

The IUCN Red List: The world's 'barometer of life'

The IUCN Red List of Threatened Species[™] (hereafter the IUCN Red List) was created over 50 years ago by the International Union for Conservation of Nature (IUCN) to "provide information and analyses on the status, trends and threats to species in order to inform and catalyse action for biodiversity conservation".¹ In its five decades of existence, the IUCN Red List has evolved to become the world's most comprehensive information source on the conservation status of animal, fungi and plant species.^{2,3}

The IUCN Red List is based on contributions from thousands of dedicated, scientific experts around the globe², managed by the IUCN Red List Unit, working closely with the IUCN Species Survival Commission (IUCN SSC). Over 91,500 species have been categorised to date, around twenty-eight per cent of which are threatened by extinction.⁴ IUCN Red List data are used to inform conservation action and policy decisions made by governments around the world.

Why the IUCN Red List matters

Biodiversity loss is one of the world's most pressing, but least talked about crises. The variety and abundance of species is in rapid decline around the planet, with many being pushed towards extinction. As species disappear, we lose both the known and unknown benefits that they provide. Species are invaluable: they are the building blocks of ecosystems; they provide economic benefits to people; and they have intrinsic value as a source of wonder in all cultures. With the loss of species, the quality of our lives declines.

In response to this crisis, governments have set clear conservation targets. In particular, Target 12 of 20

Aichi Biodiversity Targets (adopted by the world's governments at the Conference of the Parties to the Convention on Biological Diversity (CBD) in 2010) states: "By 2020, the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained".⁵ In other words, governments have committed to ending extinction and the decline of threatened species.

Despite these commitments, it is clear that the global community is on course to miss many of the

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Aichi targets, and that much more needs to be done to conserve and restore biodiversity where it is threatened. The difficulty and in many cases failure to meet such targets⁶ underscores the importance of having accurate, scientifically rigorous information on which to base policies related to biodiversity. This is where the IUCN Red List plays a key role.

How the IUCN Red List works

The IUCN Red List Categories and Criteria⁷ provide a rigorous, objective system for evaluating species based on past, present and projected future threats, and are the widely accepted standard for assessing the risk of extinction of species. These Categories and Criteria were developed based on extinction-risk biology and theory.⁸

The majority of assessments published on the IUCN Red List are carried out by members of the IUCN SSC (especially through its specially-appointed Red List Authorities (RLAs)) and Red List Partner organisations (which have signed a partnership agreement with IUCN to support the IUCN Red List). Assessments can also be undertaken by any trained assessor and submitted to IUCN for consideration.9 The assessment process ensures the highest standards of scientific documentation, information management, expert review, and justification.¹⁰ There are eight IUCN Red List Categories (Figure 1) based on criteria that are linked to the species' population trend, size and structure, and geographic range. Species listed as Critically Endangered, Endangered or Vulnerable are collectively described as Threatened.7



Figure 1. IUCN Red List Categories. A species is considered to be Threatened when it has been classified as either Vulnerable, Endangered or Critically Endangered.

What the IUCN Red List tells us

The IUCN Red List represents far more than a list of species and their conservation status. It is a vast collection of information on global species, including: range; population size; habitat and ecology; use and/or trade; threats and conservation actions.^{3,11}

The data collected on species for the IUCN Red List is analysed to produce the IUCN Red List Index (RLI) that reveals trends in their overall extinction risk.^{11,12} The RLI is calculated from changes in IUCN Red List Categories of assessed species in a taxonomic group over time. Currently, the RLI is available for birds, mammals, amphibians, corals and cycads^{13,14} and will soon be available for conifers. The Index provides an indicator that is used by governments to track their progress in achieving United Nations Sustainable Development Goal 15¹³ (Target 15.5),¹⁵ and targets for reducing biodiversity loss, such as the Aichi Biodiversity Targets (particularly Target 12).^{5,11}



The Red List Index reveals a marked trend towards increased risk among the taxa assessed. (See Figure 2) Coral species are facing the most rapid increases in extinction risk, while amphibians and cycads are, on average, the most threatened groups.



