Conservation news

Uplisting a threatened small mammal: the Nimba otter-shrew of West Africa

The Nimba otter-shrew *Micropotamogale lamottei* is one of three semi-aquatic mammal species in the family Potamogalidae (Supercohort Afrotheria, Order Afrosoricida). Closely related to the tenrecs of Madagascar, otter-shrews resemble small otters. They occur in rivers, streams and pools in the forests of central and western Africa where they feed on aquatic invertebrates, fish and amphibians. However, as with most small mammal species, their ecology, abundance and distribution are poorly known.

The Nimba otter-shrew is endemic to a small part of the Upper Guinea Region of West Africa: the Nimba mountains of Liberia, Guinea and Côte d'Ivoire and the Putu mountains of Liberia. Both areas are exploited for mining and agriculture, yet until recently, little information was available on the distribution of the otter-shrew, hindering assessment of its conservation status. The last IUCN Red List of Threatened Species categorized the otter-shrew as Near Threatened but in urgent need of further study (Stephenson, 2016, *The IUCN Red List of Threatened Species 2016: e.T13393A21287657*).

Recent studies focusing on the Putu range in east-central Liberia (Decher et al., 2016, *Journal of Contemporary Water Research & Education,* 157, 46–57) and the Nimba range in northern Liberia (Monadjem et al., 2018, *Mammalia,* https://doi.org/10.1515/mammalia-2017-0144) have shed light on this elusive small mammal and confirmed that it is under threat. Otter-shrews were found to be confined to freshwater habitats in severely fragmented mid-elevation forest, where they are largely solitary, occurring at low population densities. The core population at Mount Nimba is under severe threat from iron ore mining in both Liberia and Guinea, as is its habitat in the satellite population in the Putu range. The Nimba study provides evidence that mining has a direct impact on otter-shrews, probably as a result of an increase in siltation of their aquatic habitat. Other threats to the species include conversion of forests into rice paddies and incidental capture and drowning in fish traps.

These new studies suggest the extent of occurrence (EOO) of the Nimba otter-shrew is 14,725 km² (Monadjem et al., 2018, op. cit.). As the EOO is $< 20{,}000$ km² and thought to be decreasing, and as the extent and quality of the habitat are deteriorating as a result of mining and agricultural activity, the species has been uplisted from Near Threatened to Vulnerable based on criteria B1ab(i,ii,iii) (Stephenson et al., in press, *Micropotamogale lamottei. The IUCN Red List of Threatened Species 2018*). This demonstrates the value and importance of using field data to revise conservation status assessments, especially for overlooked small mammal species.

The main opportunity for conserving the Nimba otter-shrew is the effective management of two protected areas within its range. The 17,540 ha Mount Nimba Strict Nature Reserve is a UNESCO World Heritage site in Guinea and Côte d'Ivoire that is also home to Critically Endangered species such as the Mount Nimba viviparous toad *Nimbaphrynoides occidentalis,* Lamotte's roundleaf bat *Hipposideros lamottei* and western chimpanzee *Pan troglodytes verus.* The Reserve is threatened by a mining enclave, as well as by poaching and fires (Monadjem et al., 2016, *Acta Chiropterologica*, 18, 359–375), and is currently a World Heritage Site in Danger. Otter-shrews have also recently been recorded in East Nimba Nature Reserve on the eastern side of the mountain (Monadjem et al., 2018, op. cit.), which is currently co-managed by ArcelorMittal Liberia to offset biodiversity losses from its mining activities. Only improved management of these two protected areas, and further investigation of protection options in the Putu range, will ensure the survival of the Nimba otter-shrew, but the lack of interest from international conservation agencies in this species, and this region, is of concern.

Despite these recent studies, the full impact of mining, habitat conversion and bycatch on the ottershrew remains unclear and requires investigation. Further research on the species' distribution, status, habitat requirements, and threats would help determine which conservation measures could be appropriate in addition to enhancing protected area management. In the meantime, we hope the conservation community finally pays some attention to this unique Afrotherian and its Mount Nimba home, before it is too late.

