IBAT

IBAT Briefing Note

Species Threat Abatement and Restoration (STAR)

A Global Metric Supporting Nature-Positive Action

STAR Powered by IUCN RED LIST

White Rhino
Ceratotherium simum
Near Threatened

IBAT alliance partners

BirdLife INTERNATIONAL
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UN environment programme
WCMC

Report prepared by

THE BIODIVERSITY CONSULTANCY

Red Panda
Ailurus fulgens
Endangered

Why is STAR important?

- Nature underpins our societies and economies, but pressures on nature continue to grow and to degrade the world's life-supporting functions.
- Businesses are increasingly expected to contribute to positive outcomes for nature. To do this, they need to be able to assess and report on their conservation impacts.
- Effective measures are needed that are informative yet easy to use and that can be shared across business, government and civil society with a stake in conservation.

Business relevance and implications

- The Species Threat Abatement and Restoration (STAR) metric focuses on addressing the threats driving species extinction risk, a key concern for nature conservation and a central element of the post-2020 Global Biodiversity Framework and the Sustainable Development Goals.
- STAR is simple, standardised and scaleable. It uses global data from the IUCN Red List of Threatened Species™ to help identify opportunities to contribute to species conservation goals, either by reducing threats or by undertaking restoration.
- STAR can help businesses identify both opportunities and risks associated with their activities and value-chains.
- STAR can also provide a basis for setting corporate "science-based targets" for nature that contribute to global conservation goals.

What is STAR?

STAR stands for "Species Threat Abatement and Restoration". It is a biodiversity metric based on The IUCN Red List of Threatened Species™. STAR combines data on species, the threats they face and their risk of extinction, to produce two complementary global data layers for **threat abatement ($STAR_T$)** and **restoration ($STAR_R$)** *(Figure 1)*. These can be used to identify areas where actions to abate threats or undertake restoration can help reduce species extinction risk and contribute to conservation goals.

High **threat abatement ($STAR_T$)** scores indicate areas that currently contain relatively high numbers of threatened species, a large proportion of individual species' ranges, and/or species that are severely threatened. These are locations where positive interventions could make a large contribution to reducing global species extinction risk and where developments that increase threats to species should be mitigated. Such locations may include Key Biodiversity Areas, identified for their global significance for biodiversity, which together cover less than ten percent of the world's surface area but include nearly 50% of the global STAR threat abatement score.

High **restoration ($STAR_R$)** scores indicate areas that previously supported relatively high numbers of threatened species, a large proportion of individual species' ranges, and/or species that are severely threatened. These are locations where restoration activities could make a relatively large contribution to reducing species extinction risk.

STAR is calculated in a standardised way, using global and spatially explicit data, meaning that scores can be assessed, compared and added for any site, country or region. STAR scores can also be broken down to show the contributions of individual threat types. STAR's scaleability lends itself to a range of private and public sector applications, as it enables identification and comparison of opportunities and risks across multiple projects or assets, and can help set science-based targets for nature at a range of scales.

