Understanding risks to ecosystems

Human actions are changing ecosystems\(^1\) at an alarming rate. Ecosystems across the globe continue to be degraded with consequent biodiversity loss, and this undermines their capacity to support life. However, to identify the most appropriate actions and priority areas to reduce the risk of ecosystem loss, we need scientifically credible and objective assessments of risks to ecosystems.

A comprehensive, scientific understanding of the risks to ecosystems, which are intrinsically linked to livelihoods, will ensure that appropriate conservation and people-oriented actions are implemented on the ground.

What is the IUCN Red List of Ecosystems?

The IUCN Red List of Ecosystems (RLE) is a standardised, globally recognised framework for assessing the status of ecosystems at local, national, regional and global levels. Assessments determine the level of risk that an ecosystem faces, with a risk classification system that mirrors the Red List of Species (Fig. 2). An RLE assessment is precise, realistic, and simple. It is based on a set of rules, or criteria, formulated on the hypothesis that ecosystem risk is a function of the species that compose them, their interaction, and the ecological processes they depend on.

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\(^1\) An ecosystem refers to complexes of organisms and their associated physical environment, within an area. Ecosystems have four essential elements: a biotic complex; an abiotic environment or complex; the interactions within and between them; and a physical space in which these operate.

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(A to E, for which data is available). In order to do so, the ecosystem is studied and consultations are carried out with stakeholders and experts on the ground. Key threats are diagnosed, quantifying their impacts on ecosystem properties. Additionally, relative risks are estimated and evaluated to identify alternative management scenarios to reduce those risks. During an assessment, RLE builds on the existing data and assessments available for the ecosystem, becoming a mechanism to collate all data into a systematic risk assessment.

How are the Results Implemented?

An RLE assessment can be used to support conservation planning, by supporting zoning assessments, strategies for threat reductions, and for the design and implementation of ecosystem management plans. Regular assessments provide a baseline and monitoring method to evaluate the effectiveness of conservation strategies and to adapt these strategies as necessary.

It can be used to implement an early-warning system, to localise threats and address them, with lessons learned that can feed into policies for long-term conservation and management.

RLE can help quantify ecosystem services and potential losses, which can be used to develop Nature-Based solutions that effectively protect people’s livelihoods.

The Red List of Ecosystems and global challenges

The conservation and management of ecosystems has never been more central to the future of biodiversity and human well-being on Earth. The CBD Aichi targets and UN Sustainable Development Goals mandate global action that depends directly or indirectly on ecosystem assessment. The information infrastructure to support these global policy initiatives is developing rapidly, including the IUCN Red List of Ecosystems (RLE), which aims for a global assessment of the world’s ecosystems by 2025. All published assessments will be publicly available in a database, an instrument of fundamental importance to lead global conservation actions.

The case of seagrasses in South Australia

Seagrasses are marine flowering plants that thrive in shallow oceanic and estuarine waters. Recognized among the most productive ecosystems on Earth, seagrasses are also among the most rapidly declining ones. Seagrass ecosystems provide habitats and nursery areas to a variety of marine invertebrates and vertebrates.

The RLE assessment of the seagrass ecosystem in South Australia provided information about its decline, and identified the main threats to the ecosystem in this area. The assessment classified the seagrass ecosystem of South Australia as Endangered (Fig. 3).

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Assessing environmental degradation affecting this ecosystem allows us to take measures to avoid a continuing degradation of the ecosystem distribution and state.

For more information, visit https://iucnrle.org/ and https://www.iucn.org/commissions/commission-ecosystem-management/our-work/teams/thematic-groups/red-list-ecosystems. IUCN acknowledges the MAVA Foundation, Gordon and Betty Moore Foundation, Australian Research Council, Embassy of the Netherlands in Brazil, and Agence Française de Développement for supporting IUCN’s work on the Red List of Ecosystems.

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