Species Threat Abatement and Recovery (STAR) Metric July 2019

Background

In 2010, the Convention on Biological Diversity (CBD) established the Strategic Plan for Biodiversity 2011-2020, which included twenty Aichi Biodiversity Targets. Target 12 refers specifically to preventing extinctions and improving the conservation status of threatened species. We are not on track to meet this target at the global level; instead species conservation status continues to deteriorate.

With 2020 fast approaching, it is essential that we are prepared to make better progress in species conservation during the coming decade. Many Parties to the CBD are responsible for extremely large numbers of threatened species within their national borders, and the scale of problem is perceived as one of the major challenges in making progress. Moreover, there is increasing interesting among Parties in not only tackling threats to species, but also restoring habitat. With 2021-2030 having been announced as the UN Decade on Ecosystem restoration, this presents an opportunity for conservation to go hand-in-hand with climate change mitigation efforts.

At the same time, within the discussion of the post-2020 policy framework, the CBD is motivated to engage businesses in conservation, and there has been strong interest from businesses keen to have a positive impact. However, measuring the impact on biodiversity that business investment could make is challenging. Businesses require a measure of the benefit to biodiversity in order to reflect a 'return on investment' of their actions.

These issues could be addressed simultaneously by the development of a metric that allows quantification of the potential reduction in species extinction risk that could be achieved by taking action at a particular site to tackle threats to species and restore habitat.

Aims

The aim is to develop a metric that informs target-setting across spatial scales, and allows countries and other entities (such as NGOs and businesses) to measure their potential contribution towards species conservation. The metric will consider two complementary site-based actions for species conservation; (i) the abatement of threats in order to prevent further deterioration in species survival probability, and (ii) the restoration of habitat in order to contribute to improving species survival probability.

The metric will allow calculation of the contribution that could be made over any spatial scale (from small-scale contribution of businesses, to national, through to global), and for any species or group of species for which data are available. The metric will be scalable and additive, thus allowing, for example, businesses to measure their national contribution, and nations to measure their global contribution.

Metric calculation

Calculation of the metric requires information on species conservation status (IUCN Red List category), Area of Habitat (AOH; both current and historical, which are calculated using species distribution polygons, habitat associations from the IUCN Red List, and land cover maps) and the threats they face (from the IUCN Red List threat classification hierarchy).

The threat abatement component of the metric has already been developed. It is spatially explicit and is calculated for all species present (according to available data) at a defined site (a site can range from a single grid cell to any larger delineated area, e.g. a country). Species AOH is used to determine the percent of the species distribution present at the site. IUCN Red List assessments are used to determine the threats facing the species present, and the relative contribution of those threats to the species extinction risk. The metric calculation for a site is:

$$\sum (P_{Sp} \times W_{Sp} \times R_{SpT})$$

Where P_{Sp} is the percent of distribution of species *Sp* at the site, W_{Sp} is the Red List category weighting of species *Sp* (NT=1, VU=2, EN=3, CR=4) and R_{SpT} is the relative contribution of threat *T* to the extinction risk of species *Sp*.

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Thus, the total metric score per site indicates the potential contribution to reducing species extinction risk that could be made from abating all threats to species at that site. The metric formulation also allows calculation of the potential contribution to reducing species extinction risk that could be made from abating individual threats to species at that site. The metric is scalable as scores per site can be compared to the total global score to give the relative contribution to species conservation that the particular site could make.

The metric is calculated in three phases: the Estimated Ex Ante phase, based only on existing published information, which enables users to gain a preliminary evaluation of the potential of a site to contribute to threatened species extinction risk reduction; the Baseline Ex-Ante phase, which requires verification of the presence of threatened species and the factors influencing their extinction risk, and the Ex-Post phase which enables users to measure progress against delivery in reducing the impact of extinction risk factors through management.

The complementary restoration component of the metric is currently under development, but a preliminary formulation will be available soon.

Scope

The current phase of analysis is global and focuses on amphibians, birds and mammals due to good data availability. The possibility of including plant groups and other animal taxa (e.g. reptiles) in order to expand the taxonomic scope is being explored. The intent is to use all globally assessed taxa (those for which all species have been assessed) in the metric calculation in the future. Species that are Near Threatened and threatened (Vulnerable, Endangered, and Critically Endangered) according to the IUCN Red List will be included.

Application

STAR can be used to assess ex-ante (potential) and ex-post (achieved) impacts of investments at a range of scales and over a range of timeframes. It has a range of potential uses, including:

- Portfolio screening for selection of projects with maximum potential conservation impact
- Assessment of potential and achieved impact on species extinction risk across a portfolio
- Identifying and monitoring conservation interventions at particular sites
- Tracking sectoral impacts on extinction risk, across commodity value chains
- Measuring province, state or national progress in reducing extinction risk
- Developing and tracking global targets on slowing extinction risk, to complement the Red List Index for instance in the post 2020 global Aichi targets

Project development

Technical development The threat abatement component of the metric has been through sensitivity testing and has been applied to amphibians, birds and mammals globally. Road tests in Sumatra and El Salvador on commodity production concessions with biodiversity outcomes have demonstrated the viability of the approach, the utility of the metric in contributing to larger-scale targets and have clarified the steps needed to advance from the Ex-Ante Estimate phase to the Ex-Ante Baseline and Ex-Post measurement phases. The restoration component is under development and will be ready for testing soon. In order to include plants, distribution data need to be obtained and AOH modelling carried out.

Policy engagement We are engaged with Parties to the CBD through the IUCN SSC Post-2020 Task Force (led by Philip McGowan). The threat abatement component of the metric was introduced to Parties at a side-event at CBD CoP14. National case studies are being developed with three Parties to demonstrate metric application. Further engagement is planned for proceeding CBD meetings to encourage uptake.

Major milestone The aim is to have a high impact manuscript presenting the metric and global analyses under review in advance of the CBD technical meeting in November 2019.

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