The difference conservation can make: integrating knowledge to reduce extinction risk

J o n P a u l R o d r í g u e z

The IUCN Species Survival Commission (SSC) is a unique network of 10,000 expert volunteers from almost every country. Grouped into c. 140 specialist groups of taxonomic expertise and cross-cutting disciplines, one of the major tasks undertaken, in collaboration with the IUCN Global Species Programme, is the continuous update and publication of the *IUCN Red List of Threatened Species*. Not really a list and not only about threatened species, it is an extensive database of information across taxa, from those not currently threatened to those that are extinct in the wild. The Red List includes data on species' geographical distributions, population structure and trends, habitat and ecology, and threats and conservation actions proposed or taken. To date, nearly 83,000 species have been assessed, 29% of which are categorized as threatened (IUCN, 2016c). IUCN aims to assess a total of 160,000 species for the Red List by 2020 (Stuart et al., 2010).

The Red List is evidence-based, with species assessments grounded in the best available data and subjected to peer review and quality control (Brooks et al., 2015). Transparency and objectivity of assessments are supported by clear guidelines for application of the IUCN Red List Categories and Criteria and a formal mechanism for challenging and amending them (IUCN, 2012a,b; IUCN Standards and Petitions Subcommittee, 2016). Publication of Red List analyses in the scientific literature strengthens the process, by exposing the reasons for species categorizations or recommending changes, illustrating innovative uses of the categories and criteria, documenting the impact of conservation action or policies, and subjecting the conceptual foundations of the Red List to scrutiny from outside the IUCN Community (for examples in this journal, see: Hjarding et al., 2015; Teixeira et al., 2015; Tejedor Garavito et al., 2015; de Lima et al., 2016; Rossi et al., 2016).

There is no doubt that the dedication of the people and the expertise underlying the Red List has paid off. It is widely used for supporting conservation policy decisions at national and global levels, and for guiding investments (IFC, 2012), informing progress towards achieving the targets of international agreements such as the Convention on Biological Diversity and the UN Sustainable Development Goals (Brooks et al., 2015), and evaluating the proposals submitted for consideration by CITES.

But is documenting extinction risk sufficient, and is detailed knowledge of species' declines, or the contrary, a

conservation achievement in itself? Clearly, simply keeping a record, no matter how rigorous, is only the first step. Repeated assessments are required to document change in response to conservation interventions or as a result of drivers of population decline. For example, Red List data have been used to measure the difference that conservation makes, demonstrating that in the absence of conservation interventions the Red List status of species would probably be worse (Hoffmann et al., 2015). But we need more: ways to reward conservation success and to create incentives for reducing extinction risk. To address this challenge, we are developing Green List criteria, which would be integrated into the Red List to highlight conservation success (IUCN, 2012c: Resolution 041 Development of objective criteria for a Green List of species, ecosystems and protected areas).

Saving species requires the expansion of the SSC's evidence-based approach to the implementation of actions and policies that lead to the reduction of extinction risk. This will benefit from diversification of the active participation of members from all statutory regions of IUCN in the leadership of the SSC, and the increase in diversity of the membership both geographically and demographically. Key will also be to engage more regularly with the other IUCN Commissions (Education and Communication; Environmental, Economic and Social Policy; Environmental Law; Ecosystem Management; and Protected Areas) and the Secretariat in designing and delivering scientific tools to assist the Members of IUCN in reporting progress towards achieving international biodiversity goals and targets, and implementing conservation action.

If one makes a global map of the species' richness of, for example, birds, the greatest number of species occurs in the tropics. If one plots financial resources (e.g. per capita GDP), human resources (e.g. number of authors involved in the *Millennium Ecosystem Assessment*) or institutional capacity (e.g. number of IUCN Members), one finds a different pattern: the lowest numbers lie in the tropics. This paradox—more species are located where there are fewer resources—is a challenge for the SSC and for biodiversity conservation generally. Local capacity can be enhanced by seeking and identifying emerging leaders in countries not well represented in the SSC. This will be a primary responsibility of the eight Regional Vice Chairs, who will serve on the SSC Steering Committee, one for each of IUCN's statutory regions.

Although the global influence of the Red List is undisputed, there is comparatively little interaction between the SSC and IUCN Members. The problem with this is that conservation action does not really occur at the global level but at the level

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of countries or even narrower jurisdictions. The primary players in saving species are governments, governmental agencies and civil society organizations. A key priority for me, as newly elected Chair of the SSC, will be to increase the engagement of the SSC with the IUCN membership. Firstly, we need to catalyse support for creating national Red Lists and to use this information to help define priorities for biodiversity conservation—to be led by Domitilla Raimondo of the South African National Biodiversity Institute, who is SSC Deputy Chair. One strategy will be to increase the number of people trained in performing and leading Red List assessments. Secondly, I plan to work with our Specialist Groups and the Global Species Programme to expand conservation planning capacity, strengthen species priority setting, develop action plans and identify Key Biodiversity Areas. Thirdly, we have begun pursuing innovative approaches to mobilize financial resources for supporting national conservation planning efforts.

But I firmly believe that in addition to what each Commission can offer individually, the strength of IUCN lies in the integration of all its knowledge products, and the presentation of a unified front to our constituencies. This is cost-effective and better suited to the needs of the users. The typical setting in a country's environmental agency is that a few staff are responsible for species and ecosystem conservation programmes, and protected area management. They are not divided into subgroups in the way that we are in IUCN.

In collaboration with a large group of partners (Brooks et al., 2015), IUCN is currently able to mobilize four knowledge products: the *IUCN Red List of Threatened Species*, *Protected Planet*, the *Red List of Ecosystems* and *Key Biodiversity Areas*. The SSC, working closely with the World Commission on Protected Areas and the Commission on Ecosystem Management, as well as with our Secretariat counterparts, now has the opportunity to deliver an integrated toolkit to assist national conservation planning.

Imagine that knowledge product development at the national level begins with the adoption of an ecosystem map. This would be the template for all additional data. Species distributions could be improved by mapping them along the boundaries of the ecosystems they inhabit, and protected areas would then explicitly encompass the species and ecosystems of the region. Quantification of risks of loss to biodiversity for the Red Lists of species and ecosystems, plus identification of Key Biodiversity Areas, would be the next step (Bland et al., 2016, IUCN, 2012a,b, 2016a,b). Rather than implementing each knowledge product independently, by following an integrated process the time, personnel and resources invested in building each knowledge product would feed directly into the others. Users would then have access to a rich digital database, and thus the facility to respond to many conservation planning questions simultaneously.

Being Chair of the SSC is the biggest professional challenge I have faced. Biodiversity loss continues to outpace our capacity to address it (Tittensor et al., 2014), yet conservation can make a difference. Saving species from extinction requires creative solutions that make the best use of our limited resources to empower the global conservation community to halt and reverse this trend.

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