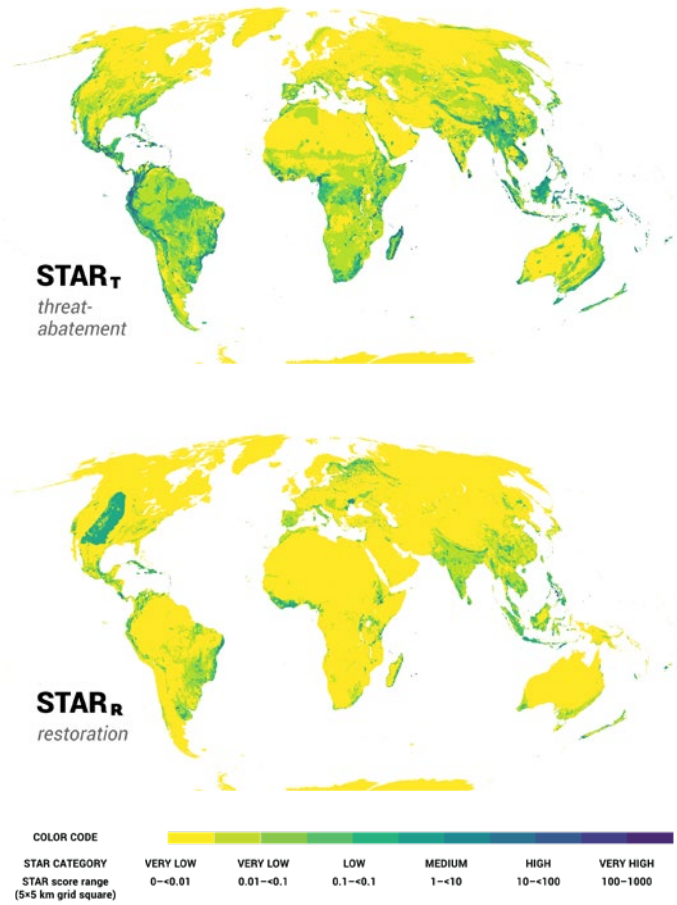


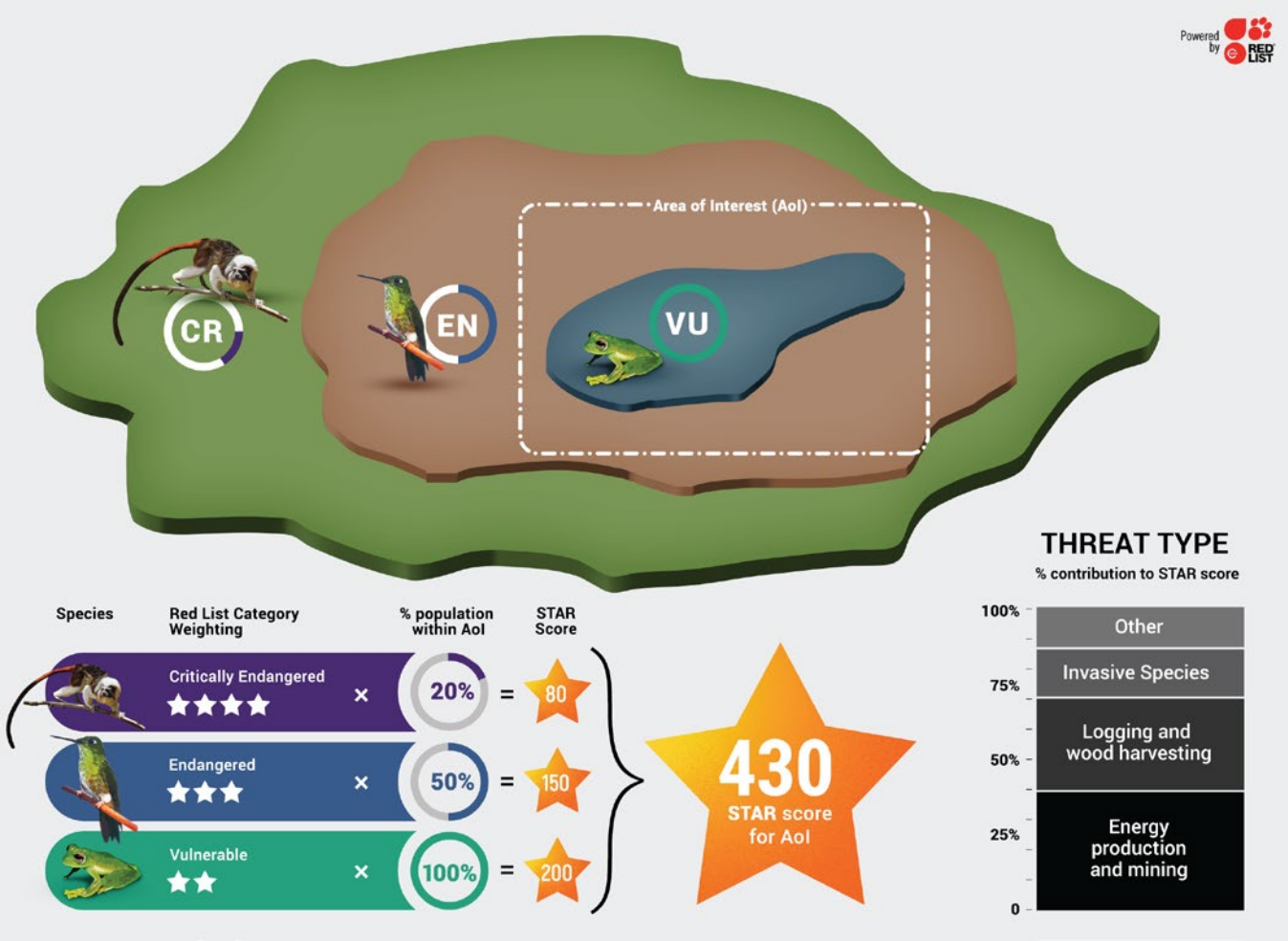
Figure 1: *Global STAR scores for STAR threat-abatement (top) and STAR restoration (bottom). Quantitative STAR scores are placed into categories from Very Low to Very High. The Very Low category includes scores at or near zero, shown in yellow. Note that threatened species and important biodiversity can still be present in areas with very low STAR scores. Grid cells are at a 5-km resolution.*

Waved Albatross
Phoebastria irrorata
Critically Endangered

How is STAR calculated?

