



Science for Carpathians: biodiversity research agenda and recommendations

9th Meeting of the Carpathian Convention Working Group on Conservation and Sustainable Use of Biological and Landscape Diversity
Ostrava, Czech Republic, 30 - 31 May 2019

Workshop on science in decision-making - How to improve knowledge exchange among scientists and decision makers in Carpathians?





Outline

- **Science for Carpathians and Forum Carpathicum**
- Recommendations from FC 2018
- S4C Research Agenda
- Other Issues
- Questions for Workshop Discussion



Science for Carpathians (S4C)

- connects scientists and practitioners in Carpathians
- defines research priorities for the region
- enhances international collaboration with partners from outside the Carpathians

10 years of Carpathian conferences



- Launched in the first S4C conference in Kraków, Poland (27-28 May 2008)
- As a voice from the Carpathian science community to the Carpathian Convention.



Forum Carpathicum conferences

- 2010 Kraków (Poland) - Integration of nature and society towards sustainability**
- 2012 Stará Lesná (Slovakia) - From data to knowledge, from knowledge to action**
- 2014 Lviv (Ukraine) - Local Responses to Global Challenges**
- 2016 Bucharest (Romania) - Future of the Carpathians: Smart, Sustainable, Inclusive**
- 2018 Eger (Hungary) - Adapting to Environmental and Social Risk in the Carpathian Mountain Region**

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Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

Umwelt 
Bundesamt

Key IPBES messages relevant for Carpathians

- A more **integrated, participatory approach** in protected area management is needed.
- Traditional knowledge is often **rich, but is often not respected**.
- **Traditional practices are needed for conservation** but are largely sidelined in regulatory frameworks.
- **Landscape-specific and culture-specific agricultural regulatory frameworks and subsidy systems** are needed.
- Small-scale extensive land use often **survives in protected areas only**.



Photo credits:
W.S. Keeton,
May 2019

Case: The vanishing European Oakscape

***Evidence of the destructive effects of top-down policies, including agriculture, forest management, and conservation policies, on traditional rural landscapes in CE Europe**

- Traditional agricultural landscapes with trees maintain multiple ecosystem services.
- Maintenance of veteran-type oaks in agro-silvo-pastoral systems is a key challenge.
- Maintenance of traditional integrated agro-silvo-pastoral management sustaining oakscapes needs to combine local traditional knowledge and landscape stewardship.



Top-down segregated policies undermine the maintenance of traditional wooded landscapes: Evidence from oaks at the European Union's eastern border.

A. Bobiec, R. Podlaski, B. Ortyl, M. Korol, S. Havryluk, K. Öllerer, J. M. Ziobro, K. Pilch, V. Dychkevych, T. Dudek, K. Mázsa, A. Varga, P. Angelstam, *Landscape and Urban Planning* 189 (2019) 247–259



Biodiversity

FC session: Climate change vulnerability and adaptation of biodiversity

- The high biological diversity of the Carpathians **is facing growing pressures**
- In the long-term perspective, **almost every natural habitat type** in the Carpathians **has remarkable decreased**
- The Carpathians still support viable populations of large carnivores, but increasing infrastructure development presents challenges to **maintaining connectivity** of their habitat and to **avoid its fragmentation** and isolation





Biodiversity

FC session: Climate change vulnerability and adaptation of biodiversity

- Improve networks of scientists engaged in **multidisciplinary research**
- Facilitate **trans-boundary and regional scale research**
- Continue to **harmonize protocols and methods** throughout the Carpathian region
- **Protect ecological corridors** facilitating species migrations to mitigate some climate change vulnerabilities