Figure 2. RLIs for reef-forming corals, birds, mammals, amphibians and cycads^{13,14}

How the IUCN Red List helps to conserve species

The information revealed by the IUCN Red List and Red List Index is used to inform and catalyse action for biodiversity conservation and policy change.³ The data can be used to identify where limited resources would be best invested in conservation efforts. This is important, because there is strong evidence that conservation efforts do make a measurable contribution to bringing about species' recovery.^{16,17} In 2010, a research analysis of 25,780 vertebrates from around the globe revealed that of the one-fifth of vertebrate species classified as Threatened on the IUCN Red List, on average 52 species of mammals, birds and amphibians move one category closer to extinction each year. They found that in the absence of successful conservation efforts, the rate of deterioration would have been at least one-fifth as much again.¹⁶ In another study of the 235 species of ungulates in the world, it

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was found that, over a 12-year period, if conservation had not taken place, the overall decline as measured on the Red List Index would have been nearly 8 times worse than what in fact happened.¹⁷

As well as being a vital tool to monitor the changing conservation status of species globally, the great value of the IUCN Red List is in its wide application to global conservation. It plays a key role in:

Influencing resource allocation

Results produced by the IUCN Red List are used by a very wide variety of donors to guide their investment in conservation, for example the Global Environment Facility.¹⁸

• Informing conservation planning and action for individual species and sites

The IUCN Red List data provide a source of information that is required to guide conservation efforts focused on particular species¹⁹ and provides essential data to support the identification of important sites for conservation action¹¹, including Key Biodiversity Areas.²⁰

Improving decision-making

IUCN Red List data are used to guide environmental impact assessments, biodiversity management plans, site rehabilitation plans,¹¹ and are also used in IBAT for Business²¹ to inform development decisions taken by the business community to ensure that they do not harm threatened species.

Informing policy and legislation

The IUCN Red List data are used to inform the development of legislation. These data also inform decisions taken by international agreements such as the Convention on Biological Diversity (CBD), and Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).^{11,22} However, as the IUCN Red List has no powers of enforcement, it depends on the quality of its science to convince the relevant agencies to act on its results.³

Guiding scientific research

The IUCN Red List also enables the identification of survey work and ecological studies that need to be undertaken for species, for example for species that lack data and are listed as Data Deficient, but which may well be threatened.²²

Raising awareness and offering education

The IUCN Red List raises public awareness and is a valuable education tool used by educators and students.¹¹

• Providing health care

Distribution data available on the IUCN Red List is frequently used by researchers in the health sector to look at the distributions of species which are known or suspected vectors of human and domestic-animal diseases, allowing for the development of models on predicted future occurrences of the diseases.¹¹

As a result of targeted and continued conservation efforts, the IUCN Red List demonstrates that conservation works by reporting on the improvement in the conservation status of a range of species. For example:

• **The Mallorcan Midwife Toad** (*Alytes muletensis*). This amphibian was downlisted in 2006, moving from the category Critically Endangered to Vulnerable as a result of targeted conservation action.¹¹

• The Black-footed Ferret (Mustela nigripes) was considered Extinct in the Wild in 1996 but thanks to the successful reintroduction of captive-bred individuals, the species' extinction risk decreased in 2008 to the Endangered category.¹¹

• Valerian (*Centranthus trinervis*). The habitat of this herbaceous plant is now included in the European Union's Natura 2000 network, and is managed in a way that benefits the conservation of this species. As a result, in 2011, this species' conservation status improved and it was moved from Critically Endangered to Endangered.¹¹

More recently, species that were moved to less threatened categories in 2017 as a result of targeted conservation action include:²³

• **The Rodrigues Flying Fox** (*Pteropus rodricensis*) moved from Critically Endangered to Endangered.

• Previously listed as Vulnerable, the snail Amphorella melampoides moved from Vulnerable to Least Concern as a result of better management of the invasive species that were threatening this snail.

• Two species of Kiwi, the **Okarito Kiwi** (Apteryx rowi) and the **Northern Brown Kiwi** (Apteryx mantelli) moved from Endangered to Vulnerable.

