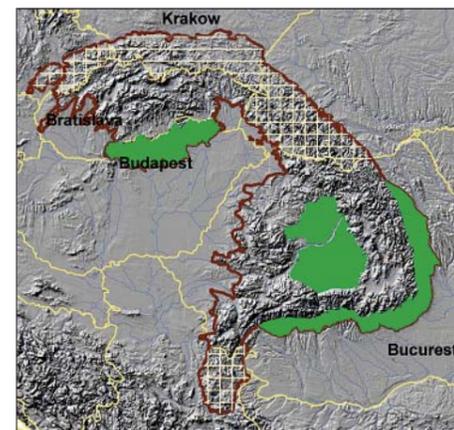
Riverine willow-poplar woodlands: Growing on the lower parts of floodplains, these hygrophilous, *Salix* and *Populus* dominated forests presently still get regular flooding.

#### Geographical distribution in the Carpathians

Endemic habitat: no  
Current area (HU, RO): 1160 ha  
Primeval virgin forest: 0 ha

#### Assessment rationale and causes of endangerment

The few remaining semi-natural floodplain forests, particularly in complex with natural accompanying vegetation,



are greatly endangered and worthy of protection. The main threats are drainage, invasive alien species, wood plantations, spreading of non-native tree species.

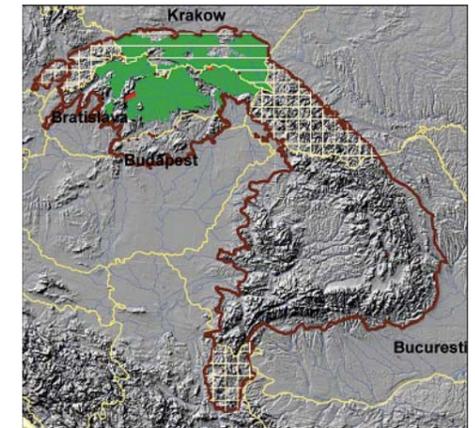
#### Required measures for protection and restitution

Cease cultivation, safeguard the water balance; protection of semi-natural stands.

#### G1.1213 - Hercynio-Carpathian grey alder galleries

Red List Status: EN  
Criterion: B1  $\geq 70$ %, B2  $\geq 70$ %,

*Alnus incana* galleries of the montane rivers of the western and northern Carpathians and of the Hercynian ranges of the Bohemian Quadrangle.



#### Geographical distribution in the Carpathians

Endemic habitat: no  
Current area (PL, SK): 5844 ha  
Primeval virgin forest: 0 ha

#### Assessment rationale and causes of endangerment

Natural and semi-natural remnants of grey alder forests only rarely occur and are severely endangered. Causes of endangerment are clearing, spruce plantation, grazing, infrastructure development (dams, roads...), stream regulations.

#### Required measures for protection and restitution

Maintaining the natural tree species composition and water regime of the area. Selection and total protection of semi-natural typical remnants.

#### G1.1214 – Eastern Carpathian grey alder galleries

Red List Status: EN  
Criterion: B1  $\geq 70$ , B2  $\geq 50$ %, D<sub>endemic</sub>  $\leq 5000$  ha

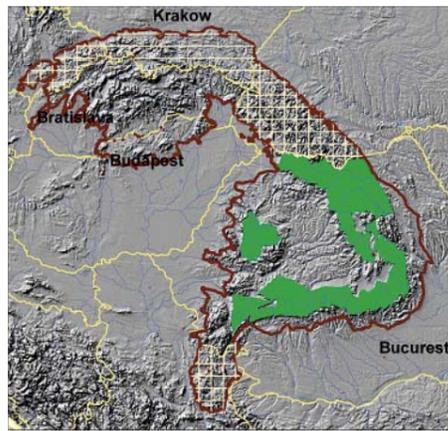
*Alnus incana* galleries along the upper reaches of Eastern Carpathian valleys, with regional species *Telekia speciosa*, *Petasites kablikianus*, *Symphytum cordatum*, *Pulmonaria rubra*, *Leucanthemum waldsteinii*, which replace the pioneer willow scrubs of the *Salici purpureae-Myricarietum*.

#### Geographical distribution in the Carpathians

Endemic habitat: yes  
Current area (RO): 600 ha  
Primeval virgin forest: 0 ha

#### Assessment rationale and causes of endangerment

Natural and semi-natural remnants of grey alder forests only rarely occur and are severely endangered. Causes of endangerment are clearing, spruce plantation,



grazing, infrastructure development (dams, roads...), stream regulations.

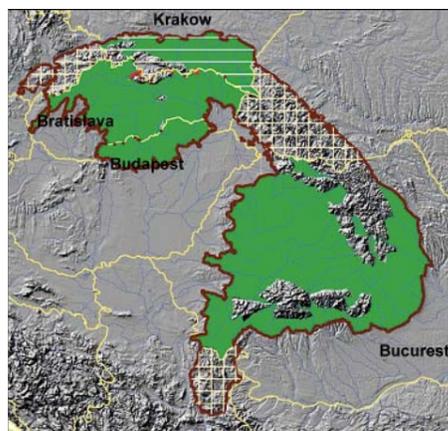
Required measures for protection and restitution

Maintaining the natural tree species composition and water regime of the area. Selection and total protection of semi-natural typical remnants.

**G1.21 – Riverine Fraxinus – Alnus woodland, wet at high but not at low water**

Red List Status: EN  
Criterion: B1≥70%, B2≥70%

Riparian forests of *Fraxinus excelsior* and *Alnus glutinosa*, sometimes *Alnus incana*, of middle European and northern Iberian lowland or hill watercourses, on soils periodically inundated by the annual rise of the river level, but otherwise well-drained and aerated during low-water; they differ from riparian alder woods within units G1.41 and G1.52 by the strong representation in the dominated layers of forest species not able to grow in permanently waterlogged soils.



Taxonomic note

Habitat includes the following sub-units:  
G1.211: [Fraxinus] – [Alnus] woods of rivulets and springs

- G1.2111: Sedge ash-alder woods
- G1.2112: Fontinal ash-alder woods
- G1.2113: Cabbage thistle ash-alder woods
- G1.2114: Hillside spring ash-alder woods
- G1.2115: Great horsetail ash-alder woods
- G1.2116: Dacio-Moesian ash-alder woods
- G1.212: [Fraxinus] - [Alnus] woods of fast-flowing rivers
- G1.2121: Collinar stream ash-alder woods
- G1.2122: Submontane Hercynian stream ash-alder woods
- G1.2123: Pre-Carpathian stream ash-alder woods
- G1.213: [Fraxinus] - [Alnus] woods of slow rivers
- G1.2131: Central European slow river floodplain woods
- G1.2132: West European tall herb ash-alder woods

Geographical distribution in the Carpathians

Endemic habitat: no  
Current area (HU, PL, RO, SK): 8000 ha  
Primeval virgin forest: 0 ha

Assessment rationale and causes of endangerment

Representative stands of these site-determined permanent communities are still to be found in some regions in small areas, nevertheless the ash-alder forest should be considered as a quite severely endangered form. Its habitat is still being deforested and used as grassland to the extent that small residual strips are all that remain along the river courses.

Main threats are droughts and less precipitation, running water course regulations and ground water table lowering.

Required measures for protection and restitution

Preservation of alluvial plains by different kinds of protective measures is required.

**G1.2233 - Pannonic ash-oak-alder forests**

Red List Status: CR  
Criterion: B1≥90%, A4a, D ≤ 2500 ha

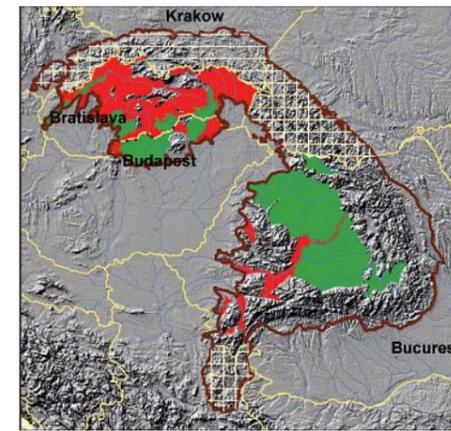
Riverine gallery forests of the Pannonic region, characteristic of the Danube basin, north to the lower Morava, of the Tisza basin and of the Danube-Tisza interfluvium. They are dominated by *Quercus robur* and *Fraxinus angustifolia* ssp. *pannonica*, sometimes with *Ulmus laevis*, *Alnus glutinosa*, *Carpinus betulus* and, in the wettest parts, *Populus alba*. The shrub layer includes *Acer campestre*, *Acer tataricum*, *Cornus sanguinea*, *Crataegus monogyna*, *Corylus avellana*, *Ulmus minor*. The herb layer is dominated by *Carex acutiformis*, *Carex elata*, *Carex riparia*, *Urtica dioica*, *Urtica kioviensis* in the wetter belt („*Fraxino-pannonicae-Alnetum*“), by *Deschampsia cespitosa*, *Veratrum album*, *Polygonatum latifolium*, *Symphytum officinale* otherwise.

Geographical distribution in the Carpathians

Endemic habitat: no  
Current area (HU, RO, SK): 2210 ha  
Primeval virgin forest: 0 ha

Assessment rationale and causes of endangerment

The few remaining semi-natural floodplain forests, parti-



cularly in complex with natural accompanying vegetation, are greatly endangered and worthy of protection. Threats – drainage, wood plantations, invasive alien species, Pathogens / parasites, infrastructure development (dams), change of water regime

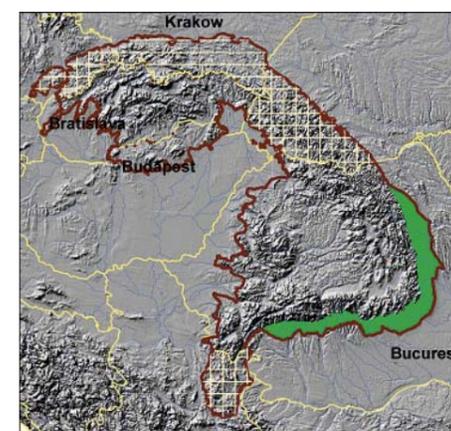
Required measures for protection and restitution

Protection of semi-natural stands. Maintaining the natural tree species composition and water regime of the area.

**G1.2234 – Getic oak-elm-ash forests**

Red List Status: CR  
Criterion: B1≥90%, A4a, D ≤ 2500 ha

Riverine forests of *Quercus robur*, *Quercus pedunculiflora*, *Fraxinus angustifolia*, *Fraxinus pallisiae*, *Ulmus minor* and *Ulmus effusa* of the great floodplains of the lower Danube, with *Cornus sanguinea*, *Viburnum opulus*, *Frangula alnus*, *Crataegus monogyna* in the shrub layer and *Rubus caesius*, *Lysimachia nummularia*, *Glechoma bederacea*, *Convallaria majalis* in the herb layer. Diagnostically important species are *Fraxinus pallisiae*, *Quercus pedunculiflora*, *Fraxinus angustifolia* subsp.



*danubialis*, *Quercus robur*, *Asperula taurina*, *Asparagus tenuifolius*, *Carex tomentosa*, *Euphorbia palustris*.

Geographical distribution in the Carpathians

Flood plains in the eastern part of the Danube plains (Romania).

Endemic habitat: no  
Current area (RO): 650 ha  
Primeval virgin forest: 0 ha

Assessment rationale and causes of endangerment

All alluvial forests have been damaged; some well-preserved alluvial forest stands are especially worthy of protection, particularly in complex with the natural accompanying vegetation.

Main threats are droughts and less precipitation, running water course regulations and ground water table lowering, wood plantations, poor recruitment/ reproduction/ regeneration.

Required measures for protection and restitution

Strict protection of the semi-natural remnants.

**G1.411 – Meso-eutrophic swamp alder woods**

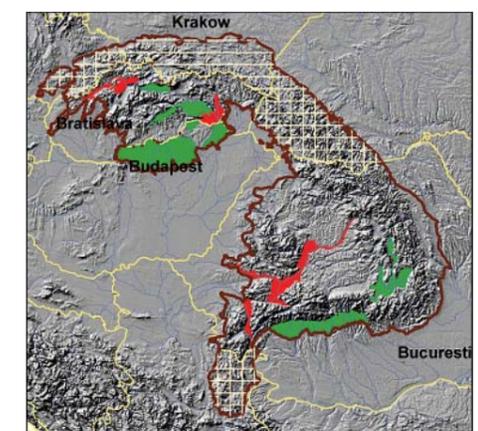
Red List Status: CR  
Criterion: B1≥90%, A1≥80%, D≤250 ha

Mesotrophic and meso-eutrophic *Alnus glutinosa* swamp woods of middle European and western Siberian, nemoral and sub-boreal, marshy depressions, with *Carex elongata*, *Thelypteris palustris*, *Dryopteris cristata*, *Osmunda regalis*, *Solanum dulcamara*, *Calystegia sepium*, *Ribes nigrum*, *Calamagrostis canescens* and often, in acidocline variants, *Betula pubescens*. The constancy of *Carex elongata* is characteristic on the continent, less so in Britain. Tall sedges, *Carex paniculata*, *Carex acutiformis*, *Carex elata*, often dominate the herb layer in the most humid types.

Taxonomic note

Habitat includes the following sub-units:

- G1.4112: Elongated-sedge swamp alder woods
- G1.4115: Eastern Carpathian [*Alnus glutinosa*] swamp woods



Geographical distribution in the Carpathians

Endemic habitat: no  
Current area (HU, RO, SK): 200 ha

Primeval virgin forest: 0 ha

#### Assessment rationale and causes of endangerment

Semi-natural stands with an intact water balance are rare, and usually preserved only in small areas; often a defective water balance.

Main threats are drainage, groundwater subsidence, eutrophication; forest clearance, stand transformation: forest grazing, pasturing, straw meadows; crop field utilisation after drainage and upheaval.

#### Required measures for protection and restitution

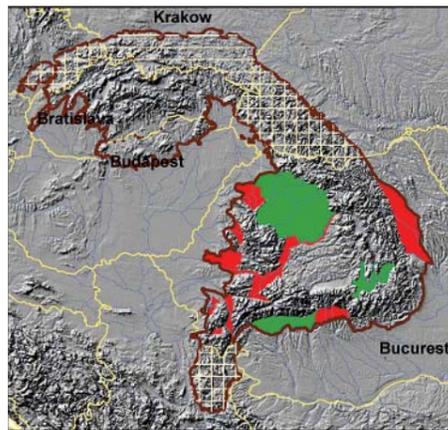
Strict protection of all semi-natural remnants; regeneration by planting of black alder and natural succession where an intact water balance occurs or after rehydration.

### G1.42 – [Quercus] swamp woods

Red List Status: EN

Criterion: B1 ≥ 90, D ≤ 2500 ha, C1c5

*Quercus robur*-dominated woods of inundated depressions of the Sarmatic region, west to lowlands of eastern Poland and Slovakia, with an accompanying species cortège composed of elements of the *Alnetalia glutinosae*, *Molinietalia*, *Phragmitetalia*, *Caricetalia fuscae* and, to a lesser extent, *Vaccinio-Piceetea* and *Quercio-Fagetea*.



#### Geographical distribution in the Carpathians

Endemic habitat: no

Current area (RO): 1600 ha

Primeval virgin forest: 0 ha

#### Assessment rationale and causes of endangerment

Semi-natural stands with an intact water balance are rare, and usually preserved only in small areas; often a defective water balance.

#### Causes of endangerment

Main threats are droughts and less precipitation, running water course regulations and ground water table lowering.

#### Required measures for protection and restitution

Strict protection of all semi-natural remnants.

### G1.5 – Broadleaved swamp woodland on acid peat

Red List Status: CR

Criterion: B1 ≥ 90%, D ≤ 250 ha

Broadleaved woodland on wet acid peat, dominated by *Betula pubescens* or rarely *Alnus glutinosa*, sometimes with an admixture of conifers or shrubby *Salix species*. *Sphagnum* spp. are normally prominent in the ground vegetation.

#### Taxonomic note

Habitat includes the following sub-units:

G1.51: Sphagnum [Betula] woods

G1.52: [Alnus] swamp woods on acid peat

#### Geographical distribution in the Carpathians

Endemic habitat: no

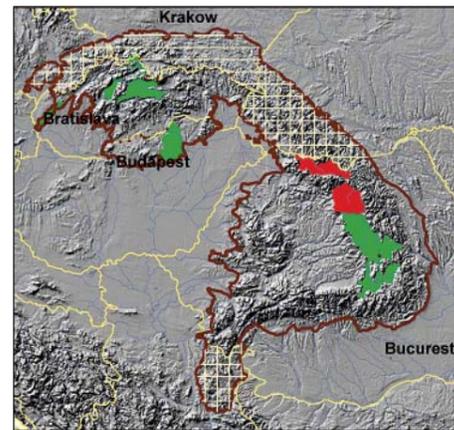
Current area (HU, RO, SK): 140 ha

Primeval virgin forest: 0 ha

#### Assessment rationale and causes of endangerment

Semi-natural stands with an intact water balance are rare, and usually preserved only in small areas; often a defective water balance.

Main threats are drainage, groundwater subsidence, eutrophication; forest clearance, stand transformation: forest grazing, pasturing, straw meadows; crop field utilisation after drainage and upheaval.



#### Required measures for protection and restitution

Strict protection of all semi-natural remnants; regeneration by planting of black alder and natural succession where an intact water balance occurs or after rehydration.

### G1.611 – Medio-European collinear woodrush beech forests

Red List Status: VU

Criterion: B1 ≥ 50%

Acidophilous *Fagus sylvatica* forests of the lesser Hercynian ranges and Lorraine, of the collinear level of the western greater Hercynian ranges, the Jura and the Alpine periphery, of the western sub-Pannonic and the intra-Pannonic hills, not or little accompanied by spontaneous conifers, and generally with an admixture of *Quercus petraea*, or

in some cases *Quercus robur*, in the canopy.

#### Taxonomic note

Habitat includes the following sub-units:

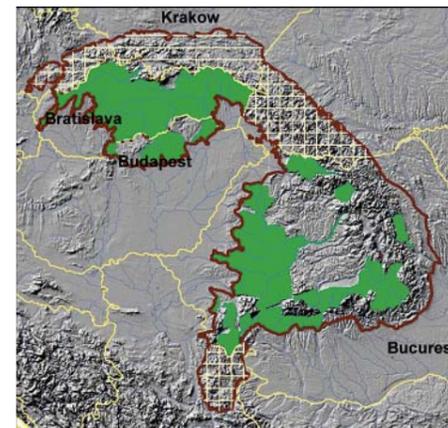
G1.6115: Pannonic collinear woodrush beech forests  
For the collinear Western Carpathian acidophilous *Fagus sylvatica* forests miss in EUNIS appropriate subunit.

#### Geographical distribution in the Carpathians

Endemic habitat: no

Current area (HU, RO, SK): 85500 ha

Primeval virgin forest: 5000 ha (RO)



#### Assessment rationale and causes of endangerment

Only a few semi-natural stands are preserved.

Causes of endangerment are transformation of semi-natural forests into coniferous plantations.

#### Required measures for protection and restitution

Protection of representative semi-natural forest areas.

### G1.6121 – Hercyno-Alpine montane woodrush beech forests

Red List Status: VU

Criterion: B1 ≥ 50%, B2 ≥ 50%

Acidophilous forests of *Fagus sylvatica*, *Fagus sylvatica* and *Abies alba* or *Fagus sylvatica*, *Abies alba* and *Picea abies* of the montane and high montane levels of the eastern greater Hercynian ranges, the Thüringian Forest, the Swabian and Franconian Jura, the Alps, where they are mostly expressed in the eastern Alps, and, in a dry version, in some parts of the western intermediate Alps, the Carpathians and the Bavarian Plateau, including, in particular, the remarkable near-natural montane woodrush beech forests of the Bayerischer Wald.

#### Geographical distribution in the Carpathians

Endemic habitat: no

Current area (PL, SK): 81000 ha

Primeval virgin forest: 50 ha – SK, PL ?

#### Assessment rationale and causes of endangerment

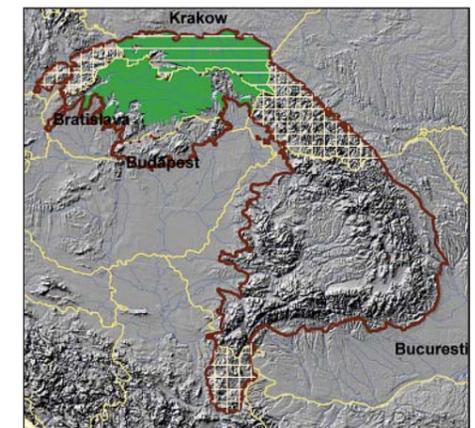
Frequently converted into spruce forests. All nearly-na-

tural stands are worthy of protection as stable structures and gene reserves.

Main threats are transformation of semi-natural forests into forestry, changes in economic use, alteration of sites, clear-cutting, eutrophication (fertilisers) and pollution.

#### Required measures for protection and restitution

Semi-natural silviculture; natural forest reserves and regeneration areas; the plantation of autochthonous firs should be considered.

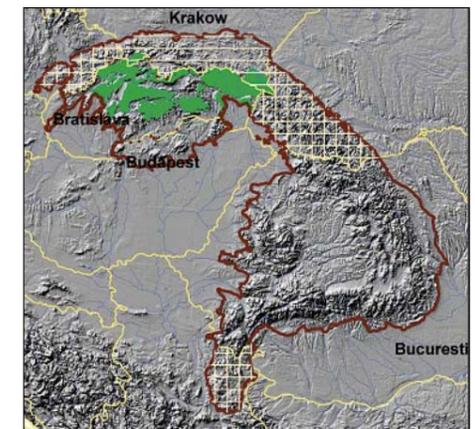


### G1.65 – Medio-European subalpine [Fagus] woods

Red List Status: VU

Criterion: B1 ≥ 50%

*Fagus sylvatica* woods usually composed of low, low-branching trees, with much sycamore (*Acer pseudoplatanus*), situated near the tree limit, mostly in low mountains with oceanic climate of Western Europe and of central and northern Central Europe, in particular the Vosges, Black Forest, Rhön, Jura, outer Alps, Central Massif, Pyrenees, the mountains of the Bohemian Quadrangle, and, very locally, the Carpathians. The herb layer is similar to that of the forests of unit G1.63 or locally of unit G1.61 and contains elements of the adjacent open grasslands.



#### Geographical distribution in the Carpathians

Endemic habitat: no

Current area (PL, SK): 8284 ha

Primeval virgin forest: 262 ha - SK

#### Assessment rationale and causes of endangerment

Habitats often degraded by forest management and natural disasters.

Frequently converted into spruce forests, occupying an area of natural forest stands, clear-cutting and transformation to a forest monocultures, building of recreational facilities (ski resorts), natural disasters. Main threats are extreme environmental conditions, poor regeneration of beech.

#### Required measures for protection and restitution

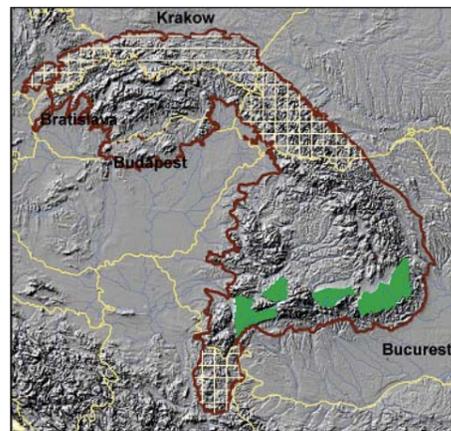
Preservation of all semi-natural stands and regeneration of degraded forests as much for their erosion and avalanche protective functions as for any other reason.

#### G1.6D3 – East Carpathian subalpine beech forests

Red List Status: VU

Criterion: B1≥50%

Local *Fagus sylvatica* and *Fagus sylvatica-Picea abies* forests of the tree-limit in the upper montane or subalpine level of the high southern Carpathians, developed where subalpine *Picea abies* forests do not form an uninterrupted zone, less well individualised than more western formations of the *Aceri-Fagion*, though, like them, characterized by the admixture of *Acer pseudoplatanus* in the canopy and of *Adenostyletalia megaphorb* species in the understorey.



#### Taxonomic note

Habitat includes the following sub-units:

G1.6D31: Dacian subalpine beech-spruce forest

G1.6D32: Dacian subalpine gooseberry beech forests

#### Geographical distribution in the Carpathians

Endemic habitat: yes

Current area (RO): 12000 ha

Primeval virgin forest: 3500 ha

#### Assessment rationale and causes of endangerment

Main threats are converting into spruce forestry, occupying an area of natural forest stands, clear-cutting and transformation to a forest monocultures, building of recreational facilities (ski resorts), natural disasters, extreme environmental conditions and poor regeneration of beech.

#### Required measures for protection and restitution

Semi-natural cultivation of the forest; semi-natural remnants of the unit as a characteristic community of the montane landscape is worthy of protection wherever it is encountered.

#### G1.7373 – Intra-Carpathian insular [*Quercus virgiliana*] woods

Red List Status: CR

Criterion: B1 ≥ 50, D<sub>endemic</sub> ≤ 500 ha

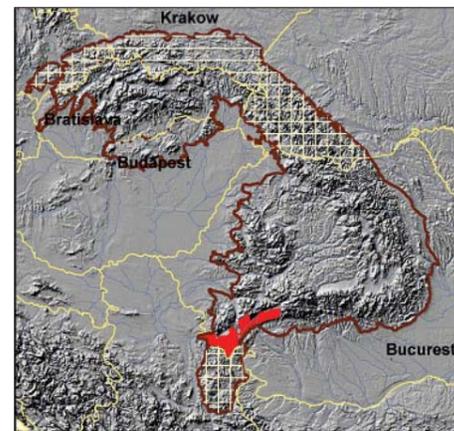
Xerophile, neutrophilous *Quercus pubescens* and *Quercus virgiliana* woods distributed in insular patches on steep south-facing slopes of intra-Carpathian hills of Romania, in particular, of the foothills bordering the lower Danubian basin of Romania, with *Cotinus coggygria*, *Amygdalus nana*, *Cornus mas* in the shrub layer and *Astragalus monspessulanus*, *Carex humilis*, *Dictamnus albus*, *Geranium sanguineum*, *Astragalus austriacus* in the herb layer.

#### Geographical distribution in the Carpathians

Endemic habitat: yes

Current area (RO): 500 ha

Primeval virgin forest: 0 ha



#### Assessment rationale and causes of endangerment

Current distribution of the habitat covers less than 500 ha. Main threats are clearing, excessive use for low forest management, fires, poor recruitment/ reproduction/ regeneration.

#### Required measures for protection and restitution

Protection of the few remaining semi-natural forests, ecological restitution of degraded forests.

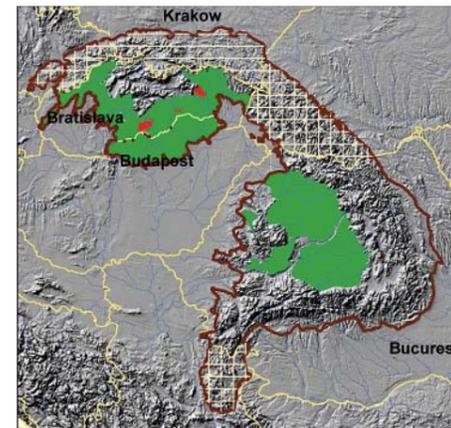
#### G1.7374 – Pannonian [*Quercus pubescens*] woods

Red List Status: VU

Criterion: B1≥50%

Pannonian mixed flowering ash-downy oak forests (*Quercus pubescens*, *Quercus polycarpa*, *Quercus petraea*, *Quercus dalechampii*) with *Fraxinus ornus*, *Cotinus coggygria*, *Vicia sparsiflora*, *Lathyrus pannonicus* subsp. *collinus*.

Diagnostically important species: *Quercus pubescens*, *Prunus mahaleb*, *Fraxinus ornus*, *Cotinus coggygria*, *Hippocrepis emerus*, *Coronilla coronata*, *Vicia sparsiflora*, *Lathyrus pannonicus* subsp. *collinus*, *Carex halleriana*, *Piptatherum virescens*, *Mercurialis ovata*.



#### Geographical distribution in the Carpathians

Endemic habitat: no

Current area (HU, RO, SK): 19450 ha

Primeval virgin forest: 32 ha - HU, SK

#### Assessment rationale and causes of endangerment

Semi-natural stands have diminished substantially, potentially endangered.

Main threats are clearing, grazing, timber use.

#### Required measures for protection and restitution

Protection of semi-natural stands.

#### G1.769 – Getic sub-continental thermophilous oak woods

Red List Status: VU

Criterion: B1≥50%

Sub-continental thermo-xerophile *Quercus frainetto*-*Quercus cerris*-*Quercus petraea* forests of the foothills bordering the lower Danube depression of southern Romania, with the continental *Acer tataricum* and lacking typically sub-Mediterranean species such as *Carpinus orientalis* and *Ruscus aculeatus*.

#### Taxonomic note

Habitat includes the following sub-units:

G1.7691: Getic white cinquefoil [*Quercus cerris*] forests

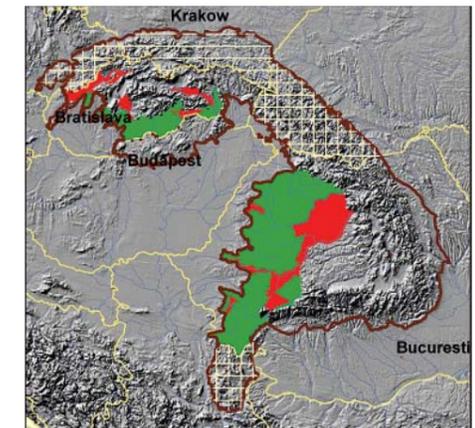
G1.7692: Getic early sedge [*Quercus frainetto*] forests

G1.7693: Getic crocus [*Quercus frainetto*]-[*Quercus cerris*] forests

G1.7694: Getic [*Q. frainetto*]-[*Q. cerris*]-[*Q. petraea*] forests

G1.7695: Getic [*Quercus frainetto*]-[*Quercus petraea*] [s.l.] forests

G1.7696: Pre-Carpathian [*Quercus cerris*]-[*Quercus petraea*] [s.l.] forests



#### Geographical distribution in the Carpathians

Endemic habitat: no

Current area (HU, RO, SK): 160950 ha

Primeval virgin forest: 0 ha

#### Assessment rationale and causes of endangerment

Very degraded as a result of low forest management, cleared forests, greatly endangered at the northern edge of the range. In the past some surfaces of this habitat were replaced with Scots pine or black locust plantations. Main threats are low forest management, transformation, oak decline, invasive alien species, change in native species dynamics (directly impacting habitat).

#### Required measures for protection and restitution

Semi-natural stands of all geographic variants with endangered species should be protected.

#### G1.7A11 – White cinquefoil oak woods

Red List Status: VU

Criterion: B1≥50%

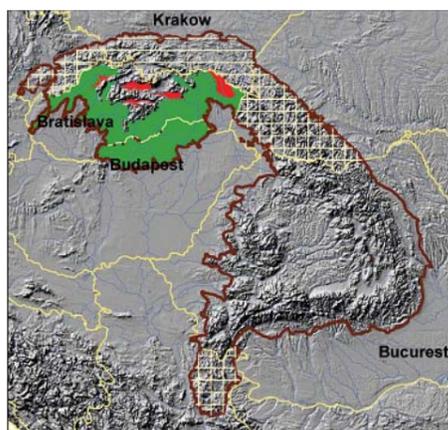
East Central European oak and pine-oak forests (*Quercus petraea*, *Quercus robur*, *Pinus sylvestris*), mostly with *Potentilla alba*, *Molinia arundinacea*, *Frangula alnus*.

#### Geographical distribution in the Carpathians

Endemic habitat: no

Current area (HU, SK): 91400 ha

Primeval virgin forest: 0 ha



**Assessment rationale and causes of endangerment**

Most forests have been transformed into arable land. Semi-natural stands are relatively rare, degraded by low forestry, and commercial forestry, and have often been converted into coniferous tree plantations. Main threats are transformation on a forest monocultures and spread of non-native tree species, invasive alien species, change in native species dynamics.

**Required measures for protection and restitution**

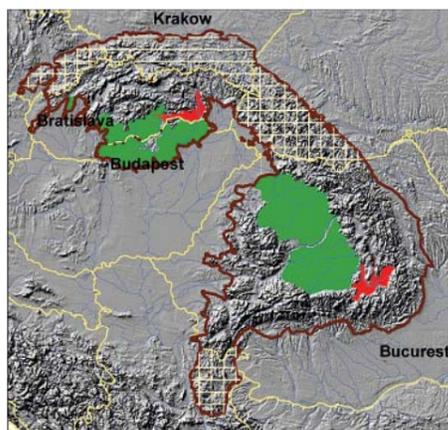
Protection of the still remaining semi-natural forests and regeneration of semi-natural forests by natural succession and promotion of indigenous tree species, particularly oaks.

**G1.7A12 – Tartar maple steppe oak woods**

Red List Status: CR

Criterion: B1≥90%, D≤ 5000 ha, A2≥50%

Xero-thermophile oak woods constituting the climax woodland element of the Pannonian and Ponto-Sarmatic wooded steppe biome, with a flora richer in southern, Euxinian and Sarmatic elements than that of the cinquefoil oak woods.



**Geographical distribution in the Carpathians**

Endemic habitat: no

Current area (HU, RO, SK): 2525 ha

Primeval virgin forest: 0 ha

**Assessment rationale and causes of endangerment**

Most forests have been transformed into arable land. Semi-natural stands are very rare.

Causes of endangerment are agricultural use, transformation on a forest monocultures and spread of non-native tree species, invasive alien species, change in native species dynamics.

**Required measures for protection and restitution**

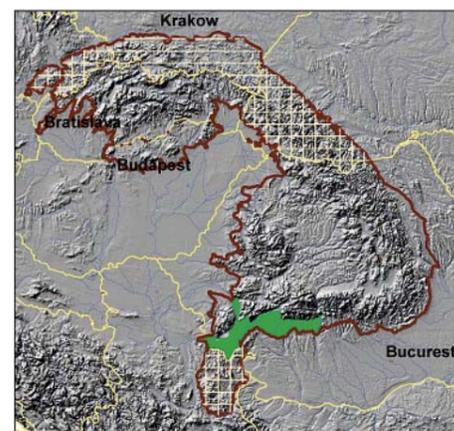
Protection is necessary. Regeneration of semi-natural forests by natural succession and promotion of indigenous tree species, particularly oaks.

**G1.7C2 – [Carpinus orientalis] woods**

Red List Status: EN

Criterion: D≤2500 ha

*Carpinus orientalis*-dominated facies of thermophilous woods of the Balkan Peninsula, south to Greece. The main distribution area in the Carpathians of this habitat is SW of Romania, as the most northern irradiations and extensions of the habitat.



**Geographical distribution in the Carpathians**

Endemic habitat: no

Current area (RO): 1500 ha

Primeval virgin forest: 0 ha

**Assessment rationale and causes of endangerment**

Few semi-natural stands remain preserved.

Main threats are related to its distribution in very small areas, grazing, burning down, soil erosion and landslide.

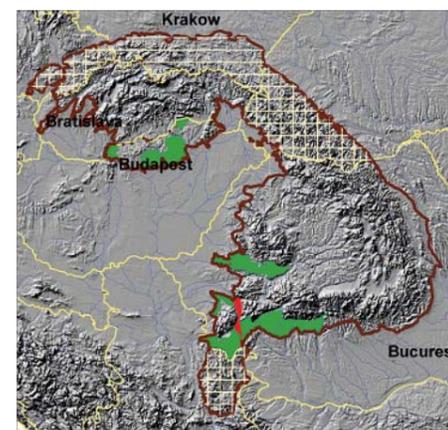
**Required measures for protection and restitution**

The main part of the current distribution of the habitat is included in protected areas and Natura 2000 sites.

**G1.7C4 – Thermophilous [Tilia] woods**

Red List Status: VU

Criterion: B1≥50%



a) *Tilia tomentosa*-dominated facies of mixed deciduous forests of southern Central Europe and the northern and middle part of the Balkan Peninsula, mostly within the *Quercion frainetto* environment, but also locally developed in conjunction with eastern *Carpinion betuli* forests.

b) Loosely closed forests mainly of *Tilia platyphyllos* and *Fraxinus excelsior* developed on shallow soils of exposed crests of limestone mountains (more rarely on andesite rocks) of the Northern Hungarian Range, with an herb layer of *Brachypodium pinnatum*, *Galium erectum*, *Cruciata glabra*, *Digitalis grandiflora*, *Erysimum odoratum*, *Sisymbrium strictissimum*, *Aconitum anthora*, accompanied by endemics among which *Hesperis irabelyiana*, *Carduus collinus* and by other regionally rare species with disjunct distribution, such as *Waldsteinia geoides*, *Melica altissima*, *Carex brevicollis*. They constitute relict forests, most probably of the Boreal era, and are of great biological value.

**Taxonomic note**

Habitat includes the following sub-units:

G1.7C41: Silver lime woods

G1.7C42: Oro-Pannonic steppe ash-lime woods

**Geographical distribution in the Carpathians**

Endemic habitat: no

Current area (HU, RO): 8200 ha

Primeval virgin forest: 0 ha

**Assessment rationale and causes of endangerment**

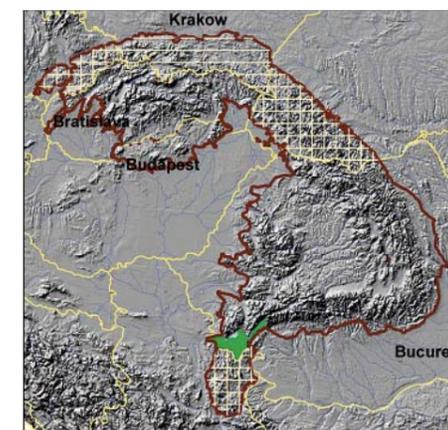
**Required measures for protection and restitution**

**G1.7C5 – [Celtis australis] woods**

Red List Status: CR

Criterion: D≤250 ha, B1 ≥ 50

Thermophilous woods dominated by, or rich in, *Celtis australis*. Forests dominated by *Celtis australis* may have been an important component of Mediterranean woodland, in particular in North Africa, but appear to have been destroyed almost everywhere and to be represented only by individual trees and small stands.



**Geographical distribution in the Carpathians**

Endemic habitat: no

Current area (RO): 10 ha

Primeval virgin forest: 0 ha

**Assessment rationale and causes of endangerment**

Current distribution covers less than 10 ha (0.1 km<sup>2</sup>) and consists of few small locations in Cernei Mountains and Banatului Mountains.

Causes of endangerment are scattered and fragmented distribution and very small populations.

**Required measures for protection and restitution**

Protection is necessary.

**G1.7D – [Castanea sativa] woodland**

Red List Status: EN

Criterion: B1 ≥ 70, A4b1, A4b2

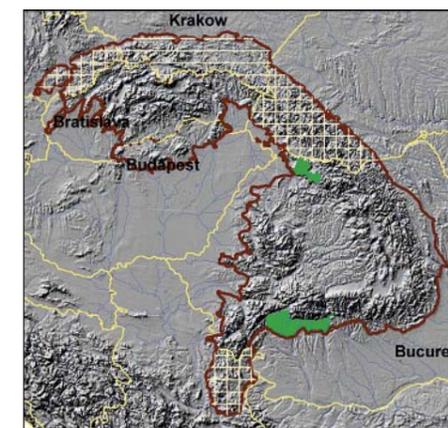
Supra-Mediterranean and sub-Mediterranean *Castanea sativa*-dominated forests and old established plantations with semi-natural undergrowth.

**Geographical distribution in the Carpathians**

Endemic habitat: no

Current area (RO): 6500 ha

Primeval virgin forest: 0 ha



#### Assessment rationale and causes of endangerment

In the last two decades the populations of sweet chestnut trees were strongly affected by chestnut blight (*Cryphonectria parasitica*). There are ongoing projects for biological control of the disease which damages chestnut trees. This habitat distribution consists of 2 major locations: In Baia Mare-Baia Sprie and in Northern part of Gorj County. The current distribution of the habitat covers about 65 km<sup>2</sup> in the Romanian Carpathians.

Causes of endangerment are change in native species dynamics (directly impacting habitat) and pathogens / parasites. In the last two decades the populations of sweet chestnut trees were strongly affected by chestnut blight (*Cryphonectria parasitica*).

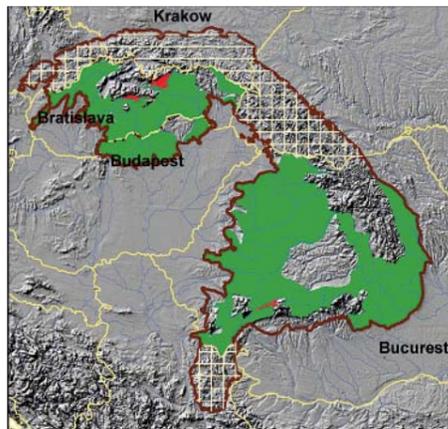
#### Required measures for protection and restitution

Both major distribution centres of this habitat are included in Natura 2000 sites (Arboretele de castan comestibil de la Baia Mare and Nordul Gorjului de Vest).

#### G1.871 – Woodrush oak forests

Red List Status: VU

Criterion: B1≥50%



Mesophile, meso-xerophile or meso-hygrophile, mesothermal acidophilous forests of *Quercus petraea* or sometimes *Quercus robur*, of central European or northwestern medio-European affinities, usually with *Luzula luzuloides*, distributed in the Western and Central European Hercynian ranges and their periphery, the northern and northeastern Alpine periphery and the northern and western Carpathian periphery.

#### Taxonomic note

Habitat includes the following sub-units:

- G1.8712: Central European dyer's greenweed oak forests
- G1.8713: Pre-Carpathian beech-sessile oak forests
- G1.8714: Central European hygrophile acidophilous oak forests

#### Geographical distribution in the Carpathians

Endemic habitat: no

Current area (HU, RO, SK): 74500 ha

Primeval virgin forest: 2500 ha

#### Assessment rationale and causes of endangerment

Causes of endangerment are clearing, transformation into agriculturally useful areas, and poor regeneration of the sessile oak and coniferous plantations. In the past important surfaces of this habitat were replaced with Scots pine or black locust plantations.

#### Required measures for protection and restitution

Protection of semi-natural stands, protection should be given priority over utilisation.

#### G1.8A – Continental [*Quercus petraea*] forests

Red List Status: VU

Criterion: B1≥50%

#### Geographical distribution in the Carpathians

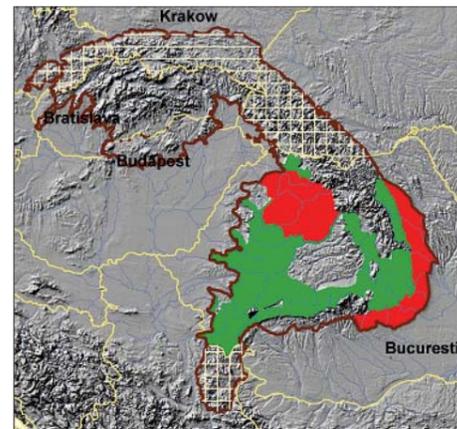
Endemic habitat: no

Current area (RO): 48000 ha

Primeval virgin forest: 0 ha

#### Assessment rationale and causes of endangerment

Main threats are poor regeneration of the sessile oak. In



the past important surfaces of this habitat were replaced with Scots pine or black locust plantations.

#### Required measures for protection and restitution

- 1.1.1. – Development
- 1.1.2. – Implementation
- 3.8. – Conservation measures
- 4.1. – Maintenance/Conservation
- 4.2. – Restoration
- 4.4.3. – Management
- 5.4. – Recovery management
- 5.5. – Disease, pathogen, parasite management

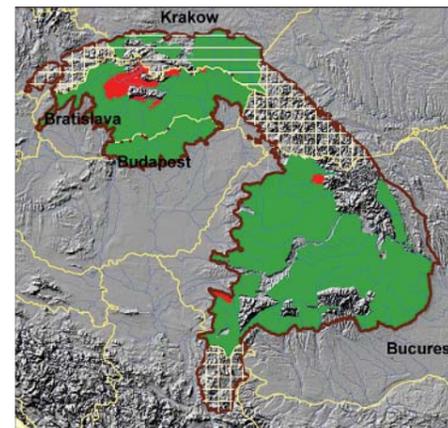
#### G1.A16 – Sub-continental [*Quercus*] – [*Carpinus betulus*] forests

Red List Status: VU

Criterion: B1≥50%, A4c1

*Quercus robur* or *Quercus petraea* forests of eutrophic or

mesotrophic soils of subcontinental and continental northern and Central Europe and of Eastern Europe. *Carpinus betulus* is generally present in their western representatives, widespread in Central Europe and western Eastern Europe. They are richer in lime, *Tilia cordata*, than the sub-Atlantic forests of units G1.A13, G1.A14 and 41.25. They are of more northern character in their area of mutual approach than the Balkanic forests of unit G1.A1C. Their southern limit of occurrence follows the Carpathian arc, the northern rim of the Podolian plateaux, and, farther east, the southern limit of nemoral forests.



#### Taxonomic note

Habitat includes the following sub-units:

- G1.A164: Peri-Carpathian lime-oak-hornbeam forests
- G1.A166: Carpathian hairy sedge oak-hornbeam forests
- G1.A167: Sub-Pannonic primrose oak-hornbeam forests
- G1.A168: Central sub-Carpathian oak-hornbeam forests

#### Geographical distribution in the Carpathians

Endemic habitat: no

Current area (HU, PL, RO, SK): 268200 ha

Primeval virgin forest: 42 ha - SK

#### Assessment rationale and causes of endangerment

Causes of endangerment are cultivation of non-indigenous tree species, change in native species dynamics (directly impacting habitat), Poor recruitment/reproduction/regeneration, invasive alien species, formerly clearing for agricultural use.

#### Required measures for protection and restitution

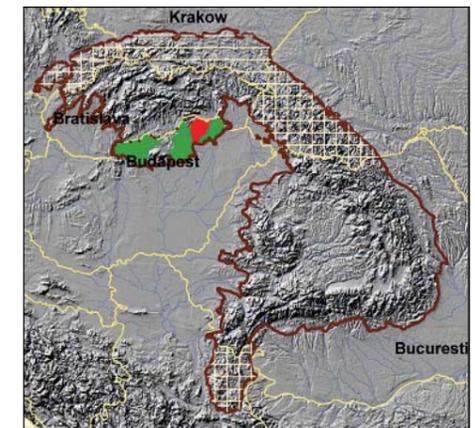
Preservation and restoration of semi-natural stands. Naturally oriented forest management.

#### G1.A1B1 – Pannonic hygrophile ash-oak-hornbeam forests

Red List Status: CR

Criterion: B1≥90%, B2≥90%

*Quercus robur*, *Quercus petraea*, *Carpinus betulus*, *Fraxinus angustifolia*, *Ulmus minor* forests of deep nutrient-rich gley soils of the Pannonic plains and hills of Styria, the Burgenland, the Alföld, the northern Hungarian Sator Range, the western Slovakian Danube plain and the eastern Slovakian lowlands, often developed in contact with riverine forests of the Alno-Padion, occupying slightly higher ground, Pannonic vicariant of the Illyrian forests of unit G1.A1A2. *Carex brizoides*, *Anemone nemorosa*, *Corydalis solida*, *Galanthus nivalis* are abundant in the herb layer, which is particularly rich in vernal ephemerals, including *Gagea*



*spathacea*, *Gagea lutea*, *Gladiolus imbricatus*, *Cyclamen purpurascens*, *Crocus neapolitanus*, *Erythronium dens-canis*, *Helleborus dumetorum*, *Adoxa moschatellina*, *Anemone ranunculoides*, *Ranunculus ficaria*, *Scilla vindobonensis*, *Leucojum vernum*.

#### Geographical distribution in the Carpathians

Endemic habitat: no

Current area (HU): 220 ha

Primeval virgin forest: 0 ha

#### Assessment rationale and causes of endangerment

In Hungary and further south the forests have been greatly hampered by man. Remnants of semi-natural forests are scattered to almost completely absent and are at great peril because of the general lowering of the groundwater table. Sometimes only scrub remnants remain preserved at the edges of the flumes.

Causes of endangerment are transformation into agriculturally useful areas (clearing, habitat drainage, water regulation, melioration), cultivation of non-indigenous tree species, change in native species dynamics (directly impacting habitat), poor recruitment/ reproduction/ regeneration, invasive alien species.

#### Required measures for protection and restitution

Protection of representative semi-natural stands.

#### G1.A1C – Southeastern European [*Quercus*] – [*Carpinus betulus*] forests

Red List Status: VU

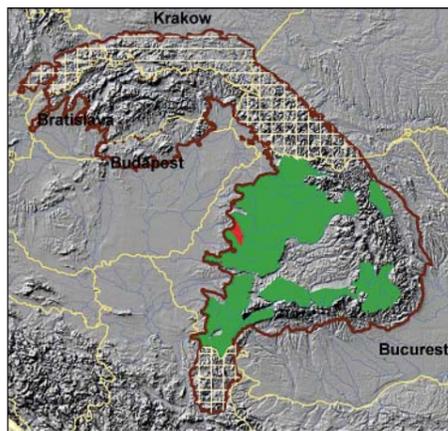
Criterion: B1≥50%

Forests of *Carpinus betulus* and *Quercus robur*, *Quercus petraea* or *Quercus dalechampii*, sometimes with *Quercus cerris* or *Quercus frainetto*, of the flanks and piedmont of the eastern and southern Carpathians and of the plateaux of the western Ukraine; azonal, often isolated oak-hornbeam woods of the Moesian Quercion frainetto zone, of the eastern Pannonic and western Pontic steppe woods zone and of the pre-Pontic hills of south-eastern Europe. They are characterized by an admixture of sub-Mediterranean *Quercion frainetto* species, and, in the east, of Euxinian species.

Taxonomic note

Habitat includes the following sub-units:

- G1.A1C1: Dacian oak-hornbeam forests
- G1.A1C2: Moldo-Muntenian oak-lime-hornbeam forests
- G1.A1C3: Moesian oak-hornbeam forests
- G1.A1C4: Southern Sarmatic oak-lime-hornbeam forests



Geographical distribution in the Carpathians

Endemic habitat: no  
Current area (RO): 95000 ha  
Primeval virgin forest: 0 ha

Assessment rationale and causes of endangerment

Main threat for the habitat is related to poor fruits production and regeneration of oak, change in native species dynamics (directly impacting habitat), small scale, selecting logging, drought.

Required measures for protection and restitution

Protection of representative semi-natural stands. Naturally oriented forest management.

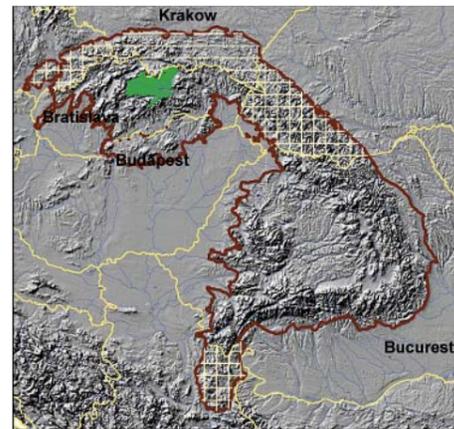
**G3.12 – Calciphilous [*Abies alba*] forests**

Red List Status: CR  
Criterion: B1 ≥ 70, D ≤ 2500 ha, A4a

*Abies alba* and *Abies alba-Picea abies* forests developed on calcareous soils.

Geographical distribution in the Carpathians

Endemic habitat: no  
Current area (SK, UA): 1650 ha  
Primeval virgin forest: 0 ha



Assessment rationale and causes of endangerment

Semi-natural stands are rare and usually preserved only in small areas. Causes of endangerment are fir decline, presumably due to increasing air pollution from industrial emissions. Transformation of fir forests into spruce plantations. Poor recruitment/ reproduction/ regeneration increasing - gnawing by forest animals, clear-cutting.

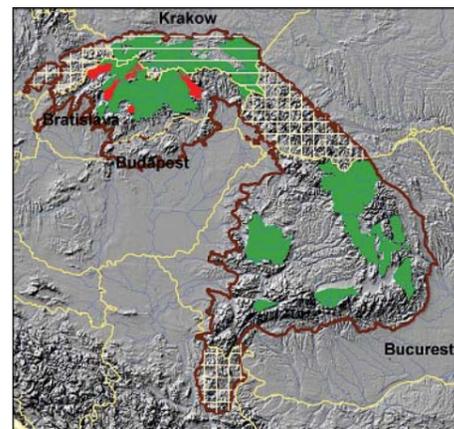
Required measures for protection and restitution

Preservation and restoration of semi-natural stands. Naturally oriented forest management.

**G3.13 – Acidophilous [*Abies alba*] forests**

Red List Status: VU  
Criterion: B1 ≥ 50%, B2 ≥ 50%, A4c1

*Abies alba* and *Abies alba-Picea abies* forests developed on acid soils of the Alps, the Dinarides, the Carpathians, the Pyrenees, the Jura, the Hercynian ranges and the northern Apennines, within the biogeographical range of beech forests of the *Fagion medio-europaeum*, of the *Fagion illyricum* or of the *Fagion dacicum*.



Taxonomic note

Habitat includes the following sub-units:

- G3.132: Acidophile Hercynio-Alpine fir forests
  - G3.1321: Peri-Alpine acidophile fir forests
  - G3.1323: Dacian acidophile beech fir forests
- G3.134: Holy Cross fir forests
- G3.135: [Bazzania] fir forests

Geographical distribution in the Carpathians

Endemic habitat: no  
Current area (PL, RO, SK): 83200 ha  
Primeval virgin forest: 1085 ha

Assessment rationale and causes of endangerment

Most stands have been transformed for almost pure spruce or spruce-larch-plantations. Causes of endangerment are fir decline, presumably due to increasing air pollution from industrial emissions. Transformation of fir forests into spruce plantations. Poor recruitment/ reproduction/ regeneration increasing - gnawing by forest animals, clear-cutting.

Required measures for protection and restitution

Protection of the remaining semi-natural stands.

**G3.1B61 – Western Carpathian subalpine spruce forests**

Red List Status: VU  
Criterion: B2 ≥ 50%, A4c2

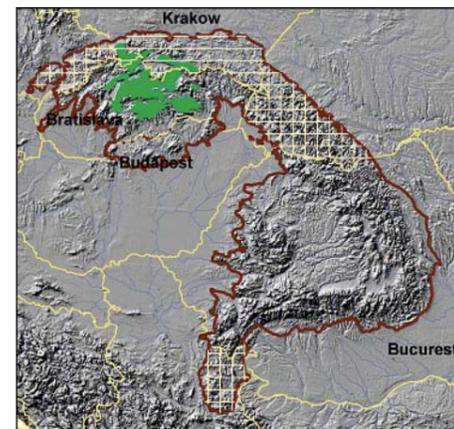
Subalpine *Picea abies* forests of the northwestern and northern Carpathians of Poland and Slovakia, partly with *Abies alba*, with *Luzula luzulina*, *Soldanella carpatica*, often in combination with tall-herb-spruce forests.

Geographical distribution in the Carpathians

Endemic habitat: yes  
Current area (PL, SK): 37000 ha  
Primeval virgin forest: 1200 ha

Assessment rationale and causes of endangerment

Poland: the altitude-zonal climax-community was preserved quite well in many places until recently, but is now greatly endangered. A characteristic and protection worthy community in its entire area of distribution; Slovakia: potentially endangered by pollutant emissions. Impor-



tance for nature conservation: Carpathian spruce forest type, biotope of more important species, a water and soil protective function

Causes of endangerment are increasing pollution due to industrial emissions, clear-cutting, building of recreational facilities, fires, occupying an area of natural forest stands, atmospheric pollution, windstorm, climate changes, pathogens / parasites / pests (*Ips typographus*), use of insecticides.

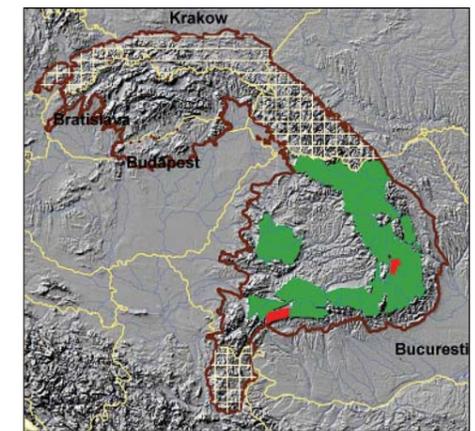
Required measures for protection and restitution

Protection of the remaining natural stands.

**G3.1B62 – Eastern Carpathian subalpine spruce forests**

Red List Status: VU  
Criterion: B2 ≥ 50%

Subalpine *Picea abies* forests of the northern Eastern, the eastern and the southern Carpathians of the Ukraine and Romania.



Geographical distribution in the Carpathians

Endemic habitat: yes  
Current area (RO): 525000 ha  
Primeval virgin forest: 41000 ha

Assessment rationale and causes of endangerment

Mainly intensely used; only a few semi-natural forests have been preserved; very important for maintaining the water balance and soil protection in the mountains. Causes of endangerment are increasing pollution due to industrial emissions, clear-cutting, building of recreational facilities, fires, occupying an area of natural forest stands, atmospheric pollution, windstorm, climate changes, pathogens/ parasites / pests (*Ips typographus*), use of insecticides, cattle grazing and uprooting for grazing.

Required measures for protection and restitution

Protection of the semi-natural remnants.

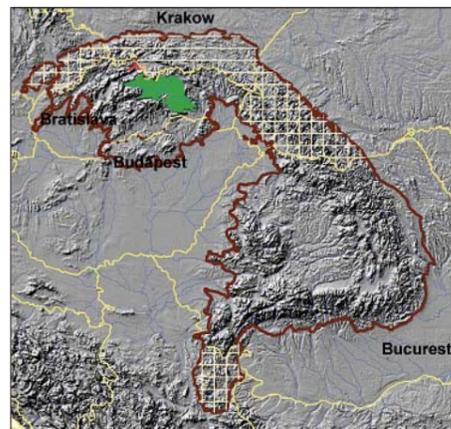
**G3.1C6 – Inner Carpathian spruce forests**

Red List Status: VU  
Criterion: B1 ≥ 50%, A4c2, D<sub>endemic</sub> ≤ 5000 ha

*Picea abies* forests of the montane and collinar levels of the inner basin of the Slovakian Carpathians, formed along the Poprad River valley between the High Tatras and the Low Tatras and subjected to a climate of high continentality.

Geographical distribution in the Carpathians

Endemic habitat: yes  
Current area (SK): 2900 ha  
Primeval virgin forest: 0 ha



Assessment rationale and causes of endangerment

The main threats are wind damage and bark beetle plagues, use of insecticides, increasing stress from air pollution related to industry and traffic, soil acidification, clear-cutting, tourism - building of recreational facilities.

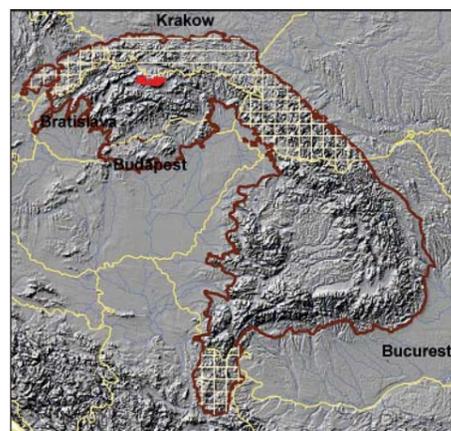
Required measures for protection and restitution

Semi-natural stands are worthy of protection (genetic origin of the local populations and ecotypes).

**G3.251 – Western Carpathian larch and arolla forests**

Red List Status: EN  
Criterion:  $D_{\text{endemic}} \leq 5000$  ha,  $B1 \geq 70\%$

Timberline silicolous *Larix decidua* and *Pinus cembra* formations of the Tatras.



Geographical distribution in the Carpathians

Endemic habitat: yes  
Current area (SK): 870 ha  
Primeval virgin forest: ? ha

Assessment rationale and causes of endangerment

The habitat has very limited distribution (limited just to Tatra National Park). However there are no present threats (due to high protection regime), it is endemic habitat for the Carpathians. There are no exact data but distribution of arolla in the last centuries was bigger and decreased due to use of arolla timber. Despite of its small area it is very important vegetation type for biodiversity of upper tree-line in the Tatra Mountains. The main threats are increasing environmental pollution, particularly from the air.

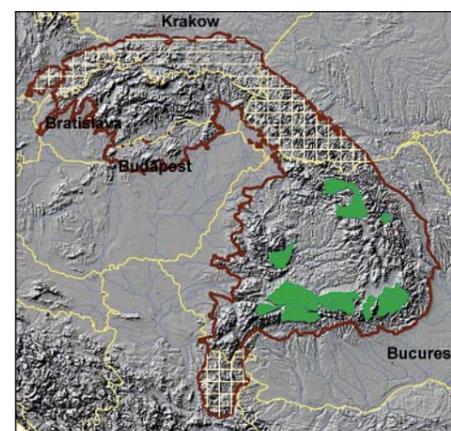
Required measures for protection and restitution

All patches are strictly protected within the Tatra National Park.

**G3.253 – Eastern Carpathian larch and arolla forests**

Red List Status: EN  
Criterion:  $B1 \geq 70\%$ ,  $D_{\text{endemic}} \leq 5000$  ha

Local mixed forests of *Pinus cembra*, *Picea abies* and *Pinus mugo*, of the lower subalpine level (1650 – 1500 m), with regional species *Rhododendron myrtifolium*, *Bruckenthalia spiculifolia*, *Melampyrum saxosum*, *Soldanella hungarica* ssp. *major*, *Campanula abietina*.



Taxonomic note

Habitat includes the following sub-units:  
G3.2531: Eastern Carpathian larch forests  
G3.2532: Eastern Carpathian arolla forests

Geographical distribution in the Carpathians

Endemic habitat: yes  
Current area (RO): 3900 ha  
Primeval virgin forest: 1500 ha

Assessment rationale and causes of endangerment

The main threats are tree-cutting, tourism facilities for winter sport practices, road construction.

Required measures for protection and restitution

Being a natural habitat placed at the upper limit of forests, no management measures are needed. Due to this fact, this habitat is rarely ever protected. They have an important role against soil erosion.

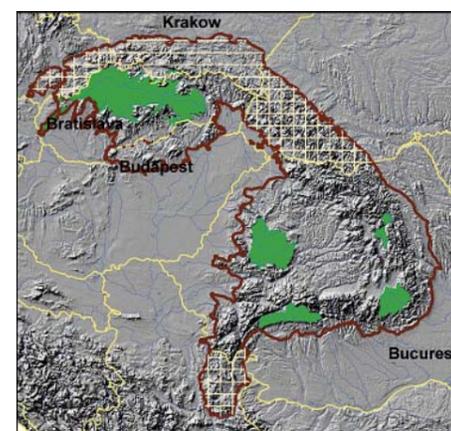
**G3.442 – Carpathian relict calcicolous [*Pinus sylvestris*] forests**

Red List Status: VU  
Criterion:  $D_{\text{endemic}} \leq 5000$  ha

Isolated, calcicolous *Pinus sylvestris* forests of the western Carpathians, related to the spring heath Scots pine forests of the Alpine area, limited to a few small enclaves in the Strazov mountains, the Velka Fatra, the Pieniny (*Pinus sylvestris*-*Calamagrostis varia* community, *Pinus sylvestris*-*Carex alba* community), the Slovakian inner-Carpathian basins and the Slovakian Erzgebirge. *Erica herbacea* and *Polygala chamaebuxus* are absent; the undergrowth includes a number of species of continental distribution and xerothermic affinities, some, western Carpathian endemics; characteristic are *Linum flavum*, *Carex humilis*, *Carex alba*, *Calamagrostis varia*, *Pulsatilla slavica*, *Thymus carpathicus*, *Primula auricula* ssp. *hungarica*, *Globularia aphyllanthes*, *Campanula carpatica*, *Festuca tatras*.

Taxonomic note

Habitats of the Romanian Carpathians should be classified as:



G3.4C8: East Carpathian [Sesleria] Scots pine forests  
G3.4CA: East Carpathian [*Daphne blagayana*] Scots pine forests

Geographical distribution in the Carpathians

Endemic habitat: yes  
Current area (PL, RO, SK): 4150 ha  
Primeval virgin forest: 350 ha

Assessment rationale and causes of endangerment

The habitat has limited distribution. It is endemic habitat for the Carpathians. Despite of its small area it is very important vegetation type for biodiversity of calcicolous

montane forests. Habitat is not used. Due to its lack of exploitability it is semi-natural to natural in nature almost everywhere. The main threats are forests fires and the forests stands should be injured by soil erosion, collection of rare species.

Required measures for protection and restitution

This being a natural habitat growing on rocky ground, no management measures are needed. Prohibiting the collection of *Arctostaphylos uva-ursi*, medicinal plant (*Scărița-Belioara*). Restrictions for collecting *Daphne blagayana*, ornamental plant (Cozia).

**G3.562 – Banat pine forests**

Red List Status: EN  
Criterion: A4a,  $D_{\text{endemic}} \leq 5000$  ha

Relict thermophile forests of *Pinus banatica* (*Pinus nigra* var. *banatica*) developed on calcareous substrates of the montane level of the Southern Carpathians, in particular, of the Banat, with *Genista radiata*, *Fraxinus ornus*, *Cotinus coggygria*, *Biscutella laevigata*, *Ceterach officinarum*, *Festuca xanthina*, *Seseli rigidum*, *Campanula kladniana*, *Centaurea rhenana* and *Campanula divergens*.

Geographical distribution in the Carpathians

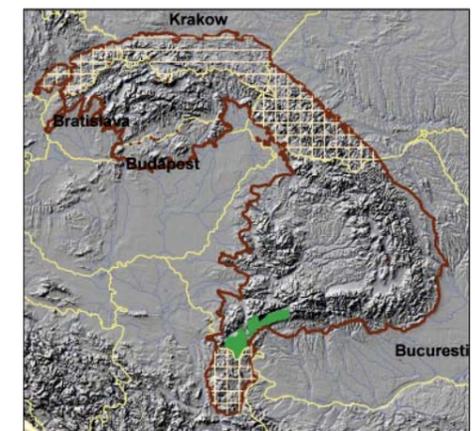
Endemic habitat: yes  
Current area (RO): 3200 ha  
Primeval virgin forest: 500 ha

Assessment rationale and causes of endangerment

The main threats to *Pinus nigra* forests include unsustainable cutting for production purposes (particularly timber), the spread of exotic species, defoliation by insect pests (especially *Thaumetopoea pityocampa*), over grazing, fires and genetic pollution.

Required measures for protection and restitution

Entire area covered by habitat is included in protected areas.

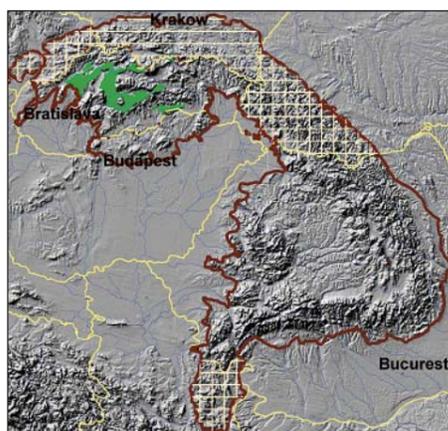


### G3.977 – Alpino-Carpathian yew woods

Red List Status: CR

Criterion: A1 ≥ 80, B1 ≥ 90, D ≤ 250 ha

*Taxus baccata* woods of the Alpine system and of the Carpathians, in part rare facies of the yew-beech formations, in part amphibolite-colonizing woods with *Picea abies* and *Fraxinus excelsior* and *Juniperus sabina*.



#### Taxonomic note

Forest communities with a rare occurrence of yew include into the G1.6612 Medio-European yew steep slope beech forests.

#### Geographical distribution in the Carpathians

Endemic habitat: no

Current area (SK): 250 ha (from other countries data are missing)

Primeval virgin forest: 50 ha

#### Assessment rationale and causes of endangerment

The most important factor effecting viability of yew-tree populations is damaging fully-grown and especially young yew-trees by deer game. Particularly adverse situation occurs when young trees are being grazed by animals. Another important factor is decline of quality of tree-top, decline of blossom and fertility of yew-trees in result of increased density of forest vegetation. The vegetation suffers from light shock when circled out and dies back gradually. As a consequence of stagnation of natural regeneration of yew-tree, heavy fragmentation of the occurrence, small number of trees in one location, improper application of forest-economic practices, many populations of yew-tree are endangered by extinction.

#### Required measures for protection and restitution

The close to nature and sustainable management in the forest, the natural tree species conservation, the support of forest regeneration and the follow protection of seedlings against the game.

### G3.E – Nemoral bog conifer woodland

Red List Status: CR

Criterion: B1 ≥ 90%, B2 ≥ 90%, A4a

Woods of *Pinus* spp. or *Picea* spp., sometimes mixed with *Betula pubescens*, colonizing bogs and fens in the nemoral zone. Conifer-dominated bog woodland occurs mainly in the boreal and boreonemoral zones, but extends into the nemoral, wooded steppe and steppe zones.

#### Taxonomic note

Habitat includes the following sub-units:

G3.E1: [*Pinus mugo*] bog woods

G3.E2: Nemoral [*Pinus sylvestris*] mire woods

G3.E211: Inland northern bilberry Scots Pine mire woods

G3.E5: Nemoral peatmoss [*Picea*] woods

G3.E51: Peri-Alpine peatmoss spruce woods

G3.E6: Nemoral bog [*Picea*] woods

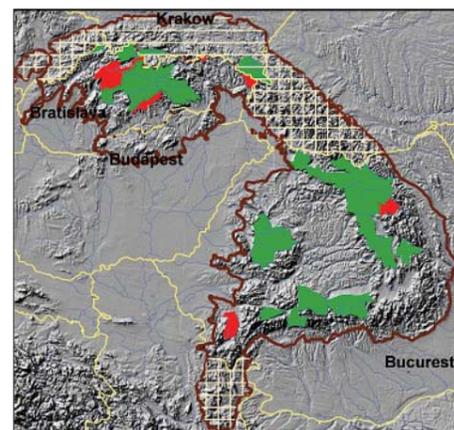
#### Geographical distribution in the Carpathians

Endemic habitat: no

Current area (PL, RO, SK): 11350 ha

Primeval virgin forest: 1050 ha

The current distribution of this habitat covers around 74 km<sup>2</sup> in Romanian Carpathians. In this habitat type has been included also the habitat type Norway spruce forests with *Sphangnum* spp. (R4210) because sometimes the transition between 91D0\* and 9410 is not evident and environmental conditions and vegetation structure is close to 91D0\*. Otherwise, the surface area of 91D0\* is around 30 – 35 km<sup>2</sup>.



#### Assessment rationale and causes of endangerment

Habitat in the past was frequently drained, converted into forestry or used for the excavation of peat. Currently most of the habitat distribution is included in the protected areas and Natura 2000 sites. The main threats are drainage, afforestation, peat extraction, eutrophication, droughts and less precipitation, grazing.

#### Required measures for protection and restitution

Most of the habitat distribution is included in protected areas and Natura 2000 sites. Cessation of peat extraction, protection of intact mires and remnants, wetland restoration.

### G4.71 – Subcontinental nemoral [*Pinus*] – [*Quercus*] forests

Red List Status: CR

Criterion: B1 ≥ 50, D ≤ 250 ha

Acidophilous forests in which *Quercus petraea* is associated in the main canopy with *Pinus sylvestris*, characteristic of siliceous bedrock, gravels, loams, moraines, with shallow, often podsolised soils, on relatively dry, often south-facing slopes and hilltops of the collinar and submontane levels of the Bohemian quadrangle, the Carpathians, the eastern Alps and their associated plateaux.

#### Geographical distribution in the Carpathians

Endemic habitat: no

Current area (SK): 50 ha

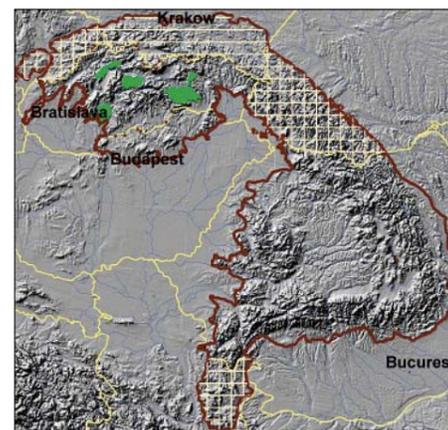
Primeval virgin forest: 0 ha

#### Assessment rationale and causes of endangerment

There are only fragments of boreal - continental forests in the West Carpathian area. It is a rare biotope in this area. Causes of endangerment: fires.

#### Required measures for protection and restitution

They are not endangered at present. The most of them are classified as protected forests. It is necessary to keep the origin status of this biotope in consideration of the rare occurrence.



#### Contributors to the compiling of the Red List

HU: Aszalos Réka (aszalos.reka@okologia.mta.hu)

PL: Mróz Wojciech, Szewczyk Monika (monika.szewczyk@gridw.pl)

RO: Biris Iovu (iovu.biris@gmail.com)

SK: Rizman Ivor (rizman@nlcsk.org), Vaško Ľudovít (vasko@nlcsk.org)

SR: Bakovic Dejan (dejan.bakovic@zzps.rs)

UK: Kabal Myroslav (forest\_cbr@ukr.net), Voloshchuk Mykola

### References

#### General:

BOHN, U., NEUHÄUSL, R., unter Mitarbeit von / with contributions by GOLLUB, G., HETTWER, C., NEUHÄUSLOVÁ, Z., RAUS, TH., SCHLÜTER, H. & WEBER, H. (2000/2003). Karte der natürlichen Vegetation Europas / Map of the Natural Vegetation of Europe. Maßstab / Scale 1 : 2 500 000. Münster (Landwirtschaftsverlag).

RODRÍGUEZ, J. P. *et al.* (2011). Establishing IUCN Red List Criteria for Threatened Ecosystems. *Conserv Biol.* 25(1): 21-29.

IUCN (2001). IUCN red list categories and criteria. Gland, Switzerland: IUCN, Species Survival Commission; 2001. Version 3.1.

IUCN (2010). Guidelines for using the IUCN Red List categories and criteria. Gland, Switzerland: Standards and Petitions Subcommittee of the IUCN Species Survival Commission, IUCN, Species Survival Commission; Version 8.0. Available from <http://intranet.iucn.org/webfiles/doc/SSC/RedList/RedListGuidelines.pdf>

#### Hungary

BÖLÖNI, J., MOLNÁR, Zs., BIRÓ, M. & HORVÁTH, F. (2008). Distribution of the (semi-)natural habitats in Hungary II. Woodlands and shrublands. *Acta Botanica Hungarica* 50 (Suppl.): 107-148.

Historical distributions were calculated with the help of the 1st Military Survey (end of 18th century).

All data were counted with GIS analysis on the basis of a whole country survey and recognition of the actual state of natural & semi-natural vegetation of Hungary: <http://www.novenyzetiterkep.hu/en/english/publications>

#### Poland

MRÓZ, W. (2010). Monitoring siedlisk przyrodniczych. Przewodnik metodyczny. Część I GIOŚ, Warszawa.

HERBICH, J. (red.) (2004). Lasy i bory. Poradniki ochrony siedlisk i gatunków Natura 2000 - podręcznik metodyczny. Ministerstwo Środowisk, Warszawa.

#### Romania

ALEXIU, V. (1998). Vegetația masivului Tezler-Păpușa. Studiu fitocenologic. Editura Cultura, Pitești, 362 pp.

BARBU, I. & BARBU, C. (2005). Silver fir (*Abies alba* Mill.) in Romania. Editura Silvică, București, 220 pp. <http://www.editurasilvica.ro/carti/barbu3/integral.pdf>

BELDIE, A. (1941). Observațiuni asupra vegetației lemnoase din Munții Bucegi. *Analele Institutului de Cercetări și Experimentație Forestieră*, vol. VI, I.C.E.F., București, p. 3-81, <http://www.editurasilvica.ro/analeleicas/6/1/beldie.pdf>

BELDIE, A. (1951). Făgetele montane superioare dintre Valea Ialomiței și Valea Buzăului - Studiu fitosociologic

comparativ. Editura Academiei, București, 114 pp.

BIRIȘ, I. A. (2001). Cercetări privind diversitatea producătorilor din ecosistemele de fâgete de pe clina sudică a Carpatilor Meridionali între Valea Oltului și Valea Prahovei, și influența măsurilor de gospodărire asupra acesteia. Teza de doctorat, Universitatea Transilvania din Brașov, 267 pp.

BORZA, A. (1959). Flora și vegetația văii Sebeșului. Editura Acad. Române, București, 326 pp.

BOȘCAIU, N. (1971). Flora și vegetația Munților Țarcu, Godeanu și Cernei. Editura Academiei, București, 494 pp.

BREGA, P. (1965). Contribuții la studiul regenerării fâgetelor și amestecurilor de fag cu rășinoase din bazinul mijlociu al râului Moldova. Teza de doctorat, Universitatea, Brașov, 442 pp.

BREGA, P. (1986). Regenerarea naturală a fâgetelor, brădetelor și amestecurilor de rășinoase cu fag în nordul țării. Editura Ceres, București, 245 pp.

BUCĂȚARU, I. ALONA, M. (2012). Cercetări privind diversitatea producătorilor din ecosistemele de fâgete și amestecuri de rășinoase cu fag din Masivul Ciucaș. Rezumatul tezei de doctorat, Brașov, 63 pp.

BUICULESCU, I. (1975). Asociațiile de pădure din masivul Piatra Mare. St. și Comun. Șt. Nat., vol. 19, Sibiu, p. 145-177.

BURESCU, P., DONIȚĂ, N. & BURESCU, L. (2002). Făgetele din Munții Pădurea Craiului, jud. Bihor. Analele Universității din Oradea, vol. VII, silvicultură, Oradea, p. 49-56.

CIUCĂ, M. (1984). Flora și vegetația pajștilor din Munții Ciucaș. Editura Academiei, București, 148 pp.

COLDEA, G. (1975). Étude phytosociologique concernant les hêtres des monts Plopiș. Revue Roum. de Biol., 20(1): 33-41.

COLDEA, G., BOȘCAIU, N., LUPȘA, V., PLĂMĂDĂ, E. & REȘMERIȚĂ, I. (1970). Vegetația fâgetelor din sectorul Valea Eșelnița – Valea Mraconici al Defileului Dunării. Studii și cerc. de Biol. Seria Bot., 22(6), p. 467-474.

CONSTANTINESCU, N. (1941). Fagul în Oltenia. Viața Forestieră, vol. IX(4-6), București, p. 85-92.

DIHORU, G. (1975). Îvelișul vegetal din muntele Siriu. Editura Acad. R.S.R., București.

DONIȚĂ, N., BĂNDIU, C., BIRIȘ, I.-A., GANCZ, V., APOSTOL, J. & MARCU, C. (2008). Harta pădurilor – pe unități ecosistemice. România (scara 1:500 000). Editura Silvică, București.

GHEORGHIU, O. (2010). CERCETĂRI PRIVIND CUNOAȘTEREA CARACTERELOR FUNDAMENTALE ALE STAȚIUNILOR FORESTIERE APTE PENTRU BRĂDETE ȘI BRĂDETO-FĂGETE

DE PE ULTIMILE PRELUNGIRI ESTICE ALE MUNȚILOR GOȘMANULUI. Rezumatul tezei de doctorat, Universitatea Transilvania din Brașov, 60 pp. <http://webbut.unitbv.ro/teze/rezumat/2010/rom/OanaGheorghiu.pdf>

HODIȘAN, V. (1973). Contribuții la cunoașterea fâgetelor din bazinul Runcu (jud. Alba). Contrib. Bot. Cluj, Cluj-Napoca, p. 195-202.

ICAS (2012). Inventarul Forestier Național. Rezultate ciclul I (2008-2012). <http://roifn.ro/site/rezultate-ifn-1/>

MILESCU, I., ALEXE, A., NICOVESCU, H. & SUCIU, P. (1967). Fagul, Editura Agro-silvică, București, 581 pp.

PAȘCOVSCHI, S. & LEANDRU, V. (1958). Tipuri de pădure din Republica Populară Română. Seria: Manuale, Referate, Monografii. nr. 14, Editura Agro-silvică de stat, București, 458 pp.

PAUCĂ, A. (1941). Studiu fitosociologic în Munții Codru și Muma. Teza de doctorat, Universitatea București, 119 pp.

PAUCĂ-COMĂNESCU, M. (1989). Făgetele din România - Cercetări ecologice. Editura Academiei. București, 263 pp.

PELA, P. (1982). Făgetele din depresiunea Almăjului (Jud. Caraș-Severin), în: Făgetele carpatine. Semnificația lor bioistorică și ecoprotectivă. Cluj-Napoca, p. 217-227.

PELA, P. (1992). Pulmonario rubrae-Abieti-Fagetum (Knapp 1942) Soó 1964 - taxetosum baccatae Comes et Tăuber 1977 în Cheile Minișului (jud. Caraș-Severin). Contrib. Bot. Cluj-Napoca, Cluj-Napoca, p. 49-50.

PLĂMĂDĂ, E. & COLDEA, G. (1990). Cercetări fitocenotice asupra unor fâgete din Transilvania. Studii și Cerc. de Biol., Seria Biol. Veget. 42(1): 43-49.

POPESCU, A. *et al.* (1989). Cenotaxonomia fâgetelor din România. Cercetări ecologice. Editura Academiei, București.

POPESCU, G. (1978). Studii fitocenologice asupra fâgetelor din bazinul hidrografic al Bistriței-Vâlcii. Analele Univ. Craiova, 9(19), Craiova, p. 75-79.

POPESCU, G. (1981). Contribuții la studiul fitocenologic al pădurilor de fag din bazinul hidrografic al Bistriței-Vâlcii. Analele Univ. Craiova, Biol., Agron., Hortic., 12(22), Craiova, p. 9-17.

POPESCU, G. (1984). Rășinoasele în zona dealurilor din zona dealurilor din Subcarpații Orientali de mijloc. Editura Ceres, București, p. 343.

POPESCU-ZELETIN, I. & BĂNDIU, C., M., V. (1975). Caracteristici ecologice ale brădeto-făgetelor pluriene de la Sinaia. Raport științific, Institutul de cercetări și amenajări silvice, București, 52 pp.

PURCELEAN, Ș. (1965). Făgetul montan nud din bazinul

superior al Teleajenului. Revista Pădurilor, 80(6), Ministerul economiei forestiere, București, p. 335-315.

PURCELEAN, Ș. (1966). Tipurile naturale de pădure din bazinul superior al Teleajenului. Institutul de cercetări forestiere, București, 254 pp.

RACLARU, P. (1970). Flora și vegetația Munților Rarău. Rezumatul tezei de doctorat, Universitatea București, 56 pp.

ROB, M. (2003). Cercetări privind particularitățile structurale și calitative ale fâgetelor montane naturale din Munții Gutâi. Teza de doctorat, Universitatea Transilvania din Brașov, 174 pp.

ȘERBĂNESCU, I. (1939). Flora și vegetația Masivului Penteleu. Teza de doctorat, Universitatea București, 135 pp.

ȘOFLETEA, N. (1998). Considerații chorologice și ecologice privind brădețele din zona perimetrală șesului Bîrsei. Revista de Silvicultură a Sud-Estului Transilvaniei, vol. III(1), Editura Lux libris, Brașov, p. 17-19.

SOÓ, R. (1964). Die regionalen Fagion – Verbände und gesellschaften Süd-ost europas Studia. Biol. Acad. Sci. Hung, 1, 104 pp.

ȘTEFAN, N. (1980). Cercetarea florei și vegetației din bazinul superior și mijlociu al râului Rîmnicului Sărat. Rezumatul tezei de doctorat, Universitatea Iași, 22 pp.

TOMA, M. (1976). Cercetări asupra florei și vegetației din Depresiunea Dornelor (județul Suceava). Rezumatul tezei de doctorat, Universitatea Cluj-Napoca, 25 pp.

TOMESCU, C. (2005). Diversitatea florei și vegetației ecosistemelor naturale din bazinul râului Suceava. Rezumatul tezei de doctorat, Universitatea Iași, 57 pp.

VLONGA, Ș. (1998). Cercetări ecologice în fâgete montane și amestecuri de rășinoase cu fag din masivul Ciucaș, în care se aplică tratamente de codru regulat. Teza de doctorat, Universitatea Transilvania din Brașov, 132 pp.

ZAMFIRESCU, O., CHIFU, T., ZAMFIRESCU, Ș. & MÎNZU, C. (2006). Făgetele din Masivul Ceahlău, Analele Universității „Ștefan Cel Mare” Suceava, vol. 1, silvicultură, Suceava, p. 5-22.

ZANOSCHI, V. (1971). Flora și vegetația Masivului Ceahlău. Rezumatul tezei de doctorat, Universitatea.

#### Slovakia

JASÍK, M., POLÁK, P. (eds) (2011). Pralesy Slovenska. FSC Slovensko, Banská Bystrica.

MICHALKO, J., MAGIC, D., BERTA, J., MAGLOCKÝ, Š. & ŠPÁNIKOVÁ, A. (1986). Geobotanická mapa ČSSR. Slovenská socialistická republika, 1 : 200.000. [Geobotanical Map of Czechoslovakia, Slovak Socialist Republic]. – Bratislava (Veda Publ.), 162 pp., 12 maps.

STANOVÁ, V., VALACHOVIČ, M. (eds) (2002). Katalóg Biotopov Slovenska. DAPHNE - Inštitút aplikovanej ekológie, Bratislava, 225 pp.

Map of potential vegetation 1:500 000 (Atlas krajiny Slovenskej republiky. Bratislava: Ministerstvo životného prostredia SR; Banská Bystrica: SAŽP, 2002).

Digital forest type map (National Forest Centre, 2011).

Forest inventory database and maps 1998 - 2008 (National Forest Centre).

#### Serbia

LAKUŠIĆ, D., BLAŽENČIĆ, J., RANDELOVIĆ, V., BUTORAC, B., VUKOJIĆIĆ, S., ZLATKOVIĆ, B., JOVANOVIĆ, S., ŠINŽAR-SEKULIĆ, J., ŽUKOVEC, D., ČALIĆ, I. & PAVIČEVIĆ, D. (2005). Habitats of Serbia – Manual with descriptions and basic facts. - In: Lakušić, D. (ed.): Serbian Habitats, Results of the project “Harmonization of the national habitat nomenclature with standards of the international community”, Institute of Botany and Botanical Garden “Jevremovac”, Faculty of Biology, the University of Belgrade, Ministry of Science and Environmental Protection of the Republic of Serbia.

Table 2: Summary of numbers of forest habitats within each category of threat

IUCN Red List categories	No. of forest habitats	No. of endemic forest habitats
Extinct (EX)	-	-
Extinct in the Wild (EW)	-	-
Critically Endangered (CR)	13	2
Endangered (EN)	10	3
Vulnerable (VU)	17	5
Near Threatened (NT)	4	-
Least Concern (LC)	9	4
Data Deficient (DD)	1	1
<b>Total number of habitats assessed</b>	<b>54</b>	<b>10</b>

Table 3: Endemic habitats and conversion between EUNIS habitat classification and other classifications

EUNIS	Endemic habitat	CM system	Natura	Pal. Hab
G1.1112 - Eastern European poplar-willow forests	no	Salicion albae	91E0*	44.132 - Eastern European poplar-willow forests
G1.1141 - Pannonic willow and poplar-willow galleries	no	Salicion albae	91E0*	44.1161 - Pannonic willow and poplar-willow galleries
G1.1213 - Herynio-Carpathian grey alder galleries	no	Alnion incanae	91E0*	44.2 Boreo-alpine riparian galleries
G1.1214 - Eastern Carpathian grey alder galleries	yes	Alnion incanae	91E0*	44.2 Boreo-alpine riparian galleries
G1.21 - Riverine Fraxinus - Alnus woodland, wet at high but not at low water	no	Alnion incanae	91E0*	44.3 Middle European stream ash-alder woods
G1.2233 - Pannonic ash-oak-alder forests	no	Alnion incanae	91F0	44.4 Mixed oak-elm-ash forests of great rivers
G1.2234 - Getic oak-elm-ash forests	no	Alnion incanae	91F0	44.434 Getic oak-elm-ash forests
G1.411 - Meso-eutrophic swamp alder woods	no	Alnion glutinosae	-	44.91 Alder swamp woods
G1.42 - [Quercus] swamp woods	no	Genisto germanicae-Quercion	9190	44.94 Oak swamp woods
G1.5 - Broadleaved swamp woodland on acid peat	no	Betulion pubescentis	91D0*	44.A1 Sphagnum birch woods
G1.611 - Medio-European collinar woodrush beech forests	no	Luzulo-Fagion	9110	41.111 Medio-European collinar woodrush beech forests
G1.6121 - Herynio-Alpine montane woodrush beech forests	no	Luzulo-Fagion	9110	41.1121 Herynio-Alpine montane woodrush beech forests
G1.65 - Medio-European subalpine [Fagus] woods	no	Fagion - Acerenion	9140	41.15 Medio-European subalpine beech woods
G1.6D3 - East Carpathian subalpine beech forests	yes	Symphyto cordati-Fagion	91Y0	41.1D3 East Carpathian sub-alpine beech forests
G1.7373 - Intra-Carpathian insular [Quercus virgiliana] woods	yes	Quercetalia pubescenti-petraeae	91AA*	41.7373 Intra-Carpathian insular [Quercus virgiliana] woods
G1.7374 - Pannonian [Quercus pubescens] woods	no	Quercetalia pubescenti-petraeae	91H0*	41.7374 Pannanian white oak woods
G1.769 - Getic sub-continental thermophilous oak woods	no	Quercion confertae cerris	91M0	41.769 Getic sub-continental thermophilous oak woods
G1.7A11 - White cinquefoil oak woods	no	Potentillo albae-Quercion	9110*	41.7A11 Western white cinquefoil sessile oak woods
G1.7A12 - Tartar maple steppe oak woods	no	Aceri tatarici-Quercion	9110*	41.7A2 Tartar maple steppe oak woods
G1.7C2 - [Carpinus orientalis] woods	no	-	-	41.822 Helleno-Balkan oriental hornbeam woods
G1.7C4 - Thermophilous [Tilia] woods	no	Tilio-Acerion	9180	41.84 Thermophilous lime woods
G1.7C5 - [Celtis australis] woods	no	Celto-Juglandetum regiae	-	41.85 Nettle-tree woods
G1.7D - [Castanea sativa] woodland	no	Castaneo-Quercion	9260	41.9 Chestnut woods
G1.871 - Woodrush oak forests	no	Genisto germanicae-Quercion	9110*	41.571 Woodrush oak forests
G1.8A - Continental [Quercus petraea] forests	no	Galio-Carpinetum	9170	-
G1.A16 - Sub-continental [Quercus] - [Carpinus betulus] forests	no	Carpinion betuli	91G0*	41.26 Sub-continental oak-hornbeam forests
G1.A1B1 - Pannonic hygrophile ash-oak-hornbeam forests	no	Quercion robori-Carpinienion	91G0*	41.2B1 Pannonic hygrophile ash-oak-hornbeam forests
G1.A1C - Southeastern European [Quercus] - [Carpinus betulus] forests	no	Dacian oak & hornbeam	91Y0	41.2C4 Southern Sarmatic oak-lime-hornbeam forests
G3.12 - Calciphilous [Abies alba] forests	no	Galio-Abietenion	-	41.12 Calciphile medio-European fir forests
G3.13 - Acidophilous [Abies alba] forests	no	Galio-Abietenion	-	42.13 Acidophile medio-European fir forests
G3.1B61 - Western Carpathian subalpine spruce forests	yes	Vaccinio-Piceion	9410	42.2161 Western Carpathian subalpine spruce forests

G3.1B62 - Eastern Carpathian subalpine spruce forests	yes	Vaccinio-Piceion	9410	42.2162 Eastern Carpathian subalpine spruce forests
G3.1C6 - Inner Carpathian spruce forests	yes	Vaccinio-Piceion	9410	42.2161 Western Carpathian subalpine spruce forests
G3.251 - Western Carpathian larch and arolla forests	yes	Vaccinio-Piceion	9420	42.351 Western Carpathian larch and arolla forests
G3.253 - Eastern Carpathian larch and arolla forests	yes	Vaccinio-Piceion	9420	42.353 Eastern Carpathian larch and arolla forests
G3.442 - Carpathian relict calcicolous [Pinus sylvestris] forests	yes	Pulsatillo slavicae-Pinion	91Q0	42.542 Carpathian relict calcicolous pine forests
G3.562 - Banat pine forests	yes	-	9530*	42.662 Banat pine forests
G3.977 - Alpino-Carpathian yew woods	no	Cephalanthero-Fagion	9150	42.A77 Alpino-Carpathian yew woods
G3.E - Nemoral bog conifer woodland	no	Sphagnion medii, Piceion excelsae	91D0*	44.A Birch and conifer mire woods
G4.71 - Subcontinental nemoral [Pinus] - [Quercus] forests	no	Pino-Quercion	-	43.5 Subcontinental nemoral pine-oak forests

# RED LIST OF VASCULAR PLANTS OF THE CARPATHIANS

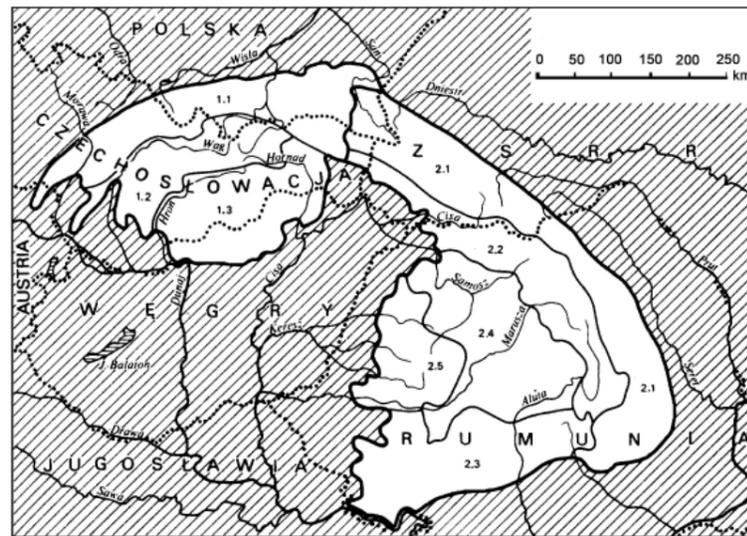
Compiled by Peter Turis

**Authors / Contributors:** Peter Turis, Pavol Eliáš jun. (Slovakia), András Schmotzer, Gergely Király (Hungary), Erika Schneider (Romania), Hanna Kuciel, Monika Szewczyk (Poland), Alla Kozurak, Tatiana Antosyak, Mykola Voloshchuk (Ukraine), Predrag Lazarević (Serbia), Pavel Lustyk (Czech Republic)

## Introduction

The Carpathians constitute one of the largest and best preserved European mountains. Opinions on precise demarcation of about 1,500 km long mountain system vary according to different authors. Part of the authors (e.g. KONDRACKI 1989) sees them as a massif starting in Austria and continuing through the Czech Republic, Slovakia, Poland, Hungary, Ukraine, Romania up to the Danube River on the border with Serbia. They incorporate there also the relatively large Transylvanian tableland in Romania (Fig. 1). Other authors (e.g. POSEA 2006) do not consider the Transylvanian tableland as part of the Carpathian Mountains and they include here only significant mountains rising from the surrounding areas situated below in Romania (Fig. 2). Another authors (e.g. KRÁL 1999) assigned to the Carpathians also the area behind the Kazan breakthrough of the Danube in eastern Serbia (Fig. 3). Exceptionally, hills in the northwest ness of Bulgaria are regarded as part of the Carpathian Mountains as well (e.g. CANKOV 1974).

Figure 1: Map of the Carpathians (according to KONDRACKI 1989).



Depending on the border demarcation, the Carpathian Mts occupy about 210,000 km<sup>2</sup>, and the width ranges up to 60 – 300 km (KONDRACKI 1989, KRÁL 1999). The major part is located in Romania (about 55% of the total area), much less in Slovakia (about 17%), Ukraine (about 10%), Poland (about 9%), Hungary (about 4%), the Czech Republic (about 3%) and Austria (less than 1%) (KONDRACKI 1989). From the orographic and phytogeographical point of view, the Carpathians are usually divided into Western Carpathians, Eastern Carpathians and Southern Carpathians, the boundaries between these units vary according to respective views (e.g. KLIMENT 1999).

The Carpathians are the northernmost and easternmost mountain massif of the Central Europe extending up to about 70 m above sea level on the banks of the Danube in the Iron Gates to 2,655 m asl in highest mountains in the Tatras. It represents a corridor linking the Alps with the Balkan Mts. They are typical band-pass mountains with a significant presence of flysch in the outer zone, metamorphosed, crystalline, or extremely rugged calcareous rocks in the central zone and the Neogene volcanics in the inner zone (KONDRACKI 1989, KRÁL 1999). Several stages of the Quaternary glaciations (KONDRACKI 1989) left significant geomorphological traces in the highest part of the massif. Anthropogenic use of the Carpathian area has not reached significant level compared with the mountains of the Western Europe and it had more or less extensive character to the mid-20th century. Medieval Wallachian colonization was an important phenomenon in the colonization of Carpathian mountain landscape aimed at obtaining meadows and pastures for livestock.

The flora of the Carpathians is considered very rich due to the natural and climatic conditions, geographical

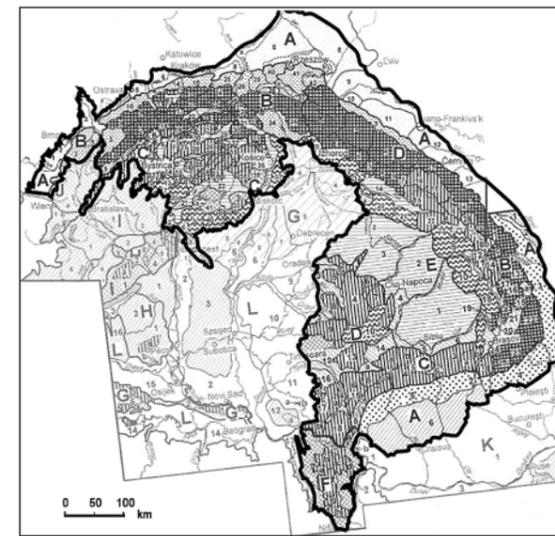
Figure 2: Map of the Carpathians (according to RUFFINI F. V., STREIFENEDER T. & EISELT B., 2006: Implementing an international mountain convention. An approach for the delimitation of the Carpathian Convention area. European Academy, Bolzano/Bozen, 119 pp.).



location and historical development. Within about 12,500 taxa of vascular plants recorded throughout Europe (WWF & IUCN 1994), 3,895 taxa are known from the Carpathians (TASENKEVICH 1998), among which 482 taxa are exclusively Carpathian endemics (TASENKEVICH 2003). Therefore, the Carpathians are included among the key Palearctic mountain eco-regions (WEBSTER *et al.* 2001) and they represent one of the 24 phyto-diversity centres of Europe (WWF & IUCN 1994).

Changes associated with industrialization and agricultural use of Carpathian countries around the mid-20th century lead to gradual anthropisation of the territory, which hit original flora in varying intensity. The Red Lists of plants or plant Red Books have begun to highlight this escalating threatening of flora of these countries. Within each

Figure 3: Map of the Carpathians (according to KRÁL 1999).



country these Red Lists were generated from 70-ties of the last century (Czech Republic: ČEŘOVSKÝ *et al.* 1979, HOLUB *et al.* 1979; Hungary: RAKONCZAY 1990; Poland: JASIEWICZ 1981, ZARZYCKI & KAŻMIERCZAKOWA 1993; Romania: BOŞCAIU *et al.* 1994, DIHORU & DIHORU 1994, OLTEAN *et al.* 1994, DIHORU & NEGREAN 2009; Serbia: STEVANOVIĆ *et al.* 1996, STEVANOVIĆ 1999; Slovakia: MAGLOCKÝ 1983; Ukraine: SITNIK 1980; former Czechoslovakia: ČEŘOVSKÝ *et al.* 1999) and they were later rewritten, or supplemented in view of the continuing devastation of the natural environment (Czech Republic: PROCHÁZKA *et al.* 1983, HOLUB 2000, GRULICH 2012; Hungary: KIRÁLY 2007; Poland: ZARZYCKI 1986, ZARZYCKI & SZELĄG 1992, 2006,

*Psephellus trinervius* – critically endangered (CR) species marginally extending into Romanian Carpathians, photo: P. Turis



KAŻMIERCZAKOWA & ZARZYCKI 2001; Slovakia: MAGLOCKÝ & FERÁKOVÁ 1993, FERÁKOVÁ *et al.* 2001; Ukraine: ŠELJAG-SOSONKO 1996, DIDUCH 2009). In these works, the authors evaluated together taxa present not only in the Carpathians, but also in other parts of the country. Red Lists of plants or Red Books of plants exclusively for the Carpathian region were published only occasionally (MIREK & PIĘKOŚ-MIRKOWA 1992, KRICSFALUSY *et al.* 1999, KRICSFALUSY & BUDNIKOV 2007, MIREK & PIĘKOŚ-MIRKOWA 2008). Only Tassenkevich tried the Carpathian-wide approach to the assessment of vulnerability of flora when preparing two similar versions of red lists of plants within the project of the Carpathian EcoRegion Initiative and WWF – Danube-Carpathian Programme (TASENKEVICH 2002, 2003). Their update was needed because of the diversity of data on which assessment was based and changes in the guidelines of the International Union for Conservation of Nature (IUCN) for application of red list criteria.

The present Red List of vascular plants of the Carpathians was developed within the project 'BioREGIO Carpathians' (<http://www.bioregio-carpathians.eu>) in 2011 – 2013. The partner organizations of the project (State Nature Conservancy of the Slovak Republic and the National Forest Centre in Slovakia, National Foundation for Environmental Protection Environmental Information Centre UNEP/GRID-Warsaw in Poland, Duna-Ipoly National Park Directorate and the Szent István University in Hungary, Carpathian Biosphere Reserve in Ukraine, Piatra Craiului National Park Administration, Maramures Mountains Nature Park Administration, Iron Gates Nature Park Administration and the Environmental Protection Agency Sibiu in Romania, Public Enterprise Djerdap National Park in Serbia) developed the red lists for the Carpathian parts in respective countries, using the specialists' expertise. The aim of the project was to create red lists of vascular plants, several animal groups, forest habitats, non-forest habitats and the list of invasive alien plants and animals.

#### Methods

The compilation of the Red List of vascular plants of the Carpathians (the 'Carpathian list') preceded the formation of red lists of vascular plants of the Carpathian parts of respective Carpathian countries (the 'national lists'), which represented the basis for development of the final 'Carpathian list'.

#### Geographical scope

For solving the above-mentioned objective of the "Bio-

*Papaver taticum* subsp. *fatraemagnae* – endemic endangered (EN) taxon of Slovakian Western Carpathians, photo: P. Turis



REGIO Carpathians' project a common definition of the Carpathians was established (Fig. 4), outline of which coincides with the boundaries declared by Král (KRÁL 1999). In Romania, the territory under evaluation was later modified – the Transylvanian tableland was excluded.

#### Application of IUCN categories and criteria

Internationally binding Red List Guidelines and Criteria

Figure 4: Map of the Carpathians (according to 'BioREGIO Carpathians' project, [http://www.bioregio-carpathians.eu/tl\\_files/bioregio/downloads/resources/Key%20Outputs%20and%20Publication/Bioregio\\_WP3\\_Methodology\\_RedListVascularPlant\\_EndangeredSpecies.pdf](http://www.bioregio-carpathians.eu/tl_files/bioregio/downloads/resources/Key%20Outputs%20and%20Publication/Bioregio_WP3_Methodology_RedListVascularPlant_EndangeredSpecies.pdf)).



defined by IUCN in versions 3.1 and 4.0 (IUCN 2012a, 2012b) have been respected in the threat assessment of taxa included in 'national lists' and 'Carpathian list'. Categories Extinct (EX), Regionally Extinct (RE), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), Not Applicable (NA) and their content are used in accordance with these guidelines. Missing taxa, for which there is some low probability of recurrence, were distinguished from the category of extinct (EX, RE). For those taxa, unofficial categories 'Critically Endangered (possibly extinct)' [CR (PE); taxa not confirmed in evaluated area for less than 25 years], and 'probably extinct' [globally EX?, in regional scale RE?, taxa not confirmed in the evaluated area for 25 to 50 years]. So category RE was applied here to taxa not confirmed in the assessed area for over 50 years. The category Least Concern (LC) was used in the 'national lists' for common or abundant taxa in any orographic unit of evaluated country. In the 'Carpathian list', it was used for common or abundant taxa in at least one country. Similarly, category Data Deficient (DD) was applied for taxa with lack of data necessary for the evaluation, or for taxa with unclear taxonomic position.

#### Principles for elaboration of the Red Lists of vascular plants in particular Carpathian countries

During the processes of 'national lists' elaboration, the

experts from particular countries used already published documents (available only for Poland and Ukraine; MIREK & PIĘKOŚ-MIRKOWA 1992, KRICSFALUSY *et al.* 1999, KRICSFALUSY & BUDNIKOV 2007, MIREK & PIĘKOŚ-MIRKOWA 2008), or they used published national red lists of plants (for other countries) from which taxa absent in the Carpathian part of the state were excluded. Based on the current field research or detailed taxonomic studies these initial lists were complemented by adding other taxa, or reduction of included taxa.

All native taxa (excluding interspecific hybrids) present in the respective region were included to 'national lists', in-

*Daphne arbuscula* – endemic vulnerable (VU) species of Slovakian Western Carpathians, photo: P. Turis



cluding steady hybridogenous species and archaeophytes. Neophytes were assigned only in case of naturalized rare taxa that do not behave as invasive at regional level and if they occur in up to 5 locations.

Inclusion of taxa of apomictic genera in those 'national lists' was very diverse and it expressed levels of obtained data necessary for the assessment of their threat and rareness. For example, genus *Alchemilla* was assessed only in Poland, *Rubus* only in the Czech Republic, *Taraxacum* in the Czech Republic, Poland and partly also in Slovakia, *Hieracium* and *Pilosella* only in the Czech Republic and Slovakia, and *Sorbus* only in Slovakia.

When assessing the conservation status of taxa, sites with demonstrably non-originating occurrence were excluded. Taxa with temporary incidence reported in previous national lists in the EX category were included only if their occurrence was demonstrable (e.g. by herbarium specimens).

#### Principles for elaboration of the Red List of vascular plants of the Carpathians

Taxonomic structure of the 'Carpathian list' form individual taxa from 'national lists' which were evaluated in IUCN ca-

tegories VU, EN, CR, CR(PE), RE?, RE and EX? \*.

There are included not only categories of threat and criteria for taxa at the Carpathian-wide level, but also at the national level, which shows the regional differences in threat. Presence of not threatened taxa in individual countries (i.e. not included in the 'national lists') is in the 'Carpathian list' indicated by '+'. Information about the presence of taxa helps to better understand a category assignment on the Carpathian-wide scale.

Evaluation of the category of threat of individual taxa within the whole Carpathians is mainly based on their distribution. Taxa present in single country has been assigned category of threat proposed by this country. For other taxa, the number of known sites and vulnerability of their habitats has been taken into account in particular.

Special symbols indicate endemic species, neophytes, the occurrence of taxa on predominantly anthropogenic habitats, taxa common in neighbouring regions, but only marginally extending into the Carpathians and taxa protected by international instruments (Bern Convention, Natura 2000). Neophytes are according to the works of PROTOPOPOVA 1991, BALOGH *et al.* 2004, MEDVECKÁ *et al.* 2012, PYŠEK *et al.* 2012, endemic taxa follow STOYKO & TASENKEVICH 1993, KLIMENT 1999, BERNÁTOVÁ 2002, KRICSFALUSY & BUDNIKOV 2002, BERNÁTOVÁ & MÁJOVSKÝ 2003, BERNÁTOVÁ *et al.* 2003, DVOŘÁKOVÁ 2003, PIĘKOŚ-MIRKOWA & MIREK 2003, CHRTEK & MRÁZ 2007, KLIMENT & BERNÁTOVÁ 2008, and HURDU *et al.* 2012. In the 'Car-

*Rhododendron myrtifolium* – least concern (LC) species of Eastern and Southern Carpathians, photo: P. Turis



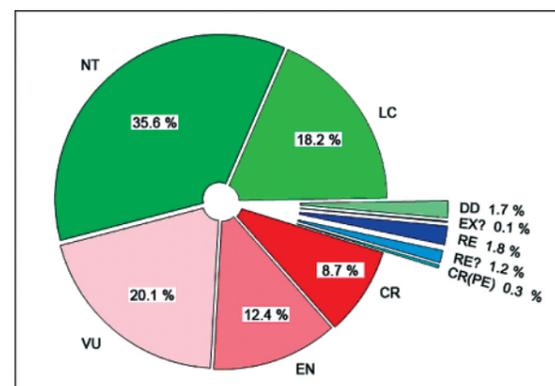
\* see comment about participation of the Czech Republic in the 'BioREGIO Carpathians' project in the chapter 'Note'

pathian list' no endemic species of the Czech Republic (KAPLAN 2012) is included.

### Nomenclature of included taxa

Individual countries enrolled taxa in 'national lists' according to the nomenclature under their own generally accepted and used resources (Czech Republic: DANIELKA *et al.* 2012; Hungary: KIRÁLY 2009; Poland: MIREK *et al.* 2002, PIĘKOŚ-MIRKOWA & MIREK 2003, MIREK & PIĘKOŚ-MIRKOWA 2008, KAŻMIERCZAKOWA & ZARZYCKI in prep.; Romania: OPREA 2005, CIOCĂRLAN 2009; Serbia: JOSIFOVIĆ 1970–1977, SARIĆ & DIKLIĆ 1986, SARIĆ 1992, STEVANOVIC 1999, 2012; Slovakia: MARHOLD *et al.* in prep.; Ukraine: MOSYAKIN & FEDORONCHUK 1999). Taxa are referred to the level of subspecies. Subspecies are not specified when the species does not have lower taxonomic unit described, or if it is the nominate subspecies.

Figure 5: Percentage of taxa classified in particular categories of threat in the Red List of vascular plants of the Carpathians (abbreviations used: see the text).



Considering the disunity of use of national nomenclature [see e.g. different author abbreviations to *Adenophora liliifolia* (L.) Besser vs. *Adenophora liliifolia* (L.) Ledeb. ex A. DC., etc.], synonyms (see e.g. *Conioselinum tataricum* vs. *Conioselinum vaginatum*, *Seseli peucedanoides* vs. *Gasparinia peucedanoides*, etc.) and the diversity of taxonomic concepts in respective countries (see e.g. *Erigeron alpinus* vs. *E. alpinus* subsp. *intermedius*, *Aquilegia nigricans* vs. *Aquilegia vulgaris* subsp. *nigricans*, etc.) the nomenclature of the 'Carpathian list' refers to the database of Euro+Med PlantBase (EURO+MED PLANTBASE 2006–2011). In the case of unprocessed groups, the terminology used is in accordance with an earlier version of the database appearing on the PGR Forum ([www.pgrforum.org](http://www.pgrforum.org)). The taxon name according to this database combines in some cases several differently written names, synonyms and comparable taxa of different taxonomic evaluation in respective states (see examples above). The taxa reported in one country as different (see e.g. *Epipactis purpurata* vs. *E. purpurata* and *E. pseudopurpurata*) are not grouped under the common name in this database. For this reason, some names according to

Euro+Med PlantBase are mentioned repeatedly.

The names of taxa according to Euro+Med PlantBase are also referred to the level of subspecies, except of cases, when subspecies are not distinguished in any of the country, and therefore could not have been clearly identified (see e.g. *Aethionema saxatile*, etc.). For the same reason some taxa can be listed simultaneously at species and subspecies level, but both names represent different taxa in 'national lists' (see e.g. *Lathyrus pannonicus* subsp. *pannonicus* and *L. pannonicus* subsp. *collinus*).

### Note

For the initial absence of the Czech Republic in the project 'BioREGIO Carpathians' this country has not developed its own 'national list'. The involvement of the Czech Republic at a final stage of the 'Carpathian list' elaboration was addressed by adding those threatened taxa that do not occur in other countries. Therefore, taxa evaluated in the 'Carpathian list' disregard the presence and the level of threat / no threat in the Carpathian part of the Czech Republic.

### Results and Discussion

The proposed 'Carpathian list' (Table 1) presents a regional list containing 1,091 taxa reported in the database of Euro+Med PlantBase (see column 'EuroMed name') and 1,169 taxa recorded in literature sources of various Carpathian countries (see column 'National name').

It is the first Carpathian-wide list of threatened species according to the IUCN categories and criteria. It includes one taxon evaluated in the category EX?, 20 taxa evalua-

*Astragalus dasyanthus* – endangered (EN) species of Hungarian Western Carpathians, photo: P. Turis



ted in category RE, 13 taxa in the category RE?, 3 taxa in the category CR(PE), 95 taxa in the category CR, 135 taxa in the category EN and 219 taxa in the category VU. Furthermore, there are 388 taxa listed in the category NT, 199 in the category LC and 18 taxa were evaluated as DD. Categories ratio is shown in Fig. 5. The final form of the 'Carpathian list' is based on proposals drawn up by individual Carpathian countries (<http://www.soprs.sk/symphony-bioregio/botany>), a part of the 'national lists' is published (TURIS *et al.*, 2014). Overview of taxa and representation of IUCN categories in the 'national lists' (status to August 22nd, 2013) is shown in Table 2.