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What Works in Conservation 2018

A new book, free to download, brings together evidence to help conservationists choose the most effective strategies to

conserve species and habitats. *What Works in Conservation 2018*, the third edition of the *What Works* series from the Conservation Evidence project, is a digest of data from over 5,000 scientific tests of over 1,200 conservation interventions (actions of any sort that conservationists could take to protect biodiversity). Freely available from https://www.openbookpublishers.com/product/696, the book summarizes the evidence available from https://www.conservationevidence.com.

This new edition is over 50% larger than that of last year, reflecting the number of new conservation interventions that have been summarized and assessed since then. Comprehensive new chapters have been added on the conservation of primates, shrublands and heathlands, and peatlands, as well as a chapter on management actions for some animal groups in captivity. The chapter on control of freshwater invasive species has been extended since 2017 to cover additional invasive species, and the other chapters from previous editions cover global conservation of amphibians, bats, birds and forests, conservation of European farmland biodiversity, and some aspects of enhancing natural pest control and soil fertility.

The book uses expert assessment, elicited over two rounds of Delphi scoring, to score interventions using a traffic light system. This scoring system comprises three components, (effectiveness of the intervention, certainty of the evidence, and harms arising from the intervention), and the scores from these components are combined to give each intervention a category ranging from 'Beneficial' to 'Likely to be ineffective or harmful'. It also identifies where the evidence is insufficient to make such judgements. For those who desire greater detail, links to the more in-depth evidence describing each individual study are provided.

The interventions covered include species and habitat management strategies, but go beyond this to include interventions on livelihood, economic and other incentives; education and awareness; law and policy; and land/water protection. This gives the reader an overview of a wide range of available conservation techniques they could try, and the evidence for how well each has worked. The book also highlights what we do not know: where the team found no studies for an intervention this is indicated, providing a useful indication to researchers of where to target future efforts. For example, for bats 48 of the 78 interventions reviewed returned no studies, and for primates a third of interventions had been tested but as a result of insufficient or unclear evidence they were classed as 'Unknown effectiveness'. If researchers systematically tested the interventions with the least evidence, we'd soon learn a lot more about how to conserve the natural world more effectively.

The concept of evidence-based conservation is often promoted without sufficient consideration of how conservationists are expected to ensure their work is evidence-based. This book is one easy way in which practitioners and policy-makers can assess the degree to which their decisions align with current evidence, making it practical to turn a paradigm into a reality.

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Discovery of two new populations of the rare endemic *Rhododendron liboense* in Guizhou, China

The Yunnan-Kweichow Plateau in Guizhou, China, is famous for its plant diversity. However, unlike in Yunnan, where there have been many explorations for plants, large areas in Guizhou remain to be investigated. *Rhododendron liboense* Z. R. Chen & K. M. Lan, an evergreen tree of the Ericaceae family, is only known from a single population of 35 individuals growing on a karst mountain in Libo county, south-east Guizhou. It was categorized as Critically Endangered on the Red List of Rhododendrons (Gibbs et al., 2011, *The Red List of Rhododendrons*, Botanic Gardens Conservation International), and as Critically Endangered on the Chinese Higher Plants Red List (Qin et al., 2017, *Biodiversity Science*, 25, 696–744).

To secure more information on *R. liboense* three field surveys were carried out in Libo County during 2017–2018 with the support of Botanic Gardens Conservation International (grant no. BGCI30415). In addition to the type location on Donghua mountain in Maolan National Nature Reserve, two additional populations of *R. liboense* were located. In April 2017 a population of 15 plants (with four flowering) was found in Xizhu, c. 10 km from the type location of *R. liboense*. In March 2018 a population of 36 plants (with 23 flowering) was found in Dongdao, c. 20 km from the type location. These finds bring the total number of known individuals to 86. The habitat of the two newly located populations is similar to that of the type location, where *R. liboense* grows on steep karst mountains, but outside Maolan National Nature Reserve.

In addition, 300 seedlings of *R. liboense*, propagated from seeds collected from the Donghua population in November 2016, are available for ex situ conservation. At least 100 seedlings will be planted in 2018 in the Rhododendron garden of Guizhou Minzu University, to assess adaptation. Given the species' apparently low fruit production and that two of the three known populations are unprotected, additional in situ conservation is required for this rare endemic Rhododendron. We are now discussing with local government officials potential in situ conservation actions for populations of *R. liboense* outside Maolan National Nature