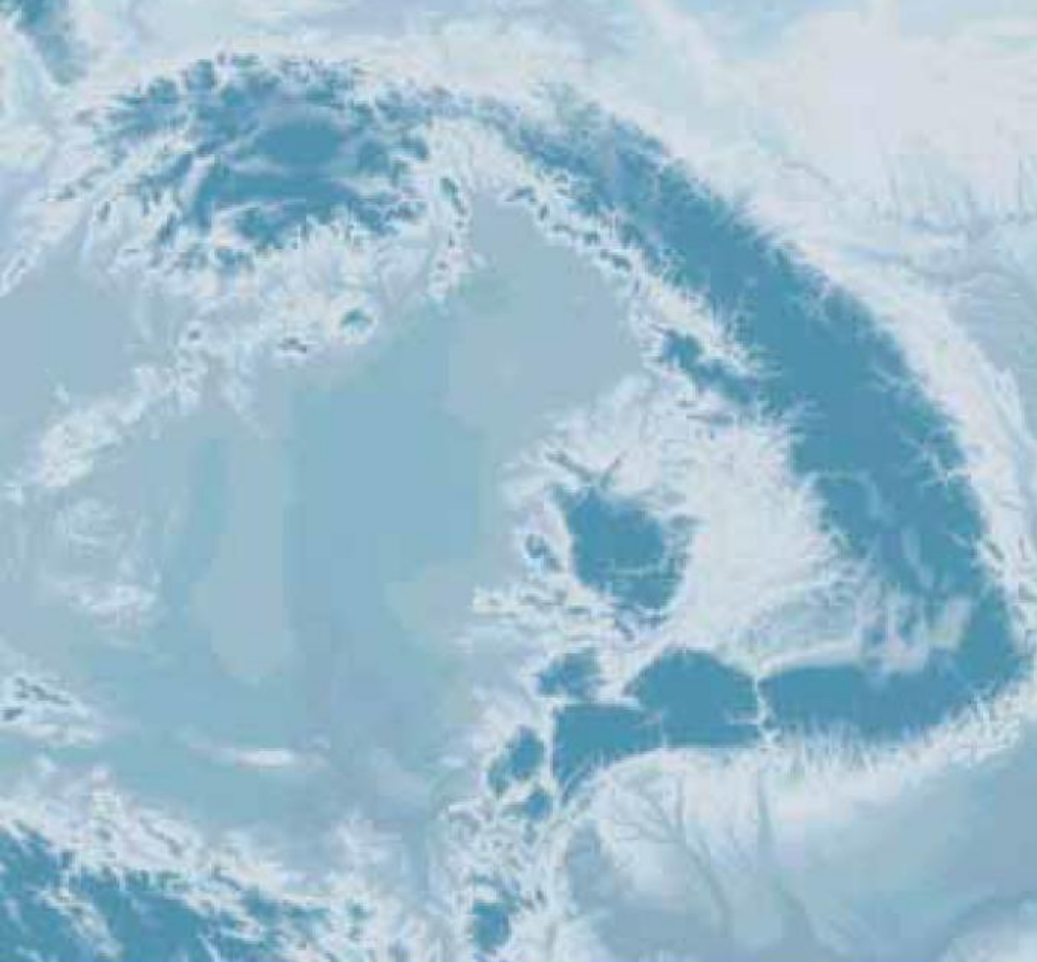
Effects of forest management on biodiversity

- **The area of primeval forests have been strongly and considerably decreasing in the Carpathians** - strong negative effects on biodiversity
- **Both the conservation of protected areas and the ecologically sustainable forest management in production forests** are very important for the conservation of forest biodiversity on landscape level
- Production forests: the use of **close to nature forestry systems** should be increased for the maintenance of forest biodiversity.
- For conservation planning the determination of **conservational aims should be defined for the selected areas for the next decades**
 - in some cases abandonment (preservation),
 - in other cases conservation oriented management
- For the indication of forest biodiversity responses **multi-taxa indicators** based on the composition of communities are necessary.



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S4C

Science for the Carpathians

Research Agenda for the Carpathians 2010 - 2015

Integrating Nature and Society towards Sustainability

2010-2015

Printed with support of the
Carpathian Convention

2015-2020

Some chapters completed
and available on web site,
other draft texts

2020-2030

Will be prepared and
adopted in 2020

S4C Research Agenda 2015-2020 - Biodiversity

- To initiate and foster **comparative and retrospective biodiversity studies with pan-Carpathian coverage**
- To continue in building of the **Carpathian biodiversity database.**
- To select basic **common monitoring indicators** and develop monitoring systems **compatible** for the entire Carpathian region. This includes agreement on and **harmonization of sound monitoring procedures.**



S4C Research Agenda 2015-2020 - Biodiversity

- To continue is assessment of the conservation status of species and habitats and to produce **complete set of Carpathian red lists**.
- To identify **biodiversity hot spots** across the Carpathian arc and to prepare proposals for their conservation.
- To pay increased attention to identification and study of taxa endemic to Carpathians, to produce and publish list of **Carpathian endemic taxa**.
- To continue in study of invasive species and to develop **strategy for the invasive species elimination**.



S4C Research Agenda 2015-2020 - Biodiversity



- To develop further genetic studies using modern approaches, methods and technologies in order to know better **genetic diversity** of plant and animal taxa
 - to identify areas with high genetic diversity, to understand better phylogeography and postglacial migrations in Carpathians.
 - To use genetic approaches to **study viability, isolation and connectedness** of populations of species important for biodiversity conservation.
- Perform a systematic analysis of **wildlife presence and dispersal** through GIS and field work.
- To perform studies completing already identified **ecological networks** on national and supra-national scales by those on regional and local levels.