From the 3,895 taxa mentioned in the Carpathians (TASENKEVICH 1998), 1,152 (29.6%) are included in the proposed 'Carpathian list', 103 of them are regarded as Carpathian endemics (21.4%). In addition, 37 taxa of the 'Carpathian list' are included in Appendix I (strictly protected species) of the Convention on the Conservation of European

*Betula humilis* – critically endangered (CR) species of Ukrainian and Romanian Eastern Carpathians, photo: P. Turis



Wildlife and Natural Habitats (<http://conventions.coe.int/Treaty/FR/Treaties/Html/104-1.htm#PTERIDOPHYTA>) and 35 taxa are listed in Annex II (Species Requiring designation of Special Areas of Conservation) of the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32006L0105:EN:NOT>).

Comparison of the list developed is possible with only two similar lists published by TASENKEVICH (2002, 2003), however, both contain 747 less taxa. Lower number of evaluated species is partly due to absence of 17 taxa present only in the Serbian part of the Carpathians, which was not the subject of study in mentioned lists published in the past. However, different methodological approach is probably the main reason. Compared with the above lists, the number of taxa included in the relevant categories increased in the present one, the same number remained only in the category Endangered (EN). Notable is also almost three times higher number of (probably) extinct taxa in the current list (37 in total) compared to the previous (14 and 13 in total, respectively, cf. TASENKEVICH 2002, 2003). Number of taxa in all threat categories TH

(TH = CR + EN + VU) also increased and the present list contains 449 taxa, while TASENKEVICH (2002, 2003) reported 324 and 331 taxa, respectively.

With the exception of the (probably) extinct taxa, the results are not comparable due to different methodological approaches used for evaluation. Previous Red Lists (Tasenkevich 2002, 2003) were also based on different input data and therefore the difference in number of evaluated taxa as well as its distribution in IUCN categories can not be considered as fundamentally important. Only the Red List elaborated by using the same methodology will allow for more detailed analysis.

### References

- BALOGH L., DANCZA I. & KIRÁLY G. (2004). A magyarországi neofitonok időszzerű jegyzéke, és besorolásuk inváziós szempontból. p. 61–92. In: MIHÁLY B. & BOTTA-DUKÁT Z. (eds), Özönnövények. Biológiai inváziók Magyarországon. Budapest, Természetbúvár Alapítvány, 408 pp.
- BERNÁTOVÁ D. (2002). *Papaver tatricum* (A. Nyár.) Ehrend. p. 47–54. In: GOLIAŠOVÁ K. & ŠÍPOŠOVÁ H., Flóra Slovenska V/4, Veda, vydavateľstvo Slovenskej akadémie vied, Bratislava, 836 pp.
- BERNÁTOVÁ D. & MÁJOVSKÝ J. (2003). New endemic hybridogeneous species of the genus *Sorbus* in the Western Carpathians. *Biologia*, Bratislava, 58, 4: 781–790.
- BERNÁTOVÁ D., KLIMENT J. & UHLÍŘOVÁ J. (2003). K cenológii lipnice osobitej (*Poa sejuncta*) a lipnice babiohorskej (*Poa babiogorensis*). *Bull. Slov. Bot. Spoločn.*, Bratislava, 25: 231–237.
- BOȘCAIU N., COLDEA G. & HOREANU C. (1994). Lista roșie a plantelor vasculare dispărute, periclitate, vulnerabile și rare din flora României. *Ocrotirea naturii și a mediului inconjurator*, 38, 1: 45–56.
- CANKOV C. (1974). The Bulgarian Carpathian-Balkan region. The Southern Carpathians. p. 303–307. In: MAHEE M. (ed.), Tectonics of the Carpathian-Balkan regions. Veda, Bratislava, 455 pp.
- CHRTEK J. JUN. & MRÁZ P. (2007). Taxonomic revision of *Hieracium nigrescens* agg. in the Western Carpathians. *Preslia*, 79: 45–62.
- CIOCĂRLAN V. (2009). Flora ilustrată a României. Pteridophyta et Spermatophyta. Editura Ceres, București, 1 141 pp.
- ČERŮVSKÝ J., HOLUB J. & PROCHÁZKA F. (1979). Červený seznam flóry ČSR. Památ. a Přír., Praha: 361–378.
- ČERŮVSKÝ J., FERÁKOVÁ V., HOLUB J., MAGLOCKÝ Š. & PROCHÁZKA F. (1999). Červená kniha ohrozených a vzácných druhov rastlín a živočíchov SR a ČR. Vol. 5. Vyššie rastliny, Príroda, Bratislava, 456 pp.
- DANIELKA J., CHRTEK J. JUN. & KAPLAN Z. (2012). Checklist of vascular plants of the Czech Republic. *Preslia*, 84: 647–811.

- DIDUCH YA. P. (ed.) (2009). Chervona kniga Ukrainy. Roslinnij svit. Globalkonsalting, 900 pp.
- DIHORU G. & DIHORU A. (1994). Plante rare, periclitare și endemice în flora României – Lista roșie. Acta Botanica Horti Bucurestiensis, 1993–1994: 173–197.
- DIHORU G. & NEGREAN G. (2009). Cartea roșie a plantelor vasculare din România. Editura Academiei Române, București, 630 pp.
- DVOŘÁKOVÁ M. (2003). *Minuartia pauciflora*, das karpatische Endemit aus der *M. verna*-Gruppe. Preslia, 75: 349–356.
- EURO+MED PLANTBASE (2006–2011). Euro+Med PlantBase – the information resource for Euro-Mediterranean Plant Diversity, Available at: <http://www.emplantbase.org/home.html>.
- FERÁKOVÁ V., MAGLOCKÝ Š. & MARHOLD K. (2001). Červený zoznam papraďorastov a semenných rastlín Slovenska (december 2001). In: BALÁŽ D., MARHOLD K. & URBAN P. (eds): Červený zoznam rastlín a živočíchov Slovenska. Ochr. Prír., Suppl. 20, p. 74–77.
- GRULICH V. (2012). Red List of vascular plants of the Czech Republic: 3rd edition. Preslia, 84: 631–645.
- HOLUB J. (2000). Černá listina vymizelých taxonů květeny České republiky a Slovenské republiky. Preslia, 72: 167–186.
- HOLUB J., PROCHÁZKA F. & ČEŘOVSKÝ J. (1979). Seznam vyhynulých, endemických a ohrozených taxonů vyšších rostlin květeny ČSR (1. verze). Preslia, 51: 213–237.
- HURDU B. I., PUŞKAŞ M., TURTUREANU P. D., NIKETIĆ M., VONICA G. & COLDEA G. (2012). A critical evaluation of the Carpathian endemic plant taxa list from the Romanian Carpathians. Contribuții Botanice, XLVII: 39–47.
- IUCN (2012a). IUCN Red List Categories and Criteria: Version 3.1. Second edition. Gland, Switzerland and Cambridge, UK: IUCN. iv + 32 pp. Available on internet: <[http://www.iucnredlist.org/documents/redlist\\_cats\\_crit\\_en.pdf](http://www.iucnredlist.org/documents/redlist_cats_crit_en.pdf)>.
- IUCN (2012b). Guidelines for Application of IUCN Red List Criteria at Regional and National Levels: Version 4.0. Gland, Switzerland and Cambridge, UK: IUCN. iii + 41 pp. Available on internet: <[http://www.iucnredlist.org/documents/reg\\_guidelines\\_en.pdf](http://www.iucnredlist.org/documents/reg_guidelines_en.pdf)>.
- JASIEWICZ A. (1981). Wykaz gatunków rzadkich i zagrożonych flory polskiej. Fragm. Flor. Geobot., 27, 3: 401–414.
- JOSIFOVIĆ M. (ed.) (1970–1977). Flora SR Srbije I–IX. Srpska akademija nauka i umetnosti, Beograd.
- KAPLAN Z. (2012). Flora and phytogeography of the Czech Republic. Preslia, 84: 505–573.
- KAŹMIERCZAKOWA R. & ZARZYCKI K. (eds) (2001). Polska Czerwona księga roślin. Paprotniki i rośliny kwiatowe. Wyd. 2. Instytut Botaniki PAN, Kraków, 664 pp.
- KAŹMIERCZAKOWA R. & ZARZYCKI K. (eds) (2002). Polska Czerwona księga roślin. Paprotniki i rośliny kwiatowe. Wyd. 3. Instytut Ochrony Przyrody PAN, Kraków, in press.
- KIRÁLY G. (ed.) (2007). Vörös Lista. A magyarországi edényes flóra veszélyeztetett fajai. Sajtó kiadás, Sopron, 73 pp.
- KIRÁLY G. (ed.) (2009). Új magyar fűvészkönyv. Magyarország hajtásos növényei. Határozókulcsok. Aggteleki Nemzeti Park Igazgatóság, Jósvald, 616 pp.
- KLIMENT J. (1999). Komentovaný prehľad vyšších rastlín flóry Slovenska, uvádzaných v literatúre ako endemické taxóny. Bull. Slov. Bot. Spoločn., Bratislava, Supplement 4, 21, 434 pp.
- KLIMENT J. & BERNÁTOVÁ D. (2008). Fytocenologické spektrum *Poa carpatica* subsp. *supramontana*. Bull. Slov. Bot. Spoločn., Bratislava, 30, 1: 61–67.
- KONDRACKI J. (1989). Karpaty. Wyd. 2. WSiP, Warszawa, 263 pp.
- KRÁL V. (1999). Fyzická geografie Evropy. Academia, 349 pp.
- KRICSFALUSY V. V., BUDNIKOV G. B. & MIHALY A. V. (1999). Red List of Transcarpathia: threatened plant species and plant communities. Patent, Uzhgorod, Zakarpattya, 196 pp.
- KRICSFALUSY V. V. & BUDNIKOV G. B. (2002). Endemic vascular plants in the Ukrainian Carpathians. p. 356–360. In: HAMOR F. D. (ed.), Mountains and people (in the context of sustainable development), The conference proceedings dedicated to the International Year of Mountains, Rakhiv, October 14–18, 2002, 604 pp.
- KRICSFALUSY V. & BUDNIKOV G. (2007). Threatened vascular plants in the Ukrainian Carpathians: current status, distribution and conservation. Thaiszia – J. Bot., Košice, 17: 11–32.
- MAGLOCKÝ Š. (1983). Zoznam vyhynutých, endemických a ohrozených taxonov vyšších rastlín flóry Slovenska. Biologia (Bratislava), 38/9: 825–852.
- MAGLOCKÝ Š. & FERÁKOVÁ V. (1993). Red list of ferns and flowering plants (Pteridophyta and Spermatophyta) of the flora of Slovakia (the second draft). Biologia (Bratislava), 48/ 4: 361–385.
- MARHOLD K. *et al.*: Určovací kľúč papraďorastov a semenných rastlín Slovenska. In prep.
- MEDVECKÁ J., KLIMENT J., MÁJEKOVÁ J., HALADA L., ZALIBEROVÁ M., GOJDIČOVÁ E., FERÁKOVÁ V. & JAROLÍMEK I. (2012). Inventory of the alien flora of Slovakia. Preslia, 84: 257–309.
- MIREK Z. & PIĘKOŚ-MIRKOWA H. (1992). Contemporary threat to the vascular flora of the Polish Carpathians (S. Poland). Veröff. Geobot. Inst. ETH, Stiftung Rübel, Zürich, 107: 151–162.
- MIREK Z., PIĘKOŚ-MIRKOWA H., ZAJĄC A. & ZAJĄC M. (2002). Flowering Plants and Pteridophytes of Poland: A Checklist. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków, 442 pp.
- MIREK Z. & PIĘKOŚ-MIRKOWA H. (eds) (2008). Czerwona Księga Karpat Polskich. Rośliny naczyniowe. Instytut Botaniki im. W. Szafera PAN, Instytut Ochrony Przyrody PAN, Kraków, 615 pp.
- MOSYAKIN S. L. & FEDORONCHUK M. M. (1999). Vascular plants of Ukraine. A nomenclatural Checklist. National Academy of Sciences of Ukraine, M. G. Kholodny Institute of Botany, Kiev, 346 pp.
- OLTEAN M., NEGREAN G., POPESCU A., ROMAN N., DIHORU G., SANDA V. & MIHĂILESCU S. (1994). Lista roșie a plantelor superioare din România. Studii, sinteze, documentații de ecologie, 1, 52 pp.
- OPREA A. (2005). Lista critica a plantelor vasculare din România. Editura Universității „Alexandru Ion Cuza”, Iasi, 668 pp.
- PIĘKOŚ-MIRKOWA H. & MIREK Z. (2003). Endemic taxa of vascular plants in the Polish Carpathians. Acta Soc. Bot. Pol., 72, 3: 235–242.
- POSEA G. (2006). Geografia fizică a României. Partea I. Date generale. Poziție geografică. Relief. Universitatea Spiru Haret, Editura Fundației României de Măine, 262 pp.
- PROCHÁZKA F., ČEŘOVSKÝ J. & HOLUB J. (1983). Chráněné a ohrozené druhy květeny ČSR. Ústřední dům pionýrů a mládeže, Praha, 103 pp.
- PROTOPOPOVA V. V. (1991). Sinantropnaja flora Ukrainy i puti jejo razvitija. Naukova dumka, Kijev, 204 pp.
- PYŠEK P., DANIHELKA J., SÁDLO J., CHRTEK J. JUN., CHYTRÝ M., JAROŠÍK V., KAPLAN Z., KRAHULEC F., MORAVCOVÁ L., PERGL J., ŠTAJEROVÁ K. & TICHÝ L. (2012). Catalogue of alien plants of the Czech Republic (2nd edition): checklist update, taxonomic diversity and invasion patterns. Preslia, 84, 2: 155–255.
- RAKONCZAY Z. (ed.) (1990). Vörös könyv. A Magyarországon kipusztult és veszélyeztetett állat- és növényfajok. Akadémiai Kiadó, Budapest, 360 pp.
- SARIĆ M. R. & DIKLIC N. (eds) (1986). Flora SR Srbije X. Srpska akademija nauka i umetnosti, Beograd, 400 pp.
- SARIĆ M. R. (ed.) (1992). Flora Srbije I. 2nd ed. Srpska akademija nauka i umetnosti, Beograd, 429 pp.
- SITNIK K. M. (red.) (1980). Chervona kniga Ukrainkoj RSR. Nauk. dumka, Kiiv, 504 pp.
- STEVANOVIĆ V., NIKETIĆ M., LAKUŠIĆ D., JOVANOVIĆ S., BULIĆ Z., BUTORAC B., BOŽA P., KNEŽEVIĆ A., RANDELOVIĆ V., RANDELOVIĆ N., STEVANOVIĆ B., VUKOJIĆIĆ S., SAVIĆ D. & TOMOVIĆ G. (1996). Crvena lista vaskularne flore Jugoslavije-radni materijal. Biološki fakultet, Beograd.
- STEVANOVIĆ V. (ed.) (1999). Crvena knjiga flore Srbije 1 – iščezli i krajnje ugroženi taksoni. Ministarstvo za životnu sredinu Republike Srbije, Biološki fakultet Univerziteta u Beogradu, Zavod za zaštitu prirode Republike Srbije, Beograd, 566 pp.
- STEVANOVIĆ V. (ed.) (2012). Flora Srbije II. Srpska akademija nauka i umetnosti, Beograd, 619 pp.
- STOYKO S. M. & TASENKEVICH L. (1993). Some aspects of endemism in the Ukrainian Carpathians. Fragm. Flor. Geobot., Suppl. 2(1): 343–353.
- ŠELJAG-SOSONKO JU. P. (red.) (1996). Chervona kniga Ukrainy. Roslinnij svit. Red Book of Ukraine. Plants. Ukr. encikloped., Kiiv, 607 pp.
- TASENKEVICH L. (1998). Flora of the Carpathians. Checklist of the native vascular plant species. State Museum of Natural History, NASU, Lviv, 609 pp.
- TASENKEVICH L. (2002). Red List of Vascular Plants of the Carpathian Mountains. Lviv, Carpathian Ecoregion Initiative, 28 pp.
- TASENKEVICH L. (2003). Vascular plants. p. 6–19. In: WITKOWSKI Z. J., KRÓL W. & SOLARZ W. (eds), Carpathian List of Endangered Species. WWF and Institute of Nature Conservation, Polish Academy of Sciences, Vienna-Krakow, 64 pp.
- TURIS P., KLIMENT J., FERÁKOVÁ V., DÍTĚ D., ELLIÁS P., HRIVNÁK R., KOŠTÁL J., ŠUVADA R., MRÁZ P. & BERNÁTOVÁ D. (2014). Red List of vascular plants of the Carpathian part of Slovakia. Thaiszia – J. Bot., Košice, 24, 1: 35–87.
- WEBSTER R., HOLT S. & AVIS C. (2001). The Status of the Carpathians. A report developed as a part of the Carpathian Ecoregion Initiative. WWF, Vienna.
- WWF & IUCN (1994). Centres of plant diversity. A guide and strategy for their conservation. Volume 1. Europe, Africa, South West Asia and the Middle East. IUCN Publications Unit, Cambridge, UK.
- ZARZYCKI K. (1986). Lista wymierających i zagrożonych roślin naczyniowych Polski. p. 11–27. In: ZARZYCKI K. & WOJEWODA W. (eds), Lista roślin wymierających i zagrożonych w Polsce, PWN, Warszawa, 128 pp.
- ZARZYCKI K. & KAŹMIERCZAKOWA R. (eds) (1993). Polska czerwona księga roślin. Paprotniki i rośliny kwiatowe. Ed.1. Instytut Botaniki im. W. Szafera PAN, Instytut Ochrony Przyrody PAN, Kraków, 310 pp.
- ZARZYCKI K. & SZELĄG Z. (1992). Czerwona lista roślin naczyniowych zagrożonych w Polsce. p. 87–98. In: ZARZYCKI K., WOJEWODA W. & HEINRICH Z. (eds), Lista roślin zagrożonych w Polsce. Ed. 2. Instytut Botaniki im. W. Szafera PAN, Kraków, 98 pp.
- ZARZYCKI K. & SZELĄG Z. (2006). Red list of the vascular plants in Poland. p. 9–20. In: MIREK Z., ZARZYCKI K., WOJEWODA W. & SZELĄG Z. (eds), Red list of the plants and fungi in Poland. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków, 99 pp.

Table 1: Red List of vascular plants of the Carpathians

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit	
<i>Acanthus hungaricus</i> (Borbás) Baen.	<i>Acanthus longifolius</i> Host non Poiret		VU	B2ab(iv)													VU	B2a; B2b(vi)						+	
<i>Achillea asplenifolia</i> Vent.	<i>Achillea asplenifolia</i> Vent.	M	VU	B1ab(i,iii,iv,v)	CR	B2a(ii)b(ii,iii,iv,v)				+									+	VU	A1b,c,e; B1; B2b,c,d				
<i>Achillea impatiens</i> L.	<i>Achillea impatiens</i> L.		EN	B1ac(iv)													EN	B1a; B1c(iv)							
<i>Achillea linguata</i> Waldst. & Kit.	<i>Pteris linguata</i> (Waldst. & Kit.) DC.		NT																						
<i>Achillea ochroleuca</i> Ehrh.	<i>Achillea ochroleuca</i> Ehrh.	M	CR	B1ab(iii,iv)	RE																				
<i>Achillea oxyloba</i> subsp. <i>schurii</i> (Sch. Bip.) Heimerl	<i>Pteris tenuifolia</i> (Schur) Schur	E	NT																						
<i>Achillea ptarmica</i> L.	<i>Achillea ptarmica</i> L.		NT				+	VU	B2b(ii,iii)				+												
<i>Achillea setacea</i> Waldst. & Kit.	<i>Achillea setacea</i> Waldst. & Kit.	M	NT										+	CR	B2a; C2a(i)										
<i>Aconitum anthora</i> L.	<i>Aconitum anthora</i> L.		LC				+																		
<i>Aconitum anthora</i> L.	<i>Aconitum jacquinii</i> Rchb.	E	CR	C2a(i)																					
<i>Aconitum bucovinense</i> Zapal.	<i>Aconitum bucovinense</i> Zapal.	E	NT																						
<i>Aconitum lycoctonum</i> L. subsp. <i>lycoctonum</i>	<i>Aconitum lycoctonum</i> L. emend. Koelle subsp. <i>lycoctonum</i>		LC				+																		
<i>Aconitum lycoctonum</i> subsp. <i>moldavicum</i> (Hacq.) Jalas	<i>Aconitum moldavicum</i> Hacq.	E	LC				+	VU	B2b(iii)				+												
<i>Aconitum variegatum</i> subsp. <i>gracile</i> (Rchb.) Gáy.	<i>Aconitum variegatum</i> L. subsp. <i>gracile</i> (Rchb.) Gáy.	E	LC				+	VU	B2b(iii)				+												
<i>Aconitum variegatum</i> subsp. <i>valesiacum</i> (Gayer) Greuter & Burdet	<i>Aconitum lasiocarpum</i> (Rchb.) Gayer	B, E	VU	D2	VU	D2(ii)																			
<i>Adenophora liliifolia</i> (L.) A. DC.	<i>Adenophora liliifolia</i> (L.) A. DC.	H	NT																						
	<i>Adenophora liliifolia</i> (L.) Besser																								
	<i>Adenophora liliifolia</i> (L.) Ledeb. ex A. DC.				VU	D2(i)		CR	A4; B2b(i,ii,iii,iv); C2b																
<i>Adonis flammula</i> Jacq.	<i>Adonis flammula</i> Jacq.	A	VU	B1ab(i,iii,iv)	CR	B2a(i)b(ii,iii,iv)c(ii,iii,iv)		VU																	
<i>Adonis vogensis</i> DC.	<i>Adonis vogensis</i> Steven		VU	E																VU	E				
<i>Aegilops cylindrica</i> Host	<i>Aegilops cylindrica</i> Host	A	NT		CR	B2a(ii)b(iii)		VU	B2b(iii, iv)																
<i>Aethionema saxatile</i> (L.) W. T. Aiton	<i>Aethionema saxatile</i> (L.) W. T. Aiton		VU	B1ab(iii)																					
	subsp. <i>saxatile</i>				EN	B2a(i)b(iii)																			
	<i>Aethionema saxatile</i> (L.) R. Br.																			CR	B1a; B1c(iii)				
<i>Agropyron cristatum</i> (L.) Gaertn.	<i>Agropyron cristatum</i> (L.) Gaertn.		DD																						
	<i>Agropyron cristatum</i> (L.) Gaertn.	N						VU	B2b(ii,iii,iv)																
	<i>Agropyron pectinatum</i> (M. Bieb.) P. Beauv. subsp. <i>pectinatum</i>	M			CR	B2a(ii)b(iii)																			
<i>Agrostemma githago</i> L.	<i>Agrostemma githago</i> L.	A	LC		CR	A2ac; B2a(i)b(ii,iv,v)																			
<i>Agrostis alpina</i> Scop.	<i>Agrostis alpina</i> Scop.		NT				+																		
<i>Agrostis rupestris</i> All.	<i>Agrostis rupestris</i> All.		LC				+																		
<i>Aira elegantissima</i> Schur	<i>Aira elegantissima</i> Schur		NT					RE																	
<i>Ajuga lasmannii</i> (Murray) Benth.	<i>Ajuga lasmannii</i> (L.) Benth.		NT		RE																				
<i>Ajuga pyramidalis</i> L.	<i>Ajuga pyramidalis</i> L.		VU	B1ab(iii)	CR	A2c; B1a(i)b(v)																			
<i>Alchemilla crinita</i> Buser	<i>Alchemilla crinita</i> Buser		NT				+	EN	B2a; B2b(iii)				+												
<i>Alchemilla filicanlis</i> Buser	<i>Alchemilla filicanlis</i> Buser		VU	B1ab(iii)			+	EN	B2a; B2b(iii)				+												
<i>Alchemilla glaucescens</i> Wallr.	<i>Alchemilla glaucescens</i> Wallr.		NT				+	CR	B2a; B2b(iii)				+												
<i>Alchemilla micans</i> Buser	<i>Alchemilla micans</i> Buser		LC				+	VU	B2a; B2b(iii)				+												
<i>Alchemilla mollis</i> (Buser) Rothm.	<i>Alchemilla acutiloba</i> Opiz		NT					EN	B2a; B2b(iii)				+												
<i>Alchemilla monticola</i> Opiz	<i>Alchemilla monticola</i> Opiz		NT				+	VU	B2a; B2b(iii)				+												
<i>Alchemilla monticola</i> Opiz	<i>Alchemilla hungarica</i> Soó		EN	B2ab(iii)				EN	B2a; B2b(iii)				+												
<i>Alchemilla subrenata</i> Buser	<i>Alchemilla subrenata</i> Buser		LC				+	EN	B2a; B2b(iii)				+												
<i>Aldrovanda vesiculosa</i> L.	<i>Aldrovanda vesiculosa</i> L.	B, H	CR	A2c																CR	A2				
<i>Alisma gramineum</i> Lej.	<i>Alisma gramineum</i> Lej.		VU	B1ab(iii)																					
	<i>Alisma gramineum</i> C. C. Gmel.	M						EN	B2a; B2b(iii)																
	<i>Alisma gramineum</i> Lej.				CR	B2a(i)c(ii,iv)																			
<i>Allium angulosum</i> L.	<i>Allium angulosum</i> L.		NT		VU	B2a(i)b(ii,iv,v)																			
<i>Allium carinatum</i> L. subsp. <i>carinatum</i>	<i>Allium carinatum</i> L. subsp. <i>carinatum</i>		NT				+	EN	B2b(iii, iv)				+												
<i>Allium carinatum</i> subsp. <i>pukbellum</i> (G. Don) Bonnier & Layens	<i>Allium cirrhosum</i> Vand.		VU	B1ab(i,iv)	RE								+												
<i>Allium ericetorum</i> Thore	<i>Allium ericetorum</i> Thore		NT		CR	B2a(ii)b(iii,iv,v); D																			
<i>Allium obliquum</i> L.	<i>Allium obliquum</i> L.		EN	B2ac(i)																CR	B2a; B2c(i)				
<i>Allium paniculatum</i> L. subsp. <i>paniculatum</i>	<i>Allium paniculatum</i> L. subsp. <i>paniculatum</i>		NT		CR	B2a(ii)b(iii,v); D							+												

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit	
<i>Allium saxatile</i> M. Bieb.	<i>Allium moschatum</i> L.	M	NT					EN	C2a(ii)																
<i>Allium strictum</i> Schrad.	<i>Allium strictum</i> Schrad.		CR	B2ab(ii,v); C2a(ii)	CR	B2a(i)b(ii,v); C2a(ii)																			
<i>Allium ursinum</i> L.	<i>Allium ursinum</i> L.		LC				+			+				VU	A2abcd										
<i>Allium victorialis</i> L.	<i>Allium victorialis</i> L.		LC				+	EN	B2a; C2a(ii)																
<i>Althaea cannabina</i> L.	<i>Althaea cannabina</i> L.	M	NT		CR	B1a(ii)b(iii); D				+															
<i>Alyssoides utriculata</i> (L.) Medik.	<i>Alyssum utriculatum</i> L.		VU	B1ab(i)													CR	C2b							
<i>Alyssum montanum</i> L. subsp. <i>montanum</i>	<i>Alyssum montanum</i> L. subsp. <i>montanum</i>		LC				+			+							CR	B2a; B2c(iii)							
<i>Alyssum tortuosum</i> subsp. <i>heterophyllum</i> Nyár.	<i>Alyssum tortuosum</i> Waldst. & Kit. subsp. <i>heterophyllum</i> Nyár.		EN	B2ab(ii,iii,iv,v)	EN	B2a(i)b(ii,iii,iv,v)																			
<i>Anacamptis coriophora</i> (L.) R. M. Bateman, Pridgeon & M. W. Chase	<i>Orchis coriophora</i> L.		NT					EN	B2b(ii, iii); B2c(iii,iv); C2b		RE										+	NT			
	<i>Anacamptis coriophora</i> (L.) R. M. Bateman, Pridgeon & M. W. Chase				CR	A2acd; B2a(i)(f,ii,iii,iv)								EN	A2abcd										
<i>Anacamptis lasioflora</i> (Lam.) R. M. Bateman, Pridgeon & M. W. Chase	<i>Anacamptis lasioflora</i> (Lam.) R. M. Bateman, Pridgeon & M. W. Chase		NT											CR	B1ab(i,ii,iv,v)							+			
<i>Anacamptis morio</i> (L.) R. M. Bateman, Pridgeon & M. W. Chase	<i>Orchis morio</i> L.		LC																						
	<i>Anacamptis morio</i> (L.) R. M. Bateman, Pridgeon & M. W. Chase						+			+	EN	A2a; C2a(i)													+
	<i>Anacamptis morio</i> (L.) R. M. Bateman, Pridgeon & M. W. Chase													VU	A2abcd										
<i>Anacamptis palustris</i> subsp. <i>elegans</i> (Heuff.) R. M. Bateman, Pridgeon & M. W. Chase	<i>Anacamptis palustris</i> subsp. <i>elegans</i> (Heuff.) R. M. Bateman, A. M. Pridgeon & M. W. Chase		VU	B1ab(i,iii,iv)c(iii,iv)																					
	<i>Anacamptis palustris</i> subsp. <i>elegans</i> (Heuff.) R. M. Bateman, A. M. Pridgeon & M. W. Chase				CR	A2ac; B2a(i)b(i,ii,iii,iv)c(iv)																			
	<i>Orchis elegans</i> Heuff.							VU	B2b(iii, iv); B2c(iii)																+
<i>Anacamptis palustris</i> (Jacq.) R. M. Bateman, Pridgeon & M. W. Chase subsp. <i>palustris</i>	<i>Anacamptis palustris</i> (Jacq.) R. M. Bateman, A. M. Pridgeon & M. W. Chase subsp. <i>palustris</i>		CR	B1ab(iii,iv)c(iv)																					
	<i>Anacamptis palustris</i> (Jacq.) R. M. Bateman, A. M. Pridgeon & M. W. Chase subsp. <i>palustris</i>				CR	B2a(ii)b(ii,iv)c(iv); D																			
	<i>Anacamptis palustris</i> (Jacq.) R. M. Bateman, Pridgeon & M. W. Chase													CR	A4abcd										
	<i>Orchis palustris</i> Jacq.							CR	B2a; C2a(ii)																
<i>Anacamptis pyramidalis</i> (L.) Rich.	<i>Anacamptis pyramidalis</i> (L.) Rich.		NT		VU	A2ac; B2a(i)b(i,ii,iii,iv)c(iv); C1+C2b		VU	B2b(iii); C1																+
<i>Anagallis minima</i> (L.) E. H. L. Krause	<i>Centunculus minimus</i> L.		NT		CR	B1a(i)b(iii)c(iv)		CR	A4				+												+
<i>Andromeda polifolia</i> L.	<i>Andromeda polifolia</i> L.		NT		EN	A2ac; B2a(i)b(i,ii,iii)							+												+
<i>Androsace maxima</i> L.	<i>Androsace maxima</i> L.		VU	B1ab(i,iii,iv)c(iii,iv)	CR	B2a(i)b(ii,iii,iv)		EN	B2b(i,iii,iv)+c(ii,iii,iv); C2b																+
<i>Androsace obtusifolia</i> All.	<i>Androsace obtusifolia</i> All.		LC		LC						EN	C2a(i); D													+
<i>Androsace villosa</i> L.	<i>Androsace villosa</i> L. subsp. <i>arachnoidea</i> (Schot, Nyman & Kotschy)		NT		VU	D2(i,ii)																			+
<i>Andryala laevitomentosa</i> (Nyár.) Greuter	<i>Andryala laevitomentosa</i> (Nyár.) P. D. Sell	B, E	CR	B2ab(ii)													CR	B2a; B2b(ii)							
<i>Anemone narcissiflora</i> L.	<i>Anemone narcissiflora</i> L.		LC				+						+	VU	A2abcd										+
<i>Angelica palustris</i> (Besser) Hoffm.	<i>Angelica palustris</i> (Besser) Hoffm.	B, H	CR	B1ac(iii)													CR	B1a; B1c(iii)							
<i>Anchusa azurea</i> Mill.	<i>Anchusa azurea</i> Mill.	A	VU	B1ab(i,iv)			+	VU	B2ab(i, ii, iv)																+
<i>Anogramma leptophyllum</i> (L.) Link.	<i>Anogramma leptophyllum</i> (L.) Link.		CR	B2ab(ii); C2a(ii)				CR	B2a; C2a(ii)																
<i>Antennaria carpatia</i> (Wahlenb.) Bluff & Fingerh.	<i>Antennaria carpatia</i> (Wahlenb.) Bluff & Fingerh.	E	LC				+						+	CR	C2a(i)										
<i>Anthemis cretica</i> subsp. <i>carpatia</i> (Willd.) Grierson	<i>Anthemis carpatia</i> Waldst. & Kit ex Willd.	E	NT											CR	B2ab(iv,v)										+
<i>Anthericum liliago</i> L.	<i>Anthericum liliago</i> L.		NT					RE																	+
<i>Apera interrupta</i> (L.) P. Beauv.	<i>Apera interrupta</i> (L.) P. Beauv.		VU	B1ab(iii)				RE																	+
<i>Aphanes arvensis</i> L.	<i>Aphanes arvensis</i> L.	A	NT		EN	A2ac; B2a(i)b(i,iii,iv)c(iv)				+			+												+
<i>Aphanes australis</i> Rydb.	<i>Aphanes australis</i> Rydb.		EN	B1ab(iii,iv)c(iv)																					
	<i>Aphanes australis</i> Rydb.	A, M	CR	B1ab(iii,iv)	RE								+												
	<i>Aphanes microcarpa</i> (Boiss. & Reut.) Rothm.		CR	D													CR	D							

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit
<i>Aquilegia nigricans</i> Baumg.	<i>Aquilegia nigricans</i> Baumg.		DD											EN	D				+					
	<i>Aquilegia nigricans</i> subsp. <i>nigricans</i>							VU	A3cd										+					
	<i>Aquilegia nigricans</i> subsp. <i>subscaposa</i> (Borbás) Soó	E															CR	B2a; B2c(iii)						
<i>Aquilegia transilvanica</i> Schur	<i>Aquilegia transilvanica</i> Schur	E	NT											CR	B1ab(i,ii,iii,iv,v)				+					
<i>Arabis balleri</i> (L.) O'Kane & Al-Shehbaz	<i>Cardaminopsis balleri</i> (L.) Hayek		LC				+	CR	B2ab(iii, v); C2a(i)				+						+					
<i>Arabis alpina</i> L.	<i>Arabis alpina</i> L.	N	LC				+	VU	A3c; D2				+						+					
<i>Arabis nova</i> Vill.	<i>Arabis nova</i> Vill.		NT		CR	B2a(ii)b(iii)c(iv)																		
<i>Arabis pauciflora</i> (Grimm) Garcke	<i>Arabis pauciflora</i> (Grimm) Garcke	M	RE		RE																			
<i>Arabis planisiliqua</i> subsp. <i>nemorensis</i> (Hoffm.) Soják	<i>Arabis nemorensis</i> (Hoffm.) W. D. J. Koch		EN	A2ac; B2ab(ii,iii,v)	EN	A2ac; B2a(ii)b(ii,iii,v)																		
<i>Arabis procurrens</i> Waldst. & Kit.	<i>Arabis procurrens</i> Waldst. & Kit.	N	NT		RE																			
<i>Arctostaphylos alpinus</i> (L.) Spreng.	<i>Arctostaphylos alpinus</i> (L.) Spreng.		VU	D2	VU	D2(i,ii)																		
<i>Arctostaphylos uva-ursi</i> (L.) Sprengel	<i>Arctostaphylos uva-ursi</i> (L.) Sprengel		LC				+										VU	C2a(i)		VU	A1b,c,d; A2b,c,d; B2b,c,e			
<i>Arenaria grandiflora</i> L. subsp. <i>grandiflora</i>	<i>Arenaria grandiflora</i> L.		CR	B2ab(iii)																			CR	B2a(ii)b(iii)
<i>Arenaria proera</i> subsp. <i>glabra</i> (Williams) Holub	<i>Arenaria proera</i> subsp. <i>glabra</i> (Williams) Holub	M	NT		EN	A2ac; B2a(ii)b(iii,iv,v)c(iv)					+													
<i>Armeria alpina</i> Willd.	<i>Armeria alpina</i> Willd.	EN	B2ab(iii)		CR	B2a(ii)b(iii)																		
<i>Armeria maritima</i> (Mill.) Willd. subsp. <i>barvensis</i> (Simonk.) P. Silva	<i>Armeria barvensis</i> Simk.		CR	B1ab(iv)													CR	B1a; B1b(iv)						
<i>Armeria maritima</i> subsp. <i>elongata</i> (Hoffm.) Bonnier	<i>Armeria elongata</i> (Hoffm.) K. Koch	EN	B2ab(iii,iv)		EN	B2ab(iii, iv)							+											
<i>Armoracia macrocarpa</i> (Willd.) Baumg.	<i>Armoracia macrocarpa</i> (Waldst. & Kit.) Kit. ex Baumg.	B, M	RE		RE																			
<i>Arnica montana</i> L.	<i>Arnica montana</i> L.		NT																					
<i>Artemisia alba</i> Turra	<i>Artemisia alba</i> Turra		VU	B1ab(iii,v)				EN	B2ab(iii, v); D															
<i>Artemisia austriaca</i> Jacq.	<i>Artemisia austriaca</i> Jacq.	A, M	VU	B2ab(ii,iii,iv)	CR	A2ace; B2a(ii)b(ii,iii,v)																		
<i>Artemisia panicci</i> (Janka) Ronniger	<i>Artemisia panicci</i> Ronniger ex Danihelka & Marhold	H*	CR	B1ab(iii,v); C2a(i)																			CR	B1a(ii)b(iii,v); C2a(i)
<i>Asperula arvensis</i> L.	<i>Asperula arvensis</i> L.	A	CR	B1ab(i,ii,iii)c(iv)	RE																			
<i>Asperula neireichii</i> Beck	<i>Asperula neireichii</i> Beck		VU	B1ab(i,iii,iv,v)	EN	B1a(i,ii)b(ii,iii,iv,v)																		
<i>Asplenium adiantum-nigrum</i> L. subsp. <i>adiantum-nigrum</i>	<i>Asplenium adiantum-nigrum</i> L.		LC		NT			VU	B2a; B2b(iii)					EN	A2abcd									
<i>Asplenium adiantum-nigrum</i> subsp. <i>onopteris</i> (L.) Heufl.	<i>Asplenium onopteris</i> L.		EN	C1													EN	C1						
<i>Asplenium adulterinum</i> Milde	<i>Asplenium adulterinum</i> Milde	H	VU	B1ab(i,iii,iv,v)	CR	B2a(i)b(iii,iv,v)											CR	C2a(i)						
<i>Asplenium ceterach</i> subsp. <i>bivalens</i> (D. E. Mey) Greuter & Burdet	<i>Asplenium ceterach</i> subsp. <i>bivalens</i> (D. E. Mey) Greuter & Burdet		NT		CR	B2a(ii)b(iii); D					+													
<i>Asplenium cuneifolium</i> Viv.	<i>Asplenium cuneifolium</i> Viv.		NT		CR	B2a(i)b(iii,iv,v)																		
<i>Asplenium lepidum</i> C. Presl subsp. <i>lepidum</i>	<i>Asplenium lepidum</i> C. Presl subsp. <i>lepidum</i>		EN	B1ab(v); D				EN	B2a; D1								CR	C2a(i)						
<i>Asplenium platyneuron</i> (L.) Britton, Sterns & Poggenb.	<i>Asplenium platyneuron</i> (L.) Britton, Sterns & Poggenb.		CR	D	CR	D																		
<i>Asplenium septentrionale</i> (L.) Hoffm.	<i>Asplenium septentrionale</i> (L.) Hoffm.		LC				+			+	VU	B2a												
<i>Asplenium viride</i> Huds.	<i>Asplenium viride</i> Huds.		LC				+	EN	B2b(iii, iv); C2a(i)				+											
<i>Aster alpinus</i> L.	<i>Aster alpinus</i> L.		LC				+							EN	A2abcd								LC	
<i>Astragalus australis</i> (L.) Lam.	<i>Astragalus krasinae</i> Domin	E	NT				+							CR	B1ab(iii,iv,v)									
<i>Astragalus austriacus</i> Jacq.	<i>Astragalus austriacus</i> Jacq.	M	NT		EN	B1a(ii)b(iii)																		
<i>Astragalus damicus</i> Retz.	<i>Astragalus damicus</i> Retz.		VU	B1ab(iii)	VU	B1a(i)b(iii)																		
<i>Astragalus dasyanthus</i> Pall.	<i>Astragalus dasyanthus</i> Pall.	M	EN	C1	RE			EN	C1															
<i>Astragalus depressus</i> L.	<i>Astragalus depressus</i> L.		EN	B1ab(i)													CR	D						
<i>Astragalus excapus</i> L.	<i>Astragalus excapus</i> L.	M	VU	A3cd	RE?			VU	A3cd															
<i>Astragalus frigidus</i> (L.) A. Gray	<i>Astragalus frigidus</i> (L.) A. Gray		NT				+							VU	C2a(i)									
<i>Astragalus glycyphylloides</i> DC.	<i>Astragalus glycyphylloides</i> DC. subsp. <i>serbicus</i> (Reichenb.) Vasić & Niketić	M	VU	B1ab(ii)																			VU	B1
<i>Astragalus penduliflorus</i> Lam.	<i>Astragalus penduliflorus</i> Lam.		NT		NT		+							CR	B2a; C2a(i)									
<i>Astragalus pseudopurpureus</i> Gusul.	<i>Astragalus pseudopurpureus</i> Gusulac	B, E	EN	B1ac(i)													EN	B1a; B1c(i)						
<i>Astragalus roemerii</i> Simonk.	<i>Astragalus roemerii</i> Simonkai	E	EN	B1ac(ii)													EN	B1a; B1c(iii)						

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit
<i>Astragalus vesicarius</i> L. subsp. <i>vesicarius</i>	<i>Astragalus vesicarius</i> L. subsp. <i>albinus</i> (Waldst. & Kit.) Braun-Blanq.		VU	D2				VU	D2															
<i>Astragalus vesicarius</i> L. subsp. <i>vesicarius</i>	<i>Astragalus vesicarius</i> L. subsp. <i>vesicarius</i>		VU	D2	VU	D2(i)																		
<i>Athamanta turbith</i> subsp. <i>hungarica</i> (Borbás) Tutin	<i>Athamanta hungarica</i> Borbás	E	VU	B1ab(i)																+	EN	B1		
<i>Atriplex rosea</i> L.	<i>Atriplex rosea</i> L.	A	DD		VU	B2a(i)c(ii,iv)																		
<i>Atropa belladonna</i> L.	<i>Atropa belladonna</i> L.		LC				+			+				VU	A2abcd									
<i>Aubrieta columnae</i> Guss.	<i>Aubrieta columnae</i> Guss. subsp. <i>croatica</i> (Schott, Nyman & Kotschy)		CR	C2a(i)																CR	C2a(i)			
<i>Barbarea stricta</i> Andr.	<i>Barbarea stricta</i> Andr.		NT				+			+										CR	C2b			
<i>Barbarea vulgaris</i> R. Br.	<i>Barbarea vulgaris</i> W. T. Aiton subsp. <i>lepuznica</i> (Nyár.) Soó	E	CR	B2ac(iii)																CR	B2a; B2c(iii)			
<i>Bassia sedoides</i> (Pall.) Asch.	<i>Bassia sedoides</i> (Pall.) Asch.	M	CR	C1; D				CR	C1; D															
<i>Bellardiachloa variegata</i> (Lam.) Kerguelen	<i>Bellardiachloa variegata</i> (Lam.) Kerguelen		NT																					
	<i>Bellardiachloa violacea</i> (Bellardi) Chiov.				VU	D1+D2(i)																		
<i>Betula humilis</i> Schrank.	<i>Betula humilis</i> Schrank.		CR	B2ac(iii)																				
<i>Betula kotulae</i> Zaver.	<i>Betula obscura</i> A. Kotula		EN	B1ab(i,ii,iii,iv)																				
<i>Betula nana</i> L.	<i>Betula nana</i> L.		CR	B1ac(i)	RE						RE													
<i>Betula oycoviensis</i> Besser	<i>Betula xoyoviensis</i> Besser		VU	B1ab(iii)							VU	C2a(ii)												
<i>Betula pubescens</i> Ehrh.	<i>Betula pubescens</i> Ehrh.		LC				+	VU	B2a; C1; C2a(i)															
<i>Bifora radians</i> M. Bieb.	<i>Bifora radians</i> M. Bieb.	A	NT		CR	A2ac; B2a(i)b(i,iii,iv)c(iii,iv)				+														
<i>Biscutella laevigata</i> L.	<i>Biscutella laevigata</i> L.		LC				+	CR	A2c; B2a(i,ii,iv); C2a(i); D						EN	A4abc								
<i>Blechnum spicant</i> (L.) Roth.	<i>Blechnum spicant</i> (L.) Roth		LC				+	CR	D1															
<i>Blysmus compressus</i> (L.) Link	<i>Blysmus compressus</i> (L.) Panz.		LC				+	EN	B2a; B2b(iii)															
<i>Bolboschoenus maritimus</i> (L.) Palla	<i>Bolboschoenus maritimus</i> (L.) Palla	M	DD		EN	B2a(i)b(ii,v)c(iv)				+														
<i>Bolboschoenus planiculmis</i> (F. Schmidt) T. V. Egorova	<i>Bolboschoenus planiculmis</i> (F. Schmidt) T. V. Egorova	A, M	VU	B2ac(ii,iii,iv)	VU	B2a(i,ii)c(i,iii,iv)																		
<i>Bolboschoenus yagara</i> (Ohwi) Y. C. Yang & M. Zhan	<i>Bolboschoenus yagara</i> (Ohwi) Y. C. Yang & M. Zhan	A	CR	B2ac(iv); C2b	CR	B2a(i)c(iv); C2b																		
<i>Bombycilaena erecta</i> (L.) Smoljan.	<i>Bombycilaena erecta</i> (L.) Smoljan.	M	VU	B1ab(i)	CR	B2a(ii)b(i,iii,iv)				+														
<i>Botrychium lancolatum</i> (S. G. Gmel.) Ångstr.	<i>Botrychium lancolatum</i> (S. G. Gmel.) Ångstr.		RE								RE													
<i>Botrychium lunaria</i> (L.) Sw.	<i>Botrychium lunaria</i> (L.) Sw.		LC				+	VU	B2a; B2b(iii)						VU	B1ab(i,ii,iii)								
<i>Botrychium matricarifolium</i> W. D. J. Koch	<i>Botrychium matricarifolium</i> (A. Braun ex Döll) W. D. J. Koch	B	EN	B1ab(iii,iv,v)				CR	A2ac; B2a(ii)b(iii,iv,v)															
	<i>Botrychium matricarifolium</i> (Retz.) A. Braun							RE																
	<i>Botrychium matricarifolium</i> A. Br. ex Koch													CR	C2a(i)									
	<i>Botrychium ramosum</i> (Roth) Asch.																			CR	B1a; B1c(ii)			
<i>Botrychium multifidum</i> (S. G. Gmel.) Rupr.	<i>Botrychium multifidum</i> (S. G. Gmel.) Rupr.	B	VU	B1ab(iii,v)	CR	B2a(ii)b(i,iii,v); C2a(i,ii); D		CR	B2a; B2b(iii); C1					+	CR	A4abc								
<i>Botrychium virginianum</i> (L.) Sw.	<i>Botrychium virginianum</i> (L.) Sw.		VU	B2ac(ii)																				
	<i>Botrychium virginianum</i> (L.) Sw. in Schrad.							RE																
	<i>Botrychium virginianum</i> (L.) Sw. in Schrad.																							
<i>Brassica elongata</i> Ehrh. subsp. <i>elongata</i>	<i>Brassica elongata</i> Ehrh. subsp. <i>elongata</i>	M, N	RE		RE																			
<i>Bromus pannonicus</i> Kumm. & Sendtn.	<i>Bromus pannonicus</i> Kumm. & Sendtn.		VU	B2ab(iii,iv)				VU	B2b(iii, iv)															
<i>Bromus secalinus</i> L. subsp. <i>secalinus</i>	<i>Bromus secalinus</i> L. subsp. <i>secalinus</i>	A	NT		EN	A2ac; B1a(i)b(iii,iv,v)c(iv)		VU	B2b(iii, iv)															
<i>Bupleurum longifolium</i> L.	<i>Bupleurum longifolium</i> L.		LC				+	VU	C2a(i)		EN	B2a; C1a(i)												
<i>Bupleurum pachnospermum</i> Pančić	<i>Bupleurum pachnospermum</i> Pančić		VU	C1				VU	C1															
<i>Bupleurum praealtum</i> L.	<i>Bupleurum praealtum</i> L.		NT		CR	B1a(i)b(iii)					NT													
<i>Bupleurum ranunculoides</i> L.	<i>Bupleurum ranunculoides</i> L.	E	NT				+							CR	B1ab(i,iii)									
<i>Bupleurum rotundifolium</i> L.	<i>Bupleurum rotundifolium</i> L.	A	NT		CR	B2a(i)b(i,iii)				+														
<i>Bupleurum tenuissimum</i> L.	<i>Bupleurum tenuissimum</i> L.	A	VU	B1ab(i,iii)	CR	B2a(i)b(i,iii)				+				VU	A4bcd									
<i>Calamagrostis canescens</i> (Weber) Roth	<i>Calamagrostis canescens</i> (Weber) Roth em. Druce		NT					VU	B2a; B2b(iii)															
<i>Calamagrostis purpurea</i> subsp. <i>phragmitoides</i> (Hartm.) Tzevelev	<i>Calamagrostis phragmitoides</i> Hartm.		CR	C2a(ii)				CR	C2a(ii)															
<i>Calla palustris</i> L.	<i>Calla palustris</i> L.		NT		VU	A2ac; B1a(i)b(iii,iv,v)+B2a(i)b(iii,iv,v)																		
<i>Callianthemum coriandriifolium</i> Rechb.	<i>Callianthemum coriandriifolium</i> Rechb.		NT		LC		+				NT			CR	C2a(ii)									
<i>Callitriche hamulata</i> Kütz ex W. D. J. Koch	<i>Callitriche hamulata</i> W. D. J. Koch		EN	B2ac(ii,iv)	EN	B2a(ii)c(iii,iv)																		
<i>Calluna vulgaris</i> (L.) Hull	<i>Calluna vulgaris</i> (L.) Hull		LC				+			+														

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit	
<i>Camelina abyssum</i> (Mill.) Thell. subsp. <i>abyssum</i>	<i>Camelina abyssum</i> (Mill.) Thell. subsp. <i>abyssum</i>	A, M	RE		RE			RE			RE														
<i>Camelina abyssum</i> subsp. <i>integerrima</i> (Čelak.) Smejkal	<i>Camelina abyssum</i> subsp. <i>integerrima</i> (Čelak.) Smejkal	A	RE		RE						RE														
<i>Camelina rumelica</i> Velen. subsp. <i>rumelica</i>	<i>Camelina rumelica</i> Velen. subsp. <i>rumelica</i>	M	CR	B1ab(iii,iv,v)c(iv)	CR	A2ac; B2a(i)b(iii,iv,v)c(iv)										+									
<i>Camelina sativa</i> (L.) Crantz subsp. <i>sativa</i>	<i>Camelina sativa</i> (L.) Crantz subsp. <i>sativa</i>	A	RE		RE											+									
<i>Camelina sativa</i> subsp. <i>zingeri</i> (Mirek) Smejkal	<i>Camelina sativa</i> subsp. <i>zingeri</i> (Mirek) Smejkal	N	RE?		RE?																				
<i>Campanula carpatica</i> Jacq.	<i>Campanula carpatica</i> Jacq.	E	LC				+							EN	A4abcd				+						
<i>Campanula crassipes</i> Heuff.	<i>Campanula crassipes</i> Heuff.	E	VU	B1ab(i)													EN	B1a; B1c(i)		VU	B1a; B2b(iii)				
<i>Campanula kladniana</i> (Schur) Witasek	<i>Campanula kladniana</i> (Schur) Witasek	E	NT											VU	A4abcd				+						
<i>Campanula latifolia</i> L.	<i>Campanula latifolia</i> L.		NT				+	EN	B2b(iii)+c(iv)				+			+							+		
<i>Campanula macrostachya</i> Willd.	<i>Campanula macrostachya</i> Willd.		NT																						
	<i>Campanula macrostachya</i> Waldst. & Kit. ex Willd.				EN	B1a(i)b(iii)																		+	
	<i>Campanula macrostachya</i> Kit.							VU	A4cd																
<i>Campanula rapunculid</i> L.	<i>Campanula rapunculid</i> L.		NT		EN	B1a(i)b(i,iii)				+														+	
<i>Cardamine dentata</i> Schult.	<i>Cardamine dentata</i> Schult.		VU	B1ab(iii,iv)	EN	B2a(i)b(iii)																			
<i>Cardamine enneaphyllos</i> (L.) Crantz	<i>Dentaria enneaphyllos</i> L.		LC				+																		
<i>Cardamine glauca</i> DC.	<i>Cardamine glauca</i> Spreng. ex DC.		CR	C2a(i)																					
<i>Cardamine parviflora</i> L.	<i>Cardamine parviflora</i> L.	M	NT							+							EN	C2b		EN					
<i>Carduus collinus</i> Waldst. & Kit.	<i>Carduus collinus</i> Waldst. & Kit.		LC				+			+	VU	B2a; C2a(i)		EN	D										
<i>Carduus defloratus</i> subsp. <i>summanus</i> (Pollini) Arcang.	<i>Carduus crassifolius</i> Willd. subsp. <i>glauca</i> (Baumg.) Kazmi		LC				+	EN	A2ac; B2a(iii)				+												
<i>Carduus hamosus</i> Ehrh.	<i>Carduus hamosus</i> Ehrh.	M	CR	B1ab(i)				RE																+	
<i>Carex appropinquata</i> Schumach.	<i>Carex appropinquata</i> Schumach.		NT		VU	A2ac; B1a(i)b(iii,iv)		VU	B2a; B2b(iii)				+			+									
<i>Carex atrofusca</i> Schkuhr	<i>Carex atrofusca</i> Schkuhr		VU	D2	VU	D2(i,ii)																			
<i>Carex bicolor</i> All.	<i>Carex bicolor</i> All.		EN	B1ab(i,iii,iv,v)										EN	B1ab(i,ii,iii,iv,v)		EN	C2a(i)							
<i>Carex bigelowii</i> subsp. <i>dacica</i> (Heuff.) T. V. Egorova	<i>Carex dacica</i> Heuff.		NT								VU	B2a				+								+	
<i>Carex bigelowii</i> subsp. <i>rigida</i> W. Schultze-Motel	<i>Carex bigelowii</i> Torr. ex Schwein. subsp. <i>rigida</i> W. Schultze-Motel		NT				+				EN	B2a												+	
<i>Carex brevicollis</i> DC.	<i>Carex brevicollis</i> DC.		LC		VU	D2(i,ii)				+						+								NT	
<i>Carex buchananii</i> Wahlenb.	<i>Carex buchananii</i> Wahlenb.		NT		CR	B2a(ii)b(iii)		CR	C2a(ii)				+	VU	A2abcd										+
<i>Carex canescens</i> L.	<i>Carex canescens</i> L.		LC		LC		+	EN	B2a; B2b(iii)				+			+									
<i>Carex cespitosa</i> L.	<i>Carex cespitosa</i> L.		LC				+	EN	B2a; B2b(iii)				+			+								+	
<i>Carex davalliana</i> Sm.	<i>Carex davalliana</i> Sm.		LC				+	RE					+	VU	A4abcd									+	
<i>Carex depressa</i> subsp. <i>transylvanica</i> (Schur) T. V. Egorova	<i>Carex depressa</i> Link subsp. <i>transylvanica</i> (Schur) T. V. Egorova		NT					EN	B2a; B2b(iv)				+			+								+	
<i>Carex diandra</i> Schrank	<i>Carex diandra</i> Schrank		NT		VU	A2ac; B2a(i)b(iii,iv,v)		CR	C2b				+			+								+	
<i>Carex dioica</i> L.	<i>Carex dioica</i> L. subsp. <i>dioica</i>		NT		VU	A2ac; B2a(i)b(iii,iv,v)							+			+								+	
<i>Carex echinata</i> Murray	<i>Carex echinata</i> Murr.		LC				+	CR	C2a(ii)				+			+								+	
<i>Carex elongata</i> L.	<i>Carex elongata</i> L.		NT				+	VU	B2a; B2b(iii)				+			+								+	
<i>Carex erictorum</i> Pollich	<i>Carex erictorum</i> Pollich		VU	B1ab(iii)				RE?					+											+	
<i>Carex firma</i> Host	<i>Carex firma</i> Host		LC				+						+											CR B2a; B2c(i); C2a(i)	
<i>Carex fritschii</i> Waisb.	<i>Carex fritschii</i> Waisb.		RE?				RE?																		
<i>Carex fuliginosa</i> Schkuhr	<i>Carex fuliginosa</i> Schkuhr		NT				+						+	VU	A1abc									+	
<i>Carex halleriana</i> Asso	<i>Carex halleriana</i> Asso		NT		CR	B2a(ii)b(iii)							+											+	
<i>Carex hartmannii</i> Cajander	<i>Carex hartmannii</i> Cajander		NT				+	VU	B2a; B2b(iii)				+			+								+	
<i>Carex helonastes</i> L. f.	<i>Carex helonastes</i> L. f.		CR	C2a(ii)																				CR C2a(ii)	
<i>Carex hordisticus</i> Vill.	<i>Carex hordisticus</i> Vill.	M	NT				+	VU	B2a; B2b(iii)															+	
<i>Carex hostiana</i> DC.	<i>Carex hostiana</i> DC.		NT		VU	A2ac; B2a(i)b(iii,iv)		EN	B2a; B2b(iii)															+	
<i>Carex chordorrhiza</i> L. f.	<i>Carex chordorrhiza</i> L. f.		VU	B1ab(iii)	CR	B2a(i)b(iii)																		CR C2a(i)	
<i>Carex lasiocarpa</i> Ehrh.	<i>Carex lasiocarpa</i> Ehrh.		NT		VU	A2ac; B2a(i)b(i,ii,iii,iv,v)		EN	B2a; B2b(iii)				+			+								+	
<i>Carex limosa</i> L.	<i>Carex limosa</i> L.		NT		EN	A2ac; B2a(i)b(i,ii,iii,iv,v)		RE					+			+								+	
<i>Carex loliacea</i> L.	<i>Carex loliacea</i> L.		CR	B2ac(iii); C2a(i)																				CR B2a; B2c(iii); C2a(i)	
<i>Carex magellanica</i> subsp. <i>irrigua</i> (Wahlenb.) Hiitonen	<i>Carex magellanica</i> subsp. <i>irrigua</i> (Wahlenb.) Hiitonen		EN	B1ab(iii)	CR	B2a(ii)b(iii); C1+C2a(ii)																		+	
<i>Carex melanostachya</i> M. Bieb. ex Willd.	<i>Carex melanostachya</i> M. Bieb. ex Willd.		NT		VU	B2a(i)b(i,iii,iv)				+														+	
<i>Carex parviflora</i> Host	<i>Carex parviflora</i> Host		NT		VU	D2(i,ii)					CR	C2a(i)												+	
<i>Carex pauciflora</i> Lightf.	<i>Carex pauciflora</i> Lightf.		NT		EN	B2a(ii)b(iii); C1+C2a(ii)					EN	A2a		VU	A1abcd									+	

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit	
<i>Carex pediformis</i> subsp. <i>rhizodes</i> (Meinsh.) H. Lindb.			VU	B1ab(ii)																					
	<i>Carex pediformis</i> C. A. Mey. subsp. <i>rhizodes</i> (Blytt) A. Linb. fil.																CR	C2a(i)							
	<i>Carex rhizina</i> Lindb.				VU	B2a(ii)b(iii)										+									
<i>Carex pseudocyperus</i> L.	<i>Carex pseudocyperus</i> L.		NT				+	VU	B2a; B2b(iii)				+			+							+		
<i>Carex pulicaris</i> L.	<i>Carex pulicaris</i> L.		EN	A2ac; B2ab(i,ii,iii)	EN	A2ac; B2a(ii)b(i,ii,iii)							+												
<i>Carex pyrenaica</i> Wahlenb.	<i>Carex pyrenaica</i> Wahlenb.		VU	B1ab(ii)	RE																				
<i>Carex rostrata</i> Stokes	<i>Carex rostrata</i> Stokes		LC				+	EN	B2a; B2b(iii)				+			+								+	
<i>Carex rupestris</i> All.	<i>Carex rupestris</i> All.		NT		NT		+				EN	B2a		EN	D										+
<i>Carex strigosa</i> Huds.	<i>Carex strigosa</i> Huds.		NT		VU	B2a(i)b(iii)		EN	C2a(ii); D1		NT					+									+
<i>Carex supina</i> Wahlenb.	<i>Carex supina</i> Wahlbg.		VU	B2ab(ii)				VU	B2a; B2b(iii)																
<i>Carex umbrosa</i> Host	<i>Carex umbrosa</i> Host		NT		VU	A2ac; B2a(i)b(ii)		RE					+	LC											+
<i>Carex vaginata</i> Tausch	<i>Carex vaginata</i> Tausch		CR	B1ab(ii)	CR	B2a(ii)b(iii)								CR	B1ab(i,ii,iii)										
<i>Carthamus lanatus</i> L.	<i>Carthamus lanatus</i> L.		NT		CR	A2ac; B1a(i)b(iii,iv,v)c(iv)																			+
<i>Catabrosa aquatica</i> (L.) P. Beauv.	<i>Catabrosa aquatica</i> (L.) P. Beauv.		NT				+	VU	B2b(iii, iv)							+									+
<i>Caucalis platycarpus</i> L.	<i>Caucalis platycarpus</i> subsp. <i>muricata</i> (Čelak.) Holub	A	NT		EN	B1a(i)b(i,iii)c(iv)																			
<i>Centaurea affinis</i> Friv. subsp. <i>affinis</i>	<i>Centaurea affinis</i> Friv.		CR	B2ab(iv)													CR	B2a; B2b(iv)							
<i>Centaurea chrysolepis</i> Vis.	<i>Centaurea chrysolepis</i> Vis.	M	VU	B1ab(ii)																			VU	B1	
<i>Centaurea phrygia</i> subsp. <i>rumunensis</i> (Prodan) Dostál	<i>Centaurea carpatica</i> (Porcius) Porcius subsp. <i>rumunensis</i> (Prodan) Ciocarlan	E	CR	D													CR	D							
<i>Centaurea phrygia</i> subsp. <i>ratezatensis</i> (Prodan) Dostál	<i>Centaurea pseudophrygia</i> C. A. Mey. subsp. <i>ratezatensis</i> (Prodan) Ciocarlan	E	VU	D1													VU	D1							
<i>Centaurea solstitialis</i> L. subsp. <i>solstitialis</i>	<i>Centaurea solstitialis</i> L. subsp. <i>solstitialis</i>	A, N	NT		CR(PE)								+												
<i>Centaureum litorale</i> subsp. <i>compressum</i> (Hayne) Kirschner	<i>Centaureum litorale</i> subsp. <i>compressum</i> (Hayne) Kirschner		EN	A2ac; B1ab(ii)	EN	A2ac; B1a(i)b(ii)																			
<i>Cephalanthera damasonium</i> (Mill.) Druce	<i>Cephalanthera damasonium</i> (Mill.) Druce		LC				+						+	EN	A1abc										+
<i>Cephalanthera longifolia</i> (L.) Fritsch	<i>Cephalanthera longifolia</i> (L.) Fritsch		LC		NT		+						+	VU	A2abc										+
<i>Cephalanthera rubra</i> (L.) Rich.	<i>Cephalanthera rubra</i> (L.) Rich.		LC		NT		+						+	CR	B2a; C2a(i)	VU	A2abcd								+
<i>Cephalaria pastriensis</i> Dörf. & Hayek	<i>Cephalaria pastriensis</i> Dörf. & Hayek	M	EN	B1ab(ii)																					EN
<i>Cerastium alpinum</i> L.			NT																						
	<i>Cerastium alpinum</i> L.				CR(PE)																				
	<i>Cerastium alpinum</i> L. s. str.																								
<i>Cerastium anomalum</i> Schrank	<i>Dicodon viscidum</i> (M. Bieb.) Holub	M	NT		EN	A2ac; B2a(ii)b(iii,iv)							+												
<i>Cerastium carinthiacum</i> Vest	<i>Cerastium latifolium</i> L.		VU	D2	VU	D2(i)																			
<i>Cerastium cerastioides</i> (L.) Britton	<i>Dicodon cerastioides</i> (L.) Rehb.		NT				+																		
<i>Cerastium uniflorum</i> Clairv.	<i>Cerastium uniflorum</i> Clairv.		NT		VU	D2(i)								VU	B2a										
<i>Ceratocephala testiculata</i> (Crantz) Besser			NT																						
	<i>Ceratocephala testiculata</i> (Crantz) Roth	M, N						VU	A3c																
	<i>Ceratocephala testiculata</i> (Crantz) Besser	A			RE																				
<i>Chaerophyllum hirsutum</i> L.	<i>Chaerophyllum hirsutum</i> L.		LC				+	CR	A3c; C2a(ii)				+			+									+
<i>Chaerophyllum nodosum</i> (L.) Crantz	<i>Myrrhoides nodosa</i> (L.) Cannon	A, N	VU	D1+2	VU	D1+D2(i,ii)																			
<i>Chamorchis alpina</i> (L.) Rich.	<i>Chamorchis alpina</i> (L.) Rich.		NT		NT		+							EN	B2a; C2a(i)										
<i>Chenopodium foliosum</i> Asch.	<i>Chenopodium foliosum</i> Asch.	A, N	NT		CR	B2a(i,ii)b(i,ii,iii,iv,v); C2a(i,ii); D																			
<i>Chenopodium chenopodioides</i> (L.) Aellen	<i>Chenopodium chenopodioides</i> (L.) Aellen	M, N	EN	B2ac(ii,iii)																				EN	B2a(ii)c(ii,iii)
<i>Chimaphila umbellata</i> (L.) W. P. C. Barton	<i>Chimaphila umbellata</i> (L.) W. P. C. Barton		NT		EN	B2a(i)b(iii,iv,v); D2(i)		CR	C1				+			+	CR	C2a(i)							
<i>Chrysanthemum zavadskii</i> Herbieh	<i>Chrysanthemum zavadskii</i> Herbieh	B	VU	D2	VU	D2(i,ii)																			
<i>Chrysopogon gryllus</i> (L.) Trin.	<i>Chrysopogon gryllus</i> (L.) Trin.		LC		VU	B1a(i)b(iii,iv,v)							+												+
<i>Cicuta virosa</i> L.	<i>Cicuta virosa</i> L.		NT		EN	B2a(iv)b(iii,iv,v)		CR	A3c; B2ab(ii,iii,iv); C2a(i); D				+			+									
<i>Cimicifuga europaea</i> Schipcz.	<i>Cimicifuga europaea</i> Schipcz.		NT				+	CR	A3c; B2ab(ii,iii,iv); C2a(i); D				+			+									
<i>Circaea alpina</i> L.	<i>Circaea alpina</i> L.		LC				+	CR	B2ab(i,ii,iv); C2a(ii)				+			+									
<i>Cirsium acule</i> Scop. subsp. <i>acule</i>	<i>Cirsium acule</i> Scop.		NT				+										EN	C2a(i)							
<i>Cirsium eriophorum</i> (L.) Scop.	<i>Cirsium eriophorum</i> (L.) Scop.		LC				+						+	VU	B2a										+
<i>Cirsium erisibales</i> (Jacq.) Scop.	<i>Cirsium erisibales</i> (Jacq.) Scop.		LC				+	VU	A4c; C1				+			+									+
<i>Cirsium waldesteinii</i> Rouy	<i>Cirsium waldesteinii</i> Rouy		NT		VU	A2ac; B2a(ii)b(iii,v)							+			+									
<i>Cladium mariscus</i> (L.) Pohl	<i>Cladium mariscus</i> (L.) Pohl	M	EN	A2ac; B1ab(iii,iv)	CR	A2ac; B2a(ii)b(iii,iv)																			
<i>Clematis alpina</i> (L.) Mill.	<i>Clematis alpina</i> (L.) Mill.		LC				+	EN	A3c				+			+									
<i>Clematis integrifolia</i> L.	<i>Clematis integrifolia</i> L.	M	NT		VU	B1a(i)b(ii)							+			+									

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit	
<i>Clinopodium thymifolium</i> (Scop.) Kuntze	<i>Micromeria thymifolia</i> (Scop.) Fritsch		EN	A4cd; C2a(i)				EN	A4cd; C2a(ii)																
<i>Cochlearia borzeana</i> (Coman & Nyár.) Pobed.	<i>Cochlearia borzeana</i> (Coman & Nyár.) Pobed.	E	EN	C2b													EN	C2b							
<i>Cochlearia tatrea</i> Borbás	<i>Cochlearia tatrea</i> Borbás	E, H*	NT		NT		+				VU	B2a	+												
<i>Coleanthus subtilis</i> (Tratt.) Seidl	<i>Coleanthus subtilis</i> (Tratt.) Seidl	B, H	RE		RE																				
<i>Colchicum arenarium</i> Waldst. & Kit.	<i>Colchicum arenarium</i> W. & K.	B, H	RE					RE																	
<i>Colchicum autumnale</i> L.	<i>Colchicum autumnale</i> L.		LC				+			+			+	VU	A1abcd							+		+	
<i>Comarum palustre</i> L.	<i>Comarum palustre</i> L.		NT		VU	A2ac; B2a(i)b(i,ii,iii,iv,v)					NT		+			+									
<i>Conioselinum tataricum</i> Hoffm.	<i>Conioselinum tataricum</i> Hoffm.		NT				+				VU	B2a													
	<i>Conioselinum vaginatum</i> (Spreng.) Thell.													CR	C2a(i)										
<i>Conringia austriaca</i> (Jacq.) Sweet	<i>Conringia austriaca</i> (Jacq.) Sweet	M	EN	A2ac; B1ab(iii)c(iv)	CR	A2ac; B2a(ii)b(iii)c(iv); D		RE																+	
<i>Conringia orientalis</i> (L.) Dumort.	<i>Conringia orientalis</i> (L.) Dumort.	A	NT		CR	A2ac; B1a(i)b(iii,iv)c(iv)		RE					+			+								+	
<i>Consolida regalis</i> subsp. <i>paniculata</i> (Host) Soó	<i>Consolida regalis</i> subsp. <i>paniculata</i> (Host) Soó	A	DD		VU	B1b(iii)c(iii,iv)																		+	
<i>Convolvulus cantabrica</i> L.	<i>Convolvulus cantabrica</i> L.	M	NT		EN	B2a(ii)b(iii)				+														+	
<i>Corallorhiza trifida</i> Châtel.	<i>Corallorhiza trifida</i> Châtel.		LC				+	EN	B2c(iii, iv); C2b				+	VU	A2abc									+	
<i>Corispermum nitidum</i> Kit. ex Schult.	<i>Corispermum nitidum</i> Kit. ex Schult.		CR(PE)		CR(PE)																				
<i>Coronopus squamatus</i> (Forssk.) Asch.	<i>Coronopus squamatus</i> (Forssk.) Asch. subsp. <i>squamatus</i>	A	VU	B1ab(i)c(iv)	EN	B1a(i)b(iii)c(iii)										+									
<i>Cortusa matthioli</i> L.	<i>Cortusa matthioli</i> L. subsp. <i>pubens</i> (Schott, Nyman & Kotschy) Jáv.		NT										+	CR	B2ab(i,ii,iii)									+	
<i>Corydalis capnoides</i> (L.) Pers.	<i>Corydalis capnoides</i> (L.) Pers.		NT		VU	A2ac; B2a(i)b(i,ii,iii,iv,v)					NT		+			+								+	
<i>Corynephorus canescens</i> (L.) P. Beauv.	<i>Corynephorus canescens</i> (L.) P. B.		VU	B2ab(iii,iv)				EN	B2a; B2b(iv)				+												
<i>Cotoneaster tomentosus</i> (Aiton) Lindl.	<i>Cotoneaster tomentosus</i> (Aiton) Lindl.		NT				+	RE			EN	B2a												+	
<i>Crambe tataria</i> Sebeök	<i>Crambe tataria</i> Sebeök	H	EN	A3cd				EN	A3c,d																
<i>Crataegus rhipidophylla</i> Gand.	<i>Crataegus lindmanii</i> Hrabětová		VU	B1ab(iii)	EN	A2ae; D							+											+	
<i>Crepis jacquinii</i> Tausch	<i>Crepis jacquinii</i> Tausch		LC				+						+	CR	C2a(i,ii)									+	
<i>Crepis mollis</i> (Jacq.) Asch.	<i>Crepis mollis</i> (Jacq.) Asch.		LC				+						+			+	CR	C2a(i)							
<i>Crepis nicaensis</i> Pers.	<i>Crepis nicaensis</i> Balb.	N	VU	A2ac; B1ab(i,iii)				EN	A2ac; B2ab(i,iii)															+	
<i>Crepis pannonica</i> (Jacq.) K. Koch	<i>Crepis pannonica</i> (Jacq.) C. Koch		EN	A2ac; B2ab(iii,iv)				EN	A2ac; B2ab (iii, iv)																
<i>Crepis praemorsa</i> (L.) Walther	<i>Crepis praemorsa</i> (L.) Tausch		LC				+			+	CR	B2a; C2a(i)			+									+	
<i>Crepis pulchra</i> L.	<i>Crepis pulchra</i> L.	A	NT		VU	D2(i,ii)				+														+	
<i>Crepis sibirica</i> L.	<i>Crepis sibirica</i> L.		VU	B1ab(iii,iv)	EN	B1a(i)b(i,iii,iv)+B2a(i)b(i,iii,iv)																		+	
<i>Crocus vernus</i> (L.) Hill subsp. <i>vernus</i>	<i>Crocus banaticus</i> J. Gay	E	NT											EN	A4abcd								RE		
<i>Crupina vulgaris</i> Cass.	<i>Crupina vulgaris</i> Cass.		NT		EN	A2ac; B2a(i)b(iii,iv,v)c(iv)					+													+	
<i>Crypsis alopecuroides</i> (Piller & Mitterp.) Schrad.	<i>Crypsis alopecuroides</i> (Piller & Mitterp.) Schrad.		VU	B1ab(iii)																					
	<i>Crypsis alopecuroides</i> (Piller & Mitterpac.) Schrad.	M						VU	B2a; B2b(iii)							+								+	
	<i>Helosciola alopecuroides</i> (Piller & Mitterp.) Host ex Roem.				CR	B2a(ii)b(iii)																			
<i>Cryptogramma crispa</i> (L.) Hook.	<i>Cryptogramma crispa</i> (L.) R. Br. ex Hook.		VU	B1ab(i,iv)	VU	B1a(ii)b(i,iv)																		RE?	
<i>Cuscuta epilinum</i> Weihe	<i>Cuscuta epilinum</i> Weihe	A									RE														
	<i>Cuscuta epilinum</i> Weihe ex Boenn.																							+	
<i>Cuscuta lupuliformis</i> Krock.	<i>Cuscuta lupuliformis</i> Krock.	M	NT		CR	A4ac; B2a(i,ii)b(iii,iv)							+											+	
<i>Cyanus triumfettii</i> (All.) Á. Löve & D. Löve	<i>Centaurea triumfettii</i> All.		LC				+				VU	B2a												+	
<i>Cynoglossis barrelieri</i> (All.) Vural & Kit Tan	<i>Anchusa barrelieri</i> (All.) Vitman	M	VU	B2ab(ii,iii,iv)	RE			VU	B2b(ii,iii,iv)															+	
<i>Cypripedium calceolus</i> L.	<i>Cypripedium calceolus</i> L.	B, H	NT		NT		+	EN	A1; B2b(ii, iii, iv)		VU	C2a(i)		CR	D									+	
<i>Cystopteris fragilis</i> subsp. <i>alpina</i> (Lam.) Hartm.	<i>Cystopteris regia</i> (L.) Desv.		NT				+						+	VU	A4abc									+	
<i>Cystopteris montana</i> (Lam.) Desv.	<i>Cystopteris montana</i> (Lam.) Bernh. ex Desv.		LC				+						+	VU	B1ab(i,ii,iii,iv,v)									+	
<i>Cystopteris sudetica</i> A. Braun & Milde	<i>Cystopteris sudetica</i> A. Braun & Milde		NT				+						+	VU	A4abc									+	
<i>Cytisus austriacus</i> var. <i>rochelii</i> (Wierzb.) Cristof.	<i>Cytisus rochelii</i> (Wierzb.) Rothm.		DD																						
	<i>Chamaecytisus rochelii</i> (Wierzb.) Rothm.							VU	B2ab(i,ii,iii,iv)																
<i>Cytisus podolicus</i> Blocki	<i>Chamaecytisus podolicus</i> (Blocki) Klask.		VU	D2										EN	B2ab(i,ii,iii,iv)									+	
<i>Dactylorhiza cordigera</i> (Fr.) Soó	<i>Dactylorhiza cordigera</i> (Fr.) Soó		NT											VU	A2abcd										+
<i>Dactylorhiza fuchsii</i> (Druce) Soó	<i>Dactylorhiza fuchsii</i> (Druce) Soó		LC				+	VU	B2b(ii, iii); C2b				+	LC										+	
<i>Dactylorhiza incarnata</i> subsp. <i>eruenta</i> (O. F. Müll.) P. D. Sell	<i>Dactylorhiza eruenta</i> (O. F. Müll.) Soó		CR(PE)		CR(PE)																				
<i>Dactylorhiza incarnata</i> subsp. <i>eruenta</i> (O. F. Müll.) P. D. Sell	<i>Dactylorhiza incarnata</i> subsp. <i>haematodes</i> (Rehb.) Soó		EN	B1ab(i)	CR	A2acc; B2a(i)b(iii,v)c(iv); C1							+												

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit			
<i>Dactylorhiza incarnata</i> (L.) Soó subsp. <i>incarnata</i>	<i>Dactylorhiza incarnata</i> (L.) Soó subsp. <i>incarnata</i>		NT																								
	<i>Dactylorhiza incarnata</i> (L.) Soó subsp. <i>incarnata</i>						+			+	CR	B2a; C2a(i)							+	NT							
	<i>Dactylorhiza incarnata</i> (L.) Soó													EN	A4abcd												
<i>Dactylorhiza incarnata</i> subsp. <i>ochroleuca</i> (Wüstnei ex Boll) P. F. Hunt & Summerh	<i>Dactylorhiza incarnata</i> (L.) Soó subsp. <i>ochroleuca</i> (Boll) P. F. Hunt & Summerh.		EN	B1ab(iii)							RE								+								
<i>Dactylorhiza incarnata</i> subsp. <i>pulchella</i> (Druce) Soó	<i>Dactylorhiza incarnata</i> subsp. <i>pulchella</i> (Druce) Soó		VU	A2e; B2b(iii,v)c(iv)	VU	A2e; B2b(iii,v)c(iv)				+																	
<i>Dactylorhiza maculata</i> subsp. <i>elodes</i> (Griseb.) Soó	<i>Dactylorhiza maculata</i> subsp. <i>elodes</i> (Griseb.) Soó		CR	A2e; B2ab(iii)c(iv); C1	CR	A2e; B2a(i)b(iii)c(iv); C1																					
<i>Dactylorhiza maculata</i> subsp. <i>ericetorum</i> (E. F. Linton) P. F. Hunt & Summerh	<i>Dactylorhiza ericetorum</i> (E. F. Linton) Aver.		CR	A2e; B2ab(iii)c(iv)	CR	A2e; B2a(i)b(iii)c(iv)																					
<i>Dactylorhiza maculata</i> (L.) Soó subsp. <i>maculata</i>	<i>Dactylorhiza maculata</i> (L.) Soó subsp. <i>maculata</i>		NT											VU	A2abcd				+								
	<i>Dactylorhiza maculata</i> (L.) Soó subsp. <i>maculata</i>				EN	A2e; B2a(i)b(iii)c(iv)																	LC				
<i>Dactylorhiza maculata</i> subsp. <i>transilvanica</i> (Schur) Soó	<i>Dactylorhiza maculata</i> subsp. <i>transilvanica</i> (Schur) Soó	E	NT																								
	<i>Dactylorhiza maculata</i> subsp. <i>transilvanica</i> (Schur) Soó				CR	A2e; B2a(i)b(iii)c(iv); C1																		+			
	<i>Dactylorhiza transilvanica</i> (Schur) Aver.												+	DD													
<i>Dactylorhiza majalis</i> (Rehb.) P. F. Hunt & Summerh.	<i>Dactylorhiza majalis</i> (Rehb.) P. F. Hunt & Summerh.		LC				+	VU	B2b(ii, iii); C2b				+	VU	A2abcd									+			
<i>Dactylorhiza sambucina</i> (L.) Soó	<i>Dactylorhiza sambucina</i> (L.) Soó		LC			NT	+	VU	B2b(ii, iii); C2b		EN	A2a; C2a(i)		VU	A2abcd									+			
<i>Dactylorhiza viridis</i> (L.) R. M. Bateman, Pridgeon & M. W. Chase	<i>Coeloglossum viride</i> (L.) Hartm.		LC				+	VU	B2b(iii, iv); C1				+	VU	A2abcd									+	VU	B1	
<i>Daphne arbuscula</i> Čelak.	<i>Daphne arbuscula</i> Čelak.	B, E, H*	VU	B1ab(i,iv)	VU	B1a(i)b(i,iv)																					
<i>Daphne cneorum</i> L.	<i>Daphne cneorum</i> L.		NT		VU	B1a(i)b(i,iii,iv)		EN	A4c; C2a(ii)															+	VU	B1;C2a;D2	
<i>Daphne laureola</i> L. subsp. <i>laureola</i>	<i>Daphne laureola</i> L.		VU	B1ac(iv)													VU	B1a; B1c(iv)						VU	B1		
<i>Delphinium elatum</i> L.	<i>Delphinium elatum</i> L. subsp. <i>nacladense</i> (Zapal.) Holub	E	CR	B1ab(iii)							CR	B2a; C2a(i)															
<i>Dianthus barbatus</i> subsp. <i>compactus</i> (Kit.) Heuff.	<i>Dianthus barbatus</i> subsp. <i>compactus</i> (Kit.) Heuff.		NT		VU	B2a(i)b(iii)							+			+									+		
<i>Dianthus carthusianorum</i> L.	<i>Dianthus carthusianorum</i> L. subsp. <i>saxigenus</i> (Schur) Jav.	E	NT								EN	B2a; C2b				+											
<i>Dianthus collinus</i> subsp. <i>glabriusculus</i> (Kit.) Thaisz	<i>Dianthus collinus</i> subsp. <i>glabriusculus</i> (Kit.) Thaisz		VU	B1ab(i)	EN	B2a(i)b(iii,iv)				+															+		
<i>Dianthus benteri</i> Griseb. & Schenk	<i>Dianthus benteri</i> Heuff. ex Griseb. & Schenk	E	VU	B2ac(ii)													VU	B2a; B2c(ii)									
<i>Dianthus nitidus</i> Waldst. & Kit.	<i>Dianthus nitidus</i> Waldst. & Kit.	B, E, H*	NT				+				RE																
<i>Dianthus peljiformis</i> Heuff.	<i>Dianthus peljiformis</i> Heuffel	M	VU	B1ab(ii)																					VU	B1	
<i>Dianthus petraeus</i> subsp. <i>orbelicus</i> (Velen.) Greuter & Burdet	<i>Dianthus petraeus</i> Waldst. & Kit. subsp. <i>orbelicus</i> (Velen.) Greuter & Burdet		CR	B2ac(iii)																					CR	B2a; B2c(iii)	
<i>Dianthus pinifolius</i> subsp. <i>serbicus</i> Wettst.	<i>Dianthus pinifolius</i> Sm. subsp. <i>serbicus</i> Wettst.		CR	B2ac(ii)																					CR	B2a; B2c(ii)	
<i>Dianthus praecox</i> Kit. subsp. <i>praecox</i> (Kit. ex Schult.) Domin	<i>Dianthus plumarius</i> L. subsp. <i>praecox</i> (Kit. ex Schult.) Domin	E	NT				+	EN	A4cd; B2ab(ii,iii)				+														
<i>Dianthus praecox</i> subsp. <i>pseudopraecox</i> (Novák) Kmet'ová	<i>Dianthus praecox</i> subsp. <i>pseudopraecox</i> (Novák) Kmet'ová	E	VU	B1ab(iii)	VU	B1a(ii)b(iii)																					
<i>Dianthus serotinus</i> Waldst. & Kit.	<i>Dianthus serotinus</i> Waldst. & Kit.	B	VU	B1ab(iii)	CR	B2a(i)b(iii)							+												+		
<i>Dianthus superbus</i> L. subsp. <i>superbus</i>	<i>Dianthus superbus</i> L. subsp. <i>superbus</i>		NT		EN	B2a(i)b(iii,iv)							+			+									VU	B2c	
<i>Doronicum clusii</i> (All.) Tausch	<i>Doronicum stiriacum</i> (Vill.) Dalla Torre		LC		LC		+						+	EN	A3bcd										+		
<i>Doronicum hungaricum</i> Rehb. f.	<i>Doronicum hungaricum</i> Rehb. f.		NT																								
	<i>Doronicum hungaricum</i> (Sadl.) Rehb.				EN	B2a(i)b(iii,iv); C2a(i)				+				CR	B2ab(iv,v)										+	VU	A1a,b,c,e;A2b,c; B2b,c,d
<i>Draba aizoides</i> L.	<i>Draba aizoides</i> L.		NT				+						+	CR	B1ab(iii,iv,y)										+		
<i>Draba aizoides</i> subsp. <i>beckeri</i> (A. Kern.) Hörandl & Gutermann	<i>Draba aizoides</i> subsp. <i>beckeri</i> (A. Kern.) Hörandl & Gutermann		EN	B2ab(iii)	EN	B2a(i)b(iii)																					
<i>Draba doreri</i> Heuff.	<i>Draba doreri</i> Heuff.	B, E, H	CR	B1ac(iii)																					CR	B1a; B1c(iii)	

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit
<i>Draba dubia</i> Suter	<i>Draba dubia</i> Suter		NT		NT		+				EN	B2a; C2a(i)							+					
<i>Draba fladnizensis</i> Wulfen	<i>Draba fladnizensis</i> Wulfen		VU	C2b	VU	D1+D2(i,ii)											CR	C2b						
<i>Draba haynaldii</i> Stur	<i>Draba haynaldii</i> Stur	E	CR	B2ac(iii)													CR	B2a; B2c(iii)						
<i>Draba lasiocarpa</i> subsp. <i>klasterskyi</i> (Chrték) Chrték	<i>Draba lasiocarpa</i> subsp. <i>klasterskyi</i> (Chrték) Chrték	E	CR	B2ab(ii,iii,iv)	CR	B2a(i)b(ii,iii,iv)																		
<i>Draba lasiocarpa</i> Rochel subsp. <i>lasiocarpa</i>	<i>Draba lasiocarpa</i> Rochel subsp. <i>lasiocarpa</i>		NT					VU	A4c; C1										+			+		
<i>Draba muralis</i> L.	<i>Draba muralis</i> L.	M	NT		VU	B2b(ii,iii)c(iii,iv)				+									+			+		
<i>Draba nemorosa</i> L.	<i>Draba nemorosa</i> L.	M, N	NT		LC		+			+	EN	B2a; C2a(i)				+			+					
<i>Draba pacheri</i> Stur	<i>Draba pacheri</i> Stur		RE		RE																			
<i>Draba siliquosa</i> M. Bieb.	<i>Draba siliquosa</i> Clairv.		NT								CR	B2a; C2a(i)												
	<i>Draba siliquosa</i> M. Bieb.				EN	B2a(ii)b(iii,iv,v); C2a(i)													+					
<i>Draba simonkaiana</i> Jáv.	<i>Draba simonkaiana</i> Jáv.	E	CR	B1ac(iii)													CR	B1a; B1c(iii)						
<i>Draba tomentosa</i> Clairv.	<i>Draba tomentosa</i> Clairv.		NT				+				EN	B2a; C2a(i)												
<i>Dracocephalum austriacum</i> L.	<i>Dracocephalum austriacum</i> L.	B, H	VU	B1ab(i,iv,v)	CR	B2a(i)b(i,iv,v)		CR	A2ac								CR	C2a(i)						
<i>Dracocephalum ruschiana</i> L.	<i>Dracocephalum ruschiana</i> L.	B	EN	A2ac; B1ab(iii)				CR	A2ac; B2ab(iii); C2a(ii)										+					
<i>Drosera intermedia</i> Hayne	<i>Drosera intermedia</i> Hayne		EN	B1ab(iii)c(i)									+							CR	B1a; B1c(i)			
<i>Drosera longifolia</i> L.	<i>Drosera anglica</i> Huds.		VU	B1ab(iii,iv,v)c(iii)	EN	A2ac; B2a(i)b(iii,iv,v)							+			+				CR	B1a; B1c(iii)			
<i>Drosera rotundifolia</i> L.	<i>Drosera rotundifolia</i> L.		NT		VU	A2ac; B2a(i)b(iii,iv,v)		EN	A3cd				+			+						+		
<i>Dryas octopetala</i> L.	<i>Dryas octopetala</i> L.		LC		LC		+						+	EN	A4abcd							+		
<i>Dryocallis rupestris</i> (L.) Soják	<i>Dryocallis rupestris</i> (L.) Soják		NT		VU	B1a(i)b(iii)				+														
<i>Dryochloa drymeja</i> (Mert. & W. D. J. Koch) Holub	<i>Festuca drymeja</i> Mert. & W. D. J. Koch.		LC				+			+			+	VU	A4abcd									
<i>Dryopteris borrieri</i> (Newman) Oberh. & Tavel	<i>Dryopteris affinis</i> subsp. <i>borrieri</i> (Newman) Fraser-Jenk		VU	B1ab(i)				EN	D1				+			+						+		
<i>Dryopteris cristata</i> (L.) A. Gray	<i>Dryopteris cristata</i> (L.) A. Gray		VU	B1ab(i,iii,iv)	EN	B2a(ii)b(ii,iii,iv)		CR	C1; D1				+			+						+		
<i>Dryopteris villarii</i> (Bellardi) Schinz & Thell.	<i>Dryopteris villarii</i> (Bellardi) Schinz & Thell. subsp. <i>villarii</i>		RE								RE													
<i>Echinops ritro</i> subsp. <i>ruthenicus</i> (M. Bieb.) Nyman	<i>Echinops ritro</i> subsp. <i>ruthenicus</i> (M. Bieb.) Nyman		CR	B2ab(iii); C2a(i)	CR	B2a(i)b(iii); C2a(i)																		
<i>Edraianthus serbicus</i> Petrovič	<i>Edraianthus serbicus</i> (Ker.) Petrovič	M	EN	B1ab(ii)																EN	B1			
<i>Elatine alsinastrum</i> L.	<i>Elatine alsinastrum</i> L.		VU	A4ac; B1ac(iii)				VU	A4acd; B2a,c							+						+		
<i>Elatine ambigua</i> Wight	<i>Elatine triandra</i> Schkuhr var. <i>pedicellata</i> Rouy & Fouc.		DD													+	CR	C2a(i)						
<i>Elatine hexandra</i> (Lapierre) DC.	<i>Elatine hexandra</i> (Lapierre) DC.		CR	C2a(i)																				
<i>Elatine hydropiper</i> L.	<i>Elatine hydropiper</i> L.		EN	B1ab(i)c(iii,iv)									+			+	CR	C2a(i)						
<i>Elatine triandra</i> Schkuhr	<i>Elatine triandra</i> Schkuhr		EN	B1ab(i)c(iii,iv)									+				CR	C2a(i)					+	
<i>Eleocharis carniolica</i> W. D. J. Koch	<i>Eleocharis carniolica</i> W. D. J. Koch	B, H	NT		VU	B2a(i)b(iii,iv,v)c(iii,iv)		VU	C2b		EN	B2a; C2a(i)										+		
<i>Eleocharis ovata</i> (Roth) Roem. & Schult.	<i>Eleocharis ovata</i> (Roth) Roem. & Schult.		VU	B2ab(iii,v)c(iv)	VU	B2a(i)b(iii,v)c(iv)				+			+									+		
<i>Empetrum nigrum</i> L. subsp. <i>nigrum</i>	<i>Empetrum nigrum</i> L. subsp. <i>nigrum</i>		NT		VU	A2ac; B1a(i)b(iii,iv,v)							+			+						+		
<i>Epilobium nutans</i> F. W. Schmidt	<i>Epilobium nutans</i> F. W. Schmidt		NT		VU	B2a(i,ii)b(i,iv); D2(i)					EN	C2a(i)				+						+		
<i>Epilobium palustre</i> L.	<i>Epilobium palustre</i> L.		LC				+	VU	B2b(iii, iv)				+			+						+		+
<i>Epipactis albensis</i> Nováková & Rydlo	<i>Epipactis albensis</i> Nováková & Rydlo		VU	B2ac(iii,iv)				EN	B2c(iii, iv); C2b				+											
<i>Epipactis atrorubens</i> (Hoffm.) Besser	<i>Epipactis atrorubens</i> (Hoffm.) Besser		LC				+			+			+	EN	A2abcd							+		+
<i>Epipactis excilis</i> P. Delforge	<i>Epipactis excilis</i> P. Delforge		CR	B2ab(iii,iv); C2b				CR	B2a, B2b(iii, iv), C2b															
<i>Epipactis greuteri</i> H. Baumann & Künkele	<i>Epipactis greuteri</i> H. Baumann & Künkele		EN	D	EN	D							+											
<i>Epipactis belleborine</i> (L.) Crantz subsp. <i>belleborine</i>	<i>Epipactis belleborine</i> (L.) Crantz		LC				+			+			+	VU	A3abcd							+	LC	
<i>Epipactis belleborine</i> (L.) Crantz subsp. <i>belleborine</i>	<i>Epipactis voethii</i> Robatsch		NT		CR	B2a(i)b(iii)c(iv)				+			+											
<i>Epipactis belleborine</i> subsp. <i>lentei</i> (Robatsch) Kreutz	<i>Epipactis lentei</i> Robatsch		EN	B2ab(iii)c(iv)	EN	B2a(i)b(iii)c(iv)																		
<i>Epipactis leptochila</i> subsp. <i>futakii</i> (Mered'a & Potucek) Kreutz	<i>Epipactis futakii</i> Mered'a & Potucek		EN	B1ab(iv)	EN	D		EN	C2a(i)															

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit
<i>Epipactis leptochila</i> (Godfery) Godfery			NT																					
	<i>Epipactis leptochila</i> (Godfery) Godfery				VU	B2a(i)b(iii)c(iv)													+					
	<i>Epipactis leptochila</i> (Godfery) Godfery subsp. <i>leptochila</i>							VU	C2b															
<i>Epipactis leptochila</i> subsp. <i>neglecta</i> Kümpele	<i>Epipactis neglecta</i> (Kümpele) Kümpele		NT		VU	B2a(i)b(iii)c(iv)				+														
<i>Epipactis microphylla</i> (Ehrh.) Sw.	<i>Epipactis microphylla</i> (Ehrh.) Sw.		NT		LC		+			+	EN	B2a		DD					+	EN	B1			
<i>Epipactis nordienorum</i> Robatsch	<i>Epipactis nordienorum</i> Robatsch		VU	C2a(i)+2b				VU	C2a(i), C2b															
<i>Epipactis palustris</i> (L.) Crantz	<i>Epipactis palustris</i> (L.) Crantz		LC		NT		+	VU	A1; B2b(ii, iii, iv)				+	VU	A2abc				+					
<i>Epipactis placentina</i> Bongiorno & P. Grünanger	<i>Epipactis placentina</i> Bongiorno & Grünanger		EN	B1ab(iii)c(iv)	EN	B2a(i)b(iii)c(iv)		CR	B2a, C2a(ii)															
<i>Epipactis purpurata</i> Sm.	<i>Epipactis purpurata</i> Sm.		NT		NT		+			+			+	VU	A1abc				+					
<i>Epipactis purpurata</i> Sm.	<i>Epipactis pseudopurpurata</i> Mered'á		NT		VU	B2a(i)b(iii)c(iv)				+			+											
<i>Epipactis tallosii</i> A. Molnár & Robatsch	<i>Epipactis tallosii</i> A. Molnár & Robatsch		NT				+	VU	B2a; B2b(iv)															
<i>Epipogon aphyllum</i> Sw.	<i>Epipogon aphyllum</i> Sw.		NT		NT		+	CR	B2a, B2c(iv)		VU	B2a		CR	A2abc				+			+		
<i>Equisetum hyemale</i> L.	<i>Equisetum hyemale</i> L.		NT				+	VU	B2a; B2b(iii)				+			+			+					
<i>Equisetum sylvaticum</i> L.	<i>Equisetum sylvaticum</i> L.		LC				+	VU	B2a; B2b(iii)				+			+			+					
<i>Equisetum variegatum</i> F. Weber & D. Mohr	<i>Equisetum variegatum</i> Schleich.		NT				+	EN	D1				+			+			+					
<i>Erigeron alpinus</i> L.	<i>Erigeron alpinus</i> L.		NT											CR	B1ab(i,ii,iii,iv,v)				+					
	<i>Erigeron alpinus</i> L. subsp. <i>intermedius</i> (Schleich.) Pawl.						+				CR	B2a; C2a(i)												
<i>Erigeron atticus</i> Vill.	<i>Erigeron atticus</i> Vill.		NT		DD		+							CR	D				+					
<i>Eriophorum angustifolium</i> Honck.	<i>Eriophorum angustifolium</i> Honck.		LC				+	VU	B2a, B2c(iv)				+			+			+					
<i>Eriophorum gracile</i> Roth	<i>Eriophorum gracile</i> W. D. J. Koch		NT										+			+								
	<i>Eriophorum gracile</i> W. D. J. Koch ex Roth				CR	A2ac; B2a(i)b(iii,iv,v)c(iv)																		
<i>Eriophorum latifolium</i> Hoppe	<i>Eriophorum latifolium</i> Hoppe		LC				+	VU	B2a, B2c(iv)				+			+			+					
<i>Eriophorum vaginatum</i> L.	<i>Eriophorum vaginatum</i> L.		LC				+	EN	B2a; C2a(ii)				+			+			+					
<i>Erodium ciconium</i> (L.) L'Hér.	<i>Erodium ciconium</i> (L.) L'Hér.	M	EN	B1ab(i)c(iii,iv)	CR	B1a(i)b(iii)c(iv)				+														
<i>Eryngium planum</i> L.	<i>Eryngium planum</i> L.	M	NT		VU	B2b(i,iii,iv)				+						+			+					
<i>Erysimum crepidifolium</i> Rechb.	<i>Erysimum crepidifolium</i> Rechb.		NT		EN	B1a(i)b(iii)		VU	B2ab(iii)										+					
<i>Erysimum marschallianum</i> M. Bieb.	<i>Erysimum marschallianum</i> Andr. ex Bieb.		NT				+																	
<i>Erysimum pallidiflorum</i> Jáv.	<i>Erysimum pallidiflorum</i> Szépl. ex Jáv.	E	VU	A2ac; B1ab(i,iii,iv,v)																				
	<i>Erysimum wittmannii</i> Zaw. subsp. <i>pallidiflorum</i> (Jáv.) Jáv.				VU	A2ac; B1a(i)b(iii,iv,v); C2a(i)										+								
<i>Erysimum pieninicum</i> (Zapal.) Pawl.	<i>Erysimum pieninicum</i> (Zapal.) Pawl.	B, E, H*	VU	B2ab(ii); C2a(i)							VU	B2a; C2a(i)												
<i>Erythronium dens-canis</i> L.	<i>Erythronium dens-canis</i> L.		LC		VU	D2(i,ii)		EN	B2a; B2b(iii)					VU	A1abcd				+				+	
<i>Euphorbia angulata</i> Jacq.	<i>Euphorbia angulata</i> Jacq.		NT		VU	B2a(i,ii)b(iii)				+			+			+			+					
<i>Euphorbia carpatica</i> Wol.	<i>Euphorbia carpatica</i> Wol.	E	NT													+			CR	B1a; B1c(iii)				
<i>Euphorbia lucida</i> Waldst. & Kit.	<i>Euphorbia lucida</i> Waldst. & Kit.	M	NT		CR	B1a(i)b(iii)				+						+			+					
<i>Euphorbia myrsinites</i> L.	<i>Euphorbia myrsinites</i> L. subsp. <i>myrsinites</i>		VU	B1ab(i)													EN	B2a; B2c(ii)				+		
<i>Euphorbia nicaeensis</i> All. subsp. <i>niccaensis</i> (Host.) Kuzmanov	<i>Euphorbia glareosa</i> subsp. <i>pannonica</i> (Host.) Kuzmanov		EN	B1ab(i)	CR	B1a(ii)b(iii)				+														
<i>Euphorbia seguieriana</i> Neck.	<i>Euphorbia seguieriana</i> subsp. <i>minor</i> (Sadler) Domin		CR	B1ab(iii)	CR	B1a(i)b(iii)																		
<i>Euphorbia sojakii</i> (Chrtek & Křisa) Dubovik	<i>Euphorbia austriaca</i> subsp. <i>sojakii</i> Chrtek & Křisa	E	NT		EN	B2a(i)b(i,iii,iv,v); C2a(i)										+								
<i>Euphorbia verrucosa</i> L.	<i>Euphorbia verrucosa</i> L.		RE		RE																			
<i>Euphrasia exaristata</i> Smejkal	<i>Euphrasia exaristata</i> Smejkal	E	VU	B1ab(iii,v)	EN	B2a(ii)b(ii,v)					CR	B2a												
<i>Euphrasia micrantha</i> Rechb.	<i>Euphrasia micrantha</i> Rechb.		EN	B2ab(iii)	EN	B2a(ii)b(iii)																		
<i>Euphrasia pectinata</i> Ten.	<i>Euphrasia stricta</i> subsp. <i>pectinata</i> (Ten.) P. Fourn.		CR	B2ab(iii)	CR	B2a(i)b(iii)																		
<i>Euphrasia slovacica</i> subsp. <i>pseudomontana</i> (Klášt.) Dostál	<i>Euphrasia slovacica</i> subsp. <i>pseudomontana</i> (Klášt.) Dostál		EN	A2ac; B2ab(ii,iii,iv,v)	EN	A2ac; B2a(i)b(i,iii,iv,v)																		
<i>Euphrasia stipitata</i> Smejkal	<i>Euphrasia stipitata</i> Smejkal	E	EN	B2ab(iii,v)	EN	B2a(ii)b(iii,v)																		

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit	
<i>Ferula heuffelii</i> Heuff.	<i>Ferula heuffelii</i> Griseb. ex Heuffel		VU	B1ab(i)													EN	B2a; B2c(iii); D		VU	B1				
<i>Ferula sadleriana</i> Ledeb.	<i>Ferula sadleriana</i> Ledeb.	B, H*	VU	B1ab(iii)	CR	B2a(i)b(iii); C2a(i); D		EN	B2ab(ii,iii)										+						
<i>Festuca alpina</i> Suter subsp. <i>alpina</i>	<i>Festuca alpina</i> Suter subsp. <i>alpina</i>		EN	B2ab(iii,v); C2a(i)	EN	B2a(i,ii)b(iii,v); C2a(i)																			
<i>Festuca amethystina</i> L.	<i>Festuca amethystina</i> L.		NT				+	EN	B2a; B2b(iii); D1																
<i>Festuca filiformis</i> Pourr.	<i>Festuca tenuifolia</i> Sibth.		VU	B1ab(i)																EN	C2a(i)				
<i>Festuca heterophylla</i> Lam.	<i>Festuca heterophylla</i> Lam.		LC				+			+							VU	B1ab(i,ii,iii,iv,v)						+	
<i>Festuca porzii</i> Hack.	<i>Festuca porzii</i> Hack.	E	NT																	EN	A2abcd				
<i>Festuca stricta</i> subsp. <i>saxatilis</i> (Schur) Foggi & Signorini	<i>Festuca saxatilis</i> Schur	E	VU	B1ab(i,iii,iv,v)	CR	B2a(i,ii)b(i,ii,iii,v); C2a(i); D																			
<i>Festuca vojtkoi</i> Penksza	<i>Festuca vojtkoi</i> Penksza		VU	B2ab(ii)				VU	B2a; D2																
<i>Filago germanica</i> (L.) Huds.	<i>Filago vulgaris</i> Lam.		NT		CR	A2ac; B2a(i,ii)b(iii,iv,v)c(iv)					+														
<i>Fraxinus ornus</i> L.	<i>Fraxinus ornus</i> L.	N	LC				+										CR	B2ab(i,ii,iii)						+	
<i>Fritillaria meleagris</i> L.	<i>Fritillaria meleagris</i> L.		NT		EN	A2ac		VU	B2a; B2b(iii)								VU	A2abcd							
<i>Gagea bobemica</i> (Zauschn.) Schult. & Schult. f.	<i>Gagea bobemica</i> (Zauschn.) Schult. & Schult. f. subsp. <i>bobemica</i>		NT		EN	B2a(i)b(iii)		VU	B2a; B2b(iii)																
<i>Gagea minima</i> (L.) Ker Gawl.	<i>Gagea minima</i> (L.) Ker Gawl.		LC					VU	B2a(i)b(iv,v)																
	<i>Ornithogalum pannonicum</i> Chaix							RE																	
<i>Gagea pusilla</i> (F. W. Schmidt) Sweet	<i>Gagea pusilla</i> (F. W. Schmidt) Schult. & Schult. f.		LC		EN	B2a(i)b(iii)					+														
<i>Gagea spatheca</i> (Hayne) Salisb.	<i>Gagea spatheca</i> (Hayne) Salisb.		NT				+	VU	B2a; B2b(iii)																
<i>Galatella cana</i> (Waldst. & Kit.) Nees	<i>Aster sedifolius</i> L. subsp. <i>canus</i> (Waldst. & Kit.) Merxm.		VU	B2ab(i,ii,iii,iv)				VU	B2b(i,ii,iii,iv)																
<i>Galatella villosa</i> (L.) Rehb. f.	<i>Aster oleifolius</i> (Lam.) Wagenitz		EN	B2ab(iii)				EN	B2ab(iii)																
<i>Galium abaujense</i> Borbás	<i>Galium abaujense</i> Borbás	E	NT		VU	A2ac; B2a(i)b(iii,iv,v)					+														
<i>Galium baillonii</i> D. Brändzã	<i>Galium baillonii</i> Brandza	E	EN	C2a(i)													EN	C2a(i)							
<i>Galium boreale</i> subsp. <i>excoletum</i> (Klokov) Soják	<i>Galium boreale</i> subsp. <i>excoletum</i> (Klokov) Soják	EN	B2ab(iii)																				EN	B2a(i)b(iii)	
<i>Galium divaricatum</i> Lam.	<i>Galium divaricatum</i> Lam.		VU	B1ab(i,iii,iv)																					
	<i>Galium divaricatum</i> Pourr. ex Lam.	M			RE																				
<i>Galium lucidum</i> All.	<i>Galium lucidum</i> All.		VU	B1ac(i)																VU	B1a; B1c(i)				+
<i>Galium pumilum</i> Murray	<i>Galium pumilum</i> Murray		NT								CR	B2a													
<i>Galium tenuissimum</i> M. Bieb.	<i>Galium tenuissimum</i> M. Bieb.		NT		CR	B2a(ii)b(iii)c(iv)																			
<i>Galium tricornutum</i> Dandy	<i>Galium tricornutum</i> Dandy	A	NT		CR	A2ac; B2a(i)b(iii,iv,v)c(iii,iv)					+														
<i>Galium valdepiosum</i> Heine Braun	<i>Galium valdepiosum</i> Heine Braun subsp. <i>valdepiosum</i>		EN	B2ab(iii)																			EN	B2a(ii)b(iii)	
<i>Genista tinctoria</i> L.	<i>Genista oligosperma</i> (Andrae) Simonk.	E	NT																						
<i>Genista tinctoria</i> L.	<i>Genista ovata</i> subsp. <i>mayeri</i> (Janka) Nyman		RE		RE																				
<i>Genista sagittalis</i> L.	<i>Genistella sagittalis</i> (L.) Gams		NT				+	VU	B2b(iii)																
<i>Genista subcapitata</i> Pančić	<i>Genista subcapitata</i> Pančić	M	VU	B1ab(ii); D2																					
<i>Gentiana acaulis</i> L.	<i>Gentiana acaulis</i> L.		NT																						
<i>Gentiana lutea</i> L.	<i>Gentiana lutea</i> L.		NT																						
<i>Gentiana nivalis</i> L.	<i>Gentiana nivalis</i> L.		NT		NT		+																		
<i>Gentiana pneumonanthe</i> L.	<i>Gentiana pneumonanthe</i> L.		NT		VU	B2a(i)b(i,iii,iv,v)																			
<i>Gentiana punctata</i> L.	<i>Gentiana punctata</i> L.		LC		NT		+																		
<i>Gentiana pyrenaica</i> L.	<i>Gentiana laciniata</i> Kit. ex Kanitz		VU	A2abcd																					
<i>Gentianella amarella</i> subsp. <i>lingulata</i> (C. Agardh) Holub	<i>Gentianella amarella</i> subsp. <i>lingulata</i> (C. Agardh) Holub		NT		EN	A2ac; B2a(i,ii)b(i,iii,iv,v)																			
<i>Gentianella amarella</i> subsp. <i>lingulata</i> (C. Agardh) Holub	<i>Gentianella amarella</i> (L.) Börner subsp. <i>livonica</i> (Ledeb.) Dostál		EN	B2b(iii)c(i,iii,iv)				EN	B2b(iii)+c(i,iii,iv)																
<i>Gentianella austriaca</i> (A. Kern. & Jos. Kern.) Holub	<i>Gentianella austriaca</i> (A. Kern. & J. Kern.) Holub		VU	B2b(iii)c(i,iii,iv)				VU	B2b(iii)+c(i,iii,iv)																
<i>Gentianella tenella</i> (Rottb.) Börner	<i>Gentianella tenella</i> (Rottb.) Börner		NT				+				VU	B2a													
<i>Geranium bobemicum</i> L.	<i>Geranium bobemicum</i> L.		VU	B1ab(iii)	EN	B2a(i)b(iii)c(i,iii,iv)																			
<i>Geranium rotundifolium</i> L.	<i>Geranium rotundifolium</i> L.	N	NT		EN	B1a(i)b(iii)																			
<i>Geranium subcaulescens</i> DC.	<i>Geranium cinereum</i> Cav. subsp. <i>subcaulescens</i> (L., Her. ex DC.) Hayek		CR	B2ab(iv); D																					
<i>Geranium sylvaticum</i> L.	<i>Geranium sylvaticum</i> L.		LC				+	CR	B2ab(i,ii,v); C1a(i,ii); D																

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit	
<i>Geum aleppicum</i> Jacq.	<i>Geum aleppicum</i> Jacq.		NT				+	EN	B2b(iii)																
<i>Geum rivale</i> L.	<i>Geum rivale</i> L.		LC				+	CR	B2ab(iii); C2a(ii)				+			+									
<i>Gladiolus imbricatus</i> L.	<i>Gladiolus imbricatus</i> L.		LC				+	EN	B2a; B2b(iii)				+	VU	A1abcd									+	
<i>Gladiolus palustris</i> Gaudin	<i>Gladiolus palustris</i> Gaudin	H	EN	B1ab(iii)				CR	A4; D1						DD									+	
<i>Glancium corniculatum</i> (L.) Rudolph	<i>Glancium corniculatum</i> (L.) Rudolph	A, M	NT		CR	A4ac; B2a(ii)b(iii,iv)c(iii,iv)				+															
<i>Glauco maritima</i> L.	<i>Glauco maritima</i> L.		EN	B2ab(iii,iv,v)	EN	B2a(i)b(iii,iv,v)																			
<i>Globularia bisnagarica</i> L.	<i>Globularia bisnagarica</i> L.		LC				+										CR	B2a; B2c(vi)							
<i>Glyceria declinata</i> Bréb.	<i>Glyceria declinata</i> Bréb.		VU	B2ab(iii)			+	VU	B2a; B2bb(iii)				+												
<i>Glyceria nemoralis</i> (R. Uechtr.) R. Uechtr. & Körn.	<i>Glyceria nemoralis</i> (Uechtr.) Uechtr. & Koern.		NT				+	VU	B2b(iii, iv)				+											+	
<i>Gnaphalium boppeanum</i> W. D. J. Koch	<i>Gnaphalium boppeanum</i> W. D. J. Koch		NT		EN	B2a(ii)b(ii,iv,v)					VU	Ca(i)													
<i>Goodyera repens</i> (L.) R. Br.	<i>Goodyera repens</i> (L.) R. Br.		LC				+						+	VU	A2abc									+	
<i>Gratiola officinalis</i> L.	<i>Gratiola officinalis</i> L.	M	NT		VU	B1a(i)b(iii)				+														+	
<i>Gymnadenia carpatia</i> (Zapal.) Teppner & E. Klein	<i>Nigritella carpatia</i> (Zapal.) Teppner, Klein & Zagulski	E	CR	C2b											CR	C2b									
<i>Gymnadenia conopsea</i> (L.) R. Br.	<i>Gymnadenia conopsea</i> (L.) R. Br.		LC				+			+			+	VU	A3bcd								+	LC	
<i>Gymnadenia frivaldii</i> Hampe ex Griseb.	<i>Pseudoborchis frivaldii</i> (Hampe ex Griseb.)		CR	C2a(i)													CR	C2a(i)							
<i>Gymnadenia odoratissima</i> (L.) Rich.	<i>Gymnadenia odoratissima</i> (L.) Rich.		LC				+	EN	B2b(iv); C2a(i)				+	CR	B1ab(i,iii,iv,v)									+	
<i>Gypsophila fastigiata</i> subsp. <i>arenaria</i> (Waldst. & Kit.) Domin	<i>Gypsophila fastigiata</i> subsp. <i>arenaria</i> (Waldst. & Kit. ex Willd.) Domin		EN	B2ab(iii)	EN	B2a(ii)b(iii)																			
<i>Gypsophila paniculata</i> L.	<i>Gypsophila paniculata</i> L.	M	LC		EN	B2a(ii)b(iii)				+															
<i>Hackelia deflexa</i> (Wahlenb.) Opiz	<i>Hackelia deflexa</i> (Wahlenb.) Opiz		VU	B2ab(iii,iv,v)	VU	B2a(i)b(iii,iv,v)																			
<i>Hammarbia paludosa</i> (L.) Kuntze	<i>Hammarbia paludosa</i> (L.) Kuntze		EN	C2a(i)											EN	B2ab(i,iii,iv)	CR	C2a(i)							
<i>Hedysarum bedysaroides</i> (L.) Schinz & Thell.	<i>Hedysarum bedysaroides</i> (L.) Schinz & Thell.		LC				+						+	CR	A4abcd									+	
<i>Helianthemum alpestre</i> subsp. <i>rupifragum</i> (A. Kern.) Jáv.	<i>Helianthemum alpestre</i> (Jacq.) Dunal subsp. <i>rupifragum</i> (A. Kern.) Jáv.		LC				+				VU	B2a												+	
<i>Helictobloa compressa</i> (Heuff.) Romero Zarco	<i>Helictotrichon compressum</i> (Heuff.) Henrard		VU	B2ab(iii)				VU	B2a; B2b(iii)															+	
<i>Helictobloa planiculmis</i> (Schr.) Romero Zarco	<i>Avenula planiculmis</i> (Schr.) W. Sauer & Chmelitschek var. <i>planiculmis</i>		NT				+				VU	D2; C				+								+	
<i>Helictobloa pratensis</i> subsp. <i>hirtifolia</i> (Podp.) Romero Zarco	<i>Avenula pratensis</i> subsp. <i>hirtifolia</i> (Podp.) Holub		VU	D1+2	VU	D1+D2(i,ii)																			
<i>Helictotrichon desertorum</i> subsp. <i>basalticum</i> (Podp.) Holub	<i>Helictotrichon desertorum</i> subsp. <i>basalticum</i> (Podp.) Holub		EN	B2ab(iii)																			EN	B2a(ii)b(iii)	
<i>Heliotropium europaeum</i> L.	<i>Heliotropium europaeum</i> L.	A	LC		EN	B1a(i)b(iii)c(iv)				+														+	
<i>Helleborus purpurascens</i> Waldst. & Kit.	<i>Helleborus purpurascens</i> Waldst. & Kit.		LC				+			+	VU	A1a; B2a				+								+	
<i>Helminthotheca echioides</i> (L.) Holub	<i>Helminthotheca echioides</i> (L.) Holub	N	VU	B1ab(v)c(iv)	CR	B2a(ii)c(iv)																		+	
<i>Helosciadium nodiflorum</i> (L.) W. D. J. Koch	<i>Apium nodiflorum</i> (L.) Lag.		RE														RE								
<i>Helosciadium repens</i> (Jacq.) W. D. J. Koch	<i>Apium repens</i> (Jacq.) Lag.		RE?														RE?								
<i>Hepatica nobilis</i> Schreb.	<i>Hepatica nobilis</i> Schreb.		LC				+	EN	A4c; B2ab (iii,iv); C2a(ii)				+											+	
<i>Heraclium carpaticum</i> Porcius	<i>Heraclium carpaticum</i> Porcius	E	CR	B1ac(iii)													+	CR	B1a; B1c(iii)						
<i>Herninium monorchis</i> (L.) R. Br.	<i>Herninium monorchis</i> (L.) R. Br.		NT		CR	A2ac; B2a(i)b(iii,iv,v)c(iv); C2a(i)+C2b								EN	B2ab(iii,iv,v)									+	
<i>Herniaria hirsuta</i> L.	<i>Herniaria hirsuta</i> L.	A	VU	B1ab(i)	EN	B2a(i)b(iii)		RE																+	
<i>Herniaria incana</i> Lam.	<i>Herniaria incana</i> Lam.		NT		CR	B2a(i)b(iii)		EN	B2a; B2b(iii)															+	
<i>Hesperis matronalis</i> subsp. <i>candida</i> (Schulzer, Kanitz & Knapp) Thell.	<i>Hesperis matronalis</i> L. subsp. <i>vrabelyana</i> (Schur) Soó	E	EN	B2ab(i,ii,v)				EN	B2ab(i, ii, v)				+												
<i>Hesperis slovacica</i> (F. Dvořák) F. Dvořák	<i>Hesperis slovacica</i> (F. Dvořák) F. Dvořák	E	VU	B2ab(iii,iv,v)	VU	B2a(i)b(iii,iv,v)																			
<i>Hieracium austrotaticum</i> Szelag	<i>Hieracium austrotaticum</i> Szelag		VU	D2	VU	D2(i,ii)																			
<i>Hieracium bifidum</i> Hornem.	<i>Hieracium bifidum</i> Hornem. subsp. <i>stolanum</i> Zahn	M	RE?																				RE?		
<i>Hieracium bupleuroides</i> C. C. Gmel.	<i>Hieracium bupleuroides</i> C. C. Gmel.		LC				+	EN	C2a(i, ii)				+												
<i>Hieracium jurassicum</i> Griseb.	<i>Hieracium jurassicum</i> Griseb. subsp. <i>papyraceum</i> (Zahn) NN	M	RE?																				RE?		
<i>Hieracium krizsnae</i> Lengyel & Zahn	<i>Hieracium krizsnae</i> Lengyel & Zahn		EX?		EX?																				

