Conservation biology: A Central-Eastern European perspective

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Description

One of the main goals of the EU Biodiversity Strategy for 2030 is to avoid further loss of biodiversity and to restore ecosystems. These efforts can be facilitated by compiling the main research topics related to conservation biology to provide new evidence for the most urgent knowledge gaps, and publicise it to researchers, research funders and policy makers. We used the possible future statements from the Hungarian Environmental Foresight Report for 2050 which identified region-specific problems. To highlight likely future environmental and conservation questions, in this study we asked researchers from the fields of ecology and conservation to define research questions addressing these future statements in line with international research trends and challenges. The study resulted in fourteen priority research topics, split into seven clusters relevant to biological conservation that should be targeted by stakeholders, primarily policy makers and funders to focus research capacity to these topics. The main overarching themes identified here include a wide range of approaches and solutions such as innovative technologies, involvement of local stakeholders and citizen scientists, legislation, and issues related to human health. These indicate that solutions to conservation challenges require a multidisciplinary approach in design and a multi-actor approach in implementation. Although the identified research priorities were listed for Hungary, they are in line with European and global biodiversity strategies, and can be tailored to suit other Central and Eastern European countries as well. We believe that our prioritisation can help science policy discussion, and will eventually contribute to healthy and well-functioning ecosystems.

Natural Ecosystems

Natural, semi-natural and appropriately managed ecosystems contribute to the health and well-being of people, secure a sustainable provision of ecosystem services for future generations and support climate change mitigation and adaptation. At the same time, most human activities seriously undermine the integrity, functioning and services of ecosystems and threaten their health and stability by transforming them into species-poor, simplified or novel ecosystems. The maintenance of ecosystems' contributions to human well-being thus requires protection, management and restoration efforts. To that end, new conservation goals and targets have been adopted recently for the next decade. For example, the European Green Deal and the EU Biodiversity Strategy for 2030 both emphasise that beyond the conservation of vulnerable habitats, it is also fundamental to avoid further loss of biodiversity and to restore ecosystems in the future. For effective conservation it is also essential to bring together the policy makers, researchers and society on national as well as international levels. All sectors have to collaborate to support the restoration of habitats that contribute to the regeneration of ecosystems, restoring their natural functions.

The collection of the main research topics related to conservation biology and sustainable land use can facilitate conservation as well as restoration targets. Prioritisation of ecological knowledge gaps is important in designing ecological frameworks and projects for securing future ecosystem health and stability. Thus, effective conservation of biodiversity has to rely on evidence-based knowledge. Due to limited capacity and financial resources, expanding knowledge needs a prioritised list of research questions, to provide new evidence for the most urgent knowledge gaps. Collaborative research prioritisation studies in ecology have become popular in the last decade. A recent review and meta-analysis found that such studies in the fields of ecology, biodiversity conservation and environmental science have identified over 2000 research priorities between 2006 and 2020, but there are still important issues that have not yet been addressed. One reason for this surge of interest is that research prioritisation studies can help identify barriers to effective conservation science and practice and thus achieve conservation objectives. Many collaborative research prioritisation studies are thematically similar, but vary either in regional focus: e.g. studies focusing on UK, USA, Hungary, Oceania's small-island developing states, Estonia, Southeast Asia, or in objective: e.g. on the Belt and Road Initiative. Many

studies exist where a group of experts identified and prioritised the main questions in the field of conservation biology as well as terrestrial and marine restoration ecology.

Some authors have already highlighted the priorities in global environmental aspects related to climate change, plastic pollution or declining global biodiversity. Related to the ongoing technological revolution, new horizon scan (HS) studies investigate the future impacts of robotics, artificial intelligence and autonomous systems on urban biodiversity and ecosystems. All these examples indicate that the identification of research priorities or knowledge gaps and questions provides guidelines for policy development and application, but they must be operationalised at the level of decisions, which is usually at the state level, or below. Since the development and enforcement of policies besides EU policy instruments mostly take place at the level of national institutions, the most effective way to utilise the results of research prioritisation studies is to inform national authorities such as ministries or agencies and research funding bodies.

European Biodiversity

Although the Central and Eastern European region (CEE) differs from economically well-developed countries in Western Europe (WE), European biodiversity policy needs to be relevant for all the different political and biogeographical regions of Europe. Hungary's status as a post-socialist CEE country considerably determines its environmental policy. Specifically, all territory of Hungary is part of the Pannonian Region (EEA, 2002a). Designated areas of the region within EU member states are included in the EU Natura 2000 network of protected area, and harbor a high diversity of habitats and species and a large number of endemic plants and animals, despite the fact that more than 60% of the region has been converted to agricultural land. Since 70% of the Pannonian Region belongs to Hungary (EEA, 2002b), the country has a major role and responsibility in conserving its natural values, including biodiversity. In our study we addressed the future conservation priorities of the Pannonian biogeographical region from a CEE point of view.