What to save
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Causes of risk
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Phylogenetic Diversity

http://www.panzerwelten.de/forum/thread-89.html
Oziothelphusa cyclonis, a related species
**Fig. 4** Species richness and phylogenetic diversity (PD) for the three elevational zones (lowland, upland and highland). The left vertical axis indicates percentage species richness; the right vertical axis indicates PD scores as clade evolutionary history (in million years).
As part of a Global Biodiversity Hotspot, the conservation of Sri Lanka’s endemic biodiversity warrants special attention. With 51 species (50 of them endemic) occurring in the island, the biodiversity of freshwater crabs is unusually high for such a small area (65 600 km$^2$). Freshwater crabs have successfully colonized most moist habitats and all climatic and elevational zones in Sri Lanka. We assessed the biodiversity of these crabs in relation to the different elevational zones (lowland, upland and highland) based on both species richness and phylogenetic diversity. Three different lineages appear to have radiated simultaneously, each within a specific elevational zone, with little interchange thereafter. **The lowland and upland zones show a higher species richness than the highland zone while – unexpectedly – phylogenetic diversity is highest in the lowland zone, illustrating the importance of considering both these measures in conservation planning.** The diversity indices for the species in the various IUCN Red List categories in each of the three zones suggest that risk of extinction may be related to elevational zone. **Our results also show that overall more than 50% of Sri Lanka’s freshwater crab species** (including several as yet undescribed ones), **or approximately 72 million years of evolutionary history, are threatened with extinction.**
Figure 1. Hypothetical phylogeny of seven species (A-G) with Evolutionary Distinctiveness (ED) scores. Numbers above each branch indicate the length; numbers below show the number of descendant species. MYBP, millions of years before present.
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The top 100 EDGE species span all the major mammalian clades and display a comparable range of morphological and ecological disparity, including the largest and smallest mammals, most of the world’s freshwater cetaceans, an oviparous mammal and the only species capable of injecting venom using their teeth. However, around three-quarters of species-based mammal conservation projects are specifically aimed at charismatic megafauna, so conventional priority-setting tools may not be sufficient to protect high priority EDGE species. ... [A]n assessment of published conservation strategies and recommendations ... reveals that no species-specific conservation actions have even been suggested for 42 of the top 100 EDGE species. Most of these species are from poorly known regions or taxonomic groups and until now have rarely been highlighted as conservation priorities.
Phylogenies and conservation biology

What to save

Causes of risk
(i) Small populations are more likely to die out than large ones: demographic stochasticity, local catastrophes, slow rates of adaptation, ‘mutational meltdown’ and inbreeding are all more serious for populations with few individuals (Brown 1995; Lande 1999). Small geographical ranges and low population densities are therefore likely to confer an enhanced extinction risk (Gaston 1994).

(ii) Island endemics are very likely to have small geographical ranges and, hence, small populations. In addition, they may have evolved in isolation from predators and competitors (including humans), perhaps making them particularly vulnerable to the effects of introduced species and over-exploitation (Pimm 1991).

(iii) Species at higher trophic levels are more vulnerable to the cumulative effects of disturbance to species lower down the food chain (e.g. chains of extinction) (Diamond 1984; Crooks & Soulé 1999).

(iv) Species with ‘slow’ life histories, i.e. small litters, slow growth rates, late sexual maturity, long gestation and long interbirth intervals, are less able to compensate for increased mortality with increased fecundity and are therefore more vulnerable to population extinction (MacArthur & Wilson 1967).

(v) Species with complex social structures for mating, group foraging or group defence are more vulnerable to extinction because persistence depends upon a larger unit than the individual (Allee effects) (Courchamp et al. 1999); in addition, social groups are conspicuous which can lead to increased hunting (Soulé 1983).

(vi) Species where individuals have large home ranges are particularly vulnerable to habitat loss and degradation and, in particular, to edge effects (Woodroffe & Ginsberg 1998).

(vii) Diurnal species show a suite of characteristics that might make them more vulnerable, e.g. large body size, sociality, high predation rates and large home ranges (Gittleman 1985; Fleagle 1999), as well as being easier to hunt.

(viii) Last but not least, large body size correlates with many of the extinction-promoting traits above (McKinney 1997). Larger species tend to have low population densities, slower life histories and larger home ranges. In addition, humans may be less tolerant of and, thus, more likely to persecute larger carnivores (Weaver et al. 1996), and hunters are more likely to target larger primates for food (Cowlishaw & Dunbar 2000).
On East side of river

http://www.youtube.com/watch?v=9R8hpPY_9kY
Can eat thistle
On East side of river

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Can eat thistle
Uses lookouts
On East side of river

http://www.youtube.com/watch?v=9R8hpPY_9kY
Locality

- West
- East

IUCN status
- good
- bad

Least concern

Critically Endangered

Endangered

Can eat thistle

Uses lookouts

On East side of river
Can eat thistle
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Figure 2 | Changes in phylogenetic diversity versus scenarios of random extinction for plants, birds and mammals. a. Emission scenario A1F1; b, emission scenario B1. Black solid and dashed lines depict the median, maximum and minimum current phylogenetic diversities across the sample of trees. Blue solid and dashed lines represent the median, maximum and minimum projected phylogenetic diversities due to range change across the sample of trees. The grey area is the quantile range of projected phylogenetic diversity due to range contraction (from 2020 onward), randomly scattered across the sample of trees. The red lines are the remaining phylogenetic diversity when the risk of extinction is positively (lower line) or negatively (upper line) related to the evolutionary distinctiveness of the taxa.
Figure 3 | Map of current and future phylogenetic diversities (A1FI scenario for 2080) and their relative differences for the three species groups. Maps represent average phylogenetic diversity (PD; colour scale) across the sample of 100 phylogenetic trees used for each study group.