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Through supporting our partners that are working tirelessly on the completion of IUCN Red List assessments, we are taking the first vital step towards conserving these amazing species and many more.

Challenges

To date more than 91,500 species have been assessed on the IUCN Red List, which is an amazing achievement.4 However, not all taxonomic groups have been completely assessed. The main gaps in coverage that IUCN and its partners are currently working on are plants, invertebrates, fungi and freshwater and marine species.²⁴

A complex process

The IUCN Red List process^{9,10} - from completing an assessment to getting it published on the website - is a huge exercise that depends on many factors such as the availability of IUCN Red List assessors and experts to undertake the assessments, and independent reviewers to check them. Despite the best efforts of everyone involved in the process, given the restricted resources and the time it takes for completing an assessment to getting it published, it is challenging to keep the IUCN Red List up to date.

Funding

The amount of available funding has been recognised as one of the biggest challenges faced by the IUCN Red List, as it limits the rate at which it can (re)assess more species. The IUCN Red List depends on the support of an extensive global network of experts, the majority of whom dedicate their free time to carrying out IUCN Red List assessments, and many of whom would be able to contribute more if they were better supported. Increased financial support would also allow for more IUCN Red List workshops to take place. These workshops bring experts together to exchange valuable information and undertake a larger batch of species (re) assessments.

Time

Time is also considered to be a limiting factor. The IUCN Red List website is updated at least twice per year and a new version number is allocated to each update. In each update, some species will be assessed for the first time, and some species, which have previously been assessed, will be reassessed. Species are generally reassessed every 10 years (or sooner if the situation for the taxon is rapidly changing) although this is dependent on funding.²⁵

How Synchronicity Earth supports the IUCN Red List

Recognising the immense value of the IUCN Red List to biodiversity conservation, Synchronicity Earth has been supporting the IUCN Red List through coordinated action and funding: • We support and work in close collaboration with our partners through our Amphibian Programme and Freshwater Programme, as well as with individual organisations that contribute to the IUCN Red List. Our support helps them to complete IUCN Red List assessments of globally threatened and often overlooked species, such as tortoises and freshwater turtles, seahorses, and prioritised taxa of freshwater species, including anguillid eels, and amphibians.

• In 2014, we organised the Biophilia Ball at the Natural History Museum in London to celebrate the 50th anniversary of the IUCN Red List. It was a celebration of the diversity of life on Earth through an immersive masked ball featuring handmade masks, representing 500 unique species from across 50 ecosystems, world music, dance, drumming, and an art exhibition and auction. The event helped to raise public awareness of the IUCN Red List and donations raised from the event are allowing IUCN to implement a major upgrade of their website.

Synchronicity Earth will continue to support work to keep the IUCN Red List up to date, and to help to make it more comprehensive, in order to inform and catalyse action for biodiversity conservation. More specifically, we are committed to helping the IUCN SSC Amphibian Red List Authority (ARLA) to complete the updating of the amphibian Red List assessments. We also assist the IUCN Freshwater Biodiversity Unit to complete their freshwater species assessments focused on fish, molluscs, dragonflies, crustaceans and plants.

Future development of the IUCN Red List

To provide a more complete 'Barometer of Life'²⁵ that will produce the most representative indication of the health of the world's biodiversity to guide critical conservation action, the IUCN Red List is running a campaign with the goal to assess at least 160,000 species by 2020 on their list.²⁶ This will mean that under-represented groups, such as invertebrates, plants, fungi and marine species are better covered on the IUCN Red List in future.

Another exciting development is the new IUCN Green List of Species, to complement the IUCN Red List, and which will be part of the same database and website as the Red List. While the Red List measures the extinction risk of species, the Green List will be a framework for comprehensively assessing species recovery and conservation success.²⁷

The complex scientific process to develop the Green List approach should be completed by 2020, after which species will be assessed for both their Red List and Green List status. So watch this space!

Insight Series: Bringing Conservation to Life

This series describes in simple terms the species, ecosystems and regions that we believe to be the most urgent conservation priorities, globally. We look at key challenges and potential solutions and describe how Synchronicity Earth, along with our partners, is helping to transform robust science into effective conservation action.

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