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit	
<i>Hieracium mlinicae</i> (Hruby & Zahn) Chrtek f. & Mráz	<i>Hieracium mlinicae</i> (Hruby & Zahn) Chrtek f. & Mráz	E	VU	D2	VU	D2(i,ii)							+												
<i>Hieracium piliferum</i> Hoppe	<i>Hieracium piliferum</i> Hoppe		VU	D1+2	VU	D1+D2(i,ii)					CR	D													
<i>Hieracium piliferum</i> subsp. <i>glanduliferum</i> (Hoppe) Zahn	<i>Hieracium glanduliferum</i> Hoppe		RE?		RE?																				
<i>Hieracium racemosum</i> subsp. <i>barbatum</i> (Froel.) Zahn	<i>Hieracium barbatum</i> Tausch		EN	B2ab(ii); C2a(i)							EN	B2a; C2a(i)													
<i>Hieracium slovacum</i> Chrtek f.	<i>Hieracium slovacum</i> Chrtek jun.	E	VU	D2	VU	D2(i,ii)																			
<i>Hieracium sparsum</i> subsp. <i>silesiacum</i> (E. Krause) Zahn	<i>Hieracium silesiacum</i> E. Krause		VU	D2	VU	D2(i)					CR	B2a; D													
<i>Hieracium sparsum</i> subsp. <i>vierhapperi</i> (Zahn) Szelag	<i>Hieracium vierhapperi</i> (Zahn) Szelag		VU	D2	VU	D2(i,ii)							+												
<i>Hierochloë australis</i> (Schrad.) Roem. & Schult.	<i>Hierochloë australis</i> (Schrad.) Roem. & Schult.		EN	B2ab(iii)																		EN	B2a(ii)b(iii)		
<i>Himantoglossum adriaticum</i> H. Baumann	<i>Himantoglossum adriaticum</i> H. Baumann	H	EN	B2ab(iii)c(iii,iv)	EN	B2a(i)b(iii)c(iii,iv)	RE																		
<i>Himantoglossum caprinum</i> (M. Bieb.) Spreng.	<i>Himantoglossum caprinum</i> (M. Bieb.) Spreng.	B, H	VU	B1ab(iii)c(iii,iv)	CR	B2a(i)b(iii)c(iii,iv)	EN	B2b(ii); C2a(i)																	
<i>Hippocrepis comosa</i> L.	<i>Hippocrepis comosa</i> L.		LC				+			+							VU	D1							
<i>Hippocrepis emerus</i> subsp. <i>emeroides</i> (Boiss. & Spruner) Lassen	<i>Coronilla emerus</i> L. subsp. <i>emeroides</i> (Boiss. Spruner) Hayek		VU	B2ac(iii)													VU	B2a; B2c(iii)							
<i>Hippocrepis emerus</i> (L.) Lassen subsp. <i>emerus</i>	<i>Hippocrepis emerus</i> (L.) Lassen subsp. <i>emerus</i>		VU	B1ab(iii)	EN	D																			
<i>Hippuris vulgaris</i> L.	<i>Hippuris vulgaris</i> L.	M	CR	B1ab(i,iii)	RE						RE														
<i>Hornungia petraea</i> (L.) Rchb.	<i>Hornungia petraea</i> (L.) Rchb.		NT				+	RE									EN	B1a; B1c(iii)							
<i>Hottonia palustris</i> L.	<i>Hottonia palustris</i> L.		NT		EN	B2a(i,ii)b(iv)c(iii,iv)		VU	A4ac				+			+									
<i>Hyperzia selago</i> (L.) Schrank & Mart.	<i>Hyperzia selago</i> (L.) Bernh.		LC				+	EN	C1; C2b				+	VU	A4abcd										
<i>Hydrocotyle vulgaris</i> L.	<i>Hydrocotyle vulgaris</i> L.		EN	B2ab(iii)	EN	B2a(i)b(iii)																			
<i>Hydrocharis morsus-ranae</i> L.	<i>Hydrocharis morsus-ranae</i> L.		VU	B1ab(i)	CR(PE)								+			+									
<i>Hypericum elegans</i> Willd.	<i>Hypericum elegans</i> Stephan ex Willd.		VU	B1ab(i,ii,v)			EN	B2ab(i, ii, v)																	
<i>Hypericum rochelii</i> Griseb. & Schenk	<i>Hypericum rochelii</i> Griseb. & Schenk		EN	B2ac(iii)													EN	B2a; B2c(iii)		DD					
<i>Hypericum umbellatum</i> A. Kern.	<i>Hypericum umbellatum</i> A. Kern.		CR	B2ac(iii)													CR	B2a; B2c(iii)							
<i>Hypochaeris glabra</i> L.	<i>Hypochaeris glabra</i> L.		NT		RE								+			+									
<i>Iris aphylla</i> subsp. <i>hungarica</i> (Waldst. & Kit.) Hegi	<i>Iris aphylla</i> subsp. <i>hungarica</i> (Waldst. & Kit.) Hegi	H	NT		VU	B2a(i)b(ii,iii)c(iv)		VU	B1; C1																
<i>Iris graminea</i> L.	<i>Iris graminea</i> L.		NT				+			+	RE					+									
<i>Iris graminea</i> L.	<i>Iris pseudocyperus</i> Schur	M	NT														EN	B1ab(i,ii,iii,iv,v)							
<i>Iris humilis</i> Georgi	<i>Iris humilis</i> Georgi	H	EN	D																					
	<i>Iris arenaria</i> W. & K.							CR	D1																
<i>Iris pumila</i> L.	<i>Iris pumila</i> L. subsp. <i>pumila</i>		LC				+			+												EN	B2c; E		
<i>Iris reichenbachii</i> Heuff.	<i>Iris reichenbachii</i> Heuff.		VU	B1ab(i)													CR	B2a; B2c(ii)					+		
<i>Iris sibirica</i> L.	<i>Iris sibirica</i> L.		NT		VU	A2ac; B1a(i)b(iii,iv,v)							+			+	VU	A3abcd							
<i>Iris spuria</i> L. subsp. <i>spuria</i>	<i>Iris spuria</i> L. subsp. <i>spuria</i>	M	VU	B1ab(iii)	CR	B1a(ii)b(iii)	EN	B2a; B2b(iii)																	
<i>Iris variegata</i> L.	<i>Iris variegata</i> L.		LC		VU	B2a(ii)b(iii)							+										+		
<i>Isatis praecox</i> Tratt.	<i>Isatis praecox</i> Kit. ex Tratt.		NT		VU	B1a(i)b(iii); C2a(i); D2(i)																			
<i>Isatis tinctoria</i> L.	<i>Isatis tinctoria</i> L.		NT				+	VU	A3c																
<i>Isolepis setacea</i> (L.) R. Br.	<i>Isolepis setacea</i> (L.) R. Br.		VU	A2ac; B2ab(iii,iv,v)	VU	A2ac; B2a(i)b(iii,iv,v)																			
<i>Jacobaea abrotanifolia</i> subsp. <i>carpathica</i> (Herbich) B. Nord. & Greuter	<i>Senecio carpathicus</i> Herbich		LC				+							EN	B2ab(ii,iii)										
<i>Jacobaea aquatica</i> (Hill) G. Gaertn. & al.	<i>Senecio aquaticus</i> Hill		EN	B1ac(iv)				EN	B1ac(iv)								EN	B2a; B2c(iv); D							
<i>Jacobaea erucifolia</i> subsp. <i>tenuifolia</i> (J. Presl & K. Presl) B. Nord. & Greuter	<i>Jacobaea erucifolia</i> subsp. <i>tenuifolia</i> (J. Presl & K. Presl) B. Nord. & Greuter		NT		EN	A2ac; B2a(i)b(iii,iv,v)							+												
<i>Jacobaea paludosa</i> (L.) G. Gaertn. & al. subsp. <i>paludosa</i>	<i>Jacobaea paludosa</i> (L.) P. Gaertn., B. Mey. & Scherb. subsp. <i>paludosa</i>		EN	B2ab(i,ii)	CR	A2ac; B2a(ii)b(i,ii); D																			
<i>Jasione montana</i> L.	<i>Jasione montana</i> L.		NT		VU	B1a(i)b(iii)							+			+									
<i>Joribarba globifera</i> subsp. <i>birta</i> (L.) J. Parn. <i>Joribarba birta</i> (L.) Opiz	<i>Joribarba birta</i> (L.) J. Parn. <i>Joribarba birta</i> (L.) Opiz		LC				+						+	EN	A4abcd										
<i>Juncus acutiflorus</i> Ehrh. ex Hoffm.	<i>Juncus acutiflorus</i> Ehrh. ex Hoffm.		VU	B1ab(iii)	CR	B2a(i)b(iii)																			
<i>Juncus castaneus</i> Sm.	<i>Juncus castaneus</i> Sm.		EN	A2ac; B1ab(iii,iv,v)	CR	A2ac; B2a(i)b(iii,iv,v)																			
<i>Juncus gerardii</i> Loisel. subsp. <i>gerardii</i>	<i>Juncus gerardii</i> Loisel. subsp. <i>gerardii</i>	M	NT		EN	B2a(ii)b(iii)							+												



EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit
<i>Lilium martagon</i> L.	<i>Lilium martagon</i> L.		LC				+			+				VU	Aabcd				+	LC				
<i>Linaria alpina</i> (L.) Mill.	<i>Linaria alpina</i> (L.) Mill.		VU	C2a(i)	CR	D											VU	C2a(i)						
<i>Linaria angustissima</i> (Loisel.) Borbás	<i>Linaria pallidiflora</i> (Lam.) Valdés	M	NT		VU	B1a(i)b(iii,iv,v)				+						+			+					
	<i>Linaria angustissima</i> (Loisel.) Borbás subsp. <i>strictissima</i>																			DD				
<i>Linaria arvensis</i> (L.) Desf.	<i>Linaria arvensis</i> (L.) Desf.	A	RE		RE																			
<i>Lindernia procumbens</i> (Krock.) Philcox	<i>Lindernia procumbens</i> (Krock.) Philcox	B, M, N	NT		VU	D2(i,ii)		VU	C2a(ii); C2b							+			+					
<i>Linnaea borealis</i> L.	<i>Linnaea borealis</i> L.		EN	B1ab(iv); C2a(i)	EN	B2a(ii)b(i,ii,iv)								CR	B2ab(iii,iv)				+					
	<i>Linnaea borealis</i> L. subsp. <i>borealis</i>										CR	C2a(i)												
<i>Linum hirsutum</i> subsp. <i>glabrescens</i> (Roche) Soó	<i>Linum hirsutum</i> subsp. <i>glabrescens</i> (Roche) Soó		EN	B2ab(i,ii,iv)c(i,iii)	EN	B2a(i,ii)b(i,iii,iv)c(i,iii)																		
<i>Linum trigynum</i> L.	<i>Linum trigynum</i> L.	A	VU	B1ab(i)	CR	A2ac; B1a(i,ii)b(i,iii,iv,v)c(iv)		RE								+			+					
<i>Liparis loeselii</i> (L.) Rich.	<i>Liparis loeselii</i> (L.) Rich.	B, H	VU	B1ab(iii)c(iv)	CR	B2a(ii)b(iii)c(iv); C2a(ii)														DD				+
<i>Lloydia serotina</i> (L.) Rehb	<i>Lloydia serotina</i> (L.) Rehb		LC				+										CR	B1ab(i,ii,iii,iv)						+
<i>Loiseleuria procumbens</i> (L.) Desv.	<i>Loiseleuria procumbens</i> (L.) Desv.		NT		EN	B2a(i)b(i,iii,iv,v)								VU	A2abcd									+
<i>Lolium remotum</i> Schrank	<i>Lolium remotum</i> Schrank	A	CR	B1ab(i,iii)	RE																			+
<i>Lolium temulentum</i> L.	<i>Lolium temulentum</i> L. subsp. <i>temulentum</i>	A, M	NT		CR	A2ac; B2a(i,ii)b(iii,iv); C2a(ii)		RE								+			+					+
<i>Lonicera alpigena</i> L.	<i>Lonicera alpigena</i> L.		VU	B1ab(i)	VU	D2(i,ii)																		+
<i>Lonicera caerulea</i> L.	<i>Lonicera caerulea</i> L.		VU	B1ab(iv)										CR	B2ab(i,ii,iii)		VU	C1b						
<i>Lonicera nigra</i> L.	<i>Lonicera nigra</i> L.		LC				+	CR	B2a; D1							+			+					+
<i>Lotus borbasii</i> Ujhelyi	<i>Lotus borbasii</i> Ujhelyi		NT		EN	B1a(i)b(iii)		VU	B2b(i,ii)															
<i>Lotus maritimus</i> L.	<i>Tetragonolobus maritimus</i> (L.) Roth		NT		EN	B1a(i)b(iii)				+									+					
<i>Lotus pedunculatus</i> Cav.	<i>Lotus uliginosus</i> Schkuhr		NT		EN	B1a(i)b(iii)													+					
<i>Ludwigia palustris</i> (L.) Elliott	<i>Ludwigia palustris</i> (L.) Elliott		DD														DD							+
<i>Lycopodiella inundata</i> (L.) Holub	<i>Lycopodiella inundata</i> (L.) Holub		EN	A2ac; B1ab(iii,iv,v)	CR	A2ac; B1a(i)b(iii,iv,v)											+	CR	B2ab(i,ii,iii)					+
<i>Lycopodium alpinum</i> L.	<i>Diphasiastrum alpinum</i> (L.) Holub		NT				+							VU	A4abcd									+
<i>Lycopodium annotinum</i> L.	<i>Lycopodium annotinum</i> L.		LC				+	EN	C2a(i)					VU	A1abcd									+
<i>Lycopodium clavatum</i> L.	<i>Lycopodium clavatum</i> L.		LC				+	VU	B2a; B2c(iv)							+			+	EN	B2b,c,d,e			
<i>Lycopodium complanatum</i> L.	<i>Diphasiastrum complanatum</i> (L.) Holub		NT																					
	<i>Diphasium complanatum</i> (L.) Rothm.				VU	B2a(i)b(iii)													+	DD				+
	<i>Diphasium complanatum</i> (L.) Rothm.							VU	B2b(iii, iv)															
<i>Lycopodium issleri</i> (Rouy) Domin	<i>Diphasiastrum issleri</i> (Rouy) Holub		CR	C2a(i)	RE			RE			CR	C2a(i)		CR	B2ab(i,iii,iv)									
<i>Lycopodium zeileri</i> (Rouy) Greuter & Burdet	<i>Diphasiastrum zeileri</i> (Rouy) Holub		VU	B2ab(ii)							VU	B2a												
<i>Lysimachia nemorum</i> L.	<i>Lysimachia nemorum</i> L.		LC				+										CR	C2b						
<i>Lysimachia thyriflora</i> L.	<i>Lysimachia thyriflora</i> L.		NT		EN	B2a(ii)b(iii,iv,v)		RE											+	VU	B2a; B2c(ii)			
<i>Malaxis monophyllos</i> (L.) Sw.	<i>Malaxis monophyllos</i> (L.) Sw.		LC		NT						EN	C2a(i); D		EN	C2a(i)									+
<i>Malcolmia orsiniana</i> (Ten.) Ten.	<i>Malcolmia orsiniana</i> (Ten.) Ten. subsp. <i>serbica</i> (Pančić) Greuter & Burdet	M	VU	B2ab(ii)																		VU	B1	
<i>Marrubium vulgare</i> L.	<i>Marrubium vulgare</i> L.	A	NT		VU	A2ad; B2a(ii)b(ii,iv)											+			+				+
<i>Medicago monspeliaca</i> (L.) Trautv.	<i>Medicago monspeliaca</i> (L.) Trautv.	M	VU	B1ab(iii)	EN	B1a(i)b(iii)																		
<i>Medicago prostrata</i> Jacq.	<i>Medicago prostrata</i> Jacq.		NT		VU	B1a(i)b(iii)																		+
<i>Medicago rigidula</i> (L.) All.	<i>Medicago rigidula</i> (L.) All.	M, N	NT		CR	B1a(i)b(iii)		EN	B2ab(i, ii, iv)															+
<i>Melampyrum barbatum</i> Waldst. & Kit. ex Willd. subsp. <i>barbatum</i>	<i>Melampyrum barbatum</i> Waldst. & Kit. ex Willd. subsp. <i>barbatum</i>	N	NT		VU	A2ac; B2a(i)b(ii,iii,iv,v)c(iv)																		+
<i>Melampyrum herbichii</i> Wol.	<i>Melampyrum herbichii</i> Wol.	E	NT		VU	A2ce; B2a(i,ii)b(iii)													+					+
<i>Melampyrum saxosum</i> Baumg.	<i>Melampyrum saxosum</i> Baumg.	E	NT								VU	B2a							+					+
<i>Melica altissima</i> L.	<i>Melica altissima</i> L.	N	LC		CR	B1a(i)b(iii)																		+
<i>Melilotus altissimus</i> Thuill.	<i>Melilotus altissimus</i> Thuill.	M	VU	A2acd; B2ab(i,ii,iii)	VU	A2acd; B2a(ii)b(i,ii,iii)																		+
<i>Menyanthes trifoliata</i> L.	<i>Menyanthes trifoliata</i> L.		LC				+	VU	B2b(i,ii)										+					+
<i>Minnartia glaucina</i> Dvořáková	<i>Minnartia glaucina</i> Dvořáková		NT		VU	A2ac; B2b(i,iii)																		+
<i>Minnartia glomerata</i> (M. Bieb.) Degen subsp. <i>pannonica</i> Letz.	<i>Minnartia glomerata</i> (M. Bieb.) Degen subsp. <i>pannonica</i> Letz.		VU	B1ab(iii)	CR	B2a(ii)b(iii)																		+
<i>Minnartia hirsuta</i> subsp. <i>frutescens</i> (Kit.) Hand.-Mazz.	<i>Minnartia frutescens</i> (Kit. ex Schult.) Tuzson ex Degen		NT		VU	A2ace; B2a(i)b(ii,v); C2a(i)																		+
<i>Minnartia laricifolia</i> subsp. <i>kitabelii</i> (Nyman) Mattf.	<i>Minnartia laricifolia</i> (L.) Schinz & Thell. subsp. <i>kitabelii</i> (Nyman) Mattf.		LC				+										CR	C1a(i)						

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit
<i>Minnartia setacea</i> (Thuill.) Hayek	<i>Minnartia setacea</i> (Thuill.) Hayek			NT			+			+	CR	A2a; B2a							+					
<i>Minnartia verna</i> (L.) Hiern subsp. <i>verna</i>	<i>Minnartia pauciflora</i> (Kit. ex Kanitz) Dvořáková	E		NT			+						+	CR	A4abc								+	
<i>Minnartia verna</i> subsp. <i>ocypetala</i> (Woll.) G. Halliday	<i>Minnartia ocypetala</i> (Wol.) Kulcz.	E		EN		A2ac								CR	A3bc								+	
<i>Minnartia viscosa</i> (Schreb.) Schinz & Thell.	<i>Minnartia viscosa</i> (Schreb.) Schinz & Thell.	M		EN		B1ab(i)	RE			+														
<i>Moebria muscosa</i> L.	<i>Moebria muscosa</i> L.			LC				+	VU		A4ac; C2a(i)					+							+	
<i>Moenchia mantica</i> (L.) Bartl. subsp. <i>mantica</i>	<i>Moenchia mantica</i> (L.) Bartl. subsp. <i>mantica</i>	M, N		LC			RE			+													+	
<i>Moneses uniflora</i> (L.) A. Gray	<i>Moneses uniflora</i> (L.) A. Gray			LC				+	VU		A4acd; C2a(i)					+							+	
<i>Montia arvensis</i> Wallr.	<i>Montia arvensis</i> Wallr.			CR(PE)			CR(PE)																	
<i>Montia fontana</i> L.	<i>Montia fontana</i> L.			VU		A2ac; B1ab(iii)c(iii,iv)	CR						+										+	
<i>Muscari botryoides</i> (L.) Mill.	<i>Muscari botryoides</i> (L.) Mill.	A		LC				+						EN	A1abcd								+	
<i>Myosotis discolor</i> Pers.	<i>Myosotis discolor</i> Pers. subsp. <i>discolor</i>			NT					VU		A2ac; B2a(i)b(i,ii,iii,iv,v)													
<i>Myosotis discolor</i> Pers.	<i>Myosotis discolor</i> Pers.			NT													EN	B1a; B1c(iv)						
<i>Myosotis laxa</i> subsp. <i>caespitosa</i> (Schultz) Nordh.	<i>Myosotis caespitosa</i> Schultz			NT			EN		A2ac; B2a(i,ii)b(iii,iv,v)					VU	B2a(i,ii)b(iii,iv,v)				+				+	
<i>Myosotis stenophylla</i> Knaf	<i>Myosotis stenophylla</i> Knaf			NT			VU		B2a(i,ii)b(iii,iv,v)c(iv); C2a(i)b(iv)										+				+	
<i>Myricaria germanica</i> (L.) Desv.	<i>Myricaria germanica</i> (L.) Desv.			NT			VU		A1ac; B1a(i)b(iii,iv,v)		CR	D1											+	
<i>Myriophyllum verticillatum</i> L.	<i>Myriophyllum verticillatum</i> L.			NT			VU		B2a(i,ii)c(iii,iv)				+										+	
<i>Narcissus poeticus</i> subsp. <i>radiiflorus</i> (Salisb.) Baker	<i>Narcissus angustifolius</i> Curtis	B		VU		A4abcd								VU	A4abcd								+	
<i>Nasturtium officinale</i> (L.) R. Br.	<i>Nasturtium officinale</i> R. Br.			LC			CR		B2a(ii)b(iii)c(iii,iv)				+										+	
<i>Neotinea ustulata</i> (L.) R. M. Bateman, Pridgeon & M. W. Chase	<i>Orchis ustulata</i> L.			NT										VU	B2a; B2b(iii)		CR	C2a(i)					+	LC
	<i>Neotinea ustulata</i> (L.) R. M. Bateman, Pridgeon & M. W. Chase			NT										EN	A2abcd									
	<i>Neotinea ustulata</i> (L.) R. M. Bateman, Pridgeon & M. W. Chase subsp. <i>ustulata</i>			NT			EN		B2a(i)b(iii)c(iv)															
<i>Neottia cordata</i> (L.) Rich	<i>Listera cordata</i> (L.) R. Br.			NT				+						CR	A4abc								+	
<i>Neottia nidus-avis</i> (L.) Rich.	<i>Neottia nidus-avis</i> (L.) Rich.			LC				+					+	VU	A2abcd								+	LC
<i>Neottia ovata</i> (L.) Bluff & Fingerh.	<i>Listera ovata</i> (L.) R. Br.			LC				+					+	VU	A2abcd								+	LC
<i>Nepeta rtanjensis</i> Diklić & Milojević	<i>Nepeta rtanjensis</i> Diklić & Milojević			CR		B2ac(ii,iii)																	CR	B2c
<i>Nocca banatica</i> (R. Uechtr.) F. K. Mey.	<i>Thlaspi dacinum</i> Heuff. subsp. <i>banaticum</i> (R. Uechtr.) Jáv.	E		NT																			VU	B2a; B2c(iii)
<i>Nocca jankae</i> (A. Kern.) F. K. Mey.	<i>Thlaspi jankae</i> A. Kern.	B, E, H		NT			VU		B2a(i)b(iii)				+										+	
<i>Nocca kovatsii</i> (Heuff.) F. K. Mey.	<i>Thlaspi kovatsii</i> Heuff. subsp. <i>schudichii</i> (Soó) Soó			LC							CR	B2ab(i, ii, iii, v)											+	
<i>Nocca montana</i> (L.) F. K. Mey.	<i>Thlaspi montanum</i> L.			EN		B2ab(iii,iv,v)	EN		B2a(i)b(iii,iv,v)															
<i>Nuphar lutea</i> (L.) Sm.	<i>Nuphar lutea</i> (L.) Sm.	M		NT			EN		A2acd				+											+
<i>Nymphaea alba</i> L.	<i>Nymphaea alba</i> L.	M		NT			RE						+											+
<i>Odontites vernus</i> (Bellardi) Dumort.	<i>Odontites verna</i> (Bellardi) Dumort.			DD			CR(PE)																	
<i>Oenanthe banatica</i> Heuff.	<i>Oenanthe banatica</i> Heuff.	M		NT			EN		A2ac; B2a(i,ii)b(iii); D					VU	B2b(i,ii)								+	
<i>Oenanthe fistulosa</i> L.	<i>Oenanthe fistulosa</i> L.			NT				+	VU		B2b(i,ii)												+	
<i>Oenanthe silaifolia</i> M. Bieb.	<i>Oenanthe silaifolia</i> M. Bieb. subsp. <i>silaifolia</i>	M		NT			CR(PE)						+										+	
<i>Omphalodes scorpioides</i> (Haenke) Schrank	<i>Omphalodes scorpioides</i> (Haenke) Schrank			NT				+	VU		A4acd												+	
<i>Onobrychis montana</i> DC.	<i>Onobrychis montana</i> DC.			NT			VU		D2(i)					VU	D2; C								+	
<i>Onoclea struthiopteris</i> (L.) Roth	<i>Mattenucia struthiopteris</i> (L.) Tod.			LC				+	VU		D2												+	
<i>Ononis pusilla</i> L.	<i>Ononis pusilla</i> L.	M		NT			CR		A2ace; B2a(ii)b(iii,iv)				+											
<i>Onosma arenaria</i> Waldst. & Kit.	<i>Onosma arenaria</i> Waldst. & Kit.			CR		B2ab(ii,iii); D	CR		B2a(i)b(ii,iii); D															
<i>Onosma pseudoarenaria</i> Schur subsp. <i>pseudoarenaria</i>	<i>Onosma pseudoarenaria</i> Waldst. & Kit. subsp. <i>pseudoarenaria</i> (Schur) Jáv.			VU		C2a(i)																	VU	C2a(i)
<i>Onosma pseudoarenaria</i> subsp. <i>tuberculata</i> (Kit.) Rauschert	<i>Onosma pseudoarenaria</i> subsp. <i>tuberculata</i> (Kit.) Rauschert			VU		B1ab(i,iii); C2a(i)	CR		B2a(i)b(ii,iii)					VU	A4acd; C2a(i)									
<i>Onosma tornensis</i> Jáv.	<i>Onosma tornensis</i> Jáv.	B, E, H*		EN		B1ab(iii)	CR		B2a(i)b(ii,iii)					EN	B2ab(iii)									

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit	
<i>Onosma visianii</i> Clementi	<i>Onosma visianii</i> Clementi		VU	B1ab(iii,iv,v)	VU	B2a(i)b(iii,iv,v)		EN	A2ac; B2ab (i,ii,iii,iv)															+	
<i>Ophrys apifera</i> Huds.	<i>Ophrys apifera</i> Huds.		NT		VU	B1a(i)b(iii,iv,v)c(iv)		CR	B2b(v); B2c(iv); C2a(i)																
<i>Ophrys apifera</i> Huds.	<i>Ophrys apifera</i> Huds.		EN	B1ab(iii,v)c(iv)																					
	<i>Ophrys holoserica</i> (Burm. f.) Greuter				CR	B2a(i)b(iii)c(iv)																			
	<i>Ophrys holoserica</i> Burm. f.																CR	A2; B2a; B2b(v)							
<i>Ophrys fuciflora</i> (F. W. Schmidt) Moench subsp. <i>fuciflora</i>	<i>Ophrys fuciflora</i> (F. W. Schmidt) Moench		CR	A2; B2ab(v)													CR	A2; B2a; B2b(v)							
<i>Ophrys holoserica</i> subsp. <i>bolubyana</i> (András.) Dostál	<i>Ophrys bolubyana</i> András.		VU	A2ac; B1ab(iii,iv,v)c(iv)	VU	A2ac; B1a(i)b(iii,iv,v)c(iv)																			
<i>Ophrys insectifera</i> L.	<i>Ophrys insectifera</i> L.		LC																						
	<i>Ophrys muscifera</i> Hudson				NT		+	CR	B2a; C2a(i)		EN	C2a(i)	DD												
<i>Ophrys scolopax</i> subsp. <i>cornuta</i> (Steven) E. G. Camus	<i>Ophrys cornuta</i> Steven		CR	C2a(i)													CR	C2a(i)							
<i>Ophrys sphegodes</i> Mill.	<i>Ophrys sphegodes</i> Mill.		EN	B1ab(iii)c(iv)																					
	<i>Ophrys aranifera</i> Huds.				CR	B2a(i)b(iii)c(iv); D		CR	B2a; C2a(i)								CR	C2a(i)							
<i>Orchis mascula</i> (L.) L. subsp. <i>mascula</i>	<i>Orchis mascula</i> (L.) L.		VU	B2ab(i,ii,iii,iv,v)										VU	B2ab(i,ii,iii,iv,v)										+
<i>Orchis mascula</i> subsp. <i>speciosa</i> (Mutel) Hegi	<i>Orchis mascula</i> L. subsp. <i>signifera</i> (Vest) Soó		LC																						
	<i>Orchis signifera</i> Vest						+	VU	B2a; B2c(iv)				+												+
<i>Orchis militaris</i> L.	<i>Orchis militaris</i> L.		LC		NT						+	CR	B2a; D	VU	A2abcd					+					+
<i>Orchis pallens</i> L.	<i>Orchis pallens</i> L.		LC		NT						+	VU	A2a; C2a(i)	CR	C2b					+					
<i>Orchis purpurea</i> Huds.	<i>Orchis purpurea</i> Huds.		LC		NT						+	EN	B2a; C2a(i)	CR	A3bc					+					+
<i>Orchis simia</i> Lam.	<i>Orchis simia</i> Lam.		VU	B1ac(i,iv)				CR	B2a; B2c(iv); D1											+					+
<i>Orchis spitzgellii</i> W. D. J. Koch	<i>Orchis spitzgellii</i> W. D. J. Koch		EN	D	EN	D																			
<i>Oreochloa disticha</i> (Wulfen) Link	<i>Oreochloa disticha</i> (Wulfen) Link		LC				+									+	CR	C2a(ii)							+
<i>Ornithogalum comosum</i> L.	<i>Ornithogalum comosum</i> Torn.		EN	B1ab(i)	RE						+														+
<i>Ornithogalum sphaerocarpum</i> A. Kern.	<i>Ornithogalum pyrenaicum</i> subsp. <i>sphaerocarpum</i> (A. Kern.) Hegi		VU	A2ac; B1ab(i,iii,iv,v)c(iv)																					
	<i>Ornithogalum sphaerocarpum</i> A. Kern.				CR	A2ac; B2a(ii)b(i,iii,iv,v); C1+C2a(ii)																			
	<i>Ornithogalum sphaerocarpum</i> A. Kern.							VU	B2a; B2c(iv)																+
<i>Orobanche alba</i> Willd.	<i>Orobanche alba</i> Stephan ex Willd.		NT				+				+	VU	D2							+					+
<i>Orobanche alsatica</i> Kirschl.	<i>Orobanche alsatica</i> Kirschl.		NT		VU	B2a(i)b(iii,iv,v)					+														
<i>Orobanche alsatica</i> Kirschl.	<i>Orobanche mayeri</i> (Suess. & Ronniger) Bertsch		NT		VU	B1a(i,ii)b(iii,iv,v)																			
	<i>Orobanche mayeri</i> (Suess. & Ronniger) Bertsch & F. Bertsch																CR	C2a(i)b; D							
<i>Orobanche arenaria</i> Borkh.	<i>Phelipanche arenaria</i> (Borkh.) Pomel		NT		EN	B2a(i)b(iii,iv,v); C2a(i)																			
<i>Orobanche artemisiae-campestris</i> Gaudin	<i>Orobanche artemisiae-campestris</i> Vaucher ex Gaudin	M	EN	B1ab(iii)	CR	B2a(i,ii)b(iii); D																			+
<i>Orobanche artemisiae-campestris</i> Gaudin	<i>Orobanche picridis</i> F. W. Schultz ex W. D. J. Koch		VU	B1ab(iii,iv,v); C2(b)																					
	<i>Orobanche picridis</i> F. W. Schultz				VU	B2a(i,ii)b(iii,iv,v)																			
<i>Orobanche cernua</i> Loeffl.	<i>Orobanche cernua</i> L. in Loeffl.		CR	D				CR	D1																
<i>Orobanche coerulescens</i> Stephan	<i>Orobanche coerulescens</i> Stephan	M	EN	B1ab(iii,iv)	CR	B2a(i)b(iii,iv)		RE																	+
<i>Orobanche elatior</i> Sutton (sensu orig.)	<i>Orobanche elatior</i> Sutton		NT																						
	<i>Orobanche elatior</i> Sutton (sensu orig.)				CR	B2a(i,ii)b(iii); D					+														
<i>Orobanche flava</i> F. W. Schultz	<i>Orobanche flava</i> Mart.		LC				+	VU	D2				+												+
<i>Orobanche gracilis</i> Sm.	<i>Orobanche gracilis</i> Sm.	M	VU	B1ab(iii,iv,v)	VU	B1a(i)b(iii,iv,v)																			+
<i>Orobanche teucridii</i> Holandre	<i>Orobanche teucridii</i> Holandre	M	DD		EN	B2a(i,ii)b(iii); D					+														

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit	
<i>Osmunda regalis</i> L.	<i>Osmunda regalis</i> L.		RE?														RE?								
<i>Oxyria digyna</i> (L.) Hill	<i>Oxyria digyna</i> (L.) Hill		LC				+							EN	B2ab(ii,iii)				+						
<i>Oxytropis campestris</i> (L.) DC. subsp. <i>campestris</i>	<i>Oxytropis campestris</i> (L.) DC. subsp. <i>tatrae</i> (Borbás)		NT								VU	B2a								+					
	<i>Oxytropis campestris</i> subsp. <i>tatrae</i> (Borbás) Dostál	E			VU	D2(i)																			
<i>Oxytropis carpatia</i> R. Uechtr.	<i>Oxytropis carpatia</i> R. Uechtr.	E	NT				+				VU	C2a(i)				+									
<i>Oxytropis balleri</i> W. D. J. Koch	<i>Oxytropis balleri</i> Bunge		NT				+				VU	C2a(i)													
<i>Oxytropis neglecta</i> Ten.	<i>Oxytropis neglecta</i> Ten.		CR	B1ac(i)													CR	B1a; B1c(i)							
<i>Oxytropis pilosa</i> (L.) DC.	<i>Oxytropis pilosa</i> (L.) De Cand.		VU	B1ab(iii)				EN	D1											+	EN	B2b,c; C1			
<i>Paeonia daurica</i> Andrews	<i>Paeonia corallina</i> Retz.		EN	B2ab(ii,iii)																		EN	B2b,c,d		
<i>Paeonia tenuifolia</i> L.	<i>Paeonia tenuifolia</i> L.	B	CR	A3cd				CR	A3cd																
<i>Papaver argemone</i> L.	<i>Papaver argemone</i> L.	A	NT		CR	A2ac																			
<i>Papaver dubium</i> subsp. <i>confine</i> (Jord.) Hörandl	<i>Papaver confine</i> Jord.		DD		VU	A2ce; B2(ii)b(i,iii,iv)c(iii)																			
<i>Papaver dubium</i> L. subsp. <i>dubium</i>	<i>Papaver dubium</i> L. subsp. <i>dubium</i>	A	NT		CR	B2a(i)b(i,ii,iv); D																			
<i>Papaver tatricum</i> (A. Nyár.) Ehrend.	<i>Papaver tatricum</i> (A. Nyár.) Ehrend. subsp. <i>tatricum</i>	E	NT				+				VU	B2a; C2a(i)													
<i>Papaver tatricum</i> (A. Nyár.) Ehrend.	<i>Papaver tatricum</i> subsp. <i>fatraemagnae</i> Bernátová	E	EN	B2ab(iii,iv)c(iii,iv); C2a(i)	EN	B2a(i,ii)b(iii,iv,c)(iii,iv); C2a(i)																			
<i>Parnassia palustris</i> L.	<i>Parnassia palustris</i> L.		LC				+	VU	B2ab(i,ii,iii,iv)																
<i>Paronychia cephalotes</i> (M. Bieb.) Besser	<i>Paronychia cephalotes</i> (M. Bieb.) Bess.		NT					VU	B2ab(iii, iv)																
<i>Pastinaca hirsuta</i> Pančić	<i>Pastinaca hirsuta</i> Pančić	M	VU	B1ab(ii,iii)																			VU	B1	
<i>Pedicularis baumgartenii</i> Simonk.	<i>Pedicularis baumgartenii</i> Simonk.	E	CR	B1ac(iii)																			CR	B1a; B1c(iii)	
<i>Pedicularis comosa</i> L. subsp. <i>comosa</i>	<i>Pedicularis comosa</i> L. subsp. <i>comosa</i>		VU	B1ab(iii)	CR	C2a(i)																			
<i>Pedicularis bacquetii</i> Graf	<i>Pedicularis bacquetii</i> Graf		NT				+				VU	B2a													
<i>Pedicularis kaufmannii</i> Pinzger	<i>Pedicularis kaufmannii</i> Pinzger		CR	B2a; C2a(i); D							CR	B2a; C2a(i); D													
<i>Pedicularis oederi</i> Vahl	<i>Pedicularis oederi</i> Vahl		NT		LC		+																		
<i>Pedicularis sceptrum-carolinum</i> L.	<i>Pedicularis sceptrum-carolinum</i> L.		VU	A2ac; B1ab(iii,iv,v)	EN	A2ac; B2a(i)b(iii,iv,v)																			
<i>Pedicularis sylvatica</i> L.	<i>Pedicularis sylvatica</i> L. subsp. <i>sylvatica</i>		NT																						
	<i>Pedicularis sylvatica</i> L.				VU	B2a(i)b(i,iii,iv)																			
<i>Petrocallis pyrenaica</i> (L.) R. Br.	<i>Petrocallis pyrenaica</i> (L.) W. T. Aiton		VU	D2	VU	D2(i)																			
<i>Petrorhagia saxifraga</i> (L.) Link	<i>Petrorhagia saxifraga</i> (L.) Link		NT		VU	B2a(ii)b(iii,iv)																			
<i>Peucedanum arenarium</i> Waldst. & Kit. subsp. <i>arenarium</i>	<i>Peucedanum arenarium</i> Waldst. & Kit.	M	CR	A2ad; B2ab(iii); C2a(ii)	CR	A2ad; B2a(ii)b(iii); C2a(ii)		RE																	
<i>Phegopteris connectilis</i> (Michx.) Watt	<i>Phegopteris connectilis</i> (Michx.) Watt		LC				+	VU	B2a; B2c(iv)																
<i>Phyteuma orbiculare</i> L.	<i>Phyteuma orbiculare</i> L.		LC				+	VU	B2ab(iii)																
<i>Pilosella echioides</i> (Lum.) F. W. Schultz & Sch. Bip.	<i>Pilosella echioides</i> (Lum.) F. W. Schultz & Sch. Bip.	M	NT		VU	D2(i,ii)																			
<i>Pilosella enchaetia</i> (Nägeli & Peter) Soják	<i>Pilosella enchaetia</i> (Nägeli & Peter) Soják		VU	B1ab(iii)																				VU	B1a(ii)b(iii)
<i>Pilosella fallacina</i> (F. W. Schultz) F. W. Schultz	<i>Pilosella fallacina</i> (F. W. Schultz) F. W. Schultz		VU	B1ab(iii)																				VU	B1a(ii)b(iii)
<i>Pilosella guthnickiana</i> (Hegetschw.) Soják	<i>Pilosella guthnickiana</i> (Hegetschw.) Soják		VU	D2	VU	D2(i,ii)																			
<i>Pilosella iserana</i> (R. Uechtr.) Soják	<i>Pilosella callimorpha</i> (Nägeli & Peter) Soják		RE?																						
<i>Pilosella pilosellina</i> (F. W. Schultz) Soják	<i>Pilosella pilosellina</i> (F. W. Schultz) Soják		CR	B1b(iii)c(iii)																				CR	B1b(iii)c(iii)
<i>Pilosella rothiana</i> (Wällr.) F. W. Schultz & Sch. Bip.	<i>Pilosella rothiana</i> (Wällr.) F. W. Schultz & Sch. Bip.		VU	D2	VU	D2(i,ii)																			
<i>Pilosella stenoma</i> (Nägeli & Peter) Soják	<i>Pilosella stenoma</i> (Nägeli & Peter) Soják		RE?																						
<i>Pinguicula alpina</i> L.	<i>Pinguicula alpina</i> L.		LC				+																		
<i>Pinguicula vulgaris</i> L.	<i>Pinguicula vulgaris</i> L.		NT																						
	<i>Pinguicula vulgaris</i> L. subsp. <i>bicolor</i> (Wol.) Á. Löve & D. Löve						+																		
<i>Pinus cembra</i> L.	<i>Pinus cembra</i> L.		NT				+																		
<i>Pinus nigra</i> Arn. subsp. <i>pallasiana</i> (Lamb.) Holmboe	<i>Pinus nigra</i> Arn. subsp. <i>pallasiana</i> (Lamb.) Holmboe		DD																						
<i>Pistorinia hispanica</i> (L.) DC.	<i>Sedum antiquum</i> Omelez. & Zaverucha		NT																						

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit	
<i>Pisum sativum</i> L. subsp. <i>elatius</i> (M. Bieb.) Asch. & Graebn.	<i>Pisum sativum</i> L. subsp. <i>elatius</i> (M. Bieb.) Asch. & Graebn.		NT					VU	D2								CR	C2b							
<i>Plantago arenaria</i> Waldst. & Kit.	<i>Plantago arenaria</i> Waldst. & Kit.	M, N	NT		CR(PE)					+		+				+									
<i>Plantago argentea</i> Chaix	<i>Plantago argentea</i> Chaix		NT					VU	D2															+	
<i>Plantago atrata</i> subsp. <i>carpatica</i> (Soó) Soó	<i>Plantago atrata</i> Hoppe subsp. <i>carpatica</i> (Soó) Soó	E	NT					+			VU	B2a; C2a(i)				+								+	
<i>Plantago maritima</i> subsp. <i>ciliata</i> Printz	<i>Plantago maritima</i> subsp. <i>salsa</i> (Pall.) Soják	M	EN	B2ab(iii,iv,v)	EN	B2a(i)b(iii,iv,v)				+															
<i>Plantago maxima</i> Jacq.	<i>Plantago maxima</i> Juss. ex Jacq.		RE?														RE?								
<i>Plantago schwarzenbergiana</i> Schur	<i>Plantago schwarzenbergiana</i> Schur.	M	VU	D2				VU	D2															+	
<i>Platanthera bifolia</i> (L.) Rich.	<i>Platanthera bifolia</i> (L.) Rich.		LC					+			+		+	VU	A2abcd									+	LC
<i>Platanthera chlorantha</i> (Custer) Rchb.	<i>Platanthera chlorantha</i> (Cust.) Rchb.		LC		NT			+			+		+	EN	A4abcd									+	LC
<i>Pleurospermum austriacum</i> (L.) Hoffm.	<i>Pleurospermum austriacum</i> (L.) Hoffm.		NT					+	CR	A2ac; B2a (ii,iii)			+			+								+	
<i>Poa babiogorensis</i> Bernátová, Májovský & Obuch	<i>Poa babiogorensis</i> Bernátová, Májovský & Obuch	E	CR	D							CR	D													
<i>Poa nemoralis</i> subsp. <i>carpatica</i> V. Jirásek	<i>Poa carpatica</i> subsp. <i>supramontana</i> Bernátová, Májovský, Kliment & Topercer	E	VU	D1+2	VU	D1+D2(i,ii)							+												
<i>Poa margilicola</i> Bernátová & Májovský	<i>Poa margilicola</i> Bernátová & Májovský	E	EN	B2ab(iii,v); C2a(ii)	EN	B2a(ii)b(iii,v); C2a(ii)																			
<i>Poa rehmanni</i> (Asch. & Graebn.) Wolosz.	<i>Poa rehmanni</i> (Asch. & Graebn.) Wolosz.	E	VU	B1ac(ii)										CR	A4abcd		VU	B2a; B2c(ii)							
<i>Poa remota</i> Forselles	<i>Poa remota</i> Forselles		LC					+	EN	B2a; B2b(iii)			+			+								+	
<i>Poa seimta</i> Bernátová, Májovský & Obuch	<i>Poa seimta</i> Bernátová, Májovský & Obuch	E	VU	D1+2	VU	D1+D2(i,ii)																			
<i>Podospermum laciniatum</i> (L.) DC.	<i>Podospermum laciniatum</i> (L.) DC.		CR	B1ab(i)	CR(PE)																				+
<i>Podospermum roseum</i> (Waldst. & Kit.) Gemeinholzer & Greuter	<i>Scorzenera rosea</i> Waldst. & Kit.		NT		CR	A2ac; B2a(ii)b(iii,iv); C2a(i); D							+			+									+
<i>Polycarpon tetraphyllum</i> (L.) L. subsp. <i>tetraphyllum</i>	<i>Polycarpon tetraphyllum</i> (L.) L. subsp. <i>tetraphyllum</i>	A, N	EN	A2ac; B1ab(ii,iii,iv)	EN	A2ac; B2a(ii)b(ii,iii,iv)																			+
<i>Polycnemum arvense</i> L.	<i>Polycnemum arvense</i> L.	A, M	LC		VU	B1ab(iii)c(iii,iv)							+			+									+
<i>Polycnemum beuffelii</i> Láng	<i>Polycnemum beuffelii</i> Láng		CR	B2ab(ii)				RE						CR	B2ab(ii)										
<i>Polygala amara</i> L.	<i>Polygala amara</i> L.		LC					+	VU	B2ab(i,iii)			+			+									+
<i>Polygonum bistorta</i> L.	<i>Persicaria bistorta</i> (L.) Samp.		LC					+	VU	B2ab(i,ii,iii)			+			+									+
<i>Polystichum braunii</i> (Spenn.) Fée	<i>Polystichum braunii</i> (Spenn.) Fée		LC					+	EN	B2b(iii, iv); D1			+			+									+
<i>Polystichum lonchitis</i> (L.) Roth	<i>Polystichum lonchitis</i> (L.) Roth		LC					+	EN	D1			+			+									+
<i>Polystichum setiferum</i> (Forssk.) Woyn.	<i>Polystichum setiferum</i> (Forssk.) Woyn.		LC						EN	D1			+			+									+
<i>Pontechium maculatum</i> (L.) Böhle & Hilger	<i>Echium maculatum</i> L.	H	NT		VU	A2ac; B2a(i)b(i,ii,iii,iv,v)c(iv); C2a(i);b; D2(i)			VU	A4cd; C2b															+
<i>Potamogeton acutifolius</i> Link	<i>Potamogeton acutifolius</i> Link		VU	B1ab(i)	CR	B2a(iv)c(iv)			EN	B2a; B2b(iv)						+									+
<i>Potamogeton alpinus</i> Balb.	<i>Potamogeton alpinus</i> Balb.		VU	B1ab(i)	CR	B2a(iv)b(iv)							+			+	CR	C2b							
<i>Potamogeton compressus</i> L.	<i>Potamogeton compressus</i> L.		CR	B1ab(i)	RE																				+
<i>Potamogeton gramineus</i> L.	<i>Potamogeton gramineus</i> L.		VU	B1ab(i)	EN	B2a(i,ii)c(ii,iv,v)			RE							+									+
<i>Potamogeton obtusifolius</i> Mert. & W. D. J. Koch	<i>Potamogeton obtusifolius</i> Mert. & W. D. J. Koch		VU	B2ab(iii,iv)	CR	B2a(i,ii)b(iii,iv)							+												+
<i>Potentilla anglica</i> Laichard	<i>Potentilla anglica</i> Laichard		VU	B1ab(i)c(ii)				+					+				CR	B2a; B2c(ii); C2a(i)							
<i>Potentilla haynaldiana</i> Janka	<i>Potentilla haynaldiana</i> Janka		CR	B1ac(i)									+				CR	B1a; B1c(i)							
<i>Potentilla micrantha</i> DC.	<i>Potentilla micrantha</i> Ramond ex DC.		LC		EN	B2a(ii)b(iii)					+	EN	D												+
<i>Potentilla patula</i> Waldst. & Kit. subsp. <i>patula</i>	<i>Potentilla patula</i> Waldst. & Kit. subsp. <i>patula</i>		NT		EN	B2a(ii)b(iii)										+									
<i>Potentilla pedata</i> Willd.	<i>Potentilla pedata</i> Willd. ex Nestl.	M	DD		EN	A2ac; B2a(ii)b(ii,iii,iv,v); D																			+
<i>Potentilla pusilla</i> Host	<i>Potentilla pusilla</i> Host		NT					+					+				CR	B2a; B2c(i)							
<i>Primula acanthis</i> (L.) L.	<i>Primula vulgaris</i> Huds.		LC					+					+	RE		+									+
<i>Primula auricula</i> L. subsp. <i>serratifolia</i> (Roche) Jav.	<i>Primula auricula</i> L. subsp. <i>serratifolia</i> (Roche) Jav.	E	VU	C2a(i)													VU	C2a(i)		CR	B1;B2c;C2a,b; D				
<i>Primula farinosa</i> L.	<i>Primula farinosa</i> L. subsp. <i>farinosa</i>		NT																						
	<i>Primula farinosa</i> L.				VU	B2a(i)b(iii)								CR	A1a; B2a	DD									
	<i>Primula farinosa</i> L.																CR	C2b							
<i>Primula halleri</i> J. F. Gmel.	<i>Primula halleri</i> J. F. Gmel. subsp. <i>balleri</i>		NT																						
	<i>Primula halleri</i> J. F. Gmel.																								
	<i>Primula halleri</i> subsp. <i>platyphylla</i> O. Schwarz				VU	D2(i)											EN	A4abcd							+

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit
<i>Primula minima</i> L.	<i>Primula minima</i> L.		LC		LC		+						+	VU	A2abcd				+					
<i>Primula wulfeniana</i> Schott subsp. <i>baumgarteniana</i> (Degen & Moesz) Lüdli	<i>Primula baumgarteniana</i> Degen & Moesz	B, E	CR	C2a(i)													CR	C2a(i)						
<i>Prügelago alpina</i> subsp. <i>dubia</i> (Pawl.) Soják	<i>Prügelago alpina</i> subsp. <i>dubia</i> (Pawl.) Soják		VU	D2	VU	D2(i)																		
<i>Prunus padus</i> subsp. <i>borealis</i> (A. Blytt) Nyman	<i>Padus petraea</i> Tausch		NT				+				VU	B2a												
<i>Prunus tenella</i> Batsch	<i>Prunus tenella</i> Batsch		NT		CR	B1a(ii)b(iii)				+										+	VU	B2c;B3b; C1		
<i>Psephellus trinervius</i> (Willd.) Wagenitz	<i>Centaura trinervia</i> Stephan ex Willd.		CR	C2a(i)													CR	C2a(i)						
<i>Pseudorchis albida</i> (L.) Á. Löve & D. Löve	<i>Pseudorchis albida</i> (L.) Á. Löve & D. Löve		LC				+						+	VU	A4abc									
<i>Pulmonaria angustifolia</i> L.	<i>Pulmonaria angustifolia</i> L.		NT		EN	B2a(i)b(iii,iv,v)		EN	B2ab(i,ii,iii,iv)				+			+								
<i>Pulsatilla alpina</i> subsp. <i>austriaca</i> Aichele & Schwegler	<i>Pulsatilla scerfelii</i> (Ullep.) Skalický		LC				+							VU	A4abcd									
<i>Pulsatilla balleri</i> subsp. <i>slavica</i> (G. Reuss) Zámelis	<i>Pulsatilla slavica</i> G. Reuss	B, E, H*	NT				+				EN	C2a(ii); D												
<i>Pulsatilla montana</i> subsp. <i>bulgarica</i> Rummelsp.	<i>Pulsatilla montana</i> (Hoppe) Reichnb. subsp. <i>bulgarica</i> Rummelsp.		EN	B2ab(ii)																		EN	B2b,c,d	
<i>Pulsatilla patens</i> (L.) Mill.	<i>Pulsatilla patens</i> (L.) Mill.	B, H	NT		VU	B2a(i,ii)b(iii,iv,v)							+			+								
<i>Pulsatilla pratensis</i> (L.) Mill.	<i>Pulsatilla pratensis</i> subsp. <i>flavescens</i> (Hazsl.) Holub	M	EN	B1ab(ii,iii,v)	EN	B2a(ii)b(iii,iv,v)				+														
<i>Pulsatilla pratensis</i> (L.) Mill.	<i>Pulsatilla zimmermannii</i> Soó	M	CR	B2ab(ii,iii,iv,v); D	CR	B2a(ii)b(iii,iv,v); D																		
<i>Pulsatilla vernalis</i> (L.) Mill.	<i>Pulsatilla vernalis</i> (L.) Mill.		NT		EN	B2a(ii)b(v); C2a(i)					EN	B2a; C2a(i)												
<i>Pulsatilla vulgaris</i> subsp. <i>grandis</i> (Wender.) Zámelis	<i>Pulsatilla grandis</i> Wender.		LC				+			+						+	CR	C2b		VU	B2a,b,c;E			
<i>Pyreus flavescens</i> (L.) Rchb.	<i>Cyperus flavescens</i> L.		VU	B1ab(iii,iv,v)c(iv)	CR	A2ac; B2a(i)b(iii,iv,v)c(iv)		VU	B2c(iii,iv)				+			+								
<i>Pyrola chlorantha</i> Sw.	<i>Pyrola chlorantha</i> Sw.		NT				+	VU	B2a; B2b(iv)				+			+								
<i>Pyrola rotundifolia</i> L.	<i>Pyrola rotundifolia</i> L.		LC				+	VU	B2b(iii, iv)				+			+								
<i>Pyrus spinosa</i> Forssk.	<i>Pyrus nivalis</i> Jacq.	A	EN	C2a(i); D				EN	C2a(i); D1															
<i>Quercus cerris</i> L.	<i>Quercus cerris</i> L.		LC				+			+				EN	A2abcd									+
<i>Quercus frainetto</i> Ten.	<i>Quercus frainetto</i> Ten.		LC		VU	A2e; B2a(i)b(iii)				+														+
<i>Radiola linoides</i> Roth	<i>Radiola linoides</i> Roth		EN	B1ab(iii,iv,v)	CR	B2a(i,ii)b(iii,iv,v)c(iii,iv)							+											
<i>Ranunculus alitatus</i> Paclová & Murín	<i>Ranunculus alitatus</i> Paclová & Murín	E	VU	B2ab(iii,v); D2	VU	B2a(i,ii)b(iii,v); D2(i)																		
<i>Ranunculus carpathicus</i> Herbach	<i>Ranunculus carpathicus</i> Herbach	E	NT		EN	B2a(ii)b(iii,v); C2a(ii)										+								
<i>Ranunculus flabellifolius</i> Reichenb.	<i>Ranunculus flabellifolius</i> Heuff. in Rchb.		VU	B1ab(ii)									+									EN	B1	
<i>Ranunculus glacialis</i> L.	<i>Ranunculus glacialis</i> L.		NT				+						+				CR	C2a(i)						
<i>Ranunculus illyricus</i> L.	<i>Ranunculus illyricus</i> L.		LC		VU	B2a(ii)b(iii,iv)				+						+							LC	
<i>Ranunculus lateriflorus</i> DC.	<i>Ranunculus lateriflorus</i> DC.	M	CR	B1ab(i)c(iv)	RE			RE																
<i>Ranunculus lingua</i> L.	<i>Ranunculus lingua</i> L.		NT		CR	A2ac; B2a(i,ii)b(iii,iv,v); C2a(ii)		EN	B2ab(i,ii,iii,iv), C2a(i)				+			+								
<i>Ranunculus millefoliatus</i> Vahl	<i>Ranunculus millefoliatus</i> Vahl		EN	B1ab(i)	RE																		EN	B1ab(i) +
<i>Ranunculus ophioglossifolius</i> Vill.	<i>Ranunculus ophioglossifolius</i> Vill.		VU	D2												+	VU	D1; D2						
<i>Ranunculus peltatus</i> subsp. <i>baudotii</i> (Godr.) C. D. K. Cook	<i>Batrachium baudotii</i> (Godr.) F. W. Schultz		EN	B1ab(iii)	CR	B2a(i,ii)c(iv)																		
<i>Ranunculus polyphyllus</i> Willd.	<i>Ranunculus polyphyllus</i> Waldst. & Kit.	M	EN	B1ab(i)				CR	B2ab(i,ii,iii,iv)+2c(iv)							+								
<i>Ranunculus pygmaeus</i> Wahlenb.	<i>Ranunculus pygmaeus</i> Wahlenb.		EN	B2ab(iii,iv,v)	EN	B2a(ii)b(iii,iv,v)																		
<i>Ranunculus reptans</i> L.	<i>Ranunculus reptans</i> L.		EN	B1ab(iii,v)	CR	B2a(ii)b(iii,v); D																		
<i>Ranunculus rionii</i> Lagger	<i>Batrachium rionii</i> (Lagger) Nyman		NT		VU	B2a(i,ii)c(iii,iv)				+														
<i>Ranunculus thora</i> L.	<i>Ranunculus thora</i> L.		NT				+							EN	A2abcd		VU	C2a(i)						
<i>Reseda phytanema</i> L.	<i>Reseda phytanema</i> L.	A, M	VU	B1ab(i)	EN	A2acc; B2a(i,ii)b(iii,iv); C2a(i)				+														
<i>Rhamnus saxatilis</i> Jacq. subsp. <i>saxatilis</i>	<i>Rhamnus saxatilis</i> Jacq. subsp. <i>saxatilis</i>	M	EN	B2ab(iii)	EN	B2a(ii)b(iii)																		
<i>Rhinanthus alectorolophus</i> (Scop.) Pollich	<i>Rhinanthus alectorolophus</i> (Scop.) Pollich.		NT																					
<i>Rhinanthus alectorolophus</i> (Scop.) Pollich	<i>Rhinanthus alectorolophus</i> Pollich						+	RE									VU	C2a(i)						
<i>Rhinanthus borbasii</i> (Dörf.) Soó	<i>Rhinanthus borbasii</i> (Dörf.) Soó	M	DD		CR	B1a(i)b(iii)				+			+											
<i>Rhinanthus rumelicus</i> Velen.	<i>Rhinanthus rumelicus</i> Velen.		NT		EN	B1a(i)b(iii)		VU	B2b(iii, iv)															+
<i>Rhodiola rosea</i> L.	<i>Rhodiola rosea</i> L.		LC		LC		+						+	CR	A4abcd									
<i>Rhododendron myrsinifolium</i> Schott & Kotschy	<i>Rhododendron myrsinifolium</i> Schott & Kotschy		LC											VU	A4abcd									
<i>Rhododendron tomentosum</i> Harmaja	<i>Rhododendron tomentosum</i> Harmaja		EN	A2ac; B2ab(i,ii,iii,iv,v)	EN	A2ac; B2a(i)b(i,ii,iii,iv,v)							+											

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit
<i>Rhynchospora alba</i> (L.) Vahl	<i>Rhynchospora alba</i> (L.) Vahl		NT		CR	A2ac; B2a(ii)b(iii,iv)c(iv)					VU	C2a(i)				+	VU	B2a; B2c(iv)						
<i>Ribes alpinum</i> L.	<i>Ribes alpinum</i> L.		LC				+	VU	C2a(i); D1				+						+	VU	B1; B2c,e; C2a			
<i>Ribes nigrum</i> L.	<i>Ribes nigrum</i> L.		NT					VU	B2a; D1				+						+					
<i>Ribes petraeum</i> Wulfen	<i>Ribes petraeum</i> Wulfen		LC				+	RE					+						+					
<i>Ribes spicatum</i> E. Robson	<i>Ribes spicatum</i> Robson		DD										+				CR	C1						
<i>Rorippa pyrenaica</i> (All.) Rehb.	<i>Rorippa pyrenaica</i> (All.) Rehb.		NT		VU	B1a(i)b(iii,iv,v)													+					
<i>Rosa arvensis</i> Huds.	<i>Rosa arvensis</i> Huds.	M	NT		VU	D1+ D2(i,ii)				+									+					
<i>Rosa glauca</i> Pourr.	<i>Rosa glauca</i> Pourr.	N	NT		EN	B2a(i)b(iii)								+					+					
<i>Rubus chamaemorus</i> L.	<i>Rubus chamaemorus</i> L.		CR	C2a(i); D							CR	B2a; C2a(i); D												
<i>Rubus portae-moravicae</i> Holub & Trávn.	<i>Rubus portae-moravicae</i> Holub & Trávn.		VU	B2ab(iii)																			VU	B2a(ii)b(iii)
<i>Rubus senticosus</i> Weihe	<i>Rubus senticosus</i> Weihe		EN	B2ab(iii)																			EN	B2a(ii)b(iii)
<i>Ruscus hypoglossum</i> L.	<i>Ruscus hypoglossum</i> L.		NT		EN	B2a(i,ii)b(iii,v)													+					
<i>Sagina apetala</i> Ard.	<i>Sagina apetala</i> Ard.		VU	B1ab(i,iii,iv)																				
	<i>Sagina apetala</i> Ard. subsp. <i>apetala</i>				CR	A2ac; B2a(i,ii)b(i,ii,iii,iv)													+	CR	C1a(i)			
<i>Sagina nodosa</i> (L.) Fenzl subsp. <i>nodosa</i>	<i>Sagina nodosa</i> (L.) Fenzl subsp. <i>nodosa</i>		VU	B1ab(iii)	VU	A2ac; B2a(ii)b(iii)							+						+					
<i>Sagina subulata</i> (Sw.) C. Presl	<i>Sagina subulata</i> (Sw.) C. Presl		NT		VU	A2ac; B2a(ii)b(i,iii,v)				+									+	CR	B1a; B1c(i)			
<i>Sagittaria sagittifolia</i> L.	<i>Sagittaria sagittifolia</i> L.	M	LC		VU	B2a(iv)b(iv)							+											+
<i>Salicornia perennans</i> Willd.	<i>Salicornia prostrata</i> Pall.	M	RE																					RE
<i>Salix alpina</i> Scop.	<i>Salix alpina</i> Scop.		LC																					
	<i>Salix jacquinii</i> Host																							
	<i>Salix alpina</i> Scop.						+							CR	B2a(i,ii,iv)									
<i>Salix aurita</i> L.	<i>Salix aurita</i> L.		LC				+	VU	B2a(ii)b(i,iii,iv)				+						+					+
<i>Salix bicolor</i> Willd.	<i>Salix phlycticifolia</i> auct.		NT		NT		+												+	CR	C2a(i)			
<i>Salix hastata</i> L. subsp. <i>hastata</i>	<i>Salix hastata</i> L. subsp. <i>hastata</i>		LC				+				EN	B2a												
<i>Salix helvetica</i> Vill.	<i>Salix helvetica</i> Vill.		NT		LC		+				EN	B2a; D												
<i>Salix herbacea</i> L.	<i>Salix herbacea</i> L.		LC		LC		+						+				VU	A2abc						+
<i>Salix lapponum</i> L.	<i>Salix lapponum</i> L.		CR	B2ab(i,ii,iii,iv)													CR	B2ab(i,ii,iii,iv)						
<i>Salix myrtilloides</i> L.	<i>Salix myrtilloides</i> L.		CR	A2acc; B2ab(i,ii,iii,iv,v); D	CR	A2acc; B2a(ii)b(i,ii,iii,iv,v); D														RE				
<i>Salix pentandra</i> L.	<i>Salix pentandra</i> L.		LC				+	RE											+					
<i>Salix retusa</i> L.	<i>Salix kitatibeliana</i> Willd.	E	VU	B2ab(iii)	VU	B2a(i)b(iii)																		
<i>Salix retusa</i> L.	<i>Salix retusa</i> L.		LC		LC		+							EN	A4abcd									
<i>Salix starkeana</i> Willd.	<i>Salix starkeana</i> Willd.		EN	B1ab(iii)																				
	<i>Salix starkeana</i> Willd.				EN	B2a(i,ii),b(iii); D													+					
	<i>Salix livida</i> Wahlenb.																							
<i>Salvia aethiops</i> L.	<i>Salvia aethiops</i> L.	M	NT		VU	B1a(i)b(iii)																		
<i>Saponaria bellidifolia</i> Sm.	<i>Saponaria bellidifolia</i> Sm.		VU	B1ab(i)																				
<i>Saussurea alpina</i> (L.) DC.	<i>Saussurea alpina</i> (L.) DC.		NT		NT		+																	
<i>Saussurea porcii</i> Degen	<i>Saussurea porcii</i> Degen	E	CR	B1ab(i,ii,iii,iv,v)																				
	<i>Saussurea serrata</i> Stankov & Taliev																							
<i>Saussurea pygmaea</i> (Jacq.) Spreng.	<i>Saussurea pygmaea</i> (Jacq.) Sprengel		NT				+				ENB2a; C2a(i)													
<i>Saxifraga adscendens</i> L.	<i>Saxifraga adscendens</i> L.		LC				+	CR	A2ac; B2ab(ii,iii)+c(iv); C2a(i)				+											
<i>Saxifraga aizoides</i> L.	<i>Saxifraga aizoides</i> L.		LC				+							CR	B1ab(i,ii,iii,iv,v)									+
<i>Saxifraga androsacea</i> L.	<i>Saxifraga androsacea</i> L.		LC		LC		+							CR	B1ab(i,ii,iii,iv,v)									+
<i>Saxifraga bryoides</i> L.	<i>Saxifraga bryoides</i> L.		NT		LC		+							CR	B1ab(i,ii,iii,iv,v)									+
<i>Saxifraga bulbifera</i> L.	<i>Saxifraga bulbifera</i> L.		LC				+						+	CR	C1									+
<i>Saxifraga carpatia</i> Sternb.	<i>Saxifraga carpatia</i> Sternb.		NT				+							EN	A4abcd									+
<i>Saxifraga cernua</i> L.	<i>Saxifraga cernua</i> L.		NT		VU	D2(i,ii)								VU	C2a(i)									+
<i>Saxifraga cymbalaria</i> L. subsp. <i>cymbalaria</i>	<i>Saxifraga cymbalaria</i> L.		EN	B2ac(iii)																EN	B2a; B2c(iii)			
<i>Saxifraga hirculus</i> L.	<i>Saxifraga hirculus</i> L.	B, H	CR	B2ac(i); D																				
	<i>Saxifraga hirculus</i> L. subsp. <i>hirculus</i>																							
	<i>Saxifraga hirculus</i> L.																							
<i>Saxifraga luteoviridis</i> Schott & Kotschy	<i>Saxifraga luteo-viridis</i> Schott & Kotschy		NT																					
<i>Saxifraga mutata</i> L.	<i>Saxifraga mutata</i> L.		VU	B2ab(ii,v); D2	VU	B2a(i)b(iii,v); D2(i,ii)																		
<i>Saxifraga oppositifolia</i> L.	<i>Saxifraga oppositifolia</i> L.		LC				+																	

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit	
<i>Saxifraga pedemontana</i> subsp. <i>cymosa</i> Engl.	<i>Saxifraga pedemontana</i> All. subsp. <i>cymosa</i> Engler		NT											DD					+						
<i>Saxifraga retusa</i> Gouan	<i>Saxifraga retusa</i> Gouan		NT				+				VU	B2a; C2a(i)							+						
<i>Scabiosa canescens</i> Waldst. & Kit.	<i>Scabiosa canescens</i> Waldst. & Kit.		NT		VU	B1a(i)b(iii)				+			+						+						
<i>Scabiosa columbaria</i> subsp. <i>pseudobanatica</i> (Schur) Jáv. & Csapody	<i>Scabiosa columbaria</i> L. subsp. <i>pseudobanatica</i> (Schur) Jáv.	E	VU	B1ab(iii,iv)				EN	A3c, d; B2ab(iii,iv); D										+						
<i>Scabiosa triandra</i> L.	<i>Scabiosa triandra</i> L.	M	VU	A2ac; B2ab(iii,iv)	VU	A2ac; B2a(ii)b(iii,iv)		EN	B2a(ii)b(i,ii)																
<i>Scandix pecten-veneris</i> L.	<i>Scandix pecten-veneris</i> L. subsp. <i>pecten-veneris</i>	A	VU	B1ab(i,iii,iv,v)c(iii); C2b	CR	A2ac; B2a(ii)b(ii,iii,iv,v)c(iii); D											VU	C2b							
<i>Schenchzeria palustris</i> L.	<i>Schenchzeria palustris</i> L.		NT					EN	B2a(i)b(iii)										+						
	<i>Schenchzeria palustris</i> L. subsp. <i>palustris</i>										EN	B2a													
<i>Schoenoplectus supinus</i> (L.) Palla	<i>Schoenoplectus supinus</i> (L.) Palla	A	VU	B2ab(iii)				VU	B2a; B2b(iii)										+						
<i>Schoenus ferrugineus</i> L.	<i>Schoenus ferrugineus</i> L.		NT		EN	A2ce; B2a(i)b(ii,iii,iv,v)								VU	A3bc										
<i>Schoenus nigricans</i> L.	<i>Schoenus nigricans</i> L.		EN	B1ab(iii)				RE																	
<i>Scilla bifolia</i> L.	<i>Scilla vindobonensis</i> Speta		VU	D2				VU	D2				+											+	
<i>Scleranthus perennis</i> L. subsp. <i>perennis</i>	<i>Scleranthus perennis</i> L. subsp. <i>perennis</i>		LC		CR	A2ac; B2a(ii)b(iii,iv)				+			+						+					+	
<i>Scleranthus verticillatus</i> Tausch	<i>Scleranthus verticillatus</i> Tausch		NT		EN	A2ac; B2a(i,ii)b(iii,iv)c(iv)																			
<i>Scopolia carniolica</i> Jacq.	<i>Scopolia carniolica</i> Jacq.		NT				+	VU	A3cd								LC					CR	B2c; C2b		
<i>Scorzonera hispanica</i> L.	<i>Scorzonera hispanica</i> L.		NT		VU	B1a(i)b(iii)				+														+	
<i>Scorzonera parviflora</i> Jacq.	<i>Scorzonera parviflora</i> Jacq.	M	EN	B2ab(iii,iv)	CR	A2ac; B2a(i,ii)b(iii,iv)																		+	
<i>Scutellaria alpina</i> L.	<i>Scutellaria alpina</i> L. subsp. <i>alpina</i>		CR	B2ac(i)																CR	B2a; B2c(i)				
<i>Scutellaria altissima</i> L.	<i>Scutellaria altissima</i> L.	N	LC		EN	A2ac; B2a(ii)b(ii,iv,v)				+														+	
<i>Scutellaria supina</i> L.	<i>Scutellaria supina</i> L.		CR	D																CR	D				
<i>Securigera elegans</i> (Pančić) Lassen	<i>Securigera elegans</i> (Pančić) Lassen		VU	B1ab(iv)			+	EN	B1; B2a					EN	B2ab(ii,iii,iv)									+	
<i>Sedum annuum</i> L.	<i>Sedum annuum</i> L.		NT		VU	A2ac; B2a(i)b(iii, iv,v); C2a(i)													+					+	
<i>Sedum dasyphyllum</i> L. subsp. <i>dasyphyllum</i>	<i>Sedum dasyphyllum</i> L.		VU	B1ab(i)													EN	C2b						+	
<i>Selaginella selaginoides</i> (L.) Schrank & Mart.	<i>Selaginella selaginoides</i> (L.) Beauv. ex Mart. & Schrank		LC				+						+	VU	A2abc									+	
<i>Selinum dubium</i> (Schkuhr) Leute	<i>Selinum dubium</i> (Schkuhr) Thell.		NT					VU	A3cd																
	<i>Cnidium dubium</i> (Schkuhr) Thell.												+				EN	A2							
<i>Sempervivum carpathicum</i> subsp. <i>heterophyllum</i> (Hazsl.) Letz.	<i>Sempervivum carpathicum</i> subsp. <i>heterophyllum</i> (Hazsl.) Letz.	E	VU	B2ab(iii,v); C2a(i)	VU	B2a(i)b(iii,v); C2a(i)																			
<i>Sempervivum marmoratum</i> Griseb.	<i>Sempervivum marmoratum</i> Griseb.		NT											EN	D									+	
<i>Sempervivum matricum</i> Letz.	<i>Sempervivum matricum</i> Letz.		NT		VU	B2a(i)b(iii,iv,v); C2a(i)				+															
<i>Sempervivum montanum</i> L.	<i>Sempervivum montanum</i> L.	E	NT										+	CR	A4abc									+	
<i>Senecio doria</i> L.	<i>Senecio doria</i> L.	M	LC		CR	A2c; B2a(ii)b(iii)				+															
<i>Senecio sarracenicus</i> L.	<i>Senecio sarracenicus</i> L.		NT					VU	A3c				+											+	
<i>Senecio squalidus</i> subsp. <i>rupesstris</i> (Waldst. & Kit.) Greuter	<i>Senecio rupesstris</i> Waldst. & Kit.		NT		RE																			+	
<i>Senecio umbrosus</i> Waldst. & Kit.	<i>Senecio umbrosus</i> Waldst. & Kit. s. str.		LC				+				RE													+	
<i>Seseli gracile</i> Waldst. & Kit.	<i>Seseli gracile</i> Waldst. & Kit.		NT																			EN	B1		
<i>Seseli hippomarathrum</i> Jacq.	<i>Seseli hippomarathrum</i> Jacq.		LC		VU	B1a(i)b(iii)							+												
<i>Seseli leucospermum</i> Waldst. & Kit.	<i>Seseli leucospermum</i> Waldst. & Kit.		VU	C2a(ii)				VU	C2a(ii)																
<i>Seseli pallasii</i> Besser	<i>Seseli pallasii</i> Besser		NT		EN	B1a(i)b(iii)				+														+	
<i>Seseli peucedanoides</i> (M. Bieb.) Koso-Pol.	<i>Seseli peucedanoides</i> (M. Bieb.) Koso-Pol.		VU	A3cd; B1ab(i,iii,iv,v)c(iv); C2a(i)																					
	<i>Gasparria peucedanoides</i> (M. Bieb.) Thell.				CR	B2a(i)b(ii,iii,iv,v)c(iv); C2a(i)				+														+	
<i>Sesleria caerulea</i> (L.) Ard.	<i>Sesleria albicans</i> Kit. ex Schult.		LC				+	EN	B2a; B2b(iii)				+											+	
<i>Sesleria coarctata</i> Friv.	<i>Sesleria bielzii</i> Schur		NT								VU	C2a(ii)												+	
<i>Sesleria beuflierana</i> Schur	<i>Sesleria beuflierana</i> Schur.		NT				+	VU	B1; B2a															+	
<i>Sesleria sadleriana</i> Janka	<i>Sesleria sadleriana</i> Janka		EN	B1ab(iii)	CR	B2a(i,ii)b(iii)							+												
<i>Sesleria uliginosa</i> Opiz	<i>Sesleria uliginosa</i> Opiz		VU	A2ac; B1ab(i,iii,iv,v)	VU	A2ac; B2a(i)b(ii,iii,iv,v)																		CR	B2a; B2c(ii); C2a(ii)
<i>Sibbaldia procumbens</i> L.	<i>Sibbaldia procumbens</i> L.		NT		CR	B2a(i)b(iii); D					VU	B2a													
<i>Silene silaus</i> (L.) Schinz & Thell.	<i>Silene silaus</i> (L.) Schinz & Thell.		LC				+	CR	B2ab(ii, v)				+											+	
<i>Silene bupleuroides</i> L. subsp. <i>bupleuroides</i>	<i>Silene bupleuroides</i> L. subsp. <i>bupleuroides</i>		VU	B1ab(i,iii,iv)	EN	A2ac; B2a(i)b(iii,iv,v)					VU	B2ab(i, ii, iii)												+	
<i>Silene conica</i> L.	<i>Silene conica</i> L.	M	NT		EN	B2a(ii)b(iii)c(iv)				+			+											+	
<i>Silene gallica</i> L.	<i>Silene gallica</i> L.	A	NT		CR	A2ac; B2a(i)b(iii,iv,v)							+											+	

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit
<i>Silene lerechenfeldiana</i> Baumg.	<i>Silene lerechenfeldiana</i> Baumg.		VU	B1ac(i)													VU	B1a; B1c(ii)						
<i>Silene nivalis</i> (Kit.) Rohrb.	<i>Silene nivalis</i> (Kit.) Rohrb.	E	VU	B2ac(iii)													VU	B2a; B2c(iii)						
<i>Silene nutans</i> subsp. <i>dubia</i> (Rohrb.) Zapal.	<i>Silene nutans</i> subsp. <i>dubia</i> (Herbich) Zapal.	E	NT																					
	<i>Silene dubia</i> L.				CR	B2ab(iii,v); C2a(ii); D																		
<i>Silene rupestris</i> L.	<i>Silene rupestris</i> L.		CR	B2ac(i)																				
<i>Silene zavadszkii</i> Herbich	<i>Silenanthe zavadszkii</i> (Herbich) Griseb. &	E	NT														CR	B2ab(i,ii,iii,iv,v)						
<i>Sisymbrium austriacum</i> Jacq.	<i>Sisymbrium austriacum</i> Jacq.	N	VU	D1+2	VU	D1+D2(i,ii)																		
subsp. <i>austriacum</i>	subsp. <i>austriacum</i>																							
<i>Sisymbrium polymorphum</i> (Murray) Roth	<i>Sisymbrium polymorphum</i> (Murr.) Roth	M	VU	B1ab(i,iii,iv)				EN	B2ab(i,ii,iii,iv)															
<i>Sium sisarum</i> L.	<i>Sium sisarum</i> L.		VU	B1ab(i)				EN	A3cd															
<i>Soldanella pseudomontana</i> F. K. Mey.	<i>Soldanella pseudomontana</i> subsp. <i>pienica</i> Hrouda & Kochjarová, ined.	E	CR	D	CR	D																		
<i>Sorbus atrimontis</i> Májovský, Bernátová & Topercer	<i>Sorbus atrimontis</i> Bernátová & Májovský	E	CR	B2ab(i,ii,iii,iv,v); C2a(i)	CR	B2a(i)b(i,ii,iii,iv,v); C2a(i)																		
<i>Sorbus austriaca</i> subsp. <i>hazslinszkyana</i> (Soó) Kárpáti	<i>Sorbus hazslinszkyana</i> (Soó) Májovský		NT					+	CR	C2a(i); D1														
<i>Sorbus borbasii</i> Jav.	<i>Sorbus borbasii</i> Jav.	E	VU	B1ac(i)																				
<i>Sorbus bueckensis</i> (Soó) Soó	<i>Sorbus bueckensis</i> Soó		VU	B2ab(ii); D1				VU	B2a(i,ii)b(i,iii,iv,v)															
<i>Sorbus caeruleomontana</i> Májovský, Bernátová & Topercer	<i>Sorbus caeruleomontana</i> Bernátová & Májovský	E	CR	B2ab(i,iii,v); C2a(ii)	CR	B2a(ii)b(i,iii,v); C2a(ii)																		
<i>Sorbus carpatica</i> Borbás	<i>Sorbus zolyomii</i> (Soó) Kárpáti		NT					+	EN	B2a														
<i>Sorbus dacica</i> Borbas	<i>Sorbus dacica</i> Borbas	E	EN	B2ac(ii)																				
<i>Sorbus graeca</i> (Spach) Schauer	<i>Sorbus graeca</i> (Spach) Lodd. ex Schauer		NT		CR	B2a(i)b(i,iv,v); C2a(i); D																		
<i>Sorbus hajjamoniae</i> Májovský, Bernátová & Topercer	<i>Sorbus hajjamoniae</i> Bernátová & Májovský	E	VU	B2ab(iii); C2a(i); D1+2	VU	B2a(i,ii)b(i,iii); C2a(i); D1+D2(i)																		
<i>Sorbus chamaemespilus</i> (L.) Crantz	<i>Sorbus chamaemespilus</i> (L.) Crantz		NT					+			VU	B2a					EN	C2a(i)						
<i>Sorbus javorcae</i> (Soó) Kárpáti	<i>Sorbus javorcae</i> (Soó) Kárpáti		NT					+	VU	B2a(i,ii)b(i,iii,iv,v)														
<i>Sorbus margittaiana</i> (Jáv.) Kárpáti	<i>Sorbus margittaiana</i> (Jáv.) Kárpáti	E	EN	B2ab(i,iii,iv,v); C2a(i)	EN	B2a(i,ii)b(i,iii,iv,v); C2a(i)																		
<i>Sorbus montisalpaie</i> Májovský, Bernátová & Topercer	<i>Sorbus montisalpaie</i> Bernátová & Májovský	E	EN	B2ab(i,iii,iv,v); C2a(i)	EN	B2a(i,ii)b(i,iii,iv,v); C2a(i)																		
<i>Sorbus pannonica</i> Kárpáti	<i>Sorbus thaiszii</i> (Soó) Kárpáti		NT					+	VU	B2a(i,ii)b(i,iii,iv,v)														
<i>Sorbus pekarovae</i> Májovský & Bernátová	<i>Sorbus pekarovae</i> Májovský & Bernátová	E	CR	B2ab(iii,v); C2a(ii)	CR	B2a(ii)b(iii,v); C2a(ii)																		
<i>Sorbus scopusiensis</i> Kovanda	<i>Sorbus scopusiensis</i> Kovanda	E	CR	B2b(i,ii,iv,v); C2a(ii)	CR	B2b(i,ii,iv,v); C2a(ii)																		
<i>Sorbus sooi</i> (Máthé) Kárpáti	<i>Sorbus sooi</i> (Máthé) Kárpáti		NT					+	VU	B2a(i,ii)b(i,iii,iv,v)														
<i>Sorbus szuzanae</i> Májovský, Bernátová & Topercer	<i>Sorbus szuzanae</i> Májovský & Bernátová	E	VU	B2ab(iii); C2a(i); D1+2	VU	B2a(i,ii)b(i,iii); C2a(i); D1+D2(i)																		
<i>Sparganium angustifolium</i> Michx.	<i>Sparganium angustifolium</i> F. Michx.		VU	B1ab(iii)	EN	B2a(ii)b(iii); C2a(ii)					CR	B2a; C2a(i); D		DD										
<i>Sparganium emersum</i> Rehmann	<i>Sparganium emersum</i> Rehmann		NT					+	VU	B2a; B2b(iv)														
<i>Sparganium natans</i> L.	<i>Sparganium natans</i> L.		EN	B2ab(iii)	EN	B2a(i)b(iii)		RE																
<i>Spergula pentandra</i> L.	<i>Spergula pentandra</i> L.		EN	B1ab(i,iii)c(ii,iv)	CR	D																		
<i>Spiraea media</i> Schmidt subsp. <i>media</i>	<i>Spiraea media</i> Schmidt subsp. <i>media</i>		LC					+																
<i>Spiraea salicifolia</i> L.	<i>Spiraea salicifolia</i> L.		VU	B1ab(i,iii)					RE															
<i>Spiranthes spiralis</i> (L.) Chevall.	<i>Spiranthes spiralis</i> (L.) Chevall.		NT		CR	A2ac																		
<i>Stachys alpina</i> L.	<i>Stachys alpina</i> L.		LC					+	RE															
<i>Staphylea pinnata</i> L.	<i>Staphylea pinnata</i> L.		NT					+																
<i>Stellaria longifolia</i> Willd.	<i>Stellaria longifolia</i> H. L. Mühl. ex Willd.		VU	A2ac; B1ab(i,iii,iv)	VU	A2ac; B2a(i)b(i,iii,iv)																		
<i>Stellaria palustris</i> Hoffm.	<i>Stellaria palustris</i> Hoffm.		NT																					
	<i>Stellaria palustris</i> Retz.																							
	<i>Stellaria palustris</i> Ehrh. ex Hoffm.				VU	A2ac; B2a(i,ii)b(iii,iv)																		
<i>Sternbergia colchiciflora</i> Waldst. & Kit	<i>Sternbergia colchiciflora</i> Waldst. & Kit		EN	B1ab(i)					RE															
<i>Stipa dasyphylla</i> (Lindem.) Trautv.	<i>Stipa dasyphylla</i> (Czern. ex Lindem.) Trautv.		NT					+																
<i>Stipa eriocaulis</i> Borbás	<i>Stipa eriocaulis</i> C. Koch		NT					+	RE															
<i>Stipa pulcherrima</i> subsp. <i>crassiculmis</i> (P. A. Smirn.) Tzvelev	<i>Stipa crassiculmis</i> subsp. <i>euroanatolica</i> Martinovský		EN	B1ab(iii)c(ii)	CR	B2a(ii)b(iii); D																		
<i>Stipa transcarpatica</i> Klokov	<i>Stipa transcarpatica</i> Klokov		EN	C2a(ii)																				
<i>Stipa zaleskii</i> Wilensky	<i>Stipa smirnovii</i> Martinovský	H*, M	RE		RE																			
<i>Suaeda prostrata</i> Pall.	<i>Suaeda prostrata</i> Pall.	M	RE																					RE

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit	
<i>Snucisella inflexa</i> (Kluk) G. Beck	<i>Snucisella inflexa</i> (Kluk.) Beck			LC			+	VU	B2ab(i,ii,iii,iv)				+	VU	A4abcd				+						
<i>Syringa josikaea</i> J. Jacq. ex Rchb.	<i>Syringa josikaea</i> J. Jacq. ex Rchb.	B, E, H	NT											VU	A4abcd				+						
<i>Taraxacum austrinum</i> G. E. Haglund (sect. Palustria)	<i>Taraxacum austrinum</i> G. E. Haglund (sect. Palustria)			RE?																				RE?	
<i>Taraxacum erythrocarpum</i> Kirschner & Štěpánek (sect. Erythrocarpa)	<i>Taraxacum erythrocarpum</i> Kirschner & Štěpánek (sect. Erythrocarpa)	E	EN	B1ab(iii,iv,v)	EN	B1a(i,ii)b(iii,iv,v)																			
<i>Taraxacum gelertii</i> Raunk. (sect. Naevosa)	<i>Taraxacum gelertii</i> Raunk. (sect. Naevosa)		EN	B2ab(iii,iv)																				EN	B2a(ii)b(iii,iv)
<i>Taraxacum gibberum</i> Markl. (sect. Ruderalia)	<i>Taraxacum gibberum</i> Markl. (sect. Ruderalia)		VU	B2ab(iii,iv)																				VU	B2a(ii)b(iii,iv)
<i>Taraxacum kernianum</i> Hagend. & al. (sect. Hamata)	<i>Taraxacum kernianum</i> Hagend. & al. (sect. Hamata)		EN	B2ab(iii,iv)																				EN	B2a(ii)b(iii,iv)
<i>Taraxacum maricum</i> Vašut & al. (sect. Erythrocarpa)	<i>Taraxacum maricum</i> Vašut & al. (sect. Erythrocarpa)		VU	B2ab(iii)																				VU	B2a(ii)b(iii)
<i>Taraxacum nigricans</i> (Kit.) Rchb. (sect. Alpestrina)	<i>Taraxacum nigricans</i> (Kit.) Rchb. (sect. Alpestrina)	E	NT		EN	B2a(i,ii)b(iii)							+			+			+						
<i>Taraxacum paludem-ornans</i> Kirschner & Štěpánek (sect. Palustria)	<i>Taraxacum paludem-ornans</i> Kirschner & Štěpánek (sect. Palustria)		EN	B2ab(iii,iv)																				EN	B2a(ii)b(iii,iv)
<i>Taraxacum pieninicum</i> Pawl. (sect. Erythrocarpa)	<i>Taraxacum pieninicum</i> Pawl. (sect. Erythrocarpa)	E	CR	B2ab(i); C2a(i); D							CR	B2a; C2a(i); D													
<i>Taraxacum pseudobamatum</i> Dahlst. (sect. Hamata)	<i>Taraxacum pseudobamatum</i> Dahlst. (sect. Hamata)		CR	B2ab(iii,iv)																				CR	B2a(ii)b(iii,iv)
<i>Taraxacum quadrans</i> H. Ollg. (sect. Hamata)	<i>Taraxacum quadrans</i> H. Ollg. (sect. Hamata)		CR	B2ab(iii,iv)																				CR	B2a(ii)b(iii,iv)
<i>Taraxacum quaesitum</i> Kirschner & Štěpánek (sect. Palustria)	<i>Taraxacum quaesitum</i> Kirschner & Štěpánek (sect. Palustria)		EN	B2ab(iii)	EN	B2a(i,ii)b(iii)																			
<i>Taraxacum raunkiaeri</i> Wüinst. (sect. Naevosa)	<i>Taraxacum duplidentifrons</i> Dahlst. (sect. Naevosa)		EN	B2ab(iii,iv)																				EN	B2a(ii)b(iii,iv)
<i>Taraxacum rupicaprae</i> Štěpánek & Kirschner (sect. Alpestrina)	<i>Taraxacum rupicaprae</i> Štěpánek & Kirschner (sect. Alpestrina)		EN	B2ab(i); D	EN	B2a(i,ii); D																			
<i>Taraxacum serotinum</i> (Waldst. & Kit.) Fisch. (sect. Dioszegia)	<i>Taraxacum serotinum</i> (Waldst. & Kit.) Poir.		LC																						
	<i>Taraxacum serotinum</i> (Waldst. & Kit.) Fisch. (sect. Dioszegia)				EN	B1a(i,ii)b(iii,iv,v)		VU	A3cd																+
<i>Taraxacum subpolonicum</i> Kirschner & Štěpánek (sect. Palustria)	<i>Taraxacum subpolonicum</i> Kirschner & Štěpánek (sect. Palustria)		EN	B2ab(iii)	EN	B2a(i,ii)b(iii)																			
<i>Taxus baccata</i> L.	<i>Taxus baccata</i> L.		LC				+	VU	B2a; D1				+	EN	A1abcd				+	EN	B2a,b,c,d,e				
<i>Telekia speciosa</i> (Schreb.) Baumg.	<i>Telekia speciosa</i> (Schreb.) Baumg.		LC				+	EN	A4ac; C2a(i)				+			+			+						+
<i>Tephrosia crispa</i> (Jacq.) Rchb.	<i>Tephrosia crispa</i> (Jacq.) Rchb.		LC				+	VU	B2ab(i, ii, iii, iv, v)				+												
<i>Tephrosia integrifolia</i> subsp. <i>aurantiaca</i> (Willd.) B. Nord.	<i>Tephrosia aurantiaca</i> (Willd.) Griseb. & Schenk		NT																						
	<i>Senecio aurantiacus</i> (Hoppe) Less.						+	EN	A4ac; C2a(i)																
<i>Tephrosia integrifolia</i> (L.) Holub subsp. <i>integrifolia</i>	<i>Senecio integrifolius</i> (L.) Clairv. subsp. <i>integrifolius</i>		NT				+					+	CR	B2a; C2a(i); D					+						
<i>Tephrosia longifolia</i> subsp. <i>moravica</i> Holub	<i>Tephrosia longifolia</i> subsp. <i>moravica</i> Holub	E, H	EN	B2ab(iii,v)c(iv)	EN	B2a(i,ii)b(iii,v)c(iv)																			
<i>Tephrosia papposa</i> (Rchb.) Schur subsp. <i>papposa</i>	<i>Tephrosia papposa</i> (Rchb.) Schur subsp. <i>papposa</i>		EN	A2ac; B2ab(ii,iii,iv,v); C2a(i)	EN	A2ac; B2a(i,ii)b(iii,iv,v); C2a(i)							+						+						
<i>Teucrium botrys</i> L.	<i>Teucrium botrys</i> L.		NT				+	VU	B2ab(i, ii, iv, v)				+				VU	C2a(i)							
<i>Teucrium scordium</i> L.	<i>Teucrium scordium</i> L.	M	NT		EN	A2cd						+							+					+	
<i>Thalictrum flavum</i> L.	<i>Thalictrum flavum</i> L.		NT		EN	B1a(i)b(iii)							+			+			+						+

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit		
<i>Thalictrum foetidum</i> L.	<i>Thalictrum foetidum</i> L.		NT				+	EN	B2ab(i, ii, iv, v); C2a(i)										+					+		
<i>Thalictrum minus</i> subsp. <i>pseudominus</i> (Borbás) Soó	<i>Thalictrum pseudominus</i> Borbás		NT				+	VU	B2ab(i,ii,iii)																	
<i>Thalictrum simplex</i> subsp. <i>galioides</i> (DC.) Korsh.	<i>Thalictrum simplex</i> subsp. <i>galioides</i> (DC.) Korsh.		NT		VU	B1a(i)b(iii)				+															+	
<i>Thelypteris limbosperma</i> (All.) H. P. Fuchs	<i>Oreopteris limbosperma</i> (All.) Holub		LC				+	CR	D1				+			+									+	
<i>Thelypteris palustris</i> Schott	<i>Thelypteris palustris</i> Salisb.		NT				+	VU	B2a; B2c(iv)				+			+									+	
<i>Thesium dollineri</i> Murb.	<i>Thesium dollineri</i> Murb.	M, N	CR	B2ab(iii)	CR	B2a(ii)b(iii)																				
<i>Thesium pyrenaicum</i> Pourr.	<i>Thesium pyrenaicum</i> Pourr.		RE		RE																					
<i>Thymus longedentatus</i> (Degen & Urum.) Ronniger	<i>Thymus longedentatus</i> (Degen & Urum.) Ronniger	M	RE?																						RE?	
<i>Thymus pulegioides</i> subsp. <i>pannonicus</i> (All.) Kerguelen	<i>Thymus pulegioides</i> subsp. <i>carniolicus</i> (Borbás) P. A. Schmidt		CR	B2ab(iii)	CR	B2a(i,ii)b(iii)																				
<i>Tofieldia pusilla</i> (Michx.) Pers.	<i>Tofieldia pusilla</i> (F. Michx.) Pers.		VU	D2	VU	D2(i,ii)																				
<i>Tordylium maximum</i> L.	<i>Tordylium maximum</i> L.		NT		EN	B1a(i)b(iii)					+														+	
<i>Trapa natans</i> L.	<i>Trapa natans</i> L.	B, M	NT		VU	B2a(i,ii)c(iii,iv)					+			LC											+	
<i>Traunsteinera globosa</i> (L.) Rchb.	<i>Traunsteinera globosa</i> (L.) Rchb.		LC				+	EN	C2a(i)				+	VU	A2abcd											+
<i>Trientalis europaea</i> L.	<i>Trientalis europaea</i> L.		NT				+						+				CR	C2b								
<i>Trifolium badium</i> Schreb.	<i>Trifolium badium</i> Schreb.		NT				+						+	VU	A2abcd											+
<i>Trifolium lupinaster</i> L.	<i>Trifolium lupinaster</i> f. <i>angustifolia</i> Litv.		EN	A2ace; B1ab(iii,v)																						CR B1a; B1c(i); C2b
	<i>Trifolium romanicum</i> Brandza				CR	A2ace; B2a(ii)b(iii,v); C2a(ii); D																				
<i>Trifolium pannonicum</i> Jacq.	<i>Trifolium pannonicum</i> Jacq.		LC				+				+	VU	B2a; C2a(i)													+
<i>Trifolium retusum</i> L.	<i>Trifolium retusum</i> L.	M	NT		CR(PE)								+													+
<i>Trifolium striatum</i> L.	<i>Trifolium striatum</i> L.	M	NT		EN	A2ac; B2a(i)b(ii,iii)							+													+
<i>Trifolium vesiculosum</i> Savi	<i>Trifolium vesiculosum</i> Savi	M, N	CR	B1ab(i)				RE																		DD
<i>Triglochin maritima</i> L.	<i>Triglochin maritima</i> L.		VU	A2ac; B1ab(iii,iv,v)	VU	A2ac; B2a(i)b(iii,iv,v)							+													+
<i>Triglochin palustris</i> L.	<i>Triglochin palustris</i> L.		NT				+	VU	A3cd				+													+
<i>Trichoporum alpinum</i> (L.) Pers.	<i>Bacothryon alpinum</i> (L.) T. V. Egorova		EN	B1ab(iii)																						
	<i>Trichoporum alpinum</i> (L.) Pers.				EN	B2a(ii)b(iii)																				
<i>Trichoporum cespitosum</i> (L.) Hartm. subsp. <i>cespitosum</i>	<i>Trichoporum cespitosum</i> (L.) Hartm. subsp. <i>cespitosum</i>		EN	A2ac; B2ab(ii,iv,v); C2a(ii)	EN	A2ac; B2a(i)b(ii,iv,v); C2a(ii)																				+
<i>Trichoporum pumilum</i> (Vahl) Schinz & Thell.	<i>Trichoporum pumilum</i> (Vahl) Schinz & Thell.		EN	A2ac; B2ab(iii)	EN	A2ac; B2a(i)b(iii)																				
<i>Trinia glauca</i> (L.) Dumort. subsp. <i>glauca</i>	<i>Trinia glauca</i> (L.) Dumort. subsp. <i>glauca</i>		NT		VU	B1a(i)b(iii)							+													+
<i>Trinia kstaubeli</i> M. Bieb.	<i>Trinia ucrainica</i> Schischk.		EN	B1ab(iii)	EN	B1a(i)b(iii)																				
<i>Triplurospermum tenuifolium</i> (Kit.) Freyn	<i>Matricaria tricophylla</i> (Boiss.) Boiss.		VU	C2a(i)																						+
<i>Trollius europaeus</i> L. s. l.	<i>Trollius europaeus</i> L.		LC				+	CR	C2a(i)				+													+
<i>Tulipa hungarica</i> Borbás	<i>Tulipa hungarica</i> Borbás	B, E, H	VU	D2																						+
<i>Turgenia latifolia</i> (L.) Hoffm.	<i>Turgenia latifolia</i> (L.) Hoffm.	M	VU	B1ab(i,iii,iv)	EN	B2a(ii)b(ii,iii,iv)																				+
<i>Typha shuttleworthii</i> W. D. J. Koch & Sond.	<i>Typha shuttleworthii</i> W. D. J. Koch & Sond.	B	VU	B1ab(i)	CR	B2a(i,ii)b(iii)																				+
<i>Utricularia australis</i> R.Br.	<i>Utricularia australis</i> R. Br.		NT				+						+	VU	B2ab(i,ii,iii,iv,v)											+
<i>Utricularia bremsii</i> Heer	<i>Utricularia bremsii</i> Heer		DD					RE					+	DD												+
<i>Utricularia minor</i> L.	<i>Utricularia minor</i> L.		VU	A2ac; B1ab(iii,iv,v)	EN	A2ac; B2a(ii)b(iii,iv,v)		CR	C2a(i)		VU	C2a(i)														+
<i>Utricularia vulgaris</i> L.	<i>Utricularia vulgaris</i> L.		NT					VU	B2a(i,ii)c(ii,iii,iv)																	+
	<i>Utricularia vulgaris</i> L. subsp. <i>vulgaris</i>													VU	A2a											
<i>Vaccaria hispanica</i> (Mill.) Rauschert	<i>Vaccaria hispanica</i> subsp. <i>grandiflora</i> (Ser. ex DC.) Holub	A	CR	B1ab(i)	RE																					+
<i>Vaccinium microcarpum</i> (Rupr.) Schmalh.	<i>Oxycoccus microcarpus</i> Turcz. ex Rupr.		NT																							
	<i>Vaccinium microcarpum</i> (Turcz. ex Rupr.) Schmalh.				CR	B1a(i)b(iii)		EN	D2																	+
<i>Vaccinium oxycoccus</i> L.	<i>Oxycoccus palustris</i> Pers.		LC				+							VU	B2b(iii)											+
<i>Vaccinium uliginosum</i> L. subsp. <i>uliginosum</i>	<i>Vaccinium uliginosum</i> L. subsp. <i>uliginosum</i>		NT		VU	A2ac; B2a(i)b(iii,iv,v)																				+

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit
<i>Vaccinium vitis-idaea</i> L.	<i>Vaccinium vitis-idaea</i> L.		LC				+	VU	B2b(iii, iv); C1				+			+			+					
<i>Valeriana dioica</i> subsp. <i>simplicifolia</i> (Rchb.) Nyman	<i>Valeriana simplicifolia</i> (Rchb.) Kabath		LC				+	CR	B2ab(ii,iii,iv,v)				+			+			+					
<i>Valeriana officinalis</i> subsp. <i>sambucifolia</i> (J. C. Mikan) Čelak	<i>Valeriana officinalis</i> L. subsp. <i>sambucifolia</i> (J. C. Mikan) Čelak.		LC				+	EN	B2ab(ii,iii,iv)				+						+					
<i>Valeriana tripteris</i> subsp. <i>austriaca</i> E. Walther	<i>Valeriana tripteris</i> L. subsp. <i>austriaca</i> E. Walther		LC				+	VU	A3c; C2a(i)							+								
<i>Valerianella coronata</i> (L.) DC.	<i>Valerianella coronata</i> (L.) DC.	M	VU	B1ab(i)	EN	A2ac; B2a(ii)b(iii,iv); C2b													+			+		
<i>Veratrum album</i> L. subsp. <i>album</i>	<i>Veratrum album</i> L. subsp. <i>album</i>		LC		VU	B2a(i)b(i,iii,iv,v); C2a(i); D1+D2(i)							+			+			+				+	
<i>Veratrum nigrum</i> L.	<i>Veratrum nigrum</i> L.		VU	D2	VU	D2		VU	D2										+				+	
<i>Verbascum glabratum</i> subsp. <i>brandzue</i> (D. Brändzä) Murb.	<i>Verbascum glabratum</i> Friv. subsp. <i>brandzue</i> (Franch. ex D. Brändzä) Murb.		VU	B2ac(ii)													VU	B2a; B2c(ii)						
<i>Verbascum hychnitis</i> subsp. <i>moenchii</i> (Schultz) Holub & Mladý	<i>Verbascum hychnitis</i> subsp. <i>moenchii</i> (Schultz) Holub & Mladý	M	RE																				RE	
<i>Verbascum speciosum</i> Schrad. subsp. <i>speciosum</i>	<i>Verbascum speciosum</i> Schrad. subsp. <i>speciosum</i>		NT		VU	B1a(ii)b(iii)		VU	B1a(ii)b(iii)															
<i>Veronica acinifolia</i> L.	<i>Veronica acinifolia</i> L.		EN	B1ab(iii)	RE											+			+					
<i>Veronica agrestis</i> L.	<i>Veronica agrestis</i> L.	A, M	NT		CR	A2ac; B2a(i)b(i,ii,iv,v)							+			+			+				+	
<i>Veronica anagalloides</i> Guss.	<i>Veronica anagalloides</i> Guss.	M, N	NT		VU	B1a(i,ii)c(iii,iv,v)				+			+			+			+					
<i>Veronica aphylla</i> L.	<i>Veronica aphylla</i> L.		NT				+						+	EN	A4abc				+					
<i>Veronica austriaca</i> subsp. <i>jacquinii</i> (Baumg.) Eb. Fisch.	<i>Veronica jacquinii</i> Baumg.		VU	A2ac; B1ab(iii,iv,v)	CR	A2ac; B2a(ii)b(iii,iv,v)				+						+			+				+	
<i>Veronica bachofenii</i> Heuff.	<i>Veronica bachofenii</i> Heuffel		NT													+			+	RE?			+	
<i>Veronica bellidioides</i> L.	<i>Veronica bellidioides</i> L.		EN	B1ab(i)										CR	D				+					
<i>Veronica catenata</i> Pennell	<i>Veronica catenata</i> Pennell	M, N	LC		EN	B1a(i,ii)c(iii,iv,v)				+									+					
<i>Veronica fruticans</i> Jacq.	<i>Veronica fruticans</i> Jacq.		LC				+						+	EN	C1				+					
<i>Veronica incana</i> subsp. <i>pallens</i> (Host) Albach	<i>Pseudolysimachion incanum</i> subsp. <i>pallens</i> (Host) Trávníček		CR	B1ab(iii)	CR	B1a(ii)b(iii)																		
<i>Veronica longifolia</i> L.	<i>Pseudolysimachion maritimum</i> (L.) Á. Löve & D. Löve		NT		VU	B1a(i)b(iii)				+			+			+			+					
<i>Veronica montana</i> L.	<i>Veronica montana</i> L.		LC				+	VU	B2b(iii, iv)				+			+			+					
<i>Veronica opaca</i> Fr.	<i>Veronica opaca</i> Fr.	A	VU	B1ab(i,iii)	CR(PE)			CR	B2a; C1				+						+					
<i>Veronica scardica</i> Griseb.	<i>Veronica scardica</i> Griseb.		VU	B2ab(iv)	RE			RE									VU	B2a; B2b(vi)						
<i>Veronica spicata</i> subsp. <i>fischeri</i> (Trávn.) Albach	<i>Pseudolysimachion spicatum</i> subsp. <i>fischeri</i> Trávníček		VU	B1ab(iii)	VU	B1a(i)b(iii)				+														
<i>Veronica spuria</i> L.	<i>Pseudolysimachion spurium</i> subsp. <i>foliosum</i> (Waldst. & Kit.) Holub	M			RE																			
	<i>Pseudolysimachion spurium</i> (L.) Rauschert							VU	B2ab(i,ii,iii,iv)							+								
<i>Veronica triloba</i> (Opiz) Wiesb.	<i>Veronica triloba</i> (Opiz) Opiz	A, M	DD		EN	A2ac; B2(i,ii)b(iii,iv)										+			+					
<i>Veronica urticifolia</i> Jacq.	<i>Veronica urticifolia</i> Jacq.		LC		VU	A2ac; B2a(ii)b(ii,iii,iv,v)					VU	B2a; C2a(i)				+			+					
<i>Vicia lutea</i> L.	<i>Vicia lutea</i> L.	N	VU	C2a(ii)				VU	C2a(ii)										+				+	
<i>Vicia narbonensis</i> L.	<i>Vicia narbonensis</i> L.		CR	B1ab(i)				RE											+					
<i>Vicia sparsiflora</i> Ten.	<i>Vicia sparsiflora</i> Ten.		NT		VU	B1a(i)b(iii,iv)				+									+				+	
<i>Vicia sylvatica</i> L.	<i>Vicia sylvatica</i> L.		LC				+	VU	A2ac				+			+			+				+	
<i>Vicia herbacea</i> Waldst. & Kit.	<i>Vicia herbacea</i> Waldst. & Kit.	M	NT		VU	B1a(ii)b(iii)+B2a(ii)b(iii)				+									+					
<i>Viola alba</i> Besser	<i>Viola alba</i> Besser		NT				+			+	RE			CR	B1ab(iii,iv,v)				+					
<i>Viola alpina</i> Jacq.	<i>Viola alpina</i> Jacq.		VU	B2ab(i); D2	VU	B2a(i)b(i); D2(i)							+						+					
<i>Viola ambigua</i> Waldst. & Kit.	<i>Viola ambigua</i> Waldst. & Kit.	M	NT		EN	A2ac; B2(ii)b(iii,iv)				+						+			+					
<i>Viola biflora</i> L.	<i>Viola biflora</i> L.		LC				+	EN	A3c, d; B2ab (ii)				+			+			+					
<i>Viola dacica</i> Borbás	<i>Viola dacica</i> Borbás		LC		VU	B2a(i)b(iii,v); C2a(i); D1+D2(i)							+			+			+					
<i>Viola elatior</i> Fr.	<i>Viola elatior</i> Fr.		NT		CR	A2ac; B2a(i)b(ii,iii,iv,v); C2a(ii)		VU	B2ab(i,ii,iii,iv)							+			+				+	
<i>Viola epipsila</i> Ledeb.	<i>Viola epipsila</i> Ledeb.		VU	B1ab(iii,v)c(iv)	CR	B2a(ii)b(iii,v)											CR	B2a; B2c(iv)						
<i>Viola grisebachiana</i> Boiss.	<i>Viola grisebachiana</i> Vis.	M	VU	B2ab(ii)															+	VU	B1;D2			
<i>Viola palustris</i> L. subsp. <i>palustris</i>	<i>Viola palustris</i> L.		LC				+						+			+	CR	B2a; B2c(iii)						
<i>Viola persicifolia</i> Schreb.	<i>Viola stagnina</i> KIT.		VU	B1ab(i,iii,iv)				EN	B2ab(i,ii,iii,iv)				+			+			+					

EuroMed name	National name	Character	Carpathians category	Carpathians criteria	SK cat	SK crit	SK pres	HU cat	HU crit	HU pres	PL cat	PL crit	PL pres	UA cat	UA crit	UA pres	RO cat	RO crit	RO pres	RS cat	RS crit	RS pres	CZ cat	CZ crit
<i>Viola pumila</i> Chaix	<i>Viola pumila</i> Chaix		NT		EN	A2ac; B2a(ii)b(i,iii,iv,v)				+						+			+					
<i>Vitis vinifera</i> subsp. <i>sylvestris</i> (C. C. Gmel.) Hegi	<i>Vitis sylvestris</i> C. C. Gmel.		VU	B1ac(iv)				EN	B2a; B2c(iv)							+			+				+	
<i>Vulpia bromoides</i> (L.) Gray	<i>Vulpia bromoides</i> (L.) Gray	M	VU	B1ab(i)	RE											+	EN	B2a; B2c(ii); C2a(i)						
<i>Waldsteinia ternata</i> subsp. <i>trifolia</i> (K. Koch) Teppner	<i>Waldsteinia teppneri</i> Májovský		CR	B2ab(iii)	CR	B2a(ii)b(iii)																		
<i>Waldsteinia ternata</i> subsp. <i>trifolia</i> (K. Koch) Teppner	<i>Waldsteinia ternata</i> subsp. <i>magicii</i> Májovský		EN	B2ab(ii,iii,v)	EN	B2a(i)b(ii,iii,v)																		
<i>Wolffia arrhiza</i> (L.) Wimm.	<i>Wolffia arrhiza</i> (L.) Horkel ex Wimm.		NT							+						+	EN	A2; C2b	+				+	
<i>Woodsia alpina</i> (Bolton) Gray	<i>Woodsia alpina</i> (Bolton) Gray		VU	B1ab(iv); D2	VU	D2(i,ii)		RE			CR	B2a; C2a(i)		DD			EN	D						
<i>Woodsia ibensis</i> (L.) R. Br.	<i>Woodsia ibensis</i> (L.) R. Br.		NT		VU	B1a(i)b(iii)		VU	C1; D1		CR	B2a(i); C2a(i); D		CR	D				+					
<i>Woodsia pulchella</i> Bertol.	<i>Woodsia glabella</i> R. Br. subsp. <i>pulchella</i> (Bertol.) A. & D. Lowe		EN	C2b													EN	C2b						
<i>Xanthium spinosum</i> L.	<i>Xanthium spinosum</i> L.	A, M, N	NT		EN	A2ac; B2a(i,ii)b(iii,iv,v)				+			+			+			+				+	
<i>Xeranthemum cylindraceum</i> Sm.	<i>Xeranthemum cylindraceum</i> Sm.	A	NT		VU	A2ac; B2a(i)b(iii,iv,v)c(iv)				+									+				+	

Legend: cat. – category, crit. – criteria, pres. – presence

Table 2: Number of taxa proposed by individual Carpathian countries in the Red List of vascular plants of the Carpathians (according to status of database <http://www.sopsr.sk/symfony-bioregio/botany> to August 22nd, 2013).

