

BIODIVERSITY INDICATORS: WHAT DOES SPECIES INFORMATION TELL US?



IUCN has access to many different kinds of information on species, ranging from the global assessments provided by The Red List of Threatened Species through to local case studies on particular species. The IUCN Species Survival Commission, together with the Species Programme and their partners have developed a number of species-based indicators, each of which uses a different approach to build up a picture of status and trends in species and biodiversity at global, regional and national scales.

A global perspective

The IUCN Red List provides evaluations of the conservation status of species by comparing information on distribution, population and trends over time, with standardized quantitative criteria for each of the categories of threat (Critically Endangered, Endangered and Vulnerable). Repeated global assessments have been carried out for all species of birds (1988, 1994, 2000, 2004 and 2008) and mammals (1996 and 2008). Repeat assessments for all cycads, the first plant group, will be available soon (2003 and 2009). Global assessment projects have been completed for other groups such as amphibians, reef-building corals, sharks, groupers, freshwater crabs and crayfishes, and conifers and others are underway to establish baselines for cacti, reptiles, fishes, and cephalopods.

The IUCN Red List Index (RLI) uses genuine changes in threat categories to measure changes in the overall extinction risk of a group of species. Large groups such as insects and plants cannot be fully assessed, so a sampled approach has been developed; it is based on a sample of 1,500 species randomly selected and will be applied to vertebrates, invertebrates, plants, fungi and algae. The first set of assessments have been conducted for freshwater fishes, reptiles, and dragonflies and by 2010, additional groups such as marine fishes, lobsters, molluscs, beetles and butterflies will also be included. These will all form a baseline for future indicators.

Heraldica Clearwing Ithomia heraldica, found in the Monteverde Cloud Forest Reserve in Costa Rica. © Brett Cole and Wild Northwest

Indicator	What does the indicator measure?	Lead organisation(s)
IUCN Red List Index	Change in the extinction risk of species over time as measured by changes in Red List categories	IUCN Species Survival Commission
Sampled Red List Index	Change in the extinction risk over time of a random selection of species from better known taxa as measured by changes in Red List categories	IUCN Species Survival Commission Zoological Society of London
Living Planet Index	The average population trend across a selection of terrestrial, freshwater and marine vertebrate species	Zoological Society of London WWF
Global Wild Bird Index	Composite indicator based on trends in populations of a representative selection of wild birds	BirdLife RSPB
Sustainable use		
Index of species in international trade	Trends in the wild status of a sample of internationally traded animals and plants	CITES UNEP-WCMC
Wild Commodities Index	The use and sustainability of use of a selection of a sample of heavily used wild populations of animals and plants	IUCN Species Survival Commission IUCN Sustainable Use Specialist Group UNEP-WCMC, TRAFFIC, Zoological Society of London Shell Research Foundation
Biodiversity for Food and Medicine	Changes in the status of a selection of wild species harvested for food and medicine and how affordable they are to the people who use them.	IUCN Medicinal Plants Specialist Group TRAFFIC
Invasive species (IS)	<ul style="list-style-type: none"> • The number of IS per country over time • Number of operational management plans in place relating to IS • Number of countries party to international agreements regarding IS • Impact of IS on species' conservation status 	Global Invasive Species Programme (GISP)
Climate change	The number of vulnerable species exposed to large changes in climate	IUCN Species Survival Commission McArthur Foundation Indianapolis Zoo

The current species based indicators being produced by IUCN and their partners, including a summary of each indicator and the names of the leading organisations.

Key:	in use	developed	in development
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Measuring change in local population abundance over time also provides the means to create robust and representative indicators of change. Population-based indicators, such as the Living Planet Index (WWF and ZSL) and the Global Wild Bird Index (RSPB and BirdLife), combine data taken from individual populations of many species to create a single index. The data can then be used to answer questions about changes in status of groups of species or habitats, measure local level processes and give early warning about new threats or processes within an area. These indicators provide invaluable information about both the status of species and the environments in which they live.

The global indicators described here are being used to monitor progress towards biodiversity targets such as the Convention of Biological Diversity's 2010 target to reduce the loss of biodiversity. IUCN and its partner organizations are therefore working closely with the 2010 Biodiversity Indicators Partnership (2010 BIP) to build an over-arching story of how global biodiversity is faring as we approach 2010.

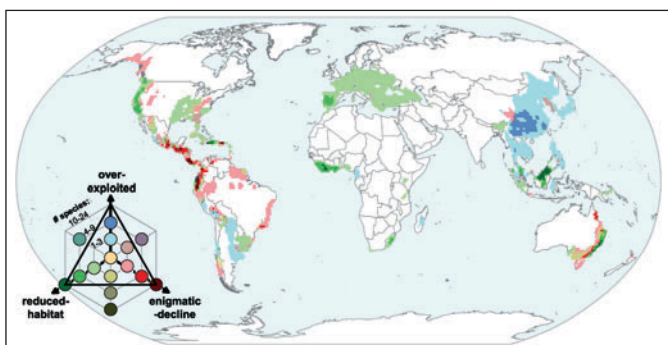
Looking to the future

A suite of new indicators will add information on drivers and

pressures to the current suite of indicators. Two indicators relating to the use of species will track the wild populations and commercial demand for a selection of highly used animals and plants, and reflect the extent to which the use of these species is sustainable. The Biodiversity for Food and Medicine indicator focuses on changes in the status of a selection of wild species harvested for food and medicine, and how affordable they are to the people who use them. Indicators focusing on threats to biodiversity include the invasive species indicators being developed by the Global Invasive Species Programme (GISP) and an indicator of the effects of climate change being led by IUCN.

There is also increasing demand for national or regional-level indicators that are directly relevant to the countries where the species live and can more easily be incorporated into in-country policy and decision-making processes. Many of the species-based indicators referred to above are ideally suited for use at these scales, and national and regional versions of many of the indicators, including the IUCN Red List and the Living Planet Index are currently being piloted. Together, these indicators will provide a unique perspective on changing levels of threats to biodiversity and the effect of human interventions to reduce those threats.

Geographical pattern of the dominant causes of rapid decline in amphibian species: overexploited (shades of blue), reduced habitat (shades of green) and enigmatic decline (shades of red). Figure taken from Stuart et al. 2004. Science 306: 1783-1786; reprinted with permission from AAAS.



A hovering Green Crowned Brilliant Hummingbird *Heliodoxa jacula* (Least Concern) found in the Monteverde Cloud Forest Reserve in Costa Rica. © Brett Cole and Wild Northwest

