IUCN RED LIST OF ECOSYSTEMS

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Box 1: The IUCN Red List of Ecosystems will be:

1. Easily understood by policy-makers and the public.
2. Consistent with and complementary to the IUCN Red List of Threatened Species™, which measure extinction risk.
3. Transparent, objective, and scientifically rigorous.
4. Applicable to terrestrial, marine, freshwater and subterranean systems.
5. Applicable from local to global scales, and from very small (fine resolution) to very large (coarse resolution)
6. Able to use historic and present-day data.
7. Clear about how risk assessments can inform conservation, land use and investment priorities.
8. Defined by criteria that reflect varying levels of risk and loss of function, and which are easily quantified and monitored.
9. Provide standard ways to compare ecosystems.

Everyone knows that coral reefs are in danger, and that the rainforests are disappearing – or do we? What do we actually know in scientific terms? How much of these ecosystems are left, and how likely are they to disappear? What is the risk of the Kenya's Amboseli ecosystem collapsing, or the risk that the water towers of Kenya will become so degraded that their capacity to deliver ecosystem services to society is impaired? IUCN, the International Union for Conservation of Nature, is developing a new tool to provide answers to these and other questions – the IUCN Red List of Ecosystems.

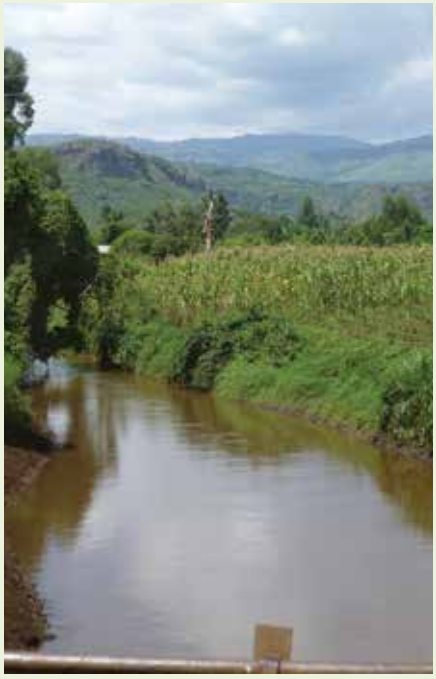
The IUCN Red List of Ecosystems will be a global standard for how we assess the status of ecosystems (Box 1), applicable at local, national, regional, and global levels. We will be able to identify which ecosystems are not at any appreciable risk of collapse, and which ones are vulnerable, endangered, or critically endangered. This will be measured by assessing losses in area, degradation, and other major changes (e.g. climate disruption). This is presented in version 2 of the IUCN Red List of Ecosystems Categories and Criteria which was recently published and is freely available (http://dx.plos.org/10.1371/journal.pone.0062111 and http://sapiens.revues.org/1286).

The Red List of Ecosystems will be of great value for different sectors, including:

- **Global Environmental Reporting:** to inform governments and the global community on progress towards the Aichi targets under the Convention on Biological Diversity.
- **Local Conservation:** to help prioritise action, for example, investments in ecosystem restoration, reforms of land use practices, or as a means to reward good and improved ecosystem management.
- **Land use planning:** to highlight the risks faced by ecosystems under current and potential land use scenarios, and the knock-on effects this might have on services such as clean water, maintenance of soil fertility, pollination, and the availability of natural products.

[1]For further information on the Red List of Ecosystems, please contact Edmund G. Barrow, Head of IUCN's Global Ecosystem Management Programme and based in Nairobi, Kenya (Edmund.Barrow@iucn.org), Jon Paul Rodríguez, IUCN Commission on Ecosystem Management (CEM) and Provita in Caracas, Venezuela (jonpaul@ivic.gob.ve) or David Keith, University of New South Wales, Australia (david.keith@unsw.edu.au), or visit www.iucnredlitstofecosystems.org and http://www.iucn.org/about/union/commissions/cem/cem_work/tg_red_list/. We acknowledge the support of the MAVA Foundation and the Gordon and Betty Moore Foundation for IUCN's work on the Red List of Ecosystems.

[2]An *ecosystem* refers to an area of land/water, the biodiversity that lives there and the associated physical environment (air, water, rocks, etc.) that interact together. Examples of ecosystems include lakes, mountains, riverine systems, coral reefs, forests and deserts.



Top left: Sipi River Falls midway up the Mount Elgon ecosystem, Uganda.
Top right: Turkwell River and riparian Acacia ecosystem near Lodwar, Turkana, Kenya.

- **Improvement of governance and livelihoods:** to inform development of governance systems in ways that improve ecosystem management, livelihood security and for livelihood improvement.
- **Macro-economic planning:** to provide a globally accepted standard that will enable planners to evaluate risks of ecosystem collapse and the related economic costs of reduced ecosystem services, and, conversely, the potential economic benefits of improved management ecosystem.

How will the Red List of Ecosystems be developed?

A standardized system will allow risks of ecosystem collapse, and consequent losses of ecosystem functions and services, to be assessed objectively, transparently and repeatedly (e.g. as a monitoring tool). Such assessments would be comparable between regions and over time. At the global level, IUCN will assess the conservation status of the world's terrestrial, freshwater, marine and subterranean ecosystems, aiming to achieve complete coverage by 2025. Criteria for determining threat categories are based on ecosystem extent, and declines in distribution and function over historical, present-day and future time frames.