Country	Total number of taxa	Number of taxa included into Carpathian Red list
Czech republic	26	26
Hungary	539	321
Poland	198	130
Romania	187	159
Serbia	106	26
Slovakia	1 001	525
Ukraine	195	180

# DRAFT CARPATHIAN RED LIST OF MOLLUSCS (MOLLUSCA)

Compiled by Lubomíra Vavrová

**Authors / Contributors:** Lubomíra Vavrová, Marek Čiliak, Jozef Šteffek† (Slovakia), Miklós G. Heltai, Zoltán Fehér (Hungary), Katarzyna Zajac, Anna Zięcik, Monika Szewczyk, Piotr Mikolajczyk (Poland), Vasyl Chumak (Ukraine), Angela Banaduc (Romania)

## Background

According to the latest IUCN European Red List of Non-marine Molluscs (Cuttelod et al., 2011) in total **854 freshwater molluscs species** (including 748 species endemic to Europe) and **1233 terrestrial molluscs species** (including 1161 species endemic to Europe) were assessed using the IUCN Red List Criteria (IUCN 2001).

### Number of Carpathian species per category:

Freshwater molluscs: EX (Extinct) – 5, CR (Critically Endangered) – 109, EN (Endangered) – 90, VU (Vulnerable) – 174, NT (Near Threatened) – 75, LC (Least Concern) – 190, DD (Data Deficient) – 211

Terrestrial molluscs: EX (Extinct) – 3, CR (Critically Endangered) – 53, EN (Endangered) – 51, VU (Vulnerable) – 142, NT (Near Threatened) – 182, LC (Least Concern) – 677, DD (Data Deficient) – 125

The following mollusc species that occur in the Carpathians are listed also in the European list of threatened species (categories EU / EU27):

*Theodoxus prevostianus* (EN / EN), *Theodoxus transversalis* (EN / EN), *Unio crassus* (VU / VU), *Vertigo angustior* (VU / VU), *Vertigo moulinsiana* (VU / VU), *Agardhiella tunda* (VU / VU), *Bythinella molcsanyi* (VU / VU), *Xerocampylaea zelebori* (LC / VU).

## Executive summary

In total 357 molluscs species occurring in the Carpathians were assessed according to the IUCN Red List Criteria (IUCN 2001). Considering the recent knowledge about the species populations size and trends and their habitat quality 37 taxa in total were classified as threatened. These taxa were classified in the following categories:

CR (1 taxon) - *Theodoxus prevostianus*

EN (6 taxa) – *Alopiacina maciana*, *Bythinella molcsanyi*, *Quickella*

*arenaria*, *Theodoxus transversalis*, *Unio crassus*, *Valvata macrotoma*

VU (30 taxa) – *Agardhiella tunda*, *Alopiacina bielzki clatbrata*, *A. b. madensis*, *A. meschendorferi*, *A. petrensis*, *A. pomatias*, *Alzoniella slovenica*, *Bythinella calimanic*, *B. viseuiana*, *B. blidariensis*, *B. georgievi*, *B. falniowski*, *B. feberi*, *B. sirbui*, *B. szarowskiae*, *Cochlicopa nitens*, *Cochlodina fimbriata remota*, *Faustina cingulella*, *F. rossmässleri*, *Gyraulus rossmässleri*, *Helicigona kiralikoeica*, *Petasina filicina*, *Pisidium moitessierianum*, *P. pseudosphaerium*, *P. tenuilineatum*, *Pseudanodonta complanata*, *Pupilla sterrii*, *Terrestribythinella baidashnikovii*, *Theodoxus danubialis*, *Troglonitrea argintarii*

In total 46 taxa are considered as endemic to the Carpathians. In total 9 taxa are of the European importance and are listed in Annexes of the Habitats Directive.

**Annex II** – *Vertigo angustior*, *V. geyeri*, *V. moulinsiana*

**Annex IV** – *Theodoxus prevostianus*

**Annex II and Annex IV** – *Anisus vorticulus*, *Bythinella panonica*, *Drobia banatica*, *Theodoxus transversalis*, *Unio crassus*

*Bithynia leachii* is classified as DD (Data Deficient) due to the fact that in the past the species was confused with *B. troschelii*. Although there is *Oxyoloma dunkeri* included in the list and classified as LC, it is not confirmed that this species occurs in the Carpathians. *Spelaeodiscus triarius* needs taxonomic revision and therefore is classified as DD.

There were several factors that have impact on the final classification of the species status in the Carpathians. The most important factor was lack of recent data on molluscs occurrence in the Carpathians and lack of experts to consult the species status at the national level. To overcome these difficulties personal records of authors and their expert opinion were applied in classification of species with absent data. Therefore the presented Red List of Molluscs for Carpathians needs to be considered as a draft list. To elaborate a list based on scientific knowledge it is necessary to focus on research and data collecting. It is also necessary to train national experts on applicati-

on of the IUCN Red List Criteria to ensure that species classification at national level will be comparable for all relevant countries.

## Assessment methodology

Standard methodology for application of the IUCN Red List Criteria (IUCN 2001) at regional level was used for the species classification.

Based on the available data a list of the Carpathian molluscs was elaborated. The list was consulted with experts from the region. For the assessment the following rules were set up:

- all species with confirmed occurrence in the Carpathians were classified;
- invasive and non-native species were not classified;
- subspecies were classified only exceptionally;
- if no published data available an expert opinion and personal database (if existing) were used for the species assessment.

There were complications in application of the IUCN methodology at national level. For the future assessment it is necessary to secure that the same methodology is correctly applied at national levels and that the data are comparable. This can be done through a training of national experts on using the IUCN methodology.

## Taxonomic scope / Habitats categorisation

On the list there are 24 species that are not listed in Fauna Europea. In addition to that a note on the species synonym is included for 9 species.

## Major threats

Main threats to mollusc species in the Carpathians are:

- logging and removing of dead wood from forests (threatened are mainly species strictly or very much bound to forests, e.g. *Cochlodina fimbriata remota*, *Faustina rossmässleri*;
- changes in character of water bodies and sediments (main threat to *Theodoxus transversalis*, *T. danubialis*, *T. prevostianus*, *Unio crassus*);
- degradation of wetlands (e.g. *Cochlicopa nitens*);
- degradation of specific habitats, e.g. springs (genus *Bythinella* sp.).

## Conservation/conservation management

It is very important to regularly monitor the species, their population size and trends as well as quality of their habitats. Priority should be given to species classified as threatened (category CR, EN, and VU) and those of the European and national importance.

As mentioned above the presented list is a draft based on recently available data and knowledge that are in many cases not sufficient for objective assessment. Future research should be focused also on collecting data necessary for the species classification according to the IUCN

Red List Criteria. Overview of the status of molluscs of the Carpathians is in Table 1.

## References

- BERAN, L. (2002). Aquatic molluscs of the Czech Republic – distribution and its changes, habitats, dispersal, threat and protection, Red List. Sborník přírodovědného klubu v Uh. Hradišti, Supplementum 10, 258 pp.
- CUTTELOD, A., SEDDON, M. & NEUBERT, E. (2011). European Red List of Non-marine Molluscs. Luxembourg: Publications Office of the European Union.
- DELI, T. & SUBAI, P. (2011). Revision der Vitrea-Arten der Südkarpaten Rumäniens mit Beschreibung einer neuen Art (Gastropoda, Pulmonata, Pristilomatidae). Contrib. Nat. Hist. 19: 1–53.
- DVOŘÁKOVÁ, J., LOŽEK, V., HORSÁK, M. & PECHANEC, V. (2011). Atlas rozšíření suchozemských plžů v CHKO Bílé Karpaty. Acta Carpathica Occidentalis, Supplementum 1, 124 pp.
- FALNIOWSKI, A., SZAROWSKA, M. & SIRBU, I. (2009). Bythinella Moquin-Tandon, 1856 (Gastropoda: Rissooidea: Bythinellidae) in Romania: its morphology with description of four new species. Folia Malacol. 17: 33–48.
- FEHÉR, Z., NÉMETH, L., NICOARĂ, A. & SZEKERES, M. (2013). Molecular phylogeny of the land snail genus Alopiacina (Gastropoda: Clausiliidae) reveals multiple inversions of chirality. ZOOLOGICAL JOURNAL OF THE LINNEAN SOCIETY 167: 259–272.
- FEHÉR, Z., TRIF, C. & VARGA, A. (2008). A malacofaunistic study of Maramureş county, Romania with some taxonomical and conservation notes. STUD UNIV VASILE GOLDIS 18 suppl.: 153–165.
- FEHÉR, Z., VARGA, A., DELI, T. & DOMOKOS, T. (2009). Geographic distribution and genital morphology of the genera Lozekia Hudec, 1970 and Kovacsia Nordsieck, 1993 (Mollusca: Gastropoda: Hygromiidae). Zoosystematics and Evolution, 85: 151–160.
- GLÖER, P. (2013). New Bythinella species from Northern Romania (Gastropoda: Rissooidea). Folia Malacologica, 21(2): 55–66.
- GROSSU, A. V. (1981). Gastropoda Romaniae. Vol. 3. Suprafamiliiile Clausiliacea și Achatinacea. București, 269 pp.
- GROSSU, A. V. (1983). Gastropoda Romaniae. Vol. 4. Suprafamiliiile Arionacea, Zonitacea, Ariophantacea și Helicacea. București, 564 pp.
- GROSSU, A. V. (1986). Gastropoda Romaniae I. Opisthobranchia. Academiei Republicii Populare Romine, București.
- HORSÁK, M., JUŘÍČKOVÁ, L., BERAN, L., ČEJKA, T. & DVOŘÁK, L. (2010). Annotated list of molluscs species

recorded outdoors in the Czech and Slovak Republics. Malacologica Bohemoslovaca, Suppl. 1, p. 1-37.

IUCN (2001). IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland.

LIKHAREV, I. M. & RAMMELMEIER, E. S. (1962). Terrestrial Molluscs of the Fauna of the U.S.S.R., Jerusalem, Israel Prog. Sci. Translations, 574 pp.

LISICKÝ, M. J. (1991). Mollusca Slovenska. Vydavateľstvo SAV, Bratislava, 341 pp.

PINTÉR, L. & SUARA, R. (2004). Magyarországi puhatestűek katalógusa: hazai malakológusok gyűjtései alapján. (Fehér Z., Gubányi A. (szerk.): A magyarországi puhatestűek elterjedése; II.). Budapest: Magyar Természettudományi Múzeum, 547 pp.

SOÓS, L. (1940). Adatok az Északkeleti Kárpátok Mollusca-faunájának ismeretéhez [A contribution to the Mollusc fauna of the North Eastern Carpathians]. Állattani Közlemények, 37: 140-154.

SOÓS, L. (1943). A Kárpát-medence Mollusca-faunája. In: Magyarország természetrajza, I. Állattani rész. Magyar Tudományos Akadémia, Budapest, pp. 1-478.

SUBAI, P. (2011). Revision of the Argnidae, 2. The species of Agardhiella from the eastern part of the Balkan Peninsula (Gastropoda: Pulmonata: Pupilloidea). Archiv für Molluskenkunde Peter 140(1): 77-121.

ŠTEFFEK, J., NAGEL, K.-O. & VAVROVÁ, E. (2006). Ecology, distribution and conservation of mussels (Unionidae, Dreissenidae and Corbiculidae) in the Slovak Republic. TU Zvolen, Fakulta ekológie a environmentalistiky, 91 pp.

VAVROVÁ, E. (2009). Ekoszozologická typizácia malakofauny Slovenska s využitím GIS. Dizertačná práca, Ústav ekológie lesa SAV, Zvolen, 90 pp. + mapová príloha.

WAGNER, J. (1942a). Malakozoologische Mitteilungen aus den Ost-Karpaten. Fragmenta Faunistica Hungarica, 5: 30-31.

WAGNER, J. (1942b). Neue Beiträge zur Kenntnis der Molluskenfauna Siebenbürgens und des Partiums. Mathematikai és Természettudományi Értesítő, 61: 385-399.

WAGNER, J. (1943). Az 1942. évi erdélyi kutatóútak malakológiai eredményei. Állattani Közlemények, 40: 35-49.

Table 1: Overview of the status of molluscs of the Carpathians

Taxon	Category	Criteria	Endemic to Carpathians	Habitats Directive	Bern Convention	Note
Abida secale secale (Draparnaud, 1801)	DD					
Acanthinula aculeata (O.F. Muller, 1774)	LC					
Acicula parcelineata (Clessin, 1911)	LC					
Acroloxus lacustris (Linnaeus, 1758)	LC					
Aegopinella epipedostoma (Fagot, 1879)	NT					
Aegopinella minor (Stabile, 1864)	LC					
Aegopinella nitens (Michaud, 1831)	LC					
Aegopinella pura (Alder, 1830)	LC					
Agardhiella parreyssii armata (Clessin, 1887)	LC					
Agardhiella banatica (Zilch, 1958)	NT		YES			
Agardhiella parreyssii caesa (Westerlund, 1876)	LC					
Agardhiella crassilabris (Grossu & Negrea, 1968)	NT		YES			
Agardhiella domokosi Subai, 2011	LC					
Agardhiella grossui (Zilch, 1958)	NT		YES			
Agardhiella incerta Grossu, 1987	LC					
Agardhiella lamellata (Clessin, 1887)	LC					
Agardhiella reinhardti (Zilch, 1958)	NT		YES			
Agardhiella serbica Subai, 2011	NT					
Agardhiella tunde Deli, 2010	VU	D2	YES			
Alinda (Alinda) biplicata (Montagu, 1803)	LC					
Alinda (Pseudalinda) stabilis (L. Pfeiffer, 1847)	LC					
Alopiopsis (Alopiopsis) bielzii (L. Pfeiffer, 1849)	LC					
Alopiopsis (Alopiopsis) bielzii bielzii (L. Pfeiffer, 1849)	LC		YES			
Alopiopsis (Alopiopsis) bielzii clathrata (E.A. Bielz, 1856)	VU		YES			
Alopiopsis (Alopiopsis) bielzii madensis (C. Fuss, 1855)	VU		YES			
Alopiopsis (Alopiopsis) bielzii tenuis (E.A. Bielz, 1861)	DD		YES			
Alopiopsis (Alopiopsis) bogatensis (E.A. Bielz, 1856)	NT		YES			
Alopiopsis (Alopiopsis) canescens M. von Kimakowicz, 1883	LC		YES			
Alopiopsis (Alopiopsis) fussi (M. von Kimakowicz, 1894)	NT		YES			
Alopiopsis glauca (Bielz, 1853)	NT		YES			
Alopiopsis (Alopiopsis) glorifica (Charpentier, 1852)	LC		YES			
Alopiopsis (Alopiopsis) helenae R. von Kimakowicz, 1928	LC		YES			
Alopiopsis (Alopiopsis) hildegardae R. von Kimakowicz, 1931	NT		YES			
Alopiopsis (Alopiopsis) lischkeana (Charpentier, 1852)	LC		YES			
Alopiopsis (Alopiopsis) livida (Menke, 1828)	LC		YES			
Alopiopsis maciana Badarau & Szekeres, 2001	EN	B2aC(iv)				
Alopiopsis (Alopiopsis) meschendorferi (E.A. Bielz, 1858)	VU	D2	YES			
Alopiopsis (Alopiopsis) nefasta (M. von Kimakowicz, 1894)	NT		YES			
Alopiopsis (Alopiopsis) nixa (M. von Kimakowicz, 1894)	NT		YES			synonym Alopiopsis fussi
Alopiopsis petrensis Nordsieck, 1996	VU	D2				
Alopiopsis (Alopiopsis) plumbea (Rossmässler, 1839)	LC		YES			
Alopiopsis soosiana Agócsy & Pócs, 1961	DD		YES			
Alopiopsis (Alopiopsis) straminicollis (Charpentier, 1852)	LC		YES			
Alopiopsis (Alopiopsis) subcosticollis (A. Schmidt, 1858)	LC		YES			
Alopiopsis (Alopiopsis) zagani Szekeres, 1969	DD		YES			

Taxon	Category	Criteria	Endemic to Carpathians	Habitats Directive	Bern Convention	Note
<i>Alopia</i> ( <i>Kimakowiczia</i> ) <i>glauca</i> (E.A. Bielz, 1853)	NT					
<i>Alopia</i> ( <i>Kimakowiczia</i> ) <i>pomatias</i> (L. Pfeiffer, 1868)	VU	B2ac(i)(iii)				synonym <i>Alopia cyclostoma</i>
<i>Alzoniella</i> ( <i>Alzoniella</i> ) <i>slovenica</i> (Lozek & Brtek, 1964)	VU					
<i>Ancylus fluviatilis</i> O.F. Muller, 1774	LC					
<i>Anisus</i> ( <i>Anisus</i> ) <i>leucostoma</i> (Millet, 1813)	LC					
<i>Anisus</i> ( <i>Anisus</i> ) <i>septemgyratus</i> (Rossmassler, 1835)	NT					
<i>Anisus</i> ( <i>Anisus</i> ) <i>spiroorbis</i> (Linnaeus, 1758)	LC					
<i>Anisus</i> ( <i>Disculifer</i> ) <i>vortex</i> (Linnaeus, 1758)	LC					
<i>Anisus</i> ( <i>Disculifer</i> ) <i>vorticulus</i> (Troschel, 1834)	DD			II, IV		
<i>Anodonta anatina</i> (Linnaeus, 1758)	NT					
<i>Anodonta cygnea</i> (Linnaeus, 1758)	NT					
<i>Aplexa hypnorum</i> (Linnaeus, 1758)	LC					
<i>Argna bielzi</i> (Rossmassler, 1859)	LC					
<i>Arianta aethiops aethiops</i> (M. Bielz, 1851)	LC		YES			
<i>Arianta arbustorum</i> (Linnaeus, 1758)	LC					
<i>Arianta hessei</i> (M. von Kimakowicz, 1883)	NT		YES			
<i>Arion</i> ( <i>Arion</i> ) <i>lusitanicus</i> J. Mabille, 1868	LC					synonym <i>Arion vulgare</i>
<i>Arion</i> ( <i>Arion</i> ) <i>rufus</i> (Linnaeus, 1758)	LC					
<i>Arion</i> ( <i>Carinarion</i> ) <i>circumscriptus</i> Johnston, 1828	LC					
<i>Arion</i> ( <i>Carinarion</i> ) <i>fasciatus</i> (Nilsson, 1823)	LC					
<i>Arion hortensis</i> Férussac, 1819	LC					
<i>Arion</i> ( <i>Carinarion</i> ) <i>silvaticus</i> Lohmander, 1937	LC					
<i>Arion</i> ( <i>Kobeltia</i> ) <i>distinctus</i> J. Mabille, 1868	LC					
<i>Arion</i> ( <i>Mesarion</i> ) <i>fuscus</i> (O.F. Muller, 1774)	LC					
<i>Balea fallax</i> (Rossmässler, 1836)	LC					
<i>Balea jugularis</i> (Vest, 1859)	LC					
<i>Balea perversa</i> (Linnaeus, 1758)	LC					
<i>Balea viridana</i> (Rossmässler, 1836)	LC					
<i>Bathymphalus contortus</i> (Linnaeus, 1758)	LC					
<i>Bielzia coerulans</i> (M. Bielz, 1851)	LC		YES			
<i>Bithynia leachii</i> (Sheppard, 1823)	DD					in the past very often confused with <i>Bithynia troschelii</i>
<i>Bithynia tentaculata</i> (Linnaeus, 1758)	LC					
<i>Bithynia troschelii</i> (Paasch, 1842)	DD					
<i>Boettgerilla pallens</i> Simroth, 1912	LC					
<i>Borysthenia naticina</i> (Menke, 1845)	DD					
<i>Bulgarica</i> ( <i>Strigilecula</i> ) <i>cana</i> (Held, 1836)	LC					
<i>Bulgarica rugicollis</i> (Rossmässler, 1836)	LC					
<i>Bulgarica vetusta</i> (Rossmässler, 1836)	LC					
<i>Bythinella austriaca</i> (Frauenfeld, 1857)	LC					
<i>Bythinella calimanica</i> Falniowski, Szarowska & Sirbu, 2009	VU	D2	YES			

Taxon	Category	Criteria	Endemic to Carpathians	Habitats Directive	Bern Convention	Note
<i>Bythinella dacica</i> Grossu, 1946	NT		YES			
<i>Bythinella grossui</i> Falniowski, Szarowska & Sirbu, 2009	NT		YES			
<i>Bythinella molcsanyi</i> H. Wagner, 1941	EN	B2ab(iii)	YES			
<i>Bythinella pannonica</i> (Frauenfeld, 1865)	LC			II, IV		
<i>Bythinella radomanii</i> Falniowski, Szarowska & Sirbu, 2009	NT		YES			
<i>Bythinella viseuiana</i> Falniowski, Szarowska & Sirbu, 2009	VU	D2	YES			
<i>Bythinella blidariensis</i> Gloer, 2013	VU	D2	YES			
<i>Bythinella georgievi</i> Gloer, 2013	VU	D2	YES			
<i>Bythinella falniowskii</i> Gloer, 2013	VU	D2	YES			
<i>Bythinella feheri</i> Gloer, 2013	VU	D2	YES			
<i>Bythinella sirbui</i> Gloer, 2013	VU	D2	YES			
<i>Bythinella szarowskiae</i> Gloer, 2013	VU	D2	YES			
<i>Candidula unifasciata</i> (Poiret, 1801)	DD					
<i>Carpathica</i> ( <i>Carpathica</i> ) <i>calophana</i> (Westerlund, 1881)	NT		YES			
<i>Carpathica stussineri</i> (A.J. Wagner, 1895)	DD					
<i>Carychium</i> ( <i>Carychium</i> ) <i>minimum</i> O.F. Muller, 1774	LC					
<i>Carychium</i> ( <i>Saraphia</i> ) <i>tridentatum</i> (Risso, 1826)	LC					
<i>Causa holosericea</i> (S. Studer, 1820)	NT					
<i>Cecilioides</i> ( <i>Cecilioides</i> ) <i>acicula</i> (O.F. Muller, 1774)	LC					
<i>Cecilioides</i> ( <i>Cecilioides</i> ) <i>petitiana</i> (Benoit, 1862)	DD					
<i>Cellariopsis deubeli</i> (A.J. Wagner, 1914)	LC					
<i>Cepaea</i> ( <i>Austrotachea</i> ) <i>vindobonensis</i> (C. Pfeiffer, 1828)	LC					
<i>Cepaea</i> ( <i>Cepaea</i> ) <i>hortensis</i> (O.F. Muller, 1774)	LC					
<i>Cepaea</i> ( <i>Cepaea</i> ) <i>nemoralis</i> (Linnaeus, 1758)	LC					
<i>Clausilia</i> ( <i>Andraea</i> ) <i>dubia</i> Draparnaud, 1805	LC					
<i>Clausilia</i> ( <i>Clausilia</i> ) <i>cruciata</i> (S. Studer, 1820)	LC					
<i>Clausilia</i> ( <i>Clausilia</i> ) <i>pumila</i> C. Pfeiffer, 1828	LC					
<i>Clausilia</i> ( <i>Clausilia</i> ) <i>rugosa parvula</i> A. Ferussac, 1807	LC					
<i>Cochlicopa lubrica</i> (O.F. Muller, 1774)	LC					
<i>Cochlicopa lubricella</i> (Rossmassler, 1834)	LC					
<i>Cochlicopa nitens</i> (M. von Gallenstein, 1848)	VU	B2ab(iii)				
<i>Cochlodina</i> ( <i>Cochlodina</i> ) <i>laminata</i> (Montagu, 1803)	LC					
<i>Cochlodina</i> ( <i>Paracochlodina</i> ) <i>marisi</i> (A. Schmidt, 1868)	LC					
<i>Cochlodina</i> ( <i>Paracochlodina</i> ) <i>cerata</i> (Rossmassler, 1836)	LC					
<i>Cochlodina</i> ( <i>Paracochlodina</i> ) <i>orthostoma</i> (Menke, 1828)	LC					
<i>Cochlodina</i> ( <i>Stabilea</i> ) <i>fimbriata remota</i> Lozek, 1952	VU	D2				
<i>Columella aspera</i> Walden, 1966	DD					

Taxon	Category	Criteria	Endemic to Carpathians	Habitats Directive	Bern Convention	Note
<i>Columella columella</i> (G. von Martens, 1830)	NT					
<i>Columella edentula</i> (Draparnaud, 1805)	LC					
<i>Corbicula fluminalis</i> (O. F. Muller, 1774)	LC					
<i>Daudebardia</i> ( <i>Daudebardia</i> ) <i>brevipes</i> (Draparnaud, 1805)	LC					
<i>Daudebardia langi</i> (Pfeiffer, 1846)	DD					
<i>Daudebardia nana</i> (Grossu, 1969)	DD					
<i>Daudebardia</i> ( <i>Daudebardia</i> ) <i>rufa</i> (Draparnaud, 1805)	LC					synonym <i>D. cavicola</i>
<i>Deroceras</i> ( <i>Deroceras</i> ) <i>agreste</i> (Linnaeus, 1758)	LC					
<i>Deroceras</i> ( <i>Liolytopelte</i> ) <i>buerschii</i> (H. Wagner, 1934)	DD					
<i>Deroceras</i> ( <i>Deroceras</i> ) <i>laeve</i> (O.F. Muller, 1774)	LC					
<i>Deroceras occidentale</i> (Grossu & Lupu, 1966)	DD					
<i>Deroceras</i> ( <i>Deroceras</i> ) <i>praeceox</i> Wiktor, 1966	LC					
<i>Deroceras</i> ( <i>Deroceras</i> ) <i>reticulatum</i> (O.F. Muller, 1774)	LC					
<i>Deroceras</i> ( <i>Deroceras</i> ) <i>rodnae</i> Grossu & Lupu, 1965	LC					
<i>Deroceras</i> ( <i>Deroceras</i> ) <i>sturanyi</i> (Simroth, 1894)	LC					
<i>Deroceras</i> ( <i>Deroceras</i> ) <i>turcicum</i> (Simroth, 1894)	LC					
<i>Deroceras zilchi</i> Grossu, 1969	DD					
<i>Deroceras</i> ( <i>Liolytopelte</i> ) <i>moldavicum</i> (Grossu & Lupu, 1961)	LC					
<i>Discus</i> ( <i>Discus</i> ) <i>runderatus</i> (W. Hartmann, 1821)	LC					
<i>Discus</i> ( <i>Gonyodiscus</i> ) <i>perspectivus</i> (Megerle von Muhlfield, 1816)	LC					
<i>Discus</i> ( <i>Gonyodiscus</i> ) <i>rotundatus</i> (O.F. Muller, 1774)	LC					
<i>Drobacia banatica</i> (Rossmassler, 1838)	LC			II, IV		
<i>Ena montana</i> (Draparnaud, 1801)	LC					
<i>Fagotia esperi</i> (A. Férussac, 1823)	NT					
<i>Eucobresia diaphana</i> (Draparnaud, 1805)	DD					
<i>Eucobresia nivalis</i> (Dumont & Mortillet, 1854)	DD					
<i>Euconulus</i> ( <i>Euconulus</i> ) <i>fulvus</i> (O.F. Muller, 1774)	LC					
<i>Euconulus</i> ( <i>Euconulus</i> ) <i>praticola</i> (Reinhardt, 1883)	LC					
<i>Euomphalia strigella</i> (Draparnaud, 1801)	LC					
<i>Faustina cingulella</i> (Rossmassler, 1837)	VU	B1ab(iii)+2ab(iii)				
<i>Faustina faustina</i> (Rossmassler, 1835)	LC					
<i>Faustina rosmaessleri</i> (L. Pfeiffer, 1842)	VU	B1ab(iii)+2ab(iii)				
<i>Fruticicola fruticum</i> (O.F. Muller, 1774)	LC					
<i>Galba</i> ( <i>Galba</i> ) <i>truncatula</i> (O.F. Muller, 1774)	LC					
<i>Graciliaria inserta</i> (A. & J.B. Villa, 1841)	DD					
<i>Granaria frumentum</i> (Draparnaud, 1801)	LC					
<i>Gyraulus acronicus</i> (A. Férussac, 1807)	DD					
<i>Gyraulus</i> ( <i>Armiger</i> ) <i>crista</i> (Linnaeus, 1758)	LC					
<i>Gyraulus</i> ( <i>Gyraulus</i> ) <i>albus</i> (O.F. Muller, 1774)	LC					
<i>Gyraulus</i> ( <i>Lamorbis</i> ) <i>rosmaessleri</i> (Auerswald, 1852)	VU	B2ab(iii)				
<i>Gyraulus</i> ( <i>Torquis</i> ) <i>laevis</i> (Alder, 1838)	LC					
<i>Gyraulus riparius</i> (Westerlund, 1865)	DD					

Taxon	Category	Criteria	Endemic to Carpathians	Habitats Directive	Bern Convention	Note
<i>Helicigona balcanica</i> (Kobelt, 1875)	DD					
<i>Helicigona kiralikoeica</i> (Kimakowicz, 1890)	VU	D2	YES			
<i>Helicigona kollari</i> (Pfeiffer, 1856)	DD					
<i>Helicigona trizona</i> (Rossmässler, 1834)	LC					
<i>Helicodonta obvoluta</i> (O.F. Muller, 1774)	LC					
<i>Helicopsis cereoflava</i> (M. Bielz, 1851)	LC					
<i>Helicopsis instabilis</i> (Rossmässler, 1838)	LC					
<i>Helicopsis striata</i> (Müller, 1774)	NT					
<i>Helix lucorum</i> Linnaeus, 1758	LC					
<i>Helix</i> ( <i>Helix</i> ) <i>lutescens</i> Rossmassler, 1837	LC					
<i>Helix</i> ( <i>Helix</i> ) <i>pomatia</i> Linnaeus, 1758	LC				III	
<i>Herilla zieglerei</i> (Kuster, 1845)	NT					
<i>Hippeutis complanatus</i> (Linnaeus, 1758)	LC					
<i>Amphimelania holandrii</i> (C. Pfeiffer, 1828)	NT					synonym <i>Holandriana holandrii</i>
<i>Chondrina arcadica clienta</i> (Westerlund, 1883)	LC					
<i>Chondrina tatica</i> Lozek, 1948	NT					
<i>Mastus bielzi</i> (M. von Kimakowicz, 1890)	LC					synonym <i>Chondrula bielzi</i>
<i>Chondrula tridens</i> (O.F. Muller, 1774)	LC					
<i>Isognomostoma isognomostomos</i> (Schroter, 1784)	LC					
<i>Kovacsia kovaci</i> (Varga & L. Pinter, 1972)	LC					
<i>Laciniaria plicata</i> (Draparnaud, 1801)	LC					
<i>Laciniaria pseudostabilis</i> (Westerlund, 1901)	DD					
<i>Lehmannia horezia</i> Grossu & Lupu, 1962	DD		YES			
<i>Lehmannia jaroslaviae</i> Grossu, 1967	DD					
<i>Lehmannia macroflagellata</i> Grossu & Lupu, 1962	NT					
<i>Lehmannia marginata</i> (O.F. Muller, 1774)	LC					
<i>Lehmannia medioflagellata</i> Lupu, 1968	DD					
<i>Lehmannia nyctelia</i> (Bourguignat, 1861)	LC					
<i>Lehmannia valentiana</i> (Férussac, 1822)	DD					
<i>Lehmannia vrancensis</i> Lupu, 1973	DD					
<i>Limacus flavus</i> (Linnaeus, 1758)	LC					
<i>Limax cinereoniger</i> Wolf, 1803	LC					
<i>Limax maximus</i> Linnaeus, 1758	LC					
<i>Lithoglyphus naticoides</i> (C. Pfeiffer, 1828)	LC					
<i>Lozekia deubeli</i> (M. von Kimakowicz, 1890)	LC					
<i>Lozekia transsylvanica</i> (Westerlund, 1876)	LC					
<i>Lymnaea stagnalis</i> (Linnaeus, 1758)	LC					
<i>Macedonica frauenfeldi</i> (Rossmässler, 1856)	LC					
<i>Macedonica marginata</i> (Rossmässler, 1835)	LC					
<i>Macrogastra</i> ( <i>Macrogastra</i> ) <i>ventricosa</i> (Draparnaud, 1801)	LC					
<i>Macrogastra</i> ( <i>Pyrostoma</i> ) <i>borealis</i> (O. Boettger, 1878)	LC					
<i>Macrogastra</i> ( <i>Pyrostoma</i> ) <i>borealis</i> <i>bielzi</i> H. Nordsieck, 1993	LC					

Taxon	Category	Criteria	Endemic to Carpathians	Habitats Directive	Bern Convention	Note
Macrogastra (Pyrostoma) plicatula (Draparnaud, 1801)	LC					
Macrogastra (Pyrostoma) tumida (Rossmassler, 1836)	LC					
Malacolimax tenellus (O.F. Muller, 1774)	LC					
Mastus transsylvanicus M. von Kimakowicz, 1883	LC					
Mastus venerabilis (L. Pfeiffer, 1855)	LC					
Mediterranea depressa (Sterki, 1880)	LC					
Mediterranea inopinata (Ulicny, 1887)	LC					
Merdigera obscura (O.F. Muller, 1774)	LC					
Fagotia (Microcolpia) daudebartii (Prevost, 1821)	NT					synonym Esperiana daudebartii
Monacha (Monacha) cartusiana (O.F. Muller, 1774)	LC					
Monachoides incarnatus (O.F. Muller, 1774)	LC					
Monachoides vicinus (Rossmassler, 1842)	LC					
Morlina glabra (Rossmassler, 1835)	LC					
Musculium lacustre (O. F. Muller, 1774)	LC					
Nesovitrea (Perpolita) hammonis (Strom, 1765)	LC					
Nesovitrea (Perpolita) petronella (L. Pfeiffer, 1853)	NT					
Oligolimax annularis (S. Studer, 1820)	LC					
Orcula dolium (Draparnaud, 1801)	LC					
Orcula jetschini M. von Kimakowicz, 1883	LC					
Oxychilus (Oxychilus) cellarius (O.F. Muller, 1774)	LC					
Oxychilus (Oxychilus) draparnaudi (H. Beck, 1837)	LC					
Schistophallus (Schistophallus) oscar (M. von Kimakowicz, 1883)	DD					
Oxyloma (Oxyloma) elegans (Risso, 1826)	LC					
Oxyloma dunkeri (Pfeiffer, 1865)	LC					
Pagodulina pagodula (Des Moulins, 1830)	DD					
Perforatella bidentata (Gmelin, 1791)	LC					
Perforatella dibothrion (M. von Kimakowicz, 1884)	LC					
Petasina (Edentiella) bakowskii (Polinski, 1924)	LC					
Petasina (Filicinella) bielzi (E.A. Bielz, 1859)	LC					synonym Trochulus bielzi
Petasina (Filicinella) filicina (L. Pfeiffer, 1841)	VU	D2				
Petasina (Petasina) unidentata (Draparnaud, 1805)	LC					
Physa fontinalis (Linnaeus, 1758)	NT					
Pisidium amnicum (O. F. Muller, 1774)	NT					
Pisidium casertanum (Poli, 1791)	LC					
Pisidium globulare Westerlund, 1873	DD					
Pisidium henslowanum (Sheppard, 1823)	LC					
Pisidium hibernicum Westerlund, 1894	LC					
Pisidium milium Held, 1836	LC					
Pisidium moitessierianum Paladilhe, 1866	VU	B2ab(iii)				
Pisidium nitidum Jenyns, 1832	LC					
Pisidium obtusale (Lamarck, 1818)	LC					
Pisidium personatum Malm, 1855	LC					
Pisidium pseudosphaerium J. Favre, 1927	VU	D2				

Taxon	Category	Criteria	Endemic to Carpathians	Habitats Directive	Bern Convention	Note
Pisidium pulchellum Jenyns, 1832	DD					
Pisidium subtruncatum Malm, 1855	LC					
Pisidium supinum A. Schmidt, 1851	LC					
Pisidium tenuilineatum Stelfox, 1918	VU	D2				
Planorbarius corneus (Linnaeus, 1758)	LC					
Planorbis (Planorbis) carinatus O.F. Muller, 1774	LC					
Planorbis (Planorbis) planorbis (Linnaeus, 1758)	LC					
Platyla banatica (Rossmässler, 1842)	LC					
Platyla microsphira (Pini, 1884)	DD					
Platyla perpusilla (Reinhardt, 1880)	LC					
Platyla polita (W. Hartmann, 1840)	LC					
Platyla similis (Reinhardt, 1880)	LC					
Pomatias rivularis (Eichwald, 1829)	LC					
Prostenomphalia carpathica Baidashnikov, 1985	DD					
Pseudanodonta complanata (Rossmassler, 1835)	VU	A2ace+A4ace				
Pseudofusus varians (C. Pfeiffer, 1828)	NT					
Pseudotrichia rubiginosa (Rossmassler, 1838)	LC					
Punctum (Punctum) pygmaeum (Draparnaud, 1801)	LC					
Pupilla (Pupilla) alpicola (Charpentier, 1837)	LC					
Pupilla (Pupilla) bigranata (Rossmassler, 1839)	LC					
Pupilla (Pupilla) muscorum (Linnaeus, 1758)	LC					
Pupilla pratensis (Clessin, 1871)	DD					
Pupilla (Pupilla) sterrii (Voith, 1840)	VU	B1a(i)b(iii)				
Pupilla (Pupilla) triplicata (S. Studer, 1820)	LC					
Pyramidula pusilla (Vallot, 1801)	LC					
Quickella arenaria (Potiez & Michaud, 1835)	EN	B1+2ab(iii)				
Radix ampla (W. Hartmann, 1821)	LC					
Radix auricularia (Linnaeus, 1758)	LC					
Radix balthica (Linnaeus, 1758)	LC					
Radix labiata (Rossmassler, 1835)	LC					
Ruthenica filigrana (Rossmassler, 1836)	LC					
Ruthenica gallinae (E. A. Bielz, 1861)	DD					
Segmentina nitida (O.F. Muller, 1774)	LC					
Semilimacella bonelli (Targioni Tozzetti, 1873)	LC					
Semilimax kotulae (Westerlund, 1883)	NT					
Semilimax semilimax (J. Ferussac, 1802)	LC					
Soosia diodonta (A. Ferussac, 1821)	NT					
Spelaediscus triarius (Rossmässler, 1839)	DD					taxon revision is needed
Spelaediscus (Aspasita) triarius taticus (Hazay, 1883)	DD					taxon revision is needed
Sphaerium corneum (Linnaeus, 1758)	LC					
Sphaerium nucleus (Studer, 1820)	DD					
Sphaerium ovale (A. Férussac, 1807)	LC					
Sphaerium rivicola (Lamarck, 1818)	NT					
Sphyradium doliolum (Bruguiere, 1792)	LC					
Stagnicola corvus (Gmelin, 1791)	LC					

Taxon	Category	Criteria	Endemic to Carpathians	Habitats Directive	Bern Convention	Note
Stagnicola palustris (O.F. Muller, 1774)	LC					
Succinea putris (Linnaeus, 1758)	LC					
Succinella oblonga (Draparnaud, 1801)	LC					
Tandonia budapestensis (Hazay, 1880)	LC					
Tandonia rustica (Millet, 1843)	DD					
Terrestribythinella baidashnikovi Sitnokova, Starobogatov & V. Anistratenko, 1992	VU	D2				
Theodoxus danubialis (Pfeiffer, 1828)	VU	B2b(i,iii,iv,v)				
Theodoxus fluviatilis (Linnaeus, 1758)	LC					
Theodoxus prevostianus (Pfeiffer, 1828)	CR	A4,B1, B2ab(iii,iv)		IV		
Theodoxus (Theodoxus) transversalis (C. Pfeiffer, 1828)	EN	B2ab(iii)		II, IV		
Troglavitrea argintarui Negrea & Riedel, 1968	VU	D2	YES			
Trochulus bielzi (A. Schmidt, 1860)	LC					
Trochulus (Plicuteria) lubomirskii (Slosarski, 1881)	LC					
Trochulus (Trochulus) hispidus (Linnaeus, 1758)	LC					
Trochulus (Trochulus) striolatus danubialis (Clessin, 1874)	LC					
Trochulus (Trochulus) villosulus (Rossmassler, 1838)	LC					
Truncatellina callicratis (Scacchi, 1833)	DD					
Truncatellina claustralis (Gredler, 1856)	LC					
Truncatellina costulata (Nilsson, 1823)	NT					
Truncatellina cylindrica (A. Ferussac, 1807)	LC					
Truncatellina opisthodon (Reinhardt, 1879)	DD		YES			
Unio crassus Philipson, 1788	EN	A2acc		II, IV		
Unio pictorum (Linnaeus, 1758)	LC					
Unio tumidus Philipson, 1788	NT					
Urticicola umbrosus (C. Pfeiffer, 1828)	LC					
Vallonia costata (O.F. Muller, 1774)	LC					
Vallonia declivis Sterki, 1893	DD					
Vallonia enniensis (Gredler, 1856)	NT					
Vallonia excentrica Sterki, 1893	LC					
Vallonia pulchella (O.F. Muller, 1774)	LC					
Valvata (Cincinna) piscinalis (O.F. Muller, 1774)	LC					
Valvata (Tropidina) macrostoma Morch, 1864	EN	B2ab(iii, iv)				
Valvata (Valvata) cristata O.F. Muller, 1774	LC					
Vertigo (Vertigo) alpestris Alder, 1838	LC					
Vertigo (Vertigo) antivertigo (Draparnaud, 1801)	LC					
Vertigo (Vertigo) geyeri Lindholm, 1925	NT			II		
Vertigo (Vertigo) modesta arctica (Wallenberg, 1858)	LC					
Vertigo (Vertigo) moulinsiana (Dupuy, 1849)	NT			II		
Vertigo (Vertigo) pusilla O.F. Muller, 1774	LC					
Vertigo (Vertigo) pygmaea (Draparnaud, 1801)	LC					
Vertigo (Vertigo) substriata (Jeffreys, 1833)	LC					
Vertigo (Vertilla) angustior Jeffreys, 1830	LC			II		
Vestia (Vestia) elata (Rossmassler, 1836)	LC					
Vestia (Vestia) gulo (E.A. Bielz, 1859)	LC					

Taxon	Category	Criteria	Endemic to Carpathians	Habitats Directive	Bern Convention	Note
Vestia (Vestia) turgida (Rossmassler, 1836)	LC					
Vitrea botterii (L. Pfeiffer, 1853)	LC					
Vitrea contracta (Westerlund, 1871)	LC					
Vitrea crystallina (O.F. Muller, 1774)	LC					
Vitrea diaphana (S. Studer, 1820)	LC					
Vitrea erjavecii (Brusina, 1870)	LC					synonym Vitrea diaphana erjavecii
Vitrea jetschini (Kimakowicz, 1890)	LC					
Vitrea subcarinata (Clessin, 1877)	LC					
Vitrea subrimata (Reinhardt, 1871)	LC					
Vitrea szekeresi Deli & Subai, 2011	LC					
Vitrea transylvanica (Clessin, 1877)	LC					
Vitrina pellucida (O.F. Muller, 1774)	LC					
Viviparus acerosus Bourguignat, 1862	LC					
Viviparus contectus (Millet, 1813)	LC					
Viviparus viviparus (Linnaeus, 1758)	LC					
Xerocampylaea zelebori (Pfeiffer, 1853)	LC					
Xerolenta obvia (Menke, 1828)	LC					
Zebrina detrita (O.F. Muller, 1774)	LC					
Zonitoides (Zonitoides) nitidus (O.F. Muller, 1774)	LC					

# RED LIST OF SPIDERS (ARANEAE) OF THE CARPATHIAN MTS.

Compiled by Peter Gajdoš (Slovakia)

Authors / Contributors: Peter Gajdoš (Slovakia), Liviu Aurel Moscaliuc (Romania), Robert Rozwałka (Poland), Anna Hirna (Ukraine), Zdeněk Majkus (Czech Republic), András Gubányi, Miklós Gábor Heltai (Hungary), Jaroslav Svatoň (Czech Republic, Slovakia)

## Introduction

Spiders, as an integral part of global biodiversity, are very important component of almost all ecosystems where they play many important roles as predators and sources of food for other creatures. Spiders as a group are used as bio-indicators of environmental quality or in rapid biodiversity measurement. Many spider species are dependent on original natural ecosystems and their primary threat is habitat loss and degradation caused mainly by human activities and factors as urban development, land-use management, pollution, introduction of alien species, collection in some cases, etc. There are also groups of spiders which are threatened; however, data on their species are very poor or absolutely missing. In spite of above mentioned facts, spiders receive relatively little attention from the conservation community. Considering the high diversity of species presented by 44 450 described species in the world (PLATNICK 2014), only 32 spider species are listed in global Red List of IUCN (IUCN 2013) and only 1 of them lives in the Carpathians (*Dolomedes plantarius* VU).

Red list assessments of the European spider fauna with 4 913 described species (HELSDINGEN 2013) are not elaborated yet and only Red lists of some European countries are published. Considering Carpathian countries, the Red Lists exist in the Czech Republic (BUCHAR, RUŽIČKA 2002 and 2005), Poland (STAREGA *et al.* 2002), and Slovakia (GAJDOŠ, SVATOŇ 1993, GAJDOŠ *et al.* 1999 and GAJDOŠ, SVATOŇ 2001). There also is the Red Book of Ukraine Carpathians with one spider *Carpathonesticus galotshkai* red listed (EVTUSHENKO 2011) and the red book of former Czechoslovakia with 30 listed spider species (BUCHAR 1992). Few species have a legal protection safeguarded; in Hungary (15 species, only one from Carpathians), in Poland (7 species, including four found in Carpathian Mts.) and Slovakia (15 species, 13 from Carpathians). Considering the whole Carpathian Mountains, there is only the Carpathian List of Endangered Species (WITKOWSKI *et al.* 2003) which includes spiders very marginally. It lists only 17 species in total and with many incorrect data.

## Methods of Assessments

The following four steps were used to process the existing data on spider species (class Arachnida: order Araneae) present in the Carpathian region in Czech Republic, Hungary, Poland, Ukraine, Romania, Serbia and Slovakia:

1. Documenting spider fauna in the studied Carpathian Mts. Any data available were used, literature sources (see literature), spider collections in museums, individually owned databases and also own unpublished data. (In order to find out whether the species belongs to the Carpathians, an intersection of GIS layer of orographic units and a point GIS layer of studied sites was carried out.)
2. Preparing the national Carpathian Red Lists by experts from individual Carpathian countries. All the spider species recorded in the Carpathian part of individual countries were evaluated according to the IUCN criteria (IUCN 2013) and classified as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC) and Data deficient (DD).
3. Uploading of data in the specifically designed online database for the purposes of BioREGIO Carpathians project. National data were entered into database as well as submitted in an Microsoft Excel spreadsheet.
4. Preparing the whole Carpathian Red List. All the 1 067 spider species documented in the Carpathian orogeographic units were evaluated according to the listing in the national red lists, taking into consideration the IUCN criteria for higher (Carpathian) level. The taxa in categories VU, EN, CR, RE?, were selected as a basis for elaboration of the draft Carpathian Red List. Final categorisation (VU, EN, CR, RE) of the threatened species on Carpathian level was done on the basis of common consultations and discussions of the project partners. Check list and also Red List of the Serbian Carpathians was developed based on data from a monograph "The spiders of Serbia" (DELTSHEV *et al.* 2003).

For project purposes, the species nomenclature of Fauna Europaea was used. As this nomenclature does not accept new trends in taxonomy, the Platnick nomenclature (2014) - version 14.5 is listed in the Table 1. as well. Some species were synonymised (brown highlighted row). The aim was to provide a baseline dataset and information describing the conservation status of the species from the order Araneae occurring in the Carpathian Mts. in seven Carpathian countries and which can be used for conservation purposes on local as well as regional level.

## Results

Altogether 1 067 spider taxa (ca 21.72% of 4 913 European species) were found in seven Carpathian countries (CZ, HU, PL, RO, RS, SK, UA). The level of knowledge on spiders in individual Carpathian countries is different. The best data are from Slovakia (the SK Carpathian dataset listed more than 95 thousands spider records from about 4000 localities and from 85 orographic units, Slovakian Carpathians are divided into 86 orographic units). The highest richness of spider fauna is documented from Slovak, Czech, Romanian and Poland Carpathians (929, 671, 619 and 570 species, respectively). 386 species were recorded in the Ukrainian Carpathian Mountains. There are less data available from Hungarian and Serbian Carpathians (182 and 203 species). In summary, the following numbers of taxa were listed under the categories RE?, CR, EN, and VU in the National Red Lists: 0 (HU), 14 (UA), 15 (RS), 25 (RO), 86 (PL), 170 (CZ) and 200 species (SK) (Table 1).

Altogether 185 species (from 1 067 assessed) were included in the Carpathian Red List in categories VU, EN, CR, RE?. Out of them, 129 threatened species are listed in category VU, 43 species in category EN, 8 species in category CR and 5 species in category RE? (not recorded for more than 50 years), Table 1, 2.

## Endemism of Araneae in the Carpathians

Altogether 49 endemic species were found in the Carpathians (4.59% of 1 067) (Table 1). The majority of "endemic species" is concentrated in Romania (41 species), many of them are East Carpathian endemic species. From habitat type point of view, many endemic species in the Carpathians occur in underground habitats, namely in caves, mining tunnels, etc. In Western Carpathians a few endemic species live in subalpine zone of the High Tatras Mts. (e.g. *Mecynargus longus*, *Mughiphantes varians*, *Walckenaeria suspecta*, etc). In Romania, the Carpathian endemic species are mostly the representatives of two families: Nesticidae and Linyphiidae, the list being completed by a locally distributed subspecies of *Nemesia* (Nemesiidae). The Nesticidae are highly specialized cave inhabitants (*Nesticus* and *Carpathonesticus*) that seem to be separated in different mountain ranges by geographical isolation and also by minute differences in ecological preferences (DUȚ & DUMA 2013). That concerns the following genera especially: 11 *Carpathonesticus* species and 9 *Nesticus* species (PLATNICK 2014), the South Carpathians appear to be their speciation centre. The Linyphiidae are represented by 18 species, most of them forest dwellers, a few cave dwellers (*Troglohyphantes*) and also species of the high mountains like *Tenuiphantes fogarasensis* (WEISS, 1986). Around half of them are data deficient, needing sustained further research into their biology and ecology. There is also one species with doubtful existence: *Ceratinella marcu* Rosca, 1932 that was not found after its description and whose type specimens are missing. The most recently described endemic Linyphiid spider is *Scutpelecopsis loricata* DUMA & TANASEVITCH, 2011, known to exist only in a very small area. Two populations appear to have been sampled, the distance between the points being of approximately 27 km. Other endemic subspecies from family Nemesiidae *Nemesia pannonica cobeni* FUHN & POLENEC, 1967 is a rare and little known Mediterranean soil dweller that has been

Table 1: Number of species recorded in the Carpathians in individual countries and number of species recorded in national and whole-Carpathian Red Lists

	CZ	HU	PL	RO	SK	RS	UA	Carp.
Species	671	180+1+?	568+2	601+18	903+26	193+10	383+3	1042+25
Species total	671	181	570	619	929	203	386	1067
RE?	3				13		1	5
CR	28		20		27	1		8
EN	73		35	1	68	9	3	43
VU	66		31	24	94	5	10	129
Total	170	0	86	25	200	15	14	185
DD	44			49	54	29	47	63
LC	9	174	33	277	28		5	95
NT	63	7		13	72		14	118
NE					5			
Total	286	181	119	364	361	44	80	461

found in the warm habitats of the mountains around the Danube's gorges.

All these species are in need of further in-depth research into their habits and of efficient long term management of the natural habitats in the area that they occur in, in order to increase the long term residence of the species; habitat conservation is a "sine qua non" condition for protecting valuable taxa, even more so when their biology is mostly unknown. Special attention should be given to the scientific exploration of the underground environments in the Carpathians, there being a good possibility of new scientific findings and care should be given to any proposal of development of tourism infrastructure in the caves in the area in order not to modify or destroy valuable and vulnerable habitats.

#### Main threats

For most of the red listed species:

- Habitat loss/degradation (afforestation of many forest areas, decreasing of area of virgin forests, changes in land use, agriculture intensification, abandonment of traditional management, of grass cutting and grazing and following succession leading to overgrowing by shrubs and trees, wetland degradation, etc.);
- Air and water pollution;
- Use of insecticides.

For some species:

Restricted range, low densities, limited dispersal.

#### References

##### Carpathians & Red Lists

BUCHAR, J. (1992). Pavúkovce (Arachnida). In: Škapec L. (ed.): Červená kniha ohrozených a vzácných druhů rostlin a živočichů ČSFR 3 - Bezobratlí. [Red data book of endangered and rare plant and animal species of the ČSFR 3 - Invertebrates]. Příroda, Bratislava, 160 pp. (in Czech)

EVTUSHENKO, K. (2011). Pavuky Karpatonestíkus galochki - spiders *Carpathonesticus galotshkai*. In: Mateleshko, O. Y., Potish, L. A. Chervona kniha Ukraïnskikh Karpat, Tvarinniy svit (Red Book of the Ukrainian Carpathians). Vseukraïnske vidavnistvo „Karpaty“, Uzhgorod, p. 16.

GAJDOŠ, P. & SVATOŇ, J. (1993). The red list of spiders of Slovakia. C.R. XIVe Coll. eur. Arachnol. Catania 1993. *Boll. Accad. Gioenia Sci. nat.*, 26(345): 115-133.

GAJDOŠ, P. & SVATOŇ, J. (2001). Červený (ekozozologický) zoznam pavúkov (Araneae) Slovenska. Red (Ecosozological) List of spiders (Araneae) of Slovakia. In: Baláž, D., Marhold, K., Urban, P. (eds), Červený zoznam rastlín a živočichov Slovenska. Red List of plants and animals of Slovakia. Nature Conservation. Ochr.Prír., Banská Bystrica, 20 (supl.): 80-86.

IUCN (2013). IUCN Red List of Threatened Species. Version 2013.2. <www.iucnredlist.org>. Downloaded on 31 January 2014.

RŮŽIČKA, V. (2005). Araneae (pavouci). In FARKAČ J., KRÁL D. & ŠKORPÍK M. (eds), Červený seznam ohrozených druhů České republiky. Bezobratlí [Red list of threatened species in the Czech Republic. Invertebrates]. Agentura ochrany přírody a krajiny, Praha, p. 76–82.

PLATNICK, N. I. (2014). The World Spider Catalog. Version 14.5. American Museum of Natural history, Washington, <http://research.amnh.org/entomology/spiders/catalog/index.html>.

STARĘGA, W., BŁASZAK, C. & RAFALSKI, J. (2002). Arachnida Pajęczaki. Czerwona lista gatunków. W: Glowaciński Z. (red.) Czerwona lista zwierząt ginących i zagrożonych w Polsce. Instytut Ochrony Przyrody PAN, Kraków, p. 133-140.

WITKOWSKI, Z.J., KRÓL, W. & SOLARZ, W. (eds) (2003). Carpathian List of Endangered Species. WWF and Institute of Nature Conservation, Polish Academy of Sciences, Vienna-Krakow.

##### Czech Republic

ADAMUS, R. (1991). Ekologické hodnocení arachnofauny okolí Paskova jako pomůcka k bioindikaci průmyslové krajiny. - Dipl. práce, Pedagogická fakulta, Ostrava, 59 pp.

BILÍKOVÁ, I. (2000). Ekologicko-faunistická charakteristika arachnofauny Štramberka. - Dipl. práce, Přírodovědecká fakulta Ostravské univerzity, Ostrava, 80 pp.

BRYJA, V., MAJKUS, Z. (1999): Pavouci (Araneida) CHKO Poodří (Česká republika). - Čas. Slez. Muz. Opava (A), 48: 73-82.

BUCHAR, J. & RŮŽIČKA, V. (2002). Catalogue of spiders of the Czech Republic, Peres Praha, 351 pp.

HOLUŠA, J. (1988). Výskyt pavouka *Arctosa cinerea* (Fabr. 1777) v okrese Frýdek-Místek na lokalitě Baška-Hodoňovice. Ms., Gymnázium Petra Bezruče, Frýdek-Místek, 17 pp. + 23 pp. příloh.

KOŠULIČ, O. & HULA, V. (2011). The wolf spiders (Araneae, Lycosidae) of the eastern part of the Hustopeče bioregion. *Acta Mus. Moraviae, Sci. Biol.* 96(1): 29–40.

KOŠULIČ, O. & HULA, V. (2011). Arachnofauna přírodní rezervace Louky pod Kumstátem (Česká republika). Arachnofauna of Louky pod Kumstátem Nature Reserve (Czech Republic). *Klapalekiana* 47(3–4): 201–212 (in Czech, English abstract and summary).

MACHAČ, O. (2010). Nález pavouka *Comaroma simoni* Bertkau, 1889 v Bílých Karpatech (Česká republika) [Record of spider *Comaroma simoni* Bertkau, 1889 in White Carpathian Mountains (Czech Republic)]. *Acta Carp. Occ.* 1: 101.

MACHAČ, O. (2011). Inventarizační průzkum pavouků (Araneae) v NPR Hůrka. Dep. in: Správa CHKO Poodří, Studénka, 22 pp.

MACHAČ, O. (2012). Distribuce pavouků v lesní mozaice [Distribution of spiders in forest mosaic]. BSc. thesis, Palacký University, Olomouc. 32 pp. (in Czech, English summary).

MAJKUS, Z. (1982). Příspěvek k poznání fauny pavouků (Araneida) Loucké rybníky. - Přírodov. Sbor. Ostrav. Muz., Ostrava, 26: 21-29.

MAJKUS, Z. (1985). Příspěvek k poznání arachnofauny (Araneida) Poodří. - *Acta Fac. paedag. Ostraviensis, Ostrava, Ser. E*, 14 (1984): 29-39.

MAJKUS, Z. (1987). Studium pavoučích společenstev vybraných ostravských hald. - *Zprav. Ochr. Přír. města Ostravy, Ostrava*, 1987: 77-86.

MAJKUS, Z. (1988). Ekologicko-faunistická charakteristika arachnocenóz vybraných ostravských hald. *Spisy Pedagogické fakulty v Ostravě* 63, 192 pp.

MAJKUS, Z. (1991). Fauna pavouků (Araneae) z území Hranického krasu. - *Acta Fac. paedag. Ostraviensis, Ostrava, Ser. E-21*, 127: 27-40.

MAJKUS, Z. (1996). Příspěvek k poznání arachnofauny okolí Mostů u Jablunkova. - *Práce a studie, Frýdek-Místek*, 1996: 128-133.

MAJKUS, Z. (2001). Pavoučí zvířena (Araneae) Hostýnských vrchů. Výsledky arachnologické exkurze konané ve dnech 26.-30. května 1999. - *Sbor. Přírodověd. Klubu v Uher. Hradišti, Uherské Hradiště*, 6.

MAJKUS, Z. (2003). *Ekologicko-faunistická charakteristika arachnocenóz haldy Dolu Odry (Lidice)*. *Acta Fac. Rer. Nat. Univ. Ostraviensis, Biologica – Ecologica* 10, p. 81–98.

MAJKUS, Z. (2004). Pavouci (Araneae) navrhovaného chráněného území Skalická Morávka (Podbeskydský bioregion). *Práce a studie 2004, Muzeum Beskyd Frýdek-Místek*.

MAJKUS, Z. (2007). Závěrečná zpráva inventarizačního arachnologického výzkumu PP Lázeňský mokřad. Pro potřeby Odboru životního prostředí KÚ Zlínského kraje. 8 pp.

MAJKUS, Z. (ed.) (1999). Fauna pavouků Hostýnských vrchů (Výsledky arachnologické exkurze Hostýnské vrchy 1999).

MAJKUS, Z. (ed.) (2000). Arachnofauna vybraných lokalit Vsetínska. *Acta Fac. Rer. Nat. Univ. Ostraviensis* 192 - *Biologica-Ecologica*, 6-7 /2000/: 57-70.

MAJKUS, Z. & SVATOŇ, J. (1995). Araneida. - In: Rozkošný, R., Vaňhara, J. (eds.), *Terrestrial Invertebrates of the Pálava Biosphere Reserve of UNESCO, I.* - *Folia Fac. Sci. nat. Univ. Masarykianae Brunensis, Biol., Brno*, 92: 35-50.

RŮŽIČKA, V. (ed.) (1998). Pavouci jihovýchodní Moravy. *Sborník Přírodovědného klubu v Uh. Hradišti, Uherské Hradiště*, 3: 23-35.

SECHTEROVÁ, E. (1989). The spatial horizontal distribution of epigeic spider and harvestmen populations living in a spruce forest in the Beskydy Mountains (Araneae; Opiliones). - *Studia Oecol., Ostrava*, 2: 17-27.

SECHTEROVÁ, E. (1990). Aktivita a sezónní dynamika populací epigeických pavouků a sekáčů v lesních biocenózách Beskyd (Araneae; Opiliones). - *Acta Univ. Palack. Olom., Fac. rer. nat., Biol., Olomouc*, 30(99): 219-232.

SECHTEROVÁ, E. (1991). Biology and ecology of *Saloca kulczynskii* Mill. et Krat. 1939 in the Beskydy Mountains (Micryphantidae; Araneae). - *Acta Univ. Palack. Olom., Fac. rer. nat., Biol., Olomouc*, 31(104): 139-148.

SECHTEROVÁ, E. (1992). Analýza epigeické arachnofauny lesních biotopů Beskyd (Araneae, Opiliones). - PhD thesis, Institute of Industrial Landscape Ecology, Ostrava, 205 pp.

SECHTEROVÁ-ŠPIČÁKOVÁ, E. (1988). Communities of spiders (Araneida) and harvestmen (Opiliones) in State Nature Reserve Smrk in the Beskydy Mountains affected by imissions. - *Acta Univ. Palack. Olom., Fac. rer. nat., Biol., Olomouc*, 93: 163-184.

ŠIMKOVÁ, M. (2000). Ekologicko-faunistická charakteristika arachnofauny Březové a Strání (CHKO Bílé Karpaty). Dipl. práce, Přírodovědecká fakulta Ostravské univerzity, Ostrava, 73 pp.

ŠUGAR, J. (2012). *Sukcese arachnocenóz na odvalu Dolu Paskov a jeho okolí*. Ostrava, 2012. Diplomová práce. VŠB - Technická univerzita Ostrava.

VRKOČOVÁ, M. (2003). *Ekologicko-faunistická charakteristika arachnofauny Dolu Lidice*. Ostrava, 91 pp. Diplomová práce. Ostravská univerzita v Ostravě.

TUF, I. H., TRNKA, F. & MACHAČ, O. (2009). Výsledky inventarizačního výzkumu vybraných skupin bezobratlých živočichů v jižní části NPR Hůrka u Hranic. Dep. in: Správa CHKO Poodří, Studénka, 28 pp.

ŽILA, P. (2009). Sukcesia arachnocenóz odvalu Dolu Odry. Ostrava, 56 pp. Bakalářská práce. [http://www.arachnology.cz/cas/app\\_contents/downloads/bibliography/ARA896.pdf](http://www.arachnology.cz/cas/app_contents/downloads/bibliography/ARA896.pdf)

##### Hungary

BALOG, J. I. & LOKSA, I. (1947a). Faunistische Angaben über die Spinnen des Karpatenbeckens. I. *Fragmenta faunistica Hungarica* 10: 26-28.

BALOG, J. I. & LOKSA, I. I. (1947b). Faunistische Angaben über die Spinnen des Karpatenbeckens. II. *Fragmenta faunistica Hungarica* 10: 61-68.

DUDÁS, GY. (1999). The spider fauna of the Aggtelek

National Park (Araneae). The Fauna of the Aggtelek National Park I–II. 2: 609–617.

DUDÁS, GY., KÁLMÁN, D. & VARGA, J. (2001). Adatok Dél-Heves pókfaunájához. – *Folia Hist.-nat. Mus. Matr.* 25: 69–78.

DUDÁS, GY. & VARGA, J. (2002). Adatok a Tornai-domb-ság és a Keleti-Cserehát pók-faunájához. – *Folia Historico Naturalia Musei Matraensis* 26: 141–147.

KOLOLOSVÁRY, G. (1933). Ökológiai kutatásaim a Bükk hegység barlangjaiban. [On mycological studies in the caves of Bükk mountains.] *Barlangvilág* 3: 6–13.

KOLOLOSVÁRY, G. (1934): 21 neue Spinnenarten aus Slovensko, Ungarn und aus der Banat. *Folia Zoologica et Hydrobiologica* 6: 12–17.

KOVÁCS, G., SZINETÁR, CS. & TÖRÖK, T. (2010). Adatok a Magyarországon előforduló bikapók fajok biológiájához (*Eresus kollari* Rossi, 1846, *Eresus moravicus* Rezac, 2008, Araneae: Eresidae). A NyME Savaria Egyetemi Központ Tudományos Közleményei XVII. Terméyzettudományok, 12: 139–156.

PFLIEGLER, W. P., PFEIFFER, K. M. & GRABOLLE, A. (2012). Some spiders (Araneae) new to the Hungarian fauna, including three genera and one family. *Opusc. Zool. Budapest*, 43(2): 179–186.

RŰŽIČKA, V. (2009). The European species of the *microphthalmum*-group in the genus *Porrhomma* (Araneae: Linyphiidae). *Contrib. Nat. Hist.* 12: 1081–1094.

SAMU, F. & SZINETÁR, CS. (1999). Bibliographic Check List of the Hungarian spider fauna. *Bulletin of the British Arachnological Society* 11(5): 161–184.

TÓTH, F. & KISS, J. (1999). Comparative analysis of epigeic spider assemblages in northern Hungarian winter wheat fields and their adjacent margins. *The Journal of Arachnology* 27: 241–248.

#### Poland

BEDNARZ, S. (1966). Nowe stanowiska tygrzyka paskowanego, *Argiope bruennichi* Scop. (Argiopidae) w Polsce na Dolnym Śląsku. *Przegląd zoologiczny*, Wrocław, 10: 179–185.

CHYZER, C. & KULCZYŃSKI, W. (1891). Araneae Hungariae, Budapest, 1: 1–170.

CHYZER, C. & KULCZYŃSKI, W. (1894). Araneae Hungariae, Budapest, 2: 1–150.

CHYZER, C. & KULCZYŃSKI, W. (1897). Araneae Hungariae, Budapest, 2: 151–366.

CICHOCKI, W. & ROZWALKA, R. (2013). Pająki rezerwatu torfowiskowego „Bór na Czerwonym”, Chrońmy Przyrodę ojczystą 69(1): 41–54.

CZAJKA, M. (1957). Kilka nowych stanowisk dwóch rzadkich pajaków w Polsce. *Przegląd zoologiczny*. Wro-

claw, 1: 178–179.

CZAJKA, M., PILAWSKI, S. & WOŹNY, M. (1981). Przyczynek do poznania pajaków (Aranei) Bieszczadów. *Fragmenta faunistica*, Warszawa, 25: 453–461.

CZAJKA, M. & WOŹNY, M. (1971). Przyczynek do znajomości fauny pajaków (Araneae) Polski. *Zeszyty Przyrodnicze Opolskiego Towarzystwa Nauk* 11: 141–145.

DELICHEV, K. & KAJAK, A. (1975). Analysis of a sheep pasture ecosystem in the Pieniny Mountains (the Carpatians). XVI. Effect of pasture management on the number and biomass of spiders (Araneae) in two climatic regions (the Pieniny and the Sredna Gora Mountains). *Ekologia polska* 22: 693–710.

DYLEWSKA, M. (1965). Fauna kserotermiczna Pienin. *Przegląd zoologiczny*, Wrocław, 9: 160–168.

KOCH, L. (1870). Beiträge zur Kenntniss der Arachnidenfauna Galiziens. *Roczniki Cesarsko-Królewskiego Towarzystwa Naukowego*, Kraków, 41: 1–56.

KOCH, L. (1876). Verzeichniss der in Tirol bis jetzt beobachteten Arachniden nebst Beschreibungen einiger neuen oder weniger bekannten Arten. *Zeitschr. Ferd. Tirol. Vorarlb. Innsbruck*, 3(19): 221–354.

KOWALSKI, K. (1955). Fauna jaskiń Tatr Polskich. *Ochrona Przyrody* 23: 283–332.

KSIĄŻKÓWNA, I. (1936). Charakterystyka ekologiczna zespołów pajaków w lasach pogórza cieszyńskiego. *Pr. Biol. Wydz. Śl.*, Kraków, 1(52): 133–161.

KULCZYŃSKI, W. (1872). Przyczynek do fauny pajęczej. *Sprawozdanie Komisji Fizjograficznej*, Kraków, 6: 1–3.

KULCZYŃSKI, W. (1876). Dodatek do fauny pajęczaków Galicji. *Sprawozdanie Komisji Fizjograficznej*, Kraków, 10: 41–67.

KULCZYŃSKI, W. (1881). Wykaz pajaków z Tatr, Babięj Góry i Karpat szlązkich z uwzględnieniem pionowego rozsiadlenia pajaków żyjących w Galicji zachodniej. *Sprawozdanie Komisji Fizjograficznej* 15: 1–75.

KULCZYŃSKI, W. (1882a). Opisy nowych gatunków pajaków Babięj Góry i Karpat szlązkich. *Pamiętnik Akademii Umiejętności. Wydziału Matematyczno-Przyrodniczego*, 8: 1–42.

KULCZYŃSKI, W. (1882b). Spinnen aus der Tatra und den Westlichen Beskiden. *Kraków*, 34 pp.

KULCZYŃSKI, W. (1884). Przegląd krytyczny pajaków z rodziny Attoidae żyjących w Galicji. *Rozprawy i Sprawozdania. Wydziału Matematyczno-Przyrodniczego Akademii Umiejętności*, 12: 136–232.

KULCZYŃSKI, W. (1887). Przyczynek do tyrolskiej fauny pajęczaków. *Rozprawy i Sprawozdania Wydziału Matematyczno-Przyrodniczego Akademii Umiejętności w Krakowie*, Kraków, 16: 245–356.

KULCZYŃSKI, W. (1890). Pajęczaki galicyjskie rodziny Salticoidae. *Spraw. Gimn. Ś. Jacka*. Kraków, 1890. 33 pp.

KULCZYŃSKI, W. (1902). Erigonae Europaeae. Addenda ad descriptions. *Bull. Acad. Sci., Cl. Sci. Math. Nat., Cracovie*, 539–561.

KULCZYŃSKI, W. (1905). *Fragmenta arachnologica*. I. *Bull. Acad. Sci., Cl. Sci. Math. Nat., Cracovie*, 533–568.

KULCZYŃSKI, W. (1909a). *Fragmenta Arachnologica*. VII. *Bull. Acad. Sci., Cl. Sci. Math. Nat., Cracovie*, 427–472.

KULCZYŃSKI, W. (1909b). *Fragmenta Arachnologica*. VIII. *Bull. Acad. Sci., Cl. Sci. Math. Nat., Cracovie*, 667–687.

KULCZYŃSKI, W. (1915). *Fragmenta arachnologica*. X. Araneae species nonnullae novae aut minus cognitae. *Acad. Sci., Cl. Sci. Math. Nat., Cracovie*, B (1914): 897–942.

KUNTZE, R. (1936). *Problemy zoogeograficzne Pienin*. *Kosmos*, seria B. Lwów, 59: 217–242.

ŁOMNICKI, A. (1963). The distribution and abundance of ground-surface inhabiting arthropods above the timber line in the region of Żółta Turnia in the Tatra Mts. *Acta Zoologica Cracovienis* 8: 183–249.

MIKULSKA, I. (1950). Materiały do poznania pajaków jako elementu składowego biocenozy kilku lasów Karpat Śląskich. *Prace Biol. Wydziału Śląsk. PAU*, Kraków, III: 113–140.

NOWICKI, M. (1867). *Zapiski z fauny tatrzańskiej*. *Sprawozdania Komisji Fizjograficznej* 1: 197–206.

NOWICKI, M. (1868). *Zapiski z faunistyczne*. *Sprawozdania Komisji Fizjograficznej* 2: 77–91.

NOWICKI, M. (1869). *Zapiski z faunistyczne*. *Sprawozdania Komisji Fizjograficznej* 3: 1–28.

NOWICKI, M. (1870). *Zapiski z faunistyczne*. *Sprawozdania Komisji Fizjograficznej* 3: 2–11.

NOWICKI, M. (1874). *Dodatek do fauny pajęczej Galicji*. *Sprawozdania Komisji Fizjograficznej* 8: 197–206.

PILAWSKI, S. (1963). Pająki nowe dla fauny Dolnego Śląska. *Przegląd zoologiczny* 7: 43–52.

PILAWSKI, S. (1965). O kilkunastu gatunkach pajaków złowionych w Sudetach Śląskich nowych dla fauny Dolnego Śląska i Polski. *Przegląd zoologiczny* 9: 254–265.

PRÓSZYŃSKI, J. & STAREGA, W. (1971). Pająki – Aranei. *Katalog Fauny Polski*, Warszawa (PWN), 33: 382 pp.

PUNDA, H. (1972). *Agyneta ramosa* Jackson, 1914 (*Aranei, Linyphiidae*) - a new species for Poland. *Bull. Pol. Acad. Sci.*, Warszawa, 20: 127–132.

ROZWALKA, R. (2006). *Tegenaria parietina* (FOURCROY, 1785) – błędnie wymieniany z Polski gatunek pająka. *Przegląd Zoologiczny* 50: 45–49.

ROZWALKA, R. (2007). *Cryphoeca carpatica* (HERMAN, 1879) (Araneae: Hahnidae) w Polsce. *Przegląd zoologiczny*, Wrocław, 51(3–4): 163–168.

ROZWALKA, R. (2010). Materiały do znajomości pajaków Araneae Bieszczadów i Bieszczadzkiego Parku Narodowego. *Roczniki Bieszczadzkie, Ustrzyki Dolne*, 18: 167–177.

ROZWALKA, R. (2012). Materiały do znajomości pajaków Araneae Bieszczadzkiego Parku Narodowego. *Roczniki Bieszczadzkie, Ustrzyki Dolne*, 20: 156–195.

ROZWALKA, R., BALDY, K. & SZYMKOWIAK, P. (2010). *Anguliphantes tripartitus* (MILLER ET SVATON, 1978) and *Anguliphantes monticola* (KULCZYŃSKI, 1882) (Araneae: Linyphiidae) in Poland. *Acta Biologica, (Szczecin)*, 17: 73–84.

ROZWALKA, R., RUTKOWSKI, T. & BIELAK-BIELECKI, P. (2013). New data on introduced and rare synanthropic spiders (Arachnida: Araneae) in Poland. *Annales UMCS, sec. C, LXVIII* (1): 127–150.

ROZWALKA, R. & SZEWCZYK, M. (2011). Nowe stanowisko *Atypus piceus* (SULZER, 1776) (Araneae: Atypidae) oraz uwagi o jego rozmieszczeniu w Polsce. *Przegląd zoologiczny* 52–54: 153–157.

SACHER, J. (1979). *Rhaebothorax morulus* (O.P.-Cambridge), eine für die Fauna Polens neue Spinnenart (Araneae, Micryphantidae). *Polskie Pismo entomologiczne*, Wrocław, 49: 389–390.

SIMM, K. (1938). A. Wierzejski, *Notatki zoologiczne do fauny Tatr*. *Kosmos*, seria A, Lwów, 63(3): 75–79.

STAREGA, W. (1966). Przyczynek do poznania fauny pajaków (Aranei) Polski. *Fragmenta faunistica* 13: 175–186.

STAREGA, W. (1972). Nowe dla fauny Polski i rzadsze gatunki pajaków (Aranei), z opisem *Leptyphantes milleri* sp. n., *Fragmenta faunistica* 18: 55–98.

STAREGA, W. (1974). Materiały do znajomości rozmieszczenia pajaków (Aranei) w Polsce. *Fragmenta faunistica* 19: 395–420.

STAREGA, W. (1976). Pająki (Aranei) Pienin. *Fragmenta faunistica* 21: 233–330.

STAREGA, W. (1978). Materiały do znajomości rozmieszczenia pajaków (Aranei) w Polsce, III–VII. *Fragmenta faunistica* 23: 259–302.

STAREGA, W. (1983). Wykaz krytyczny pajaków (*Aranei*) Polski. *Fragmenta faunistica* 27: 149–268.

STAREGA, W. (2001). Pająki (Araneae) Bieszczadzkiego Parku Narodowego. *Monografie bieszczadzkie, Ustrzyki Dolne*, 7: 55–66.

STAREGA, W. (1983). Wykaz krytyczny pajaków (Aranei) Polski. *Fragmenta faunistica* 27: 149–268.

STAREGA, W. & KUPRYJANOWICZ, J. (1996). Beitrag zur

Kenntnis der Spinnen (Araneae) des Gorce-Gebirges. *Fragmenta faunistica* 39: 313-328.

STARĘGA, W. & NAKAZIUK, G. (1987). Pająki (Aranei) z okolic Międzyrzecza Podlaskiego oraz uzupełnienia i sprostowania wiadomości o pajakach Podlasia. *Roczniki międzyrzeckie, Międzyrzec Podlaski*, 16-17: 232-245.

SZYMKOWIAK, P. (1995). Stan zbadania araneofauny Gorców i Gorczańskiego Parku Narodowego na tle wybranych krain Polski. *Parki narodowe i Rezerwy przyrody* 14(3): 111-115.

WAJGIEL, L. (1867). Spis pajaków Sprawozdania Komisji Fizyograficznej 1: 138-141.

WAJGIEL, L. (1868). Spis pajaków. Sprawozdania Komisji Fizyograficznej 2: 153-155.

WAJGIEL, L. (1874). Pajęczaki galicyjskie. Kolomyja, 36 pp.

WAWER, W. (2012). Uwagi o występowaniu ekspanywnego pająka *Argiope bruennichi* (Scop.) oraz towarzyszących pajaków sieciowych w Beskidach. *Nowy Pamiętnik Fizjograficzny, Warszawa*, 7(1-2): 45-51.

WIŚNIEWSKI, K. & WESOŁOWSKA, W. (2012). *Maro lepidus* CASEMIR, 1961, a newly recorded spider species (Araneae, Linyphiidae) for Poland. *Fragmenta faunistica* 55(2): 155-160.

WIŚNIEWSKI, K., ROZWALKA, R. & WESOŁOWSKA, W. (2013). The first record of *Habnia difficilis* HARM, 1966 (Araneae, Habniidae) in Poland. *Fragmenta faunistica* 56(1): 55-63.

Wolska, H. (1957). Wstępne badania nad preferendum termicznym niektórych owadów i pajaków spotykanych na śniegu. *Folia Biologica, Kraków*, 5: 195-208.

WOŻNY, M. (1982). *Lepthyphantes complicatus* (Emerton) nowy gatunek pająka (Aranei) dla fauny Polski. *Przegląd zoologiczny, Wrocław*, 26: 399-401.

WUNDERLICH, J. (1984). Seltene und bisher unbekannte Wolfspinnen aus Mitteleuropa und Revision der Pardosa saltuaria-Gruppe (Arachnida, Araneae, Lycosidae). *Verh. naturw. Ver., Hamburg, N.F.*, 27: 417-442.

#### Serbia

DELTSHEV, C.C., ČURČIĆ, B.P.M. & BLAGOEV, G.A. (2003). The Spiders of Serbia. - (Čurčić, B.P.M., ed.) - Beograd: Institute of Zoology Faculty of Biology, University of Belgrade: Committee for Karst and Speleology, Serbian Academy of Sciences and Arts: Institute for Biological Research "Siniša Stanković": Sofia: Institute of Zoology, Bulgarian Academy of Sciences (Beograd Geokarta). - 833 pp. - (Monographs/Institute of Zoology Faculty of Biology, University of Belgrade, ISSN 1451-3900, vol. 7). ISBN 86-7078-020-8

#### Slovakia

ČAPEK, M., CHARVAT, K. & PATOČKA, J. (1957). Poznámky k faune korún duba plstnatého v Štátnej prírodnej

rezervácii „Kováčovske kopce“ pri Štúrove na južnom Slovensku. *Ochrana prírody (Praha)*, 12, 5: 144-145.

ČAPKOVIČ, J., GAJDOŠ, P. & DAVID, S. (2006). Príspevok k poznaniu epigeických pavúkov (Araneae) Chráneného areálu Kostolianské lúky. In *Rosalia: spravodaj ochrany prírody Chránenej krajiny oblasti Ponitrie*, vol. 18, p. 55-74.

DANKANINOVÁ, L. & GAJDOŠ, P. (2010). Epigeické pavúky vo väzbe na vinohradnícke historické krajinné štruktúry (modelové územie Svätý Jur). In *Mladí vedci 2010: zborník vedeckých prác doktorandov, mladých vedeckých a pedagogických pracovníkov*. Zodp. red. Lucia Kečkéšová, editori Ján Liga et al. - Nitra: Fakulta prírodných vied Univerzity Konštantína Filozofa, p. 201-209. ISBN 978-80-8094-742-2

DANKANINOVÁ, L. & GAJDOŠ, P. (2012). Epigeické pavúky historických štruktúr poľnohospodárskej krajiny (vinohradnícka krajina Svätý Jur). In *Folia faunistica Slovaca*, vol. 17, no. 3, p. 275-290. ISSN 1336-4529 online version, 1335-7522 print version

ÉNEKESOVÁ, E., KRUMPÁL, M. & KRUMPÁLOVÁ, Z. (2009). Invázne prejavy druhu *Argiope bruennichi* (Araneae, Araneidae) na Slovensku. *Entomofauna carpathica* 21: 1-8.

ÉNEKESOVÁ, E., ŠESTÁKOVÁ, A. & KRUMPÁLOVÁ, Z. (2011). A first record of *Glyptesis taoplesius* (Linyphiidae, Araneae) from Slovakia. *Arachnologische Mitteilungen* 2011, Vol 42, p. 16-20.

FRANC, V. (1997). O genofondových hodnotách a ochrannárskom význame Cerovej vrchoviny vzhľadom na chrobáky (*Coleoptera*) a pavúky (*Araneae*). In: URBAN, P., HRIVNÁK, R. (eds): *Poiplie*. SAŽP Banská Bystrica, p. 43-50.

FRANC, V. (1999): Jeskynní pavouci – opomíjená skupina živočichů. *Speleofórum (Česká speleologická společnost, Praha)*, 18: 58-60.

FRANC, V. (2001). Pavúky (Araneae) orografického celku Ostrôžky. *Ochrana prírody, Banská Bystrica*, 19: 175-183.

FRANC, V. (2002). Contribution to the knowledge of spiders (Araneae) of the Veľká Fatra Mts. *Matthias Belivs Univ. Proc. (UMB Banská Bystrica)*, Suppl. 2/1: 155-163.

FRANC, V. (2003). Contribution to the knowledge on myrmecophilous spiders (Araneae myrmeco-phila) of Slovakia. *Matthias Belivs Univ. Proc. (UMB Banská Bystrica)*, 3/1: 71-75.

FRANC, V. (2004). Contribution to the knowledge on spiders (Araneae) of the Strážovské vrchy Mts., p. 67-76. In: FRANC, V. (ed.), *Strážovské vrchy Mts. – research and conservation of Nature*. Proceedings of the conference, Belušké Slatiny (Slovakia), October 1 & 2, 2004, 164 pp.

FRANC, V. (2005). Contribution to the knowledge on spiders (Araneae) in the surroundings of Banská Bystrica (Slovakia). *Entomofauna carpathica, Bratislava*, 17, 2: 48-54.

FRANC, V. (2007). Príspevok k poznaniu pavúkov (Araneae) Prírodnej rezervácie Horné Lazy pri Valaskej. *Stredné Slovensko (Banská Bystrica)*, 11: 67-76.

FRANC, V. (2009). Príspevok k poznaniu pavúkov (Araneae) PR Barania hlava nad Donovalmi a blízkeho okolia. *Príroda Nízkych Tatier*, vol. 2, Banská Bystrica, p. 159-164.

FRANC, V. (2010). Príspevok k poznaniu pavúkov (Araneae) okolia Príbeliec. [in press]

FRANC, V. & KORENKO, S. (2008). Spiders (Araneae) from the Panský diel (Starohorské vrchy Mts, Slovakia). In *Arachnologische Mitteilungen*, Vol. 35, p. 9-20.

GAJDOŠ, P. (2005). Araneofauna vybraných stanovišť katastrálneho územia Trenčín a jej zhodnotenie pre potreby územného plánu. In *Entomofauna carpathica*, 17: 66-71. ISSN 1335-1214

GAJDOŠ, P. (2008). Príspevok k poznaniu epigeických pavúkov (Araneae) Koškých mokradí vytvorených poddolovaním územia banskou činnosťou. In *Rosalia, spravodaj ochrany prírody Chránenej krajiny oblasti Ponitrie, Nitra*, vol. 19, p. 63-70.

GAJDOŠ, P. (2009). Influence of nitrogen and phosphorus addition on epigeal invertebrates of the alpine grassland ecosystem with focus on spider communities (Slovakia: Western Tatras Mts.). In *Geography and sustainable development: proceedings*. - Skopje: Macedonian Geographical Society, 2009, p. 149-158. ISBN 978-608-65155-0-8

GAJDOŠ, P. (2010a). Epigeické pavúky (Araneae) výskumnej plochy Báb pri Nitre. In *Rosalia* 21: zborník vedeckých prác a štúdií Správy chránenej krajiny oblasti Ponitrie. Eds Michal Ambros, Peter Gajdoš. - Bratislava: Ústav krajiny ekológie Slovenskej akadémie vied, 2010, p. 87-102. ISBN 978-80-970672-1-2

GAJDOŠ, P. (2010b). Pavúky (Araneae) z Malaisého pasci z Bábskeho lesa pri Nitre. In *Rosalia* 21: zborník vedeckých prác a štúdií Správy chránenej krajiny oblasti Ponitrie. Eds Michal Ambros, Peter Gajdoš. - Bratislava: Ústav krajiny ekológie Slovenskej akadémie vied, 2010, p. 103-110. ISBN 978-80-970672-1-2

GAJDOŠ, P. (2010c). Pavúky (Araneae) PR Šúr. In *Príroda rezervácie Šúr*. In: Majzlan, O., Vidlička, O. (eds). *Ústav zoológie SAV, Bratislava*, 2010, p. 89-104. ISBN 978-80-970326-0-9

GAJDOŠ, P. & MAJZLAN, O. (2002). Spiders (Araneae) of the sandy and loess dunes in the south-western Slovakia. In *Folia faunistica Slovaca*, 6: 19-32.

GAJDOŠ, P. & MAJZLAN, O. (2008). Pavúky pieskových

biotopov v okolí obce Sekule (CHKO Záhorie). In *Naturae tutela: zborník Slovenského múzea ochrany prírody a jaskyniarstva* 12: 89-96.

GAJDOŠ, P. & MAJZLAN, O. (2010a). Pavúky (Araneae) prírodnej rezervácie Nad Šenkárkou v chránenej krajiny oblasti Malé Karpaty. In *Naturae tutela: Odborný časopis Slovenského múzea ochrany prírody a jaskyniarstva v Liptovskom Mikuláši*. - Liptovský Mikuláš: Slovenské múzeum ochrany prírody a jaskyniarstva, 14(1): 29-35. ISSN 1336-7609

GAJDOŠ, P. & MAJZLAN, O. (2010b). Pavúky (Araneae) pieskov v okolí Malaciek a Lakšárskej Novej Vsi. In *Naturae tutela: Odborný časopis Slovenského múzea ochrany prírody a jaskyniarstva v Liptovskom Mikuláši*. - Liptovský Mikuláš: Slovenské múzeum ochrany prírody a jaskyniarstva, 14(2): 173-182. ISSN 1336-7609

GAJDOŠ, P., MAJZLAN, O. & AMBROS, M. (2009). Pavúky (Araneae) masívu Rokoša (Strážovské vrchy). In *Rosalia* 20: zborník vedeckých prác a štúdií Správy chránenej krajiny oblasti Ponitrie. Ed. Michal Ambros. - Nitra: Trábeč - základná organizácia Slovenského zväzu ochrancov prírody a krajiny v Nitre, 2009, p. 49-58. ISBN 978-80-970627-0-5

GAJDOŠ, P., SVATOŇ, J. & SLOBODA, K. (1999). Katalóg pavúkov Slovenska. *Ústav krajiny ekológie SAV, Bratislava*, 339 pp.

HREŠKO, J., MEDERLY, P., HALADA, E., TOPERCER, J., GAJDOŠ, P., PETROVIČ, F., MAJZLAN, O., KOSTRA, J., DOBRUCKÁ, A. & VLČKOVÁ, T. (2003). Krajinnokoekologický plán mesta Považská Bystrica. Nitra: Univerzita Konštantína Filozofa v Nitre, 275 pp. ISBN 80-8050-601-9

KUBCOVA, L. (2004). A new spider species from the group *Philodromus aurelus* (Araneae, Philodromidae) in Central Europe. *Denisia* 12, zugleich Kataloge der OO. Landesmuseum Neue Serie 14 (2004), 291-304.

KORENKO, S. (2007). Pavúky (Arachnida, Araneae) východnej časti Kozích chrbtov. In *Naturae tutela* 11: 103-111.

KORENKO, S., ŠTEFÁNIK, M., TRNIK, M. & GAJDOŠ, P. (2012). Pavúky (Araneae) nadregionálneho biocentra Žihľavník - Baske (Strážovské vrchy, Slovensko). In *Folia faunistica Slovaca* 17, 4: 309-315. ISSN 1336-4529 online version, 1335-7522

KRUMPÁLOVÁ, Z. (1999). A case of gynandromorph spider (Araneae, Liocranidae) in Slovakia. *Revue d'arachnologie, Aramon*, 13: 61-67.

KRUMPÁLOVÁ, Z. (2000). Pavúky (Araneae) zaplavovaného lužného lesa v meandry Horniacký včelín v inundačnom území rieky Moravy. *Sborník Přírodovědného klubu v Uh. Hradišti* 5: 184-199. ISBN 80-902213-9-4

KRUMPÁLOVÁ, Z. (2002). Epigeic spiders (Araneae) of one Middle Danube floodplain forest. *Biológia, Bratislava*, 57: 161-169.

- KRUMPÁLOVÁ, Z. (2003). Records of interesting and rare spiders in inundation biotopes of Morava river (South-western Slovakia). *Entomofauna carpathica* 15, 1-2: 41-43.
- KRUMPÁLOVÁ, Z. (2007). Pavúky (Araneae) PR Ostrova Kopáč, p. 67-94. In: MAJZLAN, O. (ed.): *Príroda Ostrova Kopáč*, Fytoterapia, Bratislava: 287 pp. ISBN 978-80-969718-7-9
- KRUMPÁLOVÁ, Z. & BARTOŠ, D. (2002). Lycosid spiders (Araneae) of the oak forests of the Malé Karpaty Mts. near Modra. In: TAJOVSKÝ, K., BALÍK, V. & PIŽL, V. (eds) *Studies on Soil Fauna in Central Europe*. ISB AS CR, České Budějovice, p. 105–111.
- KRUMPÁLOVÁ, Z. & SZABOVÁ, S. (2003). Araneocenózy epigeónu dubovo-hrabového lesa PR Katarínka v Malých Karpatoch. *Entomofauna carpathica*, Bratislava, 15, 3-4: 49-55.
- KRUMPÁLOVÁ, Z. & SZABOVÁ, S. (2005). Pavúky (Araneae) dubovo-hrabového lesa Malých Karpát zaťaženého emisiami. *Entomofauna carpathica*, Bratislava, 17, 2: 55-60.
- KRUMPÁLOVÁ, Z., KRUMPÁL, M. & ŠTRBÍK I. (2009). Classification of epigeic spiders (Araneae) at the western part of the Carpathians (Slovakia). *Biologia* 64: 116-123. DOI 10.2478/s.11756-008-0018-6
- KŮRKA, A. (2001). A survey of spider species (Araneida) in prof. F. Miller's collection. Department of Zoology, Museum of Natural History, National Museum, part VI: Salticidae. *Časopis Národního Muzea, Řada přírodovědná*, 170(1-4): 81-89.
- KŮRKA, A. (2003). A survey of spider species (Araneida) in prof. F. Miller's collection. Department of Zoology, Museum of Natural History, National Museum, part VII: Theridiidae. *Časopis Národního Muzea, Řada přírodovědná*, 172(1-4): 133-140.
- KŮRKA, A. (2004 a). A survey of spider species (Araneida) in prof. F. Miller's collection. Department of Zoology, Museum of Natural History, National Museum, part VIII: Araneidae. *Časopis Národního Muzea, Řada přírodovědná*, 173(1-4): 29-34.
- KŮRKA, A. (2004 b). A survey of spider species (Araneida) in prof. F. Miller's collection. Department of Zoology, Museum of Natural History, National Museum, part IX: Nesticidae, Tetragnathidae and Dictynidae (part). *Časopis Národního Muzea, Řada přírodovědná*, 173(1-4): 29-34.
- MÉSZÁROS, I. (2007). Epigeické pavúky Ostrova Sihot'. [Diplomová práca, depon in: *Prírodoved. Fakult. Univ. Komen., Bratislava.*], 71 pp.
- PRÍDAVKA, R. (2000). Príspevok k poznaniu pavúkov (Araneae) doliny Chrapovského potoka v Turčianskej doline. *Kmetianum (Martin)* 9: 75-85.
- PRÍDAVKA, R. (2000). Príspevok k poznaniu fauny pavúkov (Araneae) CHKO Biele Karpaty. *Sborník Přírodovědného klubu v Uh. Hradišti* 5: 200-207. ISBN 80-902213-9-4
- PRÍDAVKA, R. (2002). Príspevok k poznaniu pavúkov (Araneae) Borskej nížiny. *Sborník Přírodovědného klubu v Uh. Hradišti* 7: 91-104. ISBN 80-86485-04-8
- SIMM, K. & WIERZEJSKI, A. (1938). *Notatki zoologiczne do fauny Tatr*. Kosmos Ser. A. 63: 247-251.
- SVATOŇ, J. (2000). Pavúky Turčianskej kotliny II (Araneae: Pholcidae, Segestriidae, Dysderidae, Mimetidae, Nesticidae, Theridiidae). *Kmetianum (Martin)* 9: 87-94.
- SVATOŇ, J. *et al.* (2009). Pavúky (Araneae). In: MAŠÁN P., MIHÁL I. (eds). *Pavúkovce Cerovej vrchoviny*: (Arachnida: Araneae, Pseudoscorpiones, Opiliones, Acari). Banská Bystrica: Štátna ochrana prírody SR; Rimavská Sobota: Správa CHKO Cerová vrchovina; Bratislava: Ústav zoológie SAV; Zvolen: Ústav ekológie lesa SAV, p. 21-113. ISBN 978-80-228-2070-7
- SVATOŇ, J. & PRÍDAVKA, R. (2005). Pavúky Turčianskej kotliny III – Kmetianum (Martin) 10: 143-147.
- SVATOŇ, J., MIHÁL, I., ASTALOŠ, B., FENĎA, P., GAJDOŠ, P., HRÚZ, V., KRAJČA, A., KRÍŽOVÁ, V., MAŠÁN, P., PEKÁR, S., PRÍDAVKA, R. & SVATOŇOVÁ, E. (2000). Fauna pavúkov (Araneae) chránenej krajinskej oblasti / biosférickej rezervácie Poľana. In *Ochrana prírody* 18, p. 99-108.
- SVATOŇ, J., THOMKA, V. & GAJDOŠ, P. (2003). Pavúky - Araneae. In MAŠÁN, P., SVATOŇ, J. (eds), *Pavúkovce Národného parku Poloniny*. - Humenné: Štátna ochrana prírody SR Banská Bystrica a Správa NP Poloniny Snina: Balada press, p. 21-113. ISBN 80-89035-21-3
- ŠTRBÍK, I. (2007). Výskyt zaujímavých a vzácnych druhov pavúkov v NPR Devínska Kobyla. *Entomofauna carpathica*, Bratislava, 19(1-2): 55-57.
- THOMKA, V. (2001). Faunistické údaje (Araneae) z územia východného Slovenska. – *Natura Carpatica*, Košice, 42: 89-108.
- THOMKA, V. (2003). Fauna pavúkov (Araneae) údolia Cirochy. – *Natura Carpatica*, Košice, 44: 139-154.
- THOMKA, V. (2005). Fauna pavúkov (Araneae) vybraných prírodných rezervácií Vihorlatských vrchov a Laboreckej vrchoviny. – *Naturae Tutela, Liptovský Mikuláš*, 9: 155-162, tab.1-2.
- THOMKA, V. (2005). História výskum pavúkov (Araneae) na severovýchodnom Slovensku. *Entomofauna carpathica*, Bratislava, 17(2): 61.
- THOMKA, V. (2005). Pavúky (Araneae) Brekovského hradného vrchu. *Entomofauna carpathica*, Bratislava, 17(2): 62-65.
- THOMKA, V. (2007). Fauna pavúkov na slatinách flyšových území severovýchodného Slovenska. *Entomofauna carpathica*, Bratislava, 19(1-2): 58-62.
- ŽILA, P., GAJDOŠ, P. & SVATOŇ, J. (2012). Súčasný poznatky o faune pavúkov (Araneae) nelesných habitatov národného parku Poloniny. In *Biosférické rezervácie na Slovensku IX.: zborník referátov*. Editor Rudolf Midriak. - Bratislava: Slovenský výbor pre Program UNESCO Človek a biosféra Bratislava, p. 119-124. ISBN 978-80-228-2450-7

## Romania

DOBRE, A. (2004). Spider fauna from sterile deposits (Retezat massif - Romania). *Travaux du Museum National d'Histoire Naturelle «Grigore Antipa»* vol. XLVII, p. 359-365.

DUMA, I. (2006). Notes on the spider (Arachnida: Araneae) fauna from the lower Mures river valley, with a new mention for Romania. *Annals of West University of Timișoara, series Biology*, vol. IX, p. 111-117.

DUMA, I. (2007). Aestival spider (Arachnida: Araneae) fauna from the Ţarcu Mountains (Romania) with re-description of *Pardosa saltuaria* (l. Koch, 1870) from the Southwestern Carpathians. *Travaux du Muséum National d'Histoire Naturelle «Grigore Antipa»*, Vol. L, p. 111–123.

DUMA, I. (2007). *Pellenes seriatus* (Thorell, 1875) (Araneae: Salticidae) new for Romania. *Studia Universitatis Babeş – Bolyai, Biologia*, LII, 1, p. 3-6.

DUMA, I. (2008). *Theridion ubligi* Martin, 1974 (Araneae: Theridiidae) new to Romania. *Entomologica Romanica* 13: 297-299.

DUMA, I. (2012). Preliminary report on spider assemblage from the pastures and fieldcrops of the Mures river floodplain. In *TISCIA* monograph series: Landscape-scale connections between the land use, habitat quality and ecosystem goods and services in the Mureş/Maros valley (ed.) László Kőrmöcz, p. 67-76.

DUMA, I. & TANASEVITCH, A. V. (2011). A new *Scutpeleopsis* Marusik & Gnelitsa from Romania (Araneae, Linyphiidae, Erigoninae). *Revue suisse de Zoologie* 118: 251-256.

DUMITRESCU, M. & GEORGESCU, M. (1970). Révision des représentants du genre *Troglohyphantes* des grottes de Roumanie. *Livre Cent E. G. Racovitza*: 313-331. eologie «Emile Racovitza» t. X, p. 235-244.

DUMITRESCU, M. & GEORGESCU, M. (1977). Nouvelle espèce du genre *Troglohyphantes* en Roumanie. *Travaux de l'Institut de Speologie «Emile Racovitza»* t. XVI, p. 63-70.

DUMITRESCU, M. (1979). La monographie des représentants du genre *Nesticus* des grottes de Roumanie. I-ere note. *Travaux de l'Institut de Speologie «Emile Racovitza»* t. XVIII, p. 53-84.

DUMITRESCU, M. (1980). La monographie des repre-

sentants du genre *Nesticus* des grottes de Roumanie. II-eme note. *Travaux de l'Institut de Speologie «Emile Racovitza»* t. XIX, p. 77-101.

DUMITRESCU, M. & GEORGESCU, M. (1980). Quelques espèces du genre *Centromerus* (Araneae, Linyphiidae) trouvées en Roumanie. *Travaux de l'Institut de Speologie «Emile Racovitza»* t. XIX, p. 103-123.

DUMITRESCU, D. (1981). L'état actuel des études arachnologiques en Roumanie. C. R. VIème Colloque d'Arachnologie d'expression française, Modena-Pisa 1981.

DUŢ, C. & DUMA, I. (2013). A comparative study on the ecology of two *Nesticus* (Araneae: Nesticidae) species. Murariu D., C. Adam, G. Chişamera, E. Iorgu, L. O. Popa, O. P. Popa (eds) 2013. *Annual Zoological Congress of "Grigore Antipa" Museum - Book of abstracts*. "Grigore Antipa" National Museum of Natural History, Bucharest, Romania.

FEDORIAK, M. & MOSCALIUC, L. A. (2013). Verification of „Alexandru Roşca“ spider collection from the „Grigore Antipa“ National Museum of Natural History (Bucharest) Part 1. Mimetidae, Oxyopidae, Pholcidae, Pisauridae, Theridiidae. *Travaux du Museum National d'Histoire Naturelle «Grigore Antipa»* (in print)

FETYKO, K. & URÁK, I. (2004). A new genus and new species in the Romanian spider fauna (Arachnida: Araneae) from the Gura Zlata (Retezat National Park, Romania). *Travaux du Museum National d'Histoire Naturelle «Grigore Antipa»* vol. XLVI, p. 7-13.

FUHN, I. E. & GHERASIM, V. F. (1995). Fauna Republicii Socialiste România, Arachnida, Vol. V, Fascicula 5, Familia Salticidae.

FUHN, I. E. & NICULESCU-BURLACU, F. (1970). Araneae din zona viitorului lac de baraj de la Porţile de Fier. *Studii și Cercetări de Biologie, Seria Zoologie*, Tom 22, nr. 5, p. 413-419. Editura Academiei Republicii Socialiste România.

FUHN, I. E. & NICULESCU-BURLACU, F. (1971). Fauna Republicii Socialiste România, Arachnida, Vol. V, Fascicula 3, Familia Lycosidae.

GALLE, R. & URÁK, I. (2001). Contribution to the spiders (Arachnida: Araneae) of upper Mures river valley with some new data for the Romanian fauna. *Entomologica Romanica* 6: 141-145.

GALLE, R. & URÁK, I. (2002). Faunistical data on the spiders (Arachnida: Araneae) of the Nemira Mountain's bog complex with two new species for the Romanian fauna. *Entomologica Romanica* 7: 85-88.

GALLE, R. & URÁK, I. (2006). Faunistical data on the spiders (Arachnida: Araneae) of the Lacul Dracului bog complex with new data for the Romanian fauna. *Scientific Annals of the Danube Delta Institute*, vol. 12, p. 29-32.

- GEORGESCU, M. (1969). Asupra unor specii ale genului *Erigone* (Micriphantiidae) din România. Travaux de l'Institut de Speologie «Emile Racovitza» t. VIII, p. 91-97.
- GEORGESCU, M. (1971). Quelques considerations sur le genre *Micrurgus* (Dahl) en Roumanie. Travaux de l'Institut de Speologie «Emile Racovitza» t. X, p. 235-244.
- GEORGESCU, M. (1973). La position systematique des genres *Tapinocyba* E. Simon et *Aulacocyba* E. Simon. La description d'une nouvelle espece: *Tapinocyba silvestris*. Travaux de l'Institut de Speologie «Emile Racovitza» t. XII, p. 127-134.
- HELSDINGEN, P.J. van (2012). Araneae, In: Fauna Europaea. Database European spiders and their distribution - Version 2012.1.
- JOCQUÉ, R. & DIPPENAAR-SCHOEMAN, A. S. (2007). Spider families of the world. Royal Museum for Central Africa, Belgium.
- LOTREAN, N. (2012). Contributions to the knowledge of the spider fauna from the National Park Buila Vânturarița, County Vâlcea (Romania). Muzeul Olteniei Craiova. Oltenia. Studii și comunicări. Științele Naturii. Tom. 28.
- NAE, A. & ILIE, V. (2004). Data concerning the spider diversity (Arachnida: Araneae) from the Cloșani karstic area (Oltenia, Romania), with special reference to the superficial subterranean environment. Travaux du Museum National d'Histoire Naturelle «Grigore Antipa» vol. XLVII, p. 31-41.
- NAE, A. (2008). Data concerning the Araneae fauna from the Aninei Mountains karstic area. Travaux de l'Institut de Speologie «Emile Racovitza» t. XLVII, p. 53-63.
- NAE, A. (2010). *Impropantes improbulus* (Simon, 1929) (Araneae, Linyphiidae) new record for the Roumanian fauna. Travaux de l'Institut de Speologie «Emile Racovitza» t. XLIX, p. 81-85.
- NITZU, E., POPA, I., NAE, A. & IUȘAN, C. (2008). Faunal researches on the invertebrates (Coleoptera, Orthoptera, Collembola and Araneae) in the Rodnei Mountains Biosphere Reserve. Travaux de l'Institut de Speologie «Emile Racovitza» t. XLVII, p. 3-52.
- NITZU, E., OLENICI, N., POPA, I., NAE, A. & BIRIS, I.A. (2009). Soil and saproxylic species (Coleoptera, Collembola, Araneae) in primeval forests from the northern part of South-Eastern Carpathians. Annals of Forest Research 52: 27-54.
- PLATNICK, N. I. (2014). The world spider catalog, version 14.5. American Museum of Natural History, online at <http://research.amnh.org/iz/spiders/catalog> DOI: 10.5531/db.iz.0001.
- ROȘCA, A. (1930). Contribuțiuni la cunoașterea Arachnoidelor din Bucovina. Buletinul Facultății de Științe din Cernăuți, vol. IV, fasc. 2.
- ROȘCA, A. (1931). Contribuțiuni la cunoașterea Arachnoidelor din Bucugi. Buletinul Facultății de Științe din Cernăuți, vol. V, fasc. 2.
- ROȘCA, A. (1935). Neue Spinnenarten aus der Bukovina (Rumänien). Zool. Anz. 111: 241-254.
- ROȘCA, A. (1936). Fauna araneelor din Bucovina (sistemica, ecologia și raspândirea geografică). Bul. Fac. științe Cernauti 10: 123-216.
- ROȘCA, A. (1937). Suplement la fauna Araneelor din Bucovina. Buletinul Facultății de Științe din Cernăuți, Vol. XI.
- RUZICKA, V. (1985). *Leptyphantes retezatius* sp. n., a new spider from the Rumanian mountains (Araneae, Linyphiidae). *Vestník československé Společnosti zoologické* 49: 234-238.
- STERGHIU, CL. (1985). Clubionidae, Fauna R. S. Romania, 5(4): 1-168.
- ȘERBĂNESCU, I., DRAGU, I. & BABACA, G. (1975). Harta Geobotanică. In: Atlasul geologic al României. Institutul de Geologie și Geofizică, București. (in Romanian).
- URÁK, I. (2002). Study of the spiders (Arachnida: Araneae) in the Fânațele Clujului Botanical Reservation. *Entomologica Romanica* 7: 79-84.
- URÁK, I. (2005). Two new invasive alien spiders (Arachnida: Araneae) in Romanian arachnofauna. *Entomologica Romanica* 10: 89-91.
- URÁK, I. & FETUKO, K. (2006). Arachnological studies in the Retezat National Park (Romania). *Transylvanian Review of Systematical and Ecological Research* 3, „The Retezat National Park“, p. 79-88.
- URÁK, I. & GALLE, R. (2003). Some new records and rare species from the Romanian spider fauna (Arachnida: Araneae). *Entomologica Romanica* 8: 91-93.
- URAK, I., HARTEL, T. & BALOG, A. (2010). The influence of Carpathian Landscape scale on spider communities. *Arch. Biol. Sci., Belgrade*, 62(4): 1231-1237.
- WEISS, I. & HEIMER, S. (1982). Zwei neue *Carpathonesticus*-Arten aus Rumänien nebst Betrachtungen über Kopulationsmechanismen und deren Evolution (Arachnida, Araneae, Nesticidae). *Reichenbachia* 20: 167-174.
- WEISS, I. (1998a). *Asthenargus carpatius* spec. nova aus dem Fogarascher Gebirge, Rumänien (Araneae, Linyphiidae). *Linzger Biol Beitr.* 30: 455-457.
- WEISS, I. (1998b). Colecția arachnologică a Muzeului de Istorie Naturală din Sibiu (Arachnida, Araneae). *Muzeul Brukenthal, Studii și Comunicări – Științele Naturii* 27: 173-200, Sibiu.
- WEISS, I. & PETRIȘOR, A. (1999). List of the spiders (Arachnida: Araneae) from Romania. *Travaux du Museum National d'Histoire Naturelle «Grigore Antipa»*, vol. XLI, p. 79-107.
- WEISS, I. & URÁK, I. (2000). Faunenliste der Spinnen Rumäniens. Internet: <http://www.arachnologie.info/fauna.htm>
- Ukraine**
- BALOGH, J. (1940). Zur Kenntnis der Spinnenfauna der Nordostkarpaten. *Fragm. faun. hung. (Budapest)*, 3(3): 71-74.
- BALOGH, J. & LOKSA (1947a). Faunistische Angaben über die Spinnen des Karpatenbeckens, I. *Fragm. faun. hung. (Budapest)*, 10(1): 26-28.
- BALOGH, J. & LOKSA, (1947b). Faunistische Angaben über die Spinnen des Karpatenbeckens, II. *Fragm. faun. hung. (Budapest)*, 10(2): 61-68.
- BAUM, J. (1930). Doplňek seznamu pavouků. *Čas. českoslov. Společ. ent. (Praha)*, 27(5-6): 131-13.
- BAUM, J. (1934). Nově získané zajímavé druhy mé sbírky pavouků. *Čas. českoslov. Společ. ent. (Praha)*, 31: 82-84.
- BAUM, J. (1938a). O některých zajímavých druzích pavouků vyskytujících se v republice Československé. *Čas. Nár. Muz., Odd. přírodov. (Praha)*, 112: 60-70.
- BAUM, J. (1938b). O výskytu některých našich pavouků. *Čas. Nár. Muz., Odd. přírodov. (Praha)*, 112: 302-307.
- CHUMAK, V., PROKOPENKO, O. & TYMOŠCHKO, V. (2007). Чумак В., Прокопенко О., Тимочко В. Угрупування павуків (Aranei, Arachnida) субальпійського поясу Чорногори // Вісник Прикарпат. нац. ун-ту. Сер. біол. [Visnyk Prykarpats'koho universytetu. Seria Biol.]. – 2007. – Вип. 7-8. – p. 186-190.
- CHUMAK, V.O., DERBAL', O.F., RIZUN, V.B., PROKOPENKO, O.V. & KOŠJANENKO, O.V. (2007). Чумак В.О., Дербаль О.Ф., Різун В.Б., Прокопенко О.В., Косьяненко О.В. Фауністичне різноманіття узлісся ялинового лісу [Faunistic diversity of the edge of a forest the fir forest] // Наук. Вісник Ужгород. ун-ту. Сер. біол. [Sci. Bull. Uzhgorod Univ. (ser. Biol.)]. – 2007. – Вип. 18. – p. 72-82.
- CHYZER, C. & KULCZYŃSKI, L. (1891). Araneae Hungariae, I. Editio Academiae scientiarum hungaricae, Budapest, p. 1-168.
- CHYZER, C. & KULCZYŃSKI, L. (1894). Araneae Hungariae, II., pars prior. Editio Academiae scientiarum hungaricae, Budapest, p. 1-156.
- CHYZER, C. & KULCZYŃSKI, L. (1897). Araneae Hungariae, III., pars posterior. Editio Academiae scientiarum hungaricae, Budapest, p. 143-366.
- CHYZER, C. & KULCZYŃSKI, L. (1899). Arachnida. In: Thalhammer, J.: Fauna Regni Hungariae, pars III.: Arthropoda, Budapest, p. 1-33.
- EVTUSHENKO, K.V. (2003). New species of the genus *Carpathonesticus* (Aranei, Nesticidae) from the East Carpathians (Ukraine) // *Arthropoda Selecta* 2(3): 61-63.
- EVTUSHENKO, K. V. (2004). Свтушенко К. В. Павуки (Aranei) / Фауна печер України [Cave fauna of Ukraine] / За ред. І. Загороднюка. – Київ [Kyiv], 2004. – p. 64-68.
- EVTUSHENKO, K. V. & FEDORIAK, M. M. (2003). Свтушенко К.В., Федоряк М.М. Видовой состав и распределение пауков, обитающих на каменных наносах на берегах шести горных рек Черновицкой области [Species composition and distribution of Spiders (Aranei) living on the rock sediments on the shores of six mountain rivers of Chernivtsi region] // *Вестник зоологии [Vestnik zoologii]* – 2003, №16. – p. 25-28.
- FEDORIAK, M.M. & EVTUSHENKO, K.V. (2004). On the Lycosidae (Araneae) occurring on the pebble banks of the River Siret and its tributaries, Ciscarpathia (Ukraine). *European Arachnology 2003, Arthropoda Selecta: Special Issue Proc. 21st Europ. Colloq. Arachnol., St.-Petersb., 4-9 Aug. 2003.* (D.V. Logunov, D. Penney (eds). KMK Sci. Press Ltd. Moscow, 1: 75-78.
- FEDORIAK, M., ЕФТЕМІЙ, А. & ВЕРЕНЬКО, І. (2009). Федоряк М. М., Ефтемії А. В., Веренько І. В. Павуки (Araneae) житлових будинків обласних центрів Західної України [Spiders (Araneae) of domestic buildings of regional centres in Western Ukraine] // *Zoocenosis — 2009. Biodiversity and Role of Animals in Ecosystems. The V International Conference: Extended Abstracts of the V International Conference.* – Dnipropetrovsk: Lira, 2009. – p. 174-176.
- FEDORIAK, M.M., ТАЛАХ, М.В. & EVTUSHENKO, K.V. (2007). Федоряк М.М., Талах М.В., Свтушенко К.В. Угрупування павуків (Aranei) чистих та мішаних букових лісів Чернівецької області [Communities of spiders (Aranei) of pure and mixed beech forests of Chernivtsi region] // *Наук. вісник Чернівецького ун-ту: Збірник наук. праць [Sci. Bull. Chernivtsi Univ., Ser. Biol.]*. – 2007. – Вип. 343. – p. 252-259.
- FEDORIAK, M.M. (2009). Федоряк М.М. Пауки (Aranei) помещенный жилых домов областных центров природно-географической зоны Украинские Карпаты [Spiders (Aranei) of dwelling houses the regional centers of natural-geographic zone the Ukrainian Carpathians] // *Экологический мониторинг и биоразнообразие. – Ишим [Ishim]*, 2009. – Т.4, № 1-2. – p. 57-60.
- GNELITSIA, V.A. (2004). Гнелица В.А. Предварительные данные о пауках семейства Linyphiidae Выжницкого национального природного парка [Preliminary data about spiders of family Linyphiidae in Vyzhnitsky National Park] // *Заповідна справа в Україні [Nature Reserves in Ukraine]*. – Т. 10, Вип. 1-2. – 2004. – p. 86-89.

