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Biodiversity in decline, but conservation efforts making a difference

One-fifth of the world's mammals, birds, amphibians, reptiles and fish are threatened with extinction, according to a recent report. The study notes that there have been many conservation success stories, but far greater long-term resources are needed to improve the outlook for the world's threatened vertebrate species.

Biodiversity is of great cultural and economic importance for human society, but ecosystems can collapse if key individual species become extinct. Species found on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species are classified into eight categories, according to how close they are to becoming extinct. Species listed as 'Critically Endangered', 'Endangered' or 'Vulnerable' are collectively known as 'Threatened species'.

Using information from 25,780 species of vertebrates (mammals, birds, amphibians, reptiles and fishes) on the IUCN Red List, an international team of researchers has assessed the changing conservation status of vertebrates around the world. In all, almost one-fifth of living vertebrate species are classed as Threatened. This includes13 per cent of the birds and 41 per cent of the amphibians assessed.

The researchers looked at how many species of birds, mammals and amphibians had changed category on the Red List, either improving (facing a lessened risk of extinction) or deteriorating (facing a greater risk of extinction). The risk of extinction increased for all three groups of vertebrates over time, with amphibians experiencing the greatest increase in risk of extinction as a result of lower levels of conservation efforts and greater threats, compared with mammals and birds. In total, an average of 52 species moved closer to extinction every year between 1980 and 2008.

The greatest number of threatened bird, mammal and amphibian species occurs in tropical areas, with species in Southeast Asia particularly at risk. Amphibian populations are especially at risk in California, Central America, Australia and the tropical Andes in South America from devastating fungal disease chytridiomycosis.

Human activities, such as agriculture, logging, over-exploitation of species and the introduction of invasive alien species, are primarily responsible for driving the global loss of biodiversity and pushing many species closer towards extinction. There is evidence, however, that conservation efforts can halt and even reverse biodiversity loss, provided there are sufficient resources and the collective will to protect habitats. For example, 68 of the 928 species (or seven per cent) in the study improved their Red List status and moved further away from the risk of extinction primarily as a result of conservation initiatives. Overall, biodiversity loss would have been at least one-fifth greater had it not been for conservation initiatives.

Birds and mammals have particularly benefited from conservation actions that reduce the threat posed by invasive alien species. For example, control of invasive species and reintroduction efforts on the Seychelles has allowed the Magpie-robin population to rebound. However, conservation efforts to reduce the impact on habitats caused by agricultural expansion have been less successful. Robust agri-environment schemes and well-managed networks of protected areas are needed.

The current study provides compelling evidence that, while current conservation efforts have been insufficient to offset the main drivers of loss, they have not been in vain. Some conservation success has also been achieved through introducing tougher legislation and bans on hunting, although this threat has been more successfully mitigated in birds than in mammals. Conservation responses to threats from the fisheries industry have been more effective for marine mammals than for birds.

Source: Hoffmann, M., Hilton-Taylor, C., Angulo, A. *et al*. (2010) The Impact of Conservation on the Status of the World's Vertebrates. *Science*. DOI: 10.1126/science.1194442.

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