S4C Research Agenda 2015-2020 - Biodiversity



- To develop a framework to identify strategic locations for **enhancing wildlife connectivity**.
- Prepare proposals to improve habitat connectivity for the umbrella species **by removal of barriers and decrease of habitat fragmentation**.
- To improve the **understanding of implications of the land use and land cover changes for biodiversity** and nature conservation in Carpathians.
- To improve knowledge of the habitat diversity and conservation status of wetland, grassland and freshwater habitats
 - to propose necessary management measures to improve their conservation and/or sustainable use.

S4C Research Agenda 2015-2020 - Biodiversity

- To use new bioinformatics modelling tool sets and ecosystem service indicators for **ecosystem-scale simulations and ecosystem services studies** for the Carpathians.
- To study and model expected **effects of climate change to sensitive species**, especially endemic ones
- To continue in study of **consequences of current forest disturbances** (especially spruce forest dieback) to species and habitat diversity;
- To pay special attention to **study of virgin, old-growth forests and natural forests**, their structure, diversity and protection and to use the gained knowledge for management of all types of forests.



Photo credits:
W.S. Keeton, May 2019

A light blue-toned topographic map of the Carpathian Basin, showing the mountain ranges and surrounding regions. The word "Outline" is centered at the top in a dark red font.

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2013: Evolution of Biodiversity in a Spatiotemporal Context

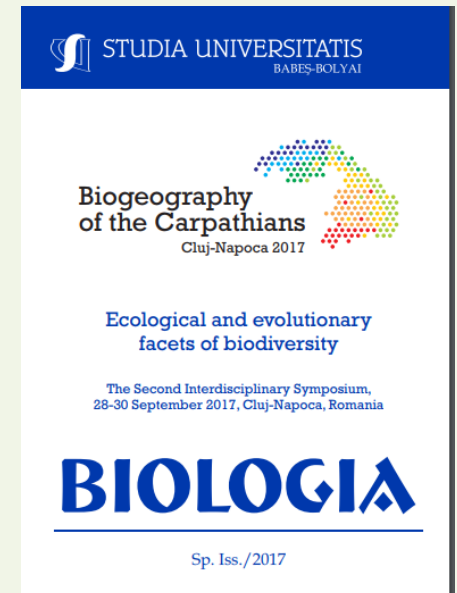
2017: Ecological and evolutionary facets of biodiversity



Volume 119, Issue 3

Special Issue: Biogeography of the Carpathians: Evolutionary and Spatial Facets of Biodiversity

Pages: 523-744
November 2016



S4C plans for the next period

- **Forum Carpathicum 2020:** 23-26 June 2020, Brno, Czech Republic
- **Summer schools**
- **Research Agenda 2020-2030**
- **Message to Carpathian Convention COP6**

<http://carpathianscience.org>

World Café – 3 Questions:

- 1. What are the most urgent knowledge gaps in the field of Biodiversity for the Carpathian Convention? How can they be addressed in the research agenda and in research projects?*
- 2. What are important interdisciplinary areas and research questions under the Carpathian Convention strongly related to Biodiversity, which can be addressed by S4C?*
- 3. What are concrete ways and opportunities for scientists to cooperate with WG on Biodiversity and CC Secretariat in order to support CC work in this field?*

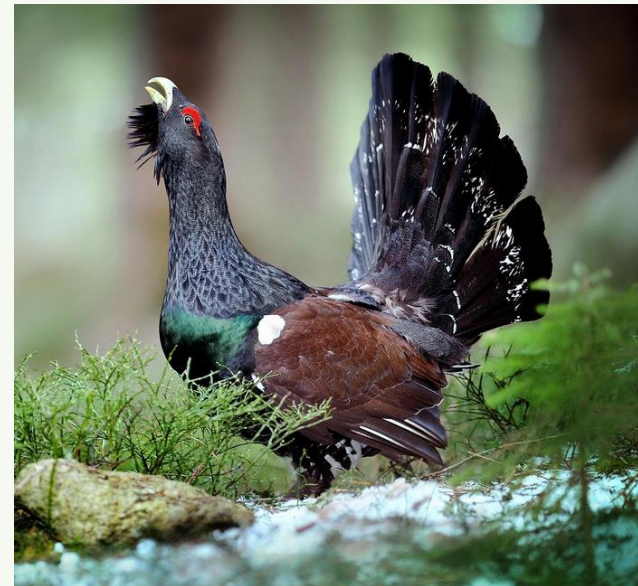
Some inputs from S4C and WWF

WWF:

- Select a list of Indicator Species, and monitor these species on a long term to assess the state of Carpathian ecosystems
- Involve the scientists into advocacy and awareness-raising initiatives

S4C, Bill Keeton:

- Capercaillie as an indicator/umbrella species
- a broader approach to protecting the few remaining valleys in the Carpathians where natural processes and dynamics are operating at truly landscape scales





Thank you!

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