- GNELITSA, V.A. (2005). Гнелица В. А. Павуки родини Linyphiidae [The spider family Linyphiidae] / Національний природний парк «Вижницький»: природа, рекреаційні ресурси, менеджмент / В.П. Коржик, І.І. Черней, І.В. Скільський та ін. – Чернівці [Chernivtsi]: Зелена Буковина, 2005. – р. 178-181.
- GNELITSA, V.A. (2005a). Гнелица В. А. Предварительные данные о пауках семейства Linyphiidae Национального природного парка «Синевир» [Preliminary data about spiders of family Linyphiidae of the National Park "Synevyr"] // Заповідна справа в Україні [Nature Reserves in Ukraine]. – Т. 11, Вип. 1. – 2005. – р. 54-59.
- HIRNA, A. (2010). Гірна А. Угруповання павуків-герпетобіонтів вторинних екосистем вологої мезотрофної бучини Вододільно-Верховинського хребта Карпат [The spider-herpetobions Groups in Secondary Ecosystems of humid mezotroph beech forest on the territory of Divide-Verchovynskij Carpathians mountain range] // Наук. основи збереження біотичної різноманітності: Матер. X наук. конф. молодих учених (Львів, 2010 р.). – Львів [Lviv], 2010. – р. 81-83.
- HIRNA, A. (2011). Гірна А. Я. Початковий етап інвентаризації фауни павуків природоохоронних територій Львівської області [Preliminary stage of inventarization of the spiders fauna within protected areas of Lviv region] // Наук. основи збереження біотичної різноманітності [Scientific principles of biodiversity conservation]. – 2010 (2011). – 1(8): 101-115.
- HIRNA, A. (2013). Гірна А. Я. Фауна павуків (Aranei) лісових екосистем Верхньодністровських Бескидів (Українські Карпати) [Fauna of spiders (Aranei) forest ecosystems of Verkhnodnistrovski Beskydy (Ukrainian Carpathians)] // Вісник Львів ун-ту. Сер. біол. [Visnyk of the Lviv University. Ser. Biology] – 2013. – Вип. 62. – р. 133-139.
- HIRNA, A., SLOBODIAN, O. M. & CHUMAK, V. O. (2012). Гірна А. Я., Слободян О.М., Чумак В. О. Угруповання епігеобіонтних павуків лісових екосистем природного заповідника «Горгани» (Українські Карпати) [Epigeobionts spider communities of the forest ecosystem of Gorgany Nature Reserve (Ukrainian Carpathians)] // Науковий вісник Ужгородського університету. Серія Біологія [Sci. Bull. Uzhgorod Univ. (ser. Biol.)]. – 2012. – Вип. 32. – р. 107-111.
- HIRNA, A., ZHUKOVETS, E., LYESNIK, V. & SHIDLOVSKYY, I. (2012). Гірна А. Я., Жукавець С. М., Леснік В. В., Шидловський І. В. Матеріали до фауни павуків Передкарпаття за результатами ревізії колекцій зоологічного музею Львівського національного університету [Materials for spider fauna of Ciscarpathian by the revision of Zoological Museum collection of Lviv National University] // Наукові основи збереження біотичної різноманітності [Scientific principles of biodiversity conservation]. – 2012 (2011). – Т. 2(9), № 1. – р. 257-270.
- KOCH, L. (1870). Beiträge zur Kenntniss der Arachnidenfauna Galiziens. Roczniki Cesarsko-Królewskiego Towarzystwa Naukowego, Kraków, 41: 1-56.
- KOLOSVÁRY, G. (1937a). Neue Daten zur Spinnenfauna Siebenbürgens. Festschr. Strand (Riga), 3: 402-405.
- KOLOSVÁRY, G. (1937b). Neue Daten zur Spinnengeographie der Karpathenländer. Festschr. Strand (Riga), 3: 398-401.
- KOLOSVÁRY, G. (1939). Über die vertikale Verbreitung der Spinnen in den Karpathenländern. Folia zool. hydrobiol. (Riga), 9(2): 337-341.
- KOVBYLYUK, M., PROKOPENKO, E. & NADOLNY, A. (2008). Ковбляук Н. М., Прокопенко Е. В., Надольний А. А. Павуки семейства Dysderidae Украины (Arachnida, Aranei) [Spider family Dysderidae of the Ukraine (Arachnida, Aranei)] // Евразийский энтомологический журнал [Euroasian Entomological Journal]. – 2008. – Т. 7, № 4. – р. 287-306.
- KRATOCHVÍL, J. (1932a). Trochosa (Hogna) singoriensis (Laxm). na Moravě a její rozšíření ve střední Evropě. Příroda (Brno), 25(1): 1-6.
- KRATOCHVÍL, J. (1932b). Rod pavouků Titanoesa v Československé republice. Sbor. Přírodov. Spol. (Mor. Ostrava), 7: 11-24.
- KRATOCHVÍL, J. (1951). Jsme svědky rozšiřování zvířat? Příroda (Brno), 44(1-2): 19-22.
- KULCZYŃSKI, W. (1884). Przegląd krytyczny pajaków z rodziny Attoidea żyjących w Galicyi (Conspectus Attoidarum Galiciae). Rozpr. Akad. umiej. Wyzd. Mat. Przyn. (Kraków), 12: 136-232.
- LEGOTAY, M. V. (1958). Леготай М. В. Некоторые данные об арахнофауне Закарпатья [Some data on the arachnofauna of Transcarpathia] // Докл. и сообщ. Ужгород ун-та. Серия биол. – 1958. – Вип. 2. – р. 27-30.
- LEGOTAY, M. V. (1959). Леготай М. В. Дополнительные данные об арахнофауне Закарпатья [Additional data on the arachnofauna of Transcarpathia] // Докл. и сообщ. Ужгород ун-та. Серия биол. – 1959. – Вип. 3. – р. 53-56.
- LEGOTAY, M. V. (1964). Павуки в культурных биоценозах Закарпатья [Spiders in cultural biocenoses of Transcarpathia] // Экол. насекомых и др. наземных беспозвоночных Сов. Карпат: Матер. межвузовск. конф. (окт. 1964). – Ужгород: Ужгородск. ун-т, Закарпатск. фил. ВЭО, 1964. – р. 54-59.
- LEGOTAY, M. V. (1973). Леготай М. В. Павуки Украинских Карпат [Spiders of the Ukrainian Carpathians] / Автореф. дисс. канд. биол. наук [Autoreference of the Thesis of Candidate (Ph.D) of Biological Sci Degree]. – Харьков: Харьков. ун-т. – 21 pp.
- LEGOTAY, M. V. (1974). Значення павуків Українських Карпат та їх охорона [Significance of the spiders of the Ukrainian Carpathians and their conservation] // Охорона природи та раціональне використання природних ресурсів у західних областях УРСР. Тези доп. міжобл. конф. – Львів, р. 199-201.
- LEGOTAY, M. V. (1979). Изменение фауны пауков (Arachnoidea) Украинских Карпат под влиянием антропогенного фактора [Changes in the spider (Arachnoidea) fauna of the Ukrainian Carpathians under the influence of antropogenic factor] // Седьмой Междунар. симпоз. по энтомофауне Сред. Европы (Ленинград, 19-24 сент., 1977). – Л.: Зоол. ин-т АН СССР, 1979. – р. 354-355.
- LEGOTAY, M. V. (1981). Леготай М.В. Павуки и их место в лесных биоценозах Закарпатья [Spiders and their place in forest biocenoses of Transcarpathia] // Новейшие достижения лесной энтомологии: Матер. 8-го съезда Всес. энтомол. об-ва (Вильнюс, 9-13 окт. 1979). – Вильнюс: ин-т зоологии и паразитологии АН ЛитССР, 1981. – р. 94-96.
- LEGOTAY, M. V. (1989). Леготай М.В. Матеріали по фауні павуків (Arachnida, Aranei) Закарпаття [Materials on the spider fauna (Arachnida, Aranei) of Transcarpathia] // Фауна и экол. пауков и скорпионов. Арахнол. сб. – М.: Наука, 1989. – р. 16-30.
- LEGOTAY, M. & TARASYUK, N. (1964). Леготай М.В., Тарасюк Г. Д. Экологическое распределение арахнофауны Прикарпатья // Экол. насекомых и др. наземных беспозвоночных Сов. Карпат: Матер. межвузовск. конф. (окт. 1964). – Ужгород: Ужгородск. ун-т, Закарпатск. фил. ВЭО, 1964. – р. 54-59.
- MELESHUK, L., FEDORIAK, M. & SKILSKIJ, I. (2009). Мелешук Л., Федоряк М., Скільський І. 2009. Предварительные сведения о пауках (Araneae) из гнезд дендрофильных птиц региона Украинских Карпат // "Diversitatea, valorificarea rationala si protectia lumii animale": Simpoz. intern. consacrat din ziua nasterii prof. univ. Andrei Munteanu (2009; Chisinau). Chisinau: I.E.P. Stiinta, p. 202-205.
- NOWICKI, M. (1870). Zapiski fauniczne // Sprawozdanie Komisji fizyograficznej c.k. Towarzystwa naukowego Krakowskiego: Materyaly do fizyografii Galicyi. – Kraków, 1870. – Т. 4. – р. 1-30.
- OVCHINNIKOV, S. V. (1999). Овчинников С. В. К надвидовой систематике пауков подсемейства Coelotinae фауны бывшего СССР [On the supraspecific systematics of the subfamily Coelotinae (Araneae, Amaurobiidae) in the former USSR fauna] // TETHYS Entomological Research. – 1999. – №1. – р. 63-80.
- POLOZHENTSEV, P.A. & AKIMTSEVA, N.A. (1980). Павуки (Aranei) лесных стаций Закарпатья [Spiders (Aranei) of forest biocenoses of Transcarpathia] // Энтомологический обзор. – 1980. – Т. 59, Вып. 2. – р. 448-450.
- PROKOPENKO, YE.V. (2001a). К изучению фауны пауков (Aranei) Карпатского биосферного заповедника [To the study of the spider (Aranei) fauna of the Carpathian Biosphere Reserve] // Пр. наук. конф. Дон. нац. ун-ту за підсумками наук.-дослід. роботи за період 1999-2000 рр (18-20 квітня 2001 року). – Донецьк [Donetsk], р. 15-16.
- PROKOPENKO, YE.V. (2001b). К изучению фауны пауков (Aranei) Карпатского биосферного заповедника [To the study of the spider (Aranei) fauna of the Carpathian Biosphere Reserve] // Міжнар. наук.-практ. конф. «Гори і люди». – Рахів [Rachiv], 2002 - р. 448-452.
- PROKOPENKO, YE.V. (2003). К изучению аранеофауны Карпат [To the study of the araneofauna of Carpathians] // Тез. доп. IV з'їзду Укр. ентомолог. т-ва (Біла Церква, 2003). – Біла Церква [Bila Tserkva], р. 91-92.
- PROKOPENKO, YE.V. & CHUMAK, V.A. (2007). Прокопенко Е.В., Чумак В.А. Аннотированный список пауков (Araneae) Карпатского биосферного заповедника и карпатского национального природного парка [An annotated list of the spiders (Araneae) of the Carpathian Biosphere Reserve and the Carpathian National Nature Park] // Изв. Харьк. энтомол. об-ва [The Kharkov Entomological Society Gazette]. – 2006 (2007). – Т. 14. – 1, 2. – р. 201-218.
- ROȘCA, A. (1930). Contributiuni la cunoasterea Arachnoidelor din Bucovina. Buletinul Facultatii de Stiinta din Cernauti, IV (2): 201–219.
- WAJGIEL, L. (1868). Spis pajaków // Sprawozdanie Komisji fizyograficznej c.k. Towarzystwa naukowego Krakowskiego: Materyaly do fizyografii Galicyi. – Kraków, T. 2: 153-155.
- WAJGIEL, L. (1874). Pajęczaki galicyjskie (Arachnoidea Haliciae). – Kołomyja, 36 pp.

Table 2: Araneae in the Carpathians and their IUCN regional Red List categories (RL) and criteria (Crit) in particular Carpathian countries and for the whole Carpathian Mts.

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Atypus affinis Eichwald, 1830	Atypidae	55651	Atypus affinis Eichwald, 1830	NT		CR	A1c; B2a; C2ai; D			1					1		
Atypus muralis Bertkau, 1890	Atypidae	55652	Atypus muralis Bertkau, 1890	VU				1		LC					1		LC
Atypus piceus (Sulzer, 1776)	Atypidae	55653	Atypus piceus (Sulzer, 1776)	1		CR	A1c; B2a; C2ai; D			1					1		
Nemesia pannonica coheni Fuhn & Polenec, 1967	Nemesiidae	62539	Nemesia pannonica coheni Fuhn & Polenec, 1967					NT							1	x	NT
Scytodes thoracica (Latreille, 1802)	Scytodidae	65273	Scytodes thoracica (Latreille, 1802)	1				LC		1			1		1		
Protopleptoneta bulgarica Deltshv, 1972	Leptonetidae	60168	Protopleptoneta bulgarica Deltshv, 1972									EN			1		VU
Hoplopholcus forskali (Thorell, 1871)	Pholcidae	63827	Hoplopholcus forskali (Thorell, 1871)					LC				1			1		
Pholcus alticeps Spassky, 1932	Pholcidae	63833	Pholcus alticeps Spassky, 1932			1									1		
Pholcus opilionoides (Schrank, 1781)	Pholcidae	63856	Pholcus opilionoides (Schrank, 1781)	1	LC	1		LC		1		1	1		1		
Pholcus phalangioides (Fuesslin, 1775)	Pholcidae	63859	Pholcus phalangioides (Fuesslin, 1775)	1				LC		1			1		1		
Pholcus ponticus Thorell, 1875	Pholcidae	63860	Pholcus ponticus Thorell, 1875										1		1		
Psilochorus simoni (Berland, 1911)	Pholcidae	63870	Psilochorus simoni (Berland, 1911)			1				1					1		
Segestria bavarica C.L.Koch, 1843	Segestriidae	65281	Segestria bavarica C.L.Koch, 1843	EN				LC		LC					1		LC
Segestria florentina (Rossi, 1790)	Segestriidae	65284	Segestria florentina (Rossi, 1790)					1		1?					1		
Segestria senoculata (Linnaeus, 1758)	Segestriidae	65290	Segestria senoculata (Linnaeus, 1758)	1		1		1		1		1	1		1		
Dasumia canestrinii (L. Koch, 1876)	Dysderidae	56776	Dasumia canestrinii (L. Koch, 1876)					LC							1		LC
Dasumia carpatica (Kulczyński, 1882)	Dysderidae	56777	Dasumia carpatica (Kulczyński, 1882)	VU		CR	B1; D			NT					1	x	VU
Dysdera crocota C.L.Koch, 1838	Dysderidae	56821	Dysdera crocota C.L.Koch, 1838	DD				1		DD					1		DD
Dysdera dubrovinnii Deeleman-Reinhold, 1988	Dysderidae	56824	Dysdera dubrovinnii Deeleman-Reinhold, 1988					DD		DD					1		DD
Dysdera erythrina (Walckenaer, 1802)	Dysderidae	56832	Dysdera erythrina (Walckenaer, 1802)	1	LC			1		1					1		
Dysdera erythrina lantosquensis Simon, 1882	Dysderidae	56830	Dysdera erythrina lantosquensis Simon, 1882	1											1		
Dysdera hungarica Kulczyński, 1897	Dysderidae	56856	Dysdera hungarica Kulczyński, 1897	EN	LC			1		NT				DD	1		LC
Dysdera longirostris Doblika, 1853	Dysderidae	56874	Dysdera longirostris Doblika, 1853					VU	D2	EN	B2a,b,C2b,D1	DD			1		VU
Dysdera ninnii Canestrini, 1868	Dysderidae	56890	Dysdera ninnii Canestrini, 1868	VU				LC		DD		DD	DD		1		DD
Dysdera taurica Charitonov 1956	Dysderidae	56941	Dysdera taurica Charitonov 1956							EN	B2a,b,C2b,D1				1		VU
Harpactea hombergi (Scopoli, 1763)	Dysderidae	56991	Harpactea hombergi (Scopoli, 1763)	1	LC	1		1		1		1			1		
Harpactea lepida (C.L.Koch, 1838)	Dysderidae	56998	Harpactea lepida (C.L.Koch, 1838)	1		1		LC		1					1		
Harpactea rubicunda (C.L.Koch, 1838)	Dysderidae	57011	Harpactea rubicunda (C.L.Koch, 1838)	1	LC	1		LC		1			1		1		
Harpactea saeva (Herman, 1879)	Dysderidae	57013	Harpactea saeva (Herman, 1879)					1		VU	C2a	DD	DD		1		DD
Triacris stenaspis Simon, 1891	Oonopidae	62732	Triacris stenaspis Simon, 1891							1					1		
Ero aphaena (Walckenaer, 1802)	Mimetidae	62349	Ero aphaena (Walckenaer, 1802)	LC		1		LC		1					1		
Ero cambridgei Kulczyński, 1911	Mimetidae	62350	Ero cambridgei Kulczyński, 1911	EN		VU	B1, B2a; D2			EN	B2a,b, C2a				1		VU
Ero furcata (Villers, 1789)	Mimetidae	62352	Ero furcata (Villers, 1789)	1	LC	1		1		1			1		1		
Ero tuberculata (De Geer, 1778)	Mimetidae	62354	Ero tuberculata (De Geer, 1778)	VU	NT	1		1		VU	B2a,b, C2a		DD		1		NT
Eresus kollari Rossi, 1846	Eresidae	57197	Eresus kollari Rossi, 1846	NT				DD		DD		DD	DD		1		DD
Eresus moravicus Řezáč, 2008	Eresidae	57198	Eresus moravicus Řezáč, 2008	EN						DD					1		NT
Hyptiotes paradoxus (C.L.Koch, 1834)	Uloboridae	67314	Hyptiotes paradoxus (C.L.Koch, 1834)	DD				LC		1			1		1		LC
Uloborus walckenaerius Latreille, 1806	Uloboridae	67321	Uloborus walckenaerius Latreille, 1806	CR				LC		LC					1		LC
Carpathonesticus avrigensis Weiss & Heimer, 1982	Nesticidae	62567	Carpathonesticus avrigensis Weiss & Heimer, 1982					DD							1	x	DD
Carpathonesticus biroi (Kulczyński, 1895)	Nesticidae	62568	Carpathonesticus biroi (Kulczyński, 1895)					NT							1	x	NT
Carpathonesticus cibiniensis (Weiss, 1981)	Nesticidae	62570	Carpathonesticus cibiniensis (Weiss, 1981)					VU	D2						1	x	VU
Carpathonesticus fodinarum (Kulczyn'ski, 1894)	Nesticidae	62571	Carpathonesticus fodinarum (Kulczyn'ski, 1894)					NT							1	x	NT
Carpathonesticus galotshkai Evtushenko, 1993	Nesticidae	62572	Carpathonesticus galotshkai Evtushenko, 1993										VU	B2a	1	x	VU
Carpathonesticus hungaricus (Chyzer, 1894)	Nesticidae	62573	Carpathonesticus hungaricus (Chyzer, 1894)					VU	D2						1	x	VU
Carpathonesticus lotriensis Weiss, 1983	Nesticidae	62574	Carpathonesticus lotriensis Weiss, 1983					VU	D2						1	x	VU
Carpathonesticus paraavrigensis Weiss & Heimer, 1982	Nesticidae	62576	Carpathonesticus paraavrigensis Weiss & Heimer, 1982					DD							1	x	DD
Carpathonesticus puteorum (Kulczyn'ski, 1894)	Nesticidae	62578	Carpathonesticus puteorum (Kulczyn'ski, 1894)					NT							1	x	NT
Carpathonesticus racovitzaei (Dumitrescu, 1980)	Nesticidae	62579	Carpathonesticus racovitzaei (Dumitrescu, 1980)					NT							1	x	NT
Carpathonesticus simoni (Fage, 1931)	Nesticidae	62580	Carpathonesticus simoni (Fage, 1931)					VU	D2						1	x	VU
Carpathonesticus spelaeus (Szombathy, 1917)	Nesticidae	62581	Carpathonesticus spelaeus (Szombathy, 1917)					NT							1	x	NT
Nesticus balacescui Dumitrescu, 1979	Nesticidae	62585	Nesticus balacescui Dumitrescu, 1979					VU	D2						1	x	VU

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Nesticus carpaticus Dumitrescu, 1979	Nesticidae	62588	Nesticus carpaticus Dumitrescu, 1979					VU	D2						1	x	VU
Nesticus cellulanus (Clerck, 1757)	Nesticidae	62590	Nesticus cellulanus (Clerck, 1757)	1		1		LC		1		1	1		1		
Nesticus cellulanus affinis Kulczyn'ski, 1894	Nesticidae	62589	Nesticus cellulanus affinis Kulczyn'ski, 1894							1					1		
Nesticus cernensis Dumitrescu, 1979	Nesticidae	62591	Nesticus cernensis Dumitrescu, 1979					VU	D2						1	x	VU
Nesticus constantinescui Dumitrescu, 1979	Nesticidae	62592	Nesticus constantinescui Dumitrescu, 1979					VU	D2						1	x	VU
Nesticus diaconui Dumitrescu, 1979	Nesticidae	62593	Nesticus diaconui Dumitrescu, 1979					VU	D2						1	x	VU
Nesticus ionescui Dumitrescu, 1979	Nesticidae	62598	Nesticus ionescui Dumitrescu, 1979					LC							1	x	LC
Nesticus orghidani Dumitrescu, 1979	Nesticidae	62604	Nesticus orghidani Dumitrescu, 1979					VU	D2						1	x	VU
Nesticus plesai Dumitrescu, 1980	Nesticidae	62605	Nesticus plesai Dumitrescu, 1980					VU	D2						1	x	VU
Nesticus wiehlei Dumitrescu, 1979	Nesticidae	62608	Nesticus wiehlei Dumitrescu, 1979					VU	D2						1	x	VU
Asagena meridionalis Kulczyński, 1894	Theridiidae	66245	Asagena meridionalis Kulczyński, 1894							CR	B2a,b, C2a, D1				1		EN
Asagena phalerata (Panzer, 1801)	Theridiidae	66246	Asagena phalerata (Panzer, 1801)	1		1		LC		1		1	1		1		
Crustulina guttata (Wider, 1834)	Theridiidae	66255	Crustulina guttata (Wider, 1834)	1	LC	1		LC		1		1			1		
Crustulina sticta (O.P.-Cambridge, 1861)	Theridiidae	66257	Crustulina sticta (O.P.-Cambridge, 1861)							VU	B2a,b, C2a, D1				1		NT
Cryptachaea riparia (Blackwall, 1834)	Theridiidae	66260	Cryptachaea riparia (Blackwall, 1834)	1		1		LC		1					1		
Dipoena braccata (C.L.Koch, 1841)	Theridiidae	66262	Dipoena braccata (C.L.Koch, 1841)	VU				DD		1					1		
Dipoena convexa (Blackwall, 1870)	Theridiidae	66263	Lasaeola convexa (Blackwall, 1870)					DD							1		DD
Dipoena coracina (C.L.Koch, 1837)	Theridiidae	66264	Dipoena coracina (C.L.Koch, 1837)	VU						1					1		
Dipoena erythropus (Simon, 1881)	Theridiidae	66266	Dipoena erythropus (Simon, 1881)	CR		VU	B1, B2a; D	DD		LC					1		VU
Dipoena melanogaster (C.L.Koch, 1837)	Theridiidae	66271	Dipoena melanogaster (C.L.Koch, 1837)	1		1		LC		1		1			1		
Dipoena nigroreticulata (Simon, 1879)	Theridiidae	66272	Dipoena nigroreticulata (Simon, 1879)							CR	B2a,b, C2a, D1				1		VU
Dipoena torva (Thorell, 1875)	Theridiidae	66277	Dipoena torva (Thorell, 1875)	DD				DD		VU	B2a,b, C2a, D1				1		DD
Enoplognatha caricis (Fickert, 1876)	Theridiidae	66287	Enoplognatha caricis (Fickert, 1876)					DD		DD					1		DD
Enoplognatha latimana Hippa & Oksala, 1982	Theridiidae	66292	Enoplognatha latimana Hippa & Oksala, 1982	1		1		1		1					1		
Enoplognatha mordax (Thorell, 1875)	Theridiidae	66297	Enoplognatha mordax (Thorell, 1875)							EN	B2a,b, C2a, D1				1		VU
Enoplognatha oelandica (Thorell, 1875)	Theridiidae	66299	Enoplognatha oelandica (Thorell, 1875)							EN	B2a,b, C2a, D1				1		VU
Enoplognatha ovata (Clerck, 1757)	Theridiidae	66300	Enoplognatha ovata (Clerck, 1757)	1		1		LC		1		1	1		1		
Enoplognatha thoracica (Hahn, 1833)	Theridiidae	66307	Enoplognatha thoracica (Hahn, 1833)	1		1		LC		1		1	1		1		
Episinus angulatus (Blackwall, 1836)	Theridiidae	66311	Episinus angulatus (Blackwall, 1836)	1		1		LC		1					1		
Episinus maculipes Cavana, 1876	Theridiidae	66313	Episinus maculipes Cavana, 1876							1					1		
Episinus truncatus Latreille, 1809	Theridiidae	66316	Episinus truncatus Latreille, 1809	1	LC	1		LC		1			1		1		
Euryopsis flavomaculata (C.L.Koch, 1836)	Theridiidae	66321	Euryopsis flavomaculata (C.L.Koch, 1836)	1		1		1		1			1		1		
Euryopsis lacta (Westring, 1861)	Theridiidae	66324	Euryopsis lacta (Westring, 1861)	EN	LC	CR	B2a; D			NT					1		EN
Euryopsis quinqueguttata Thorell, 1875	Theridiidae	66328	Euryopsis quinqueguttata Thorell, 1875	EN						LC					1		NT
Euryopsis saukeya Levi, 1951	Theridiidae	66329	Euryopsis saukeya Levi, 1951	VU											1		VU
Heterotheridion nigrovariegatum (Simon, 1873)	Theridiidae	66334	Heterotheridion nigrovariegatum (Simon, 1873)	NT				LC		1					1		
Lasaeola prona (Menge, 1868)	Theridiidae	66338	Lasaeola prona (Menge, 1868)	VU						NT					1		NT
Lasaeola tristis (Hahn, 1833)	Theridiidae	66340	Lasaeola tristis (Hahn, 1833)	1	LC	1				1			1		1		
Neottiura bimaculata (Linnaeus, 1767)	Theridiidae	66351	Neottiura bimaculata (Linnaeus, 1767)	1	LC	1		LC		1			1		1		
Neottiura suaveolens (Simon, 1879)	Theridiidae	66354	Neottiura suaveolens (Simon, 1879)	1	LC					1					1		
Ohlertidion ohlerti (Thorell, 1870)	Theridiidae	66357	Ohlertidion ohlerti (Thorell, 1870)			VU	B1			VU	B2a,b, C2a, D1		VU	B1a	1		VU
Paidiscura pallens (Blackwall, 1834)	Theridiidae	66361	Paidiscura pallens (Blackwall, 1834)	1		1		LC		1			1		1		
Parasteatoda lunata (Clerck, 1757)	Theridiidae	66363	Parasteatoda lunata (Clerck, 1757)	1		1		LC		1		1	1		1		
Parasteatoda simulans (Thorell, 1875)	Theridiidae	66364	Parasteatoda simulans (Thorell, 1875)	1		1		LC		1			1		1		
Parasteatoda tabulata (Levi, 1980)	Theridiidae	66362	Parasteatoda tabulata (Levi, 1980)			1		1		1			1		1		
Parasteatoda tepidariorum (C.L.Koch, 1841)	Theridiidae	66365	Parasteatoda tepidariorum (C.L.Koch, 1841)	1				LC		1		1	1		1		
Pholcomma gibbum (Westring, 1851)	Theridiidae	66367	Pholcomma gibbum (Westring, 1851)	LC		1		1		1					1		
Phycosoma inornatum (O.P.-Cambridge, 1861)	Theridiidae	66370	Phycosoma inornatum (O.P.-Cambridge, 1861)					1		NT					1		
Phylloneta impressum L. Koch, 1881	Theridiidae	66371	Phylloneta impressa (L.Koch, 1881)	1	LC	1		LC		1			1		1		
Phylloneta sisypbia (Clerck, 1757)	Theridiidae	66373	Phylloneta sisypbia (Clerck, 1757)	1		1		1		1			1		1		
Platnickina tincta (Walckenaer, 1802)	Theridiidae	66375	Platnickina tincta (Walckenaer, 1802)	1		1		LC		1			1		1		
Robertus arundineti (O.P.-Cambridge, 1871)	Theridiidae	66379	Robertus arundineti (O.P.-Cambridge, 1871)	1	LC	1		1		1			1		1		
Robertus frivaldszkyi (Chyzer, 1894)	Theridiidae	66382	Robertus frivaldszkyi (Chyzer, 1894)							1					1		
Robertus lividus (Blackwall, 1836)	Theridiidae	66386	Robertus lividus (Blackwall, 1836)	1		1		1		1		1	1		1		
Robertus neglectus (O.P.-Cambridge, 1871)	Theridiidae	66391	Robertus neglectus (O.P.-Cambridge, 1871)	NT	LC	1				1			1		1		
Robertus scoticus Jackson, 1914	Theridiidae	66392	Robertus scoticus Jackson, 1914			1		1		VU	B2a,b, C2a, D1				1		NT
Robertus truncorum (L.Koch, 1872)	Theridiidae	66393	Robertus truncorum (L.Koch, 1872)	VU		LC		1		1			1		1		

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Robertus unguatus Vogelsanger, 1944	Theridiidae	66394	Robertus unguatus Vogelsanger, 1944							EN	B2a,b, C2a, D1				1		VU
Rugathodes bellicosus (Simon, 1873)	Theridiidae	66397	Rugathodes bellicosus (Simon, 1873)	1		VU	B2	1		NT					1		NT
Rugathodes instabilis (O.P.-Cambridge, 1871)	Theridiidae	66398	Rugathodes instabilis (O.P.-Cambridge, 1871)	DD						EN	B2a,b, C2a, D1		1		1		NT
Sardinidion blackwalli O.P.-Cambridge, 1871	Theridiidae	66401	Sardinidion blackwalli O.P.-Cambridge, 1871	DD						EN	B2a,b, C2a, D1				1		VU
Selimus pulchellus (Walckenaer, 1802)	Theridiidae	66402	Anelosimus pulchellus (Walckenaer, 1802)							RE?					1		
Selimus vittatus (C.L. Koch, 1836)	Theridiidae	66403	Anelosimus vittatus (C.L.Koch, 1836)	1		1				VU	B2a,b, C2a, D1				1		LC
Simitidion simile (C.L.Koch, 1836)	Theridiidae	66406	Simitidion simile (C.L.Koch, 1836)	NT		1		LC		1			1		1		
Steatoda albomaculata (De Geer, 1778)	Theridiidae	66408	Steatoda albomaculata (De Geer, 1778)	NT		1				1					1		
Steatoda bipunctata (Linnaeus, 1758)	Theridiidae	66410	Steatoda bipunctata (Linnaeus, 1758)	1		1		1		1			1	1	1		
Steatoda castanea (Clerck, 1757)	Theridiidae	66411	Steatoda castanea (Clerck, 1757)	1		1		LC		1			1	1	1		
Steatoda grossa (C.L.Koch, 1838)	Theridiidae	66415	Steatoda grossa (C.L.Koch, 1838)	1				LC		1			1		1		
Steatoda paykulliana (Walckenaer, 1805)	Theridiidae	66421	Steatoda paykulliana (Walckenaer, 1805)					LC							1		LC
Steatoda triangulosa (Walckenaer, 1802)	Theridiidae	66422	Steatoda triangulosa (Walckenaer, 1802)	1				LC		1			1	1	1		
Theonoe minutissima (O.P.-Cambridge, 1879)	Theridiidae	66426	Theonoe minutissima (O.P.-Cambridge, 1879)	VU						VU	B2a,b, C2a, D1				1		NT
Theridion betteni Wiehle, 1960	Theridiidae	66432	Theridion betteni Wiehle, 1960	1		EN	B1, B2a; D2			1					1		NT
Theridion boesenbergi Strand, 1904	Theridiidae	66434	Theridion boesenbergi Strand, 1904					1		DD					1		
Theridion cinereum Thorell, 1875	Theridiidae	66437	Theridion cinereum Thorell, 1875							DD					1		DD
Theridion familiare O.P.-Cambridge, 1871	Theridiidae	66441	Theridion familiare O.P.-Cambridge, 1871							1					1		
Theridion hemerobium Simon, 1914	Theridiidae	66447	Theridion hemerobium Simon, 1914	DD						VU	B2a,b, C2a, D1				1		NT
Theridion italiense Wunderlich, 1995	Theridiidae	66450	Theridion italiense Wunderlich, 1995					1							1		
Theridion melanurum Hahn, 1831	Theridiidae	66456	Theridion melanurum Hahn, 1831	NT		1		LC		NT					1		LC
Theridion mystaceum L.Koch, 1870	Theridiidae	66459	Theridion mystaceum L.Koch, 1870	1		1				1					1		
Theridion pictum (Walckenaer, 1802)	Theridiidae	66468	Theridion pictum (Walckenaer, 1802)	1		1		1		1			1		1		
Theridion pinastri L.Koch, 1872	Theridiidae	66469	Theridion pinastri L.Koch, 1872	1		1		LC		1			1		1		
Theridion varians Hahn, 1833	Theridiidae	66482	Theridion varians Hahn, 1833	1		1		LC		1			1		1		
Theridiosoma gemmosum (L.Koch, 1877)	Theridiosomatidae	66489	Theridiosoma gemmosum (L.Koch, 1877)	1						VU	B2a,b, C2a, D1				1		NT
Comaroma simoni Bertkau, 1889	Anapidae	55017	Comaroma simoni Bertkau, 1889	CR						CR	B2a,b, C2a, D1				1		CR
Mysmenella jobi (Kraus, 1967)	Mysmenidae	62460	Mysmenella jobi (Kraus, 1967)							EN	B2a,b, C2a, D1				1		VU
Troglonata granulum Simon, 1922	Mysmenidae	62462	Troglonata granulum Simon, 1922	VU						1					1		LC
Abacoproeces saltuum (L.Koch, 1872)	Linyphiidae	60306	Abacoproeces saltuum (L.Koch, 1872)	NT		1		1		1					1		
Acartauchenius scurrilis (O.P.-Cambridge, 1872)	Linyphiidae	60313	Acartauchenius scurrilis (O.P.-Cambridge, 1872)	VU				DD		1					1		LC
Agnypantes expunctus (O.P.-Cambridge, 1875)	Linyphiidae	60316	Agnypantes expunctus (O.P.-Cambridge, 1875)			CR	D	1		LC			DD		1		LC
Agyneta cauta (O.P.-Cambridge, 1902)	Linyphiidae	60320	Agyneta cauta (O.P.-Cambridge, 1902)			1		1		1					1		
Agyneta conigera (O.P.-Cambridge, 1863)	Linyphiidae	60321	Agyneta conigera (O.P.-Cambridge, 1863)	DD		1		LC		LC			LC		1		LC
Agyneta decora (O.P.-Cambridge, 1871)	Linyphiidae	60322	Agyneta decora (O.P.-Cambridge, 1871)							RE?					1		
Agyneta olivacea (Emerton, 1882)	Linyphiidae	60324	Agyneta olivacea (Emerton, 1882)							1					1		
Agyneta ramosa Jackson, 1912	Linyphiidae	60325	Agyneta ramosa Jackson, 1912	NT		1				1			1		1		
Agyneta subtilis (O.P.-Cambridge, 1863)	Linyphiidae	60327	Agyneta subtilis (O.P.-Cambridge, 1863)	LC		1		1		1					1		
Allomengea scopigera (Grube, 1859)	Linyphiidae	60333	Allomengea scopigera (Grube, 1859)	VU						1					1		LC
Allomengea vidua (L.Koch, 1879)	Linyphiidae	60334	Allomengea vidua (L.Koch, 1879)	VU						EN	B2a,b, C2a, D1				1		VU
Anguliphantes angulipalpis (Westring, 1851)	Linyphiidae	60335	Anguliphantes angulipalpis (Westring, 1851)	NT	LC	1				1			1		1		
Anguliphantes monticola (Kulczyński, 1881)	Linyphiidae	60336	Anguliphantes monticola (Kulczyński, 1881)			EN	D	1		NT					1		VU
Anguliphantes silli (Weiss, 1987)	Linyphiidae	60337	Anguliphantes silli (Weiss, 1987)					1							1	x	
Anguliphantes tripartitus (Miller & Svatoň, 1978)	Linyphiidae	60338	Anguliphantes tripartitus (Miller & Svatoň, 1978)	NT		LC				1			DD		1		LC
Aphileta misera (O.P.-Cambridge, 1882)	Linyphiidae	60342	Aphileta misera (O.P.-Cambridge, 1882)			1				EN	B2a,b, C2a, D1				1		NT
Araeoncus anguineus (L. Koch, 1869)	Linyphiidae	60344	Araeoncus anguineus (L. Koch, 1869)					1							1		
Araeoncus crassiceps (Westring, 1861)	Linyphiidae	60348	Araeoncus crassiceps (Westring, 1861)	EN				DD		EN	B2a,b, C2a, D1				1		EN
Araeoncus humilis (Blackwall, 1841)	Linyphiidae	60352	Araeoncus humilis (Blackwall, 1841)	1		1				1			1	1	1		
Asthenargus carpaticus Weiss, 1998	Linyphiidae	60363	Asthenargus carpaticus Weiss, 1998					DD							1	x	DD
Asthenargus helveticus Schenkel, 1936	Linyphiidae	60364	Asthenargus helveticus Schenkel, 1936	VU						CR	B2a,b, C2a, D1				1		EN
Asthenargus paganus (Simon, 1884)	Linyphiidae	60366	Asthenargus paganus (Simon, 1884)	NT		1				1			1		1		
Asthenargus perforatus Schenkel, 1929	Linyphiidae	60367	Asthenargus perforatus Schenkel, 1929							CR	B2a,b, C2a, D1				1		EN
Bathyphantes approximatus (O.P.-Cambridge, 1871)	Linyphiidae	60376	Bathyphantes approximatus (O.P.-Cambridge, 1871)	1		1		1		1					1		
Bathyphantes eumenis (L.Koch, 1879)	Linyphiidae	60378	Bathyphantes eumenis (L.Koch, 1879)							DD					1		DD
Bathyphantes gracilis (Blackwall, 1841)	Linyphiidae	60379	Bathyphantes gracilis (Blackwall, 1841)	1		1				1			1		1		
Bathyphantes nigrinus (Westring, 1851)	Linyphiidae	60384	Bathyphantes nigrinus (Westring, 1851)	1		1		LC		1			1	1	1		

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Bathyphantes parvulus (Westring, 1851)	Linyphiidae	60386	Bathyphantes parvulus (Westring, 1851)	1		1				1					1		
Bathyphantes setiger F.O.P.-Cambridge, 1894	Linyphiidae	60389	Bathyphantes setiger F.O.P.-Cambridge, 1894							1					1		
Bathyphantes similis Kulczyński, 1894	Linyphiidae	60390	Bathyphantes similis Kulczyński, 1894	VU		EN	D			VU	B2a,b, C2a, D1		DD		1		VU
Bolephthiphantes index (Thorell, 1856)	Linyphiidae	60395	Bolephthiphantes index (Thorell, 1856)			VU	B2a, D	1							1		VU
Bolyphantes alticeps (Sundevall, 1833)	Linyphiidae	60396	Bolyphantes alticeps (Sundevall, 1833)	1		1		LC		1			1		1		
Bolyphantes luteolus (Blackwall, 1833)	Linyphiidae	60400	Bolyphantes luteolus (Blackwall, 1833)	NT		1		1		1					1		
Bolyphantes nigropictus Simon, 1884	Linyphiidae	60401	Bolyphantes nigropictus Simon, 1884										1?		1		
Canariphantes nanus (Kulczyński, 1898)	Linyphiidae	60413	Canariphantes nanus (Kulczyński, 1898)	EN						1					1		
Carorita limnaea (Crosby & Bishop, 1927)	Linyphiidae	60417	Carorita limnaea (Crosby & Bishop, 1927)			EN	B2a, D			CR	B2a,b, C2a, D1				1		EN
Caviphantes saxetorum (Hull, 1916)	Linyphiidae	60419	Caviphantes saxetorum (Hull, 1916)			CR	B2a, D2						DD		1		CR
Centromerita bicolor (Blackwall, 1833)	Linyphiidae	60420	Centromerita bicolor (Blackwall, 1833)	1		1		LC		1		1	1		1		
Centromerita concinna (Thorell, 1875)	Linyphiidae	60421	Centromerita concinna (Thorell, 1875)	EN		1		LC		VU	B2a,b, C2a, D1				1		LC
Centromerus acutidentatus Deltshv, 2002	Linyphiidae	60423	Centromerus acutidentatus Deltshv, 2002									VU			1		VU
Centromerus albidus Simon, 1929	Linyphiidae	60424	Centromerus albidus Simon, 1929							NT					1		NT
Centromerus arcanus (O.P.-Cambridge, 1873)	Linyphiidae	60428	Centromerus arcanus (O.P.-Cambridge, 1873)	NT		1				1			1		1		
Centromerus brevivalvatus Dahl, 1912	Linyphiidae	60431	Centromerus brevivalvatus (Menge, 1866)							1					1		
Centromerus capucinus (Simon, 1884)	Linyphiidae	60433	Centromerus capucinus (Simon, 1884)	VU						VU	B2a,b, C2a, D1				1		VU
Centromerus cavernarum (L.Koch, 1872)	Linyphiidae	60434	Centromerus cavernarum (L.Koch, 1872)	VU		EN	B2a, D2	LC		1			NT		1		LC
Centromerus chappuisi Fage, 1931	Linyphiidae	60435	Centromerus chappuisi Fage, 1931					VU							1	x	VU
Centromerus crinitus Rosca, 1935	Linyphiidae	60439	Centromerus crinitus Rosca, 1935					DD							1	x	DD
Centromerus dacicus Dumitrescu & Georgescu, 1980	Linyphiidae	60440	Centromerus dacicus Dumitrescu & Georgescu, 1980					DD							1	x	DD
Centromerus dilutus (O.P.-Cambridge, 1875)	Linyphiidae	60441	Centromerus dilutus (O.P.-Cambridge, 1875)							EN	B2a,b, C2a, D1				1		VU
Centromerus gentilis Dumitrescu & Georgescu, 1980	Linyphiidae	60445	Centromerus gentilis Dumitrescu & Georgescu, 1980					VU							1	x	VU
Centromerus incilium (L.Koch, 1881)	Linyphiidae	60446	Centromerus incilium (L.Koch, 1881)	LC		1		1		1					1		
Centromerus lakatnikensis (Drensky, 1931)	Linyphiidae	60447	Centromerus lakatnikensis (Drensky, 1931)									VU			1		VU
Centromerus levitarsis (Simon, 1884)	Linyphiidae	60449	Centromerus levitarsis (Simon, 1884)			LC		DD		EN	B2a,b, C2a, D1				1		NT
Centromerus pabulator (O.P.-Cambridge, 1875)	Linyphiidae	60455	Centromerus pabulator (O.P.-Cambridge, 1875)	1		1		1		1		1	1		1		
Centromerus persimilis (O.P.-Cambridge, 1912)	Linyphiidae	60459	Centromerus persimilis (O.P.-Cambridge, 1912)			VU	B2a, D2			VU	B2a,b, C2a, D1				1		VU
Centromerus prudens (O.P.-Cambridge, 1873)	Linyphiidae	60462	Centromerus prudens (O.P.-Cambridge, 1873)							CR	B2a,b, C2a, D1				1		VU
Centromerus sellarius (Simon, 1884)	Linyphiidae	60465	Centromerus sellarius (Simon, 1884)	1		LC		1		1			LC		1		
Centromerus semiater (L.Koch, 1879)	Linyphiidae	60466	Centromerus semiater (L.Koch, 1879)	VU						1					1		
Centromerus serbicus Deltshv, 2002	Linyphiidae	60467	Centromerus serbicus Deltshv, 2002									EN			1		EN
Centromerus serratus (O.P.-Cambridge, 1875)	Linyphiidae	60468	Centromerus serratus (O.P.-Cambridge, 1875)			LC				VU	B2a,b, C2a, D1				1		
Centromerus setosus Miller & Kratochvil, 1940	Linyphiidae	60469	Centromerus setosus Miller & Kratochvil, 1940							RE?					1		RE?
Centromerus silvicola (Kulczyński, 1887)	Linyphiidae	60471	Centromerus silvicola (Kulczyński, 1887)	CR		EN	B2a, D2	DD		NT			NT		1		VU
Centromerus sylvaticus (Blackwall, 1841)	Linyphiidae	60477	Centromerus sylvaticus (Blackwall, 1841)	1	LC	1		1		1			1		1		
Centromerus unctus (L. Koch, 1870)	Linyphiidae	60480	Centromerus unctus (L. Koch, 1870)					DD							1		DD
Ceraticelus bulbosus (Emerton, 1882)	Linyphiidae	60486	Ceraticelus bulbosus (Emerton, 1882)												1		
Ceratinella brevipes (Westring, 1851)	Linyphiidae	60488	Ceratinella brevipes (Westring, 1851)	1		1		1		1			1		1		
Ceratinella brevis (Wider, 1834)	Linyphiidae	60489	Ceratinella brevis (Wider, 1834)	1	LC	1		LC		1			1		1		
Ceratinella major Kulczyński, 1894	Linyphiidae	60490	Ceratinella major Kulczyński, 1894	NT		1		1		1					1		
Ceratinella marculi Rosca, 1932	Linyphiidae	60491	Ceratinella marculi Rosca, 1932					DD							1	x	DD
Ceratinella scabrosa (O.P.-Cambridge, 1871)	Linyphiidae	60494	Ceratinella scabrosa (O.P.-Cambridge, 1871)	1		LC		1		1					1		
Ceratinella wideri (Thorell, 1871)	Linyphiidae	60495	Ceratinella wideri (Thorell, 1871)	1				1							1		
Cineta gradata (Simon, 1881)	Linyphiidae	60499	Cineta gradata (Simon, 1881)							VU	B2a,b, C2a, D1				1		VU
Cnephalocotes obscurus (Blackwall, 1834)	Linyphiidae	60500	Cnephalocotes obscurus (Blackwall, 1834)	VU		1				1		1	1		1		
Collinsia distincta (Simon, 1884)	Linyphiidae	60506	Collinsia distincta (Simon, 1884)					NT							1		
Collinsia inerrans (O.P.-Cambridge, 1885)	Linyphiidae	60509	Collinsia inerrans (O.P.-Cambridge, 1885)							EN	B2a,b, C2a, D1				1		VU
Dicymbium nigrum (Blackwall, 1834)	Linyphiidae	60521	Dicymbium nigrum (Blackwall, 1834)			LC		LC				1	1		1		
Dicymbium nigrum brevisetosum Locket, 1962	Linyphiidae	60520	Dicymbium nigrum brevisetosum Locket, 1962	1		1				1			1		1		
Dicymbium tibiale (Blackwall, 1836)	Linyphiidae	60522	Dicymbium tibiale (Blackwall, 1836)	1		1		1		1		1	1		1		
Diplocentria bidentata (Emerton, 1882)	Linyphiidae	60525	Diplocentria bidentata (Emerton, 1882)							DD			DD		1		DD
Diplocentria rectangularata (Emerton, 1915)	Linyphiidae	60528	Diplocentria rectangularata (Emerton, 1915)							EN	B2a,b, C2a, D1				1		VU
Diplocephalus alpinus subrufus Rosca, 1935	Linyphiidae	60529	Diplocephalus alpinus subrufus Rosca, 1935					DD							1	x	DD
Diplocephalus cristatus (Blackwall, 1833)	Linyphiidae	60541	Diplocephalus cristatus (Blackwall, 1833)	1		1		LC		1		1	1		1		
Diplocephalus dentatus (Tullgren, 1955)	Linyphiidae	60543	Diplocephalus dentatus (Tullgren, 1955)	EN						DD					1		VU

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Diplocephalus helleri (L.Koch, 1869)	Linyphiidae	60548	Diplocephalus helleri (L.Koch, 1869)	VU		VU	B2a, D	LC		1			NT		1		LC
Diplocephalus latifrons (O.P.-Cambridge, 1863)	Linyphiidae	60550	Diplocephalus latifrons (O.P.-Cambridge, 1863)	1		1		LC		1		1	1		1		
Diplocephalus permixtus (O.P.-Cambridge, 1871)	Linyphiidae	60554	Diplocephalus permixtus (O.P.-Cambridge, 1871)			1		LC		VU	B2a,b, C2a, D1		VU	B1a	1		NT
Diplocephalus picinus (Blackwall, 1841)	Linyphiidae	60555	Diplocephalus picinus (Blackwall, 1841)	1		1		1		1			1		1		
Diplostyla concolor (Wider, 1834)	Linyphiidae	60566	Diplostyla concolor (Wider, 1834)		LC	1		LC		1		1	1		1		
Dismodicus bifrons (Blackwall, 1841)	Linyphiidae	60567	Dismodicus bifrons (Blackwall, 1841)	1		1		1		1			1		1		
Dismodicus elevatus (C.L.Koch, 1838)	Linyphiidae	60568	Dismodicus elevatus (C.L.Koch, 1838)	1	LC	1		1		1			1		1		
Donacochara speciosa (Thorell, 1875)	Linyphiidae	60570	Donacochara speciosa (Thorell, 1875)	1						NT					1		LC
Drapetisca socialis (Sundevall, 1833)	Linyphiidae	60571	Drapetisca socialis (Sundevall, 1833)	1	LC	1		LC		1			1		1		
Drepanostylus uncatatus (O.P.-Cambridge, 1873)	Linyphiidae	60574	Drepanostylus uncatatus (O.P.-Cambridge, 1873)	1						DD					1		DD
Drepanotylus borealis Holm, 1945	Linyphiidae	60572	Drepanotylus borealis Holm, 1945										1?		1		
Entelecara acuminata (Wider, 1834)	Linyphiidae	60576	Entelecara acuminata (Wider, 1834)	EN	LC	1		LC		1			1		1		
Entelecara congenera (O.P.-Cambridge, 1879)	Linyphiidae	60579	Entelecara congenera (O.P.-Cambridge, 1879)	1		1				1			1		1		
Entelecara errata O.P.-Cambridge, 1913	Linyphiidae	60582	Entelecara errata O.P.-Cambridge, 1913							CR	B2a,b, C2a, D1				1		VU
Entelecara erythropus (Westring, 1851)	Linyphiidae	60583	Entelecara erythropus (Westring, 1851)	1		VU	B2a, D			LC			NT		1		NT
Entelecara flavipes (Blackwall, 1834)	Linyphiidae	60584	Entelecara flavipes (Blackwall, 1834)	1						LC					1		LC
Entelecara media Kulczyński, 1887	Linyphiidae	60590	Entelecara media Kulczyński, 1887			VU	B2a, D			NT					1		VU
Entelecara omissa O.P.-Cambridge, 1902	Linyphiidae	60592	Entelecara omissa O.P.-Cambridge, 1902	NT											1		NT
Entelecara strandi Kolosváry, 1934a	Linyphiidae	60594	Entelecara strandi Kolosváry, 1934												?		
Erigone atra Blackwall, 1833	Linyphiidae	60602	Erigone atra Blackwall, 1833	1		1		LC		1			1		1		
Erigone cristatopalpus Simon, 1884	Linyphiidae	60606	Erigone cristatopalpus Simon, 1884							EN	B2a,b, C2a, D1				1		EN
Erigone dentipalpis (Wider, 1834)	Linyphiidae	60609	Erigone dentipalpis (Wider, 1834)	1	LC	1		LC		1		1	1		1		
Erigone jaegeri Baehr, 1984	Linyphiidae	60614	Erigone jaegeri Baehr, 1984							DD					1		DD
Erigone remota L. Koch, 1869	Linyphiidae	60628	Erigone remota L. Koch, 1869					LC							1		LC
Erigone strandi Kolosváry, 1934a	Linyphiidae	60631	Erigone strandi Kolosváry, 1934												?		
Erigone tirolensis L.Koch, 1872	Linyphiidae	60634	Erigone tirolensis L.Koch, 1872			CR	B2a, D2	DD		DD					1		EN
Erigonella hiemalis (Blackwall, 1841)	Linyphiidae	60637	Erigonella hiemalis (Blackwall, 1841)	NT		1				1			1		1		
Erigonella ignobilis (O.P.-Cambridge, 1871)	Linyphiidae	60638	Erigonella ignobilis (O.P.-Cambridge, 1871)							EN	B2a,b, C2a, D1				1		VU
Erigonella subelevata (L.Koch, 1869)	Linyphiidae	60640	Erigonella subelevata (L.Koch, 1869)							RE?					1		
Erigonoplus globipes (L.Koch, 1872)	Linyphiidae	60645	Erigonoplus globipes (L.Koch, 1872)			CR	A3, B2, D2			LC					1		NT
Erigonoplus jarmilae (Miller, 1943)	Linyphiidae	60648	Erigonoplus jarmilae (Miller, 1943)	NT						LC					1		LC
Evansia merens O.P.-Cambridge, 1900	Linyphiidae	60657	Evansia merens O.P.-Cambridge, 1900			VU	D	1		1					1		LC
Floronia bucculenta (Clerck, 1757)	Linyphiidae	60661	Floronia bucculenta (Clerck, 1757)	1				LC		1			1		1		
Formiphantes leptyphantiformis (Strand, 1907)	Linyphiidae	60662	Formiphantes leptyphantiformis (Strand, 1907)	VU		CR	B2a, D1, D2			VU	B2a,b, C2a, D1				1		EN
Frontinellina frutetorum (C.L.Koch, 1834)	Linyphiidae	60664	Frontinellina frutetorum (C.L.Koch, 1834)			1		1		1					1		
Glyphesis servulus (Simon, 1881)	Linyphiidae	60668	Glyphesis servulus (Simon, 1881)							VU	B2a,b, C2a, D1				1		NT
Gnathonarium dentatum (Wider, 1834)	Linyphiidae	60670	Gnathonarium dentatum (Wider, 1834)	1	LC	1				1		1	1		1		
Gonatum hilare (Thorell, 1875)	Linyphiidae	60676	Gonatum hilare (Thorell, 1875)							NT					1		NT
Gonatum orientale Fage 1931	Linyphiidae	60679	Gonatum orientale Fage 1931										DD		1		DD
Gonatum paradoxum (L.Koch, 1869)	Linyphiidae	60681	Gonatum paradoxum (L.Koch, 1869)	1		1		1		1					1		
Gonatum rubellum (Blackwall, 1841)	Linyphiidae	60682	Gonatum rubellum (Blackwall, 1841)	1		1		LC		1			1		1		
Gonatum rubens (Blackwall, 1833)	Linyphiidae	60683	Gonatum rubens (Blackwall, 1833)			1		LC		1					1		
Gongylidiellum compar (Westring, 1861)	Linyphiidae	60685	Gongylidiellum compar (Westring, 1861)										DD		1		
Gongylidiellum latebricola (O.P.-Cambridge, 1871)	Linyphiidae	60689	Gongylidiellum latebricola (O.P.-Cambridge, 1871)	LC		1		1		1					1		
Gongylidiellum murcidum Simon, 1884	Linyphiidae	60690	Gongylidiellum murcidum Simon, 1884	1		1				1					1		
Gongylidiellum vivum (O.P.-Cambridge, 1875)	Linyphiidae	60692	Gongylidiellum vivum (O.P.-Cambridge, 1875)	EN		1		1		1					1		
Gongylidium gebhardti Kolosváry, 1934	Linyphiidae	60693	Gongylidium gebhardti Kolosváry, 1934												?		
Gongylidium rufipes (Linnaeus, 1758)	Linyphiidae	60694	Gongylidium rufipes (Linnaeus, 1758)	1	LC	1		LC		1			1		1		
Helophora insignis (Blackwall, 1841)	Linyphiidae	60697	Helophora insignis (Blackwall, 1841)	1		1		1		1					1		
Heterotriconcus pusillus (Miller, 1958)	Linyphiidae	60698	Heterotriconcus pusillus (Miller, 1958)	CR						CR	B2a,b, C2a, D1				1		CR
Hilaira excisa (O.P.-Cambridge, 1871)	Linyphiidae	60700	Hilaira excisa (O.P.-Cambridge, 1871)	CR						VU	B2a,b, C2a, D2				1		VU
Hylyphantes graminicola (Sundevall, 1830)	Linyphiidae	60714	Hylyphantes graminicola (Sundevall, 1830)	CR		1		LC		EN	B2a,b, C2a, D1		VU	B1a	1		NT
Hylyphantes nigritus (Simon, 1881)	Linyphiidae	60715	Hylyphantes nigritus (Simon, 1881)	CR								DD			1		DD
Hypomma bituberculatum (Wider, 1834)	Linyphiidae	60717	Hypomma bituberculatum (Wider, 1834)	1		1		LC		1					1		
Hypomma cornutum (Blackwall, 1833)	Linyphiidae	60719	Hypomma cornutum (Blackwall, 1833)	NT		1				LC					1		
Hypselsites jacksoni (O.P.-Cambridge, 1902)	Linyphiidae	60722	Hypselsites jacksoni (O.P.-Cambridge, 1902)			VU	B2a, D2								1		VU

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Hypsocephalus pusillus (Menge 1869)	Linyphiidae	60728	Hypsocephalus pusillus (Menge 1869)	EN		EN	B2a, D2			EN	B2a,b, C2a, D1				1		EN
Improphantes complicatus (Emerton, 1882)	Linyphiidae	60731	Improphantes complicatus (Emerton, 1882)			CR	D								1		CR
Improphantes decolor (Westring, 1861)	Linyphiidae	60732	Improphantes decolor (Westring, 1861)			LC				DD					1		LC
Improphantes geniculatus (Kulczyński, 1898)	Linyphiidae	60734	Improphantes geniculatus (Kulczyński, 1898)	VU											1		NT
Improphantes improbulus (Simon, 1929)	Linyphiidae	60736	Improphantes improbulus (Simon, 1929)					1		NT					1		
Improphantes nitidus (Thorell, 1875)	Linyphiidae	60738	Improphantes nitidus (Thorell, 1875)					LC		EN	B2a,b, C2a, D1	DD			1		VU
Incestophantes annulatus (Kulczyński, 1882)	Linyphiidae	60739	Incestophantes annulatus (Kulczyński, 1882)			CR	D	VU	D2	VU					1	x	VU
Incestophantes crucifer (Menge, 1866)	Linyphiidae	60740	Incestophantes crucifer (Menge, 1866)			LC				1					1		
Ipa keyserlingi (Ausserer, 1867)	Linyphiidae	60747	Ipa keyserlingi (Ausserer, 1867)	NT		VU	D			1					1		NT
Ipa terrenus (L. Koch, 1879)	Linyphiidae	60749	Ipa terrenus (L. Koch, 1879)	VU				EN	B2a,b	EN	B2a,b, C2a, D1				1		VU
Jacksonella falconeri (Jackson, 1908)	Linyphiidae	60752	Jacksonella falconeri (Jackson, 1908)			VU	B2a, D2								1		VU
Kaestneria dorsalis (Wider, 1834)	Linyphiidae	60754	Kaestneria dorsalis (Wider, 1834)	1		1		LC		1			1		1		
Kaestneria pullata (O.P.-Cambridge, 1863)	Linyphiidae	60755	Kaestneria pullata (O.P.-Cambridge, 1863)	1		1		LC		DD					1		
Kaestneria torrentum (Kulczyński, 1881)	Linyphiidae	60756	Kaestneria torrentum (Kulczyński, 1881)	EN		LC				NT					1	x	NT
Karita paludosa (Duffey, 1971)	Linyphiidae	60757	Karita paludosa (Duffey, 1971)		LC?										1?		
Kratochviliella bicapitata Miller, 1938	Linyphiidae	60759	Kratochviliella bicapitata Miller, 1938			LC				EN	B2a,b, C2a, D1				1		VU
Labulla thoracica (Wider, 1834)	Linyphiidae	60762	Labulla thoracica (Wider, 1834)	NT		LC		1		1			1		1		
Lasiargus hirsutus (Menge, 1869)	Linyphiidae	60763	Lasiargus hirsutus (Menge, 1869)							EN	B2a,b, C2a, D1				1		VU
Lepthyphantes centromeroides carpathicus Dumitrescu & Georgescu, 1970	Linyphiidae	60779	Lepthyphantes centromeroides carpathicus Dumitrescu & Georgescu, 1970					VU	D2						1	x	VU
Lepthyphantes leprosus (Ohlert, 1865)	Linyphiidae	60797	Lepthyphantes leprosus (Ohlert, 1865)	1	LC	1		LC		1		1	1		1		
Lepthyphantes minutus (Blackwall, 1833)	Linyphiidae	60807	Lepthyphantes minutus (Blackwall, 1833)	1		1		LC		1			1		1		
Lepthyphantes nodifer Simon, 1884	Linyphiidae	60810	Lepthyphantes nodifer Simon, 1884	LC						1					1		
Lepthyphantes notabilis Kulczyński, 1887	Linyphiidae	60811	Lepthyphantes notabilis Kulczyński, 1887							NT					1		NT
Leptorhoptrum robustum (Westring, 1851)	Linyphiidae	60826	Leptorhoptrum robustum (Westring, 1851)	1		1		LC		1			1		1		
Lessertia denticelis (Simon, 1884)	Linyphiidae	60829	Lessertia denticelis (Simon, 1884)			LC				CR	B2a,b, C2a, D1				1		VU
Lessertinella carpatica Weiss, 1979	Linyphiidae	60830	Lessertinella carpatica Weiss, 1979			EN	B2a, D2	DD		CR	B2a,b, C2a, D1		VU	B1a	1	x	EN
Lessertinella kulczyńskii (Lessert, 1910)	Linyphiidae	60831	Lessertinella kulczyńskii (Lessert, 1910)							CR	B2a,b, C2a, D1				1		CR
Linyphia hortensis Sundevall, 1830	Linyphiidae	60838	Linyphia hortensis Sundevall, 1830	1		1		LC		1		1	1		1		
Linyphia triangularis (Clerck, 1757)	Linyphiidae	60852	Linyphia triangularis (Clerck, 1757)	1	LC	1		1		1			1		1		
Lophomma punctatum (Blackwall, 1841)	Linyphiidae	60854	Lophomma punctatum (Blackwall, 1841)	EN		1		1		LC			DD		1		
Macrargus carpenteri (O.P.-Cambridge, 1894)	Linyphiidae	60856	Macrargus carpenteri (O.P.-Cambridge, 1894)							EN	B2a,b, C2a, D1				1		VU
Macrargus rufus (Wider, 1834)	Linyphiidae	60860	Macrargus rufus (Wider, 1834)	1		1		1		1			1		1		
Mansuphantes arciger (Kulczyński, 1882)	Linyphiidae	60862	Mansuphantes arciger (Kulczyński, 1882)	EN		EN	B2a, D2	1		1			VU	B2a	1		VU
Mansuphantes fragilis (Thorell, 1875)	Linyphiidae	60865	Mansuphantes fragilis (Thorell, 1875)							RE?					1		RE?
Mansuphantes mansuetus (Thorell, 1875)	Linyphiidae	60867	Mansuphantes mansuetus (Thorell, 1875)	NT		1		LC		1		1	1		1		
Maro lehtineni Saaristo, 1971	Linyphiidae	60872	Maro lehtineni Saaristo, 1971							DD					1		DD
Maro lepidus Casimir, 1961	Linyphiidae	60873	Maro lepidus Casimir, 1961			EN	B2a, D			CR					1		EN
Maro minutus O. P.-Cambridge, 1906	Linyphiidae	60874	Maro minutus O. P.-Cambridge, 1906										NT		1		NT
Maro sublestus Falconer, 1915	Linyphiidae	60876	Maro sublestus Falconer, 1915							DD					1		DD
Maso gallicus Simon, 1894	Linyphiidae	60878	Maso gallicus Simon, 1894					1		1					1		
Maso sundevalli (Westring, 1851)	Linyphiidae	60879	Maso sundevalli (Westring, 1851)	1		1		1		1			1		1		
Mecopisthes peusi Wunderlich, 1972	Linyphiidae	60887	Mecopisthes peusi Wunderlich, 1972	CR						DD					1		DD
Mecopisthes silus (O.P.-Cambridge, 1872)	Linyphiidae	60890	Mecopisthes silus (O.P.-Cambridge, 1872)			EN	D								1		EN
Mecynargus longus (Kulczyński, 1882)	Linyphiidae	60894	Mecynargus longus (Kulczyński, 1882)			CR	D			VU					1	x	EN
Mecynargus morulus (O.P.-Cambridge, 1873)	Linyphiidae	60896	Mecynargus morulus (O.P.-Cambridge, 1873)			EN	D			VU					1		EN
Megalephyphantes collinus (L.Koch, 1872)	Linyphiidae	60901	Megalephyphantes collinus (L.Koch, 1872)	DD				LC		1					1		LC
Megalephyphantes nebulosus (Sundeval, 1829)	Linyphiidae	60903	Megalephyphantes nebulosus (Sundeval, 1829)	1		1		1		1			1		1		
Megalephyphantes pseudocollinus Saaristo, 1997	Linyphiidae	60904	Megalephyphantes pseudocollinus Saaristo, 1997	DD						1					1		
Meioneta affinis (Kulczyński, 1898)	Linyphiidae	60905	Agyneta affinis (Kulczyński, 1898)	1		1		1		1			1		1		
Meioneta equestris (L.Koch, 1881)	Linyphiidae	60909	Agyneta equestris (L.Koch, 1881)							NT					1		
Meioneta fuscipalpa (C.L.Koch, 1836)	Linyphiidae	60910	Agyneta fuscipalpa (C.L.Koch, 1836)	EN				DD		1		DD			1		DD
Meioneta gulosa (L.Koch, 1869)	Linyphiidae	60911	Agyneta gulosa (L.Koch, 1869)			1				CR	B2a,b, C2a, D1				1		VU
Meioneta innotabilis (O.P.-Cambridge, 1863)	Linyphiidae	60912	Agyneta innotabilis (O.P.-Cambridge, 1863)	EN		1				VU	B2a,b, C2a, D1				1		NT
Meioneta milleri Thaler, Buchar & Kürka, 1997	Linyphiidae	60915	Agyneta milleri Thaler, Buchar & Kürka, 1997					DD		1			DD		1		
Meioneta mollis (O.P.-Cambridge, 1871)	Linyphiidae	60916	Agyneta mollis (O.P.-Cambridge, 1871)	NT						1			DD		1		

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Meioneta mossica Schikora, 1993	Linyphiidae	60917	Agyneta mossica Schikora, 1993							DD			DD		1		DD
Meioneta rurestris (C.L.Koch, 1836)	Linyphiidae	60928	Agyneta rurestris (C.L.Koch, 1836)	1	LC	1		1		1		1	1		1		
Meioneta saxatilis (Blackwall, 1844)	Linyphiidae	60930	Agyneta saxatilis (Blackwall, 1844)	1		1		LC		1					1		
Meioneta similis (Kulczyński, 1926)	Linyphiidae	60931	Agyneta similis (Kulczyński, 1926)					DD							1		DD
Meioneta simplicatarsis (Simon, 1884)	Linyphiidae	60932	Agyneta simplicatarsis (Simon, 1884)	VU				DD		VU	B2a,b, C2a, D1				1		VU
Mermessus trilobatus (Emerton, 1882)	Linyphiidae	60939	Mermessus trilobatus (Emerton, 1882)			1									1		
Metopobactrus ascitus (Kulczyński, 1894)	Linyphiidae	60942	Metopobactrus ascitus (Kulczyński, 1894)	CR						LC					1		VU
Metopobactrus prominulus (O.P.-Cambridge, 1872)	Linyphiidae	60949	Metopobactrus prominulus (O.P.-Cambridge, 1872)			1				1			DD		1		
Micrargus apertus (O.P.-Cambridge, 1871)	Linyphiidae	60954	Micrargus apertus (O.P.-Cambridge, 1871)	DD		LC		1		DD			DD		1		
Micrargus georgescuae Millidge, 1976	Linyphiidae	60958	Micrargus georgescuae Millidge, 1976	1		LC		1		VU	B2a,b, C2a, D1		NT		1		LC
Micrargus herbigradus (Blackwall, 1854)	Linyphiidae	60959	Micrargus herbigradus (Blackwall, 1854)	1		1		LC		1			1		1		
Micrargus subaequalis (Westring, 1851)	Linyphiidae	60963	Micrargus subaequalis (Westring, 1851)	1		1				1					1		
Microctenonyx subitaneus (O.P.-Cambridge, 1875)	Linyphiidae	60965	Microctenonyx subitaneus (O.P.-Cambridge, 1875)					LC		EN	B2a,b, C2a, D1	DD			1		NT
Microlinyphia impigra (O.P.-Cambridge, 1871)	Linyphiidae	60966	Microlinyphia impigra (O.P.-Cambridge, 1871)	NT						VU	B2a,b, C2a, D1				1		NT
Microlinyphia pusilla (Sundevall, 1830)	Linyphiidae	60969	Microlinyphia pusilla (Sundevall, 1830)	1		1		LC		1			1		1		
Microneta viaria (Blackwall, 1841)	Linyphiidae	60973	Microneta viaria (Blackwall, 1841)	1	LC	1		1		1		1	1		1		
Midia midas (Simon, 1884)	Linyphiidae	60997	Midia midas (Simon, 1884)					1		EN	B2a,b, C2a, D1				1		VU
Minicia marginella (Wider, 1834)	Linyphiidae	61005	Minicia marginella (Wider, 1834)	1		LC		1		1			DD		1		
Minyriolus pusillus (Wider, 1834)	Linyphiidae	61011	Minyriolus pusillus (Wider, 1834)	1		1				1			1		1		
Mioxena blanda (Simon, 1884)	Linyphiidae	61012	Mioxena blanda (Simon, 1884)	EN						CR	B2a,b, C2a, D1				1		VU
Moebelia penicillata (Westring, 1851)	Linyphiidae	61014	Moebelia penicillata (Westring, 1851)	NT		1				LC					1		
Mughiphantes cornutus (Schenkel, 1927)	Linyphiidae	61017	Mughiphantes cornutus (Schenkel, 1927)							RE?					1		RE?
Mughiphantes mughi (Fickert, 1875)	Linyphiidae	61030	Mughiphantes mughi (Fickert, 1875)	1		1		LC		1			1		1		
Mughiphantes pulcher (Kulczyński, 1881)	Linyphiidae	61032	Mughiphantes pulcher (Kulczyński, 1881)			VU	D			1					1		NT
Mughiphantes varians (Kulczyński, 1882)	Linyphiidae	61042	Mughiphantes varians (Kulczyński, 1882)			EN	D			NT					1	x	VU
Nematogmus sanguinolentus (Walckenaer, 1841)	Linyphiidae	61045	Nematogmus sanguinolentus (Walckenaer, 1841)	NT				1		NT					1		LC
Neriere clathrata (Sundevall, 1830)	Linyphiidae	61048	Neriere clathrata (Sundevall, 1830)	1		1		1		1			1		1		
Neriere emphana (Walckenaer, 1841)	Linyphiidae	61049	Neriere emphana (Walckenaer, 1841)	1		1		1		1			1		1		
Neriere furtiva (O.P.-Cambridge, 1871)	Linyphiidae	61050	Neriere furtiva (O.P.-Cambridge, 1871)					LC		LC			1		1		LC
Neriere montana (Clerck, 1757)	Linyphiidae	61053	Neriere montana (Clerck, 1757)	1		1		LC		1			1		1		
Neriere peltata (Wider, 1834)	Linyphiidae	61055	Neriere peltata (Wider, 1834)	1		1		LC		1			1		1		
Neriere radiata (Walckenaer, 1842)	Linyphiidae	61057	Neriere radiata (Walckenaer, 1842)	1		1		LC		1		1	1		1		
Notioscopus sarcinatus (O.P.-Cambridge, 1872)	Linyphiidae	61060	Notioscopus sarcinatus (O.P.-Cambridge, 1872)	DD		1		1		1					1		
Nusoncus nasutus (Schenkel, 1925)	Linyphiidae	61061	Nusoncus nasutus (Schenkel, 1925)			LC				VU	B2a,b, C2a, D1		DD		1		NT
Obscuriphantes obscurus (Blackwall, 1841)	Linyphiidae	61063	Obscuriphantes obscurus (Blackwall, 1841)	EN		1		1		1			1		1		
Oedothorax agrestis (Blackwall, 1853)	Linyphiidae	61065	Oedothorax agrestis (Blackwall, 1853)	1	LC	1		LC		1			1		1		
Oedothorax apicatus (Blackwall, 1850)	Linyphiidae	61066	Oedothorax apicatus (Blackwall, 1850)	1		1		1		1			1		1		
Oedothorax fuscus (Blackwall, 1834)	Linyphiidae	61068	Oedothorax fuscus (Blackwall, 1834)	1		1		1		1					1		
Oedothorax gibbifer (Kulczyński, 1882)	Linyphiidae	61069	Oedothorax gibbifer (Kulczyński, 1882)	VU		VU	D	1		1			VU		1		NT
Oedothorax gibbosus (Blackwall, 1841)	Linyphiidae	61070	Oedothorax gibbosus (Blackwall, 1841)	1		1		LC		1			1		1		
Oedothorax insignis (Bösenberg, 1902)	Linyphiidae	61071	Oedothorax insignis (Bösenberg, 1902)					1?							?		
Oedothorax retusus (Westring, 1851)	Linyphiidae	61075	Oedothorax retusus (Westring, 1851)	1		1		1		1		1	1		1		
Oreoneta montigena (L.Koch, 1872)	Linyphiidae	61082	Oreoneta montigena (L.Koch, 1872)							DD					1		DD
Oreoneta tatica (Kulczyński, 1915)	Linyphiidae	61085	Oreoneta tatica (Kulczyński, 1915)			EN	D			EN	B2a,b, C2a, D1				1		EN
Oreonetides glacialis (L.Koch, 1872)	Linyphiidae	61087	Oreonetides glacialis (L.Koch, 1872)			EN	D			VU	B2a,b, C2a, D1				1		EN
Oreonetides vaginatus (Thorell, 1872)	Linyphiidae	61089	Oreonetides vaginatus (Thorell, 1872)			LC				VU	B2a,b, C2a, D1				1		NT
Oryphantes angulatus (O.P.-Cambridge, 1881)	Linyphiidae	61090	Oryphantes angulatus (O.P.-Cambridge, 1881)			VU	B2a, D2								1		VU
Ostearius melanopygius (O.P.-Cambridge, 1879)	Linyphiidae	61092	Ostearius melanopygius (O.P.-Cambridge, 1879)	1						1					1		
Palliduphantes alutacius (Simon, 1884)	Linyphiidae	61094	Palliduphantes alutacius (Simon, 1884)	DD		1				1					1		
Palliduphantes antroniensis (Schenkel, 1933)	Linyphiidae	61096	Palliduphantes antroniensis (Schenkel, 1933)							EN	B2a,b, C2a, D1				1		EN
Palliduphantes insignis (O.P.-Cambridge, 1913)	Linyphiidae	61117	Palliduphantes insignis (O.P.-Cambridge, 1913)	NT				1		1					1		
Palliduphantes istrianus (Kulczyński, 1914)	Linyphiidae	61118	Palliduphantes istrianus (Kulczyński, 1914)					1							1		
Palliduphantes milleri (Starega, 1972)	Linyphiidae	61127	Palliduphantes milleri (Starega, 1972)			EN	D	1		NT			NT		1	X	VU
Palliduphantes pallidus (O.P.-Cambridge, 1871)	Linyphiidae	61131	Palliduphantes pallidus (O.P.-Cambridge, 1871)	1				1		1		1	1		1		
Palliduphantes pillichi (Kulczyński, 1915)	Linyphiidae	61133	Palliduphantes pillichi (Kulczyński, 1915)							EN	B2a,b, C2a, D1				1		VU
Palliduphantes spelaeorum (Kulczyński, 1914)	Linyphiidae	61138	Palliduphantes spelaeorum (Kulczyński, 1914)									VU			1		VU

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Palliduphantes trnovensis (Drensky, 1931)	Linyphiidae	61141	Palliduphantes trnovensis (Drensky, 1931)									EN			1		EN
Panamomops affinis Miller & Kratochvil, 1939	Linyphiidae	61142	Panamomops affinis Miller & Kratochvil, 1939							NT					1		NT
Panamomops fagei Miller & Kratochvil, 1939	Linyphiidae	61144	Panamomops fagei Miller & Kratochvil, 1939	1						1					1		
Panamomops inconspicuus (Miller & Valešova, 1964)	Linyphiidae	61146	Panamomops inconspicuus (Miller & Valešova, 1964)	EN				1		EN	B2a,b, C2a, D1				1		VU
Panamomops latifrons Miller, 1959	Linyphiidae	61147	Panamomops latifrons Miller, 1959							NT					1		NT
Panamomops mengei Simon, 1926	Linyphiidae	61148	Panamomops mengei Simon, 1926	NT						VU					1		NT
Panamomops palmgreni Thaler, 1973	Linyphiidae	61150	Panamomops palmgreni Thaler, 1973							DD					1		DD
Panamomops strandi Kolosváry, 1934a	Linyphiidae	61152	Panamomops strandi Kolosváry, 1934a												?		
Panamomops sulcifrons (Wider, 1834)	Linyphiidae	61153	Panamomops sulcifrons (Wider, 1834)							VU	B2a,b, C2a, D1				1		NT
Parapelecopsis nemoralis (Blackwall, 1841)	Linyphiidae	61158	Parapelecopsis nemoralis (Blackwall, 1841)		LC	1									1		
Pelecopsis elongata (Wider, 1834)	Linyphiidae	61167	Pelecopsis elongata (Wider, 1834)	EN		1		1		1			1		1		
Pelecopsis loksai Szinetar & Samu 2003	Linyphiidae	61174	Pelecopsis loksai Szinetar & Samu 2003							CR	B2a,b, C2a, D1				1		CR
Pelecopsis mengei (Simon, 1884)	Linyphiidae	61176	Pelecopsis mengei (Simon, 1884)	VU		1				VU	B2a,b, C2a, D1				1		NT
Pelecopsis parallela (Wider, 1834)	Linyphiidae	61182	Pelecopsis parallela (Wider, 1834)	DD		1				VU	B2a,b, C2a, D1				1		NT
Pelecopsis radicolica (L.Koch, 1872)	Linyphiidae	61185	Pelecopsis radicolica (L.Koch, 1872)			1		1		1			1		1		
Peponocranium orbiculatum (O.P.-Cambridge, 1882)	Linyphiidae	61193	Peponocranium orbiculatum (O.P.-Cambridge, 1882)	EN		LC				VU	B2a,b, C2a, D1				1		NT
Peponocranium praeceps Miller, 1943	Linyphiidae	61194	Peponocranium praeceps Miller, 1943	EN		VU	D			NT					1		VU
Piniphantes pinicola (Simon, 1884)	Linyphiidae	61198	Piniphantes pinicola (Simon, 1884)										DD		1		DD
Pityohyphantes phrygianus (C.L.Koch, 1836)	Linyphiidae	61200	Pityohyphantes phrygianus (C.L.Koch, 1836)	1		1				1			1		1		
Pocadicnemis carpatica (Chyzer, 1894)	Linyphiidae	61202	Pocadicnemis carpatica (Chyzer, 1894)	NT		VU	D	DD		VU	B2a,b, C2a, D1		VU	B1a	1		VU
Pocadicnemis juncea Locket & Millidge, 1953	Linyphiidae	61204	Pocadicnemis juncea Locket & Millidge, 1953	1						1					1		
Pocadicnemis pumila (Blackwall, 1841)	Linyphiidae	61205	Pocadicnemis pumila (Blackwall, 1841)	1		1		LC		1			1		1		
Poeciloneura variegata (Blackwall, 1841)	Linyphiidae	61206	Poeciloneura variegata (Blackwall, 1841)	NT		1		LC		1			1		1		
Porrhomma campbelli F.O.P.-Cambridge, 1894	Linyphiidae	61211	Porrhomma campbelli F.O.P.-Cambridge, 1894			1				DD					1		
Porrhomma convexum (Westring, 1861)	Linyphiidae	61212	Porrhomma convexum (Westring, 1861)		LC	LC		1		1		1	LC		1		
Porrhomma egeria Simon, 1884	Linyphiidae	61214	Porrhomma egeria Simon, 1884			LC				1			LC		1		
Porrhomma errans (Blackwall, 1841)	Linyphiidae	61215	Porrhomma errans (Blackwall, 1841)	DD	LC			1		NT			DD		1		
Porrhomma lativelum Tretzel, 1956	Linyphiidae	61219	Porrhomma microps (Roewer, 1931)												syn		
Porrhomma microphthalmum (O.P.-Cambridge, 1871)	Linyphiidae	61221	Porrhomma microphthalmum (O.P.-Cambridge, 1871)	VU		1				NE					1		
Porrhomma microps (Roewer, 1931)	Linyphiidae	61222	Porrhomma microps (Roewer, 1931)	DD						NE			DD		1		DD
Porrhomma montanum Jackson, 1913	Linyphiidae	61223	Porrhomma montanum Jackson, 1913			1		LC		VU	B2a,b, C2a, D1				1		LC
Porrhomma myops Simon, 1884	Linyphiidae	61224	Porrhomma myops Simon, 1884							VU	B2a,b, C2a, D1				1		NT
Porrhomma oblitum (O.P.-Cambridge, 1870)	Linyphiidae	61225	Porrhomma oblitum (O.P.-Cambridge, 1870)	1						1					1		
Porrhomma pallidum Jackson, 1913	Linyphiidae	61228	Porrhomma pallidum Jackson, 1913	1		1		1		NT					1		
Porrhomma profundum M.Dahl, 1939	Linyphiidae	61229	Porrhomma profundum M.Dahl, 1939	VU	LC					NT					1		NT
Porrhomma pygmaeum (Blackwall, 1834)	Linyphiidae	61230	Porrhomma pygmaeum (Blackwall, 1834)	1		1		1		1			1		1		
Porrhomma rosenhaueri (L.Koch, 1872)	Linyphiidae	61232	Porrhomma rosenhaueri (L.Koch, 1872)		LC					NE					1		DD
Prinerigone vagans (Audouin, 1826)	Linyphiidae	61240	Prinerigone vagans (Audouin, 1826)	1				LC		EN	B2a,b, C2a, D1	DD	DD		1		NT
Saaristoa abnormis (Blackwall, 1841)	Linyphiidae	61246	Saaristoa abnormis (Blackwall, 1841)	VU						NE					1		DD
Saaristoa firma (O.P.-Cambridge, 1905)	Linyphiidae	61247	Saaristoa firma (O.P.-Cambridge, 1905)	EN						EN	B2a,b, C2a, D1				1		VU
Saloca diceros (O.P.-Cambridge, 1871)	Linyphiidae	61248	Saloca diceros (O.P.-Cambridge, 1871)			VU	D			VU					1		LC
Saloca kulczynskii Miller & Kratochvil, 1939	Linyphiidae	61250	Saloca kulczynskii Miller & Kratochvil, 1939	VU		1		1		1					1		
Sauron rayi (Simon, 1881)	Linyphiidae	61253	Sauron rayi (Simon, 1881)			EN	D			NT					1		VU
Savignia frontata Blackwall, 1833	Linyphiidae	61254	Savignia frontata Blackwall, 1833			1									1		
Scotargus pilosus Simon, 1913	Linyphiidae	61265	Scotargus pilosus Simon, 1913			1				EN	B2a,b, C2a, D1		DD		1		NT
Scotinotylus antennatus (O.P.-Cambridge, 1875)	Linyphiidae	61269	Scotinotylus antennatus (O.P.-Cambridge, 1875)			CR	B2a, D			VU	B2a,b, C2a, D1				1		EN
Scutpelecopsis loricata Duma & Tanasevitch, 2011	Linyphiidae	Not listed yet	Scutpelecopsis loricata Duma & Tanasevitch, 2011					VU	D2						1	x	VU
Silometopus bonessi Casimir, 1970	Linyphiidae	61288	Silometopus bonessi Casimir, 1970							DD					1		DD
Silometopus elegans (O.P.-Cambridge, 1872)	Linyphiidae	61291	Silometopus elegans (O.P.-Cambridge, 1872)			1				VU					1		LC
Silometopus reussi (Thorell, 1871)	Linyphiidae	61294	Silometopus reussi (Thorell, 1871)	VU						VU					1		NT
Sintula corniger (Blackwall, 1856)	Linyphiidae	61300	Sintula corniger (Blackwall, 1856)	VU		1		1		1			NT		1		
Sintula retroversus (O.P.-Cambridge, 1875)	Linyphiidae	61305	Sintula retroversus (O.P.-Cambridge, 1875)							RE?					1		RE?
Sintula spiniger (Balogh, 1935)	Linyphiidae	61307	Sintula spiniger (Balogh, 1935)					1		EN					1		VU
Sisicus apertus (Holm, 1939)	Linyphiidae	61308	Sisicus apertus (Holm, 1939)							VU					1		NT
Stemonyphantes lineatus (Linnaeus, 1758)	Linyphiidae	61311	Stemonyphantes lineatus (Linnaeus, 1758)	1		1		1		1			1		1		
Styloctetor romanus (O.P.-Cambridge, 1872)	Linyphiidae	61313	Styloctetor romanus (O.P.-Cambridge, 1872)	EN				DD		CR	B2a,b, C2a, D1				1		EN

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Styloctetor stivatus (Simon, 1881)	Linyphiidae	61314	Styloctetor stivatus (Simon, 1881)	DD		1				1					1		
Syedra gracilis (Menge, 1869)	Linyphiidae	61317	Syedra gracilis (Menge, 1869)		LC	1				1					1		
Syedra myrmicarum (Kulczyński, 1882)	Linyphiidae	61318	Syedra myrmicarum (Kulczyński, 1882)			EN	B2a, D			NT					1		NT
Tallusia experta (O.P.-Cambridge, 187)	Linyphiidae	61321	Tallusia experta (O.P.-Cambridge, 187)	1		1				1			1		1		
Tapinocyba affinis Lessert, 1907	Linyphiidae	61328	Tapinocyba affinis Lessert, 1907	1		1		1		1			1		1		
Tapinocyba barsica Kolosváry, 1934a	Linyphiidae	61330	Tapinocyba barsica Kolosváry, 1934							1?					?		
Tapinocyba biscissa (O.P.-Cambridge, 1872)	Linyphiidae	61332	Tapinocyba biscissa (O.P.-Cambridge, 1872)			1				NT					1		
Tapinocyba insecta (L.Koch, 1869)	Linyphiidae	61336	Tapinocyba insecta (L.Koch, 1869)	1	LC	1				1			1		1		
Tapinocyba pallens (O.P.-Cambridge, 1872)	Linyphiidae	61342	Tapinocyba pallens (O.P.-Cambridge, 1872)			1				NT			DD		1		
Tapinocyba praecox (O. P.-Cambridge, 1873)	Linyphiidae	61343	Tapinocyba praecox (O. P.-Cambridge, 1873)					DD							1		
Tapinocyba silvestris Georgescu, 1973	Linyphiidae	61344	Tapinocyba silvestris Georgescu, 1973									VU?			1		
Tapinocyboides pygmaeus (Menge, 1869)	Linyphiidae	61347	Tapinocyboides pygmaeus (Menge, 1869)	NT	LC	LC		1		1					1		
Tapinopa longidens (Wider, 1834)	Linyphiidae	61349	Tapinopa longidens (Wider, 1834)	VU		1				1					1		
Taranucnus bihari Fage, 1931	Linyphiidae	61349	Taranucnus bihari Fage, 1931			CR	D	NT		VU	B2a,b, C2a, D1		EN	B1a	1	x	VU
Taranucnus setosus (O.P.-Cambridge, 1863)	Linyphiidae	61350	Taranucnus setosus (O.P.-Cambridge, 1863)			LC				EN	B2a,b, C2a, D1		DD		1		NT
Tenuiphantes alacris (Blackwall, 1853)	Linyphiidae	61353	Tenuiphantes alacris (Blackwall, 1853)	1		1		1		1			1		1		
Tenuiphantes cristatus (Menge, 1866)	Linyphiidae	61355	Tenuiphantes cristatus (Menge, 1866)	1		1		LC		1			1		1		
Tenuiphantes flavipes (Blackwall, 1854)	Linyphiidae	61357	Tenuiphantes flavipes (Blackwall, 1854)	1	LC	1		LC		1		1	1		1		
Tenuiphantes fogarasensis (Weiss, 1986)	Linyphiidae	61359	Tenuiphantes fogarasensis (Weiss, 1986)					VU	D2						1	x	VU
Tenuiphantes jacksoni (Schenkel, 1925)	Linyphiidae	61362	Tenuiphantes jacksoni (Schenkel, 1925)					1		1?					1		
Tenuiphantes mengei (Kulczyński, 1887)	Linyphiidae	61365	Tenuiphantes mengei (Kulczyński, 1887)	1		1		LC		1		1	1		1		
Tenuiphantes retezaticus (Ruzicka, 1985)	Linyphiidae	61369	Tenuiphantes retezaticus (Ruzicka, 1985)					VU	D2						1	x	VU
Tenuiphantes tenebricola (Wider, 1834)	Linyphiidae	61372	Tenuiphantes tenebricola (Wider, 1834)	1		1		LC		1		1	1		1		
Tenuiphantes tenuis (Blackwall, 1852)	Linyphiidae	61374	Tenuiphantes tenuis (Blackwall, 1852)	1		1		LC		1		1	1		1		
Tenuiphantes zimmermanni (Bertkau, 1890)	Linyphiidae	61375	Tenuiphantes zimmermanni (Bertkau, 1890)	VU		1		LC		LC					1		LC
Theonina cornix (Simon, 1881)	Linyphiidae	61378	Theonina cornix (Simon, 1881)	NT						NT					1		NT
Theonina kratochvili Miller & Weiss, 1979	Linyphiidae	61379	Theonina kratochvili Miller & Weiss, 1979	VU						VU	B2a,b, C2a, D1				1		VU
Thyreosthenius biovatus (O.P.-Cambridge, 1875)	Linyphiidae	61380	Thyreosthenius biovatus (O.P.-Cambridge, 1875)	CR		1		DD		VU	B2a,b, C2a, D1				1		NT
Thyreosthenius parasiticus (Westring, 1851)	Linyphiidae	61381	Thyreosthenius parasiticus (Westring, 1851)	1		1		LC		1		1	1		1		
Tiso aestivus (L.Koch, 1872)	Linyphiidae	61385	Tiso aestivus (L.Koch, 1872)	EN						CR	B2a,b, C2a, D1				1		EN
Tiso strandi Kolosváry, 1934a	Linyphiidae	61386	Tiso strandi Kolosváry, 1934a							1?					?		
Tiso vagans (Blackwall, 1834)	Linyphiidae	61387	Tiso vagans (Blackwall, 1834)	1		1		1		1			DD		1		
Tmeticus affinis (Blackwall, 1855)	Linyphiidae	61388	Tmeticus affinis (Blackwall, 1855)							1					1		
Trematocephalus cristatus (Wider, 1834)	Linyphiidae	61390	Trematocephalus cristatus (Wider, 1834)	1		1				1					1		
Trichoncoides piscator (Simon, 1884)	Linyphiidae	61393	Trichoncoides piscator (Simon, 1884)	CR	NT					EN	B2a,b, C2a, D1				1		EN
Trichoncus affinis Kulczyński, 1894	Linyphiidae	61394	Trichoncus affinis Kulczyński, 1894	VU	LC	CR	D			NT			DD		1		NT
Trichoncus auritus (L.Koch, 1869)	Linyphiidae	61396	Trichoncus auritus (L.Koch, 1869)	VU						1					1		NT
Trichoncus hackmani Millidge, 1955	Linyphiidae	61398	Trichoncus hackmani Millidge, 1955	EN				NT		VU	B2a,b, C2a, D1				1		VU
Trichoncus saxicola (O. P.-Cambridge, 1861)	Linyphiidae	61404	Trichoncus saxicola (O. P.-Cambridge, 1861)					LC							1		LC
Trichoncus sordidus Simon, 1884	Linyphiidae	61407	Trichoncus sordidus Simon, 1884							CR	B2a,b, C2a, D1				1		CR
Trichopterna cito (O.P.-Cambridge, 1872)	Linyphiidae	61412	Trichopterna cito (O.P.-Cambridge, 1872)	LC				1		LC					1		
Trichopternoides thorelli (Westring, 1861)	Linyphiidae	61416	Trichopternoides thorelli (Westring, 1861)							CR	B2a,b, C2a, D1				1		VU
Troglohyphantes herculanus (Kulczyński, 1894)	Linyphiidae	61467	Troglohyphantes herculanus (Kulczyński, 1894)					1							1	x	
Troglohyphantes jeanneli Dumitrescu & Georgescu, 1970	Linyphiidae	61471	Troglohyphantes jeanneli Dumitrescu & Georgescu, 1970					VU	D2						1	x	VU
Troglohyphantes orghidani Dumitrescu & Georgescu, 1977	Linyphiidae	61492	Troglohyphantes orghidani Dumitrescu & Georgescu, 1977					VU	D2						1	x	VU
Troglohyphantes racovitzai Dumitrescu, 1970	Linyphiidae	61505	Troglohyphantes racovitzai Dumitrescu, 1970					VU	D2						1	x	VU
Troxochrus cirrifrons (O. P.-Cambridge, 1871)	Linyphiidae	61538	Troxochrus cirrifrons (O. P.-Cambridge, 1871)			1									1		
Troxochrus scabriculus (Westring, 1851)	Linyphiidae	61540	Troxochrus scabriculus (Westring, 1851)			1		1		1		1			1		
Typhochrestus digitatus (O.P.-Cambridge, 1872)	Linyphiidae	61554	Typhochrestus digitatus (O.P.-Cambridge, 1872)	EN						NT					1		NT
Walckenaeria acuminata Blackwall, 1833	Linyphiidae	61571	Walckenaeria acuminata Blackwall, 1833	DD	LC	1				1					1		
Walckenaeria alticeps (Denis, 1952)	Linyphiidae	61574	Walckenaeria alticeps (Denis, 1952)	1		1				1			1		1		
Walckenaeria antica (Wider, 1834)	Linyphiidae	61577	Walckenaeria antica (Wider, 1834)	1	LC	1		LC		1			1		1		
Walckenaeria atrotibialis (O.P.-Cambridge, 1878)	Linyphiidae	61412	Walckenaeria atrotibialis (O.P.-Cambridge, 1878)	1	LC	1				1			1		1		
Walckenaeria capito (Westring, 1861)	Linyphiidae	61582	Walckenaeria capito (Westring, 1861)	NT		1				1					1		

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Walckenaeria corniculans (O.P.-Cambridge, 1875)	Linyphiidae	61589	Walckenaeria corniculans (O.P.-Cambridge, 1875)	1						1					1		
Walckenaeria cucullata (C.L.Koch, 1836)	Linyphiidae	61591	Walckenaeria cucullata (C.L.Koch, 1836)	1		1		LC		1			1		1		
Walckenaeria cuspidata Blackwall, 1833	Linyphiidae	61593	Walckenaeria cuspidata Blackwall, 1833			1				1			1		1		
Walckenaeria dysderoides (Wider, 1834)	Linyphiidae	61598	Walckenaeria dysderoides (Wider, 1834)	1		1		1		1					1		
Walckenaeria furcillata (Menge, 1869)	Linyphiidae	61602	Walckenaeria furcillata (Menge, 1869)	1		1		DD		1			1		1		
Walckenaeria incisa (O.P.-Cambridge, 1871)	Linyphiidae	61609	Walckenaeria incisa (O.P.-Cambridge, 1871)							VU	B2a,b, C2a, D1				1		VU
Walckenaeria kochi (O.P.-Cambridge, 1872)	Linyphiidae	61615	Walckenaeria kochi (O.P.-Cambridge, 1872)	DD		1		LC		1			1		1		
Walckenaeria mitrata (Menge, 1868)	Linyphiidae	61620	Walckenaeria mitrata (Menge, 1868)	1		1		1		1			1		1		
Walckenaeria monoceros (Wider, 1834)	Linyphiidae	61621	Walckenaeria monoceros (Wider, 1834)	EN						VU	B2a,b, C2a, D1				1		VU
Walckenaeria nodosa (O.P.-Cambridge, 1873)	Linyphiidae	61622	Walckenaeria nodosa (O.P.-Cambridge, 1873)	DD		1				DD					1		DD
Walckenaeria nudipalpis (Westring, 1851)	Linyphiidae	61623	Walckenaeria nudipalpis (Westring, 1851)	1	LC	1		1		1		1	1		1		
Walckenaeria obtusa Blackwall, 1836	Linyphiidae	61624	Walckenaeria obtusa Blackwall, 1836	1		1		LC		1			1		1		
Walckenaeria simplex (Chyzer, 1894)	Linyphiidae	61631	Walckenaeria simplex (Chyzer, 1894)							1					1		
Walckenaeria suspecta (Kulczyński, 1882)	Linyphiidae	61634	Walckenaeria suspecta (Kulczyński, 1882)				CR		D		EN	B2a,b, C2a, D1			1	x	EN
Walckenaeria unicornis O.P.-Cambridge, 1861	Linyphiidae	61636	Walckenaeria unicornis O.P.-Cambridge, 1861	1						NT					1		LC
Walckenaeria vigilax (Blackwall, 1853)	Linyphiidae	61638	Walckenaeria vigilax (Blackwall, 1853)	1		1		1		1					1		
Zornella cultrigera (L. Koch, 1879)	Linyphiidae	61647	Zornella cultrigera (L. Koch, 1879)										1		1		
Meta menardi (Latreille, 1804)	Tetragnathidae	66032	Meta menardi (Latreille, 1804)	1		1		LC		1		1	1		1		
Metellina mengesi (Blackwall, 1869)	Tetragnathidae	66038	Metellina mengesi (Blackwall, 1869)	1		1		1		1		1	1		1		
Metellina merianae (Scopoli, 1763)	Tetragnathidae	66040	Metellina merianae (Scopoli, 1763)	1	LC	1		1		1		1	1		1		
Metellina segmentata (Clerck, 1757)	Tetragnathidae	66041	Metellina segmentata (Clerck, 1757)	1		1		1		1		1	1		1		
Pachygnatha clercki Sundevall, 1823	Tetragnathidae	66043	Pachygnatha clercki Sundevall, 1823	1		1		LC		1			1		1		
Pachygnatha degeeri Sundevall, 1830	Tetragnathidae	66045	Pachygnatha degeeri Sundevall, 1830	1	LC	1		LC		1			1		1		
Pachygnatha listeri Sundevall, 1830	Tetragnathidae	66046	Pachygnatha listeri Sundevall, 1830	1	LC	1		1		1			1		1		
Tetragnatha dearmata Thorell, 1873	Tetragnathidae	66054	Tetragnatha dearmata Thorell, 1873	1		1				NT					1		
Tetragnatha extensa (Linnaeus, 1758)	Tetragnathidae	66058	Tetragnatha extensa (Linnaeus, 1758)	1		1		1		1		1	1		1		
Tetragnatha montana Simon, 1874	Tetragnathidae	66062	Tetragnatha montana Simon, 1874	1		1		1		1		1	1		1		
Tetragnatha nigrita Lendl, 1886	Tetragnathidae	66063	Tetragnatha nigrita Lendl, 1886	1		1		1		1					1		
Tetragnatha obtusa C.L.Koch, 1837	Tetragnathidae	66068	Tetragnatha obtusa C.L.Koch, 1837	1		1		1		1			1		1		
Tetragnatha obtusa intermedia Kulczyński, 1891	Tetragnathidae	66066	Tetragnatha obtusa intermedia Kulczyński, 1891									DD			1		
Tetragnatha pinicola L.Koch, 1870	Tetragnathidae	66069	Tetragnatha pinicola L.Koch, 1870	1		1		LC		1			1		1		
Tetragnatha striata L.Koch, 1862	Tetragnathidae	66072	Tetragnatha striata L.Koch, 1862	VU						EN	B2a,b, C2a, D1				1		VU
Aculepeira ceropegia (Walckenaer, 1802)	Araneidae	55077	Aculepeira ceropegia (Walckenaer, 1802)	1	LC	1		1		1			1		1		
Agalenatea redii (Scopoli, 1763)	Araneidae	55080	Agalenatea redii (Scopoli, 1763)	1	LC	1		1		1			1		1		
Araneus alsine (Walckenaer, 1802)	Araneidae	55081	Araneus alsine (Walckenaer, 1802)	EN		1		LC		1			1		1		
Araneus angulatus Clerck, 1757	Araneidae	55095	Araneus angulatus Clerck, 1757			1				1		1			1		
Araneus circe (Audouin, 1826)	Araneidae	55100	Araneus circe (Audouin, 1826)					LC		LC				DD	1		LC
Araneus diadematus Clerck, 1757	Araneidae	55107	Araneus diadematus Clerck, 1757	1	LC	1		LC		1		1	1		1		
Araneus grossus (C.L.Koch, 1844)	Araneidae	55108	Araneus grossus (C.L.Koch, 1844)							VU					1		NT
Araneus marmoreus Clerck, 1757	Araneidae	55111	Araneus marmoreus Clerck, 1757	1	LC	1		1		1			1		1		
Araneus nordmanni (Thorell, 1870)	Araneidae	55112	Araneus nordmanni (Thorell, 1870)			VU	D	LC		EN	B2a,b, C2a, D1		EN	B1a	1		VU
Araneus quadratus Clerck, 1757	Araneidae	55118	Araneus quadratus Clerck, 1757	1	LC	1		1		1			1		1		
Araneus saevus (L.Koch, 1872)	Araneidae	55120	Araneus saevus (L.Koch, 1872)			1?		LC		CR	B2a,b, C2a, D1				1		VU
Araneus sturmi (Hahn, 1831)	Araneidae	55122	Araneus sturmi (Hahn, 1831)	1		1				1			1		1		
Araneus triguttatus (Fabricius, 1775)	Araneidae	55124	Araneus triguttatus (Fabricius, 1775)	1		1		1		1			1		1		
Araniella alpica (L.Koch, 1869)	Araneidae	55127	Araniella alpica (L.Koch, 1869)	1		LC		1		1			1		1		
Araniella cucurbitina (Clerck, 1757)	Araneidae	55128	Araniella cucurbitina (Clerck, 1757)	1	LC	1		1		1		1	1		1		
Araniella displicata (Hentz, 1847)	Araneidae	55129	Araniella displicata (Hentz, 1847)	NT		1				1					1		
Araniella inconspicua (Simon, 1874)	Araneidae	55130	Araniella inconspicua (Simon, 1874)	DD						1					1		
Araniella opisthographa (Kulczyński, 1905)	Araneidae	55132	Araniella opisthographa (Kulczyński, 1905)	1		1		LC		1					1		
Araniella proxima (Kulczyński, 1885)	Araneidae	55133	Araniella proxima (Kulczyński, 1885)			VU	D			VU	B2a,b, C2a, D1				1		VU
Argiope bruennichi (Scopoli, 1772)	Araneidae	55137	Argiope bruennichi (Scopoli, 1772)	1	LC	1		1		1		1	1		1		
Argiope lobata (Pallas, 1772)	Araneidae	55138	Argiope lobata (Pallas, 1772)							RE?					1		RE?
Cercidia prominens (Westring, 1851)	Araneidae	55140	Cercidia prominens (Westring, 1851)	1	LC	1		LC		1			1		1		
Cyclosa conica (Pallas, 1772)	Araneidae	55149	Cyclosa conica (Pallas, 1772)	1		1		1		1		1	1		1		

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Cyclosa oculata (Walckenaer, 1802)	Araneidae	55153	Cyclosa oculata (Walckenaer, 1802)	DD		1		1		1					1		
Gibbaranea bituberculata (Walckenaer, 1802)	Araneidae	55162	Gibbaranea bituberculata (Walckenaer, 1802)	1		1		1		1		1	1		1		
Gibbaranea gibbosa (Walckenaer, 1802)	Araneidae	55164	Gibbaranea gibbosa (Walckenaer, 1802)	LC				LC		1			1		1		
Gibbaranea omoeda (Thorell, 1870)	Araneidae	55166	Gibbaranea omoeda (Thorell, 1870)	EN		VU	D	LC		1					1		LC
Gibbaranea ullrichi (Hahn, 1835)	Araneidae	55168	Gibbaranea ullrichi (Hahn, 1835)	VU						NT					1		NT
Hypsosinga albivittata (Westring, 1851)	Araneidae	55170	Hypsosinga albivittata (Westring, 1851)	NT						1					1		
Hypsosinga heri (Hahn, 1831)	Araneidae	55171	Hypsosinga heri (Hahn, 1831)	1						1			1		1		
Hypsosinga pygmaea (Sundevall, 1831)	Araneidae	55172	Hypsosinga pygmaea (Sundevall, 1831)	1		1				1		1	1		1		
Hypsosinga sanguinea (C.L.Koch, 1844)	Araneidae	55173	Hypsosinga sanguinea (C.L.Koch, 1844)	1	LC	1				1			1		1		
Larinioides cornutus (Clerck, 1757)	Araneidae	55178	Larinioides cornutus (Clerck, 1757)	1		1		1		1			1		1		
Larinioides ixobolus (Thorell, 1873)	Araneidae	55180	Larinioides ixobolus (Thorell, 1873)	1		1		LC		1			1		1		
Larinioides patagiatus (Clerck, 1757)	Araneidae	55182	Larinioides patagiatus (Clerck, 1757)	1		1		1		1			1		1		
Larinioides sclopetarius (Clerck, 1757)	Araneidae	55183	Larinioides sclopetarius (Clerck, 1757)	1		1				1			1		1		
Larinioides suspicax (O. P.-Cambridge, 1876)	Araneidae	55184	Larinioides suspicax (O. P.-Cambridge, 1876)	1		VU	D			1			DD		1		LC
Leviellus thorelli (Ausserer, 1871)	Araneidae	55186	Leviellus thorelli (Ausserer, 1871)							VU	B2a,b, C2a, D1	1			1		NT
Mangora acalypha (Walckenaer, 1802)	Araneidae	55187	Mangora acalypha (Walckenaer, 1802)	1	LC	1		1		1		1	1		1		
Neoscona adianta (Walckenaer, 1802)	Araneidae	55189	Neoscona adianta (Walckenaer, 1802)	NT				1		VU	B2a,b, C2a, D1	1			1		LC
Nuctenea silvicultrix (C.L.Koch, 1844)	Araneidae	55195	Nuctenea silvicultrix (C.L.Koch, 1844)	EN		1				VU	B2a,b, C2a, D1				1		VU
Nuctenea umbratica (Clerck, 1757)	Araneidae	55198	Nuctenea umbratica (Clerck, 1757)	1		1		1		1		1	1		1		
Parazygiella montana (C.L.Koch, 1834)	Araneidae	55199	Parazygiella montana (C.L.Koch, 1834)	VU		LC		LC		1			LC		1		LC
Singa hamata (Clerck, 1757)	Araneidae	55202	Singa hamata (Clerck, 1757)	1		1		LC		1		1	1		1		
Singa lucina (Audouin, 1826)	Araneidae	55203	Singa lucina (Audouin, 1826)							1					1		
Singa nitidula C.L.Koch, 1844	Araneidae	55205	Singa nitidula C.L.Koch, 1844	1		1				1		1	1		1		
Stroemiellus stroemi (Thorell, 1870)	Araneidae	55209	Stroemiellus stroemi (Thorell, 1870)	DD		1		LC		1			1		1		
Zilla diodia (Walckenaer, 1802)	Araneidae	55211	Zilla diodia (Walckenaer, 1802)	1		1				1		1	1		1		
Zygiella atrica (C.L.Koch, 1845)	Araneidae	55213	Zygiella atrica (C.L.Koch, 1845)	DD		1				1			1		1		
Zygiella x-notata (Clerck, 1757)	Araneidae	55219	Zygiella x-notata (Clerck, 1757)					LC		1			1		1		
Acantholycosa lignaria (Clerck, 1757)	Lycosidae	61737	Acantholycosa lignaria (Clerck, 1757)	EN	LC	1		1		1					1		
Acantholycosa norvegica sudetica (L. Koch, 1875)	Lycosidae	61738	Acantholycosa norvegica sudetica (L. Koch, 1875)					DD							1		DD
Alopecosa accentuata (Latreille, 1817)	Lycosidae	61744	Alopecosa accentuata (Latreille, 1817)	1	LC	1		1		1			1		1		
Alopecosa aculeata (Clerck, 1757)	Lycosidae	61745	Alopecosa aculeata (Clerck, 1757)	1		1		1		1			1		1		
Alopecosa albofasciata (Brullé, 1832)	Lycosidae	61747	Alopecosa albofasciata (Brullé, 1832)					LC				DD			1		
Alopecosa barbipes (Sundevall, 1833)	Lycosidae	61755	Alopecosa barbipes (Sundevall, 1833)					DD				DD			1		DD
Alopecosa cuneata (Clerck, 1757)	Lycosidae	61761	Alopecosa cuneata (Clerck, 1757)	1	LC	1		LC		1		1	1		1		
Alopecosa cursor (Hahn, 1831)	Lycosidae	61762	Alopecosa cursor (Hahn, 1831)	EN				LC		NT		DD			1		LC
Alopecosa fabrilis (Clerck, 1757)	Lycosidae	61767	Alopecosa fabrilis (Clerck, 1757)	EN						VU	B2a,b, C2a, D1				1		VU
Alopecosa inquilina (Clerck, 1757)	Lycosidae	61776	Alopecosa inquilina (Clerck, 1757)	VU		1		LC		1		1			1		LC
Alopecosa mariae (Dahl, 1908)	Lycosidae	61783	Alopecosa mariae (Dahl, 1908)	CR				1		1					1		
Alopecosa pinetorum (Thorell, 1856)	Lycosidae	61790	Alopecosa pinetorum (Thorell, 1856)			1		1		NT					1		
Alopecosa psammophila Buchar, 2001	Lycosidae	61791	Alopecosa psammophila Buchar, 2001							1					1		
Alopecosa pulverulenta (Clerck, 1757)	Lycosidae	61793	Alopecosa pulverulenta (Clerck, 1757)	1	LC	1		LC		1		1	1		1		
Alopecosa reimoseri Kolosváry, 1834	Lycosidae	61794	Alopecosa reimoseri Kolosváry, 1834							1?					?		
Alopecosa schmidti (Hahn, 1835)	Lycosidae	61796	Alopecosa schmidti (Hahn, 1835)	VU						VU	B2a,b, C2a, D1				1		VU
Alopecosa solitaria (Herman, 1876)	Lycosidae	61798	Alopecosa solitaria (Herman, 1876)	VU				1		NT					1		LC
Alopecosa striatipes (C.L.Koch, 1837)	Lycosidae	61801	Alopecosa striatipes (C.L.Koch, 1837)							1					1		
Alopecosa sulzeri (Pavesi, 1873)	Lycosidae	61802	Alopecosa sulzeri (Pavesi, 1873)	1	LC			LC		1					1		
Alopecosa taeniata (C.L.Koch, 1835)	Lycosidae	61803	Alopecosa taeniata (C.L.Koch, 1835)	1		1				1					1		
Alopecosa trabalis (Clerck, 1757)	Lycosidae	61807	Alopecosa trabalis (Clerck, 1757)	1	LC	1		1		1			1		1		
Arctosa cinerea (Fabricius, 1777)	Lycosidae	61814	Arctosa cinerea (Fabricius, 1777)	VU		1		LC		1		1?			1		LC
Arctosa figurata (Simon, 1876)	Lycosidae	61816	Arctosa figurata (Simon, 1876)	DD				1		1					1		
Arctosa lamperti Dahl, 1908	Lycosidae	61810	Arctosa alpigena lamperti Dahl, 1908			1									1		
Arctosa leopardus (Sundevall, 1833)	Lycosidae	61819	Arctosa leopardus (Sundevall, 1833)	1		1		LC		1		1	1		1		
Arctosa lutetiana (Simon, 1876)	Lycosidae	61821	Arctosa lutetiana (Simon, 1876)	VU		1				1		1?			1		
Arctosa maculata (Hahn, 1822)	Lycosidae	61822	Arctosa maculata (Hahn, 1822)	NT		1		LC		1					1		LC
Arctosa perita (Latreille, 1799)	Lycosidae	61826	Arctosa perita (Latreille, 1799)	VU		1		LC		VU	B2a,b, C2a, D1		DD		1		NT
Arctosa stigmata (Thorell, 1875)	Lycosidae	61831	Arctosa stigmata (Thorell, 1875)							VU	B2a,b, C2a, D1		DD		1		NT