For a given user-defined area of interest, $STAR_T$ takes into account the number of species, their extinction risk (based on the IUCN Red List Criteria), and their population (as a percentage of their global range) *(Figure 2)*. At present, STAR is calculated for species of amphibians, birds and mammals, three key groups where all species have been assessed and mapped on the IUCN Red List[1].

Figure 2: *STAR threat abatement ($STAR_T$) scores for an area of interest are calculated by adding the proportion of each species' range (as a percentage), weighted by their extinction risk: 1–Near Threatened, 2–Vulnerable, 3–Endangered, 4–Critically Endangered. The total STAR score can be broken down to show the contributions of individual threat types.*



[1] Mair et al., 2021. Nature Ecology & Evolution

Amboli Bush Frog
Pseudophilautus amboli
Critically Endangered

How can STAR help your business?

STAR offers businesses a robust and scientifically-based approach to assess biodiversity-related opportunity and risk at multiple scales, from corporate-level screening to project-level assessment. STAR can be used to help prioritise nature-positive investments, and identify potential risks associated with a company's activities or supply chain.

In turn, STAR enables companies to set and measure progress on the species extinction risk component of "science-based targets" for nature, and contribute to wider, national or international goals, such as those being developed under the post-2020 Global Biodiversity Framework and the Sustainable Development Goals.

The STAR metric is firmly founded on science, drawing on the depth, coverage and reliability of information in the IUCN Red List of Threatened Species™. As a standardised metric, STAR provides a consistent and comparable basis for businesses to measure and report on their contributions to nature at all scales of their value chain.

STAR has a wide range of applications for businesses. Some of these include:

Screening

- **Screening for opportunities to invest in the most impactful conservation actions.** STAR can map and quantify where conservation investments and actions can reduce species extinction risk, either by abating threats to species or through restoration activities.
- **Screening for conservation risks associated with business operations.** In combination with other biodiversity data layers,[2] STAR can also help screen (and provide a quantitative element) for biodiversity risk. Screening can be applied across multiple scales, from a specific project site through to a landscape, to multi-commodity production base or a whole sector (e.g., mining, agriculture or fashion).

Strategic and project planning

- **Target setting.** STAR can readily be used to set science-based biodiversity targets focused on species extinction risk, for a particular site, portfolio, country or corporate. The STAR score within an area of interest represents the potential contribution that a business or investor could make towards reducing species extinction risk.
- **Mitigation planning.** STAR can be used to prioritise mitigation effort or to address key threats to species. STAR scores can be broken down by threat type, to help identify targeted actions to abate threats and reduce the extinction risk of species. At the project level, STAR can inform early project planning (alongside other information), to help identify and avoid areas of high biodiversity sensitivity.
- **Offset planning.** STAR can also help developers identify suitable areas for biodiversity offsets, either through actions that avert future losses or restore lost or degraded habitat. Note that site-level planning will require site-specific validation of species and threats to provide a reliable basis for planning.

Tracking

- Future development of STAR will allow it to be used to track progress towards conservation goals, inform adaptive management and report results to stakeholders.

