

Letters to the Editor

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LETTERS

Biodiversity in Sri Lanka and the Western Ghats

WE READ WITH INTEREST THE REPORT "LOCAL endemism within the Western Ghats—Sri Lanka biodiversity hotspot" by F. Bossuyt *et al.* (15 Oct. 2004, p. 479), which documents patterns of diversification in selected vertebrate and invertebrate lineages from Sri Lanka and the Western Ghats region of western India. Although these two areas have long been united as a single biogeographic unit (1), and more recently as a biodiversity "hotspot" (2), Bossuyt *et al.* highlight the distinctive faunal histories of the two regions and caution against treating them as a single unit for conservation purposes. We would like to add two comments, which support and extend their results.

First, the respective bird and mammal faunas of Sri Lanka and the Western Ghats are distinct in many ways: There are marked differences in the regions' restricted-range mammal assemblages [the Western Ghats support at least 15 endemic mammal species; Sri Lanka supports at least 13 endemic species, and because they share few restricted-range birds, they are treated as separate "Endemic Bird Areas" (3)]. This is significant because it is birds and mammals that tend to act as "flagship species" for conservation.

Second, trenchant faunal differentiation is evident within both areas, especially in different climatic zones within Sri Lanka (4, 5), and the two regions can be subdivided into multiple "ecoregions" (6). There may sometimes be stronger faunal differentiation between wet, dry, and cloud forest zones within Sri Lanka than between that island's dry zone and the dry country of South India [e.g., (4)]. Lists of mammals restricted to Sri Lanka, the Western Ghats, or the hotspot as a whole are given in (7–10). Those apparently restricted to high-altitude cloud forest zones (marked with an asterisk) comprise all endemic genera, half of Sri Lankan endemics, one-third of Western Ghats endemics, and about one-third of mammal species endemic to the hotspot as a whole.

KRISTOFER M. HELGEN¹ AND COLIN P. GROVES²

¹School of Earth and Environmental Sciences,

University of Adelaide, Adelaide, SA 5005, Australia.

E-mail: kristofer.helgen@adelaide.edu.au. ²School of Archaeology and Anthropology, Australian National University, Canberra, ACT 0200, Australia. E-mail: colin.groves@anu.edu.au

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6. E. Wikramanayake *et al.*, *Terrestrial Ecoregions of the Indo-Pacific* (Island Press, Washington, DC, 2002).
7. Sri Lanka: **Crocodylus* *miya*, **Solisorex* *pearsoni*, *Suncus* *fellowesgordoni*, *Suncus* *zeylanicus*, *Loris tardigradus*, *Macaca sinica*, *Trachypithecus vetulus*, **Mus fernandoni*, *Mus mayori*, **Rattus montanus*, **Srilankamys ohiensis*, **Vandeleuria nolthenii*, *Paradoxurus zeylonensis*.
8. Shared exclusively: *Crocodylus horsfieldii*, **Feroculus* cf. *feroculus*, **Suncus montanus*, *Ratufa macroura*, *Petionomys fuscicapillus*, *Funambulus layardi*, *Funambulus sublineatus*, *Herpestes fuscus*, *Herpestes viticollis*.
9. Western Ghats: *Paraechinus nudiventris*, *Suncus dayi*, **Latidens salimalii*, *Macaca silenus*, *Trachypithecus johnii*, *Funambulus tristriatus*, **Mus famulus*, **Vandeleuria nilagirica*, *Rattus ranjinae*, **Rattus satarae*, *Platacanthomys lasiurus*, *Martes gwatkinsi*, *Paradoxurus jerdoni*, *Viverra civettina*, **Nilgiritragus hylociurus*.
10. Endemic mammalian genera: Sri Lanka: **Solisorex*, **Srilankamys*; Western Ghats: **Latidens*, **Platacanthomys*, **Nilgiritragus*; shared exclusively: **Feroculus*.

Response

HELGEN AND GROVES' POINT about conservation is well taken. Yet, the major significance of our study is that it reaches beyond the recognition of a high degree of species endemism. Indeed, we have demonstrated that several Sri Lankan taxa not only contain assemblages of endemics, but that these sometimes constitute old branches or distinct clades of the tree of life. Such higher-level endemism is also evident in ranid frogs (*Lankanectes*) (1), agamid lizards (*Ceratophora*) (2), and land snails (3). The island may therefore be considered a significant reservoir of ancient lineages and clade evolutionary history (4).

From a conservationist's point of view, this is significant because radiations of tens of species are found exclusively on Sri Lanka. Because some members of these evolutionary lineages can be readily viewed in gardens (e.g., *Philautus* treefrogs) or in roadside torrents (e.g., parathelphusid

freshwater crabs), they are ideal catalysts for stimulating environmental awareness.

With few possible exceptions (mice and shrews), mammals and birds do not show clade-level endemism on Sri Lanka. Therefore, conservation managers could treat the clades of animals and plants as the island's major natural treasure, instead of selecting a single mammal or bird as a flagship species. This strategy will reinforce the fact that not only selected sites, but the island's habitats as a whole deserve protection.

It is in that perspective noteworthy that Sri Lanka's diversity is largely restricted to the formerly rain-forested southwestern "wet zone," where only ~750 km² of (highly fragmented) natural forest now survives. Human population density in Sri Lanka is one of the highest of all Global Biodiversity Hotspots (5). The threats to the unique biodiversity we uncovered, and the challenges to its conservation, are therefore formidable and demand urgent international scientific attention.

FRANKY BOSSUYT,¹ MADHA MEGASKUMBURA,^{2,3}

NATALIE BEENAERTS,¹ DAVID J. GOWER,⁴

ROHAN PETHIYAGODA,³ KIM ROELANTS,¹

AN MANNAERT,¹ MARK WILKINSON,⁴

CHRISTOPHER J. SCHNEIDER,² MOHAMED M. BAHIR,³

KELUM MANAMENDRA-ARACHCHI,³ PETER K. L. NG,⁵

OOMMEN V. OOMMEN,⁶ MICHEL C. MILINKOVITCH⁷

¹Biology Department, Unit of Ecology and Systematics, Vrije Universiteit Brussel, Pleinlaan 2,

1050 Brussels, Belgium. ²Depart-

ment of Biology, Boston Uni-

versity, 5 Cummington Street,

Boston, MA 02215, USA. ³Wildlife

Heritage Trust, 95 Cotta Road,

Colombo 8, Sri Lanka. ⁴Depart-

ment of Zoology, The Natural

History Museum, London SW7

5BD, UK. ⁵Department of Bio-

logical Sciences, National Uni-

versity of Singapore, Lower Kent

Ridge Road, Singapore 119260,

Republic of Singapore. ⁶Depart-

ment of Zoology, University of

Kerala, Kariavattom 695581,

Thiruvananthapuram, Kerala,

India. ⁷Laboratory of Evolutionary Genetics, Free

University of Brussels, C.P. 300, Institute for

Molecular Biology and Medicine, Rue Jeener et

Brachet 12, B-6041 Gosselies, Belgium.

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Lankanectes, an ancient frog lineage in Sri Lanka.