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Aulonia albimana (Walckenaer, 1805)	Lycosidae	61835	Aulonia albimana (Walckenaer, 1805)	1	LC	1		LC		1		1	1		1		
Geolycosa vultuosa (C.L.Koch, 1838)	Lycosidae	61840	Geolycosa vultuosa (C.L.Koch, 1838)					LC		NT		VU			1		NT
Hogna radiata (Latreille, 1817)	Lycosidae	61860	Hogna radiata (Latreille, 1817)		LC			LC		1		1			1		
Hygrolycosa rubrofasciata (Ohlert, 18)	Lycosidae	61862	Hygrolycosa rubrofasciata (Ohlert, 18)			1		LC		EN	B2a,b, C2a, D1		VU		1		NT
Lycosa singoriensis (Laxmann, 1770)	Lycosidae	61884	Lycosa singoriensis (Laxmann, 1770)	RE?						1		1	RE?		1		
Pardosa agrestis (Westring, 1861)	Lycosidae	61897	Pardosa agrestis (Westring, 1861)	1	LC	1		LC		1		1	1		1		
Pardosa agricola (Thorell, 1856)	Lycosidae	61900	Pardosa agricola (Thorell, 1856)	CR		1		LC		1		1	1		1		
Pardosa alacris (C.L.Koch, 1833)	Lycosidae	61901	Pardosa alacris (C.L.Koch, 1833)	1	LC	1		1		1			1		1		
Pardosa albatula (Roewer, 1951)	Lycosidae	61902	Pardosa albatula (Roewer, 1951)	1		VU	D	1		VU	B2a,b, C2a, D1				1		VU
Pardosa amentata (Clerck, 1757)	Lycosidae	61903	Pardosa amentata (Clerck, 1757)	1		1		LC		1		1	1		1		
Pardosa bifasciata (C.L.Koch, 1834)	Lycosidae	61908	Pardosa bifasciata (C.L.Koch, 1834)	DD	LC			1		1					1		
Pardosa blanda (C. L. Koch, 1833)	Lycosidae	61909	Pardosa blanda (C. L. Koch, 1833)					1							1		
Pardosa evelinae Wunderlich, 1984	Lycosidae	61920	Pardosa evelinae Wunderlich, 1984												1		
Pardosa ferruginea (L.Koch, 1870)	Lycosidae	61922	Pardosa ferruginea (L.Koch, 1870)			VU	B1, D	LC		NT		DD	DD		1		NT
Pardosa fulvipes Collet, 1875	Lycosidae	61924	Pardosa fulvipes Collet, 1875			VU	D			DD					1		NT
Pardosa hortensis (Thorell, 1872)	Lycosidae	61928	Pardosa hortensis (Thorell, 1872)	1	LC	1		LC		1		1			1		
Pardosa kratochvilli (Kolosváry, 1934a)	Lycosidae	61937	Pardosa kratochvilli (Kolosváry, 1934a)							1?					?		
Pardosa lugubris (Walckenaer, 1802)	Lycosidae	61942	Pardosa lugubris (Walckenaer, 1802)	1	LC	1		LC		1		1	1		1		
Pardosa monticola (Clerck, 1757)	Lycosidae	61949	Pardosa monticola (Clerck, 1757)	1	LC	1		LC		1		1	1		1		
Pardosa morosa (L.Koch, 1870)	Lycosidae	61950	Pardosa morosa (L.Koch, 1870)	VU		1		LC		1		1	NT		1		LC
Pardosa nebulosa (Thorell, 1872)	Lycosidae	61952	Pardosa nebulosa (Thorell, 1872)							1					1		
Pardosa nigra (C.L.Koch, 1834)	Lycosidae	61953	Pardosa nigra (C.L.Koch, 1834)			EN	D	NT		1			DD		1		NT
Pardosa nigriceps (Thorell, 1856)	Lycosidae	61954	Pardosa nigriceps (Thorell, 1856)	NT		1		1		NT					1		
Pardosa oreophila Simon, 1937	Lycosidae	61959	Pardosa oreophila Simon, 1937					1							1		
Pardosa paludicola (Clerck, 1757)	Lycosidae	61960	Pardosa paludicola (Clerck, 1757)	1	LC	1		LC		1			1		1		
Pardosa palustris (Linnaeus, 1758)	Lycosidae	61962	Pardosa palustris (Linnaeus, 1758)	1	LC	1		LC		1		1	1		1		
Pardosa poecila (Herman, 1879)	Lycosidae	61966	Pardosa poecila (Herman, 1879)							1?					?		
Pardosa prativaga (L.Koch, 1870)	Lycosidae	61969	Pardosa prativaga (L.Koch, 1870)	1	LC	1		1		1			1		1		
Pardosa proxima (C.L.Koch, 1847)	Lycosidae	61973	Pardosa proxima (C.L.Koch, 1847)					LC		NT		DD			1		LC
Pardosa pullata (Clerck, 1757)	Lycosidae	61976	Pardosa pullata (Clerck, 1757)	1	LC	1		LC		1			1		1		
Pardosa riparia (C.L.Koch, 1833)	Lycosidae	61978	Pardosa riparia (C.L.Koch, 1833)	1	LC	1		LC		1		1	1		1		
Pardosa saltuaria (L.Koch, 1870)	Lycosidae	61980	Pardosa saltuaria (L.Koch, 1870)			EN	D	1		1		1			1		LC
Pardosa sordidata (Thorell, 1875)	Lycosidae	61984	Pardosa sordidata (Thorell, 1875)			LC		LC		NT			DD		1		LC
Pardosa sphagnicola (F.Dahl, 1908)	Lycosidae	61985	Pardosa sphagnicola (F.Dahl, 1908)					LC		VU			DD		1		LC
Pardosa vittata (Keyserling, 1863)	Lycosidae	61997	Pardosa vittata (Keyserling, 1863)									DD	DD		1		DD
Pardosa wagleri (Hahn, 1822)	Lycosidae	62000	Pardosa wagleri (Hahn, 1822)	CR		1		LC		1		1	NT		1		LC
Pirata insularis Emerton 1885	Lycosidae	62005	Pirata insularis (Emerton 1885)			1									1		
Pirata piraticus (Clerck, 1757)	Lycosidae	62008	Pirata piraticus (Clerck, 1757)	1		1		LC		1		1			1		
Pirata piscatorius (Clerck, 1757)	Lycosidae	62009	Pirata piscatorius (Clerck, 1757)	DD		1				1					1		
Pirata tenuitarsis Simon, 1876	Lycosidae	62013	Pirata tenuitarsis Simon, 1876	DD						VU	B2a,b, C2a, D1				1		NT
Pirata uliginosus (Thorell, 1856)	Lycosidae	62014	Pirata uliginosus (Thorell, 1856)			1		1		NT					1		
Piratula hygrophila (Thorell, 1872)	Lycosidae	62004	Piratula hygrophila (Thorell, 1872)	1		1		1		1		1	1		1		
Piratula knorri (Scopoli, 1763)	Lycosidae	62006	Piratula knorri (Scopoli, 1763)	1		1		LC		1		1	1		1		
Piratula latitans (Blackwall, 1841)	Lycosidae	62007	Piratula latitans (Blackwall, 1841)	1		1		1		1			1		1		
Trochosa robusta (Simon, 1876)	Lycosidae	62027	Trochosa robusta (Simon, 1876)	1		1		1		1			1		1		
Trochosa ruficollis (De Geer, 1778)	Lycosidae	62028	Trochosa ruficollis (De Geer, 1778)	1	LC	1		LC		1		1	1		1		
Trochosa spinipalpis (F.O.P.-Cambridge, 1895)	Lycosidae	62029	Trochosa spinipalpis (F.O.P.-Cambridge, 1895)	1		1		1		1					1		
Trochosa terricola Thorell, 1856	Lycosidae	62030	Trochosa terricola Thorell, 1856	1	LC	1		1		1		1	1		1		
Xerolycosa miniata (C.L.Koch, 1834)	Lycosidae	62035	Xerolycosa miniata (C.L.Koch, 1834)	1	LC	1		LC		1		1	1		1		
Xerolycosa nemoralis (Westring, 1861)	Lycosidae	62036	Xerolycosa nemoralis (Westring, 1861)	1		1		1		1		1	1		1		
Dolomedes fimbriatus (Clerck, 1757)	Pisauridae	64295	Dolomedes fimbriatus (Clerck, 1757)	DD		1		1		1		1?	1		1		
Dolomedes plantarius (Clerck, 1757)	Pisauridae	64297	Dolomedes plantarius (Clerck, 1757)							EN	B2a,b, C2a, D1	1?	EN	B1a	1		EN
Pisaura mirabilis (Clerck, 1757)	Pisauridae	64300	Pisaura mirabilis (Clerck, 1757)	1	LC	1		LC		1		1	1		1		
Oxyopes heterophthalmus (Latreille, 1804)	Oxyopidae	63305	Oxyopes heterophthalmus (Latreille, 1804)					1		VU	B2a,b, C2a, D1				1		LC
Oxyopes lineatus Latreille, 1806	Oxyopidae	63308	Oxyopes lineatus Latreille, 1806					LC		VU	B2a,b, C2a, D1				1		NT
Oxyopes ramosus (Martini & Goeze, 1778)	Oxyopidae	63311	Oxyopes ramosus (Martini & Goeze, 1778)	DD	LC	1		1		1			DD		1		

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
<i>Zora armillata</i> Simon, 1878	Zoridae	67758	<i>Zora armillata</i> Simon, 1878	EN						EN	B2a,b, C2a, D1				1		VU
<i>Zora distincta</i> Kulczyński, 1915	Zoridae	67759	<i>Zora distincta</i> Kulczyński, 1915	EN		EN	D			VU	B2a,b, C2a, D1				1	x	EN
<i>Zora manicata</i> Simon, 1878	Zoridae	67761	<i>Zora manicata</i> Simon, 1878	NT						NT					1		NT
<i>Zora nemoralis</i> (Blackwall, 1861)	Zoridae	67762	<i>Zora nemoralis</i> (Blackwall, 1861)	1		1		LC		1		1	1		1		
<i>Zora parallela</i> Simon, 1878	Zoridae	67764	<i>Zora parallela</i> Simon, 1878	EN						VU	B2a,b, C2a, D1				1		VU
<i>Zora pardalis</i> Simon, 1878	Zoridae	67765	<i>Zora pardalis</i> Simon, 1878	DD	NT			DD		1					1		LC
<i>Zora silvestris</i> Kulczyński, 1897	Zoridae	67767	<i>Zora silvestris</i> Kulczyński, 1897	1		1				1					1		
<i>Zora spinimana</i> (Sundevall, 1833)	Zoridae	67768	<i>Zora spinimana</i> (Sundevall, 1833)	1	LC	1		LC		1			1		1		
<i>Agelena labyrinthica</i> (Clerck, 1757)	Agelenidae	54569	<i>Agelena labyrinthica</i> (Clerck, 1757)	1	LC	1		LC		1		1	1		1		
<i>Allagelena gracilens</i> (C.L.Koch, 1841)	Agelenidae	54568	<i>Allagelena gracilens</i> (C.L.Koch, 1841)	1	LC	1		LC		1			1		1		
<i>Histopona luxurians</i> (Kulczyński, 1897)	Agelenidae	54590	<i>Histopona luxurians</i> (Kulczyński, 1897)							1?					?		
<i>Histopona torpida</i> (C.L.Koch, 1837)	Agelenidae	54596	<i>Histopona torpida</i> (C.L.Koch, 1837)	1	LC	1		LC		1			1		1		
<i>Malthonica campestris</i> (C.L.Koch, 1834)	Agelenidae	54611	<i>Tegenaria campestris</i> (C.L.Koch, 1834)	1	LC	1		LC		1		1			1		
<i>Malthonica ferruginea</i> (Panzer, 1804)	Agelenidae	54615	<i>Tegenaria ferruginea</i> (Panzer, 1804)	1		1		LC		1		1	1		1		
<i>Malthonica pagana</i> (C.L. Koch, 1840)	Agelenidae	54622	<i>Tegenaria pagana</i> C.L. Koch, 1840									1	1		1		
<i>Malthonica picta</i> Simon, 1870	Agelenidae	54625	<i>Eratigena picta</i> (Simon, 1870)					LC		1?					1		
<i>Malthonica silvestris</i> (L.Koch, 1872)	Agelenidae	54632	<i>Tegenaria silvestris</i> L.Koch, 1872	1	LC	1		LC		1		1	1		1		
<i>Tegenaria agrestis</i> (Walckenaer, 1802)	Agelenidae	54644	<i>Eratigena agrestis</i> (Walckenaer, 1802)	1	LC	1				1			1		1		
<i>Tegenaria atrica</i> C.L.Koch, 1843	Agelenidae	54644	<i>Eratigena atrica</i> (C.L.Koch, 1843)	1		1		LC		1			1		1		
<i>Tegenaria domestica</i> (Clerck, 1757)	Agelenidae	54659	<i>Tegenaria domestica</i> (Clerck, 1757)	1		1		LC		1		1	1		1		
<i>Tegenaria parietina</i> (Fourcroy, 1785)	Agelenidae	54686	<i>Tegenaria parietina</i> (Fourcroy, 1785)					LC		1?			1		1		
<i>Tegenaria tridentina</i> L.Koch, 1872	Agelenidae	54700	<i>Tegenaria tridentina</i> L.Koch, 1872							1?					?		
<i>Textrix denticulata</i> (Olivier, 1789)	Agelenidae	54706	<i>Textrix denticulata</i> (Olivier, 1789)	1		LC		LC		1					1		
<i>Argyroneta aquatica</i> (Clerck, 1757)	Cybaeidae	56437	<i>Argyroneta aquatica</i> (Clerck, 1757)	VU						EN	B2a,b, C2a, D1	DD			1		VU
<i>Cybaeus angustiarum</i> L.Koch, 1868	Cybaeidae	56440	<i>Cybaeus angustiarum</i> L.Koch, 1868	1	LC	1		1		1		1	1		1		
<i>Cybaeus tetricus</i> (C. L. Koch, 1839)	Cybaeidae	56447	<i>Cybaeus tetricus</i> (C. L. Koch, 1839)					DD							1		
<i>Antistea elegans</i> (Blackwall, 1841)	Hahniidae	59172	<i>Antistea elegans</i> (Blackwall, 1841)	1		1		LC		1			1		1		
<i>Cryphoeca carpathica</i> Herman, 1879	Hahniidae	59174	<i>Cryphoeca carpathica</i> Herman, 1879			LC		DD		NT			DD		1	x	DD
<i>Cryphoeca silvicola</i> (C.L.Koch, 1834)	Hahniidae	59181	<i>Cryphoeca silvicola</i> (C.L.Koch, 1834)	1		1		LC		1			1		1		
<i>Hahnia candida</i> Simon, 1875	Hahniidae	59185	<i>Hahnia candida</i> Simon, 1875					DD							?		
<i>Hahnia difficilis</i> Harm, 1966	Hahniidae	59186	<i>Hahnia difficilis</i> Harm, 1966			EN	D			VU	B2a,b, C2a, D1				1		VU
<i>Hahnia helveola</i> Simon, 1875	Hahniidae	59188	<i>Hahnia helveola</i> Simon, 1875	EN		1				1					1		
<i>Hahnia montana</i> (Blackwall, 1841)	Hahniidae	59194	<i>Hahnia montana</i> (Blackwall, 1841)			EN	D			VU	B2a,b, C2a, D1		VU		1		VU
<i>Hahnia nava</i> (Blackwall, 1841)	Hahniidae	59195	<i>Hahnia nava</i> (Blackwall, 1841)	1	LC	VU		LC		1		1	1		1		
<i>Hahnia ononidum</i> Simon, 1875	Hahniidae	59196	<i>Hahnia ononidum</i> Simon, 1875	1						1			1		1		
<i>Hahnia picta</i> Kulczyński, 1897	Hahniidae	59198	<i>Hahnia picta</i> Kulczyński, 1897	1				LC		EN	B2a,b, C2a, D1				1		NT
<i>Hahnia pusilla</i> C.L.Koch, 1841	Hahniidae	59199	<i>Hahnia pusilla</i> C.L.Koch, 1841	EN		1		LC		1			1		1		LC
<i>Altella biuncata</i> (Miller, 1949)	Dictynidae	56566	<i>Altella biuncata</i> (Miller, 1949)	CR		CR	D			VU	B2a,b, C2a, D1				1		EN
<i>Altella lucida</i> (Simon, 1874)	Dictynidae	56568	<i>Altella lucida</i> (Simon, 1874)							VU	B2a,b, C2a, D1		1		1		VU
<i>Archaeodictyna ammophila</i> (Menge, 1871)	Dictynidae	56572	<i>Archaeodictyna ammophila</i> (Menge, 1871)					LC							1		LC
<i>Archaeodictyna consecuta</i> (O.P.-Cambridge, 1872)	Dictynidae	56573	<i>Archaeodictyna consecuta</i> (O.P.-Cambridge, 1872)							DD					1		DD
<i>Archaeodictyna minutissima</i> (Miller, 1954)	Dictynidae	56574	<i>Archaeodictyna minutissima</i> (Miller, 1954)	EN						DD					1		DD
<i>Argenna patula</i> (Simon, 1874)	Dictynidae	56576	<i>Argenna patula</i> (Simon, 1874)							EN	B2a,b, C2a, D1				1		EN
<i>Argenna subnigra</i> (O.P.-Cambridge, 1861)	Dictynidae	56577	<i>Argenna subnigra</i> (O.P.-Cambridge, 1861)	1		1		1		1		1			1		
<i>Brommella falcigera</i> (Balogh, 1935)	Dictynidae	56578	<i>Brommella falcigera</i> (Balogh, 1935)			VU	D2			VU		EN			1		VU
<i>Cicurina cicur</i> (Fabricius, 1793)	Dictynidae	56582	<i>Cicurina cicur</i> (Fabricius, 1793)	1	LC	1		LC		1		1	1		1		
<i>Dictyna arundinacea</i> (Linnaeus, 1758)	Dictynidae	56590	<i>Dictyna arundinacea</i> (Linnaeus, 1758)	1	LC	1		1		1			1		1		
<i>Dictyna civica</i> (Lucas, 1850)	Dictynidae	56591	<i>Dictyna civica</i> (Lucas, 1850)	1				1		1					1		
<i>Dictyna latens</i> (Fabricius, 1775)	Dictynidae	56599	<i>Dictyna latens</i> (Fabricius, 1775)							1					1		
<i>Dictyna major</i> Menge, 1869	Dictynidae	56600	<i>Dictyna major</i> Menge, 1869							CR	B2a,b, C2a, D1				1		VU
<i>Dictyna pusilla</i> Thorell, 1856	Dictynidae	56602	<i>Dictyna pusilla</i> Thorell, 1856	1		1		1		1			1		1		
<i>Dictyna uncinata</i> Thorell, 1856	Dictynidae	56606	<i>Dictyna uncinata</i> Thorell, 1856	1		1		LC		1			1		1		
<i>Dictyna vicina</i> Simon, 1873	Dictynidae	56608	<i>Dictyna vicina</i> Simon, 1873							DD					1		DD
<i>Emblyna annulipes</i> (Blackwall, 1846)	Dictynidae	56610	<i>Emblyna annulipes</i> (Blackwall, 1846)	?						NT					1		NT
<i>Emblyna brevidens</i> (Kulczyński, 1897)	Dictynidae	56611	<i>Emblyna brevidens</i> (Kulczyński, 1897)	EN						VU	B2a,b, C2a, D1				1		VU
<i>Lathys humilis</i> (Blackwall, 1855)	Dictynidae	56620	<i>Lathys humilis</i> (Blackwall, 1855)	NT		1		1		1			1		1		

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Lathys stigmatisata (Menge, 1869)	Dictynidae	56628	Lathys stigmatisata (Menge, 1869)	VU											1		NT
Marilynia bicolor (Simon, 1870)	Dictynidae	56631	Marilynia bicolor (Simon, 1870)					1							1		
Mastigusa arietina (Thorell, 1871)	Dictynidae	56632	Mastigusa arietina (Thorell, 1871)			1		LC		LC					1		
Mastigusa macrophthalma (Kulczynski, 1897)	Dictynidae	56634	Mastigusa macrophthalma (Kulczynski, 1897)					v		EN	B2a,b, C2a, D1	EN			1		NT
Nigma flavescens (Walckenaer, 1830)	Dictynidae	56636	Nigma flavescens (Walckenaer, 1830)	1		1		LC		1			1		1		
Nigma walckenaeri (Roewer, 1951)	Dictynidae	56641	Nigma walckenaeri (Roewer, 1951)	1		1		1?		1			1		1		
Amaurobius erberi (Keyserling, 1863)	Amaurobiidae	54790	Amaurobius erberi (Keyserling, 1863)	CR				LC		1					1		LC
Amaurobius fenestralis (Stroem, 1768)	Amaurobiidae	54791	Amaurobius fenestralis (Stroem, 1768)	1	LC	1		1		1			1		1		
Amaurobius ferox (Walckenaer, 1830)	Amaurobiidae	54792	Amaurobius ferox (Walckenaer, 1830)	1				LC		1			1	1	1		
Amaurobius jugorum L.Koch, 1868	Amaurobiidae	54796	Amaurobius jugorum L.Koch, 1868	1						1					1		
Amaurobius obustus L. Koch, 1868	Amaurobiidae	54801	Amaurobius obustus L. Koch, 1868					1?							?		
Amaurobius pallidus L.Koch, 1868	Amaurobiidae	54805	Amaurobius pallidus L.Koch, 1868					DD		DD		DD			1		DD
Callobius claustrarius (Hahn, 1833)	Amaurobiidae	54818	Callobius claustrarius (Hahn, 1833)	1		1		1		1			1		1		
Coelotes atropos (Walckenaer, 1830)	Amaurobiidae	54822	Coelotes atropos (Walckenaer, 1830)	1	LC	1		LC		1			1	1	1		
Coelotes mediocris Kulczyński, 1887	Amaurobiidae	54826	Coelotes mediocris Kulczyński, 1887							1?					?		
Coelotes pickardi carpathensis Ovtchinnikov, 1999 syn Coelotes pastor carpathensis Ovtchinnikov, 1999	Amaurobiidae	54829	Coelotes pickardi carpathensis Ovtchinnikov, 1999 syn Coelotes pastor carpathensis Ovtchinnikov, 1999										NT		1		NT
Coelotes terrestris (Wider, 1834)	Amaurobiidae	54840	Coelotes terrestris (Wider, 1834)	1		1		1		1			1		1		
Eurocoelotes falciger (Kulczynski, 1897)	Amaurobiidae	54848	Eurocoelotes falciger (Kulczynski, 1897)					DD				1?			1		DD
Inermocoelotes inermis (L.Koch, 1855)	Amaurobiidae	54850	Inermocoelotes inermis (L.Koch, 1855)	1	LC	1		LC		1			1	1	1		
Urocoras longispinus (Kulczyński, 1897)	Amaurobiidae	54858	Urocoras longispinus (Kulczyński, 1897)		LC			1		1			1		1		
Titanoeca psammophila Wunderlich, 1993	Titanoecidae	66702	Titanoeca psammophila Wunderlich, 1993	1						VU	B2a,b, C2a, D1				1		NT
Titanoeca quadriguttata (Hahn, 1833)	Titanoecidae	66703	Titanoeca quadriguttata (Hahn, 1833)	1	LC	LC		LC		1				DD	1		LC
Titanoeca schineri L.Koch, 1872	Titanoecidae	66704	Titanoeca schineri L.Koch, 1872	1						1				DD	1		
Titanoeca tristis L.Koch, 1872	Titanoecidae	66705	Titanoeca tristis L.Koch, 1872	RE?								EN			1		EN
Titanoeca veteranica Herman, 1879	Titanoecidae	66707	Titanoeca veteranica Herman, 1879					NT		NT		1			1		NT
Cheiracanthium campestre Lohmander, 1944	Miturgidae	62362	Cheiracanthium campestre Lohmander, 1944	EN		1		1		EN	B2a,b, C2a, D1				1		VU
Cheiracanthium cuniculum Herman, 1879	Miturgidae	62365	Cheiracanthium cuniculum Herman, 1879							1					1		
Cheiracanthium effossum Herman, 1879	Miturgidae	62366	Cheiracanthium effossum Herman, 1879	EN						NT					1		NT
Cheiracanthium elegans Thorell, 1875	Miturgidae	62367	Cheiracanthium elegans Thorell, 1875	EN				LC		1					1		LC
Cheiracanthium erraticum (Walckenaer, 1802)	Miturgidae	62368	Cheiracanthium erraticum (Walckenaer, 1802)	1		1				1			1		1		
Cheiracanthium mildei L.Koch, 1864	Miturgidae	62377	Cheiracanthium mildei L.Koch, 1864	1				LC		1		1	1		1		
Cheiracanthium montanum L.Koch, 1878	Miturgidae	62378	Cheiracanthium montanum L.Koch, 1878	EN		1				NT					1		NT
Cheiracanthium oncognathum Thorell, 1871	Miturgidae	62380	Cheiracanthium oncognathum Thorell, 1871			1				VU	B2a,b, C2a, D1				1		NT
Cheiracanthium pelagicum (C. L. Koch, 1837)	Miturgidae	62381	Cheiracanthium pelagicum (C. L. Koch, 1837)					1							1		
Cheiracanthium pennyi O.P.-Cambridge, 1873	Miturgidae	62383	Cheiracanthium pennyi O.P.-Cambridge, 1873	EN						1					1		
Cheiracanthium punctorium (Villers, 1789)	Miturgidae	62384	Cheiracanthium punctorium (Villers, 1789)	EN	LC					LC					1		LC
Cheiracanthium rupestre Herman, 1879	Miturgidae	62385	Cheiracanthium rupestre Herman, 1879					VU	D2	EN	B2a,b, C2a, D1				1		VU
Cheiracanthium seidlitzii L.Koch, 1864	Miturgidae	62387	Cheiracanthium seidlitzii L.Koch, 1864							1					1		
Cheiracanthium virescens (Sundevall, 1833)	Miturgidae	62389	Cheiracanthium virescens (Sundevall, 1833)	NT		1				1					1		
Anyphaena accentuata (Walckenaer, 1802)	Anyphaenidae	55043	Anyphaena accentuata (Walckenaer, 1802)		LC	1		LC		1		1	1		1		
Anyphaena furva Miller, 1967	Anyphaenidae	55045	Anyphaena furva Miller, 1967							EN	B2a,b, C2a, D1				1		EN
Agroeca brunnea (Blackwall, 1833)	Liocranidae	61653	Agroeca brunnea (Blackwall, 1833)	1		1		1		1			1		1		
Agroeca cuprea Menge, 1873	Liocranidae	61654	Agroeca cuprea Menge, 1873	1	LC	1		LC		1			1		1		
Agroeca lusatica (L.Koch, 1875)	Liocranidae	61658	Agroeca lusatica (L.Koch, 1875)	VU		1		1		EN	B2a,b, C2a, D1				1		NT
Agroeca proxima (O.P.-Cambridge, 1871)	Liocranidae	61661	Agroeca proxima (O.P.-Cambridge, 1871)	EN		1				EN	B2a,b, C2a, D1				1		NT
Apostenus fuscus Westring, 1851	Liocranidae	61663	Apostenus fuscus Westring, 1851	1		1		LC		1			1		1		
Liocranoea striata (Kulczyński, 1882)	Liocranidae	61679	Liocranoea striata (Kulczyński, 1882)	1		1		DD		NT					1		DD
Liocranum rupicola (Walckenaer, 1830)	Liocranidae	61687	Liocranum rupicola (Walckenaer, 1830)	1	LC	1		LC		1			1		1		
Mesiotelus annulipes (Kulczyński, 1897)	Liocranidae	61691	Mesiotelus annulipes (Kulczyński, 1897)							1					1		
Sagana rutilans Thorell, 1875	Liocranidae	61700	Sagana rutilans Thorell, 1875					1		NT		DD			1		LC
Scotina celans (Blackwall, 1841)	Liocranidae	61701	Scotina celans (Blackwall, 1841)	NT		1				1					1		
Scotina palliardi (L.Koch, 1881)	Liocranidae	61704	Scotina palliardi (L.Koch, 1881)	EN		1				NT					1		NT
Clubiona alpicola Kulczyński, 1882	Clubionidae	56292	Clubiona alpicola Kulczyński, 1882			LC		1		1			NT		1		LC
Clubiona brevipes Blackwall, 1841	Clubionidae	56296	Clubiona brevipes Blackwall, 1841	1				LC		NT					1		LC
Clubiona caerulea L.Koch, 1867	Clubionidae	56297	Clubiona caerulea L.Koch, 1867	1		1		1		1			1		1		

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Clubiona comta C.L.Koch, 1839	Clubionidae	56299	Clubiona comta C.L.Koch, 1839	1	LC	1		LC		1			1		1		
Clubiona corticalis (Walckenaer, 1802)	Clubionidae	56303	Clubiona corticalis (Walckenaer, 1802)			1		LC		NT					1		
Clubiona diversa O.P.-Cambridge, 1862	Clubionidae	56307	Clubiona diversa O.P.-Cambridge, 1862	1	LC	1		1		1					1		
Clubiona frisia Wunderlich & Schuett, 1995	Clubionidae	56309	Clubiona frisia Wunderlich & Schuett, 1995							DD					1		
Clubiona frutetorum L.Koch, 1866	Clubionidae	56310	Clubiona frutetorum L.Koch, 1866	NT		1		LC		1			1		1		LC
Clubiona genevensis L.Koch, 1866	Clubionidae	56311	Clubiona genevensis L.Koch, 1866	NT		1		LC		1					1		LC
Clubiona germanica Thorell, 1871	Clubionidae	56312	Clubiona germanica Thorell, 1871	1		1				1			1		1		
Clubiona juvenis Simon, 1878	Clubionidae	56316	Clubiona juvenis Simon, 1878	EN		LC		1		DD					1		LC
Clubiona kulczynskii Lessert, 1905	Clubionidae	56317	Clubiona kulczynskii Lessert, 1905	DD						DD					1		DD
Clubiona leucaspis Simon, 1932	Clubionidae	56318	Clubiona leucaspis Simon, 1932							DD					1		
Clubiona lutescens Westring, 1851	Clubionidae	56319	Clubiona lutescens Westring, 1851	1		1		1		1		1	1		1		
Clubiona marmorata L.Koch, 1866	Clubionidae	56320	Clubiona marmorata L.Koch, 1866	1		1				1			1		1		
Clubiona neglecta O.P.-Cambridge, 1862	Clubionidae	56324	Clubiona neglecta O.P.-Cambridge, 1862	1		1		LC		1					1		
Clubiona norvegica Strand, 1900	Clubionidae	56325	Clubiona norvegica Strand, 1900										1		1		
Clubiona pallidula (Clerck, 1757)	Clubionidae	56327	Clubiona pallidula (Clerck, 1757)	1		1		LC		1			1		1		
Clubiona phragmitis C.L.Koch, 1843	Clubionidae	56328	Clubiona phragmitis C.L.Koch, 1843	1		1		1		1					1		
Clubiona pseudoneglecta Wunderlich, 1994	Clubionidae	56331	Clubiona pseudoneglecta Wunderlich, 1994	CR	LC										1		NT
Clubiona reclusa O.P.-Cambridge, 1863	Clubionidae	56334	Clubiona reclusa O.P.-Cambridge, 1863	1		1		1		1			1		1		
Clubiona rosserae Locket, 1953	Clubionidae	56337	Clubiona rosserae Locket, 1953							CR	B2a,b, C2a, D1				1		EN
Clubiona saxatilis L.Koch, 1866	Clubionidae	56342	Clubiona saxatilis L.Koch, 1866	VU						1					1		NT
Clubiona similis L. Koch, 1867	Clubionidae	56343	Clubiona similis L. Koch, 1867	VU		1		LC		1			1		1		LC
Clubiona stagnatilis Kulczyński, 1897	Clubionidae	56344	Clubiona stagnatilis Kulczyński, 1897	1		1		1		1					1		
Clubiona subsultans Thorell, 1875	Clubionidae	56345	Clubiona subsultans Thorell, 1875	1		1		LC		1			1		1		
Clubiona subtilis L.Koch, 1867	Clubionidae	56346	Clubiona subtilis L.Koch, 1867	1		1				NT					1		
Clubiona terrestris Westring, 1851	Clubionidae	56347	Clubiona terrestris Westring, 1851	1	LC	1		LC		1		1	1		1		
Clubiona trivialis C.L.Koch, 1843	Clubionidae	56348	Clubiona trivialis C.L.Koch, 1843	1		1		1		1			1		1		
Cetonana laticeps (Canestrini, 1868)	Corinnidae	56354	Cetonana laticeps (Canestrini, 1868)					LC		1					1		
Phrurolithus festivus (C.L.Koch, 1835)	Corinnidae	56360	Phrurolithus festivus (C.L.Koch, 1835)	1	LC	1		LC		1		1	1		1		
Phrurolithus minimus C.L.Koch, 1839	Corinnidae	56362	Phrurolithus minimus C.L.Koch, 1839	NT	LC			1		1			1		1		
Phrurolithus nigrinus (Simon, 1878)	Corinnidae	56363	Phrurolithus nigrinus (Simon, 1878)					1							1		LC
Phrurolithus pullatus Kulczyński, 1897	Corinnidae	56364	Phrurolithus pullatus Kulczyński, 1897	1	LC			1		1					1		
Phrurolithus szilyi Herman, 1879	Corinnidae	56367	Phrurolithus szilyi Herman, 1879	CR	LC			LC		1					1		LC
Zodarion aculeatum Chyzer, 1897	Zodariidae	67676	Zodarion aculeatum Chyzer, 1897					NT							1		NT
Zodarion germanicum (C.L.Koch, 1837)	Zodariidae	67703	Zodarion germanicum (C.L.Koch, 1837)	1	LC	1		1		1					1		
Zodarion rubidum Simon, 1914	Zodariidae	67741	Zodarion rubidum Simon, 1914	1						1					1		
Aphantaux cincta (L.Koch, 1866)	Gnaphosidae	58684	Aphantaux cincta (L.Koch, 1866)					DD		EN	B2a,b, C2a, D1				1		EN
Aphantaux trifasciata (O. P.-Cambridge, 1872)	Gnaphosidae	58686	Aphantaux trifasciata (O. P.-Cambridge, 1872)					DD		CR	B2a,b, C2a, D1				1		EN
Berlandina cinerea (Menge, 1872)	Gnaphosidae	58692	Berlandina cinerea (Menge, 1872)	VU				NT		VU	B2a,b, C2a, D1				1		NT
Callilepis nocturna (Linnaeus, 1758)	Gnaphosidae	58701	Callilepis nocturna (Linnaeus, 1758)	1		1				1		1			1		
Callilepis schuszteri (Herman, 1879)	Gnaphosidae	58702	Callilepis schuszteri (Herman, 1879)	1	LC					1					1		
Cryptodrassus hungaricus (Balogh, 1935)	Gnaphosidae	58707	Cryptodrassus hungaricus (Balogh, 1935)	CR						VU	B2a,b, C2a, D1				1		EN
Drassodes cupreus (Blackwall, 1834)	Gnaphosidae	58718	Drassodes cupreus (Blackwall, 1834)	1				1		1					1		
Drassodes lapidosus (Walckenaer, 1802)	Gnaphosidae	58725	Drassodes lapidosus (Walckenaer, 1802)	1	LC	1		LC		1		1	1		1		
Drassodes pubescens (Thorell, 1856)	Gnaphosidae	58744	Drassodes pubescens (Thorell, 1856)	1	LC	1		1		1			1		1		
Drassodes villosus (Thorell, 1856)	Gnaphosidae	58759	Drassodes villosus (Thorell, 1856)							DD			1		1		
Drassodex hypocrita (Simon, 1878)	Gnaphosidae	58766	Drassodex hypocrita (Simon, 1878)					1							1		
Drassyllus lutetianus (L.Koch, 1866)	Gnaphosidae	58769	Drassyllus lutetianus (L.Koch, 1866)	1		1		1		1			1		1		
Drassyllus praeficus (L.Koch, 1866)	Gnaphosidae	58770	Drassyllus praeficus (L.Koch, 1866)	1	LC	1		1		1					1		
Drassyllus pumilus (C.L.Koch, 1839)	Gnaphosidae	58772	Drassyllus pumilus (C.L.Koch, 1839)	NT	LC			LC		1		1			1		
Drassyllus pusillus (C.L.Koch, 1833)	Gnaphosidae	58773	Drassyllus pusillus (C.L.Koch, 1833)	1	LC	1		1		1		1	1		1		
Drassyllus villicus (Thorell, 1875)	Gnaphosidae	58775	Drassyllus villicus (Thorell, 1875)	1	LC			1		1		1			1		
Drassyllus vinealis (Kulczyński, 1897)	Gnaphosidae	58776	Drassyllus vinealis (Kulczyński, 1897)	EN						EN	B2a,b, C2a, D1				1		EN
Echemus angustifrons (Westring, 1861)	Gnaphosidae	58778	Echemus angustifrons (Westring, 1861)							EN	B2a,b, C2a, D1	EN			1		EN
Gnaphosa alpica Simon, 1878	Gnaphosidae	58782	Gnaphosa alpica Simon, 1878		NT										syn.		
Gnaphosa bicolor (Hahn, 1833)	Gnaphosidae	58788	Gnaphosa bicolor (Hahn, 1833)		LC			1		1					1		
Gnaphosa fallax Herman, 1879	Gnaphosidae	58795	Gnaphosa fallax Herman, 1879					1?		RE?					?		

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Gnaphosa leporina (L. Koch, 1866)	Gnaphosidae	58803	Gnaphosa leporina (L. Koch, 1866)					1							1		
Gnaphosa lucifuga (Walckenaer, 1802)	Gnaphosidae	58806	Gnaphosa lucifuga (Walckenaer, 1802)	1	LC			LC		1					1		
Gnaphosa lugubris (C.L.Koch, 1839)	Gnaphosidae	58808	Gnaphosa lugubris (C.L.Koch, 1839)	1	LC					1		1			1		
Gnaphosa microps Holm, 1939	Gnaphosidae	58809	Gnaphosa microps Holm, 1939			VU	B1a			EN					1		VU
Gnaphosa modestior Kulczyński, 1897 - G. alpica Simon, 1878	Gnaphosidae	58810	Gnaphosa modestior Kulczyński, 1897 - G. alpica Simon, 1878			LC		DD		DD		DD			1		DD
Gnaphosa moesta Thorell, 1875	Gnaphosidae	58811	Gnaphosa moesta Thorell, 1875					LC							1		LC
Gnaphosa montana (L.Koch, 1866)	Gnaphosidae	58813	Gnaphosa montana (L.Koch, 1866)	VU		EN	D			NT					1		VU
Gnaphosa muscorum (L.Koch, 1866)	Gnaphosidae	58815	Gnaphosa muscorum (L.Koch, 1866)			EN	D			1					1		NT
Gnaphosa nigerrima L.Koch, 1877	Gnaphosidae	58817	Gnaphosa nigerrima L.Koch, 1877			1		1		1					1		
Gnaphosa opaca Herman, 1879	Gnaphosidae	58822	Gnaphosa opaca Herman, 1879	NT	LC	LC				1					1		
Gnaphosa petrobia L. Koch, 1872	Gnaphosidae	58825	Gnaphosa petrobia L. Koch, 1872										DD		1		DD
Haplodrassus cognatus (Westring, 1861)	Gnaphosidae	58847	Haplodrassus cognatus (Westring, 1861)	VU		1				VU					1		NT
Haplodrassus dalmatensis (L.Koch, 1866)	Gnaphosidae	58851	Haplodrassus dalmatensis (L.Koch, 1866)	NT						1					1		
Haplodrassus kulczynskii Lohmander, 1942	Gnaphosidae	58855	Haplodrassus kulczynskii Lohmander, 1942	1				1		1					1		
Haplodrassus minor (O.P.-Cambridge, 1879)	Gnaphosidae	58858	Haplodrassus minor (O.P.-Cambridge, 1879)	DD						1					1		
Haplodrassus moderatus (Kulczyński, 1897)	Gnaphosidae	58859	Haplodrassus moderatus (Kulczyński, 1897)			LC		1							1		
Haplodrassus severus (C.L.Koch, 1839)	Gnaphosidae	58861	Haplodrassus severus (C.L.Koch, 1839)							1?					?		
Haplodrassus signifer (C.L.Koch, 1839)	Gnaphosidae	58862	Haplodrassus signifer (C.L.Koch, 1839)	1	LC	1		LC		1		1	1		1		
Haplodrassus silvestris (Blackwall, 1833)	Gnaphosidae	58863	Haplodrassus silvestris (Blackwall, 1833)	1	LC	1		1		1			1		1		
Haplodrassus soereneni (Strand, 1900)	Gnaphosidae	58864	Haplodrassus soereneni (Strand, 1900)							EN	B2a,b, C2a, D1				1		VU
Haplodrassus umbratilis (L.Koch, 1866)	Gnaphosidae	58866	Haplodrassus umbratilis (L.Koch, 1866)	1		1				1		1?			1		
Kishidaia conspicua (L.Koch, 1866)	Gnaphosidae	58868	Kishidaia conspicua (L.Koch, 1866)	VU		1				1					1		
Micaria albovittata (Lucas, 1846)	Gnaphosidae	58880	Micaria albovittata (Lucas, 1846)					1		VU	B2a,b, C2a, D1				1		NT
Micaria coarctata (Lucas, 1846)	Gnaphosidae	58886	Micaria coarctata (Lucas, 1846)					LC		EN	B2a,b, C2a, D1				1		NT
Micaria dives (Lucas, 1846)	Gnaphosidae	58889	Micaria dives (Lucas, 1846)	CR	LC			1		1					1		
Micaria formicaria (Sundevall, 1832)	Gnaphosidae	58892	Micaria formicaria (Sundevall, 1832)	EN	NT	1				1					1		LC
Micaria fulgens (Walckenaer, 1802)	Gnaphosidae	58893	Micaria fulgens (Walckenaer, 1802)	NT	LC	1		LC		1					1		
Micaria guttulata (C.L.Koch, 1839)	Gnaphosidae	58898	Micaria guttulata (C.L.Koch, 1839)	1						VU	B2a,b, C2a, D1				1		VU
Micaria lenzi Bösenberg, 1899	Gnaphosidae	58901	Micaria lenzi Bösenberg, 1899	EN						DD					1		VU
Micaria nivosa L.Koch, 1866	Gnaphosidae	58902	Micaria nivosa L.Koch, 1866	CR		1				LC					1		LC
Micaria pulicaria (Sundevall, 1831)	Gnaphosidae	58905	Micaria pulicaria (Sundevall, 1831)	EN		1		1		1			1		1		
Micaria rossica Thorell, 1875	Gnaphosidae	58906	Micaria rossica Thorell, 1875							CR					1		CR
Micaria silesiaca L.Koch, 1875	Gnaphosidae	58908	Micaria silesiaca L.Koch, 1875			1				1		DD			1		
Micaria sociabilis Kulczyński, 1897	Gnaphosidae	58911	Micaria sociabilis Kulczyński, 1897	1						EN	B2a,b, C2a, D1				1		VU
Micaria subopaca Westring, 1861	Gnaphosidae	58912	Micaria subopaca Westring, 1861	VU		1				VU	B2a,b, C2a, D1				1		NT
Nomisia aussereri (L. Koch, 1872)	Gnaphosidae	58916	Nomisia aussereri (L. Koch, 1872)					LC				DD			1		LC
Nomisia exornata (C.L.Koch, 1839)	Gnaphosidae	58919	Nomisia exornata (C.L.Koch, 1839)					LC		VU	B2a,b, C2a, D1	DD			1		NT
Parasyrisca vinosa (Simon, 1878)	Gnaphosidae	58930	Parasyrisca vinosa (Simon, 1878)												1		
Phaeoedus braccatus (L.Koch, 1866)	Gnaphosidae	58932	Phaeoedus braccatus (L.Koch, 1866)	EN						1					1		NT
Poecilochroa variana (C.L.Koch, 1839)	Gnaphosidae	58944	Poecilochroa variana (C.L.Koch, 1839)							NT		DD?			1		NT
Scotophaeus blackwalli (Thorell, 1871)	Gnaphosidae	58970	Scotophaeus blackwalli (Thorell, 1871)							VU	B2a,b, C2a, D1				1		NT
Scotophaeus quadripunctatus (Linnaeus, 1758)	Gnaphosidae	58981	Scotophaeus quadripunctatus (Linnaeus, 1758)	1		1				1			1		1		
Scotophaeus scutulatus (L.Koch, 1866)	Gnaphosidae	58983	Scotophaeus scutulatus (L.Koch, 1866)	1				LC		1			1		1		
Sosticus loricatus (L.Koch, 1866)	Gnaphosidae	58996	Sosticus loricatus (L.Koch, 1866)	RE?		1				VU	B2a,b, C2a, D1				1		NT
Trachyzelotes barbatus (L. Koch, 1866)	Gnaphosidae	59003	Trachyzelotes barbatus (L. Koch, 1866)					LC							1		LC
Trachyzelotes pedestris (C.L.Koch, 1837)	Gnaphosidae	59013	Trachyzelotes pedestris (C.L.Koch, 1837)	1	LC	LC	D	1		1					1		
Zelotes aeneus (Simon, 1878)	Gnaphosidae	59021	Zelotes aeneus (Simon, 1878)	VU		1		1		VU	B2a,b, C2a, D1				1		NT
Zelotes apricorum (L.Koch, 1876)	Gnaphosidae	59024	Zelotes apricorum (L.Koch, 1876)	1	LC	1		LC		1		1	1		1		
Zelotes atrocaeruleus (Simon, 1878)	Gnaphosidae	59027	Zelotes atrocaeruleus (Simon, 1878)	CR				1		CR	B2a,b, C2a, D1				1		VU
Zelotes aurantiacus Miller, 1967	Gnaphosidae	59028	Zelotes aurantiacus Miller, 1967	NT				1		1					1		
Zelotes caucasicus (L.Koch, 1866)	Gnaphosidae	59035	Civizelotes caucasicus (L.Koch, 1866)			LC		LC		NT					1		LC
Zelotes clivicola (L.Koch, 1870)	Gnaphosidae	59038	Zelotes clivicola (L.Koch, 1870)	NT		1		1		1			1		1		
Zelotes electus (C.L.Koch, 1839)	Gnaphosidae	59051	Zelotes electus (C.L.Koch, 1839)	1	LC	1		1		1		1			1		
Zelotes erebeus (Thorell, 1871)	Gnaphosidae	59052	Zelotes erebeus (Thorell, 1871)	DD	LC					1					1		
Zelotes exiguus (Müller & Schenkel, 1895)	Gnaphosidae	59053	Zelotes exiguus (Müller & Schenkel, 1895)							VU	B2a,b, C2a, D1				1		VU

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
Zelotes gracilis (Canestrini, 1868)	Gnaphosidae	59064	Civizelotes gracilis (Canestrini, 1868)	NT				1		1					1		
Zelotes hermani (Chyzer, 1897)	Gnaphosidae	59066	Zelotes hermani (Chyzer, 1897)					DD		1		1			1		DD
Zelotes latreillei (Simon, 1878)	Gnaphosidae	59075	Zelotes latreillei (Simon, 1878)	1	LC	1		1		1			1		1		
Zelotes longipes (L.Koch, 1866)	Gnaphosidae	59077	Zelotes longipes (L.Koch, 1866)	1		1		LC		1		1			1		
Zelotes mundus (Kulczyński, 1897)	Gnaphosidae	59086	Zelotes mundus (Kulczyński, 1897)		LC										1		DD
Zelotes oblongus (C.L. Koch, 1833)	Gnaphosidae	59091	Zelotes oblongus (C.L. Koch, 1833)					DD				CR?			1		
Zelotes petrensis (C.L.Koch, 1839)	Gnaphosidae	59098	Zelotes petrensis (C.L.Koch, 1839)	1	LC	1		1		1		1			1		
Zelotes puritanus Chamberlin, 1922	Gnaphosidae	59104	Zelotes puritanus Chamberlin, 1922			1				EN	B2a,b, C2a, D1				1		VU
Zelotes pygmaeus Miller, 1943	Gnaphosidae	59105	Civizelotes pygmaeus (Miller, 1943)	NT						VU	B2a,b, C2a, D1				1		NT
Zelotes segrex (Simon, 1878)	Gnaphosidae	59114	Zelotes segrex (Simon, 1878)	EN						EN	B2a,b, C2a, D1				1		EN
Zelotes subterraneus (C.L.Koch, 1833)	Gnaphosidae	59121	Zelotes subterraneus (C.L.Koch, 1833)	1	LC	1		LC		1		1			1		
Heteropoda venatoria (Linnaeus, 1767)	Sparassidae	65405	Heteropoda venatoria (Linnaeus, 1767)										1		1		
Micrommata virescens (Clerck, 1757)	Sparassidae	65413	Micrommata virescens (Clerck, 1757)	1	LC	1		LC		1		1	1		1		
Micrommata virescens ornata (Walckenaer, 1802)	Sparassidae	65412	Micrommata virescens ornata (Walckenaer, 1802)					DD							?		
Philodromus albidus Kulczyński, 1897	Sparassidae	63721	Philodromus albidus Kulczyński, 1897	1		1				1					1		
Philodromus aureolus (Clerck, 1757)	Philodromidae	63724	Philodromus aureolus (Clerck, 1757)	1		1		LC		1		1	1		1		
Philodromus buchari Kubcová, 2004	Philodromidae	63729	Philodromus buchari Kubcová, 2004	DD						DD					1		
Philodromus buxi Simon, 1884	Philodromidae	63730	Philodromus buxi Simon, 1884									DD			1		
Philodromus cespitum (Walckenaer, 1802)	Philodromidae	63733	Philodromus cespitum (Walckenaer, 1802)	1		1		LC		1		1	1		1		
Philodromus collinus C.L.Koch, 1835	Philodromidae	63734	Philodromus collinus C.L.Koch, 1835	1		1		1		1			1		1		
Philodromus corticinus (C.L.Koch, 1837)	Philodromidae	63735	Philodromus laricum Simon, 1875							DD					1		DD
Philodromus dispar Walckenaer, 1826	Philodromidae	63739	Philodromus dispar Walckenaer, 1826	1		1		LC		1			1		1		
Philodromus emarginatus (Schränk, 1803)	Philodromidae	63742	Philodromus emarginatus (Schränk, 1803)	1		1		1		1			1		1		
Philodromus fallax Sundevall, 1833	Philodromidae	63743	Philodromus fallax Sundevall, 1833							DD					1		
Philodromus fuscolimbatus Lucas, 1846	Philodromidae	63744	Philodromus fuscolimbatus Lucas, 1846					1		RE?					1		
Philodromus fuscomarginatus (De Geer, 1778)	Philodromidae	63745	Philodromus fuscomarginatus (De Geer, 1778)	DD		1				NT					1		
Philodromus histrio (Latreille, 1819)	Philodromidae	63750	Philodromus histrio (Latreille, 1819)	DD						NT					1		NT
Philodromus longipalpis Simon, 1870	Philodromidae	63754	Philodromus longipalpis Simon, 1870					LC		1					1		
Philodromus margaritatus (Clerck, 1757)	Philodromidae	63756	Philodromus margaritatus (Clerck, 1757)	NT		1				1					1		
Philodromus marmoratus Kulczyński, 1891	Philodromidae	63757	Philodromus marmoratus Kulczyński, 1891	EN						1					1		NT
Philodromus poecilus (Thorell, 1872)	Philodromidae	63764	Philodromus poecilus (Thorell, 1872)	DD		1?		1		1					1		
Philodromus praedatus O.P.-Cambridge, 1871	Philodromidae	63765	Philodromus praedatus O.P.-Cambridge, 1871	DD		1				DD			1		1		
Philodromus rufus Walckenaer, 1826	Philodromidae	63770	Philodromus rufus Walckenaer, 1826	1						1		1			1		
Philodromus vagulus Simon, 1875	Philodromidae	63773	Philodromus vagulus Simon, 1875			EN	D	LC		1			DD		1		LC
Thanatus arenarius Thorell, 1872	Philodromidae	63779	Thanatus arenarius Thorell, 1872	NT		1		LC		1					1		LC
Thanatus atratus Simon, 1875	Philodromidae	63782	Thanatus atratus Simon, 1875	1						1					1		
Thanatus coloradensis Keyserling, 1880	Philodromidae	63784	Thanatus coloradensis Keyserling, 1880							DD					1		
Thanatus formicinus (Clerck, 1757)	Philodromidae	63790	Thanatus formicinus (Clerck, 1757)	1	LC	LC		1		1			1		1		
Thanatus pictus L.Koch, 1881	Philodromidae	63803	Thanatus pictus L.Koch, 1881	CR						EN	B2a,b, C2a, D1				1		VU
Thanatus sabulosus (Menge, 1875)	Philodromidae	63806	Thanatus sabulosus (Menge, 1875)							EN	B2a,b, C2a, D1				1		VU
Thanatus striatus C.L.Koch, 1845	Philodromidae	63807	Thanatus striatus C.L.Koch, 1845	NT						NT					1		NT
Thanatus vulgaris Simon, 1870	Philodromidae	63809	Thanatus vulgaris Simon, 1870 = auratus Simon, 1875	NT				LC		NT					1		LC
Tibellus macellus Simon, 1875	Philodromidae	63811	Tibellus macellus Simon, 1875	CR						CR	B2a,b, C2a, D1				1		EN
Tibellus maritimus (Menge, 1875)	Philodromidae	63812	Tibellus maritimus (Menge, 1875)	1		1				1					1		
Tibellus oblongus (Walckenaer, 1802)	Philodromidae	63815	Tibellus oblongus (Walckenaer, 1802)	1	LC	1		LC		1			1		1		
Coriarachne depressa (C.L.Koch, 1837)	Thomisidae	66492	Coriarachne depressa (C.L.Koch, 1837)	1						1					1		
Cozyptila blackwalli (Simon, 1875)	Thomisidae	66493	Cozyptila blackwalli (Simon, 1875)	1		1		1		1		1?			1		
Diaea dorsata (Fabricius, 1777)	Thomisidae	66496	Diaea dorsata (Fabricius, 1777)	1		1		LC		1			1		1		
Diaea livens Simon, 1876	Thomisidae	66498	Diaea livens Simon, 1876	EN						VU	B2a,b, C2a, D1				1		VU
Ebrechtella tricuspidata (Fabricius, 1775)	Thomisidae	66499	Ebrechtella tricuspidata (Fabricius, 1775)	1	LC	1		LC		1		1	1		1		
Heriaeus hirtus (Latreille, 1819)	Thomisidae	66503	Heriaeus hirtus (Latreille, 1819)	NT				1		EN	B2a,b, C2a, D1	DD			1		DD
Heriaeus mellotei Simon, 1886	Thomisidae	66505	Heriaeus mellotei Simon, 1886												syn.		
Misumena vatia (Clerck, 1757)	Thomisidae	66512	Misumena vatia (Clerck, 1757)	1	LC	1		LC		1		1	1		1		
Monaeses paradoxus (Lucas, 1846)	Thomisidae	66514	Monaeses paradoxus (Lucas, 1846)					DD							1		
Ozyptila atomaria (Panzer, 1801)	Thomisidae	66518	Ozyptila atomaria (Panzer, 1801)	1	LC	1		1		1					1		
Ozyptila brevipes (Hahn, 1826)	Thomisidae	66522	Ozyptila brevipes (Hahn, 1826)	EN				LC		VU	B2a,b, C2a, D1	DD			1		NT

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
<i>Ozyptila claveata</i> (Walckenaer, 1837)	Thomisidae	66523	<i>Ozyptila claveata</i> (Walckenaer, 1837)	1	NT	1				1					1		
<i>Ozyptila gertschi</i> Kurata, 1944	Thomisidae	66530	<i>Ozyptila gertschi</i> Kurata, 1944							1					1		
<i>Ozyptila praticola</i> (C.L.Koch, 1837)	Thomisidae	66539	<i>Ozyptila praticola</i> (C.L.Koch, 1837)	1	LC	1		1		1			1		1		
<i>Ozyptila pullata</i> (Thorell, 1875)	Thomisidae	66540	<i>Ozyptila pullata</i> (Thorell, 1875)	1		1		1		1					1		
<i>Ozyptila rauda</i> Simon, 1875	Thomisidae	66541	<i>Ozyptila rauda</i> Simon, 1875	VU		EN	D			1		1			1		NT
<i>Ozyptila scabricula</i> (Westring, 1851)	Thomisidae	66544	<i>Ozyptila scabricula</i> (Westring, 1851)	1		1		1		1			1		1		
<i>Ozyptila simplex</i> (O.P.-Cambridge, 186	Thomisidae	66546	<i>Ozyptila simplex</i> (O.P.-Cambridge, 186	NT						1					1		
<i>Ozyptila trux</i> (Blackwall, 1846)	Thomisidae	66552	<i>Ozyptila trux</i> (Blackwall, 1846)	1		1		1		1			1		1		
<i>Pistius truncatus</i> (Pallas, 1772)	Thomisidae	66555	<i>Pistius truncatus</i> (Pallas, 1772)	1				LC		1					1		
<i>Runcinia grammica</i> (C.L.Koch, 1837)	Thomisidae	66556	<i>Runcinia grammica</i> (C.L.Koch, 1837)					1		1					1		
<i>Synema globosum</i> (Fabricius, 1775)	Thomisidae	66560	<i>Synema globosum</i> (Fabricius, 1775)	1	LC	1		LC		1		1	1		1		
<i>Thomisus onustus</i> Walckenaer, 1806	Thomisidae	66569	<i>Thomisus onustus</i> Walckenaer, 1806	1	LC	1		1		1					1		
<i>Tmarus piger</i> (Walckenaer, 1802)	Thomisidae	66574	<i>Tmarus piger</i> (Walckenaer, 1802)	1	LC	1		LC		1			1		1		
<i>Tmarus stellio</i> Simon, 1875	Thomisidae	66579	<i>Tmarus stellio</i> Simon, 1875							1					1		
<i>Xysticus acerbus</i> Thorell, 1872	Thomisidae	66583	<i>Xysticus acerbus</i> Thorell, 1872	1		1		LC		1					1		
<i>Xysticus albomaculatus</i> Kulczyński, 1891	Thomisidae	66586	<i>Xysticus albomaculatus</i> Kulczyński, 1891							RE?					1		
<i>Xysticus alpicola</i> Kulczyński, 1882	Thomisidae	66587	<i>Xysticus alpicola</i> Kulczyński, 1882												syn.		
<i>Xysticus audax</i> (Schrank, 1803)	Thomisidae	66593	<i>Xysticus audax</i> (Schrank, 1803)	1	LC	1		1		1			1		1		
<i>Xysticus bifasciatus</i> C.L.Koch, 1837	Thomisidae	66595	<i>Xysticus bifasciatus</i> C.L.Koch, 1837	1	LC	1		1		1			1		1		
<i>Xysticus bliteus</i> (Simon, 1875)	Thomisidae	66596	<i>Xysticus bliteus</i> (Simon, 1875)									DD			1		DD
<i>Xysticus cristatus</i> (Clerck, 1757)	Thomisidae	66611	<i>Xysticus cristatus</i> (Clerck, 1757)	1	LC	1		1		1			1	1	1		
<i>Xysticus desidiosus</i> Simon, 1875	Thomisidae	66612	<i>Xysticus desidiosus</i> Simon, 1875									DD			1		DD
<i>Xysticus embriki</i> Kolosváry, 1935	Thomisidae	66616	<i>Xysticus embriki</i> Kolosváry, 1935	EN						DD					1		VU
<i>Xysticus erraticus</i> (Blackwall, 1834)	Thomisidae	66618	<i>Xysticus erraticus</i> (Blackwall, 1834)	1	LC	1		1		1		1	1		1		
<i>Xysticus ferrugineus</i> Menge, 1876	Thomisidae	66619	<i>Xysticus ferrugineus</i> Menge, 1876							1		1			1		
<i>Xysticus gallicus</i> Simon, 1875	Thomisidae	66623	<i>Xysticus gallicus</i> Simon, 1875			EN	D	LC		VU	B2a,b, C2a, D1		DD		1		VU
<i>Xysticus kempeleni</i> Thorell, 1872	Thomisidae	66632	<i>Xysticus kempeleni</i> Thorell, 1872	EN				1		NT					1		LC
<i>Xysticus kochi</i> Thorell, 1872	Thomisidae	66633	<i>Xysticus kochi</i> Thorell, 1872	EN	LC	1		LC		1		1	1		1		
<i>Xysticus lanio</i> C.L.Koch, 1835	Thomisidae	66637	<i>Xysticus lanio</i> C.L.Koch, 1835	1		1		LC		1		1	1		1		
<i>Xysticus lineatus</i> (Westring, 1851)	Thomisidae	66640	<i>Xysticus lineatus</i> (Westring, 1851)	1		EN	B1a, D2	1		NT					1		NT
<i>Xysticus luctator</i> L.Koch, 1870	Thomisidae	66642	<i>Xysticus luctator</i> L.Koch, 1870	1	NT	1		1		1					1		
<i>Xysticus luctuosus</i> (Blackwall, 1836)	Thomisidae	66643	<i>Xysticus luctuosus</i> (Blackwall, 1836)	1	LC	1		1		LC					1		
<i>Xysticus marmoratus</i> Thorell, 1875	Thomisidae	66646	<i>Xysticus marmoratus</i> Thorell, 1875							DD					1		DD
<i>Xysticus ninnii</i> Thorell, 1872	Thomisidae	66650	<i>Xysticus ninnii</i> Thorell, 1872	VU	LC			LC		1					1		LC
<i>Xysticus obscurus</i> Collett, 1877	Thomisidae	66653	<i>Xysticus obscurus</i> Collett, 1877			1				EN	B2a,b, C2a, D1				1		VU
<i>Xysticus robustus</i> (Hahn, 1832)	Thomisidae	66659	<i>Xysticus robustus</i> (Hahn, 1832)	1	LC	1		LC		1					1		
<i>Xysticus sabulosus</i> (Hahn, 1832)	Thomisidae	66660	<i>Xysticus sabulosus</i> (Hahn, 1832)			1		LC		NT					1		LC
<i>Xysticus slovacus</i> Svaton, Pekar & Pridavka, 1999	Thomisidae	66666	<i>Xysticus slovacus</i> Svaton, Pekar & Pridavka, 1999			CR	B1A, D			LC					1		NT
<i>Xysticus strandi</i> Kolosváry, 1934a	Thomisidae	66669	<i>Xysticus strandi</i> Kolosváry, 1934a												?		
<i>Xysticus striatipes</i> L.Koch, 1870	Thomisidae	66670	<i>Xysticus striatipes</i> L.Koch, 1870	1	LC	1		LC		1					1		
<i>Xysticus ulmi</i> (Hahn, 1832)	Thomisidae	66678	<i>Xysticus ulmi</i> (Hahn, 1832)	1		1		LC		1			1		1		
<i>Xysticus viduus</i> Kulczyński, 1898	Thomisidae	66681	<i>Xysticus viduus</i> Kulczyński, 1898					1							1		
<i>Aelurillus v-insignitus</i> (Clerck, 1757)	Salticidae	64816	<i>Aelurillus v-insignitus</i> (Clerck, 1757)	1	LC	1				1					1		
<i>Afraflacilla epiblemoides</i> (Chyzer, 1891)	Salticidae	64817	<i>Afraflacilla epiblemoides</i> (Chyzer, 1891)	CR						DD					1		DD
<i>Asianellus festivus</i> (C.L.Koch, 1834)	Salticidae	64818	<i>Asianellus festivus</i> (C.L.Koch, 1834)	1	LC	1		1		1					1		
<i>Attulus helveolus</i> (Simon, 1871)	Salticidae	64820	<i>Attulus helveolus</i> (Simon, 1871)												syn.		
<i>Ballus chalybeius</i> (Walckenaer, 1802)	Salticidae	64823	<i>Ballus chalybeius</i> (Walckenaer, 1802)	1	LC	1		LC		1		1	1		1		
<i>Carrhotus xanthogramma</i> (Latreille, 1819)	Salticidae	64832	<i>Carrhotus xanthogramma</i> (Latreille, 1819)	NT		1		LC		1		1	NT		1		LC
<i>Chalcoscirtus brevicymbialis</i> Wunderlich, 1980	Salticidae	64835	<i>Chalcoscirtus brevicymbialis</i> Wunderlich, 1980	VU						DD					1		VU
<i>Chalcoscirtus infimus</i> (Simon, 1868)	Salticidae	64838	<i>Chalcoscirtus infimus</i> (Simon, 1868)							DD					1		DD
<i>Cyrba algerina</i> (Lucas, 1846)	Salticidae	64846	<i>Cyrba algerina</i> (Lucas, 1846)					LC							1		LC
<i>Dendryphantes hastatus</i> (Clerck, 1757)	Salticidae	64850	<i>Dendryphantes hastatus</i> (Clerck, 1757)	DD		1		1		LC					1		
<i>Dendryphantes rudis</i> (Sundevall, 1833)	Salticidae	64855	<i>Dendryphantes rudis</i> (Sundevall, 1833)	1		1				1			1		1		
<i>Euophrys frontalis</i> (Walckenaer, 1802)	Salticidae	64863	<i>Euophrys frontalis</i> (Walckenaer, 1802)	1		1		LC		1		1			1		
<i>Evarcha arcuata</i> (Clerck, 1757)	Salticidae	64888	<i>Evarcha arcuata</i> (Clerck, 1757)	1	LC	1		LC		1			1		1		
<i>Evarcha falcata</i> (Clerck, 1757)	Salticidae	64891	<i>Evarcha falcata</i> (Clerck, 1757)	1	LC	1		LC		1		1	1		1		

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
<i>Evarcha jucunda</i> (Lucas, 1846)	Salticidae	64893	<i>Evarcha jucunda</i> (Lucas, 1846)							1?					?		
<i>Evarcha laetabunda</i> (C.L.Koch, 1846)	Salticidae	64894	<i>Evarcha laetabunda</i> (C.L.Koch, 1846)	1	LC	1		LC		1					1		
<i>Heliophanus aeneus</i> (Hahn, 1831)	Salticidae	64906	<i>Heliophanus aeneus</i> (Hahn, 1831)	1		1		LC		1					1		
<i>Heliophanus auratus</i> C.L.Koch, 1835	Salticidae	64911	<i>Heliophanus auratus</i> C.L.Koch, 1835	1		1		LC		1					1		
<i>Heliophanus cupreus</i> (Walckenaer, 1802)	Salticidae	64917	<i>Heliophanus cupreus</i> (Walckenaer, 1802)	1		1		LC		1		1	1		1		
<i>Heliophanus dampfi</i> Schenkel, 1923	Salticidae	64918	<i>Heliophanus dampfi</i> Schenkel, 1923	1		VU	D			VU					1		VU
<i>Heliophanus dubius</i> C.L.Koch, 1835	Salticidae	64920	<i>Heliophanus dubius</i> C.L.Koch, 1835	1		1		1		1			1		1		
<i>Heliophanus flavipes</i> (Hahn, 1832)	Salticidae	64925	<i>Heliophanus flavipes</i> (Hahn, 1832)	1	LC	1		LC		1		1	1		1		
<i>Heliophanus kochii</i> Simon, 1868	Salticidae	64929	<i>Heliophanus kochii</i> Simon, 1868					LC		1					1		
<i>Heliophanus lineiventris</i> Simon, 1868	Salticidae	64931	<i>Heliophanus lineiventris</i> Simon, 1868	EN						EN					1		EN
<i>Heliophanus melinus</i> L.Koch, 1867	Salticidae	64932	<i>Heliophanus melinus</i> L.Koch, 1867	1						RE?					1		NT
<i>Heliophanus patagiatus</i> Thorell, 1875	Salticidae	64936	<i>Heliophanus patagiatus</i> Thorell, 1875	EN		VU	D	1		LC					1		LC
<i>Heliophanus simplex</i> Simon, 1868	Salticidae	64942	<i>Heliophanus simplex</i> Simon, 1868					LC		1			1		1		
<i>Heliophanus tribulosus</i> Simon, 1868	Salticidae	64943	<i>Heliophanus tribulosus</i> Simon, 1868							EN	B2a,b, C2a, D1				1		EN
<i>Leptorchestes berolinensis</i> (C.L.Koch, 1846)	Salticidae	64956	<i>Leptorchestes berolinensis</i> (C.L.Koch, 1846)	VU				LC		1			1		1		
<i>Macarocoris nidicolens</i> (Walckenaer, 1802)	Salticidae	64967	<i>Macarocoris nidicolens</i> (Walckenaer, 1802)	1				LC		1			DD		1		
<i>Marpissa muscosa</i> (Clerck, 1757)	Salticidae	64969	<i>Marpissa muscosa</i> (Clerck, 1757)	1		1		LC		1			1		1		
<i>Marpissa nivoyi</i> (Lucas, 1846)	Salticidae	64970	<i>Marpissa nivoyi</i> (Lucas, 1846)	1						1					1		
<i>Marpissa pomatia</i> (Walckenaer, 1802)	Salticidae	64971	<i>Marpissa pomatia</i> (Walckenaer, 1802)					1		VU	B2a,b, C2a, D1				1		LC
<i>Marpissa radiata</i> (Grube, 1859)	Salticidae	64972	<i>Marpissa radiata</i> (Grube, 1859)	DD						LC					1		LC
<i>Mendoza canestrini</i> (Ninni, 1868)	Salticidae	64973	<i>Mendoza canestrini</i> (Ninni, 1868)	EN						EN	B2a,b, C2a, D1				1		EN
<i>Myrmarachne formicaria</i> (De Geer, 1778)	Salticidae	64988	<i>Myrmarachne formicaria</i> (De Geer, 1778)	1	LC			LC		1					1		
<i>Neon levis</i> (Simon, 1871)	Salticidae	64996	<i>Neon levis</i> (Simon, 1871)					LC		LC					1		LC
<i>Neon pictus</i> Kulczynski, 1891	Salticidae	64998	<i>Neon pictus</i> Kulczynski, 1891		LC										1		LC
<i>Neon rayi</i> (Simon, 1875)	Salticidae	64999	<i>Neon rayi</i> (Simon, 1875)	EN						VU	B2a,b, C2a, D1				1		VU
<i>Neon reticulatus</i> (Blackwall, 1853)	Salticidae	65000	<i>Neon reticulatus</i> (Blackwall, 1853)	1		1		LC		1			1		1		
<i>Neon valentulus</i> Falconer, 1912	Salticidae	65002	<i>Neon valentulus</i> Falconer, 1912			1		LC		VU	B2a,b, C2a, D1				1		NT
<i>Pellenes nigrociliatus</i> (Simon, 1875)	Salticidae	65020	<i>Pellenes nigrociliatus</i> (Simon, 1875)	VU				LC		1		1			1		LC
<i>Pellenes seriatus</i> (Thorell, 1875)	Salticidae	65022	<i>Pellenes seriatus</i> (Thorell, 1875)					1							1		
<i>Pellenes tripunctatus</i> (Walckenaer, 1802)	Salticidae	65024	<i>Pellenes tripunctatus</i> (Walckenaer, 1802)	1	LC	1				1					1		
<i>Philaeus chrysops</i> (Poda, 1761)	Salticidae	65026	<i>Philaeus chrysops</i> (Poda, 1761)	NT	LC	CR	B1a, D	LC		1					1		NT
<i>Philaeus varicus</i> (Simon, 1868)	Salticidae	65030	<i>Philaeus varicus</i> (Simon, 1868)					1??							?		
<i>Phintella castriesiana</i> (Grube, 1861)	Salticidae	65031	<i>Phintella castriesiana</i> (Grube, 1861)					LC		RE?					1		LC
<i>Phlegra bresnieri</i> (Lucas, 1846)	Salticidae	65033	<i>Phlegra bresnieri</i> (Lucas, 1846)					DD		1					1		
<i>Phlegra cinereofasciata</i> Simon, 1868	Salticidae	65034	<i>Phlegra cinereofasciata</i> Simon, 1868	EN	LC			1		VU	B2a,b, C2a, D1				1		LC
<i>Phlegra fasciata</i> (Hahn, 1826)	Salticidae	65035	<i>Phlegra fasciata</i> (Hahn, 1826)	1	LC	1		LC		1					1		LC
<i>Pseudeuophrys erratica</i> (Walckenaer, 1825)	Salticidae	65049	<i>Pseudeuophrys erratica</i> (Walckenaer, 1825)	DD	LC	1		LC		1			1		1		LC
<i>Pseudeuophrys lanigera</i> (Simon, 1871)	Salticidae	65050	<i>Pseudeuophrys lanigera</i> (Simon, 1871)												1		
<i>Pseudeuophrys obsoleta</i> (Simon, 1868)	Salticidae	65052	<i>Pseudeuophrys obsoleta</i> (Simon, 1868)	LC	LC					1					1		
<i>Pseudeuophrys vafra</i> (Blackwall, 1867)	Salticidae	65054	<i>Pseudeuophrys vafra</i> (Blackwall, 1867)					1		DD					1		
<i>Pseudicius encarpatus</i> (Walckenaer, 1802)	Salticidae	65058	<i>Pseudicius encarpatus</i> (Walckenaer, 1802)	DD				1		1					1		
<i>Salticus cingulatus</i> (Panzer, 1797)	Salticidae	65075	<i>Salticus cingulatus</i> (Panzer, 1797)	1		1		LC		1			1		1		
<i>Salticus mutabilis</i> Lucas, 1846	Salticidae	65088	<i>Salticus mutabilis</i> Lucas, 1846							DD					?		
<i>Salticus quagga</i> Miller, 1971	Salticidae	65095	<i>Salticus quagga</i> Miller, 1971	1						DD					1		DD
<i>Salticus scenicus</i> (Clerck, 1757)	Salticidae	65097	<i>Salticus scenicus</i> (Clerck, 1757)	1		1		LC		1			1		1		
<i>Salticus zebraneus</i> (C.L.Koch, 1837)	Salticidae	65109	<i>Salticus zebraneus</i> (C.L.Koch, 1837)	1		1		LC		1					1		
<i>Sibianor aurocinctus</i> (Ohlert, 1865)	Salticidae	65111	<i>Sibianor aurocinctus</i> (Ohlert, 1865)	1		1				1					1		
<i>Sibianor laeae</i> Logunov, 2001	Salticidae	65112	<i>Sibianor laeae</i> Logunov, 2001			EN	D			DD					1		EN
<i>Sibianor tantulus</i> (Simon, 1868)	Salticidae	65113	<i>Sibianor tantulus</i> (Simon, 1868)							DD					1		DD
<i>Sitticus caricis</i> (Westring, 1861)	Salticidae	65116	<i>Sitticus caricis</i> (Westring, 1861)	EN		1		v		1					1		
<i>Sitticus distinguendus</i> (Simon, 1868)	Salticidae	65118	<i>Sitticus distinguendus</i> (Simon, 1868)	1		EN	D	LC		NT					1		NT
<i>Sitticus dzieduszycki</i> (L.Koch, 1870)	Salticidae	65119	<i>Sitticus dzieduszycki</i> (L.Koch, 1870)	EN		EN	B1a, D	LC		NT		EN			1		VU
<i>Sitticus floricola</i> (C.L.Koch, 1837)	Salticidae	65121	<i>Sitticus floricola</i> (C.L.Koch, 1837)	VU		1		LC		1			1		1		LC
<i>Sitticus longipes</i> (Canestrini, 1873)	Salticidae	65126	<i>Sitticus longipes</i> (Canestrini, 1873)							1?					?		
<i>Sitticus penicillatus</i> (Simon, 1875)	Salticidae	65129	<i>Sitticus penicillatus</i> (Simon, 1875)	NT				LC		1					1		LC
<i>Sitticus pubescens</i> (Fabricius, 1775)	Salticidae	65130	<i>Sitticus pubescens</i> (Fabricius, 1775)	1		1		LC		1		1	1		1		

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	CZ RL	HU RL	PL RL	Crit	RO RL	Crit	SK RL	Crit	RS RL	UA RL	Crit	Status	Endemic	Carp RL
<i>Sitticus rupicola</i> (C.L.Koch, 1837)	Salticidae	65133	<i>Sitticus rupicola</i> (C.L.Koch, 1837)	1		1		LC		1			1		1		
<i>Sitticus saltator</i> (O.P.-Cambridge, 18)	Salticidae	65134	<i>Sitticus saltator</i> (O.P.-Cambridge, 18)	EN		LC				VU	B2a,b, C2a, D1				1		VU
<i>Sitticus saxicola</i> (C.L.Koch, 1846)	Salticidae	65135	<i>Sitticus saxicola</i> (C.L.Koch, 1846)	DD		EN	C, D	LC		1			DD		1		NT
<i>Sitticus strandi</i> Kolosváry, 1934a	Salticidae	65137	<i>Sitticus strandi</i> Kolosváry, 1934a							1?					?		
<i>Sitticus terebratus</i> (Clerck, 1757)	Salticidae	65139	<i>Sitticus terebratus</i> (Clerck, 1757)			EN	C, D	LC		NT			NT		1		
<i>Sitticus zimmermanni</i> (Simon, 1877)	Salticidae	65143	<i>Sitticus zimmermanni</i> (Simon, 1877)					LC		NE					1		LC
<i>Synageles hilarulus</i> (C.L.Koch, 1846)	Salticidae	65146	<i>Synageles hilarulus</i> (C.L.Koch, 1846)	EN				LC		NT					1		NT
<i>Synageles subcingulatus</i> (Simon, 1878)	Salticidae	65150	<i>Synageles subcingulatus</i> (Simon, 1878)	CR						1					1		NT
<i>Synageles venator</i> (Lucas, 1836)	Salticidae	65151	<i>Synageles venator</i> (Lucas, 1836)	1	LC	1				1		1			1		
<i>Talavera aequipes</i> (O.P.-Cambridge, 1871)	Salticidae	65153	<i>Talavera aequipes</i> (O.P.-Cambridge, 1871)	1		1		1		1					1		
<i>Talavera aperta</i> Miller, 1971	Salticidae	65154	<i>Talavera aperta</i> Miller, 1971	NT						NT					1		NT
<i>Talavera milleri</i> Brignoli, 1983	Salticidae	65158	<i>Talavera milleri</i> Brignoli, 1983	CR						DD					1		VU
<i>Talavera monticola</i> (Kulczyński, 1884)	Salticidae	65159	<i>Talavera monticola</i> (Kulczyński, 1884)			EN	D			VU	B2a,b, C2a, D1				1		VU
<i>Talavera parvistyla</i> Logunov & Kronstedt, 2003	Salticidae	65160	<i>Talavera parvistyla</i> Logunov & Kronstedt, 2003			1				DD					1		DD
<i>Talavera petrensis</i> (C.L.Koch, 1837)	Salticidae	65161	<i>Talavera petrensis</i> (C.L.Koch, 1837)	VU		VU	D			1					1		NT
<i>Talavera thorelli</i> (Kulczyński, 1891)	Salticidae	65163	<i>Talavera thorelli</i> (Kulczyński, 1891)			CR	D	1		DD					1		DD
<i>Yllenus vittatus</i> Thorell, 1875	Salticidae	65183	<i>Yllenus vittatus</i> Thorell, 1875									EN			1		VU

Name of species (Fauna Europea)	Family	ID	Name of species (Platnick 2014, version14.5)	Synonym / misidentification
<i>Hypocephalus pusillus</i> (Menge 1869)	Linyphiidae	60728	<i>Hypocephalus pusillus</i> (Menge 1869)	<i>Hypocephalus dahli</i> (Lessert, 1909) - code ID 60724
<i>Meioneta mollis</i> (O.P.-Cambridge, 1871)	Linyphiidae	60916	<i>Agyneta mollis</i> (O.P.-Cambridge, 1871)	<i>Meioneta tenera</i> (Menge 1869) - code ID 60933
<i>Pocadicnemis carpatica</i> (Chyzer, 1894)	Linyphiidae	61202	<i>Pocadicnemis carpatica</i> (Chyzer, 1894)	<i>Maso carpathicus</i> Chyzer
<i>Pociloneta variegata</i> (Blackwall, 1841)	Linyphiidae	61206	<i>Pociloneta variegata</i> (Blackwall, 1841)	<i>Pociloneta globosa</i> (Wider, 1834)
<i>Porrhomma lativelum</i> Tretzel, 1956	Linyphiidae	61219	<i>Porrhomma microps</i> (Roewer, 1931)	junior synonym of <i>Porrhomma microps</i> (Roewer, 1931)
<i>Troxochrus cirrifrons</i> (O. P.-Cambridge, 1871)	Linyphiidae	61538	<i>Troxochrus cirrifrons</i> (O. P.-Cambridge, 1871)	<i>Troxochrus scabriculus cirrifrons</i> (O.P.-Cambridge, 1871)
<i>Hahnia difficilis</i> Harm, 1966	Hahniidae	59186	<i>Hahnia difficilis</i> Harm, 1966	<i>Hahnia parva</i> Kulczyński, 1882 probably
<i>Coelotes pickardi</i> carpathensis Ovtchinnikov, 1999 syn <i>Coelotes pastor</i> carpathensis Ovtchinnikov, 1999	Amaurobiidae	54829	<i>Coelotes pickardi</i> carpathensis Ovtchinnikov, 1999 syn <i>Coelotes pastor</i> carpathensis Ovtchinnikov, 1999	<i>Coelotes pastor</i> carpathensis Ovtchinnikov, 1999
<i>Gnaphosa alpica</i> Simon, 1878	Gnaphosidae	58782	<i>Gnaphosa alpica</i> Simon, 1878	misidentification with <i>Gnaphosa modestior</i> Kulczyński, 1897
<i>Philodromus corticinus</i> (C.L.Koch, 1837)	Philodromidae	63735	<i>Philodromus laricum</i> Simon, 1875	<i>Philodromus corticinus</i> (C.L.Koch, 1837)
<i>Heriaeus hirtus</i> (Latreille, 1819)	Thomisidae	66503	<i>Heriaeus hirtus</i> (Latreille, 1819)	<i>Heriaeus melloteei</i> Simon, 1886 in records from Europe
<i>Heriaeus melloteei</i> Simon, 1886	Thomisidae	66505	<i>Heriaeus melloteei</i> Simon, 1886	misidentification with <i>Heriaeus hirtus</i> (Latreille, 1819)
<i>Xysticus alpicola</i> Kulczyński, 1882	Thomisidae	66587	<i>Xysticus alpicola</i> Kulczyński, 1882	junior synonym of <i>Xysticus gallicus</i> (Simon) Rozwalka unpubl.
<i>Xysticus gallicus</i> Simon, 1875	Thomisidae	66623	<i>Xysticus gallicus</i> Simon, 1875	<i>Xysticus alpicola</i> Kulczyński, 1882 code 66587 is junior synonym of <i>Xysticus gallicus</i> (Simon) Rozwalka unpubl.
<i>Attulus helveolus</i> (Simon, 1871)	Salticidae	64820	<i>Attulus helveolus</i> (Simon, 1871)	junior synonym of <i>Sitticus distinguendus</i>
<i>Sitticus distinguendus</i> (Simon, 1868)	Salticidae	65118	<i>Sitticus distinguendus</i> (Simon, 1868)	<i>Attulus helveolus</i> (Simon, 1871)

# DRAFT RED LIST OF DRAGONFLIES (ODONATA) OF THE CARPATHIANS

Compiled by Dušan Šácha

**Authors / Contributors:** Dušan Šácha, Stanislav David (Slovakia), Martin Waldhauser (Czech Republic), Paweł Buczyński, Grzegorz Tończyk, Małgorzata Makomaska-Juchiewicz (Poland), Alexander V. Martynov (Ukraine), Miklós G. Heltai (Hungary), Cosmin O. Mancu (Romania), Miloš Jović (Serbia)

## Dragonflies in the IUCN World Red List and European Red List

Within the latest version of the IUCN Red List (<http://www.iucnredlist.org/search, II/2014>), there are 2752 species of dragonflies evaluated. Out of them, 1 is extinct (EX), 55 critically endangered (CR), 87 endangered (EN), 123 vulnerable (VU), 112 near threatened (NT or LR/nt) and 823 data deficient (DD). Least concern (LC or LR/lc) are 1551 species.

Out of the IUCN list, there are 83 species that are native to Europe (including overseas territories). CR: 1, EN: 2, VU: 4, NT or LR/nt: 8, DD: 2 and LC or LR/lc: 66. Among NT there are 3 species, which are native to the Carpathians: *Cordulegaster bidentata*, *C. heros* and *Nebalennia speciosa*. Among LC there are 32 species native to the Carpathians or at least once reported to occur there. The rest 43 species have not been evaluated so far.

Within the European Red List (KALKMAN *et al.* 2010), all the species have been assessed. The assessment has been carried out separately for Europe in geographical sense and for EU 27.

Europe: 137 species evaluated, CR 3, EN 5, VU 13, NT 15, LC 96, DD 5.

EU 27: 134 species evaluated, CR 3, EN 6, VU 13, NT 18, LC 91, DD 3.

These Carpathian species appear in the European Red List as threatened (categories Europe / EU 27): *Lestes macrostigma* (VU / EN), *Sympetrum depressiusculum* (VU / VU), *Nebalennia speciosa* (NT / VU). To the NT category fall: *Coenagrion ornatum* (NT / NT), *C. armatum* (LC / NT), *Aeshna viridis* (NT / NT), *Cordulegaster bidentata* (NT / NT), *C. heros* (NT / NT), *Leucorrhinia albifrons* (LC / NT) and *L. caudalis* (LC / NT). DD species is *Lestes parvidens* (LC / DD). Moreover, *Cordulegaster picta*, that is not native to the Carpathians but once reported from Serbia, is rated as VU / VU, and *C. insignis* (similarly from Serbia) as EN / EN.

## Summary

There are 78 species of dragonflies ever reported from the Carpathians in total. Among them, two species are represented by dubious historical data only; no specimens exist which would confirm the identification. Four species are identified correctly and there is a material proving the identification, however they are vagrants or occasional occurrences (blown by the wind etc.) only and therefore cannot be considered permanent members of the Carpathian fauna. The rest 72 species are proven to have breeding populations in the region.

Since Carpathians are a very diverse bioregion in terms of their north-south extent and altitude levels, the dragonfly fauna constitutes mainly of Eurasian elements, accompanied by a fair proportion of thermophilous (Mediterranean) and boreo-mountainous elements. Most species are stagnicolous, whereas rheophilous species represent only a minority.

With respect to quality of data, there is a bit inconsistency in-between the individual countries. Whereas countries in the north of the range (PL, CZ, SK, HU) have relatively good and ample datasets, countries in the south and east (UA, RO, RS) show deficit of knowledge or even locally profound lack of data. This fact showed up most visibly in Serbia, where the species have been classified either LC, or DD, and no other categories came to use.

There also seems to be some variability in interpretation of the IUCN methodology among individual experts, resulting in a rather different classification of the same species in the individual countries, that cannot be always and fully explained only by differences of the species populations, trends, areas etc. Taking all this information into account, the submitted list can only be considered the very first version of the Carpathian Red List of Dragonflies. A lot of effort still has to be put into research, statistical analysis and providing and maintaining consistent set of data before the Red List, strictly following the IUCN rules, can be compiled.

Overview of the status of dragonflies of the Carpathians is in Table 1.

## Method of assessment

Standard method of the IUCN (2001, 2003 – Categories and Criteria 3.1 as applied at the regional level) was used. Where possible, the quantification of trends was based on existing data. Because of the partial incompatibility of datasets between countries and missing historical data as a baseline, in some cases also methods of inference and projection came to use, building on the habitat data, existing threats, climate change scenarios and nature conservation policies.

Threshold setting for the eligibility of the species:

- species with no valid proof of their occurrence have not been considered (NE),
- vagrant species have been excluded from the evaluation (NA),
- autochthonous species (i.e. with breeding populations) and regular migrants have all been assessed,
- these species have been assessed at the species level (breeding and migrant populations, if existing, together, not separately).

## Notes to taxonomy and nomenclature

Within the project and its online database, the Fauna Europaea (FE) was taken as a valid taxonomy and nomenclature basis. However, it has to be said, that there are several differences compared to the up-to-date World Odonata List (WOL; SCHORR & PAULSON 2013).

The most prominent is taxonomic position of *Orthetrum anceps* (SCHNEIDER, 1845), which WOL considers a true species, whereas FE otherwise. We accepted FE, because there are 5 phenotypes of *O. coeruleescens* – *anceps* complex, of which only two extreme are easily identified and the rest are intermediate (hybrids), which occur over wide extent of the Carpathians. This question of *O. anceps* taxonomic position still needs to be resolved; nonetheless it was not the aim of the BioREGIO project.

Among others there is discrepancy in use of the generic names *Lestes* – *Chalcolestes*, *Erythromma* – *Cercion*, *Anax* – *Hemianax*, *Anaciaeschna* – *Aeshna*, *Gomphus* – *Stylurus*. Alongside, small differences in authors or years of description may appear in the full names.

For this reason, it was decided to use names according to WOL in the printed publication. FE names are added, since used in the online version. Where appropriate, synonyms reflecting European usage are given.

## Notes to species selection

All the eligible species have been evaluated.

## Overview of the status and / or endemism of species in the Carpathians

There are no Carpathian endemites among dragonflies. The Carpathian Regional Red List Categories and number of species in respective categories:

LC: 43, NT (or \*NT): 10, VU (or \*VU): 5, EN (or \*EN): 4, DD: 10.

In general, tyrphophiles and species with orcal or boreal distribution patterns prevail among TH categories, whereas thermophiles and Eurasian species are of lower risk categories.

## Main threats

There are several main factors of threat to dragonflies in the Carpathians.

### Human caused factors:

- climate change and resulting habitat changes
- water regime mismanagement
- forestry
- tourism, winter sports and infrastructure (roads, hotels etc.)
- intensive fish farming
- peat excavation

### Natural factors:

- overgrowing and natural succession

## LC

Mostly species that are:

- widespread or expanding
- have not particular ecological demands or their sites are protected
- have enough nearby sources for potential immigration and re-colonisation
- usually are rated not threatened in the individual countries (exceptions may occur, where the national category has been assigned due to low number of sites or small populations, but overall in the Carpathians there are enough locations and large enough populations)

*Calopteryx splendens* (Harris, 1782)

*Calopteryx virgo* (Linnaeus, 1758)

*Lestes barbarus* (Fabricius, 1798)

*Lestes dryas* (Kirby, 1890)

*Lestes sponsa* (Hansemann, 1823)

*Chalcolestes viridis* (Vander Linden, 1825), syn. *Lestes viridis*

*Sympecma fusca* (Vander Linden, 1820)

*Coenagrion puella* (Linnaeus, 1758)

*Erythromma lindenii* (Selys, 1840), syn. *Cercion lindenii*

*Erythromma najas* (Hansemann, 1823)

*Erythromma viridulum* (Charpentier, 1840)

*Pyrrhosoma nymphula* (Sulzer, 1776)

*Enallagma cyathigerum* (Charpentier, 1840)

*Ischnura elegans* (Vander Linden, 1820)

*Ischnura pumilio* (Charpentier, 1825)

*Platycnemis pennipes* (Pallas, 1771)

*Aeshna affinis* (Vander Linden, 1820)

*Aeshna cyanea* (Müller, 1764)

*Aeshna juncea* (Linnaeus, 1758)

*Aeshna mixta* (Latreille, 1805)

*Anaciaeschna isoceles* (Müller, 1767), syn. *Aeshna isoceles*

*Anax imperator* (Leach, 1815)

*Anax parthenope* (Selys, 1839)

*Gomphus vulgatissimus* (Linnaeus, 1758)

*Onychogomphus forcipatus* (Linnaeus, 1758)

*Ophiogomphus cecilia* (Geoffroy in Fourcroy, 1785)  
*Cordulegaster bidentata* (Selys, 1843)  
*Cordulia aenea* (Linnaeus, 1758)  
*Somatochlora metallica* (Vander Linden, 1825)  
*Libellula depressa* (Linnaeus, 1758)  
*Libellula quadrimaculata* (Linnaeus, 1758)  
*Ortbetrum albistylum* (Selys, 1848)  
*Ortbetrum brunneum* (Fonscolombe, 1837)  
*Ortbetrum cancellatum* (Linnaeus, 1758)  
*Ortbetrum coerulescens* (Fabricius, 1798)  
*Crocothemis erythraea* (Brullé, 1832)  
*Sympetrum danae* (Sulzer, 1776)  
*Sympetrum flaveolum* (Linnaeus, 1758)  
*Sympetrum fonscolombii* (Selys, 1840)  
*Sympetrum meridionale* (Selys, 1841)  
*Sympetrum sanguineum* (Müller, 1764)  
*Sympetrum striolatum* (Charpentier, 1840)  
*Sympetrum vulgatum* (Linnaeus, 1758)

#### NT

Species that are in their nature similar to LC species, but not so markedly (therefore with a potential prospect of ending up VU or higher long term). On the other hand, so far do not qualify for any TH category.

*Lestes virens* (Charpentier, 1825)

SK: VU, CZ: NT, PL: NT, UA: DD, HU: LC, RO: VU, RS: DD

*Aeshna grandis* (Linnaeus, 1758)

SK: \*NT, CZ: NT, PL: LC, UA: \*NT, RO: VU

*Stylurus flavipes* (Charpentier, 1825)

syn.: *Gomphus flavipes*

SK: \*NT, CZ: VU, HU: LC, RO: VU

*Cordulegaster heros* (Theischinger, 1979)

SK: VU, CZ: DD, RO: VU, RS: LC

*Libellula fulva* (Müller, 1764)

SK: EN, CZ: EN, UA: DD, HU: LC, RO: NT

*Sympetrum pedemontanum* (Müller, 1766)

SK: \*VU, CZ: VU, PL: NT, UA: \*VU, HU: LC, RO: VU

#### \*NT

Species that would overall qualify for VU according to mainly B, C or D criteria (and in individual countries or at least the most prominent ones = SK, RO and UA mainly did), but have nearby sources for potential recolonisation, which lowers the risk of extinction.

*Coenagrion hastulatum* (Charpentier, 1825)

SK: VU, CZ: VU, PL: NT, UA: DD, RO: VU

*Coenagrion ornatum* (Selys, 1850)

SK: VU, PL: RE, HU: NT, RO: VU

*Leucorrhinia dubia* (Vander Linden, 1825)

SK: VU, CZ: EN, PL: VU, UA: DD, RO: NT

*Leucorrhinia pectoralis* (Charpentier, 1825)

SK: \*VU, CZ: \*VU, PL: DD, UA: DD, HU: LC, RO: NE

#### VU

*Lestes macrostigma* (Eversmann, 1836)

##### Population:

Breeding population in RO, where VU (A1c). Decline caused by habitat loss and drought.

Accidental data from PL and CZ.

Elsewhere no data.

Trend decreasing Europe-wide (Kalkman et al., 2010).

##### Threats:

Threats due to climate change likely (drought, habitat change).

##### Criteria:

A qualifies for VU (A1c – decline in the area or quality of habitat)

B –

C –

D –

E –

Criteria are accepted as submitted by the RO expert (since the only country with breeding population).

##### Possibility of recolonisation:

Good flier. Populations in HU, RO, CZ, AT, MO, BG, SLO, CR, in RO, HU and AT rather close to Carpathians. Immigration could be hindered by lack of appropriate habitats. At least in Southern Moravia the prospects are not bad, thanks to active landscape management measures (undertaken or planned). Overall, immigration so far rated as inadequate to provide high enough chance for recolonisation in the case of local extinction (accepted as submitted by the RO expert).

##### Category:

VU (A1c).

Accepted as submitted by the RO expert.

*Somatochlora alpestris* (Selys, 1840)

##### Population:

Breeding population in SK, where \*NT. Appears mainly in Northern SK (Tatry Mts. and surrounding regions), where widespread and locally dominant.

Population also in PL, where DD. Distributed in Tatry and Orawa regions.

In CZ one population, CR (B2a, C2).

Population in RO, where EN (C2ai). Sites map the main arc of the Carpathians. Trend positive, perhaps due to more research effort in recent years? Expected to be negatively influenced by the climate change.

Population also in UA, where EN (B1ab(iii, v)+2ab(iii, v); C2b; D). Small population (less than 250 ind.), just a few sites, distributed next to the RO border.

Populations in SK, PL and CZ can be considered one location. Populations in RO and UA can be considered second location.

Elsewhere no data.

Trend in Europe unknown (Kalkman et al., 2010).

##### Threats:

Climate change (drought, change in weather pattern and resulting habitat change), tourism, forestry, winter sports. Natural habitat change (overgrowing, succession). Potential threat in acidification of water, although successfully mitigated in the last years.

##### Criteria:

A –

B –

C qualifies for VU (C2a(i) – population estimated under 10000 + expected influence of climate change + low population densities meaning no subpopulation exceeding 1000)

D qualifies for VU (D2 – only 2 locations, meaning vulnerability to sudden impacts)

E –

##### Possibility of recolonisation:

Good flier. Populations in CZ, PL, AT, D, CH, IT, in CZ and PL rather close to Carpathians. Immigration could be hindered by lack of appropriate habitats (corridors). Overall, immigration so far rated as inadequate to provide high enough chance for recolonisation in the case of local extinction.

##### Category:

VU (C2a(i), D2).

*Sympetrum depressiusculum* (Selys, 1841)

##### Population:

Breeding population in RO, where CR (A2c). Only few recent data, trend badly negative.

Population in HU, where VU (no criteria). Distributed in two orographic units, trend rated as stable.

Population also in CZ, where CR (B2ac, C2b). Huge fluctuations in the population size, only 5 sites (all in N Moravia), of which 2 with numerous populations. Trend negative (not confirmed in many regions in last 15 years).

In PL DD. Only historical data.

No records but expected to be present in UA.

Elsewhere no data.

Trend decreasing Europe-wide (Kalkman et al., 2010).

##### Threats:

Mismanagement of the sites (water regime, intensification of fish farming).

##### Criteria:

A –

B qualifies for VU (B2ab(i, ii, iii, iv, v) – decrease in area, population, habitat and sites + 4 locations + AOO less than 2000 km<sup>2</sup> but more than 500 km<sup>2</sup>, according to the maps)

C –

D qualifies for VU (D2 – only 4 locations, vulnerability to sudden impacts)

E –

##### Possibility of recolonisation:

Populations in most countries (HU, AT, SK, CZ, PL, UA, SLO, CR, MO, BG...), some of them not far away from the Carpathians. Dispersion poorer compared to other congeneric species. Immigration could be

hindered by lack of appropriate habitats. In accord with decreasing trend in Europe, immigration so far not considered significant.

##### Category:

VU (B2ab(i, ii, iii, iv, v), D2).

#### \*VU

*Leucorrhinia albifrons* (Burmeister, 1839)

##### Population:

Breeding population in CZ, where CR (B2ac, C2b). Four sites with very small populations or only individuals. Huge fluctuations, trends cannot be assessed. Outside Carpathians in S and W Bohemia – sizeable populations.

Population also in PL, where DD. Distributed in Silesia and SE PL. Lack of appropriate habitats in Carpathians.

Elsewhere no data.

European population stable (Kalkman et al., 2010).

##### Threats:

Not serious, according to the inhabited habitats (fish ponds). Intensification of fish farming and mismanagement of water regime.

##### Criteria:

A –

B qualifies for EN (B2ac(iv) – AOO less than 500 km<sup>2</sup>, might be even less than 10 km<sup>2</sup>, but 2 locations + extreme fluctuations in population size reported)

C –

D qualifies for EN (C2b – population probably exceeds 250, but less than 2500 + population decline and fluctuations)

E –

Criteria accepted from the CZ list, with downgrading the category one step to EN because of PL population.

##### Possibility of recolonisation:

Good flier. Populations in CZ, PL, AT, D, even not far away from existing sites. Immigration could be hindered by lack of appropriate habitats. Congeneric species known to colonise new habitats in recent years. Immigration and potential recolonisation considered likely. Therefore category downgraded one step to \*VU.

##### Category:

\*VU (B2ac(iv), C2b).

*Leucorrhinia rubicunda* (Linnaeus, 1758)

##### Population:

Breeding population in SK, where CR (C2a(ii)). Only 4 known sites, of which 2 in NE and 2 in NW. Of NW sites one probably newly colonised (first discovery in 2013), from the other no data for the last 10 years. In NE data on population size vary, could indicate fluctuations or population decrease.

Population in CZ, where EN (B2ac(iv), C2b). Only 3 sites, small populations. Not enough suitable habitats.

Trend unknown.

Population in PL, where DD. Three groups of sites – Tatry, Gorce, Bieszczady Zachodnie.

All the populations lie on the southern limit of species' range and are likely to constitute at max. two locations (western and eastern).

Elsewhere no data.

Trend decreasing Europe-wide (Kalkman et al., 2010).

#### Threats:

Climate change (drought, change in weather pattern and resulting habitat change), forestry, peat excavation. Natural habitat change (overgrowing, succession). Potential threat in acidification of water, although successfully mitigated in the last years.

#### Criteria:

A –

B qualifies for EN (B2ac(iv) – AOO less than 500 km<sup>2</sup>, might be even less than 10 km<sup>2</sup>, but 2 locations + extreme fluctuations in population size indicated)

C –

D qualifies for EN (C2b – population probably exceeds 250, but less than 2500 + population decline and fluctuations)

E –

#### Possibility of recolonisation:

Good flier. Populations in PL, CZ, UA, D, in PL and CZ sites close to the Carpathians. SK proves potential for immigration and recolonisation. Therefore category downgraded one step to \*VU.

#### Category:

\*VU (B2ac(iv), C2b).

### EN

*Nehalennia speciosa* (Charpentier, 1840)

#### Population:

Breeding population in RO, where CR (C with no exact specification) – only one population of estimated size 200 individuals at max. and 400 m<sup>2</sup> area.

Population also in PL, where DD. Size of population appr. 400 individuals. Stable, breeding.

SK only an old and doubtful record.

Elsewhere no data, but is inconspicuous and could be neglected.

Trend decreasing Europe-wide (Kalkman et al., 2010).

#### Threats:

Threats due to climate change very likely (drought, habitat change).

#### Criteria:

A –

B qualifies for EN (B1ab(iii)+2ab(iii) – EOO less than 100 km<sup>2</sup> and AOO less than 100 km<sup>2</sup> but 2 locations + prognosed habitat deterioration due to climate change)

C qualifies for VU (C2a(i) – population less than 250, but subpopulations more than 250 + prognosed decreasing trend due to climate change combined with decreasing trend in Europe)

D qualifies for VU (D1+2 – total population around 600, 2 locations)

E –

#### Possibility of recolonisation:

Poor dispersion, retreat from the former extent of the area. Populations in PL, CZ, AT, D, BLR, but rather far away with respect to vagility of the species. Recolonisation unlikely.

#### Category:

EN: B1ab(iii)+2ab(iii).

*Aeshna subarctica* (Walker, 1908)

#### Population:

Breeding population in PL, where EN: B2ab(ii,iii,iv). In total 9 sites in Tatry and Orawa regions, where stable. Sites mostly protected.

Population also in SK, where CR: B1ab(iii,v)+2ab(iii,v), C2a(i,ii), D. Only one site in Tatry region, under human pressure, not sufficient data but trend seems to be decreasing.

RO: one site, breeding not confirmed but probable. CR: C with no exact specification.

Polish and Slovak populations can be considered just one location.

Elsewhere no data.

Trend decreasing Europe-wide (Kalkman et al., 2010).

#### Threats:

Climate change (drought, change in weather pattern) is very likely to cause degradation of habitats. Threats also due to tourism, winter sports, forestry. Natural habitat change (overgrowing, succession). Competition from *A. juncea*, but not easily quantifiable. Potential threat in acidification of water, although successfully mitigated in the last years.

#### Criteria:

A –

B qualifies for EN (B1ab(iii,iv,v) – EOO more than 100 km<sup>2</sup> but less than 5000 km<sup>2</sup> + 2 locations + prognosed habitat deterioration and population decline due to climate change and human pressure)

C qualifies for EN (C2a(i) – total population likely to exceed 250 but less than 2500 + individual subpopulations under 250 + prognosed decreasing trend due to climate change and human pressure)

D qualifies for VU (D1+2 – population under 1000 + only 2 locations)

E –

#### Possibility of recolonisation:

Populations in PL, CZ, AT, D, BLR, but rather far away with respect to lack of appropriate habitats. Recolonisation uncertain to unlikely.

#### Category:

EN: B1ab(iii,iv,v), C2a(i).

*Somatoblora arctica* (Zetterstedt, 1840)

#### Population:

Breeding population in RO, where CR: C with no exact specification. There were two sites, of which

one has been destroyed. The second population still survives, although under pressure (planned road ramp, more tourists).

Population in PL, where CR: B2ab(ii,iii,iv). Sites in Tatry and Orawa regions, where stable.

Population in SK, where CR: C2a(ii), D. Sites in Tatry foothills and adjacent regions (Orava, Liptov, Spiš). Sites mostly protected, nonetheless threatened by climate change and under human pressure, trend seems to be decreasing (at least 2 sites dried in 2012). In 2013 two new sites discovered, therefore SK category needs to be reassessed.

Breeding population also in CZ, where CR: B2a, C2. Can be overlooked because of the type of habitat, in rest of CZ not rare and possibly stable. CZ Carpathians – lack of suitable habitats.

Czech, Polish and Slovak populations can be considered just one location.

Elsewhere no data.

Trend in Europe unknown (Kalkman et al., 2010).

#### Threats:

Climate change is very likely to cause degradation of habitats. Threats also due to tourism, winter sports, forestry. Natural habitat change (overgrowing, succession). Potential threat in acidification of water, although successfully mitigated in the last years.

#### Criteria:

A –

B qualifies for EN (B1ab(iii,iv,v) – EOO more than 100 km<sup>2</sup> but less than 5000 km<sup>2</sup> + 2 locations + prognosed habitat deterioration and population decline due to climate change and human pressure)

C qualifies for EN (C2a(i) – total population likely to exceed 250 but less than 2500 + individual subpopulations under 250 + reported demise of several populations and prognosed decreasing trend due to climate change and human pressure)

D qualifies for VU (D1+2 – population under 1000 + only 2 locations)

E –

#### Possibility of recolonisation:

Populations in PL, CZ, AT, D, BLR, but rather far away with respect to lack of appropriate habitats. Recolonisation unlikely.

#### Category:

EN: B1ab(iii,iv,v), C2a(i).

### \*EN

*Leucorrhinia caudalis* (Charpentier, 1840)

#### Population:

Breeding population in SK, where EN: D. Only one site, small size (expected much less than the limit for EN), no information on trends or fluctuations.

Population also in PL, where DD. Size of population only tens of individuals.

Old records but expected to still occur in UA (DD).

Elsewhere no data.

Large fluctuations likely to occur (based on other spe-

cies of the genus).

European population stable (Kalkman et al., 2010).

#### Threats:

Not serious, according to the inhabited habitats (fish ponds). Intensification of fish farming and mismanagement of water regime.

#### Criteria:

A –

B qualifies for CR (B1ac(iv)+2ac(iv) – EOO less than 100 km<sup>2</sup> and AOO less than 100 km<sup>2</sup> + severely fragmented + indication of extreme fluctuations)

C –

D qualifies for EN (D – on both sites just tens of individuals but likely to exceed 50)

E –

#### Possibility of recolonisation:

Populations in PL, HU, AT, D with number of sites in close vicinity. Good flier. Recolonisation seems likely, SK population probably even founded in 2003/2004 in a colonising wave. Therefore downgrading one step to \*EN.

#### Category:

\*EN: B1ac(iv)+2ac(iv).

### DD

*Chalcolestes parvidens* (Artobolevsky, 1929)

syn.: *Lestes parvidens*

HU: LC, RO: VU

Not enough information on its distribution, and rate and impacts of cross-breeding with *L. viridis*.

Trend in Europe unknown (Kalkman et al., 2010).

*Sympetma paedisca* (Brauer, 1877)

PL: DD. SK: only accidental data, no proof of a breeding population.

Category defined by PL list. Not enough data on its distribution and status of its population.

Trend in Europe decreasing (Kalkman et al., 2010).

*Coenagrion pulchellum* (Vander Linden, 1825)

Occurs in all countries but Serbia. SK: DD (nearly missing in the Carpathians despite of appropriate habitats), CZ: NT, PL: LC, UA: \*NT, HU: LC, RO: DD (widespread, but trend possibly negative).

Large variation in its ranking between individual states. Category defined by SK and RO lists, since these countries constitute major part of the range. More research needs to focus on its ecology, distribution and possible hybridisation with *C. puella*.

Trend in Europe stable (Kalkman et al., 2010).

*Coenagrion scitulum* (Rambur, 1842)

CZ: VU, PL: NE, HU: LC, RO: VU. SK, RS and UA missing.

Large variation in its ranking between individual states. Requires more data about its distribution, population ecology (trends, impact of climate change) and

possible hybridisation with *C. puella*.  
Trend in Europe stable (Kalkman et al., 2010).

*Aeshna viridis* (Eversman, 1836)

Breeding population only in HU, where NT. Old data from UA, where proposed DD. No data from other countries, although in SK enough appropriate habitats in close vicinity to HU sites.  
More research on its ecology and distribution needed. Possibility of recolonisation needs to be examined – good flier but not enough nearby sources (only in HU) and retreat of population towards N and E in PL.  
Trend in Europe decreasing (Kalkman et al., 2010).