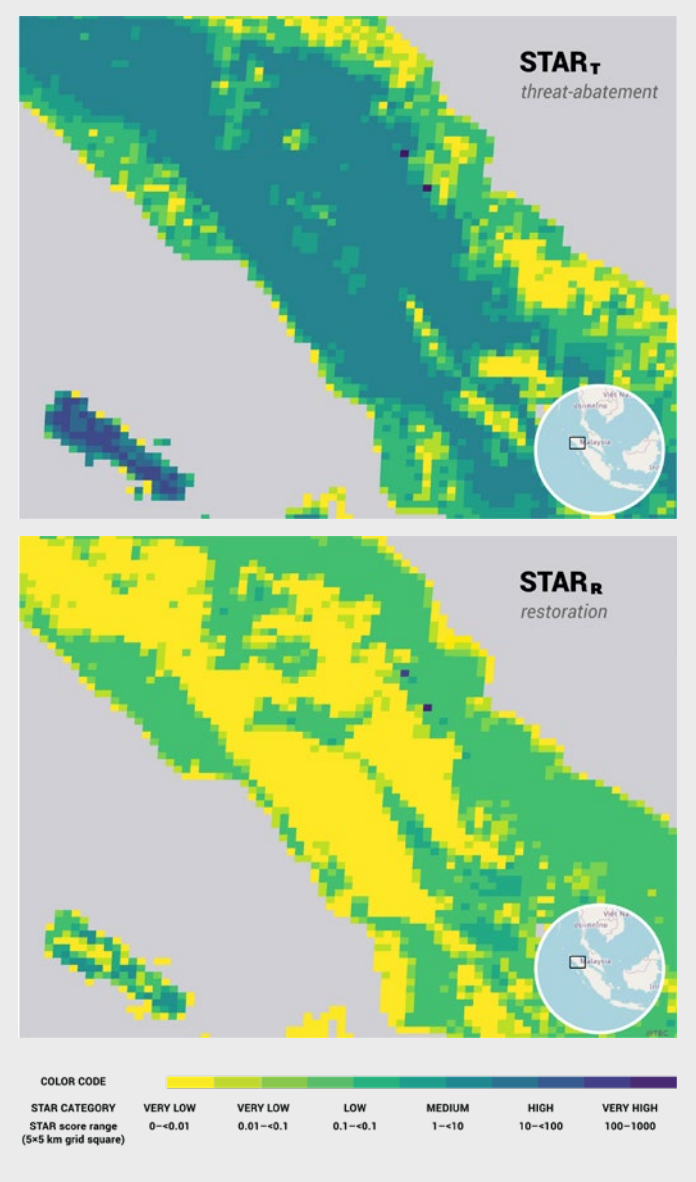
[2] Including the Critical Habitat layer and information on Key Biodiversity Areas, Protected Areas and IUCN Red List of Species available through IBAT

Case study:
Applying STAR to screen for opportunity

In this example, STAR is used to guide investments into actions to either abate threats or undertake species restoration activities. The area of interest is comprised of a mosaic of intact forest and previously logged areas within a high biodiversity landscape in Sumatra, Indonesia. Remaining forests support a relatively high abundance of species threatened by agriculture and plantations. A commodity company sourcing rubber from the area is looking to offset its impacts to threatened species by investing into actions to reduce their extinction risk.

In combination with information about forest extent and condition, STAR allows for a comparison of different sites based on their STAR scores to help prioritise threat abatement and restoration activities.

The images to the right show STAR scores for threat abatement ($STAR_T$, upper panel) *and restoration* ($STAR_R$, lower panel) *potential within the Leuser ecosystem in Sumatra, Indonesia (rescaled here into categories from Very Low to Very High). Comparison of different sites within this landscape based on their STAR scores can help prioritise actions to reduce species extinction risk.*

