

## **Mammal conservation in Europe: status and priorities – Collection of papers from the 5<sup>th</sup> European Congress of Mammalogy**

### **Editorial**

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Human colonization of the Mediterranean islands, which started in the early Holocene, was followed by an unprecedented extinction of insular endemics. During that period, European mammals experienced a mass extinction wave which swept away dwarf elephants and hippopotamus, several deer species, a cave goat, a pika, and various giant dormice, rats and voles. We shall never know what these animals really looked like or their exact mode of life. These species evolved in isolation on the large islands of Spain, France, Italy and Greece following the sea-level rise after the Messinian Salinity Crisis. They successfully survived the climate changes at the Pleistocene/Holocene boundary, but failed to cope with the arrival of man and his companion animals. Another major faunal turnover now threatens to profoundly transform mammal assemblages, this time also on the European mainland, which is intrinsically less vulnerable than the island systems.

The conservation of mammalian biodiversity was the topic of a workshop “Mammal conservation in Europe: status and priorities” organized during the 5<sup>th</sup> European Congress of Mammalogy in Siena between September 21 and 26, 2007. Of the thirteen oral and three poster presentations given during the workshop, nine papers are published in this volume. They cover a wide spectrum of topics, from the pan-European assessment of conservation status to case studies focusing on particularly threatened species.

Over the last few years the IUCN has made a significant progress towards a more objective assessment of status, trends and conservation priorities in mammals, and Europe has been particularly closely studied. Helen Temple and Andrew Terry, who summarized the results, found that 15% of Europe’s 231 mammal species are threatened, with a further 9% considered Near Threatened; 27% of mammals have declining populations and only 8% are increasing. The greatest single threat to terrestrial mammals in Europe is habitat loss and degradation. Although the EU Member States have committed to halt biodiversity loss by 2010, this target is unlikely to be met.

Good taxonomy is crucial for the implementation of any sound conservation strategy. In the last decade or so, phylogeographic analysis of mitochondrial DNA has revolutionized research on spatial patterns of evolutionary diversification in hundreds of species, including mammals. Numerous molecular studies have shown that species that were studied genetically are frequently structured into geographically non-overlapping but deeply divergent phylogenetic lineages, which probably deserve to be recognized as species on their own right. Giovanni Amori, Spartaco Gippoliti and Riccardo Castiglia review published phylogeographic data in order to identify those populations representing putative species, although these are not yet formally recognized as such. Clearly, species richness will increase as the cytochrome *b* phylogenies of European mammals are translated into taxonomy. New species will have smaller areas of distribution and smaller total populations, so at least two forms of rarity, from Rabinowitz’s ‘seven forms of rarity’ model, will more

than likely apply to them. Although rarity is common in nature, it is also one of the attributes of species on their way to extinction.

Holger Meinig and Peter Boye review factors having an adverse impact on mammal populations in highly industrialized and urbanized Germany. Given that a high proportion of Germany's 83 native mammal species are forest-dwelling, forest management affects most of them. To ensure the proper identification of conservation measures, a monitoring programme and specific research projects are badly needed. Only long-term and non-invasive population monitoring can provide the biological information necessary for the proper assessment of population trends. This issue is even more critical in European biodiversity hotspots, a topic explored by Boris Kryštufek, Vladimír Vohralík and Ján Obuch on small mammals occupying the Balkans and Anatolia. The ranges of at least three species have declined since the Last Glacial Maximum; none of them has been studied beyond simple faunal surveys, and nearly all our knowledge is derived from voucher specimen tags. Given that extinctions in a few centres of endemism contribute most to the current wave of global extinctions, one can expect that the majority of future extinctions in the western Palaearctic will occur among small bodied and small range mammals. Marco Saseti addressed the legacy of island extinctions referred to in the opening paragraph. Very few endemic species of the Late Quaternary diversity are left in the Mediterranean islands and extant mammal faunas are dominated by taxa translocated from the mainland. How should we treat such anthropochorous mammalian populations of certified ancient origin, several of which represent invaluable historic documents? The author argues that they should be at least considered as an authentic "cultural heritage".

Four papers focus on various conservation aspects of mammals which deserve at least regional conservation attention. While effective conservation measures allowed the Eurasian otter to recover remarkably in several European countries, the species remains one of the most endangered mammals in Italy. It is therefore important to identify suitable habitats where the species can establish and disperse. Anna Loy, Maria Laura Carranza, Carmen Cianfrani, Evelina D'Alessandro, Laura Bonesi, Piera Di Marzio, Michele Minotti, and Gabriella Reggiani discovered seven rivers in southern Italy to be heterogeneous both in terms of habitat suitability and in terms of connectivity, and suggested they should play a strategic role in the survival and expansion of otters in the surrounding areas. The results of a study by Markus Dietz and Jacques B. Pir lead to a scientific basis for conservation and long-term monitoring for Bechstein's bat in Luxembourg. Given that this bat is an index species for old growth broadleaved woodland, the largely deforested landscape of Luxembourg is a real challenge for conservationists. The remaining studies focus, not on large charismatic mammals, but on rodents which are so often neglected by conservationists. Anthony J. Mitchell-Jones and Ian White show that reintroductions, mainly using captive-bred animals, have been generally successful at re-establishing populations of the smallest European dormouse, the common dormouse, in England. Notably sensitive to habitat quality and fragmentation, this animal has disappeared from large parts of its range. Since a decline has also been recorded further south, even in Saxony, lessons from the UK can encourage such measures in other European countries. Attila Németh, Tamás Révay, Zolt Hegyeli, János Farkas, Dávid Czabán, Anita Rózsa, and Gábor Corba assess the extinction risks of the mole rat in the Carpathian basin. The 'species' is a collection of various small-range chromosomal forms of unresolved taxonomy. Although one of these cytotypes is perhaps already extinct, the taxon has not yet received any conservation attention.

Europe has implemented various effective instruments for the conservation of its biodiversity (e.g. Natura 2000 network), but much is left to be done. Scientific information remains of crucial importance for 'success stories'. Even within Europe, the polarization between the geographic north, which is rich in resources but poor in biodiversity, and the biodiversity-rich but resource-poor south is more than evident. Allocation of resources within the EU is highly skewed and charismatic mammals receive disproportionate attention. Compared to birds, effective conservation of the entire mammal fauna is still in an embryonic state. On the other hand, much has already been done to counteract destructive human activities. The mammal fauna we all share would be in much worse condition without the numerous conservation steps undertaken in the past.

We should like to thank participants in the workshop, particularly those who decided to submit their contributions to this volume. Eighteen reviewers read manuscripts prior to publication and provided most valuable comments and recommendations for improvements. Our particular thanks are to the editorial office and to the publisher of *Folia Zoologica* for supporting publication of this collection of papers.