*Brachytron pratense* (Müller, 1764)

SK: \*EN, CZ: NT, PL: DD, UA: DD, HU: LC, RO: VU. RS missing.  
Large variation in its ranking between individual states. Requires more data about its distribution and population ecology (trends, impact of climate change).  
Trend in Europe stable (Kalkman et al., 2010).

*Cordulegaster boltonii* (Donovan, 1807)

Breeding population in PL: DD. Erratic or questionable data from CZ, RO and RS.  
Needs more research to clarify its range. CZ and RS: Possibly confused with *C. heros* in the past (similarly elsewhere)?  
Trend in Europe stable (Kalkman et al., 2010).

*Epitheca bimaculata* (Charpentier, 1825)

Widespread, occurs in all countries but RS. SK: CR, CZ: EN, PL: DD, UA: \*EN, HU: LC, RO: CR.  
Mostly rated as facing high risk of extinction (except HU, where LC). Could be overlooked? Needs more research on its distribution and ecology to decide.  
Trend in Europe stable (Kalkman et al., 2010).

*Somatochlora flavomaculata* (Vander Linden, 1825)

Widespread, occurs in all countries but SK (only one erratic find). CZ: \*EN, PL: DD, UA: LC, HU: LC, RO: NT (trend possibly negative), RS: DD.  
Rated diversely, from LC (UA, HU) through to \*EN (CZ). More research (distribution, ecology) needed to decide.  
Trend in Europe stable (Kalkman et al., 2010).

*Somatochlora meridionalis* (Nielsen, 1935)

CZ: NA, RO: DD (widespread, with one hybrid population), RS: DD. SK – few pure *meridionalis*, mainly hybrids with *S. metallica*.  
Occurs from south (RS, RO) up to north (CZ, SK), but missing (overlooked?) in the centre (HU, UA).  
More research on the area, population and hybridisation needed.  
Trend in Europe unknown (Kalkman et al., 2010).

NE

Species, where it is not possible to prove their occurrence in the Carpathians (no valid specimens to review).

*Aeshna caerulea* (Ström, 1783)

*Cordulegaster picta* (Selys, 1854)

NA

Species proven to be present in the Carpathians, nonetheless, to the best knowledge, no stable autochthonous populations existing.

*Coenagrion armatum* (Charpentier, 1840)

*Coenagrion lunulatum* (Charpentier, 1840)

*Anax ephippiger* (Burmeister, 1839), syn. *Hemianax ephippiger*

*Cordulegaster insignis* (Schneider, 1845)

References

Slovakia

BLÁŠKOVIČ, T., BULÁNKOVÁ, E. & ŠIBL, J. (2003). First record of *Cordulegaster heros* ssp. *heros* Theischinger, 1979 (Cordulegasteridae, Odonata) from Slovakia. *Biológia*, Bratislava, 58/2: 293 – 294.

DAVID, S. (1992). Vážky (Odonata) v okolí Mochovců. *Zbor. Slov. nár. Múz., Prír. Vedy*, 38: 43-65.

DAVID, S. (1994). Nové nálezy vzácných a ohrozených druhů vážek (Insecta: Odonata) jihozápadního Slovenska. *Acta Musei Tekovensis Levice*, II-1994: 81-90.

DAVID, S. (1996). Výskyt vážky *Somatochlora arctica* ve Slovenské republice. *Entomofauna Carpathica*, 8/1: 19-21.

DAVID, S. (2000). Dragonfly (Odonata) communities and water habitats in the inundation of the Hron river potamal (SW Slovakia). *Ecologia (Bratislava)*, 19, Supplement 2/2000: 137-150.

DAVID, S. (2000). Vážky (Insecta: Odonata) Štiavnických vrchů. *Entomofauna Carpathica*, 12(2): 25-31.

DAVID, S. (2000). Faunistical notes - New records of dragonflies (Insecta: Odonata) from Slovakia, *Biológia*, Bratislava 55/5: 444.

DAVID, S. (2001). Dragonflies (Insecta: Odonata) of the Slovak-Moravian Carpathians Mts. and the Dolno-vážská niva Lea. *Biodiversitas Slovaca*, SPU Nitra, p. 62-71.

DAVID, S. (2002). Bioindikační využití vážek (Insecta: Odonata) na příkladě potamalu řeky Ipeľ. *Dizertačná práca*. Bratislava: ÚKE SAV, 133 s. + přílohy.

DAVID, S. (2005). Výsledky výzkumu vážek (Odonata) ve Slovenské republice. *Ochrana přírody*, Banská Bystrica, 24: 168-187, ISBN 80-89035-68-X.

DAVID, S. (2006). Ekologické a ekozozologické hodnocení fauny vážek (Odonata) na území v působnosti Správy Chránené krajinné oblasti Ponitrie. *Rosalia (Nitra)*, 18: 75-96.

DAVID, S. (2007). Vážky (Odonata) poklesových území v katastru obce Koš (okr. Prievidza). In *Ekologické štúdie VII. Zborník vydaný pri príležitosti konania konferencie V. ekologických dní (Nitra, 3. apríla 2007) / editor Martin Boltiziar. – Nitra: Slovenská ekologická spoločnosť, 2008. ISBN 978-80-968901-5-6, p. 143-52.*

DAVID, S. (2009). Vodní biotopy Novobaňské kopaničárske oblasti a jejich význam pro zachování biodiverzity vážek (Insecta: Odonata), s. 45-55. In: PUCHEROVÁ, Z., VANKOVÁ, V. (eds): *Problémy ochrany a využívania krajiny – teórie, metódy a aplikácie. Zborník vedeckých prác. Nitra: Združenie BIOSFÉRA, 2009, 360 pp. ISBN 978-80-968030-9-5.*

DAVID, S. (2010). Vážky (Insecta: Odonata) Tatranského národného parku a Biosférické rezervace Tatry. *Biosférické rezervace na Slovensku, VIII., Zborník referátov z 8. národnej konferencie o biosférických rezerváciách Slovenska, Zvolen 19.-20.10.2010*, p. 165-170.

DAVID, S. (2012). Vážky (Odonata) Národného parku Poloniny. In MIDRIAK, R. (ed.): *Biosférické rezervácie na Slovensku IX. Zborník referátov z 9. národnej konferencie o biosférických rezerváciách Slovenska na tému „Zmeny krajiny v biosférických rezerváciách“ pri príležitosti 15. výročia vyhlásenia Národného parku Poloniny - Medzinárodnej biosférickej rezervácie Východné Karpaty, konanej v Stakčine 11.-12. októbra 2012. Slovenský výbor pre Program MaB UNESCO, TU Zvolen, p. 47-56, ISBN 978-80-228-2450-7.*

DAVID, S. & KARÁSEKOVÁ, K. (2004). Vážky (insecta: Odonata) vybraných vodných nádrží v okolí Nitry. *Rosalia (Nitra)*, 17: 55-65.

DAVID, S. & JANSKÝ, V. (2012). Revize sbírky vážek (Odonata) M. Trpiše deponované v Přírodovědném muzeu Slovenského národního muzea v Bratislavě (předběžné sdělení). In: KUBOVČÍK, V. STAŠIOV, S. (eds.) - *Zborník príspevkov z vedeckého kongresu „Zoológia 2012“, 18. Feriancove dni, 22.-24.12.2012 Zvolen. SZS při SAV, TU vo Zvolene, p. 44-46, ISBN 978-80-228-2451-7.*

DAVID, S. & ŠMIGA, M. (2009). Vážky (Insecta: Odonata) Považského podolia v okolí Trenčína. *Folia faunistica Slovaca*, 2009, 14(16): 107-112, ISSN 1336-4529.

FUDAKOWSKI, J. (1930). Fauna ważek (Odonata) Tatr polskich. *Sprawozdanie Komisji Fizjograficznej*, 64: 87-174.

HOLUŠA, O. (1996). Nálezy vzácných druhů vážek (Odonata) na území Slovenska. (Finding some rare species of dragonflies (Odonata) in Slovakia). *Entomofauna Carpathica*, 8: 151-153.

HOLUŠA, O. (2013). Taxonomie, ekologie a zoogeografie vážek rodu *Cordulegaster* (Odonata: Cordulegasteridae) ve střední Evropě. *Dizertačná práca. Bratislava: Prír. F UK, 176 pp.*

HOLUŠA, O. & KÚDELA, M. (2010). New records of occurrence of *Cordulegaster heros* Theischinger, 1979 in Slovakia. *Acta Musei Beskydensis*, 2: 75-87.

JANEKOVÁ, K. & DAVID, S. (2012). Faunisticko-ekologický výskum vážok dolnej časti inundačného územia rieky Orava. *Folia faunistica Slovaca*, 17(2): 117-125, ISSN 1335-7522.

JANSKÝ, V. & DAVID, S. (2008). Výskyt vážky *Cordulegaster heros* ssp. *heros* (Odonata: Cordulegasteridae) na Slovensku. *Acta Rer. Natur. Mus. Nat. Slov.*, vol. LIV, Bratislava, 2008, p. 61-68, ISSN 0139-5424.

LOJKOVÁ, S. (2010). Contribution to the knowledge of dragonflies (Odonata) of selected localities of Bratislava. *Folia faunistica Slovaca*, 15(2): 135-142.

LOJKOVÁ, S. (2012). Seventy years of odonatological research of Bratislava. *Folia faunistica Slovaca*, 17(3): 231-245.

PETROVIČOVÁ, K. & DAVID, S. (2007). Vážky (Odonata) horného toku rieky Kysuce (SZ Slovensko) (Dragonflies (Odonata) of the upper reaches of the Kysuca river (NW Slovakia)). In: BALÁŽ, I. et al. eds. - VIII. vedecká konferencia doktorandov a mladých vedeckých pracovníkov, FPV UKF v Nitre, edícia *Prirodovedec* č. 242, p. 391-403, ISBN 978-80-8094-106-2.

STRAKA V. (1989). Vážky (Odonata) Oravy. *Stredné Slovensko 8 – Prírodné vedy*. Osveta.

STRAKA, V. (1990). Vážky (Odonata) Slovenska. In: *Zbor. Slov. Nár. Múz., Prír. Vedy (Bratislava)*, 36: 121 - 147.

ŠÁCHA, D. (2006). Results of the dragonflies (Odonata) occurrence mapping in mountains of the Liptov and Spiš regions during years 2000-2004. *Folia faunistica Slovaca*, 11(8): 43-48.

ŠÁCHA, D. (2006). New data on dragonflies (Odonata) in the Poprad region. *Folia faunistica Slovaca*, 11(9): 49-54.

ŠÁCHA, D. (2006). Contribution to the knowledge of dragonflies (Odonata) at the lower Liptov region. *Folia faunistica Slovaca*, 11(12): 71-75.

ŠÁCHA D. (2009). Príspevok k poznaniu vážok (Odonata) troch rašelinísk Hornej Oravy. *Entomofauna Carpathica*, 21(1-2): 48-50.

ŠÁCHA, D. (2011). Ekozozologické vyhodnotenie spoločností vážok na európsky a národne významných biotopoch vybraných lokalít severného Slovenska. *Dizertačná práca, Katedra ekozozológie a fyziotaktiky, Prírodovedecká fakulta, Univerzita Komenského, Bratislava, 205 pp. + prílohy.*

ŠÁCHA, D., DAVID, S., BULÁNKOVÁ, E., JAKAB I. & KONVIT, I. (2011). Vážky Slovenskej republiky. (<http://www.vazky.sk>, XI/2013).

ŠIBL, J. (2001). Contribution to the knowledge of dragonflies (Insecta: Odonata) of the National Park Mu-

ránska planina (Slovakia). *Folia faunistica Slovaca*, 6(6): 53-58.

ŠIBL, J. (2001). K rozšíreniu *Leucorrhinia pectoralis* (Odonata: Libellulidae) na západnom Slovensku. *Entomofauna Carpathica*, 13: 3-4.

TÓTHOVÁ, G. & DAVID, S. (2004). Vážky (Odonata) okolia Kráľovského Chlmca (JV Slovensko). In BALÁŽ, I. (ed.) Teória a prax krajinnno-ekologického plánovania, Zborník príspevkov z vedeckého seminára organizovaného pri príležitosti životného jubilea Prof. RNDr. Milana Ružičku, DrSc. Nitra: FPV UKF, 2004. p. 163-169.

TRNKA, R. (2000). Príspevok k poznaniu vážok (Odonata) rašelinísk v Chránenej krajinskej oblasti Horná Orava. *Zborník Oravského múzea*, 17: 220-226.

TRPIŠ, M. (1965). Poznatky o vážkách (Odonata) Tatranského národného parku. *Sborník prác o Tatranskom národnom parku*, 8: 71-81.

#### Czech Republic

AOPK ČR (2014). Nálezová databáze AOPK ČR. online 11.2.2014, URL: <<http://portal.nature.cz/>>

BIOLIB (2014). online 11.2.2014, URL: <<http://www.biolib.cz/>>

DOLNÝ, A., BÁRTA, D., HOLUŠA, O., WALDHAUSER, M. & HANEL, L. (2007). Vážky České republiky: Ekologie, ochrana a rozšíření / The Dragonflies of the Czech Republic: Ecology, Conservation and Distribution. Vlašim: Český svaz ochránců přírody, 678 pp.

FARKAČ, J., KRÁL, D. & ŠKORPIK, M. (eds) (2005). Červený seznam ohrožených druhů České republiky. Bezobratlí. [List of threatened species in the Czech Republic. Invertebrates.] 760 pp., Agentura ochrany přírody a krajiny ČR, Praha.

#### Poland

BERNARD, R. & BUCZYŃSKI, P. (2008). Stan zachowania i wybiórcość siedliskowa iglicy malej *Nehalennia speciosa* (Charpentier, 1840) w Polsce. *Odonatrix*, 4(2), 43-60.

BERNARD, R., BUCZYŃSKI, P. & TOŃCZYK, G. (2002). Present state, threats and conservation of dragonflies (Odonata) in Poland. *Nature Conservation*, 59(2), 53-71.

BERNARD, R., BUCZYŃSKI, P., TOŃCZYK, G. & WENDZONKA, J. (2009). Atlas rozmieszczenia ważek (Odonata) w Polsce. Bogucki Wydawnictwo Naukowe, Poznań, 256 pp.

BUCZYŃSKI, P., CICHOCKI, W. & ROZWALKA, R. (2010). Ponownie odkrycie *Somatochlora alpestris* (Selys, 1840) i nowe stanowisko *S. arctica* (Zetterstedt, 1840) w Kotlinie Nowotarsko-Orawskiej (Odonata: Corduliidae). *Odonatrix*, 6(2), 42-46.

TOŃCZYK, G. (2010). Wążki (Odonata) Tatr - historia i terażniejszość. [in:] Z. Mirek (ed.), Nauka a zarządzanie obszarem Tatr i ich otoczeniem. Tom II: Człowiek i

środowisko. Tatrzański Park Narodowy, Polskie Towarzystwo Przyjaciół Nauk o Ziemi - Oddział Krakowski, Zakopane, 101-105.

#### Hungary

AMBRUS, A., BÁNKUTI, K. & KOVÁCS, T. (1996). Lárva és imágó adatok Magyarország Odonata faunájához. *Odonata - Stadium Larvale*, 1: 51-68.

BÁNKUTI, K. (1992). Adatok Magyarország Odonata faunájához II. *Folia historico-naturalia Musei matraensis*, 17: 173-176.

BÁNKUTI, K. (1992). Érsekvadkert környéke Odonata faunája. *Folia historico-naturalia Musei matraensis*, 17: 155-162.

DÉVAI, GY. & MISKOLCZI, M. (1999). The dragonfly (Odonata) fauna of the Aggtelek National Park and its surroundings. In MAHUNKA, S. (ed.): The fauna of the Aggtelek National Park, Vol. 1, p. 61-82.

HUBER, A. (2008). Adatok Északkelet-Magyarország szitakötő- (Odonata-) faunájához III. *Folia historico-naturalia Musei matraensis*, 32: 93-102.

HUBER, A., KOVÁCS, T. & AMBRUS, A. (2002). Adatok Északkelet-Magyarország Odonata faunájához. *Folia historico-naturalia Musei matraensis*, 26: 179-188.

HUBER, A., KOVÁCS, T. & OLAJOS, P. (2005). Adatok Északkelet-Magyarország Odonata faunájához II. *Folia historico-naturalia Musei matraensis*, 29: 111-122.

KOVÁCS, T. (2000). Két ritka rovar a Mátrából: *Cordulegaster bidentatus* Selys, 1843 és *Diura bicaudata* (LINNAEUS, 1758) (Insecta: Odonata, Plecoptera). *Folia historico-naturalia Musei matraensis*, 24: 129-131.

KOVÁCS, T. & AMBRUS, A. (2010). Lárva és exuvium adatok Magyarország Odonata faunájához III. *Folia historico-naturalia Musei matraensis*, 34: 29-35.

KOVÁCS, T. & KOVÁCS, T. (2006). Records of larval Ephemeroptera, Odonata and Plecoptera from the upper part of the Hungarian section of Ipoly River, with notes on aquatic Heteroptera and Coleoptera. *Folia historico-naturalia Musei matraensis*, 30: 159-165.

KOVÁCS, T., AMBRUS, A. & JUHÁSZ, P. (2002). Ephemeroptera and Odonata larvae from the River Ipoly (Hungary). *Folia historico-naturalia Musei matraensis*, 26: 163-167.

KOVÁCS, T., AMBRUS, A., JUHÁSZ, P. & BÁNKUTI, K. (2004). Lárva és exuvium adatok Magyarország Odonata faunájához. *Folia historico-naturalia Musei matraensis*, 28: 97-110.

ODONATA: Dr. Dévai György personal data.

VIZSLÁN, T. (1992). Adatok Borsod-Abaúj-Zemplén megye Odonata faunájához. *Folia historico-naturalia Musei matraensis*, 17: 151-154.

VIZSLÁN, T. (2000). Adatok a Cserehát Odonata faunájához. *Folia historico-naturalia Musei matraensis*, 24: 133-137.

VIZSLÁN, T. & PINGITZER, B. (1997). Adatok Magyarország szitakötő-faunájához (Odonata) II. *Folia historico-naturalia Musei matraensis*, 22: 99-108.

VIZSLÁN, T. & PINGITZER, B. (1998). Adatok Borsod-Abaúj-Zemplén megye Odonata faunájához IV. *Folia historico-naturalia Musei matraensis*, 23: 171-177.

VIZSLÁN, T. & PINGITZER, B. (1998). Adatok Magyarország szitakötő-faunájához (Odonata) III. *Folia historico-naturalia Musei matraensis*, 23: 179-190.

VIZSLÁN, T. & PINGITZER, B. (2001). Adatok a Bükk-videk és Miskolc környékének Odonata faunájához. *Folia historico-naturalia Musei matraensis*, 25: 121-126.

VIZSLÁN, T. & SZENTGYÖRGYI, P. (1993). Adatok Borsod-Abaúj-Zemplén megye Odonata faunájához II. *Folia historico-naturalia Musei matraensis*, 18: 43-47.

VIZSLÁN, T., VIZSLÁN, L., PINGITZER, B. & KATRICS, K. (1995). Adatok Magyarország szitakötő-faunájához (Odonata) I. *Folia historico-naturalia Musei matraensis*, 20: 85-89.

#### Ukraine

GORB, S. N., PAVLJUK, R. S. & SPURIS, Z. D. (2000). Babky Ukraïny (Odonata): faunistychnyj ogljad [Odonata of Ukraine: a faunistic overview] / *Vestnik Zoologii, Supplement. № 15*. 155 pp. (in Ukrainian)

HOLUŠA, O. (2009). New records of *Cordulegaster bidentata* and *Somatochlora alpestris* in the Ukrainian Carpathians (Odonata: Cordulegasteridae, Corduliidae) / *Libellula*. Vol. 28. № 3/4: 191-201.

MARTYNOV, A. V. & MARTYNOV, V. V. (2008). Strekozy (Insecta, Odonata) nacional'nogo prirodnoho parka «Gucul'shhina» [Dragonflies (Insecta, Odonata) of National Natural Park «Guculshina»] / *Pryrodnychij al'manah. Biologichni nauky, Vypusk 11*. Zbirnyk naukovykh prac' [Naturalistic almanac. Biological sciences, Issue 11. Collected scientific articles]. Herson. p. 100-106. (in Russian)

MARTYNOV, A. V. & MARTYNOV, V. V. (2010). *Cordulegaster bidentata* Selys, 1843 (Odonata, Cordulegasteridae) na territorii Ukraïny [*Cordulegaster bidentata* Selys, 1843 (Odonata, Cordulegasteridae) in Ukraine] / *Evrazijskij jentomologicheskij zhurnal* [Eurasian entomological journal]. 9(2): 303-307. (in Russian)

MARTYNOV, V. V. & MARTYNOV, A. V. (2004). Interesnye nahodki strekoz (Insecta, Odonata) na territorii Ukraïny [Interesting finds of Dragonflies (Insecta, Odonata) on the territory of Ukraine] // *Vestnik zoologii*. 38(5): 38. (in Russian)

MYKITCHAK, T., RESHETYLO, O., KOSTJUK, A., POPEL'NYČKA, O., DANYLYK, I., CARENKO, P., BORSUKEVYCH,

L., MATELESHKO, O., MARTYNOV, O., LILIC'KA, G., KAPUSTIN, D., GONCHARENKO, V. & KOKISH, A. (2014). Ekosystemy lentychnyh vodojm Chornogory (Ukraïns'ki Karpaty) [Ecosystems of the lentic water bodies of Chornogory (Ukrainian Carpathians)] L'viv: ZUKC. 286 pp. (in press) (in Ukrainian)

PAVLJUK, R. S. (1981). Do vyvchennja babok (Insecta, Odonata) Chornogory ta sumizhnyh girs'kyh terytorij [For the investigation of Odonata of Chornogory and adjacent mountain territories] / *Visn. L'viv. derzh. un-tu. Ser. biol.* [Bulletin of Lviv State Univer. Biological series]. L'viv: Vyshha shkola. Vol. 12. p. 113-115. (in Ukrainian)

PAVLJUK, R. S. (1990). Strekozy (Insecta, Odonata) zapadnyh oblastei Ukraïny [Dragonflies (Insecta, Odonata) of the western districts of Ukraine] // *Latvijas Entomologs*. 33. laid. p.37-80. (in Russian)

#### Romania

BEUTLER, H. (1988). Libellen aus der Region Banat, Rumänien (Odonata). *Opusc. zool. flumin.*, 30: 1-15.

CİRDEI, C. & BULIMAR, F. (1965). Fauna Republicii Populare Române, Insecta – Ord. Odonata. 7(5), Ed. Academiei, București.

FLENKER, U. (2011). Odonata of Romanian Carpathians with notes on *Somatochlora alpestris* and on the first Romanian record of *Aeshna subarctica* (Odonata: Corduliidae, Aeshnidae). *Libellula* 30(3/4): 183-202.

DE KNIFE, G., U. FLENKER, C. VANAPPELGHEM, C.O. MANCI, V.J. KALKMAN & H. DEMOLDER (2011). The status of two boreo-alpine species, *Somatochlora alpestris* and *S. arctica*, in Romania and their vulnerability to the impact of climate change (Odonata: Corduliidae). *International Journal of Odonatology*, 14: 111-126.

LEHRER, A.Z., BULIMAR, F. (1979). Sinteze cartografice ale patrimoniului natural al României II. Ordinul Odonata Fabricius, 1792. *Nymphaea* 7: 343-393.

MANCI, C.O. (2007). Inventory of the dragonfly collection from Iron Gate Museum, Drobeta Turnu-Severin. *Drobeta, Seria St.Naturii*, 17: 172-183.

MANCI, C.O. (2011). The Dragonfly (Insecta: Odonata) collection of Iasi Museum of Natural History (Romania). *Travaux du Museum National d'Histoire Naturelle „Grigore Antipa”* 54(2): 379-393.

OLIAS, M. (2005). *Lestes parvidens* am Südostrand Mitteleuropas: Erste Nachweise aus Österreich, der Slowakei, Ungarn und Rumänien (Odonata: Lestidae). *Libellula*, 24(3/4): 155-161.

Expected for publication in 2014:

MANCI C.O. - Dragonflies (Insecta: Odonata) in Timis county, a general view of distribution.

MANCI C.O. & BAZGA D. - Contribution to the

knowledge of Transylvanian dragonfly fauna (Insecta: Odonata) and a new species for Romanian fauna.

MANCI C.O. - Contribution to the knowledge of dragonfly fauna (Insecta: Odonata) from the Hateg Country Dinosaur Geopark (Transylvania, Romania).

#### Serbia

ADAMOVIĆ, Ž. (1949). La liste des Odonates du Muséum d'Histoire Naturelle du Pays Serbe. Bulletin Du Muséum d'Histoire Naturelle Du Pays Serbe, B(1/2): 275–293.

JOVIĆ, M. (2013). A proposal of Serbian names for

dragonfly species (Insecta: Odonata) of the Balkan Peninsula, with the checklist of Odonata of Serbia. Acta Entomologica Serbica, 18(1/2): 1–10.

JOVIĆ, M. (2014). Unpublished data.

KULIĆ, L., ERIĆ, K. & GAJIĆ, M. (2013). *Cordulegaster insignis* Schneider, 1845 (Odonata: Cordulegastridae) The first record from Serbia over a century later. Bulletin of the Natural History Museum in Belgrade, 6: 65–69.

MLADENOVIĆ, A. (1994). Contribution to the knowledge of Odonata in Eastern Serbia. Bulletin of the Natural History Museum in Belgrade, B(48): 133–138.

ŽIVOJINOVIĆ, S. (1950). Fauna insekata Šumske domene Majdanpek (entomološka monografija) (262 pp.). Beograd: Srpska akademija nauka, Posebna izdanja, knjiga 160, Institut za ekologiju i biogeografiju, knjiga 2.

#### General

IUCN (2001). IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.

IUCN (2003). Guidelines for Application of IUCN Red List Criteria at Regional Levels: Version 3.0. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK. Ii + 26 pp.

KALKMAN, V. J., BOUDOT, J.-P., BERNARD, R., CONZE, K.-J., DE KNIJF, G., DYATLOVA, E., FERREIRA, S., JOVIĆ, M., OTT, J., RISERVATO, E. & SAHLÉN, G. (2010). European Red List of Dragonflies. Publications Office of the European Union, Luxembourg, 28 pp.

SCHORR, M. & PAULSON, D. (2013). World List of Odonata. Revision 22 December 2013. (<http://www.pugetsound.edu/academics/academic-resources/slater-museum/biodiversity-resources/dragonflies/world-odonata-list/>)

Table 1: Overview of the status of dragonflies of the Carpathians

WOL name: genus	species	FE name: genus	species	Carpathians	criteria	EUR	EU 27	HD	Bern
Calopteryx Leach, 1815	splendens (Harris, 1782)	Calopteryx Leach, 1815	splendens (Harris, 1782)	LC		LC	LC		
	virgo (Linnaeus, 1758)		virgo (Linnaeus, 1758)	LC		LC	LC		
Chalcolestes Kennedy, 1920	parvidens (Artobolevsky, 1929)	Lestes Leach, 1815	parvidens Artobolevsky, 1929	DD		LC	DD		
	viridis (Vander Linden, 1825)		viridis (Vander Linden, 1825)	LC		LC	LC		
Lestes Leach, 1815	barbarus (Fabricius, 1798)		barbarus (Fabricius, 1798)	LC		LC	LC		
	dryas Kirby, 1890		dryas Kirby, 1890	LC		LC	LC		
	macrostigma (Eversmann, 1836)		macrostigma (Eversmann, 1836)	VU	A1c	VU	EN		
	sponsa (Hansemann, 1823)		sponsa (Hansemann, 1823)	LC		LC	LC		
	virens (Charpentier, 1825)		virens (Charpentier, 1825)	NT		LC	LC		
Sympecma Burmeister, 1839	fusca (Vander Linden, 1820)	Sympecma Burmeister, 1839	fusca (Vander Linden, 1820)	LC		LC	LC		
	paedisca (Brauer, 1877)		paedisca (Brauer, 1882)	DD		LC	LC	4	2
Platycnemis Burmeister, 1839	pennipes (Pallas, 1771)	Platycnemis Burmeister, 1839	pennipes (Pallas, 1771)	LC		LC	LC		
Coenagrion Kirby, 1890	armatum (Charpentier, 1840)	Coenagrion Kirby, 1890	armatum (Charpentier, 1840)	NA		LC	NT		
	hastulatum (Charpentier, 1825)		hastulatum (Charpentier, 1825)	*NT		LC	LC		
	lunulatum (Charpentier, 1840)		lunulatum (Charpentier, 1840)	NA		LC	LC		
	ornatum (Selys, 1850)		ornatum (Selys, 1850)	*NT		NT	NT	2	
	puella (Linnaeus, 1758)		puella (Linnaeus, 1758)	LC		LC	LC		
	pulchellum (Vander Linden, 1825)		pulchellum (Vander Linden, 1825)	DD		LC	LC		
	scitulum (Rambur, 1842)		scitulum (Rambur, 1842)	DD		LC	LC		
Enallagma Charpentier, 1840	cyathigerum (Charpentier, 1840)	Enallagma Charpentier, 1840	cyathigerum (Charpentier, 1840)	LC		LC	LC		
Erythromma Charpentier, 1840	lindenii (Selys, 1840)	Cercion Navás, 1907	lindenii (Selys, 1840)	LC		LC	LC		
	najas (Hansemann, 1823)		Erythromma Charpentier, 1840	najas (Hansemann, 1823)	LC		LC	LC	
	viridulum Charpentier, 1840		viridulum (Charpentier, 1840)	LC		LC	LC		
Ischnura Charpentier, 1840	elegans (Vander Linden, 1820)	Ischnura Charpentier, 1840	elegans (Vander Linden, 1820)	LC		LC	LC		
	pumilio (Charpentier, 1825)		pumilio (Charpentier, 1825)	LC		LC	LC		
Nehalennia Selys, 1850	speciosa (Charpentier, 1840)	Nehalennia Selys, 1850	speciosa (Charpentier, 1840)	EN	B1ab(iii)+2ab(iii)	NT	VU		
Pyrrhosoma Charpentier, 1840	nymphula (Sulzer, 1776)	Pyrrhosoma Charpentier, 1840	nymphula (Sulzer, 1776)	LC		LC	LC		
Aeshna Fabricius, 1775	affinis Vander Linden, 1820	Aeshna Fabricius, 1775	affinis Vander Linden, 1820	LC		LC	LC		
	caerulea (Ström, 1783)		caerulea (Ström, 1783)	NE		LC	LC		
	cyanea (Müller, 1764)		cyanea (Müller, 1764)	LC		LC	LC		
	grandis (Linnaeus, 1758)		grandis (Linnaeus, 1758)	NT		LC	LC		
	juncea (Linnaeus, 1758)		juncea (Linnaeus, 1758)	LC		LC	LC		

WOL name: genus	species	FE name: genus	species	Carpathians	criteria	EUR	EU 27	HD	Bern
	mixta Latreille, 1805		mixta Latreille, 1805	LC		LC	LC		
	subarctica Walker, 1908		subarctica Walker, 1908	EN	B1ab(iii,iv,v), C2a(i)	LC	LC		
	viridis Eversman, 1836		viridis Eversman, 1836	DD		NT	NT	4	2
Anaciaeschna Selys, 1878	isocetes (Müller, 1767)		isocetes (Müller, 1767)	LC		LC	LC		
Anax Leach, 1815	ephippiger (Burmeister, 1839)	Hemianax Selys, 1839	ephippiger (Burmeister, 1839)	NA		LC	LC		
	imperator Leach, 1815	Anax Leach, 1815	imperator Leach, 1815	LC		LC	LC		
	parthenope (Selys, 1839)		parthenope (Selys, 1839)	LC		LC	LC		
Brachytron Evans, 1845	pratense (Müller, 1764)	Brachytron Evans, 1845	pratense (Müller, 1764)	DD		LC	LC		
Gomphus Leach, 1815	vulgatissimus (Linnaeus, 1758)	Gomphus Leach, 1815	vulgatissimus (Linnaeus, 1758)	LC		LC	LC		
Onychogomphus Selys, 1854	forcipatus (Linnaeus, 1758)	Onychogomphus Selys, 1854	forcipatus (Linnaeus, 1758)	LC		LC	LC		
Ophiogomphus Selys, 1854	cecilia (Geoffroy in Fourcroy, 1785)	Ophiogomphus Selys, 1854	cecilia (Fourcroy, 1785)	LC		LC	LC	2, 4	2
Stylurus Needham, 1897	flavipes (Charpentier, 1825)	Gomphus Leach, 1815	flavipes (Charpentier, 1825)	NT		LC	LC	4	2
Cordulegaster Leach, 1815	bidentata Selys, 1843	Cordulegaster Leach, 1815	bidentata Selys, 1843	LC		NT	NT		
	boltonii (Donovan, 1807)		boltonii (Donovan, 1807)	DD		LC	LC		
	heros Theischinger, 1979		heros Theischinger, 1979	NT		NT	NT	2, 4	
	insignis Schneider, 1845		insignis Schneider, 1845	NA		EN	EN		
	picta Selys, 1854		picta Selys, 1854	NE		VU	VU		
Cordulia Leach, 1915	aenea (Linnaeus, 1758)	Cordulia Leach, 1915	aenea (Linnaeus, 1758)	LC		LC	LC		
Epitheca Burmeister, 1839	bimaculata (Charpentier, 1825)	Epitheca Burmeister, 1839	bimaculata (Charpentier, 1825)	DD		LC	LC		
Somatochlora Selys, 1871	alpestris (Selys, 1840)	Somatochlora Selys, 1871	alpestris (Selys, 1840)	VU	C2a(i), D2	LC	LC		
	arctica (Zetterstedt, 1840)		arctica (Zetterstedt, 1840)	EN	B1ab(iii,iv,v), C2a(i)	LC	LC		
	flavomaculata (Vander Linden, 1825)		flavomaculata (Vander Linden, 1825)	DD		LC	LC		
	meridionalis Nielsen, 1935		meridionalis Nielsen, 1935	DD		LC	LC		
	metallica (Vander Linden, 1825)		metallica (Vander Linden, 1825)	LC		LC	LC		
Crocothemis Brauer, 1868	erythraea (Brullé, 1832)	Crocothemis Brauer, 1868	erythraea (Brullé, 1832)	LC		LC	LC		
Leucorrhinia Brittinger, 1850	albifrons (Burmeister, 1839)	Leucorrhinia Brittinger, 1850	albifrons (Burmeister, 1839)	*VU	B2ac(iv), C2b	LC	NT	4	2
	caudalis (Charpentier, 1840)		caudalis (Charpentier, 1840)	*EN	B1ac(iv)+2ac(iv)	LC	NT	4	2
	dubia (Vander Linden, 1825)		dubia (Vander Linden, 1825)	*NT		LC	LC		
	pectoralis (Charpentier, 1825)		pectoralis (Charpentier, 1825)	*NT		LC	LC	2, 4	2
	rubicunda (Linnaeus, 1758)		rubicunda (Linnaeus, 1758)	*VU	B2ac(iv), C2b	LC	LC		
Libellula Linnaeus, 1758	depressa Linnaeus, 1758	Libellula Linnaeus, 1758	depressa Linnaeus, 1758	LC		LC	LC		
	fulva Müller, 1764		fulva Müller, 1764	NT		LC	LC		
	quadrimaculata Linnaeus, 1758		quadrimaculata Linnaeus, 1758	LC		LC	LC		
Orthetrum Newman, 1833	albistylum (Selys, 1848)	Orthetrum Newman, 1833	albistylum (Selys, 1848)	LC		LC	LC		
	brunneum (Fonscolombe, 1837)		brunneum (Fonscolombe, 1837)	LC		LC	LC		
	cancellatum (Linnaeus, 1758)		cancellatum (Linnaeus, 1758)	LC		LC	LC		
	coerulescens (Fabricius, 1798)		coerulescens (Fabricius, 1798)	LC		LC	LC		
Sympetrum Newman, 1833	danae (Sulzer, 1776)	Sympetrum Newman, 1833	danae (Sulzer, 1776)	LC		LC	LC		
	depressiusculum (Selys, 1841)		depressiusculum (Selys, 1841)	VU	B2ab(i, ii, iii, iv, v), D2	VU	VU		
	flaveolum (Linnaeus, 1758)		flaveolum (Linnaeus, 1758)	LC		LC	LC		
	fonscolombii (Selys, 1840)		fonscolombii (Selys, 1840)	LC		LC	LC		
	meridionale (Selys, 1841)		meridionale (Selys, 1841)	LC		LC	LC		
	pedemontanum (Müller, 1766)		pedemontanum (Allioni, 1766)	NT		LC	LC		
	sanguineum (Müller, 1764)		sanguineum (Müller, 1764)	LC		LC	LC		
	striolatum (Charpentier, 1840)		striolatum (Charpentier, 1840)	LC		LC	LC		
	vulgatum (Linnaeus, 1758)		vulgatum (Linnaeus, 1758)	LC		LC	LC		

# RED LIST OF GRASSHOPPERS, BUSH-CRICKETS AND CRICKETS (ORTHOPTERA) OF THE CARPATHIAN MOUNTAINS

Anton Krištín (Slovakia) & Iorgu Ionuț Ștefan (Romania) (eds)

Data and assessment process contributors and authors of relevant and cited publications: Anton Krištín (Slovakia), Iorgu Ionuț Ștefan (Romania), Miklós Heltai, Barnabas Nagy (Hungary), Jevhen Lyushenko, Vasil Chumak (Ukraine), Jaroslav Holuša, Petr Kočárek (Czech Republic), Axel Hochkirch (Germany)

## Introduction

Orthoptera are among the most important bio-indicators of the status of integrity of natural habitats, especially for habitats with small plot sizes. Therefore, Orthoptera assemblages provide valuable information on habitat conditions and status of sites (MARINI *et al.* 2009).

Global assessments of the conservation status of ca. 1000 European species of grasshoppers, crickets and bush-crickets for the IUCN Red List of Threatened Species™ started in 2011. The Red List status of 60 species has been published in 2012. Altogether, the global Red List status of 236 Orthoptera species has been assessed (IUCN 2013), 14 of which occur in the Carpathians (*Chorthippus acroleucus* VU, *Gampsocleis glabra* LC, *Isophya barzsi* VU, *Metrioptera domogledi* VU, *Miramella irena* VU, *Odontopodisma montana* VU, *Odontopodisma rubripes* VU, *Onconotus servillei* VU, *Poecilimon affinis* LC, *Poecilimon ampliatus* LC, *Saga pedo* VU, *Stenobothrus eurasius* VU, *Uvarovitettix transylvanicus* VU and *Zubovskia banatica* VU).

Red Lists of Orthoptera have been published in several Carpathian countries (however, based upon different criteria): Poland (LIANA 1992, LIANA 2002, GŁOWACIŃSKI & NOWACKI 2004), former Czechoslovakia (GULIČKA 1992), Hungary (NAGY 1999), Slovakia (KRIŠTÍN 2001), Czech Republic (HOLUŠA & KOČÁREK 2005), Ukraine (AKIMOV 2009, MATELESHKO & POTISH 2011). A European Red List is not available yet and there is only one Carpathian Red List prepared ten years ago, based on unknown criteria, which includes five Orthoptera species (WITKOWSKI *et al.* 2003).

## Assessment Method

For processing the existing data on grasshoppers, crickets and bush-crickets in the Carpathian region of Slovakia, Czech Republic, Poland, Ukraine and Romania the following three steps were used:

1. Documentation on the Orthoptera fauna in the Car-

pathian region: Data was collected from the literature, from sources given by BioREGIO project partners in particular countries (see data contributors above) and own published and unpublished data (see literature section, unpublished records only by KRIŠTÍN A. & IORGU I. Ș.).

2. Data was entered in the online database platform of the project BioREGIO Carpathians as well as into a Microsoft Excel database.
3. All 142 Orthoptera species present in the Carpathian orographic units (excluding Serbia due to missing data) were evaluated according to the IUCN Red List criteria (IUCN 2001). Only one species (not native and introduced, *Meconema meridionale*) could not be assessed and was included in the category “Not Applicable” (NA). The other 141 species were classified to the categories Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC) and Data deficient (DD). Altogether 80 out of 141 species were not listed in the Bioregio database due to technical reasons (filling the occurrence, locations, habitats, threats in all orographic units in very common and abundant species), but they fulfil the general criteria for the category LC. Red List assessments from particular countries were also considered, based on the proposals of project partners and considering the extinction risk in surrounding Carpathian countries or adjacent Non-Carpathian territories. No assessment was done for the small part of the Carpathians located in Serbia, due to the absence of a partner.

Our purpose was to collect and process all existing data on Orthoptera species from six Carpathian countries (Czech Republic, Hungary, Poland, Romania, Slovakia, and Ukraine) and enter them into a database developed by the State Nature Conservancy of the Slovak Republic in order to assess the Red List status.

## Results (Summary)

Altogether 142 Orthoptera species (ca 10.3% of the 1382 European species) were recorded in the Carpathian Mountains, in six Carpathian countries (CZ, SK, PL, UA, HU, RO; Table 1). The number of species ranged from 55 (Poland) to 133 (Romania) taxa, following the temperature gradient along this region and illustrating the strong impact on thermophilous insects as well as the proportional size of Carpathians in the particular countries. In these countries, the number of species listed in national Red Lists ranged from 12 (Poland, one threatened species) to 33 (Romania, 20 threatened species) and 37 species (Slovakia, 13 threatened species).

Altogether, 61 of the 141 assessed species were included in Carpathian Red List, but only 20 of them are listed as threatened. Ten species were assessed as EN (*Isophya barzsi*, *Isophya ciucasi*, *Isophya nagy*, *Saga pedo*, *Gampsocleis glabra*, *Metrioptera domogledi*, *Zubovskia banatica*, *Chorthippus acroleucus*, *Paracaloptenus caloptenoides*, *Podismopsis transylvanica*) and ten as VU (*Isophya costata*, *I. sicula*, *I. dochia*, *Poecilimon intermedius*, *Onconotus servillei*, *Uvarovitettix transylvanicus*, *Miramella irena*, *Odontopodisma decipiens*, *Odontopodisma montana*, *Stenobothrus eurasius*, Table 1). Most of EN species are also included on the global IUCN Red List.

A total of 16 species was endemic to the Carpathians (11.3% of 142) and further six species sub-endemic (Table 1), meaning that they also occur at a few sites in the area surrounding the Carpathians.

## Main threats

The major threats detected in most red-listed species are:

- i) Habitat loss/degradation, abandonment of traditional management, of grass cutting and grazing and following succession leading to overgrowing by shrubs and trees (e.g. *Saga pedo*, *Gampsocleis glabra*, *Metrioptera domogledi*, *Paracaloptenus caloptenoides*, *Odontopodisma decipiens*, *Miramella irena*, *Stenobothrus eurasius*).
- ii) Human settlement expansion, use of insecticides, overgrazing (e.g. *Isophya barzsi*, *I. ciucasi*, *I. nagy*, *I. sicula*, *I. dochia*, *Paracaloptenus caloptenoides*, *Saga pedo*, *Chorthippus acroleucus*, *Podismopsis transylvanica*).
- iii) Afforestation of non-forest habitats (e.g. *Saga pedo*, *Paracaloptenus caloptenoides*, *Stenobothrus eurasius*).
- iv) Restricted range, low densities, limited dispersal with combination with above mentioned threats: (e.g. most of brachypterous species *Isophya barzsi*, *I. ciucasi*, *I. nagy*, *I. sicula*, *I. dochia*, *Poecilimon intermedius*, *Onconotus servillei*, *Gampsocleis glabra*, *Uvarovitettix transylvanicus*, *Miramella irena*, *Zubovskia banatica*, *Chorthippus acroleucus*, *Podismopsis transylvanica*).

## Acknowledgments

We would like to thank prof. Anna Liana from Poland for her consultations during preparation of the draft Red List.

## References

### Carpathians & Red Lists

GULIČKA, J. (1992). Orthoptera. Pp. 69-73. In: Škapec, L. (ed): Červená kniha ohrožených a vzácných druhů rostlin a živočichů ČSFR 3 - Bezobratlí. [Red data book of endangered and rare plant and animal species of the ČSFR 3 - Invertebrates]. Příroda, Bratislava, 160 pp. (in Czech).

HARZ, K. (1969). Die Orthopteren Europas - The Orthoptera of Europe. Vol. I. - The Hague, Dr. W. Junk B.V., 749 pp.

HARZ, K. (1975). Die Orthopteren Europas - The Orthoptera of Europe. Vol. II. - The Hague, Dr. W. Junk B.V., 939 pp.

IUCN (2013). IUCN Red List of Threatened Species. Version 2013.2. <www.iucnredlist.org>. Downloaded on 31 January 2014.

KRIŠTÍN, A. & KAŇUCH, P. (2013). A review of distribution and ecology of three Orthoptera species of European importance with contributions from their recent north-western range. Journal of North Western Zoology 9: 185-190.

MARINI, L., FONTANA, P., BATTISTI A. & GASTON K.J. (2009). Response of orthopteran diversity to abandonment of seminatural meadows. Agric. Ecosyst. Environ. 132: 232-236.

NAGY, B. (2005). Orthoptera fauna of the Carpathian basin – recent status of knowledge and a revised checklist. - Entomofauna carpathica 17: 14-22.

WITKOWSKI, Z.J., KRÓL, W. & SOLARZ, W. (eds) (2003). Carpathian List Of Endangered Species. WWF and Institute of Nature Conservation, Polish Academy of Sciences, Vienna-Krakow.

### Czech Republic

HOLUŠA, J. (1995). Orthoptera náplavových šterkovišť řeky Ostravice a Morávky. Klapalekiana 31: 91-99.

HOLUŠA, J. (1996). Výskyt saranče *Stethophyma grossum* (Caelifera, Acrididae) na severní Moravě a v českém Slezsku. Čas. Slez. Muz. Opava (A), 45: 285-286.

HOLUŠA, J. (1997). Druhové spektrum sarančí (Caelifera) a kobylek (Ensifera) údolí potoka Dinotice (Vsetínské vrchy). Klapalekiana 33: 11-16.

HOLUŠA, J. (2000). K poznání sarančí (Caelifera) a kobylek (Ensifera) Moravsko slezských Beskyd. Klapalekiana 36: 41-70.

HOLUŠA, J. & KOČÁREK, P. (2005). Orthoptera (rovnokřídlí). -Pp. 133-135. In: Farkač, J., Král, D., Škorpík, M. (eds). Červený seznam ohrožených druhů České republiky: Bezobratlí. AOPK, ČR, Praha.

HOLUŠA, J., KOČÁREK, P. & VLK, R. (2013). Monitoring and conservation of *Saga pedo* (Orthoptera: Tettigonii-

dae) in an isolated northwestern population. J. Insect Conserv. 17: 663-669.

KOČÁREK, P., HOLUŠA, J., VLK, R. & MARHOUL, P. (2013). Rovnokřídli České republiky (Insecta: Orthoptera). Academia, Praha, 283 pp.

KOČÁREK, P., HOLUŠA, J. & VIDLIČKA, I. (2005). Blattaria, Mantodea, Orthoptera & Dermaptera of the Czech and Slovak Republics. Kabourek, Zlín, 348 pp.

MAŘAN, J. (1952). Příspěvek k poznání systematiky, původu a zeměpisného rozšíření druhů rodu *Poecilimon* z příbuzenství druhu *Poecilimon intermedius* (Fieb.) (Orthoptera: Tettigoniidae, subfam. Phaneropterinae). - Acta ent. Mus. nat. Pragae 28: 237-250.

#### Slovakia

KAŇUCH, P., KRIŠTÍN, A. & GAVLAS, V. (2006). Rozšíření *Isophya styxi* a *Mecostethus parapleurus* na Slovensku s poznámkami k druhom radu Orthoptera Muránskej planiny. - Reussia 3: 13-20. (in Slovak, with EN summary)

KOČÁREK, P. & JEZIORSKI, P. (1999). First record of *Isophya posthumoidalis* (Orthoptera, Tettigoniidae, Phaneropterinae) from Slovakia. Biologia 54, 2: 158.

KRIŠTÍN, A. (1998). First record of *Pachytrachis gracilis* (Orthoptera, Tettigoniidae, Decticinae) in Slovakia. Biologia, Bratislava, 53/2: 212.

KRIŠTÍN, A. (2000). Zur Verbreitung und Ökologie der bedrohten Arten *Arcyptera fusca* und *Pholidoptera frivaldskeji* (Orthoptera) in der Slowakei. Linzer biol. Beitr. 32, 2: 753-761.

KRIŠTÍN, A. (2001). Červený (ekozozologický) zoznam rovnokřídlovcov (Orthoptera) Slovenska. - Ochrana prírody 20, Suppl.: 103-104. (in Slovak, with EN summary)

KRIŠTÍN, A. (2010). Rovnokřídlovce (Orthoptera) Tater.—Pp. 465–468. In: Chovancová B. (ed.). Encyklopédia Tatier, Baset, Praha, 639 pp. (in Slovak, with EN summary)

KRIŠTÍN, A., FABRICIOVÁ, V., HRÚZ, V. & KAŇUCH, P. (2009). Grasshoppers and crickets (Orthoptera) of the National park Slovenský kras Karst (E Slovakia). Natura carpatica 49: 23-32.

KRIŠTÍN, A. & KAŇUCH, P. (2007). Population, ecology and morphology of *Saga pedo* (Orthoptera, Tettigoniidae) at the northern limit of its distribution. European Journal of Entomology 104: 73-79.

KRIŠTÍN, A. & KAŇUCH, P. (eds) (2014). www.orthoptera.sk

KRIŠTÍN, A., KAŇUCH, P., FABRICIOVÁ, V. & BALLA, M. (2009). On distribution and ecology of *Polysarcus denticauda* in Slovakia. Polish Journal of Entomology 78: 185–191.

KRIŠTÍN, A., KAŇUCH, P. & PUCHALA, P. (2005). Rovnokřídlovce (Orthoptera s.l.) Malých Karpát. Ochrana prírody 24: 141-152. (in Slovak, with EN summary)

#### Hungary

JORDÁN, F., BÁLDI, A., ORCI, K.M., RÁCZ, I. & VARGA Z. (2003). Characterizing the importance of habitat patches and corridors in maintaining the landscape connectivity of a *Pholidoptera transylvanica* (Orthoptera) metapopulation. Landscape Ecology 18: 83-92.

NAGY, B. (1991). Orthopteroid insects (Orthoptera, Mantodea, Blattodea, Dermaptera) of the Bátorliget Nature reserves (NE Hungary). pp. 295-318. In: Mahunka, S. (ed.), Bátorliget Nature reserve – after 40 years. Hungarian Natural History Museum, Budapest.

NAGY, B. (1997). Orthoptera species and assemblages in the main habitat types of some urban areas in the Carpathian Basin. Biologia 52:233-240.

NAGY, B. (2005). Orthoptera fauna of the Carpathian basin – recent status of knowledge and a revised checklist. - Entomofauna carpathica 17: 14-22.

NAGY, A., KISFALI, M., SZÖVÉNYI, G., PUSKÁS, G. & RÁCZ, I. A. (2010). Distribution of Catantopinae species (Orthoptera: Acrididae) in Hungary. Articulata 25: 221-237.

NAGY, B. & RÁCZ, I. A. (1996). Orthopteroid insects in the Bükk Mountain. In: Mahunka, S. (ed.), The Fauna of the Bükk National Park. Hungarian Natural History Museum, Budapest.

NAGY, B., RÁCZ, I.A. & VARGA, Z. (1999). The Orthopteroid insects of the Aggtelek Karst Region (NE Hungary) referring to zoogeography and nature conservation. pp. 83–102. In: Mahunka, S. (ed.), The Fauna of the Aggtelek National Park. Akademia, Budapest.

NAGY, B., ŠUŠLÍK, V. & KRIŠTÍN, A. (1998). Distribution of Orthoptera species and structure of assemblages along Slanské - Zemplén Mountains Range (SE Slovakia - NE Hungary). Folia entomologica Hungarica Rovartani közlemények, LIX, p. 17-27.

RÁCZ, I. (1998). Biogeographical survey of the Orthoptera fauna in Central part of the Carpathian Basin (Hungary): Fauna types and community types. Articulata 13: 53-69.

SZÖVÉNYI, G., HARMOS, K. & NAGY, B. (2013). The Orthoptera fauna of Cserhát Hills and its surroundings (North Hungary). Articulata 28: 69-90.

VADKERTI, E., SZÖVÉNYI, G. & PURGER, D. (2003). The Isophya fauna of Mecsek and Villány Hills, SW Hungary (Insecta: Orthoptera). - Folia comloensis 12: 73–78.

#### Poland

BAZYLUK, W. (1971). Prostoskrzydłe (Orthoptera)

Bieszczadów Zachódnych wraz z opisem *Isophya posthumoidalis* n.sp. Fragm. Faun. 22: 127-159.

BAZYLUK, W. & LIANA, A. (2000). Prostoskrzydłe (Orthoptera). Katalog fauny Polski. XVII. PWN, Warszawa, 2, p. 1–156.

GŁOWACIŃSKI, Z. & NOWACKI, J. (2004). Polish red data book of animals. Invertebrates. Institute of Nature Conservation, Polish Academy of Sciences, Kraków.

LIANA, A. (1990). Rozmieszczenie i ekologia prostoskrzydłych (Orthoptera) w Górach Świętokrzyskich. Fragm. faun., Warszawa, 33: 203-246.

LIANA, A. (1992). Owady prostoskrzydłe Orthoptera. In: Czerwona lista zwierząt ginących i zagrożonych w Polsce. Z. Głowaciński (red.). ZOP i ZN PAN, Kraków, 83-89.

LIANA, A. (2000). Problemy ochrony prostoskrzydłych (Orthoptera) i innych grup ortopteroidalnych (Blattodea, Dermaptera, Mantodea) in Poland. Wiad. Entomolo. 18, Suppl. 2: 147-153.

LIANA, A. (2002). Prostoskrzydłe Orthoptera i inne owady ortopteroidalne. In: Czerwona lista zwierząt ginących i zagrożonych w Polsce. Z. Głowaciński (red.). Instytut Ochrony Przyrody PAN, Kraków: 115-120.

LIANA, A. (2011). Operat fauny owadów prostoskrzydłych (Orthoptera), p. 245-264. In: Plan ochrony Bieszczadzkiego PN, Kramcko: WWW.Kramcko.com.pl/bdnp/BdPN/Plan-Ochrony.

LIANA, A. (2012). Materiały do poznania fauny prostoskrzydłych (Orthoptera) Beskidu Żywieckiego. Nowy Pam. Fizjogr., Warszawa, 7: 7-23.

NASKRĘCKI, P. (1993). Owady prostoskrzydłe. In: Przyroda Kotliny Zakopiańskiej. Poznanie, przemiany, zagrożenia i ochrona. [red. Mirek Z., Piękoś-Mirkowa H]. Kraków-Zakopane, p. 279-280.

THEUERKAUF, J., ROUYS, S., GREIN, G. & BECKER, A. (2005). New records of Orthoptera in the Bieszczady Mountains (Southeast Poland) with special regard to the genus *Isophya*. Fragmenta Faunistica 48: 9-14.

#### Ukraine

AKIMOV, I.A. (2009). Червона книга України. Тваринний світ. Видавництво Глобалконсалтинг, Київ, 600 pp.

GOROKHOV, A.V. & STOROZHENKO, S.YU. (1988). Animal world. Invertebrate. Orthoptera / Litopys Pryrody. - Rakhiv: CSR, - 1988. - vol. 12, p. 83-86. (in Ukrainian, unpublished)

KRIŠTÍN, A., BALLA, M., FABRICIOVÁ, V., HRÚZ, V. & KAŇUCH, P. (2011). Orthoptera and Mantodea in fragments of seminatural habitats in lowlands of SE Slovakia and SW Transcarpathian Ukraine. Articulata 26: 109-121.

LIKOVITCH, I. M. (1957). Nekotorye dannye o faune prjamokrylych (Orthoptera) Zakarpattja. - Doklady i soobshchenia Uzhgorodskogo Universiteta, Seria Biologia 1: 61-64.

LIKOVITCH, I. M. (1959). K voprosu o vertikalnom raspredelenii prjamokrylych (Orthoptera) v Zakarpate. - Uzhgorodskiy Gosudarstvennyj Universitet. Nauchnye Zapisky 40: 227-238.

ЛИКОВИЧ, И.М. (1968). Новый вид прямокрылых насекомых *Acrida ungarica* Herbst. (Orthoptera, Acrididae).- Вопросы охраны природы Карпат. Карпаты. Ужгород, 1968.- p. 11-13.

ЛИКОВИЧ, И.М. (1997). Экологическое распределение ортоптеридных насекомых в предгорьях Прикарпатья. - Сиб. экол. журн., 4(3): 291-295.

МАТЕЛЕШКО, О. Ю. & А. А. ПОТІШ (eds) (2011). Червона книга Українських Карпат. Тваринний світ. Видавництво Карпати, Uzhgorod.

NAGY, A., SZANYI, S., MOLNÁR, A. & RÁCZ, I.A. (2011). Preliminary data on the Orthoptera fauna of the Velyka Dobron Wildlife Reserve (Western Ukraine). Articulata 26: 123-130.

PUSHKAR, T. I. (2008). Orthopteroidea (Insecta: Orthopteroidea), proposed to including to the Ukrainian Red Book / Living organisms under the anthropogenic pressure: Materials of the Xth International Scientific and Practical Conference (September, 15-18. 2008, Belgorod, Russia) – Belgorod: «Politerra», p: 176-177. [In Russian].

PUSHKAR, T. I. (2009). *Tetrix tuerki* (Orthoptera, Tetrigidae): distribution in Ukraine, ecological characteristic and features of biology. - Vestnik zoologii 43: 15-28.

STOROZHENKO, S. & GOROCHOV, A. (1992). Contribution to the knowledge of the Orthopteran fauna of Ukrainian Carpathians (Orthoptera). - Folia entomologica hungarica 52: 93-96.

ТЧЕТЫРКИНА, I. A. (1950). Nekotorye dannye po faune sarantchevych (Orthoptera, Acridoidea) zakarpatskoj Ukrajinj. - Doklady Akademii nauk SSSR 70: 729-732.

VEDENINA, V.YU. & DUDKIN, O.V. (1998). Orthoptero-fauna of the Carpathian Biosphere reserve (CBR): species composition and distribution. Litopys Pryrody. - Rakhiv: CBR, vol. 21 - p. 167-170. (in Ukrainian, unpublished)

#### Romania

IORGU, I. S. (2011). Bioacoustics of two newly recorded bush-crickets in the historical region of Moldavia: *Isophya pienensis* and *Isophya sicula* (Insecta: Orthoptera). In: Actual problems of protection and sustainable use of the animal world diversity. Academy of Sciences of Moldova, Department of Nature and Life Sciences, Institute of Zoology, Chisinau, p. 117-119.

IORGU, I. S. (2012). Acoustic analysis reveals a new cryptic bush-cricket in the Carpathian Mountains (Orthoptera, Phaneropteridae). *ZooKeys* 254: 1-22.

IORGU, I., E. PISICA, L. PAIS, G. LUPU & C. IUSAN (2008). Checklist of Romanian Orthoptera (Insecta) and their distribution by eco-regions. *Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa"* 51: 119-135.

IORGU, I. S. & E. I. IORGU (2010). A new species of *Isophya* (Orthoptera: Phaneropteridae) from the Romanian Carpathian Mountains. *Travaux du Muséum d'Histoire Naturelle "Grigore Antipa"* LIII: 161-170.

IORGU, I. S. & E. I. IORGU (2011). Bioacoustics in bush-cricket, crickets and grasshoppers (Insecta: Orthoptera) from Ciucaş Mountains (Eastern Carpathians, Romania). *Brukenenthal. Acta Musei* VI.3: 427-446.

IORGU, I. S. & E. I. IORGU (2012). Song description of Zubovski's bush-cricket, *Isophya zubovskii* (Orthoptera:

Phaneropteridae). *Travaux du Muséum d'Histoire Naturelle "Grigore Antipa"* LV (1): 57-63.

KIS, B. (1960). Revision der in Rumänien vorkommenden *Isophya*-Arten (Orthoptera, Phaneropterinae). *Acta Zoologica Academiae Scientiarum Hungaricae*, 6(3-4): 349-369.

KIS, B. (1965). *Zubovskia banatica* eine neue Orthopteren – Art aus Rumanien. *Reichenbachia, Mus. Tierk, Dresden*, 5(2): 5-8.

KIS, B. (1964). *Poecilimon ampliatus* Br. o specie noua pentru fauna Republicii Populare Române (Orthoptera), *Studia Univ. "Babes-Bolyai" Cluj Napoca*, 9(1): 87-89. (in Romanian)

KIS, B. & M. VASILIU (1970). Kritisches Verzeichnis der Orthopterenarten Rumäniens. *Travaux du Muséum d'Histoire Naturelle "Grigore Antipa"* 10: 207-227.

KRIŠTIN, A., P. KAŇUCH, B. JARČUŠKA, E. I. IORGU & I. S. IORGU (2013): Notes on Orthoptera (Insecta) and their assemblages in the Romanian Carpathians. *Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa"* LVI (1): 19-32.

NAGY, B., B. KIS & L. NAGY (1983). *Saga pedo* Pall. (Orthoptera, Tettigoniidae): Verbreitung und ökologische Regelmäßigkeiten des Vorkommens in SO-Mitteleuropa. *Verh. SIEEC* X: 190-192.

ORCI, K. M., G. SZÖVÉNYI & B. NAGY (2010a): A characterization of the pair forming acoustic signals of *Isophya harzi* (Orthoptera, Tettigoniidae, Phaneropteridae). *Acta Zoologica Academiae Scientiarum Hungaricae* 56(1): 43-53.

ORCI, K. M., G. SZÖVÉNYI & B. NAGY (2010b). *Isophya sicula* sp. n. (Orthoptera: Tettigoniidae), a new, morphologically cryptic bush-cricket species from the Eastern Carpathians (Romania) recognized from its peculiar male calling song. *Zootaxa* 2627: 57-68.

RAMME, W. (1951). Zur Systematik Faunistik und Biologie der Orthopteren von Sudost-Europa und Vorderasien, *Mitteilungen Aus Dem Zoologischen Museum zu Berlin*, 27: 383-385.

SANGHELI, A. (1978). Date noi privind distributia speciei *Saga pedo* (Pall), (Sagidae-Orthoptera) in Muntii Banatului. *Muzeul Banatului Tibiscus*: 133-140. (in Romanian)

SZÖVÉNYI, G. & K. M. ORCI (2008). Contributions to the Orthoptera fauna of Maramureş county with the first record of *Isophya posthumoidalis* Bazyluk 1971 in Romania. *Studia Universitatis "Vasile Goldiş", Seria Ştiinţele Vieţii* 19: 235-241.

SZÖVÉNYI, G., G. PUSKÁS & K. M. ORCI (2012): *Isophya nagyí*, a new phaneropterid bush-cricket (Orthoptera: Tettigoniidae) from the Eastern Carpathians (Caliman Mountains, North Romania). *Zootaxa* 3521: 67-79.

Table 1: Orthoptera in the Carpathians (Car) and their IUCN regional Red List categories (RL) and criteria (Crit) in particular Carpathian countries and for entire Carpathian region. (\* = present)

Taxa	SK		CZ		HU		PL		UA		RO		Carpathians		Endemic, or Subendemic in Carpathians
	RL	Crit	RL	Crit	RL	Crit	RL	Crit	RL	Crit	RL	Crit	RL	Crit	
<i>Ephippiger ephippiger</i> (Fiebig, 1784)			*									*		*	
<i>Conocephalus discolor</i> Thunberg, 1815 / = <i>fuscus</i> (Fabricius, 1793)/			*									*		*	
<i>Conocephalus dorsalis</i> (Latreille, 1804)	LC		*				*		*		*			LC	
<i>Conocephalus hastatus</i> (Charpentier, 1825)											*			*	
<i>Ruspolia nitidula</i> (Scopoli, 1786)	LC									*		*		LC	
<i>Meconema meridionale</i> A. Costa, 1860			*											NA	
<i>Meconema thalassinum</i> (De Geer, 1773)			*				*		*		*			*	
<i>Barbitistes constrictus</i> Brunner von Wattenwyl, 1878			*				*		*		*			*	
<i>Barbitistes ocskayi</i> (Charpentier, 1850)											*			*	
<i>Barbitistes serricauda</i> (Fabricius, 1798)	NT		*		NT						*			NT	
<i>Isophya beybienkoi</i> Maran, 1958	DD													DD	E
<i>Isophya camptoxypha</i> Fieber, 1853					*		*		*		*			*	E
<i>Isophya costata</i> Brunner von Wattenwyl, 1878					VU	B1 a+c					*			VU	B1a, b(iv, v)
<i>Isophya harzi</i> Kis, 1960											EN	B2a+b iii iv v		EN	B2a+b iii iv v
<i>Isophya kraussii kraussii</i> Brunner von Wattenwyl, 1878			*		*		DD		*		*			*	
<i>Isophya kraussii moldavica</i> Iorgu & Heller, 2013											*			*	
<i>Isophya modestior</i> Brunner von Wattenwyl, 1882					*						*			*	
<i>Isophya pienensis</i> Maran, 1954	NT		*				NT		*		*			LC	E
<i>Isophya ciucasi</i> Iorgu & Iorgu, 2010											EN	B1a+b ii iii		EN	B1a+b ii iii
<i>Isophya sicula</i> Orci, Szovenyi & Nagy, 2010											VU	B2a+b iii		VU	B2a+b iii
<i>Isophya dochia</i> Iorgu, 2012											VU	B2a+b iii		VU	B2a+b iii
<i>Isophya nagyí</i> Szovenyi, Puskas & Orci, 2012											EN	B2a+b iii		EN	B2a+b iii
<i>Isophya posthumoidalis</i> Bazyluk, 1971	DD						DD		*		LC			LC	E
<i>Isophya speciosa</i> (Frivaldszky, 1867)											LC			LC	
<i>Isophya stysi</i> Cejchan, 1957	NT				NT		DD		NT		*			LC	E
<i>Isophya modesta</i> (Frivaldszky, 1867)	VU	B1 a+c			VU	B1 a+c					*			DD	SE

Taxa	SK		CZ		HU		PL		UA		RO		Carpathians		Endemic, or Subendemic in Carpathians
	RL	Crit	RL	Crit	RL	Crit	RL	Crit	RL	Crit	RL	Crit	RL	Crit	
<i>Isophya rectipennis</i> Brunner von Wattenwyl, 1878												LC		LC	
<i>Isophya zubowskii</i> Bei-Bienko, 1954												LC		LC	SE
<i>Leptophyes albovittata</i> (Kollar, 1833)			*		*		*		*		*		*	*	
<i>Leptophyes discoidalis</i> (Fivaldszky, 1867)	NT				NT				NT		*		DD		SE
<i>Leptophyes laticauda</i> (Fivaldszky, 1867)											DD		DD		
<i>Leptophyes punctatissima</i> (Bosc, 1792)					*								*		
<i>Phaneroptera falcata</i> (Poda, 1761)			*		*		*		*		*		*		
<i>Phaneroptera nana</i> Fieber, 1853	DD				*				*		*		DD		
<i>Pocilimon affinis</i> (Fivaldszky, 1867)											NT		NT		
<i>Pocilimon ampliatus</i> Brunner von Wattenwyl, 1878											DD		DD		
<i>Pocilimon brunneri</i> (Fivaldszky, 1867)					*								DD		
<i>Pocilimon fuscii</i> Brunner von Wattenwyl, 1878	CR	B1 a+c			VU	B1 a+c			DD		*		DD		
<i>Pocilimon intermedius</i> (Fieber, 1853)	EN	B1 a+c; D	VU	B1 a+c	VU	B1 a+c					DD		VU	B1a, b(ii,iii,iv, v)	
<i>Pocilimon schmidtii</i> (Fieber, 1853)	LC				LC				NT		*		LC		
<i>Pocilimon thoracicus</i> (Fieber, 1853)											NT		NT		
<i>Polysarcus denticauda</i> (Charpentier, 1825)	LC		CR	B1 a+b+c	*			DD		LC	*		LC		
<i>Onconotus servillei</i> Fischer de Waldheim, 1846											VU	B2a+b iii; D1	VU	B2a+b iii; D1	
<i>Saga pedo</i> (Pallas, 1771)	CR	B1 a+b+c	CR	B1 a+b+c	EN	B1 a+b+c					EN	B2a+b i ii iii; D	EN	B2a+b i ii iii; D	
<i>Decticus verrucivorus</i> (Linnaeus, 1758)	*		*		*			*		*	*		*		
<i>Gampsocleis glabra</i> (Herbst, 1786)											EN	B2a+b; D	EN	B2a+b; D	
<i>Metrioptera</i> (M.) <i>bicolor</i> (Philippi, 1830)	*		*		*			*		*	*		*		
<i>Metrioptera</i> (M.) <i>brachyptera</i> (Linnaeus, 1761)	*		*		*			*		*	*		*		
<i>Metrioptera</i> (Broughtonia) <i>domogledi</i> Brunner v. Wattenwyl, 1882											EN	B2a+b	EN	B2a+b; D	E
<i>Metrioptera</i> (M.) <i>roeseli</i> <i>roeseli</i> (Hagenbach, 1822)	*		*		*			*		*	*		*		
<i>Pachytrachis gracilis</i> (Brunner von Wattenwyl, 1861)	CR	B1 a+b+c			EN	B1 a+c			EN	B1 a+c	*		DD		
<i>Pholidoptera aptera</i> (Fabricius, 1793)	*		*		*			*		*	*		*		
<i>Pholidoptera fallax</i> (Fischer, 1853)	*		*		*						*		*		
<i>Pholidoptera frivaldszkyi</i> (Herman, 1871)	EN	B1 a+c							DD		LC		DD		SE
<i>Pholidoptera griseoptera</i> (De Geer, 1773)	*		*		*			*		*	*		*		
<i>Pholidoptera littoralis similis</i> (Brunner von Wattenwyl, 1861)											*		*		
<i>Pholidoptera transsylvanica</i> (Fischer, 1853)	NT				NT				NT		LC		LC		SE
<i>Platycleis</i> (P.) <i>albopunctata</i> (Goeze, 1778)											*		*		
<i>Platycleis</i> (Platycleis) <i>albopunctata grisea</i> (Fabricius, 1781)	*		*		*			*		*	*		*		
<i>Platycleis</i> (Montana) <i>striata</i> (Thunberg, 1815)											*		*		
<i>Platycleis</i> (Montana) <i>montana</i> (Kollar, 1833)	NT										NT		NT		
<i>Platycleis</i> (Tesselana) <i>veyseli</i> (Kocak, 1984)	*				*						*		*		
<i>Pterolepis germanica</i> (Herrich-Schäffer, 1840)	VU	B1 a+c			*						LC		DD		
<i>Tettigonia cantans</i> (Füssli, 1775)	*		*		*			*		*	*		*		
<i>Tettigonia caudata</i> (Charpentier, 1842)	NT		*		NT						*		*		
<i>Tettigonia viridissima</i> Linnaeus, 1758	*		*		*			*		*	*		*		
<i>Acheta domesticus</i> (Linnaeus, 1758)	*		*		*			*		*	*		*		
<i>Eumodicogryllus bordigalensis</i> (Latreille, 1804)	DD		*		*					*	*		*		
<i>Gryllus campestris</i> Linnaeus, 1758	*		*		*			*		*	*		*		
<i>Melanogryllus desertus</i> (Pallas, 1771)	*		*		*					*	*		*		

Taxa	SK		CZ		HU		PL		UA		RO		Carpathians		Endemic, or Subendemic in Carpathians
	RL	Crit	RL	Crit	RL	Crit	RL	Crit	RL	Crit	RL	Crit	RL	Crit	
<i>Modicogryllus frontalis</i> (Fieber, 1844)	*		*		*				*		*		*		
<i>Nemobius sylvestris</i> (Bosc, 1792)	*		*										*		
<i>Pteronemobius heydenii</i> (Fischer, 1853)									*		*		*		
<i>Oecanthus pellucens</i> (Scopoli, 1763)	*		*		*				*		*		*		
<i>Gryllotalpa gryllotalpa</i> (Linnaeus, 1758)	*		*		*			*	*		*		*		
<i>Myrmecophilus acervorum</i> (Panzer, [1799])	*		*		*				*				*		
<i>Tetrix bipunctata</i> (Linnaeus, 1758)	*		*		*			*	*		*		*		
<i>Tetrix ceperoi</i> (Bolívar, 1887)			*										*		
<i>Tetrix subulata</i> (Linnaeus, 1758)	*		*		*			*	*		*		*		
<i>Tetrix tenuicornis</i> Sahlberg, 1893	*		*		*			*	*		*		*		
<i>Tetrix tuerki</i> (Krauss, 1876)	LC		CR	B1 a+b+c				NT		LC		LC		LC	
<i>Tetrix undulata</i> (Sowerby, 1806)	*		*		*			*	*		*		*		
<i>Uvarovitettix transsylvanicus</i> (Bazyluk et Kis, 1960)											VU	B2a,bII,IV	VU	B2a,bII,IV	E
<i>Acrida ungarica</i> (Herbst, 1786)									*		*		*		
<i>Calliptamus italicus</i> (Linnaeus, 1758)	*			NT	*				*		*		*		
<i>Paracaloptenus caloptenoides</i> (Brunner v. Wattenwyl, 1861)	CR	B1 a+b+c			CR	B1 a+b+c					EN	B2a+b; D	EN	B2a+b; D	
<i>Miramella alpina</i> (Kollar, 1833)	*				*			*			*		*		
<i>Miramella ebneri ebneri</i> (Galvagni, 1953)											*		*		
<i>Miramella ebneri carpathica</i> Cejchan, 1958	*							LC		NT	*		LC		
<i>Miramella irena</i> (Fruhstorfer, 1921)											VU	B2a+b iii; D1	VU	B2a+b iii; D1	E?
<i>Odontopodisma acuminata</i> Kis, 1962											*		*		
<i>Odontopodisma carpathica</i> Kis, 1962											*		*		
<i>Odontopodisma decipiens</i> Ramme, 1951	VU	B2 a+c											VU	B2a+c	
<i>Odontopodisma montana</i> Kis, 1962											VU	B1a+b iii iv v	VU	B1a+b iii iv v	
<i>Odontopodisma rubripes</i> Ramme, 1931	VU	B1 a+c							NT		NT		NT		SE
<i>Pezotettix giornae</i> (Rossi, 1794)	VU	B1 a+c			*						*		LC		
<i>Podisma pedestris</i> (Linnaeus, 1758)	*		RE		*			LC			*		LC		
<i>Pseudopodisma fieberi</i> (Scudder, 1897)											*				
<i>Pseudopodisma nagy</i> Galvagni & Fontana, 1996	LC				LC						*		LC		
<i>Pseudopodisma transilvanica</i> Galvagni & Fontana, 1993	*								DD		*		LC		
<i>Zubovskya banatica</i> Kis, 1965											EN	B2a+b iii iv v	EN	B2a+b iii iv v	E
<i>Arcyptera fusca</i> (Pallas, 1773)	NT		RE		VU	B1 a+c					*		NT		
<i>Chorthippus acroleucus</i> (Müller, 1924)											EN	B2a+b iii iv v	EN	B2a+b iii iv v	E
<i>Chorthippus albomarginatus</i> (De Geer, 1773)	*		*		*			*			*		*		
<i>Chorthippus apricarius</i> (Linnaeus, 1758)	*		*		*			*		*	*		*		
<i>Chorthippus biguttulus</i> (Linnaeus, 1758)	*		*		*			*		*	*		*		
<i>Chorthippus brunneus</i> (Thunberg, 1815)	*		*		*			*		*	*		*		
<i>Chorthippus dichrous</i> (Eversmann, 1859)	DD		*		*					*	*		*		
<i>Chorthippus dorsatus</i> (Zetterstedt, 1821)	*		*		*			*		*	*		*		
<i>Chorthippus mollis</i> (Charpentier, 1825)	*		*		*			*		*	*		*		
<i>Chorthippus montanus</i> (Charpentier, 1825)	*		*		*			*		*	*		*		
<i>Chorthippus oschei</i> Helversen, 1985	*				*					*	*		*		
<i>Chorthippus parallelus</i> (Zetterstedt, 1821)	*		*		*			*		*	*		*		
<i>Chorthippus pullus</i> (Philippi, 1830)	NT		NT					DD		NT	*		NT		
<i>Chorthippus tatrae</i> (Harz, 1971)	*												*		
<i>Chorthippus vagans</i> (Eversmann, 1848)	*		*		*			*			*		*		

Taxa	SK		CZ		HU		PL		UA		RO		Carpathians		Endemic, or Subendemic in Carpathians
	RL	Crit	RL	Crit	RL	Crit	RL	Crit	RL	Crit	RL	Crit	RL	Crit	
<i>Chrysochraon dispar</i> (Germar, [1834])	*		*		*		*		*		*		*		
<i>Dociostaurus brevicollis</i> (Eversmann, 1848)	*				*				*		*		*		
<i>Dociostaurus maroccanus</i> (Thunberg, 1815)					*								*		
<i>Euchorthippus declivus</i> (Brisout de Barneville, 1849)	*		*		*				*		*		*		
<i>Euchorthippus pulvinatus</i> (Fischer de Waldheim, 1846)	*				*						*		*		
<i>Euthystira brachyptera</i> (Ocskay, 1826)	*		*		*		*		*		*		*		
<i>Gomphocerippus rufus</i> (Linnaeus, 1758)	*		*		*		*		*		*		*		
<i>Myrmeleotettix maculatus</i> (Thunberg, 1815)	*		*		*		*		*		*		*		
<i>Omocestus haemorrhoidalis</i> (Charpentier, 1825)	*		*		*		*		*		*		*		
<i>Omocestus petraeus</i> (Brisout de Barneville, 1856)					*								*		
<i>Omocestus rufipes</i> (Zetterstedt, 1821)	*		*		*		*		*		*		*		
<i>Omocestus viridulus</i> (Linnaeus, 1758)	*		*		*		*		*		*		*		
<i>Podismopsis transsylvanica</i> Ramme, 1951											EN	B2a+b iii	EN	B2a+b iii	E
<i>Stauroderus scalaris</i> (Fischer de Waldheim, 1846)	NT				*				*		*		*		
<i>Stenobothrus crassipes</i> (Charpentier, 1825)	*		*		*						*		*		
<i>Stenobothrus eurasius</i> Zubovskii, 1898	VU	B2 a+c			VU	B2 a+c					VU	B2a+c	VU	B2a+c	
<i>Stenobothrus lineatus</i> (Panzer, 1796)	*		*		*		*		*		*		*		
<i>Stenobothrus nigromaculatus</i> (Herrich-Schäffer, 1840)	*		*		*						*		*		
<i>Stenobothrus rubicundulus</i> Kruseman et Jeekel, 1967											*		*		
<i>Stenobothrus stigmaticus</i> (Rambur, 1838)	*		*		*		*		*		*		*		
<i>Aiolopus strepens</i> (Latreille, 1804)											*		*		
<i>Aiolopus thalassinus</i> (Fabricius, 1781)	LC				*		DD		*		*		LC		
<i>Mecostethus parapleurus</i> (Hagenbach, 1822)	NT		NT		*		DD		NT		*		LC		
<i>Oedaleus decorus</i> (Germar, 1826)	*				*								*		
<i>Oedipoda caerulea</i> (Linnaeus, 1758)	*		*		*		*		*		*		*		
<i>Bryodemella tuberculatum</i> (Fabricius, 1775)											DD		DD		
<i>Psophus stridulus</i> (Linnaeus, 1758)	*		NT		NT		VU	B1, B2a+b iv+v	NT		*		LC		
<i>Sphingonotus caeruleus</i> (Linnaeus, 1767)	NT		*		*						*		LC		
<i>Stethophyma grossum</i> (Linnaeus, 1758)	LC		NT		*		*		*		*		LC		
Total species	37		11		17		12		14		33		61		
RE			2												
CR	4		3		1										
EN	2				2				1		10		10		
VU	7		1		6		1				10		10		
NT	11		5		6		2		9		4		7		
LC	8				2		2		2		8		22		
DD	5						7		3		4		12		

Table 2: Detailed description of Red List criteria for Carpathian Orthoptera

Taxa	Criteria in detail for Carpathians
Meconema meridionale A. Costa, 1860	not native in Carpathians, known only from 2009 there
Barbitistes serricauda (Fabricius, 1798)	NT close to VU: B. 2. AOO: approx. 3000 km <sup>2</sup> ; (a) severely fragmented; (b) II. continuing decline in area / quality of habitat
Isophya costata Brunner von Wattenwyl, 1878	B. 1. EOO cca. 10 000-15 000 km <sup>2</sup> ; (a) severely fragmented; (b) continuing decline in area, quality of habitat (due to overgrazing), number of locations; number of mature individuals.
Isophya harzi Kis, 1960	B. 2. AOO cca. 150 km <sup>2</sup> ; (a) only one known location; (b) continuing decline in area, quality of habitat (due to overgrazing), number of subpopulations; number of mature individuals
Isophya ciucasi Iorgu & Iorgu, 2010	B. 1. EOO cca. 3000 km <sup>2</sup> ; (a) only two locations; (b) continuing decline in area of occupancy and area / quality of habitat (due to overgrazing)
Isophya sicula Orci, Szovenyi & Nagy, 2010	B. 2. AOO cca. 1000 km <sup>2</sup> ; (a) only two locations; (b) continuing decline in area / quality of habitat (due to overgrazing and human settlement expansion)
Isophya dochia Iorgu, 2012	B. 2. AOO cca. 1000 km <sup>2</sup> ; (a) only three locations; (b) continuing decline in area / quality of habitat (due to overgrazing)
Isophya nagy Szovenyi, Puskas & Orci, 2012	B. 2. AOO cca. 300 km <sup>2</sup> ; (a) only two locations; (b) continuing decline in area / quality of habitat (due to overgrazing)
Pocilimon affinis (Frivaldszky, 1867)	NT close to VU: B. 1. EOO: approx. 20 000 km <sup>2</sup> ; (a) only 25 locations; (b) II. continuing decline in area / quality of habitat (due to overgrazing).
Pocilimon intermedius (Fieber, 1853)	B. 1. EOO cca. 10 000 km <sup>2</sup> ; (a) severely fragmented; (b) continuing decline in area of occupancy, quality of habitat (due to overgrazing), number of locations; number of mature individuals.
Pocilimon thoracicus (Fieber, 1853)	NT close to VU: B. 1. EOO: approx. 10 000 km <sup>2</sup> ; (a) only 11 locations; (b) II. continuing decline in area / quality of habitat (due to overgrazing).
Onconotus servillei Fischer de Waldheim, 1846	B. 2. AOO cca. 1000 km <sup>2</sup> ; (a) only one location; (b) continuing decline in area / quality of habitat; D. 1. Population size: 500-800 individuals.
Saga pedo (Pallas, 1771)	B. 2. AOO cca. 300 km <sup>2</sup> ; (a) only five locations; (b) continuing decline in extent of occurrence, area of occupancy and area / quality of habitat; D. population size estimated to be less than 200 mature individuals
Gampsocleis glabra (Herbst, 1786)	B2. AOO: approx. 200 km <sup>2</sup> ; (a) only one location; (b) continuing decline in area of occupancy and number of mature individuals; D. Population size: approx. 150-200 mature individuals.
Metrioptera (Broughtonia) domogledi Brunner v. Wattenwyl, 1882	B2. AOO: approx. 200 km <sup>2</sup> ; (a) only one location; (b) continuing decline in area of occupancy and number of mature individuals. In Serbia 4 oro units (VU, Pavičević D, in litt.)
Pachytrachis gracilis (Brunner von Wattenwyl, 1861)	NT close to VU: B. 1. EOO: approx. 25 000 km <sup>2</sup> ; (a) especially in the northern countries severely fragmented; (b) II. continuing decline in area / quality of habitat.
Platycleis (Montana) montana (Kollar, 1833)	NT close to VU: B. 2. AOO: approx. 2100 km <sup>2</sup> ; (a) only 4 locations; (b) II. continuing decline in area / quality of habitat (due to overgrazing and human settlement expansion).
Uvarovitettix transsylvanicus (Bazyluk et Kis, 1960)	B. 2. AOO: approx. 1800-2000 km <sup>2</sup> ; (a) only four locations; (b) continuing decline in (II) area of occupancy and (IV) number of locations
Paracaloptenus caloptenoides (Brunner v. Wattenwyl, 1861)	B. 2. AOO: approx. 380-450 km <sup>2</sup> ; (a) severely fragmented, only 11 locations; (b) continuing decline in area of occupancy, number of mature individuals; D. Population size: approx. 200-250 mature individuals.
Miramella irena (Fruhstorfer, 1921)	B. 2. AOO cca. 1000 km <sup>2</sup> ; (a) only one location; (b) continuing decline in area / quality of habitat; D. 1. Population size: 800-1000 mature individuals.

Odontopodisma decipiens Ramme, 1951	B. 2. AOO: approx. 800-1000 km <sup>2</sup> ; (a) only 8 locations; (c) extreme fluctuations in number of mature individuals
Odontopodisma montana Kis, 1962	B. 1. EOO cca. 15000 km <sup>2</sup> ; (a) only six locations; (b) continuing decline in area and quality of habitat; number of locations; number of mature individuals
Odontopodisma rubripes Ramme, 1931	NT close to VU: B. 1. EOO: approx. 20 000 km <sup>2</sup> ; (a) severely fragmented; (b) continuing decline in area / quality of habitat.
Zubovskya banatica Kis, 1965	B. 2. AOO cca. 200 km <sup>2</sup> ; (a) only one location; (b) continuing decline in area, quality of habitat; number of subpopulations; number of mature individuals
Arcyptera fusca (Pallas, 1773)	NT close to VU: B. 2. AOO: approx. 2 000-3 000 km <sup>2</sup> ; (a) severely fragmented; (b) continuing decline in area / quality of habitat (aforestation, lost of pastures).
Chorthippus acroleucus (Müller, 1924)	B. 2. AOO cca. 150 km <sup>2</sup> ; (a) only one location; (b) continuing decline in area, quality of habitat (due to overgrazing), number of subpopulations; number of mature individuals
Chorthippus pullus (Philippi, 1830)	NT close to VU: B. 2. AOO: approx. 2 000-3 000 km <sup>2</sup> ; (a) severely fragmented; (b) continuing decline in area / quality of habitat.
Podismopsis transsylvanica Ramme, 1951	B. 2. AOO cca. 200 km <sup>2</sup> ; (a) only one location; should be: (b) continuing decline in area / quality of habitat (due to overgrazing)
Stenobothrus curasius Zubovskii, 1898	B. 2. AOO: approx. 2000 km <sup>2</sup> ; (a) only 7 locations; (c) extreme fluctuations in number of mature individuals.

# DRAFT RED LIST OF BUTTERFLIES (LEPIDOPTERA: PAPILIONOIDEA) OF THE CARPATHIAN MTS.

Compiled by Henrik Kalivoda

Contributors and persons involved in processing and compilation of source data: Lubomír Vít'az (Slovakia), Wicześlław Król, Aleksandra Pępkowska-Król, Monika Szewczyk (Poland), Miklós Heltai (Hungary), Horea Olosutean (Romania), Yevhen Lyashenko (Ukraine), Dragan Pavicevic (Serbia)

## Background

There are 483 butterfly species listed in the worldwide IUCN Red List, and majority of the species occurring in Europe and the Carpathian region are part of this list. The worldwide IUCN Red List was one of the key documents in development of the Carpathian Red List.

Another background document used was IUCN European Red List of Butterflies, published in 2010. All butterflies species threatened in Europe are in this document very well evaluated, however, without closer reference to individual countries or regions. Data are evaluated from EU and Pan-European perspective. Despite these shortcomings, the IUCN European Red List of Butterflies was an important source of information.

The major source of information was a database developed specifically for the BioREGIO Carpathians project purposes. Full and useful data were available from Slovakia, Hungary, Poland, Romania, and Ukraine and partially from Serbia. Data from other countries of the Carpathian region were insufficient.

## Methods

A new classification of butterflies (NIEUKERKEN *et al.* 2011) was used, where some families and superfamilies of

butterflies have been changed. The family Satyridae was merged with family Nymphalidae and whole superfamily Hesperioidea was moved to superfamily Papilionoidea as family Hesperioidea.

In the overall assessment there was only a group of butterflies (Superfamily Papilionoidea) included. Data on the occurrence and distribution of other groups of Lepidoptera were insufficient.

There also is a problem in timeliness and spatial distribution in each country within the Carpathian region.

## Results

Altogether, 231 butterfly and moth species were listed in the BioREGIO Carpathians project database. Only 114 butterfly species were evaluated due to incomplete data sets of moths in some countries. The level of knowledge of butterflies in particular Carpathian countries differs as well. In summary, the following numbers of butterfly species were listed under the categories RE?, CR, EN, and VU in the National Red lists: 3 (HU), 13 (UA), 0 (RS), 25 (RO), 16 (PL) and 51 species (SK) (See Table 1). Species of dry rocky habitats, grasslands, pastures, peat bogs and fens dominate in the national red lists.

The list of threatened Butterflies in the Carpathians is in Table 2.

Table 1: Number of species recorded in Red List in the Carpathians in individual countries

Status of threat	Slovakia	Hungary	Poland	Romania	Serbia	Ukraine
RE?	8		6			
CR	8		1	3		1
EN	18	1	5	7		7
VU	17	2	4	15		5
NT	8	6	8	3	1	1
LC	2	46	13	1		1
DD	9		1	1	1	1

## Major threats to butterflies in the Carpathians

The main threats to butterflies are degradation and loss of habitats, which causes loss of optimal conditions for existence. The main reason is the drastic decline in traditional farming, mainly on non-forest habitats - abandonment of traditional management. Grass cutting and grazing is on decline and it leads to succession and overgrowing by shrubs and trees. Also an afforestation of dry rocky habitats has very negative consequences.

## Conservation of butterflies in the Carpathians

Protection of butterflies must be based on the protection of their habitats. It is necessary to stop the degradation of grassland and pasture habitats and provide management under traditional agriculture. It is also necessary to ensure the protection of fens and bogs, and to stabilise and protect the water regime. For dry rocky habitats is necessary to stop the succession and ensure a removal of pioneering shrubs and trees.

## References

- BUSZKO, J. & MASŁOWSKI, J. (2008). Motyle dzienne Polski. Wyd. Koliber, Nowy Sącz. 274 pp.
- GYULAI, P., LÁSZLÓ, M. GY., PEKARSKY, O., PEREGOVITS, L., RONKAY, G., RONKAY, L., SZABÓKY, CS., VARGA, Z. & WITT, T. J. (2011). Magyarország nagylepkéi – Macrolepidoptera of Hungary. – in: Varga, Z. (ed.): Heterocera Press Ltd., Budapest, 253 pp.
- MATELESHKO, O. & POTISH, L. (eds) (2011). Red Data Book of Ukrainian Carpathians. Animals. Uzhgorod: Karpaty, 2011. – 336 pp.
- NIEUKERKEN, E. J. VAN, KAILA, L., KITCHING, I. J., KRISTENSEN, N. P., LEES, D. C., MINET, J., MITTER, C. H.,

MUTANEN, M., REGIER, J. C., SIMONSEN, T. J., WAHLBERG, N., YEN, S-H., ZAHIRI, R., ADAMSKI, D., BAIXERAS, J., BARTSCH, D., BENGTSSON, B. Å., BROWN, J. W., BUCHELL, S. R., DAVIS, D. R., DE PRINS, J., DE PRINS, W., EPSTEIN, M. E., GENTILI-POOLE, P., GIELIS, C., HÄTTENSCHWILER, P., HAUSMANN, A., HOLLOWAY, J. D., KALLIES, A., KARSHOLT, O., KAWAHARA, A. Y., KOSTER, S. J. C., KOZLOV, M. V., LAFONTAINE, J. D., LAMAS, G., LANDRY, J-F, LEE, S., NUSS, M., PARK, K-T, PENZ, C., ROTA, J., SCHMIDT, B. C., SCHINTLMEISTER, A., SOHN, J-C, SOLIS, M. A., TARMANN, G. M., WARREN, A. D., WELLER, S., YAKOVLEV, R. V., ZOLOTUHN, V. V. & ZWICK, A. (2011). Order Lepidoptera Linnaeus, 1758. In: Zhang, Z-Q. (Ed.), Animal biodiversity: An outline of higher-level classification and survey of taxonomic richness. Zootaxa, 3148: 212–221.

NEKRUTENKO, YU. & TSHIKOLOVETS, V. (2005). The Butterflies of Ukraine. Rayevsky Scientific Publishers, Kyiv, 231 pp.

SLAMKA, F. (2004). Die Tagfalter Mitteleuropas - östlicher Teil. Bestimmung, Biotope und Bionomie, Verbreitung, Gefährdung. Bratislava: František Slamka, 288 pp.

SZÉKELY, L. (2008). The Butterflies of Romania – Fluturii de zi din România. Braşov, 305 pp.

TSHIKOLOVETS, V. (2011): Butterflies of Europe and the Mediterranean Area. Tshikolovets Publications, Pardubice, 544 pp.

VAN SWAAY, C., CUTTELOD, A., COLLINS, S., MAES, D., LOPEZ MUNGUIRA, M., ŠAŠIĆ, M., SETTELE, J., VEROVNIK, R., VERSTRAEL, T., WARREN, M., WIEMERS, M. AND WYNHOF, I. (2010). European Red List of Butterflies. Luxembourg: Publications Office of the European Union.

Table 2: List of threatened Butterflies in Carpathians and their IUCN Red List categories and criteria

	IUCN RL category (Carpathians)	IUCN RL criteria (Carpathians)	Endemic to Carpathians	HD Annexes	Bern Convention Appendices
<b>Lepidoptera</b>					
<b>Hesperioidea</b>					
Carcharodus floccifera (Zeller, 1847)	EN	A.3.	N		
Carcharodus lavatherae (Esper, 1783)	EN	A.3.	N		
Spialia orbifer (Hübner, 1823)	VU	A.3.	N		
<b>Papilionidae</b>					
Parnassius apollo (Linnaeus, 1758)	EN	A.2.	N	+	II
Zerynthia polyxena (Denis & Schiffermüller, 1775)	EN	B.1.b.(ii).	N	+	II
<b>Pieridae</b>					
Pieris ergane (Geyer, 1828)	EN	B.1.b.(ii).	N		
Pieris manni (Mayer, 1851)	EN	A.2.	N		
Leptidea morsei (Fenton, 1882)	VU	A.3.	N	+	
Colias chrysotheme (Esper, 1781)	EN	A.3.	N		
Colias myrmidone (Esper, 1781)	EN	A.3.	N	+	

# DRAFT CARPATHIAN RED LIST OF FISH AND LAMPREY SPECIES

Compiled by Ján Koščo

Contributors and persons involved in processing and compilation of source data: Ján Koščo (Slovakia), Miklós Heltai, Ákos Harka, Zoltán Sallai (Hungary), Monika Szewczyk, Michal Nowak, Piotr Mikolajczyk (Poland), Saša Branković (Serbia), Fedir Kurtiak (Ukraine), Karel Halačka, Martin Strnad (Czech Republic), Doru Banaduc (Romania)

## Acknowledgments

We would like to acknowledge the committed work of specialists who have provided information and expertise to this project: M. Makomaska-Juchiewicz, M. Szewczyk, M. Heltai, S. Branković, M. Strnad, F. Kurtyak, and D. Banaduc. We would also like to thank all the other specialists' assessors and reviewers who contributed to this project: Á. Harka, Z. Sallai, M. Nowak, and K. Halačka.

## Background

### Global and European context

At the global scale, the best source of information on the conservation status of plants and animals is the IUCN Red List of Threatened Species (see [www.iucnredlist.org](http://www.iucnredlist.org)). We used assessments available on the European Red List website and data portal: <http://www.iucnredlist.org/>, <http://ec.europa.eu/environment/nature/conservation/species/redlist> and <http://www.iucnredlist.org/europe>.

### Carpathian/national context

The waters of the Carpathians are mainly fast-flowing mountain rivers and streams with the bedrock bottom. River slope ranges between less than 10‰ to over 100‰. The occurrence of macrophytes is rather restricted, due in part to fast currents and considerable changes in water level. Such hydrological conditions determine fish composition, with the dominant share of reophilous species. Fish preferring a bedrock bottom are a characteristic group in the Carpathian region.

## Executive summary

As part of this Red List assessment, 76 native species have been assessed, present in the seven states of the Carpathian Region.

## Assessment methodology

The status of all species was assessed using the IUCN Red List Criteria, which are the world's most widely accepted system for measuring extinction risk. All assessments followed the Guidelines for Application of IUCN

Red List Criteria at Regional Levels.

The extinction risk of a species can be assessed at global, regional or national level. One species can have a different category in the National Red List and a Regional Red List. An endemic species should have the same category at national and regional level, as it is not present in any other part of the Carpathian region.

### Taxonomic scope / Habitats categorisation

Taxonomy largely follows KOTTELAT AND FREYHOF (2007).

### Assessments and evaluation

All lamprey and fish species, occurring in the Carpathians, were evaluated.

## Results

Threat status – See Table 1.

## Major threats

Although pollution is one of the most widespread threats, impacting the highest number of species, it is not the most serious threat. Other significant threats such as water abstraction and the introduction of alien species are causing much more rapid population declines for some freshwater species.

The single most important threat to European freshwater fishes is the abstraction of water; from underground, or from the streams and rivers themselves.

Many Carpathian fishes are highly susceptible to the impact of introduced alien species. These may be predators or competitors.

Most freshwater fishes are very sensitive to alterations of their natural habitat. In addition, many require long distance migrations to fulfil their life cycle.

There are few rivers in the Carpathians that have not been impacted by dams for hydropower or irrigation purposes.

## Conservation/conservation management

Carpathian countries are signatories to a number of important conventions aimed at conserving biodiversity that are particularly relevant to freshwater fishes, including the

	IUCN RL category (Carpathians)	IUCN RL criteria (Carpathians)	Endemic to Carpathians	HD Annexes	Bern Convention Appendices
<i>Colias palaeno</i> (Linnaeus, 1761)	EN	A.3.	N		
<i>Colias phicomone</i> (Esper, 1780)	RE		N		
<b>Nymphalidae</b>					
<i>Nymphalis xanthomelas</i> (Esper, 1781)	EN	A.3.	N		
<i>Nymphalis vaualbum</i> (Denis & Schiffermüller, 1775)	RE		N	+	
<i>Neptis rivularis</i> (Scopoli, 1763)	VU	A.3.	N		
<i>Brenthis hecate</i> (Denis & Schiffermüller, 1775)	VU	A.3.	N		
<i>Boloria aquilonaris</i> (Stichel, 1908)	EN	A.2.	N		
<i>Boloria titania</i> (Esper, 1793)	EN	B.1.b.(ii).	N		
<i>Boloria pales</i> (Denis & Schiffermüller, 1775)	VU	A.3.	N		
<i>Boloria eunomia</i> (Esper, 1799)	VU	B.2.a.+b.(i,ii,iii,iv).	N		
<i>Melitaea telona</i> Fruhstorfer, 1908	EN	B.2.a.	N		
<i>Melitaea trivialis</i> (Denis & Schiffermüller, 1775)	EN	A.3.	N		
<i>Melitaea phoebe</i> (Denis & Schiffermüller, 1775)	VU	A.3.	N		
<i>Euphydryas aurinia</i> (Rottemburg, 1775)	EN	A.3.	N	+	II
<i>Euphydryas maturna</i> (Linnaeus, 1758)	EN	A.3.	N	+	II
<i>Hipparchia stalinus</i> (Hufnagel, 1766)	EN	A.3.	N		
<i>Hipparchia fagi</i> (Scopoli, 1763)	VU	A.3.	N		
<i>Chazara briseis</i> (Linnaeus, 1764)	EN	A.3.	N		
<i>Erebia gorge</i> (Hübner, 1804)	VU	A.3.	N		
<i>Erebia manto</i> (Denis & Schiffermüller, 1775)	VU	A.3.	N		
<i>Erebia melas</i> (Herbst, 1796)	VU	A.3.	N		
<i>Erebia pharte</i> (Hübner, 1804)	VU	A.3.	N		
<i>Erebia pronoe</i> (Esper, 1780)	EN	A.3.	N		
<i>Erebia sudetica</i> Staudinger, 1861	EN	A.3.	N	+	II
<i>Coenonympha hero</i> (Linnaeus, 1761)	EN	A.3.	N	+	II
<i>Coenonympha rhodopensis</i> Elwes, 1900	VU	A.3.	N		
<i>Coenonympha tullia</i> (Muller, 1764)	VU	A.3.	N		
<i>Lasiommata petropolitana</i> (Fabricius, 1787)	VU	A.3.	N		
<i>Lopinga achine</i> (Scopoli, 1763)	VU	A.3.	N	+	II
<b>Lycaenidae</b>					
<i>Lycaena helle</i> (Denis & Schiffermüller, 1775)	VU	A.3.	N	+	
<i>Lycaena thersamon</i> (Esper, 1784)	VU	A.3.	N		
<i>Plebejus optilete</i> (Knoch, 1781)	VU	A.3.	N		
<i>Pseudophilotes vicrama</i> (Hemming, 1929)	VU	A.3.	N		
<i>Scolitantides orion</i> (Pallas, 1771)	VU	A.3.	N		
<i>Glaucopteryx alexis</i> (Poda, 1761)	EN	A.3.	N		
<i>Phengaris arion</i> (Linnaeus, 1758)	EN	A.2.	N	+	II
<i>Phengaris alcon</i> (Denis & Schiffermüller, 1775)	VU	A.3.	N		
<i>Phengaris nausithous</i> (Bergstrasser, 1779)	VU	A.3.	N	+	II
<i>Phengaris teleius</i> (Bergstrasser, 1779)	VU	A.3.	N	+	II
<i>Polyommatus amandus</i> (Schneider, 1792)	EN	A.2.	N		
<i>Polyommatus eroides</i> (Frivaldszky, 1835)	EN	A.2.	N	+	
<i>Polyommatus admetus</i> (Esper, 1783)	VU	A.3.	N		
<i>Polyommatus damon</i> (Denis & Schiffermüller, 1775)	VU	A.3.	N		
<i>Polyommatus doryllas</i> (Denis & Schiffermüller, 1775)	VU	A.3.	N		

1979 Bern Convention on the Conservation of European Wildlife and Natural Habitats, and most importantly, the 1992 Convention on Biological Diversity. All countries and regions also afford freshwater fishes some form of protective species legislation.

The EU's LIFE+ programme offers financial support for species and habitats conservation projects throughout the EU. In particular, LIFE+ supports the implementation of the Birds and Habitats Directives and the establishment of the Natura 2000 network. Projects involve a variety of actions including habitat restoration, site purchases, communication and awareness-raising, protected area infrastructure and conservation planning.

#### References

ESSL, F., MOSER, D., DIRNBOCK, T., DULLINGER, S., MILASOWSKY, N., WINTER, M. & RABITSCH, W. (2013). Native, alien, endemic, threatened, and extinct species diversity in European countries. *BIOLOGICAL CONSERVATION*, 164: 90-97.

FREYHOF, J. & BROOKS, E. (2011). *European Red List of Freshwater Fishes*. Luxembourg: Publications Offi-

ce of the European Union.

HARKA, Á. & SALLAI, Z. (2004). Magyarország halfaunája. Képes határozó és elterjedési tájékoztató. NIMFEA T. E., SZARVAS, 269 pp.

KOŠČO, J. & HOLČÍK, J. (2008). Anotovaný Červený zoznam mihúľ a rýb Slovenska – verzia 2007. Biodiverzita ichthyofauny ČR (VII): 119-132.

KOTTELAT, M. & FREYHOF, J. (2007). *Handbook of European freshwater fishes*. Publications Kottelat, Cornol, Switzerland, 646 pp.

LUSK, S., HANEL, L. & LUSKOVA, V. (2004). Red List of the ichthyofauna of the Czech Republic: Development and present status. *FOLIA ZOOLOGICA*, 53, 2: 215-226.

WITKOWSKI, A. (1991). Threats and protection of freshwater fishes in Poland. *Netherlands Journal of Zoology*, 42(2-3): 243-259.

WITKOWSKI, Z.J., KRÓL, W. & SOLARZ, W. (eds) (2003). *Carpathian List of Endangered Species*. WWF and Institute of Nature Conservation, Polish Academy of Sciences, Vienna-Kraków, 64 pp.

Table 1: Overview of the status of Lamprey and Fish species of the Carpathians

Family/Taxon	SK	CZ	HU	PL	RO	UA	RS	Carp. RL
<b>Petromyzontidae</b>								
<i>Eudontomyzon danfordii</i>	NT		EN		EN	NT	CR	VU
<i>Eudontomyzon mariae</i>	VU		NT	VU	-		CR	VU
<i>Eudontomyzon vladykovi</i>	NE				CR		CR	NA
<i>Lampetra planeri</i>	EN	CR		VU				VU
<b>Acipenseridae</b>								
<i>Acipenser nudiiventris</i>							EN	EN
<i>Acipenser ruthenus</i>	NT		NT			CR	EN	VU
<i>Acipenser stellatus</i>							EN	EN
<i>Acipenser sturio</i>							EN	EN
<i>Acipenser oxyrinchus</i>				RE				RE
<i>Huso huso</i>							CR	CR
<b>Anguillidae</b>								
<i>Anguilla anguilla</i>	NE	NA	VU	NE		CR	EN	NE
<b>Clupeidae</b>								
<i>Alosa caspia</i>							DD	DD
<i>Alosa immaculata</i>							VU	VU
<b>Cyprinidae</b>								
<i>Abramis brama</i>	LC	LC	LC	LC		NT	LC	LC
<i>Alburnoides bipunctatus</i>	LC	VU	LC	EN		LC	LC	NT
<i>Alburnus alburnus</i>	LC	LC	LC	LC			LC	LC
<i>Ballerus ballerus</i>	NT	VU	LC			DD	LC	NT
<i>Ballerus sapa</i>	NT		LC			NT	LC	NT
<i>Barbus barbus</i>	LC	NT	LC	VU		NT	LC	NT
<i>Barbus carpathicus</i>	LC		NT	NT		NT		NT
<i>Blicca bjoerkna</i>	LC	LC	LC	LC		DD	LC	LC

Family/Taxon	SK	CZ	HU	PL	RO	UA	RS	Carp. RL
<i>Carassius carassius</i>	VU	CR	VU	NT		EN	EN	VU
<i>Cyprinus carpio wild form</i>	NE			-			VU	EN
<i>Cyprinus carpio culture form</i>	LC	NA	LC					LC
<i>Gobio carpathicus</i>	NT		NT			EN		NT
<i>Gobio obtusirostris</i>		LC						LC
<i>Gobio gobio</i>	LC	LC	LC	LC			LC	LC
<i>Chondrostoma nasus</i>	NT	VU	LC	EN		LC	LC	NT
<i>Leucaspis delineatus</i>	EN	CR	NT	LC		LC		VU
<i>Leuciscus aspius</i>	LC	LC	LC	NT		NT	LC	LC
<i>Leuciscus idus</i>	NT	NT	LC	LC			LC	LC
<i>Leuciscus leuciscus</i>	NT	LC	LC	NT	CR		LC	NT
<i>Pelecus cultratus</i>	EN		NT			EN	LC	VU
<i>Phoxinus phoxinus</i>	LC	NT	VU	NT			DD	NT
<i>Rhodeus amarus</i>	LC	EN	LC			LC		LC
<i>Romanogobio albiginnatus</i>	NT	NT	LC	VU		VU	DD	NT
<i>Romanogobio kesslerii</i>	EN	CR	NT	NT		VU	DD	VU
<i>Romanogobio uranoscopus</i>	EN		EN		VU		DD	EN
<i>Rutilus rutilus</i>	LC	LC	LC	LC			LC	LC
<i>Rutilus virgo</i>	VU		EN			VU		VU
<i>Scardinius erythrophthalmus</i>	LC	LC	LC	LC			LC	LC
<i>Squalius cephalus</i>	LC	LC	LC	LC			LC	LC
<i>Telestes souffia</i>					VU	NT		VU
<i>Tinca tinca</i>	NT	LC	LC	LC			CR	NT
<i>Vimba vimba</i>	NT	VU	LC	CR		NT	LC	NT
<b>Cobitidae</b>								
<i>Cobitis elongatoides</i>	LC	NT	LC					NT
<i>Cobitis elongata</i>							CR	NE
<i>Cobitis taenia</i>				DD		NT	LC	NE
<i>Misgurnus fossilis</i>	NT	EN	NT				CR	NT
<i>Sabanejewia balcanica</i>	NT	VU	NT	VU		NT	-	NT
<b>Balitoridae</b>								
<i>Barbatula barbatula</i>	LC		LC	LC			LC	LC
<b>Siluridae</b>								
<i>Silurus glanis</i>	LC	LC	LC	LC		LC	LC	LC
<b>Esocidae</b>								
<i>Esox lucius</i>	LC	LC	LC	LC			LC	LC
<b>Umbridae</b>								
<i>Umbra krameri</i>	EN		VU			NT	EN	EN
<b>Salmonidae</b>								
<i>Hucho hucho</i>	EN	EW	EN	NA	CR	EN	-	EN
<i>Salmo trutta</i>	LC	NT	LC	NE		NT	-	LC
<i>Salmo salar</i>				RE				RE
<i>Thymallus thymallus</i>	NT	VU		NE	VU	VU	-	VU
<b>Lotidae</b>								
<i>Lota lota</i>	LC	NT	LC	VU		NT	LC	NT
<b>Cottidae</b>								
<i>Cottus gobio</i>	NT	VU	LC	NT			EN	VU
<i>Cottus poecilopus</i>	LC	VU		VU	VU	NT		NT

Family/Taxon	SK	CZ	HU	PL	RO	UA	RS	Carp. RL
<b>Gasterosteidae</b>								
Pungitius platygaster							DD	DD
<b>Percidae</b>								
Gymnocephalus baloni	VU		LC			DD	CR	NT
Gymnocephalus cernuus	NT	LC	NT	LC			LC	NT
Gymnocephalus schraetser	VU		EN			NT	LC	VU
Perca fluviatilis	LC	LC	LC	LC			LC	LC
Romanichthys valsanicola					CR			CR
Sander lucioperca	LC	LC	LC	LC			LC	LC
Sander volgensis	VU		NT			DD	LC	NT
Zingel streber	VU		VU			VU	CR	VU
Zingel zingel	VU		VU			NT	EN	VU
<b>Gobiidae</b>								
Neogobius fluviatilis							LC	LC
Neogobius gymnotrachelus							DD	LC
Neogobius kessleri							LC	LC
Neogobius melanostomus							LC	LC
Proterorhinus semilunaris			LC				LC	LC

	IUCN category	IUCN criteria	HD annexes	Bern Convention appendices	Bonn Convention annexes
--	---------------	---------------	------------	----------------------------	-------------------------

Family/Taxon					
<b>Petromyzontidae</b>					
Eudontomyzon danfordii	LC		HD2		
Eudontomyzon mariae	LC		HD2	Bern3	
Eudontomyzon vladykovi	LC		HD2	Bern3	
Lampetra planeri	LC		HD2	Bern3	
<b>Acipenseridae</b>					
Acipenser nudiiventris	CR	A2cd	HD5		Bonn2
Acipenser ruthenus	VU	A2cde	HD5	Bern3	Bonn2
Acipenser stellatus	CR	A2cde	HD5	Bern3	Bonn2
Acipenser sturio	CR	A2cde;B2ab(ii,iii,v)	HD2,HD4	Bern2	Bonn1,2
Acipenser oxyrinchus	NE		HD5		
Huso huso	CR	A2bcd	HD5	Bern2,3	Bonn2
<b>Anguillidae</b>					
Anguilla anguilla	NE				
<b>Clupeidae</b>					
Alosa caspia	LC		HD2,5		
Alosa immaculata	VU	B2ab(v)	HD2,5	Bern3	
<b>Cyprinidae</b>					
Abramis brama	LC				
Alburnoides bipunctatus	LC			Bern3	
Alburnus alburnus	LC				
Ballerus ballerus	LC			Bern3	
Ballerus sapa	LC			Bern3	
Barbus barbus	LC		HD5		

	IUCN category	IUCN criteria	HD annexes	Bern Convention appendices	Bonn Convention annexes
Barbus carpathicus	LC		HD5		
Blicca bjoerkna	LC				
Carassius carassius	LC				
Cyprinus carpio wild form	VU	A2ce			
Cyprinus carpio culture form					
Gobio carpathicus	LC				
Gobio obtusirostris	LC				
Gobio gobio	LC				
Chondrostoma nasus	LC			Bern3	
Leucaspis delineatus	LC			Bern3	
Leuciscus aspius	LC		HD2,5	Bern3	
Leuciscus idus	LC				
Leuciscus leuciscus	LC				
Pelecus cultratus	LC		HD2,5	Bern3	
Phoxinus phoxinus	LC				
Rhodeus amarus	LC		HD2	Bern3	
Romanogobio albipinnatus	LC		HD2	Bern3	
Romanogobio kesslerii	LC		HD2	Bern3	
Romanogobio uranoscopus	LC		HD2	Bern3	
Rutilus rutilus	LC				
Rutilus virgo	LC		HD2,5	Bern3	
Scardinius erythrophthalmus	LC				
Squalius cephalus	LC				
Telestes souffia	LC		HD2	Bern3	
Tinca tinca	LC				
Vimba vimba	LC			Bern3	
<b>Cobitidae</b>					
Cobitis elongatoides	LC		HD2	Bern3	
Cobitis elongata	LC		HD2	Bern3	
Cobitis taenia	LC		HD2	Bern3	
Misgurnus fossilis	LC		HD2	Bern3	
Sabanejewia balcanica	LC		HD2	Bern3	
<b>Balitoridae</b>					
Barbatula barbatula	LC				
<b>Siluridae</b>					
Silurus glanis	LC			Bern3	
<b>Esocidae</b>					
Esox lucius	LC				
<b>Umbridae</b>					
Umbra krameri	VU	A2c	HD2	Bern2	
<b>Salmonidae</b>					
Hucho hucho	EN	B2ab(ii,iii)	HD2,5	Bern3	
Salmo trutta	LC				
Salmo salar	NE		HD2,5	Bern3	
Thymallus thymallus	LC		HD5	Bern3	
<b>Lotidae</b>					
Lota lota	LC				

	IUCN category	IUCN criteria	HD annexes	Bern Convention appendices	Bonn Convention annexes
<b>Cottidae</b>					
<i>Cottus gobio</i>	LC		HD2		
<i>Cottus poecilopus</i>	LC			Bern3	
<b>Gasterosteidae</b>					
<i>Pungitius platygaster</i>	LC				
<b>Percidae</b>					
<i>Gymnocephalus baloni</i>	LC		HD2,4	Bern3	
<i>Gymnocephalus cernuus</i>	LC				
<i>Gymnocephalus schraetser</i>	LC		HD2,5	Bern3	
<i>Perca fluviatilis</i>	LC				
<i>Romanichthys valsanicola</i>	CR	B1ab(ii,iii)+2av(ii,iii)	HD2,4		
<i>Sander lucioperca</i>	LC				
<i>Sander volgensis</i>	LC			Bern3	
<i>Zingel streber</i>	LC		HD2	Bern3	
<i>Zingel zingel</i>	LC		HD5	Bern3	
<b>Gobiidae</b>					
<i>Neogobius fluviatilis</i>	LC			Bern3	
<i>Neogobius gymnotrachelus</i>	LC				
<i>Neogobius kessleri</i>	LC			Bern3	
<i>Neogobius melanostomus</i>	LC				
<i>Proterorhinus semilunaris</i>	LC			Bern3	

# DRAFT CARPATHIAN RED LIST OF THREATENED AMPHIBIANS (LISSAMPHIBIA)

Compiled by Peter Urban & Ján Kautman

Contributors and persons involved in processing and compilation of source data: Rastko Ajtic (Serbia), Miklós Heltai (Hungary), Ján Kautman, Peter Urban (Slovakia), Fedir Kurtiak (Ukraine), Horea Olosutean (Romania), Martin Strnad (Czech Republic), Małgorzata Makomska-Juchiewicz, Monika Szewczyk (Poland)

## Summary

### Results and recommendations

The status of amphibians was assessed at two regional levels: in each of the Carpathian countries and in the whole Carpathians.