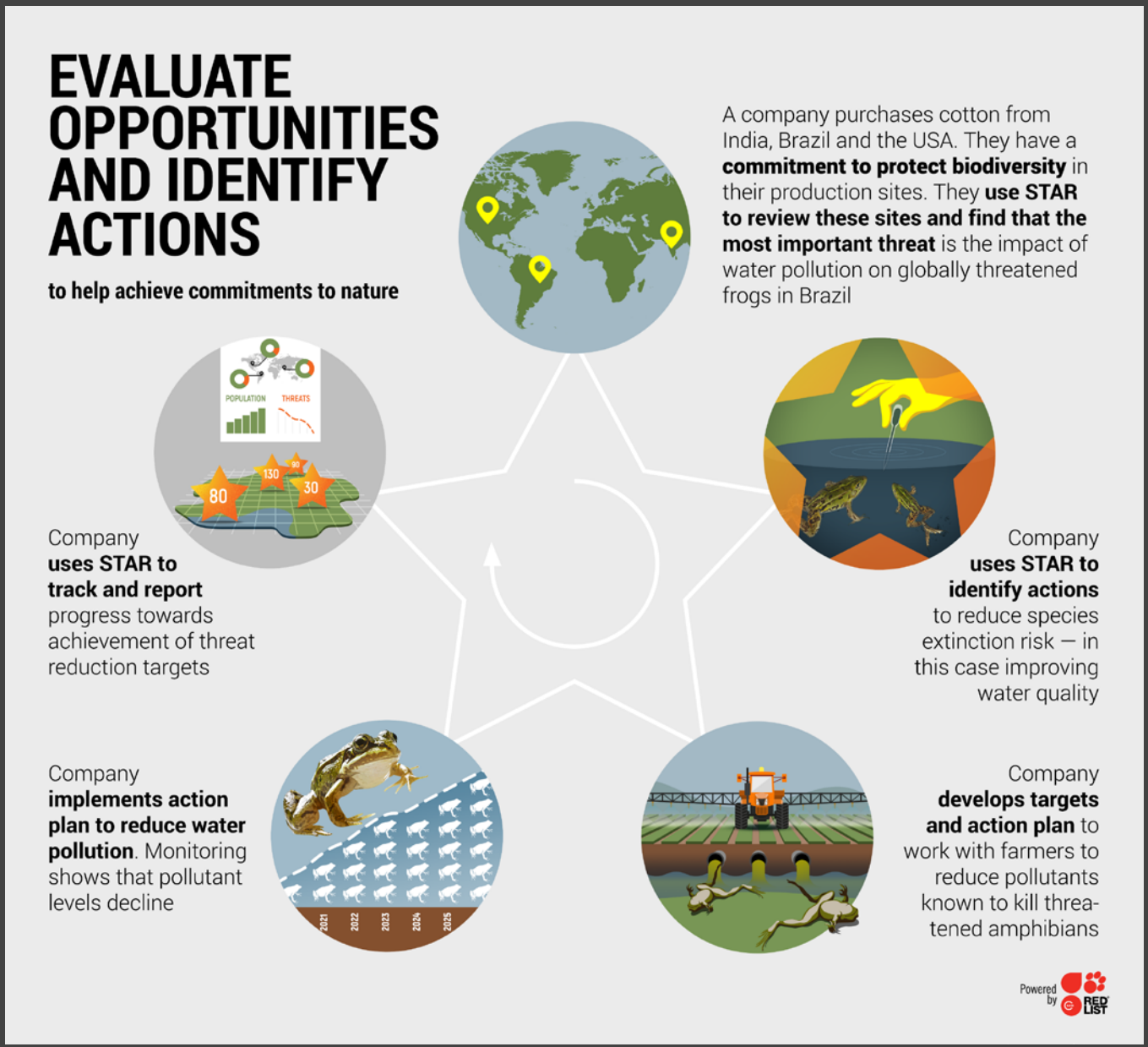


Sumatran Orangutan
Pongo abelii
Critically Endangered

Case study: *Applying STAR at buyers' level*

Companies producing or selling consumer goods have supply chains with roots in multiple countries. Identifying opportunities and risks requires information across sometimes hundreds of districts and regions. Where there is information on source locations, STAR can help downstream buyers assess risk across their supply chain, and integrate it with data on sustainable production programmes, forming the potential for responsive assessment and reporting. The fact that STAR provides a quantitative score makes it especially useful for assessing both opportunity and risk – allowing comparisons that more qualitative data cannot support.

In this example, a company that buys commodity from all over the world has a nature positive commitment in line with the post-2020 Global Biodiversity Framework. To meet this commitment, the company maps its STAR scores across its material commodities to quantify a company STAR score and identify actions to help measure and achieve their commitments to nature.



Mauritius Fody
Foudia rubra
Endangered

STAR in context

STAR focuses on global species extinction risk, which is one component of global biodiversity goals. Other components, such as ecosystem extent and condition, require additional metrics.

STAR provides a measure of the potential benefits of protecting or restoring a given area. To estimate the practically achievable benefits requires combining STAR with other sources of data – for example on restoration feasibility.

Other current limitations of STAR reflect the state of global biodiversity data; these are being addressed by ongoing development of the STAR layers.

How do I get started?

Companies can access the STAR data layers through the Integrated Biodiversity Assessment Tool (IBAT). Further information on the appropriate application of STAR is available through the guidance manual, accessible through the IUCN website, IBAT Resources web page and by emailing star@ibat-alliance.org.

IBAT

The world's most authoritative biodiversity data for your world-shaping decisions

Get in touch with us

ibat-alliance.org
ibat@ibat-alliance.org
ibat-alliance

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