A similar process will take place at the national and regional levels, but led, for example, by IUCN Members and Commissions, and their networks of collaborators, IUCN national and regional offices. Ecosystem risk assessments will be freely available in an on-line database, as a comprehensive collection of case studies in the three official IUCN languages (English, French, and Spanish), as appropriate for the countries concerned.

Sudano Sahelian Treed Savanna ecosystem of Sablogo, Central East Region of Burkina Faso.

The IUCN Red List of Ecosystems is working towards five major targets:

1. Classify and assess risks to global-scale ecosystems and document their status, scheduled for completion by 2025. Simultaneously, IUCN will support ecosystem Red List assessments at national levels,

ensuring explicit linkages between these and the global Red Lists.
2. Report assessments not only of threatened ecosystems, but also on those that are in good condition as a result of active management, and so highlight best practices in ecosystem management, as well as potential rewards for good management. By knowing which ecosystems are tracking well and which ones are in trouble, governments, industries and local communities will be well-positioned to make smart investment decisions for sustainable environmental management.
3. Establish a "secretariat" to manage the Red List of Ecosystems process in collaboration with the IUCN Red List of Threatened Species so as to ensure coherence and integration with other conservation data sets (e.g. World Database on Protected Areas, Key Biodiversity Areas).
4. Enhance technical and institutional capacity for ecosystem red-listing at national, regional and global levels through training assessors (e.g. recent projects in Senegal and Venezuela).
5. Develop strong linkages between good ecosystem management and sectors not necessarily focused on conservation (e.g. national and economic planning, livelihood improvement, and the private sector).

PHOTOS BY: EDMUND BARROW

Turkwell River and riparian Acacia ecosystem near Lodwar, Turkana, Kenya.

Shaping the IUCN Red List of Ecosystems – a collaborative and adaptive process

The Red List of Ecosystems is being developed and implemented jointly by the IUCN Commission on Ecosystem Management (CEM) and the IUCN Ecosystem Management Programme (EMP), with active involvement of the IUCN Species Survival Commission (SSC) and the IUCN Global Species Programme. The collaboration aims to build, strengthen and promote the Red List of Ecosystems at global, regional and national levels, including engaging with partners on the ground, and raising awareness among policy-makers.

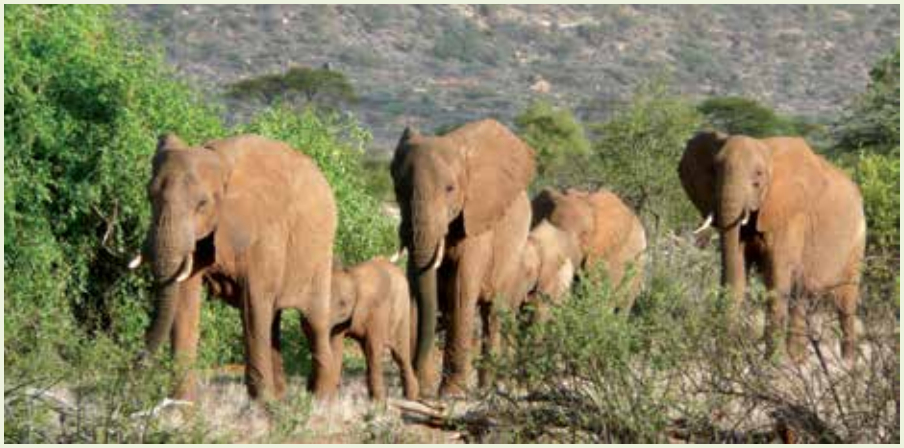
For example, we are working on the Red List of Continental Ecosystems of Americas (with support from the Gordon and Betty Moore Foundation), which will generate products at three scales: national red lists of ecosystems for Bolivia, Chile, Colombia, Costa Rica, Ecuador, Peru and Venezuela, watershed level assessments for the Magdalena River in Colombia and the Mississippi River in the United States of America, and an overall analysis of the status of terrestrial ecosystems for the entire continent, from Alaska to Patagonia. This new global standard in assessing ecosystem risk of collapse has been tested on 20 ecosystems spanning six continents and three oceans – including African ecosystems from Senegal, Madagascar and South Africa (http://dx.plos.org/10.1371/journal.pone.0062111).

Kelka Forest (seasonally flooded) ecosystem, Mopti Region of Mali.

PHOTOS BY: EDMUND BARROW

Sahelian Woodland ecosystem of Kelka, Mopti Region of Mali.

The Red List of Ecosystems will complement the IUCN Red List of Threatened Species[3] and other IUCN knowledge products. When used together, these will be the most informative indicators of the status of biological and environmental diversity available at national, regional and global levels. The Red List of Ecosystems will inform indicators used to assess ecosystem health and support arguments for non-degraded ecosystems as a core component of human well-being, land use management, governance and macro-economic planning.



Elephants in East African Bushland and thicket, Samburu National Reserve, Kenya.

With climate change and increased risks of disasters, we urgently need reliable assessments at the ecosystem level to not only raise awareness about the threats, but to also demonstrate how improved ecosystem management can reduce risks, enhance resilience, and be a means for adaptation. The IUCN Red List of Ecosystems will inform economists, rural communities, local and national authorities, enabling them to better manage the finite resources of our planet. Sound environmental management is imperative to maintain functional ecosystems, their biological diversity and the ecosystem services upon which our economies and social well-being ultimately depends.

[3]The IUCN Red List of Threatened Species developed specific criteria to evaluate the risk of extinction of species, and document conservation efforts. It is the world's most comprehensive inventory of the conservation status of thousands of biological species, and it is widely used by government agencies, NGOs and policy makers. (www.iucnredlist.org).