From 18 amphibian taxa that occur in the Carpathian region, only 6 species (33.3%) were considered threatened, classified as “Vulnerable”. Others were classed in categories “Near Threatened” (11) and “Least Concern” (1). Status of amphibian species in the Carpathians is less favourable than at European regional level, where 22.9% were considered threatened. In the Carpathians the amphibians are classed in the category “Vulnerable” only and in the geographical Europe 2.4% are “Critically Endangered”, 7.2% “Endangered” and 13.3% “Vulnerable”. A similar pattern was seen in the EU 27 (22.0% threatened, of which 2.4% CR, 6.1 % EN and 13.4 %VU) (TEMPLE & COX 2009).

## Methods

The status of all species was assessed using the IUCN Red List Criteria (IUCN 2001) and all assessments followed the Guidelines for Application of IUCN Red List Criteria at Regional Levels (IUCN 2003), Guidelines for Using the IUCN Red List Categories and Criteria (IUCN 2005) and Rules of Procedure IUCN Red List Assessment Process 2013–2016 (IUCN 2012), too. The authors assessed the status of species for the whole of the Carpathians using “categories of threat”, that were available in existing national red lists and red books. As a result, this Carpathian List of Endangered Species comprises species for which the category of threat in the whole region was estimated to be one of the following: Critically Endangered (CR); Endangered (EN) or Vulnerable (VU). Categories Extinct (EX), Regionally Extinct (RE) and Data Deficient (DD) were used, too.

Additional criteria applied when choosing species categories was inclusion of the species that are Endemic to the Carpathians, listed in the European Union’s Habitat Directive and listed in the Bern Convention.

## Notes on taxonomy

In the Carpathians, there is an occurrence of hybridisation zones of some amphibian taxa, which are situated in the transition zone between the mountains and lowlands. Natural hybridization and introgression is recorded for example between the newt species *Triturus vulgaris* and *Lissoletrichia montandoni*, in the group of Crested newts (*Triturus cristatus superspecies*) - closely related species complex (*Triturus cristatus*, *T. dobrogeicus* and *T. carnifex*) with parapatric distributions and between frog species *Bombina bombina* and *Bombina variegata*. Current patterns result from present and historical population –environment interactions that act on each of the hybridizing taxa.

## Remarks on the choice of species

Classification based on the number, trend and distribution (geographic ranges or the patterns of habitat occupancy) of the evaluated taxa is very complicated due to problems of spatial scale. National Red List databases of threatened species are in some cases still incomplete and inconsistent, as detailed knowledge about the distribution, abundance and trends of most amphibian species is not very developed. Much national information is not from the Carpathian region only. Fundamental inventory is needed in many Carpathian areas (including protected areas) in order to draw any solid conclusion about the list of species, their distribution, density and threats. Therefore, the choice of species (taxa) was difficult. The IUCN criteria were assigned not only depending on the occurrence and trends of taxa in Carpathian orographic areas (Alpine biogeographical region), but also on

the situation in adjacent areas, especially in Pannonic biogeographical region. It is especially difficult to assess the species living in lowland areas only or species with most predominant occurrence at lower altitudes. Without considering the occurrence in adjacent areas, the result of the evaluation would have been unrealistic and illogical in many cases, as the data would have been taken out of context of the actual status of the species. This concerns species *Bombina orientalis*, *Pelobates fuscus*, *Rana arvalis*, *Rana esculenta-complex*, *Triturus dobrogicus* and partially *Hyla arborea* and *Triturus vulgaris*.

#### Overview of the state of endangerment, endemic species in the Carpathians

See Table 1.

The conservation of Carpathian amphibians is regulated by different laws at the international and national levels. At the European level, the Habitats Directive (Council Directive 92/43/EEC) is the most important legal tool for their protection and was transposed into national laws.

#### Main threats

Amphibians are excellent indicators of the quality of the overall environment, as they are very sensitive to perturbations in ecosystems (TEMPLE & COX 2009). The main threat for amphibians in the Carpathians (as well as for reptiles) is habitat loss (loss of temporary freshwater habitats, e. g. seasonal ponds and other wetlands), deterioration, fragmentation and large-scale deforestation in general. The second main threat is pollution (in freshwater habitats water pollution, deterioration and other human disturbance and destruction of eggs) and reduced humidity. It is followed by impact of predators and invasive alien species and road mortality.

The decrease in abundance (increase of threat) of most of the species is significant. For example, it is estimated, that population of optically most common frog *R. temporaria* has decreased by more than 50% (even more at places) in the last decades. Destruction of reproduction sites for agricultural, forestry and water management reasons, extensive usage of pesticides and consequential destruction of food offer (aphids, bark-beetles, agricultural pests) for insectivorous species, growing of coniferous monocultures, building of migration barriers without any effort of impact mitigation as well as still unknown impact of the amphibian disease *chytridiomycosis* caused by a fungi *Batrachochytrium dendrobatidis* spread in the Carpathians, all this is a complex of negatively limiting factors of the amphibian population in the Carpathians. Generally said, many reproduction sites had vanished. All the amphibian species can be found when monitoring of these species, however, as the abundance of amphibian populations was not assessed in the past, only explicit experience from a long term observation can confirm, that the abundance of most of amphibian species populations at most of the

observed sites is decreasing.

#### New challenges

Proposed Red List of Amphibians gives the actual information on the status of this group in the Carpathian region. It brings inspiration (and need) not only for completing the missing data for some of the listed species, but also for future projects and studies on Lissamphibia and their habitats.

#### Acknowledgements

We would like to thank also our colleagues Katalin Mázsza, Jozef Májsky and Peter Mikulíček for their input to the study.

#### References

- ANONYMUS (1991). Recommendation No. 27 (1991) on the conservation of some threatened amphibians in Europe. Council of Europe, Strasbourg.
- BALOGOVÁ, M., UHRIN, M., KAŇUK, J. & KALAVSKÝ, J. (2012). *Salamandra salamandra* in Slovakia, distribution and habitat. *Folia Veterinaria* 56(4): 3-6.
- COVACIU-MARCOV, S. D., CICORT-LUCACIU, A. Ş. & DIMANCEA, N. (2009). What do the newly discovered *Lissotriton montandoni* (Caudata, Salamandridae) populations from Iezer Mountains, Romania, have to say about the species' southern distribution limit? *North-Western Journal of Zoology*, 5(2): 429-433.
- COVACIU – MARCOV, S. D., CICORT-LUCACIU, A. Ş., MITREA, I., SAS, I., CĂUŞ, A. & CUPŞA, D. (2010). Feeding of three syntopic newt species (*Triturus cristatus*, *Mesotriton alpestris* and *Lissotriton vulgaris*) from Western Romania. *North-Western Journal of Zoology* 6(1): 95-108.
- DEMETER, L., HARTEL, T. & COGĂLNICEANU, D. (2006). Distribution and conservation status of amphibians in the Ciuc basin, Eastern Carpathians, Romania. *Zeitschrift für Feldherpetologie*, Supplement 10: 217–224.
- EDGAR, P. & BIRD, D. R. (2006). Action Plan for the Conservation of the Crested Newt *Triturus cristatus* Species Complex in Europe. Convention on the Conservation of European Wildlife and Natural Habitats, Standing Committee, Strasbourg.
- GŁOWACIŃSKI, Z. (1993). Czerwona Lista zwierząt ginących i zagrożonych w Polsce [Red List of Extinct and Endangered animal species in Poland]. Zakład Ochrony Przyrody i Zasobów naturalnych PAN, Kraków.
- GŁOWACIŃSKI, Z. (ed.) (2001). Polska czerwona księga zwierząt. Kręgowce. [Polish Red Data Book of Animals. Vertebrates]. Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.
- GŁOWACIŃSKI, Z. & RAFIŃSKI, J. (eds.) (2003). Atlas Płazów i Gadów Polski: Status – Rozmieszczenie – Ochrona [Atlas of the Amphibians and Reptiles of Poland:

Status – Distribution - Conservation]. Biblioteka Monitoringu Środowiska, Warszawa - Kraków.

HARTEL, T., MOGA, C. I., ÖLLERER, K. & PUKY, M. (2009). Spatial and temporal distribution of amphibian road mortality with a *Rana dalmatina* and *Bufo bufo* predominance along the middle section of the Târnava Mare basin, Romania. *North-Western Journal of Zoology*. 5(1): 130-141.

HEGYESSY, G. (2006). Adatok Magyarország északkeleti részének gerinces állatairól (Vertebrata) I. Ingalák (Petryomzontiformes), halak (Pisces), kétélűek (Amphibia), hüllők (Reptilia). A Herman Ottó Múzeum Évkönyve (Annales Musei iscolciensis de Herman Ottó nominati) 45: 499-521.

IFTIME, A. (2001). Lista Roşie comentată a amfibienilor și reptilelor din România [Commented Red List of amphibians and reptiles from Romania]. *Ocotirea Naturii* 44 – 45: 39-49.

IFTIME, A. (2004). Occurrence of *Triturus vulgaris-Triturus montandoni* hybrids (Amphibia: Salamandridae) in disturbed habitats in the Piatra Craiului massif (Southern Carpathians, Romania). *Herpetozoa* (Wien) 17(1/2): 91-94.

IFTIME, A. & IFTIME, O. (2012). New Records of the Carpathian Endemite, *Lissotriton montandoni* (Amphibia: Caudata: Salamandridae) at its Southern Distribution Limit. *Travaux du Muséum National d'Histoire Naturelle „Grigore Antipa“* 55(1): 175–179.

IUCN (2001). IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.

IUCN (2012). IUCN Red List Categories and Criteria: Version 3.1. Second edition. Gland, Switzerland and Cambridge, UK: IUCN.

IUCN (2003). Guidelines for Application of IUCN Red List Criteria at Regional Levels: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.

IUCN (2005). Guidelines for Using the IUCN Red List Categories and Criteria. IUCN, Gland, Switzerland and Cambridge, UK.

IUCN (2012). Rules of Procedure IUCN Red List Assessment Process 2013–2016. Version 2.0. Approved by the IUCN SSC Steering Committee in September 2012. Downloadable from: [http://www.iucnredlist.org/documents/Rules\\_of\\_Procedure\\_for\\_Red\\_List\\_2013-2016.pdf](http://www.iucnredlist.org/documents/Rules_of_Procedure_for_Red_List_2013-2016.pdf)

IUCN (2013). IUCN Red List of Threatened Species. Version 2013.2. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 12 March 2014.

KAUTMAN, J., BARTÍK, I. & URBAN, P. (2001). Červený (ekozozologický) zoznam obojživelníkov (Amphibia)

Slovenska [Red (Ecosozological) List of Amphibians (Amphibia) of Slovakia]. Pp. 146-147. In: BALÁŽ D., MARHOLD K. & URBAN P. (eds.), Červený zoznam rastlín a živočíchov Slovenska. Ochrana prírody 20 (Suppl).

КУРТЯК, Ф. Ф. & МЕЖЖЕРИН, С. В. (2005). Изменчивость, распространение, численность гребенчатого, *Triturus cristatus*, и дунайского, *Triturus dobrogicus*, тритонов (Amphibia, Salamandridae) в Закарпатье [Variability, distribution, abundance of the crested newt, *Triturus cristatus* and *Triturus dobrogicus* (Amphibia, Salamandridae) in the Zakharpatie region]. *Вестник зоологии* 39(5): 49–57.

МОРОЗОВ-ЛЕОНОВ, С. Ю., МЕЖЖЕРИН, С. В. & КУРТЯК, Ф. Ф. (2003). О гибридизации гребенчатого (*Triturus cristatus*) и дунайского (*Triturus dobrogicus*) тритонов в Закарпатье [About hybridization of the crested newt, *Triturus cristatus* and *Triturus dobrogicus* in the Zakharpatie region]. *Вестник зоологии* 37(2): 88–91.

MIKULÍČEK, P. & PIÁLEK, J. (2003). Molecular identification of three crested newt species (*Triturus cristatus* superspecies) by RAPD markers. *Amphibia-Reptilia* 24: 201–207.

MIKULÍČEK, P. & KOTLIK, P. (2008). Two water frog populations from western Slovakia consisting of diploid females and diploid and triploid males of the hybridogenetic hybrid *Rana esculenta* (Anura, Ranidae). *Zoosystematics and Evolution* 77(1): 59-64.

MIKULÍČEK, P. & ZAVADIL, V. (2008). Molecular and morphological evidence of hybridization between newts *Triturus vulgaris* and *T. montandoni* (Caudata: Salamandridae) in Slovakia. *Biologia* 63(1): 127-131.

MIKULÍČEK, P., KAUTMAN, J., ZAVADIL, V. & PIÁLEK, J. (2004). Natural hybridization and limited introgression between the crested newts *T. cristatus* and *T. dobrogicus* (Caudata, Salamandridae) in Slovakia. *Biologia* 59, Suppl. 15: 21–218.

РАБИЈАН, М. (2010). Traszka grzebieniasta *Triturus cristatus* (Laurenti, 1768). In Makomaska-Juchiewicz (ed.), *Monitoring gatunków zwierząt. Przewodnik Metodyczny. Część pierwsza*. Biblioteka Monitoringu Środowiska.

ПИСАНЕЦ, Е. М., ЛИТВИНЧУК, С. Н., КУРТЯК, Ф. Ф. & РАДЧЕНКО, В. И. (2005). Земноводные Красной книги Украины (Справочник-кадастр) [Amphibians Red Book of Ukraine (Reference-inventory)]. Зоомузей ННПМ НАН України, Київ.

RAFIŃSKI, J. (2001). *Triturus cristatus*. Pp.: 285-286. In: GŁOWACIŃSKI Z. (ed.), *Polska czerwona księga zwierząt. Kręgowce* [Polish Red Data Book of Animals. Vertebrates]. Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.

RAFIŃSKI, J., COGĂLNICEANU, D. & BABIK, W. (2001). Genetic differentiation of the two subspecies of the smooth newt inhabiting Romania, *Triturus vulgaris vulgaris*

and *T. v. ampelensis* (Urodela, Salamndridae) as Revealed by Enzyme Electrophoresis. *Folia Biologica*, Kraków 49(3-4): 239-245.

RAKONCZAY, Z. (ed.) (1989). Vörös Könyv. A Magyarországon kipusztult és veszélyeztetett növény-és állatfajok [Red Book. The extinct and endangered animal and plant species of Hungary]. Akadémiai Kiadó, Budapest.

SCHÁD, P., PUKY, M. & KISS, I. (1999). A Naplás-tó Természetvédelmi Területen élő kétéltűek vonulási sajátosságai. *Természetvédelmi Közlemények* 8: 161-172.

SHCHERBAK, M. M. (ed.) (1994). Червона книга України. Тваринний світ. [Red Data Book of Ukraine. Animal Kingdom]. Видавництво “Українська енциклопедія”, Київ.

STARZYK, N. & DURAK, R. (2007). New localities of the Dalmatian frog *Rana dalmatina* Bonaparte in south-eastern Poland. *Przeгляд Zoologiczny* 51: 51–55.

TEMPLE, H. J. & COX, N. A. (2009). European Red List of Amphibians. Luxembourg: Office for Official Publications of the European Communities.

PLEŠNÍK, J., HANZAL, V. & BREJŠKOVÁ, L. (eds.) (2003). Červený seznam ohrožených druhů České republiky. Obratlovci [Red List of Threatened Species in the Czech Republic Vertebrates]. Příroda, Praha 22: 1-184.

PUKY, M., SCHÁD, P. & SZÖVÉNYI, G. (2005). Magyarorszag herpetológiai atlasza [Herpetological atlas of Hungary]. Varangy Akciócsoport Egyesület, Budapest.

VLAŠÍN, M. (2003). Reptiles and Amphibians. Pp.: 48-50. In: J. WITKOWSKI Z. J., KRÓL W. & SOLARZ W. (eds.), Carpathian List of Endangered Species. WWF and Institute of Nature Conservation, Polish Academy of Sciences, Vienna-Krakow.

VÖRÖS, J. & MAJOR, Á. (2007). Kétéltűpopulációk földrajzi szerkezete a Kárpát-medencében [Geographical structure of amphibian populations in the Carpathian Basin]. Pp.: 269-282. In: Forró L. (ed.), A Kárpát-medence állatvilágának kialakulása. Magyar Természettudományi Múzeum, Budapest.

ZAVADIL, V. & MORAVEC, J. (2003). Červený seznam obojživelníků a plazů České republiky [Red list of amphibians and reptiles of the Czech Republic]. Příroda, Praha, 22: 83-93.

ZIELIŃSKI, P. (2004). *Triturus cristatus*. In: ADAMSKI, P., BARTEL, L., BERESZYŃSKI, A., KEPEL, A. & WITKOWSKI, Z. (eds.) Gatunki zwierząt (z wyjątkiem ptaków). Poradniki ochrony siedlisk i gatunków Natura 2000 – podręcznik metodyczny [Species of animals (except birds). Tutorial protection of Natura 2000 habitats and species - Methodological manual]. Ministerstwo Środowiska, Warszawa, T. 6, p. 289-293.

Table 1: Overview of the status of amphibians of the Carpathians

Taxon	SK	CZ	HU	PL	RO	RS	UA	Proposed IUCN RL category (Carpathians)	Red List Status - criteria	Endemic to Carpathians	HD Annexes	Bern Convention Appendix
<i>Pelobates fuscus</i> (Laurenti, 1768)	VU	CR	LC			NT	VU	VU	A4 acde, B2 b (i-v)	N	IV	II
<i>Rana arvalis</i> Nilsson, 1842	EN	EN	LC			NT	VU	VU	A1,2 abcd	N	IV	II
<i>Rana lessonae</i> Cameron, 1882 [Pelophylax lessonae]	EN	CR	LC			LC	VU	VU	A2, acde	N	IV	
<i>Triturus alpestris</i> (Laurenti, 1768) [Mesotriton alpestris]	VU	NT	LC			NT	VU	VU	A2, acd	N	II, IV	II
<i>Triturus cristatus</i> (Laurenti, 1768)	CR	CR	LC	NT	VU	LC	VU	VU	A2, acd	N	II, IV	II
<i>Triturus montandoni</i> (Boulenger, 1880) [ <i>Lissotriton montandoni</i> ]	VU	CR		LC	VU	LC	VU	VU	A2,4 acde	Y	II, IV	II

Taxon	SK	CZ	HU	PL	RO	RS	UA	IUCN RL category (Carpathians)	Endemic to Carpathians	HD Annexes	Bern Convention Appendix	
<i>Bombina bombina</i> (Linnaeus, 1758)	VU	EN	LC				LC	LC	NT	II, IV	II	
<i>Bombina variegata</i> (Linnaeus, 1758)	NT	VU	LC			NT	LC	LC	NT	II, IV	II	
<i>Bufo bufo</i> (Linnaeus, 1758)	NT	LC	LC			NT	LC	LC	NT			
<i>Bufo viridis</i> Laurenti, 1768 [Pseudepidalea viridis]	NT	NT	LC			NT	LC	LC	NT	N	IV	II
<i>Hyla arborea</i> (Linnaeus, 1758)	NT	NT	LC			VU	LC	LC	NT	N	IV	II
<i>Pelobates fuscus</i> (Laurenti, 1768)	VU	CR	LC				NT	VU	VU	N	IV	II
<i>Rana arvalis</i> Nilsson, 1842	EN	EN	LC				NT	VU	VU	N	IV	II
<i>Rana dalmatina</i> Fitzinger, 1838	LC	LC	LC	NT	VU		NT	LC	LC	N	IV	II
<i>Rana esculenta</i> Linnaeus, 1758 [Pelophylax esculentus]	NT	LC	LC				LC	LC	LC	N	V	
<i>Rana lessonae</i> Cameron, 1882 [Pelophylax lessonae]	EN	CR	LC				LC	VU	VU	N	IV	II
<i>Rana ridibunda</i> Pallas, 1771 [Pelophylax ridibundus]	VU	NT	LC				LC	NT	NT	N	V	
<i>Rana temporaria</i> Linnaeus, 1758	NT	LC	LC				LC	LC	LC	N	V	
<i>Salamandra salamandra</i> (Linnaeus, 1758)	LC	LC	LC				LC	LC	LC	N		
<i>Triturus alpestris</i> (Laurenti, 1768) [Mesotriton alpestris]	VU	NT	LC				NT	VU	VU	N		
<i>Triturus cristatus</i> (Laurenti, 1768)	CR	CR	LC	NT	VU		LC	VU	VU	N	II, IV	II
<i>Triturus dobrogicus</i> (Kiritzescu, 1903)	VU		NT				NT	NT	NT	Y	II	II
<i>Triturus montandoni</i> (Boulenger, 1880) [ <i>Lissotriton montandoni</i> ]	VU	CR		LC	VU		LC	VU	VU	Y	II, IV	II
<i>Triturus vulgaris</i> (Linnaeus, 1758) [ <i>Lissotriton vulgaris</i> ]	NT	LC	LC				LC	LC	LC	N		

# DRAFT CARPATHIAN RED LIST OF THREATENED REPTILES (REPTILIA)

Compiled by Peter Urban & Ján Kautman

Contributors and persons involved in processing and compilation of source data: Rastko Ajtic (Serbia), Miklós Heltai (Hungary), Ján Kautman, Peter Urban (Slovakia), Fedir Kurtiak (Ukraine), Horea Olosutean (Romania), Martin Strnad (Czech Republic), Małgorzata Makomanska-Juchiewicz, Monika Szweczyk (Poland)

## Summary – Results and recommendations

The status of Reptiles was assessed at two regional levels: - each Carpathian country, and the whole Carpathians. From 16 Reptile species that occur in the Carpathian region, 7 (43.8%) were considered threatened, of which 1 species (6.3%) (*Vipera ursinii*) as “Critically Endangered”, 3 (18.8%) (*Emys orbicularis*, *Testudo hermanni* and *Vipera ammodytes*) as “Endangered” and 3 (18.8%) (*Ablepharus kitaibelii*, *Coronella austriaca* and *Zamenis longissimus*) as “Vulnerable” (Table 1). A further four reptile species were classed as “Near Threatened” and five species as “Least Concern”. Status of reptile species in Carpathians is less favourable than at the European regional level, where 19.4% of Reptiles are threatened, with 4.3% “Critically Endangered”, 7.9% “Endangered”, and 7.1% “Vulnerable” species. Within the EU27 the pattern is similar in the geographical Europe: 21.1% of Reptiles are threatened, with a similar break down between the three threatened categories (COX & TEMPLE 2009).

## Methods

The status of all species was assessed using the IUCN Red List Criteria (IUCN 2001) and all assessments followed the Guidelines for Application of IUCN Red List Criteria at Regional Levels (IUCN 2003) and Guidelines for Using the IUCN Red List Categories and Criteria (IUCN 2005) and Rules of Procedure IUCN Red List Assessment Process 2013–2016 (IUCN 2012), too. The authors assessed the status of species for the whole of the Carpathians using “categories of threats” in some countries available from existing country Red Lists and Red Books. As a result, this Carpathian List of Endangered Species comprises species for which the category of threat in the whole region was estimated to be one of the following: Extinct (EX); Regionally Extinct (RE); Critically Endangered (CR); Endangered (EN); or Vulnerable (VU). Additional criteria were applied when choosing species categories included whether the species was: Endemic to the Carpathians; Listed in the European Union’s Habitat Directive

and Listed in the Bern Convention Appendices.

The IUCN criteria were assigned, using not only the occurrence and trends of taxa in Carpathian orographic units (Alpine biogeographic region), but also considering the situation in adjacent areas and especially in Pannonian (biogeographic) region. Especially species living only in lowland areas or species with most predominant occurrence at lower altitudes are difficult to assess in the evaluation of the Carpathians only. Without considering the occurrence in adjacent areas the evaluation would be in many cases unrealistic, illogical if taking out the context of the actual status of the species.

## Remarks on the choice of species

Classification based on the sizes of numbers, trends and distribution (geographic ranges or the patterns of habitat occupancy) of evaluated taxa is very complicated by problems of spatial scale. Databases on the red lists of threatened species are on national level in some cases still incomplete and inconsistent, because detailed knowledge about the distribution, abundance and their trends of most reptile species is not very good. Much information available is not from the Carpathian area of the country only. Many Carpathian areas (including protected areas) need a fundamental inventory in order to draw any solid conclusions about the list of species, their distribution, density and threats. Therefore, the choice of species (taxa) was quite difficult.

The consideration of the adjacent areas to the Carpathians (mostly lowland regions) was particularly a case for the species *Emys orbicularis* and *Ablepharus kitaibelii*. Their occurrence is restricted to the Pannonian region.

Assessment and classification of taxa into categories reflects the assessment of their real status, comparisons of mutual status of more taxa and their perspective in the near future.

## Overview of the state of endangerment, endemic species in the Carpathians

See Table 1.

The conservation of Carpathian Reptiles is regulated by different laws at international, national and sub-national levels. At the European level, the Habitat Directive (Council Directive 92/43/EEC) transposed into national law, is the most important legal tool for their protection. The outputs from this project can be applied at Carpathian scale to identify priority species for protection and for some regional research and monitoring programmes.

## Main threats

The main threats for Reptiles are (like for Amphibians) habitat loss, deterioration, fragmentation and large-scale deforestation in general, pollution, harvesting, deliberate persecution and other human disturbance (destruction of eggs, e. g. *Emys orbicularis*) and road mortality.

The most serious negative factors influencing the occurrence of reptiles is use of chemicals (especially insecticides), anthropic pressure leading to the decrease of food base, succession of xerotherm habitats by (many times) invasive plant and tree species (e.g. acacia tree) and a low level of mosaic patterns in the landscape. For this reason there was a decrease in the population of the most common reptile *Lacerta agilis* in the past years. Its abundance decreased at many sites significantly, somewhere even behind the point of observation.

## Acknowledgements

We would like to thank for their input also to our colleagues Katalin Mázsa, Jozef Májsky and Peter Mikulčík.

## References

- COX, N. A. & TEMPLE, H. J. (2009). European Red List of Reptiles. Luxembourg: Office for Official Publications of the European Communities.
- GŁOWACIŃSKI, Z. (1993). Czerwona Lista zwierząt ginących i zagrożonych w Polsce [Red List of extinct and endangered animal species]. Zakład Ochrony Przyrody i Zasobów naturalnych PAN, Kraków.
- GŁOWACIŃSKI, Z. (ed.) (2001). Polska czerwona księga zwierząt. Kręgowce. [Polish Red Data Book of Animals. Vertebrates]. Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.
- IFTIME, A. (2001). Lista Roşie comentată a amfibienilor și reptilelor din România [Commented Red List of amphibians and reptiles from Romania]. Ocrotirea Naturii 44 – 45: 39-49.
- IUCN (2001). IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.
- IUCN (2003). Guidelines for Application of IUCN Red List Criteria at Regional Levels: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.

IUCN (2005). Guidelines for Using the IUCN Red List Categories and Criteria. IUCN, Gland, Switzerland and Cambridge, UK.

IUCN (2012). Rules of Procedure IUCN Red List Assessment Process 2013–2016. Version 2.0. Approved by the IUCN SSC Steering Committee in September 2012. Downloadable from: [http://www.iucnredlist.org/documents/Rules\\_of\\_Procedure\\_for\\_Red\\_List\\_2013-2016.pdf](http://www.iucnredlist.org/documents/Rules_of_Procedure_for_Red_List_2013-2016.pdf)

IUCN (2013). IUCN Red List of Threatened Species. Version 2013.2. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 12 March 2014.

KAUTMAN, J., BARTÍK, I. & URBAN, P. (2001). Červený (ekozozologický) zoznam plazov (Reptilia) Slovenska [Red (Ecosozological) List of Reptiles (Reptilia) of Slovakia]. Pp. 148-149. In: BALÁŽ, D., MARHOLD, K. & URBAN, P. (eds), Červený zoznam rastlín a živočíchov Slovenska. Ochrana prírody 20 (Suppl), 160 pp.

MIKÁTOVÁ, B., VLAŠÍN, M. & ZAVADIL, V. (eds) (2001). Atlas rozšíření plazů v České republice [Atlas of the distribution of Reptiles in the Czech Republic]. AOPK ČR Brno – Praha.

MUSILOVÁ, R., ZAVADIL, V. & KOTLÍK, P. (2006). Follow-up of Recommendation No. 106 (2003) on the conservation of the Aesculapian snake (*Elaphe longissima*). Document prepared by: The Government of the Czech Republic. Convention on the Conservation of European Wildlife and Natural Habitats Standing Committee. 26th meeting Strasbourg, 27-30 November 2006. Available at: <https://wcd.coe.int/com.instranet.InstraServlet?command=com.instranet.CmdBlobGet&InstranetImage=1326490&SecMode=1&DocId=1436596&Usage=2>

MUSILOVÁ, R., ZAVADIL, V., MARKOVÁ, S. & KOTLÍK, P. (2010). Relics of the Europe’s warm past: Phylogeography of the Aesculapian snake. Molecular Phylogenetic and Evolution: 57(3): 1245-1252.

RAKONCZAY, Z. (ed.) (1989). Vörös Könyv. A Magyarország kipusztult és veszélyeztetett növény-és állatfajok [Red Book. The extinct and endangered animal and plant species of Hungary]. Akadémiai Kiadó, Budapest.

SHCHERBAK, M. M. (ed.) (1994). Червона книга України. Тваринний світ. [Red Data Book of Ukraine. Animal Kingdom]. Видавництво “Українська енциклопедія”, Київ.

ZAVADIL, V. & MORAVEC, J. (2003). Červený seznam obojživelníků a plazů České republiky [Red list of amphibians and reptiles of the Czech Republic]. Příroda, Praha 22: 83-93.

VLAŠÍN, M. (2003). Reptiles and Amphibians. Pp.: 48-50. In: Witkowski, Z. J., Król, W. & Solarz, W. (eds), Carpathian List of Endangered Species. WWF and Institute of Nature Conservation, Polish Academy of Sciences, Vienna-Krakow, 84 pp.

Table 1: Overview of the status of reptiles of the Carpathians

Taxon	SK	CZ	HU	PL	RO	RS	UA	Proposed IUCN RL category (Carpathians)	Red List Status - criteria	Endemic to Carpathians	HD Annexes	Bern Convention Appendices
<i>Ablepharus kitaibelii</i> Bibron & Bory de Saint-Vincent, 1833	VU		LC					VU	A2,4 acc, C1,2a	N	IV	II
<i>Coronella austriaca</i> Laurenti, 1768	VU	VU	LC	LC	VU	NT	NT	VU	A2,4 acc, C1,2a	N	II, IV	II
<i>Elaphe longissima</i> (Laurenti, 1768) [Zamenis longissimus]	NT	CR	LC	EN	VU	NT	NT	VU	A2,4 acde, C1,2ab	N	IV	II
<i>Emys orbicularis</i> (Linnaeus, 1758)	CR		NT		VU	NT	NT	EN	A2,4 acde, B2 ab (i-v)	N	II, IV	II
<i>Testudo hermanni</i> Gmelin, 1789					EN			EN	A2,4 acde	N	II, IV	II
<i>Vipera ammodytes</i> (Linnaeus, 1758)					EN			EN	A2,4 acde	N		II
<i>Vipera ursinii</i> (Bonaparte, 1835)			VU		CR			CR	B2 ab (i-v)	N	II, IV	II

Taxon	SK	CZ	HU	PL	RO	RS	UA	IUCN RL category (Carpathians)	Endemic to Carpathians	HD Annexes	Bern Convention Appendices
<i>Ablepharus kitaibelii</i> Bibron & Bory de Saint-Vincent, 1833	VU		LC					VU		IV	II
<i>Anguis fragilis</i> Linnaeus, 1758	LC	LC			VU		LC	LC			III
<i>Coluber caspius</i> Gmelin, 1789			LC					LC		IV	
<i>Coronella austriaca</i> Laurenti, 1768	VU	VU	LC	LC	VU	NT	NT	VU		II, IV	II
<i>Elaphe longissima</i> (Laurenti, 1768) [Zamenis longissimus]	NT	CR	LC	EN	VU	NT	NT	VU		IV	II
<i>Emys orbicularis</i> (Linnaeus, 1758)	CR		NT		VU	NT	NT	EN		II, IV	II
<i>Lacerta agilis</i> Linnaeus, 1758	NT	NT	LC		LC		LC	LC		IV	II
<i>Lacerta viridis</i> (Laurenti, 1768)	NT	CR	LC	RE	LC		VU	NT		IV	II
<i>Natrix natrix</i> (Linnaeus, 1758)	LC	LC	LC		LC		LC	LC			II
<i>Natrix tessellata</i> (Laurenti, 1768)	VU		LC		NT		LC	NT		IV	II
<i>Podarcis muralis</i> (Laurenti, 1768)	LC	CR	LC		VU		LC	NT		IV	II
<i>Testudo hermanni</i> Gmelin, 1789					EN			EN		II, IV	II
<i>Vipera ammodytes</i> (Linnaeus, 1758)					EN			EN			II
<i>Vipera berus</i> (Linnaeus, 1758)	NT	NT	LC		EN		NT	NT		IV	
<i>Vipera ursinii</i> (Bonaparte, 1835)			VU		CR			CR		II, IV	II
<i>Zootoca vivipara</i> (Jacquin, 1787)	LC	NT	LC		LC		LC	LC		IV	II

# DRAFT CARPATHIAN RED LIST OF BIRDS (AVES)

Peter Puchala, Miroslav Demko, Anton Krištín & Goran Sekulic

## Introduction (Background)

Birds belong to a very popular animal group and have enjoyed a great attention for a long time. Due to this fact there is a lot of data on distribution and abundance of most of bird species, mainly in Central Europe. Long-term monitoring of bird populations enables to estimate their trends on different levels. Red list of threatened bird species is frequently updated and every fourth year re-evaluated. The scientific authority for this process on global level represents BirdLife International. The recent IUCN Red list of birds comprises more than 10 000 species (BirdLife International 2013). Almost 200 species worldwide are recently considered as being critically endangered. This number has reached in all-time the highest value. Almost 400 species are considered as endangered and 713 species are listed in a category vulnerable.

The last IUCN Red List on European level contains 773 bird species. From this number two of them are considered as extinct, four species critically endangered, 11 species endangered and 21 species vulnerable. The last comprehensive Red List of European bird species including the population estimates and trends was published by BirdLife International in 2004.

There were already several evaluations of status of threatened bird species at a Carpathian level. The last Red List was published in 2003, where 29 bird species in total were selected (Witkowski et al. 2003). Out of them seven species were considered as critically endangered, 11 species endangered and 11 species vulnerable. However that list was based on older categories and criteria (IUCN 1995).

## Method of assessment

This Red List of endangered bird species of Carpathians is based on data provided by 7 particular Carpathian countries. The evaluation on national level was done by each country itself and data were filled in specially developed database. Basic data contained conservation status, category, criteria used in evaluation, distribution range within individual countries according to orographic units, population data (when accessible) and in some cases information about trends.

The assessments were based on national Red Lists from individual countries. The last Red List of birds of the

Czech Republic was published in 2003 (ŠTASTNÝ & BEJČEK 2003). Polish Red Data Book was published in 2001 (GŁOWACIŃSKI 2001). The checklist of endangered bird species of Slovakia based on older IUCN categories and criteria (IUCN 1995) was published in 2001 (KRIŠTÍN *et al.* 2001). However, actual IUCN categories and criteria (IUCN 2012) were used in recent Red List of birds in Slovakia (DEMKO *et al.* 2013), parallel with preparation of the Carpathian Red List.

## Assessment methodology

The final assessment of bird species was based on assessed categories provided by individual countries (Table 1). All species included into database were considered during assessment process. However, the common approach was to assess properly each bird species that belongs to one of the categories VU, EN, CR, RE or EX in at least one country. The final assessment was done based on data from all countries, including conservation status, IUCN criteria used (IUCN 2013), population data, trend data.

One of the important variables for the assessment was the size of the breeding population. Quite a good data on population and a number of breeding pairs were available for some of the bird species, especially for the birds of prey.

However, it was quite difficult to obtain data on trends. Data on European level from Pan-European Common Bird Monitoring Scheme PECBMS (EBCC 2013) were used for the final assessment. Other important sources of population trends were the individual countries' reports for European Commission according to Article 12 of Bird Directive (EEA 2014).

One of the difficulties of the assessment was an evaluation of species whose occurrence was in the Carpathians only marginal, e.g. species whose major part of range is located in territories adjacent to Carpathians. Those species occur and occasionally breed in Carpathian region but have quite strong populations in adjacent regions. In such a case the species were included in the category not applicable (NA). Several waterfowl species that have frequently only a small breeding population in the Carpathians were also assessed this way. Species with the category NA were not included into this Red List.

## Results (Executive summary)

Altogether 28 bird species were selected for this Red List of Carpathian species. Five species were evaluated in category Critically Endangered, 14 species in category Endangered and 8 species in category Vulnerable. One bird species was considered as regionally extinct for the Carpathians (Table 2).

Some of the species included into the Carpathian Red List are also globally threatened. Two of them *Falco cherrug* and *Aquila heliaca* were evaluated at global level in higher categories (BirdLife International 2013).

For further development of the Red List of Carpathian bird species, a detailed data collection and establishment of long-term monitoring schemes is very important. It is very important to develop common schemes within all Carpathian countries. That would enable better re-

valuation of conservation status of endangered species. Regular assessments on national level are very important as well.

## Main threats

One of the most important threats to the birds in the Carpathian region is habitat alteration, fragmentation and destruction. This threat is critical for several species listed in the Red List. Birds of prey and cavity breeding birds needing old forests are affected the most; however, birds of steppe habitats and species related to agricultural land are affected as well.

Most of the red list bird species belong to the group of birds of prey, which are negatively affected by decreasing coverage of old growth forest, important for their breeding. This factor, together with interruptions during breeding,

is crucial for their population decrease. Changes in habitats affected strongly also forest gallinaceous birds *Tetrao urogallus* and *Tetrao tetrix*. Their populations have decreased rapidly in all Carpathian countries.

Habitat changes connected to changes in agricultural techniques and abandonment of traditional agricultural practices are also one of the important factors. They caused rapid decline of some species populations, e.g. as *Perdix perdix*, *Circus pygargus*.

One of the very important threats, especially for birds of prey, is a bird crime. Every year there are several cases of illegal shooting or intoxication by illegal poisons in certain countries (Slovakia, Hungary, Czech Republic). Quite important causes of population decline of those species are collisions with high voltage electric lines.

## Conservation practices and management

The Red List of Carpathian bird species is a very important source of information on the current status of populations of endangered and threatened species. The list could be an essential guide to conservation efforts focused on individual species. IUCN categories as themselves could be a key to guiding priorities for conservation measures.

The presented list could be very useful guide for common action within all Carpathian countries for selected bird species in higher categories. The main threats seem to be very similar within all countries. That is a reason for developing of common species conservation focused strategies on Carpathian level. Such an approach is extremely important.

It is necessary to repeat the assessment of conservation status within Carpathian region regularly. Regular assessment would provide valuable warning about population dynamics and environmental changes. It would also help to monitor conservation actions and their results.

## Acknowledgments

We are grateful to all who provided data to database and participated in process of assessment. Namely we would like to thank Martin Strnad from the Czech Republic, Tomasz Wilk and Rafał Bobrek from Poland, Bohdan Hodoanets from Ukraine, Miklós Heltai from Hungary and Horea Olosutean from Romania.

## References

- BIRDLIFE INTERNATIONAL (2004). Birds in Europe: population estimates, trends and conservation status – Cambridge, UK.
- BIRDLIFE INTERNATIONAL (2013). IUCN Red List for birds. [Cit. 10.03.2014] Available at <http://www.birdlife.org/datazone/species>
- DEMKO, M., KRIŠTÍN, A. & PUCHALA, P. (2013). Red list of birds in Slovakia. *Tichodroma* 25: 69-78.
- EBCC (2013). Trends of common birds in Europe,

2013 Update. [Cit. 18.09.2013] Available at <http://www.ebcc.info/index.php?ID=509>

EUROPEAN ENVIRONMENTAL AGENCY (2014). Deliveries for progress/implementation report (Article 12, Birds Directive). [Cit. 29.01.2014] Available at <http://rod.eionet.europa.eu/obligations/278/deliveries>

GŁOWACIŃSKI, Z. (red) (2001). Polska czerwona księga zwierząt - kregowce. Polish Red Data Book of Animals - Vertebrates. — PWRiL, Warszawa.

IUCN (1995). IUCN Red List categories. Prepared by IUCN Species Survival Commission. 21 pp.

IUCN (2012). IUCN Red List Categories and Criteria: Version 3.1. Second edition. Gland, Switzerland and Cambridge, UK: IUCN. iv + 32pp.

KRIŠTÍN, A., KOCIAN, E. & RÁC, P. (2001). Červený (ekozozologický) zoznam vtákov (Aves) Slovenska. Červený zoznam rastlín a živočíchov Slovenska. – Ochrana prírody Supplement 20: 150–153.

ŠTASTNÝ, K. & BEJČEK, V. (2003). Červený seznam ptáku České republiky. – *Příroda* 22: 95–129.

WITKOWSKI, Z.J., KRÓL, W. & SOLARZ, W. (eds.) (2003). Carpathian List of Endangered Species. WWF and Institute of Nature Conservation, Polish Academy of Sciences, Vienna-Krakow.

Table 1: List of the bird species with the status of threat in the Carpathians and within individual countries

species	Carpathians	CZ	SK	PL	UA	HU	RO	RS	global
<i>Mihus mihus</i>	CR (A1c)	CR	EN		EN	NT			NT
<i>Mihus migrans</i>	EN (D, C2a)	CR	EN		VU	NT			LC
<i>Circus gallicus</i>	EN (D)								LC
<i>Aquila heliaca</i>	EN (D)								VU
<i>Aquila chrysaetos</i>	VU (D)	LC	NT	VU	CR	LC	VU	NT	LC
<i>Aquila pennata</i>	EN (D, A2)	NE	CR		EN	LC	CR	NT	LC
<i>Circus pygargus</i>	EN (D)	EN	VU			LC			LC
<i>Falco cherrug</i>	CR (D, A1c)	CR	CR			EN	CR		EN
<i>Tyto alba</i>	EN (D, A2)	EN	VU		VU	LC			LC
<i>Charadrius morinellus</i>	CR (D, C2a)			RE			CR		LC
<i>Tringa totanus</i>	VU (A2)	CR	VU			LC			LC
<i>Alectoris graeca</i>	EN (D)							VU	NT
<i>Perdix perdix</i>	VU (A2)	NT	VU						LC
<i>Tetrao urogallus</i>	EN (A)	CR	EN	EN	NT				LC
<i>Tetrao tetrix</i>	EN (A2)	EN	EN	EN	CR	LC	EN		LC
<i>Coracias garrulus</i>	EN (A2)	RE	CR			NT		VU	NT
<i>Eremophila alpestris</i>	CR (D)						CR	VU	LC
<i>Lullula arborea</i>	VU (A2)	EN	NT				EN	VU	LC
<i>Anthus campestris</i>	VU (A2)	CR	VU			LC			LC
<i>Motacilla citreola</i>	EN (D)		CR	EN		LC			LC
<i>Luscinia svecica svecica</i>	EN (D)	EN	EN	CR		LC			LC
<i>Monticola saxatilis</i>	EN (A2)	RE	CR	RE	CR	LC	EN	NT	LC
<i>Phoenicurus phoenicurus</i>	VU (A2)	LC	VU			LC			LC
<i>Phylloscopus trochiloides</i>	EN (D)	VU	EN						LC
<i>Tichodroma muraria</i>	VU (A2)	NE	CR	CR		LC	VU	VU	LC
<i>Lanius senator</i>	CR (A2)	RE	RE			LC			LC
<i>Lanius minor</i>	VU (A2)	RE	EN	RE		LC			LC
<i>Pyrrhocorax graculus</i>	RE	NE						RE	LC

Table 2: List of threatened bird species in the Carpathians with IUCN criteria used and their listing in different annexes.

species	IUCN category	IUCN criteria	BD annexes	Bern Convention appendices	Bonn Convention annexes
<b>Accipitridae</b>					
<i>Milvus milvus</i>	CR	A1c	BD1	Bern2	Bonn2
<i>Milvus migrans</i>	EN	D, C2a	BD1	Bern2	Bonn2
<i>Circus gallicus</i>	EN	D	BD1	Bern2	Bonn2
<i>Aquila heliaca</i>	EN	D	BD1	Bern2	Bonn1,2
<i>Aquila chrysaetos</i>	VU	D	BD1	Bern2	Bonn2
<i>Aquila pennata</i>	EN	D, A2	BD1	Bern2	Bonn2
<i>Circus pygargus</i>	EN	D	BD1	Bern2	Bonn2
<b>Falconidae</b>					
<i>Falco cherrug</i>	CR	D, A1c	BD1	Bern2	Bonn1
<b>Tytonidae</b>					
<i>Tyto alba</i>	EN	D, A2		Bern2	
<b>Charadriidae</b>					
<i>Charadrius morinellus</i>	CR	D, C2ai	BD1	Bern2	Bonn2
<b>Scolopacidae</b>					
<i>Tringa totanus</i>	VU	A2		Bern3	Bonn2
<b>Phasianidae</b>					
<i>Alectoris graeca</i>	EN	D			
<i>Perdix perdix</i>	VU	A2	BD2/1 BD3/1	Bern3	
<i>Tetrao urogallus</i>	EN	A2	BD1 BD2/2 BD3/2	Bern3	
<i>Tetrao tetrix</i>	EN	A2	BD1 BD2/2	Bern3	
<b>Coraciidae</b>					
<i>Coracias garrulus</i>	EN	A2	BD1	Bern2	Bonn2
<b>Alaudidae</b>					
<i>Eremophila alpestris</i>	CR	D		Bern2	
<i>Lullula arborea</i>	VU	A2		Bern3	
<b>Motacillidae</b>					
<i>Antus campestris</i>	VU	A2	BD1	Bern2	
<i>Motacilla citreola</i>	EN	D		Bern2	
<b>Muscicapidae</b>					
<i>Luscinia svecica svecica</i>	EN	D	BD1	Bern2	Bonn2
<i>Monticola saxatilis</i>	EN	A2		Bern2	Bonn2
<i>Phoenicurus phoenicurus</i>	VU	A2		Bern2	Bonn2
<b>Phylloscopidae</b>					
<i>Phylloscopus trochiloides</i>	EN	D		Bern2	Bonn2
<b>Tichodromidae</b>					
<i>Tichodroma muraria</i>	VU	A2		Bern2	
<b>Laniidae</b>					
<i>Lanius senator</i>	CR	D		Bern2	
<i>Lanius minor</i>	VU	A2	BD1	Bern2	
<b>Corvidae</b>					
<i>Pyrrhocorax graculus</i>	RE			Bern2	

# DRAFT CARPATHIAN RED LIST OF THREATENED MAMMALS (MAMMALIA)

Compiled by Peter Urban & Marcel Uhrin

Contributors and persons involved in processing and compilation of source data: Michal Ambros, Marcel Uhrin, Peter Urban, David Žiak (Slovakia), Angela Banaduc (Romania), Vladan Bjedov (Serbia), Miklós Heltai (Hungary), Vasyl Pokynchereda (Ukraine), Martin Strnad (Czech Republic), Małgorzata Makomanska-Juchiewicz, Monika Szewczyk (Poland)

## Summary – Results and Recommendations

The status of mammals was assessed at two regional levels (1) in each Carpathian state and (2) in the whole Carpathians.

From 109 mammal taxa that occur in the Carpathian region, 23 (25.1%) were considered threatened, of which 2 species (2.2%) (*Alces alces* and *Mustela lutreola*) are Critically Endangered, 3 (3.3%) Endangered and 17 (18.5%) Vulnerable (Table 1). One species, aurochs (*Bos primigenius*) was Extinct. The last wild individual is reputed to have died in 1627. The aurochs is the ancestor of domestic cattle (VUURE 2005). Even 14 taxa were classed as Data Deficient. Status of mammal species in the Carpathians is less favourable than at European regional level, where 14.2% of terrestrial mammals are threatened, with 1.5% Critically Endangered, 3.4% Endangered, and 9.3% Vulnerable. Further 3.4% were classified as Data Deficient. Within the EU 25, the pattern is similar, with 14.4% of terrestrial mammals Threatened, although a higher proportion of species is Critically Endangered (2.4%) (TEMPLE & TERRY 2007).

## Methods

The status of all species was assessed using the IUCN Red List Criteria (IUCN 2001) and all assessments followed the Guidelines for Application of IUCN Red List Criteria at Regional Levels (IUCN 2003) and Guidelines for Using the IUCN Red List Categories and Criteria (IUCN 2005) and Rules of Procedure for IUCN Red List Assessment Process 2013–2016 (IUCN 2012), too. The authors assessed the status of species for the whole Carpathians using “categories of threats” in some countries available from existing country and / or regional red-lists and red-books (e.g. RAKONCZAY 1989, SHCHERBAK 1994, VOLOŠČUK 1996, BÁLDI ET AL. 2001, GŁOWACIŃSKI 2001, 2002, ŽIAK & URBAN 2001, OKARMA & PERZANOWSKI 2003, PAUNOVIĆ ET AL. 2004). As a result, the Carpathian Red List of threatened Species comprises species classified under the Red List Categories Vulnerable (VU), Endangered (EN) or Criti-

cally Endangered (CR), or Extinct (EX) and Regionally Extinct (RE). Additional criteria applied when choosing species categories included whether the species was: Endemic to the Carpathians; Listed in the European Union’s Habitat Directive and Listed in the Bern Convention appendices.

The IUCN criteria were assigned depending not only on the occurrence and trends of taxa in Carpathian orographic areas (Alpine biogeographic region), but also on the situation in adjacent areas and especially in Pannonic area (biogeographical region). It is especially difficult to assess the species living in lowland areas only or species with most predominant occurrence at lower altitudes.

## Notes on taxonomy

*Myotis blythii oxygnathus* is considered as *Myotis blythii*.

## Remarks on the choice of species

Classification based on the numbers, trend and distribution size (geographic ranges or the patterns of habitat occupancy) of taxa evaluated is very complicated due to the problems of spatial scale. The red list databases of threatened species on national level are in some cases still incomplete and inconsistent.

## Overview of the state of endangerment, endemic species in the Carpathians

See Table 1, 2.

The conservation of Carpathian mammals is regulated by different laws at international and national level. At the European level, the Habitats Directive (Council Directive 92/43/EEC) is the most important legal tool for their protection and was transposed into national law.

## Main threats

The main threat to mammals is habitat loss, deterioration, habitat fragmentation and deforestation, and forest destruction in general. The second group of threats in-

cludes intensive hunting and illegal killing, poaching, poisoning and irrational pest control.

Bats are affected by disturbance of colonies in the roosts, unauthorised visiting and disturbing colonies in lofts and subterranean spaces, natural succession in roosts after mining. Situation in blocks of flats, where important populations of some species roost (e.g. *N. noctula*), could be considered a special problem.

For some alpine species, an increasing number of tourists and sport activities (e. g. hiking, skiing, rock-climbing, ski alpinism, paragliding) is a threat.

## References

- ANDĚRA, M. & HANZAL, V. (1996). Atlas of the mammals of the Czech Republic. A Provisional Version. II. Carnivores (Carnivora). Národní muzeum, Praha: 1–85
- ANDĚRA, M. & ČERVENÝ, J. (2003). Červený seznam savců České republiky [The Red List of mammals of the Czech Republic]. Příroda, Praha, 22: 121–129.
- BASHTA, A.-T. & POTISH, L. (2007). Ssavci Zakarpat-skó oblasti. [Mammals of the Transcarpathian region (Ukraine)]. Nacionalna akademija nauk Ukrajiny, Institut ekológiei Karpat, Užgorodskij nacionalnij universitet, Fond ochorony dikoj prírody (WWF) & Fond Vitli (Whitley Fund for Nature), Lviv, 258 pp.
- BÁLDI, A., CSORBA, G. & KORSÓS, Z. (2001). Setting priorities for the conservation of terrestrial vertebrates in Hungary. Biodiversity and Conservation 10: 1283–1296.
- BIHARI, Z., CSORBA, G. & HELTAI, M. (2007). Magyarország emlőseinek atlasza [The Atlas of Hungarian Mammals]. Kossuth Kiadó, Budapest.
- BOTNARIUC, N. & TATOLE, V. (2005). Cartea roșie a vertebratelor din România. Academia Română, Muzeul Național de Istoria Naturală „Grigore Antipa“, 260 pp.
- GAŚIENICA-BYRCYN, W. (2002). Ochrona kozicy (*Rupicapra rupicapra* L.) i świstaka (*Marmota marmota* L.) w Tatrzańskim Parku Narodowym. Problemy środowiska i jego ochrony, 10: 81-91. Uniwersytet Śląski, Katowice.
- GŁOWACIŃSKI, Z. (1993). Czerwona Lista zwierząt ginących i zagrożonych w Polsce [Red List of Extinct and Endangered animal species]. Zakład Ochrony Przyrody i Zasobów naturalnych PAN, Kraków.
- GŁOWACIŃSKI, Z. (ed.) (2001). Polska czerwona księga zwierząt. Kręgowce. [Polish Red Data Book of Animals. Vertebrates]. Państwowe Wydawnictwo Rolnicze i Leśne, Warszawa.
- GŁOWACIŃSKI, Z. (ed.) (2002). Red list of threatened animals in Poland. Institute of Nature Conservation PAS, Kraków.
- HELTAI, M. (2010). Emlősragadozók Magyarországon [Mammalian predators in Hungary]. MezőgazdaKiadó, Budapest.
- IUCN (2001). IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.ii + 30 pp.
- IUCN (2003). Guidelines for Application of IUCN Red List Criteria at Regional Levels: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.
- IUCN (2005). Guidelines for Using the IUCN Red List Categories and Criteria. IUCN, Gland, Switzerland and Cambridge, UK.
- IUCN (2012). Rules of Procedure IUCN Red List Assessment Process 2013–2016. Version 2.0. Approved by the IUCN SSC Steering Committee in September 2012. Downloadable from: [http://www.iucnredlist.org/documents/Rules\\_of\\_Procedure\\_for\\_Red\\_List\\_2013-2016.pdf](http://www.iucnredlist.org/documents/Rules_of_Procedure_for_Red_List_2013-2016.pdf)
- IUCN (2013). IUCN Red List of Threatened Species. Version 2013.2. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 12 March 2014.
- JAKIMIUK, S. & KRYT, N. (eds) (2012). Ochrona gatunkowa rysia, wilka i niedźwiedzia w Polsce [Protection of lynx, greywolf and brownbear in Poland]. WWF Polska, Warszawa, 256 pp.
- JAMROZY, G., PEKSA, L., URBANIK, Z. & GAŚIENICA-BYRCYN, W. (2007). Kozica tatrzańska *Rupicapra rupicapra tatraica*. Tatrzański Park Narodowy, Zakopane.
- JANIGA, M. & ŠVAJDA, J. (eds) (2002). Ochrana kamzíka [Chamois protection]. Správa TANAP, NAPANT, Výskumný ústav vysokohorskej biológie Žilinskej univerzity, Tatranská Javorina, 262 pp.
- KRIŠTOFIK, J. & DANKO, Š. (eds) (2012). Cicavce Slovenska, rozšírenie, biotómia a ochrana [Mammals of Slovakia, distribution, bionomy and protection]. Veda, Bratislava, 712 pp.
- LEŚIŃSKI, G., SIKORA, A. & OLSZEWSKI, A. (2011). Bat casualties on a road crossing a mosaic landscape. European Journal of Wildlife Research 57: 217–223.
- OKARMA, H. & PERZANOWSKI, K. (2003). Mammals. Pp.: 36-42. In: J. WITKOWSKI, Z. J., KRÓL, W. & SOLARZ, W. (eds), Carpathian List of Endangered Species. WWF and Institute of Nature Conservation, Polish Academy of Sciences, Vienna-Krakow, 84 pp.
- PAUNOVIĆ, M., KARAPANDŽA, B., STAMENKOVIĆ, S. & MILENKOVIĆ, M. (2004). Diverzitet slepih miševa Srbije – Studijske osnove nacionalnog plana akcije za očuvanje [Diversity of bats in Serbia – a study bases of national action plan for conservation]. Unpublished report, 85 pp. [Depon. in Uprava zaštite životne sredine, Ministarstvo nauke i zaštite životne sredine Republike Srbije Beograd] (in Serbian).
- PERZANOWSKI, K., WOŁOSZYN–GAŁEZA, A. & JANUSZCZAK, M. (2009). Management of a wisent population within a Natura 2000 site. European Bison Conservation Newsletter 2: 34-39.
- PIKSA, K. & NOWAK, J. (2001). The bat fauna of the Polish Tatra caves. Pp.: 181–190. In: W. W. B. (eds.): Proceedings of the VIIIth EBRS Vol. 1, Approaches to biogeography and ecology of bats. Chiropterological Information Center & Institute of Systematics and Evolution of Animals PAS, Kraków, 273 pp.
- PIKSA, K., BOGDANOWICZ, W. & TEREBA, A. (2011). Swarming of bats at different elevations in the Carpathian Mountain. Acta Chiropterologica 13(1): 113-122.
- PUCEK, Z. & RACZYŃSKI, J. (eds) (1983). Atlas rozmieszczenia ssaków w Polsce [Atlas of Polish mammals]. PWN, Warszawa.
- RAKONCZAY, Z. (ed.) (1989). Vörös Könyv. A Magyarországon kipusztult és veszélyeztetett növény- és állatfajok [Red Book. The extinct and endangered animal and plant species of Hungary]. Akadémiai Kiadó, Budapest.
- ŘEHÁK, Z. (1998). Faunistický přehled netopýřů moravsko-slezské části Karpat (Česká republika) I. Vespertilio 3: 111–130.
- ŘEHÁK, Z. (2006). Areal and altitudinal distribution of bats in the Czech part of the Carpathians (Chiroptera). Lynx, n. s. 37: 201–228.
- SAVIĆ, I., PAUNOVIĆ, M., MILENKOVIĆ, M. & STAMENKOVIĆ, S. (1995). Diverzitet faune sisara (Mammalia) Jugoslavije, sa pregledom vrsta od međunarodnog značaja [Diversity of Mammalian Fauna of Yugoslavia with review of species of international significance]. In: Biodiverzitet Jugoslavije sa pregledom vrsta od međunarodnog značaja [Biodiversity of Yugoslavia with review of species of international significance]. Faculty of Biology (Belgrade University) and Ecolibri. Belgrade.
- SHCHERBAK, M. M. (ed.) (1994). Червона книга України. Тваринний світ. [Red Data Book of Ukraine. Animal Kingdom]. Видавництво “Українська енциклопедія”, Київ.
- TEMPLE, H. J. & TERRY, A. (2007). The status and distribution of European mammals. Luxembourg: Office for Official Publications of the European Communities.
- TEMPLE, H. J. & TERRY, A. (2009). European Mammals: Status, trends and conservation priorities. Folia zoologica 58(3): 248-269.
- VOLOŠČUK, I. (ed.) (1996). Red Data Book. Lists of threatened plants and animals of the Carpathian national parks and reserves. Association of the Carpathian National Parks and Protected Areas, Tatranská Lomnica, 86 pp.
- VUURE, VAN C. (2005). Retracing the aurochs: history, morphology and ecology of an extinct wild ox. Pensoft Publishers, Sofia-Moscow.
- WILSON, D. E. & REEDER D. M. (eds) (2005). Mammal species of the world. Johns Hopkins University Press, 2, 142 pp. Available on line at <http://nmnhgoph.si.edu/msw/>
- ŽIAK, D. & URBAN, P. (2001): Červený (ekozozologický) zoznam cicavcov (Mammalia) Slovenska [Red (Ecological) List of Mammals (Mammalia) of Slovakia]. Pp. 154-156. In: BALÁŽ, D., MARHOLD, K. & URBAN, P. (eds), Červený zoznam rastlín a živočíchov Slovenska. Ochrana prírody 20 (Suppl), 160 pp.

Table 1: Overview of the status of mammals of the Carpathians

Taxon	SK	CZ	HU	PL	RO	RS	UA	IUCN RL category (Carpathians)	Red List Status criteria	Endemic to Carpathians	HD Annexes	Bern Convention Appendices
<i>Alces alces</i> (Linnaeus, 1758)	CR	CR						CR	D1			III
<i>Apodemus agrarius</i> (Pallas, 1771)	NE	LC			NT			LC				
<i>Apodemus flavicollis</i> (Melchior, 1834)	LC	LC			LC			LC				
<i>Apodemus sylvaticus</i> (Linnaeus, 1758)	LC	LC			LC			LC				
<i>Apodemus uralensis</i> (Pallas, 1811)	LC	NE						LC				
<i>Arvicola amphibius</i> (Linnaeus, 1758)	LC				NT			LC				
<i>Arvicola schermani</i> (Shaw, 1801)	DD							DD				
<i>Barbastella barbastellus</i> (Schreber, 1774)	NT	LC	NT	DD	VU	DD	VU	NT		II, IV		II
* <i>Bison bonasus</i> (Linnaeus, 1758)	EN			VU	RE		CR	EN	D1	II, IV		III
<i>Bos primigenius</i> Bojanus, 1827	EX			EX				EX				
<i>Canis aureus</i> (Linnaeus, 1758)	NE	NE			NT			NE		V		
* <i>Canis lupus</i> (Linnaeus, 1758)	NT	CR	VU	NT	VU	VU	VU	VU	A2 cd	II, IV*, V**		II
									* except the Polish and Slovak populations, ** Polish and Slovak populations			
<i>Capreolus capreolus</i> (Linnaeus, 1758)	NE	LC				NE		NE				III
<i>Castor canadensis</i> Kuhl, 1820			LC					NE				
<i>Castor fiber</i> Linnaeus, 1758	LC	VU	LC		•	•	LC	LC		II, IV*, V**		III
									* except the Polish populations, ** Polish populations			
<i>Cervus elaphus</i> Linnaeus, 1758	NE	LC			VU			NE				III
<i>Cervus nippon</i> Temminck, 1838		LC						LC				III
<i>Clethrionomys glareolus</i> (Schreber, 1780)	LC	LC			LC			LC				
<i>Cricetus cricetus</i> (Linnaeus, 1758)	VU	LC						DD		IV*, V**		II
									* except the Hungarian populations, ** Hungarian populations			
<i>Crocidura leucodon</i> (Hermann, 1780)	LC	LC	LC		NT			LC				III
<i>Crocidura suaveolens</i> (Pallas, 1811)	LC	LC	LC		NT			LC				III
<i>Dama dama</i> (Linnaeus, 1758)	NE	LC	LC		NE			NE				
<i>Dryomys nitedula</i> (Pallas, 1778)	LC	LC	NT	NT	VU	NE	VU	LC		IV		III
<i>Eliomys quercinus</i> (Linnaeus, 1766)	DD			CR	VU	DD	DD	DD				III
<i>Eptesicus nilssonii</i> (Keyserling & Blasius, 1839)	NT	LC		NT	EN	NA	EN	NT		IV		II

Taxon	SK	CZ	HU	PL	RO	RS	UA	IUCN RL category (Carpathians)	Red List Status criteria	Endemic to Carpathians	HD Annexes	Bern Convention Appendices
<i>Eptesicus serotinus</i> (Schreber, 1774)	LC	LC	LC		VU	NT	NT	LC			IV	II
<i>Erinaceus roumanicus</i> Barrett-Hamilton, 1900	LC	LC			NT			LC				
<i>Erinaceus europaeus</i> Linnaeus, 1758	DD	LC						LC				III
<i>Felis silvestris</i> Schreber, 1775	DD	DD	NT	EN	VU	NE	LC	DD		IV		II
<i>Glis glis</i> (Linnaeus, 1766)	LC	LC	LC	NT	NT	NT		NT				III
<i>Hypsugo savii</i> (Bonaparte, 1837)	DD		LC		NT			LC		IV		II
<i>Chionomys nivalis</i> (Martins, 1842)	LC		LC		NT			LC				III
<i>Lepus europaeus</i> Pallas, 1778	LC	NT			NE			LC				
<i>Lutra lutra</i> (Linnaeus, 1758)	VU	VU	NT		VU	VU	VU	VU	A1 abcd	II, IV		II
<i>Lynx lynx</i> (Linnaeus, 1758)	EN	GR	VU	NT	VU	VU	NT	EN	A2 acd	II, IV, V		III
* <i>Marmota marmota latirostris</i> (Linnaeus, 1758)	VU			VU				VU	A3c, B2a	Y	II, IV	III
<i>Martes foina</i> (Erxleben, 1777)	LC	LC			NT			LC				III
<i>Martes martes</i> (Linnaeus, 1758)	LC	LC	LC		NT			LC		V		III
<i>Meles meles</i> (Linnaeus, 1758)	LC	LC			NE			LC				III
<i>Micromys minutus</i> (Pallas, 1771)	LC	DD	LC					LC				
<i>Microtus agrestis</i> (Linnaeus, 1761)	LC	LC	LC					LC				
<i>Microtus arvalis</i> (Pallas, 1778)	LC	LC			LC			LC				
<i>Microtus subterraneus</i> (de Selys-Longchamps, 1836)	LC	LC			LC			LC				
<i>Microtus taticus</i> (Kratohvil, 1952)	LC			LC	DD		NT	NT		II, IV		II
<i>Miniopterus schreibersii</i> (Kuhl, 1817)	EN		NT	NA	NT	NT	RE	NT		II, IV		II
<i>Mus musculus</i> Linnaeus, 1758	LC	LC			NE			LC				
<i>Mus spicilegus</i> Petenyi, 1882	LC				NT			LC				
<i>Muscardinus avellanarius</i> (Linnaeus, 1758)	LC	LC	LC		NT	NT		LC		IV		III
<i>Mustela erminea</i> Linnaeus, 1758	LC	LC	NT				NT	LC				III
<i>Mustela eversmannii</i> eversmannii Lesson, 1827	DD							DD				
<i>Mustela eversmannii</i> Lesson, 1827	DD	DD	LC		NT			DD		II, IV		II
* <i>Mustela lutreola</i> (Linnaeus, 1761)	RE						CR	CR	A1 abcde, B 1, D 1			II

Taxon	SK	CZ	HU	PL	RO	RS	UA	IUCN RL category (Carpathians)	Red List Status criteria	Endemic to Carpathians	HD Annexes	Bern Convention Appendices
<i>Mustela nivalis</i> Linnaeus, 1766	LC	LC	LC	LC	NT	NT	LC	LC			V	III
<i>Mustela putorius</i> Linnaeus, 1758	DD	DD			NT		DD	DD				III
<i>Mustela vison</i> Schreber, 1777	DD						DD	DD				
<i>Myocastor coypus</i> (Molina, 1782)	NA	LC	LC		DD		NA	NA				
<i>Myotis alcaethoe</i> Helversen & Heller, 2001	DD	DD	DD		NA	DD	DD	DD				II
<i>Myotis bechsteinii</i> (Kuhl, 1817)	NT	DD	NT	NT	VU	NE	VU	NT			II, IV	II
<i>Myotis blythii</i> (Fomes, 1857)	NT	CR	LC		NT	NT	VU	NT			II, IV	II
<i>Myotis brandtii</i> (Eversmann, 1845)	NT	LC	LC		EN	NE	NT	NT			IV	II
<i>Myotis capaccinii</i> (Bonaparte, 1837)	NA	NA	NA	NA	VU	NT	NA	VU	A3 c, D2		II, IV	II
<i>Myotis dasycneme</i> (Boie, 1825)	NT	CR	NT	NT	EN	DD	VU	NT			II, IV	II
<i>Myotis daubentonii</i> (Kuhl, 1817)	LC	LC	LC	LC	VU	LC	NT	LC			IV	II
<i>Myotis emarginatus</i> (E. Geoffroy, 1806)	NT	LC	NT	NT	VU	NE	VU	NT			II, IV	II
<i>Myotis myotis</i> (Borkhausen, 1797)	LC	LC	LC		NT	NT	VU	LC			II, IV	II
<i>Myotis mystacinus</i> (Kuhl, 1817)	LC	LC	LC		VU	NT	NT	LC			IV	II
<i>Myotis nattereri</i> (Kuhl, 1817)	NT	LC	LC		VU	NE	VU	LC			IV	II
<i>Neomys anomalus</i> Cabrera, 1907	LC	LC	LC	LC	LC	NT	NT	NT				
<i>Neomys fodiens</i> (Pennant, 1771)	VU	LC	LC		NT	NT	NT	NT				
<i>Nyctalus lasiopterus</i> (Schreber, 1780)	DD	CR	NT		NA	DD	DD	DD			IV	II
<i>Nyctalus leisleri</i> (Kuhl, 1817)	NT	DD	LC	DD	EN	NE	VU	NT			IV	II
<i>Nyctalus noctula</i> (Schreber, 1774)	LC	LC	LC		NT	NT	LC	LC			IV	II
<i>Nyctereutes procyonoides</i> (Gray, 1834)	NA	LC	LC		DD		NA	NA				
<i>Ondatra zibethicus</i> (Linnaeus, 1766)	NE	LC	LC		LC		LC	LC				
<i>Oryctolagus cuniculus</i> (Linnaeus, 1758)	DD	NE					DD	DD				
<i>Ovis arvensis</i> Linnaeus, 1758	NA		NT		NE		NA	NA				III
<i>Pipistrellus kuhlii</i> (Kuhl, 1817)	DD		LC		VU		LC	LC			IV	II
<i>Pipistrellus nathusii</i>	DD	DD	LC		VU	NE	NT	DD			IV	II
(Keyserling & Blasius, 1839)												
<i>Pipistrellus pipistrellus</i> (Schreber, 1774)	LC	LC	LC		NT	NT	LC	LC			IV	III
<i>Pipistrellus pygmaeus</i> (Leach, 1825)	LC	LC	LC		NT	NT	LC	LC			IV	II

#### Taxon

Taxon	SK	CZ	HU	PL	RO	RS	UA	IUCN RL category (Carpathians)	Red List Status criteria	Endemic to Carpathians	HD Annexes	Bern Convention Appendices
<i>Plecotus auritus</i> (Linnaeus, 1758)	LC	LC	LC		NT	DD	VU	LC			IV	II
<i>Plecotus austriacus</i> (Fischer, 1829)	LC	LC	LC		VU	NT	NT	LC			IV	II
<i>Procyon lotor</i> (Linnaeus, 1758)	NE	LC	LC			NE	NE	NE				
<i>Rattus norvegicus</i> (Berkenhout, 1769)	LC	LC				NE	LC	LC				
<i>Rattus rattus</i> (Linnaeus, 1758)	DD					NT	NE	NE				
<i>Rhinolophus blasii</i> Peters, 1866	NA	NA	NA	NA	VU	NT	NA	VU	A3 c, B1 a, D2		II, IV	II
<i>Rhinolophus euryale</i> Blasius, 1853	EN	NA	NT	NA	VU	NT	NA	VU	A3 c, B1 a		II, IV	II
<i>Rhinolophus ferrumequinum</i> (Schreber, 1774)	VU		LC	LC		NT	VU	VU	A3 c, B1 a		II, IV	II
<i>Rhinolophus hipposideros</i> (Bechstein, 1800)	LC	VU	LC	VU		NT	NT	VU	A3 c, B1 a		II, IV	II
<i>Rhinolophus mehelyi</i> Matschie, 1901	NA	NA	NA	NA	NE	NE	NA	VU	A3 c, D2		II, IV	II
<i>Rupicapra rupicapra carpatica</i> (Couturier, 1938)					VU		VU	VU	A2 ade	Y	V	III
<i>Rupicapra rupicapra balcanica</i> Bolokay, 1925						VU		VU	A1, C1		II, IV	III
<i>Rupicapra rupicapra rupicapra</i>	NE						NE	NE				III
(Linnaeus, 1758)												
* <i>Rupicapra rupicapra tatraica</i> Blahout, 1972	EN			EN			EN	EN	A2 abcde, B 2b (i-iv)	Y	II, IV	III
<i>Sciurus carolinensis</i> Gmelin, 1788			LC				NE	NE				
<i>Sciurus vulgaris</i> Linnaeus, 1758	LC		LC			NT	LC	LC				III
<i>Sicista betulina</i> (Pallas, 1779)	LC	VU			DD		VU	VU	A1 acd		IV	II
<i>Sicista subtilis</i> (Pallas, 1773)	DD		LC		DD		DD	DD			II, IV	II
<i>Sorex alpinus</i> Schinz, 1837	VU	VU			NT		NT	VU	A1 c			III
<i>Sorex araneus</i> Linnaeus, 1758	LC	LC	LC		NT		LC	LC				III
<i>Sorex minutus</i> Linnaeus, 1766		LC	LC		NT		LC	LC				III
<i>Spalax graecus</i> Nehring, 1898					VU		VU	VU	D2			II
<i>Spermophilus citellus</i> (Linnaeus, 1766)	VU	GR	VU				VU	VU	A3 c, B1 a		II, IV	II
<i>Sus scrofa</i> Linnaeus, 1758	NE	LC			LC		NE	NE				
<i>Talpa europaea</i> Linnaeus, 1758	LC	LC	LC			NT	LC	LC				
* <i>Ursus arctos</i> Linnaeus, 1758	VU	GR	VU	NT	VU	VU	VU	VU	A2 cd		II, IV	II
<i>Vespertilio murinus</i> Linnaeus, 1758	DD	DD	LC	LC	VU	NT	DD	DD			IV	II
<i>Vormela peregusna</i> (Guldenstaedt, 1770)					VU		VU	VU	A2 c		II, IV	II

# DRAFT LIST OF INVASIVE ALIEN SPECIES OF THE CARPATHIAN REGION

Compiled by Ema Gojdičová (ed.)

**Data and assessment process contributors:** Tomáš Görner (Czech Republic), Zoltán Botta-Dukát, Miklós Heltai, Zoltán Fehér, Mihály Márton, László Patkó (Hungary), Hanna Kuciel, Wojciech Solarz, Monika Szewczyk (Poland), Erika Schneider, Horea Olosutean, Angela Banaduc, Amalia Dumbravă (Romania), Predrag Lazarević, Dejan Bakovič, Aleksandra Zatezalo, Saša Brankovič (Serbia), Ema Gojdičová, Anton Krištín, Ján Kautman, Ľubomíra Vavrová, Peter Urban, Peter Zach, Ján Kulfan (Slovakia), Mykola Voloshchuk, Alla Kozurak, Fedir Kurtiak, Vasil Chumak (Ukraine)

## Introduction

Many of alien plant and animal species are beneficial for humans. However, a significant number of them can become invasive and have serious and growing adverse impacts on biodiversity and related ecosystem services, human health and economy. The threat to biodiversity and ecosystem services that invasive alien species bring can have different forms, such as impact on native species ecosystem structure and function (alteration of habitats, competition, predation, replacement of native species). Globalisation processes have created new pathways for the introduction of non-native species to Europe including the Carpathian region. Complete lists of alien flora and fauna or in particular lists of invasive alien species are a helpful tool to address biological invasions on national or regional level. Therefore, in the last decades detailed catalogues of alien flora or fauna or various lists of invasive alien species causing impacts on biodiversity, economic activities and human health have been produced from local/national to global level. When focusing on Europe, several European institutions, initiatives or projects have produced lists of invasive alien species: EPPO, EEA/SEBI 2010, DAISIE, NOBANIS. The most comprehensive list is the “metalist” of invasive alien species in Europe (GENOVESI & SCALERA 2007) comprising more than 500 species. The proposed EU regulation on the prevention and management of the introduction and spread of invasive alien species will create a new challenge to tackle invasive alien species issue on three levels: EU, regional (e.g. biogeographical regions), national (member states) fostering cooperation and coordination.

## Assessment method

Countries in the Carpathian region have already published or are developing overviews of alien flora and fauna with focus on invasive alien species, however, available data

differ from country to country (see the references).

Based on available data and within limited time and resources available in the project there was no ambition to provide complete list of alien species in the Carpathians with the information on their status. Challenging task was to prepare the list of invasive alien species already causing problems in this region.

For the purpose of compiling the Carpathian List of Invasive Alien Species the guideline was prepared and following sources were used: flora and fauna databases, published catalogues or lists of alien species/invasive alien species, including papers on some systematic groups and in some cases unpublished data of experts involved. Collected data were fed into the project on-line form supported by maps.

Species were classified according to their status in one of the following categories: casual alien species (cas), naturalized alien species (nat), invasive alien species (inv). In case that a plant or animal species has not been found in the country (its Carpathian region) yet (so attention to the occurrence in a country has been given to this particular species), category not found (notfd) was used. Category not known (notkn) was used when no information about the particular species was available. In special cases a species native (ntv) to one of the project countries but alien to the others was possible to list also.

Species identified as invasive in one of the Carpathian countries were assessed as candidates for the Carpathian List only. The expert team evaluated candidate species using criteria agreed in the guidelines: number of countries/orographical units and area occupied by the species, as well as impacts on biodiversity (human health/economy - optional), in some cases invasive potential of the species was taken into account. Experience and knowledge of experts involved played very important role in the evaluation process, too.

## Results (Summary)

Taxonomic groups assessed for the Carpathian List of Invasive Alien Species followed the scope of the Carpathian Red List species assessment. However, invasive alien species were not identified in some of selected taxonomic groups, e.g. spiders (Araneae), dragonflies and damselflies (Odonata), birds (Aves).

The final list presented in the table No 1. covers Vascular plants, Vertebrates and some of the selected groups of Invertebrates. The list comprises 77 species, 37 are plant species and 40 animal species. From plant species, 32 are herbs and 5 woody plants. Majority of animal species are Invertebrates, 14 arthropods and 11 molluscs are listed. The most numerous group of Vertebrates are fishes, 10 species are on the list.

Comparing the final list to the known European lists of invasive alien species, 20 plant and 20 animal species are included at least in one of the following lists: EPPO, EEA/SEBI, DAISIE, NOBANIS. Detailed information on listed species across the Carpathian region is available in the project on-line platform.

## Main threats

In the Carpathian region majority of listed invasive plant species occupies man-made habitats such as road and railway sides, waste dumps, abandoned arable land, urban areas, forestry plantations. The most infested natural and semi-natural habitats are various types of wetlands (various water bodies and their banks, marshes, floodplain forests) and grasslands. Forest habitats in general resist invasive alien species, however, natural disturbances (fire, wind), as well as human activities open the space for invasive plant species. Invasive animal species first of all represent serious threat to the Carpathian native species, e.g. fish, amphibians in general are the most threatened groups, water birds nesting in wetlands, or European mink and otter are also threatened by American mink.

## New challenges

Proposed list of invasive species gives the first picture of the status of some alien species in the Carpathian region. It brings inspiration (and need) not only for completing the missing data for some of listed species but also for future projects and studies on alien species in the region: inventory of alien flora and fauna, detailed distribution (trends) and adverse impacts of already listed invasive species, detection of new alien species. As invasive species do not respect borders, the list opens space for cooperation and effective coordinated management of invasive species.

## Abbreviations:

DAISIE – Delivering Alien Invasive Species Inventories for Europe  
EEA – European Environment Agency  
EPPO – European Plant Protection Organisation

SEBI (SEBI 2010) – Streamlining European Biodiversity Indicators  
NOBANIS – European Network on Invasive Species

## References:

COUNCIL OF THE EUROPEAN UNION (2014). Proposal for a Regulation of the European Parliament and of the Council on the prevention and management of the introduction and spread of invasive alien species. Document No. 7252/2014, Brussels, 18 March 2014.

GENOVESI, P. & SCALERA, R. (2007). Assessment of existing lists of invasive alien species for Europe, with particular focus on species entering Europe through trade, and proposed responses. T-PVS/Inf (2007)2, Bern Convention Document, Strasbourg, 35 pp.

NOBANIS Database <http://www.nobanis.org/>.

### Czech Republic

HORSÁK, M., ŠTEFFEK, J., ČEJKA, T., LOŽEK, V. & JURÍČKOVÁ, L. (2009). Occurrence of *Lucilla scintilla* and *Lucilla singleyana* in the Czech and Slovak Republics – with remarks how to distinguish these two non-native minute snails. *Malacologica Bohemoslovaca* 8: 24–27.

MLÍKOVSKÝ, J. & STÝBLO, P. (2006). *Nepůvodní druhy fauny a flóry ČR*. ČSOP, Praha, 496 pp.

LUSK, S., LUSKOVÁ, V. & HANEL, L. (2011). Černý seznam nepůvodních invazivních druhů ryb ČR. Black list alien invasive fish species in the Czech Republic. *Biodiverzita ichtyofauny ČR (VIII)*: 79–97.

PYŠEK, P., CHYTRÝ, M., PERGL, J., SÁDLO, J. & WILD, J. (2012). Plant invasions in the Czech Republic: current state, introduction dynamics, invasive species and invaded habitats. *Preslia*, Praha, 84: 576–629.

PYŠEK, P. *et al.* (2012). Catalogue of alien plants of the Czech Republic (2nd edition): checklist update, taxonomic diversity and invasion pattern. *Preslia*, Praha, 84: 155–255.

ŠEFROVÁ, H. & LAŠTŮVKA, Z. (2005). Catalogue of alien animal species in the Czech Republic. *Acta univ. agric. et silvic. Mendel. Brun.*, LIII, No. 4: 151–170.

### Hungary

BÓDIS, E., NOSEK, J., OERTEL, N., TÓTH, B. & FEHÉR, Z. (2006). A Comparative Study of Two *Corbicula* Morphs (Bivalvia, Corbiculidae) Inhabiting River Danube. *INTERNATIONAL REVIEW OF HYDROBIOLOGY* 96(3): 257–273. (2011)

FEHÉR, Z., MAJOROS, G. & VARGA, A. (2006). A scoring method for the assessment of rarity and conservation value of the Hungarian freshwater molluscs. *HELLDIA (MÜNCHEN)* 6(3/4): 101–114.

BOTTA-DUKÁT, Z. & BALOGH, L. (eds) (2008). *Biology of the Most Invasive Plants in Hungary*. Institute of

Ecology and Botany, Hungarian Academy of Sciences, Vacrátot.

CSÁNYI, B. (1998–1999). Spreading invaders along the Danubian highway: first record of *Corbicula fluminea* and *C. fluminalis* in Hungary. – *Folia historico-naturalia Musei Matraensis* 23: 343–345.

FEHÉR, Z. & GUBÁNYI, A. (2001). The catalogue of the Mollusca Collection of the Hungarian Natural History Museum – Az MTM Puhatestű gyűjteményének katalógusa. Budapest: Magyar Természettudományi Múzeum, 466 pp.

HELTAI, M. (ed.) (2010). Emlős ragadozók Magyarországon. (Mammalian predators in Hungary.) Publisher: Mezőgazda Kiadó, Budapest.

HARKA, Á. & SALLAI, Z. (2004). Magyarország halfaunája. Nimfea Kiadó, Szarvas, 269 pp.

PETRÓ, E. (1984). Az Anodonta woodiana woodiana (LEA, 1834) kagyló megjelenése Magyarországon. – *Állattani Közlemények* 71: 189-191.

PINTÉR, L. (1984). Magyarország recens puhatestűinek revideált katalógusa (Mollusca). – *Folia Historico-Naturalia Musei Matraensis* 9: 79-90.

SZEKERES, J., SZALÓKY, Z. & BODOLAI, K. (2008). Első adat a Dreissena bugensis (Andrusov, 1897) (Bivalvia: Dreissenidae) magyarországi megjelenéséről – *Malakológiai Tájékoztató* 26: 33-36.

VARGA, A., KIRÁLY, G. & SÜLYOK, K. (2010). A Cornu aspersum (O. F. Müller, 1774) és a Helix lucorum Linnaeus, 1758 adventív csigafajok hazai előfordulásának aktualizálása – *Malakológiai Tájékoztató* 28: 85–90.

#### Poland

BIAŁECKA, K. (1982). Rośliny naczyniowe Grupy Pilska w Beskidzie Żywieckim. De plantis vascularibus in Carpathibus occidentalibus in regione Montis Pilsko obviis. *Zesz. Nauk. UJ. Prace Botaniczne* 10: 1-149.

BLASZCZYK, H. (1978). Notatki florystyczne z Beskidu średniego (Polskie Karpaty Zachodnie). Floristic notes from the Beskid Średni Mts. (Polish Western Carpathians). *Prace Botaniczne* 6: 51-87.

Database IOP PAN, Invasive Alien Species in Poland <http://www.iop.krakow.pl/ias/>.

GUZIKOWA, M. & MAYCOCK, P. F. (1986). The invasion and expansion of three North American species of goldenrod (*Solidago canadensis* L. sensu lato, *S. gigantea* Ait. and *S. graminifolia* (L.) Salisb.) in Poland. *Acta Soc. Bot. Pol.* 55(3): 367-384.

KORNAŚ, J., MEDWECKA-KORNAŚ, A. & TOWPASZ, K. (1996). Rośliny naczyniowe Pogórza Ciężkowickiego (Karpaty Zachodnie). Vascular plants of Pogórza Ciężkowickie (Western Carpathians). *Prace Botaniczne* 28: 1-170.

MIREK, Z. & PIEKOŚ-MIRKOWA, H. (1987). Flora synantropijna Kotliny Zakopiańskiej. Synanthropic flora of the Zakopane Basin. *Stud. Nat. Ser. A.* 30: 1-182.

NOWAK, A. (1998). Rzadsze i ginące rośliny spotykane na Grojcu koło Żywca (Karpaty Zachodnie). *Fragm. Flor. Geobot. Ser. Pol.* 5: 47-54.

OKLEJEWICZ, K. (1993). Flora Dolów Jasielsko-Sanockich. The flora of the Jasło-Sanok Basin. *Zesz. Nauk. UJ. MCIII, Prace Botaniczne* 26: 1-167.

OKLEJEWICZ, K., JANUSZ, A. & DURAK, T. (2007). Supplement to the flora of Góry Słone Mts. *Fragm. Flor. Geobot. Polonica* 14(1): 206-208.

RACZYNA, A. (2004). Rośliny naczyniowe wschodniej części Pogórza Wielickiego i przylegających części Beskidów (Karpaty Zachodnie). Vascular plants of the Pogórza Wielickie (Wieliczka Foothills) and adjacent part of the Beskidy Mts. (Western Carpathians). *Prace Bot.* 38: 1-367.

TOKARSKA-GUZIŁ, B. (2005). The Establishment and Spread of Alien Plant Species (Kenophytes) in the Flora of Poland. *Wyd. Uniw. Śląski. Katowice*.

TOKARSKA-GUZIŁ, B., DAIDOK, Z., ZAJAC, M., ZAJAC, A., UBISZ, A., DANIEŁOWICZ, W. & HOLDYŃSKI, Cz. (2012). Rośliny obcego pochodzenia w Polsce ze szczególnym uwzględnieniem gatunków inwazyjnych. *GDOŚ Warszawa*.

TOWPASZ, K. (1987). Rośliny naczyniowe Pogórza Strzyżowskiego. Vascular plants of Pogórza Strzyżowskie. *Prace Botaniczne* 16: 1-157.

ZAJAC, A. & ZAJAC, M. (ed.) (2001). Distribution Atlas of Vascular Plants in Poland. *Nakł. Prac. Chorologii Komputerowej Inst. Botaniki UJ, Kraków*.

ZAJAC, M., ZAJAC, A. & ZEMANEK, B. (2006). Flora Cra-coviensis Secunda (Atlas). *Nakładem Pracowni Chorologii Romania Komputerowej Inst. Botaniki UJ, Kraków*.

ZARZYCKI, K., TRZCIŃKA-TACIK, H., RÓŻAŃSKI, W., SZELAG, Z., WOLEK, J. & KORZENIAK, U. (2002). Ecological indicator values of vascular plants of Poland Biodiversity of Poland. T. 2. W. Szafer Inst. Botany, PAS.

ZARZYCKI, K. (1981). Rośliny naczyniowe Pienin. Rozmieszczenie i warunki występowania. The vascular plants of the Pieniny Mts. (West Carpathians). *Distribution and habitats*. PWN, Warszawa-Kraków.

#### Romania

ANASTASIU, P. & NEGREAN, G. (2009). Neophytes in Romania, Neobiota din România. *Presa Universitară Clujeană*, p. 66-97.

CURTEAN-BĂNĂDUC, A. & BĂNĂDUC, D. (2007-2008). Trophic elements regarding the non-indigenous *Pseudorasbora parva* (Schlegel, 1842) fish species spreading

success – Olt River Basin, a case study. *Romanian Journal of Biology – Zoology* 52-53: 33-52.

GLÖER, P. & SIRBU, I. (2006). Freshwater molluscs species, new for the Romanian fauna. *Heldia* 6 (3/4), München, p. 207–220.

NEȚOIU, C. & TOMESCU, R. (2009). New species of leaf miner moth in black locust forest stands in Romania. In *Neobiota din România*, editori: László Rákósy & Laura Momeu, *Presa Universitară Clujeană*, p. 136-143.

PERJU, T. & TEODOR, L. (2009). Western corn's root worm (*Diabrotica virgifera virgifera* LeConte) in extension. In *Neobiota din România*, editori: Rákósy L. & Momeu L., *Presa Universitară Clujeană*, p. 159-162.

POPA, O.P. & POPA, L.O. (2006). *Sinanodonta woodiana* (Lea, 1834), *Corbicula fluminea* (O. F. Müller, 1774), *Dreissena bugensis* (Andrusov, 1897) (Mollusca: Bivalvia): alien invasive species in Romanian fauna. *Travaux du Muséum National d'Histoire Naturelle „Grigore Antipa“* 49: 7-12.

RÁKOSY, L. (2009). Lepidoptera (Fluturi). In *Neobiota din România*, editori: Rákósy L. & Momeu L., *Presa Universitară Clujeană*, p. 166-173.

RUICĂNESCU, A. & ALEXANDRU, C. (2009). Buburuza asiatică, *Harmonia axyridis* Pallas, 1773 (Coleoptera: Coccinellidae) – specie invazivă în România. In *Neobiota din România*, editori: Rákósy L. & Momeu L., *Presa Universitară Clujeană*, p. 155-158.

SIRBU, C. & OPREA, A. (2011). Plante adventive în flora României. Edit. „Ion Ionescu de la Brad”, Iași.

SKOLKA, M. & GOMOIU, M.T. (2001). Alien invertebrates species in Romanian waters. *Ovidius University Annals of Natural Sciences, Biology - Ecology Series* 5: 51-56.

TEODOR, L. & PERJU, T. (2009). Seed-beetles and snout-beetles species (Coleoptera: Bruchinae; Rhynchophorinae) as neobiota in Romania. In *Neobiota din România*, editori: Rákósy L. & Momeu L., *Presa Universitară Clujeană*, p. 163-165.

#### Serbia

ALMAŠI, R. (2004). Štetočine uskladištenog žita, brašna i proizvoda od brašna. *Biljni lekar*, vol. 32, 3-4: 210-217.

GLAVENDEKIĆ, M. (2010). Aktuelni insekti na ukrasnim biljkama u Srbiji i njihov ekonomski i ekološki značaj. *Biljni lekar*, vol. 38, 2: 122-133.

JOSIFOVIĆ, M. (ed.) (1970-1977). *Flora SR Srbije* 1-9. Srpska akademija nauke i umetnosti, Beograd.

JOVANOVIĆ, V., RAJČEVIĆ, N., DODOŠ, T. & ČUKIĆ, I. (2005). Contribution to knowledge of flora of Mt. Beljanica. 8th Symposium on the flora of Southeastern Serbia and Neighbouring Region, Niš, p. 13 -19.

JOVANOVIĆ, V. & RANDELOVIĆ, V. (2002). Stanje i zaštita folre Radana. Predlog za stavljanje Radana pod zaštitu

kao prirodnog dobra od velikog značaja. *Studija Zavoda za zaštitu prirode Srbije*. Manuscript.

LAZAREVIĆ, P., STOJANOVIĆ, V., JELIĆ, I., PERIĆ, R., KRSTESKI, B., AJTIĆ, R., SEKULIĆ, N., BRANKOVIĆ, S., SEKULIĆ, G. & BJEDOV, V. (2012). A preliminary list of invasive species in Serbia, with general measures of control and reduction as a basis of future legal acts. *Nature Conservation*, No. 62/1: 5-31.

MIHAJLOVIĆ, L.J. (2008). Šumarska entomologija. Šumarski fakultet, Beograd.

NIKOLIĆ, V. & DIKLIĆ, N. (1968). Foloristička istraživanja i registracija flore na području Đerdapa u 1968. godini. In: *Istraživački i konzervatorski rad na području đerdapskog sektora Dunava po prirodnjačkoj komponenti u 1967. Godini II*, 576-599, Beograd. Manuscript.

PETRIĆ, I., STOJANOVIĆ, V., LAZAREVIĆ, P., PEĆINAR, I. & ĐORĐEVIĆ, V. (2010). Floristic characteristics of the area of NP Đerdap and its immediate surroundings. *Nature Conservation*, No. 61/1: 35-59.

REPUBLIČKI ZAVOD ZA ZAŠTITU PRIRODE SRBIJE (1968). Fitocenološka analiza i prikaz asocijacija nižijske šumske vegetacije Đerdapskog područja. In: *Istraživački i konzervatorski rad na području đerdapskog sektora Dunava po prirodnjačkoj komponenti u 1967. Godini II*, 494-525. Beograd. Manuscript.

REPUBLIČKI ZAVOD ZA ZAŠTITU PRIRODE SRBIJE (1970). Floristička, faunistička i idiološka istraživanja i konzervacija u rezervatima i širem području Đerdapa. In: *Izveštaj o izvršenim istraživačkim i konzervatorskim radovima po prirodnjačkoj komponenti na području Đerdapa u 1969. godini*, 123-213. Beograd. Manuscript.

SIVČEV, I. (2001). Rasprostranjenost i štete od kukuruzne zlatice (*Diabrotica virgifera virgifera*) u Srbiji u 2000. i prognoza za 2001. godinu. *Biljni lekar*, vol. 29, 1: 4-12.

ZATEZALO, A. (2014). Invasive Invertebrate Species in Serbia. *Nature Conservation*, No. 64/1 (in press).

ZATEZALO, A. (2013). The Biological Control as Plant protection measure - International Legal Framework and Legislation in Serbia. *Nature Conservation*, No. 63/1-2.

#### Slovakia

GALKO, J., ZÚBRIK, M., VAKULA, J., GUBKA, A. & ÚRADNÍK, M. (2012). Aktuálne hrozby z šírenia invazných druhov hmyzu na Slovensku. In: KUNCA, A. (ed.): *Aktuálne problémy v ochrane lesa 2012*: 129–140.

GOJDIČOVÁ, E., KADLEČÍK, J., HAVRANOVÁ, I. & ADAMEC, M. (2012). Carpathian List of Invasive Alien Species. Guidelines. Manuscript.

GOJDIČOVÁ, E., CVACHOVÁ, A. & KARASOVÁ, E. (2002). List of Alien, Invasive Alien and Expansive Native Vascular Plant Species of Slovakia (Second draft). *Ochrana*

prírody, Banská Bystrica, 21: 59-79.

JANSKÝ, V., KRIŠTÍN, A. & OKÁLI, I. (1988). Der gegenwärtige Stand der Verbreitung und neue Erkenntnisse über die Bionomie der Art *Stictocephala bisonia* (Homoptera, Membracidae) in der Slowakei. *Biologia (Bratislava)* 43: 527-533. (IF1986 0.028).

KRIŠTÍN, A., JANSKY, V. & OKALI, I. (1988). Is *Stictocephala bisonia* (Membracidae) an invasion species? In: Vidano, C. & Arsons, A. (eds). Proc. 6th Auchenorrhyncha Meeting, IPRA Roma: 417-424.

KRIŠTÍN, A. (1984). Poznámky k bionómii a rozšíreniu zavlečeného druhu *Stictocephala bisonia* Kopp et Yonke 1977 (Homoptera, Membracidae). *Biologia* 39: 197-203.

KULFAN, J., ZACH, P., PARÁK, M., VIGLÁŠOVÁ, S. & PANIGA, E. (2014). Vijačka krušpánová (*Cydalima perspectalis*) – prvé poznatky o rozšírení na Slovensku, p. 16-17. In: VRABEC, V., KADLEC, T., HÁJKOVÁ, Š., BUBOVÁ, T. & JAKUBÍKOVÁ, L. (eds): VIII. Lepidopterologické kolokvium. Sborník abstraktů z konference. FAPPZ a FŽP, Česká zemědělská univerzita v Praze, 28. února 2014, Praha, 36 pp.

MEDVEČKÁ, J., KLIMENT, J., MÁJEKOVÁ, J., HALADA, L., ZALIBEROVÁ, M., GOJDIČOVÁ, E., FERÁKOVÁ, V. & JAROLÍMEK, I. (2012). Inventory of the alien flora of Slova-

kia. - *Preslia* 84: 257-309.

PATOČKA, J. & KULFAN, J. (2009). Lepidoptera of Slovakia: bionomics and ecology / Motýle Slovenska: bionómia a ekológia. VEDA, Bratislava, 312 pp.

VLK, R., BALVÍN, O., KRIŠTÍN, A., MARHOUL, P. & HRÚZ, V. (2012). Distribution of the Southern Oak Bush-cricket *Meconema meridionale* (Orthoptera, Tettigonidae) in the Czech Republic and Slovakia. *Folia oecologica* 39: 155-165.

ZACH, P., HONĚK, A., KULFAN, J., MARTINKOVÁ, Z., SELYEMOVÁ, D. & PARÁK, M. (2013). Rozšírenie a ekológia lienky (*Harmonia axyridis*) (Coleoptera: Coocinellidae) na Slovensku. Zoologické dny Brno 2013, Sborník abstraktů z konference 7.-8.2.2013, p. 251-252.

#### Ukraine

ВИХОР, Б. І., ПРОЦЬ, Б. Г. (2014). ДИНАМІКА ПОШИРЕННЯ ВИСОКОНВАЗИВНИХ ВИДІВ РОСЛИН ЗАКАРПАТТЯ ТА ОЦІНКА ЇХ ВПЛИВУ НА ФІТОРИЗНОМАНІТТЯ. // РЕГІОНАЛЬНІ АСПЕКТИ ФЛОРИСТИЧНИХ І ФАУНІСТИЧНИХ ДОСЛІДЖЕНЬ: МАТЕРІАЛИ ПЕРШОЇ МІЖНАРОДНОЇ НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ (10-12 квітня 2014 р., м. ХОТИН). ЧЕРНІВЦІ: ДРУК АРК, с. 13-17.

ВИХОР, Б. І., ПРОЦЬ, Б. Г. (2012). БОРИЩНИК СОСНОВСЬКОГО (*HERACLEUM SOSNOWSKYI* MANDEN.)

НА ЗАКАРПАТТІ: ЕКОЛОГІЯ, ПОШИРЕННЯ ТА ВПЛИВ НА ДОВКІЛЛЯ // БІОЛ. СТУДІЇ. №3. с. 185-196.

ВИХОР, Б. І., ПРОЦЬ, Б. Г. (2013). КЛЕН ЯСЕНОЛИСТИЙ (*ASER NEGUNDO* L.) НА ЗАКАРПАТТІ: ЕКОЛОГІЯ, ПОШИРЕННЯ ТА ВПЛИВ НА ДОВКІЛЛЯ // БІОЛ. СТУДІЇ. №2. с. 13-22.

КОЗУРАК, А. В., АНТОСЯК, Т. М., ВОЛОЦУК, М. І. (2014). АНАЛІЗ СІНАНТРОПНОЇ ФЛОРИ КАРПАТСЬКОГО БІОСФЕРНОГО ЗАПОВІДНИКА. // РЕГІОНАЛЬНІ АСПЕКТИ ФЛОРИСТИЧНИХ І ФАУНІСТИЧНИХ ДОСЛІДЖЕНЬ: МАТЕРІАЛИ ПЕРШОЇ МІЖНАРОДНОЇ НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ (10-12 квітня 2014 р., м. ХОТИН). ЧЕРНІВЦІ: ДРУК АРК, с. 41-44.

КУРТЯК, Ф. Ф. (2010). Іхтіофауна Закарпаття: раритетні категорії та принципи охорони // Матеріали Міжнародної науково-практичної конференції Сталій розвиток Карпат та інших гірських регіонів Європи (Ужгород, 8-10 вересня 2010 року) – Ужгород: ТИМПАНИ. с. 303-308.

КУРТЯК, Ф. Ф., ТАЛАБІШКО, Є. М., СТЕГУН, В. І. & ВЕЛИКОПОЛЬСЬКИЙ, І. Й. (2009). Іхтіофауна басейну річки Латориці в межах України // Вісник Львівського університету. Серія біологічна. Випуск 50: 85-94.

KURTYAK, F. F. & KURTYAK, M. F. (2013). Turtle, *Trache-*

*mys scripta elegans* (Wied 1839) (Reptilia; Testudines), as invasion threat in Transcarpathia (Ukraine) // Scientific Bulletin of the Uzhgorod University. Series Biology. Issue 34.

ПРОЦЬ, Б. Г. (1998). Нові місцезнаходження і тенденції поширення *Ambrosia artemisiifolia* L. на Закарпатті // Пр. наук. т-ва імені Шевченка. № 2. с. 512-516.

ПРОТОПОПОВА, В. В., МОСЯКІН, С. А., ШЕВЕР, М. В. (2003). Вплив адвентивних видів рослин на фітобіоту України // Оцінка і напрямки зменшення загроз біорізноманіттю України.- К.: Хімджест. 400 с.

ПРОТОПОПОВА, В. В. (1991). Синантропная флора Украины и пути ее развития,

Сичак, Н. М. (2012). Нові локалітетидесятих адвентивних видів рослин у Івано-Франківській області: наукові основи збереження біотичної різноманітності, том 3 (10), № 1, p. c.111-122.

ТАТАРИНОВ, К. А. (1973). Фауна хребетних заходу України. Львів: Вища школа, 257 с.

Table 1: Carpathian List of Invasive Alien Species

Taxon	Kingdom	SK	CZ	HU	PL	RO	RS	UA	Carpathians
<i>Acer negundo</i>	Plantae	inv	inv	inv	inv	inv	inv	inv	inv
<i>Ailanthus altissima</i>	Plantae	inv	inv	inv	cas	inv	inv		inv
<i>Amaranthus retroflexus</i>	Plantae	inv	inv	inv	inv	inv	nat	nat	inv
<i>Ambrosia artemisiifolia</i>	Plantae	inv	inv	inv	cas	inv	inv	inv	inv
<i>Amorpha fruticosa</i>	Plantae	nat	nat	inv	notfd	inv	inv		inv
<i>Apera spica-venti</i>	Plantae	inv	nat	inv	nat	inv??	ntv		inv
<i>Asclepias syriaca</i>	Plantae	inv	inv	inv	cas	nat	inv	notfd	inv
<i>Aster novi-belgii</i>	Plantae	inv	inv	inv	inv	cas	notfd		inv
<i>Aster lanceolatus</i>	Plantae	inv	inv	inv	cas	inv	inv	inv	inv
<i>Bidens frondosa</i>	Plantae	inv	inv	inv	inv	inv	inv	inv	inv
<i>Cardaria draba</i>	Plantae	inv	nat	ntv	nat	inv	ntv	cas	inv
<i>Conyza canadensis</i>	Plantae	inv	inv	inv	inv	inv	inv	inv	inv
<i>Cuscuta campestris</i>	Plantae	nat	inv	inv	notfd	inv	notfd	inv	inv
<i>Echinochloa crus-galli</i>	Plantae	inv	inv	inv	inv	inv	inv	inv	inv
<i>Echinocystis lobata</i>	Plantae	inv	inv	inv	inv	inv	notfd	cas	inv
<i>Elodea canadensis</i>	Plantae	nat	nat	notfd	inv	inv	inv		inv
<i>Epilobium ciliatum</i>	Plantae	inv	inv	inv???	inv	inv	notfd	notfd	inv
<i>Erigeron annuus</i>	Plantae	inv	inv	inv	inv	inv	inv	inv	inv
<i>Fallopia japonica</i>	Plantae	inv	inv	notfd	inv	inv	inv	inv	inv
<i>Fallopia x bohemica</i>	Plantae	inv	inv	inv	notkn	notfd	notfd	notfd	inv

Taxon	Kingdom	SK	CZ	HU	PL	RO	RS	UA	Carpathians
<i>Fallopia sachalinensis</i>	Plantae	inv	inv	notfd	inv	notfd	notfd	inv	inv
<i>Galinsoga parviflora</i>	Plantae	inv							
<i>Galinsoga quadriradiata</i>	Plantae	inv	inv	inv	inv	nat	notfd	inv	inv
<i>Helianthus tuberosus</i>	Plantae	inv	inv	inv	inv	inv	inv	nat	inv
<i>Heracleum mantegazzianum</i>	Plantae	inv	inv	nat	inv	notfd	notfd	notfd	inv
<i>Heracleum sosnowskyi</i>	Plantae	notfd	notfd	inv	inv	notfd	notfd	inv	inv
<i>Impatiens glandulifera</i>	Plantae	inv	inv	inv	inv	inv	notfd	inv	inv
<i>Impatiens parviflora</i>	Plantae	inv	inv	inv	inv	inv	notfd	inv	inv
<i>Juncus tenuis</i>	Plantae	inv	nat	inv	inv	inv	nat	inv	inv
<i>Lycium barbarum</i>	Plantae	inv	inv	inv	cas	inv	notfd		inv
<i>Matricaria discoidea</i>	Plantae	inv	nat	inv	inv	inv	notfd	inv	inv
<i>Parthenocissus inserta</i>	Plantae	nat	inv	inv	inv	inv	notfd	notfd	inv
<i>Phytolacca americana</i>	Plantae	nat	cas	inv	notfd	inv	inv	nat	inv
<i>Robinia pseudoacacia</i>	Plantae	inv							
<i>Solidago canadensis</i>	Plantae	inv	inv	inv	inv	inv	notfd	nat	inv
<i>Solidago gigantea</i>	Plantae	inv	inv	inv	inv	inv	inv	nat	inv
<i>Veronica persica</i>	Plantae	nat	nat	inv	inv	inv	nat	inv	inv
<b>Mollusca</b>									
<i>Arion vulgaris</i>	Animalia	inv	inv	inv	inv		notfd		inv
<i>Corbicula fluminea</i>	Animalia	inv	inv	inv	notfd		inv		inv

Taxon	Kingdom	SK	CZ	HU	PL	RO	RS	UA	Carpathians
<i>Dreissena polymorpha</i>	Animalia	inv	inv	inv	inv	inv	notfd		inv
<i>Dreissena rostriformis bugensis</i>	Animalia	inv	notfd	inv	notfd	inv	notfd		inv
<i>Ferrissia clessiniana</i>	Animalia	inv	inv	inv	notfd		notfd		inv
<i>Helix aspersa</i>	Animalia		notkn	inv	notkn		notfd		inv
<i>Lucilla scintilla</i>	Animalia	inv	notfd	notfd	notfd		notfd		inv
<i>Lucilla singleyana</i>	Animalia	inv	notfd	inv	inv		notfd		inv
<i>Physella acuta</i>	Animalia	inv	inv	inv	nat		inv		inv
<i>Potamopyrgus antipodarum</i>	Animalia	inv	inv	inv	nat	inv	inv		inv
<i>Sinanodonta woodiana</i>	Animalia	inv	cas	inv	notfd	inv	inv		inv
<b>Arthropoda</b>									
<i>Orconectes limosus</i>	Animalia	inv	inv	inv	inv	inv	inv		inv
<i>Acanthoscelides obtectus</i>	Animalia	inv	cas	inv	inv	inv	inv		inv
<i>Cameraria ohridella</i>	Animalia	inv	inv	inv	inv	inv	inv	cas	inv
<i>Cydalima perspectalis</i>	Animalia	inv	inv	notfd	notfd		notfd		inv
<i>Diabrotica virgifera</i>	Animalia	inv	inv	inv	inv	inv	inv	cas	inv
<i>Harmonia axyridis</i>	Animalia	inv	inv	inv	inv	inv	inv	inv	inv
<i>Hyphantria cunea</i>	Animalia	nat	inv	notkn	cas	inv	inv	nat	inv
<i>Leptinotarsa decemlineata</i>	Animalia	nat	inv	inv	nat	inv	inv		inv
<i>Leptoglossus occidentalis</i>	Animalia	inv	inv	inv	nat	inv	inv	inv	inv
<i>Meconema meridionale</i>	Animalia	inv	inv	inv	notfd		notfd		inv
<i>Parectopa robinella</i>	Animalia	inv	inv	inv	cas	inv	inv		inv
<i>Phyllonorycter issikii</i>	Animalia		inv	inv	inv		notfd		inv
<i>Phyllonorycter robinella</i>	Animalia	inv	inv	inv	nat	inv	inv		inv
<i>Stictocephala bisonia</i>	Animalia	inv	inv	inv	notfd	inv	inv	inv	inv
<b>Chordata</b>									
<i>Osteichthyes</i>									
<i>Ameiurus melas</i>	Animalia	inv	notkn	inv	notfd		inv	inv	inv
<i>Ameiurus nebulosus</i>	Animalia	nat	inv	inv	inv		inv	inv	inv
<i>Carassius gibelio</i>	Animalia	inv	inv	inv	inv		inv	inv	inv
<i>Lepomis gibbosus</i>	Animalia	inv	nat	nat	notfd		inv	inv	inv
<i>Neogobius fluviatilis</i>	Animalia	inv	notfd	notfd	notfd		inv		inv
<i>Neogobius gymnotrachelus</i>	Animalia	inv	notfd	notfd	ntv		inv		inv
<i>Neogobius kessleri</i>	Animalia	inv	notfd	notfd	notfd		inv		inv
<i>Neogobius melanostomus</i>	Animalia	inv	inv	notfd	notfd		inv		inv
<i>Proterorhinus marmoratus</i>	Animalia		notkn	inv	notfd		inv	inv	inv
<i>Pseudorasbora parva</i>	Animalia	inv	inv	inv	cas	inv	inv	inv	inv
<i>Reptilia</i>									
<i>Trachemys scripta</i>	Animalia	inv	cas/inv?	inv	inv	inv		inv	inv
<i>Mammalia</i>									
<i>Mustela vison</i>	Animalia	inv	inv	notkn	inv			nat	inv
<i>Nyctereutes procyonoides</i>	Animalia	nat	inv	cas	inv			inv	inv
<i>Ondatra zibethicus</i>	Animalia	nat/inv?	inv	nat	inv			inv	inv
<i>Rattus norvegicus</i>	Animalia	nat/inv?	nat	nat	inv			nat	inv

This publication was elaborated within BioREGIO Carpathians project supported by South East Europe Programme and was financed by a Swiss-Slovak project supported by the Swiss Contribution to the enlarged European Union and Carpathian Wetlands Initiative.



Program švajčiarsko-slovenskej spolupráce  
Swiss-Slovak Cooperation Programme



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra



Slovenská  
republika



ISBN 978-80-89310-81-4