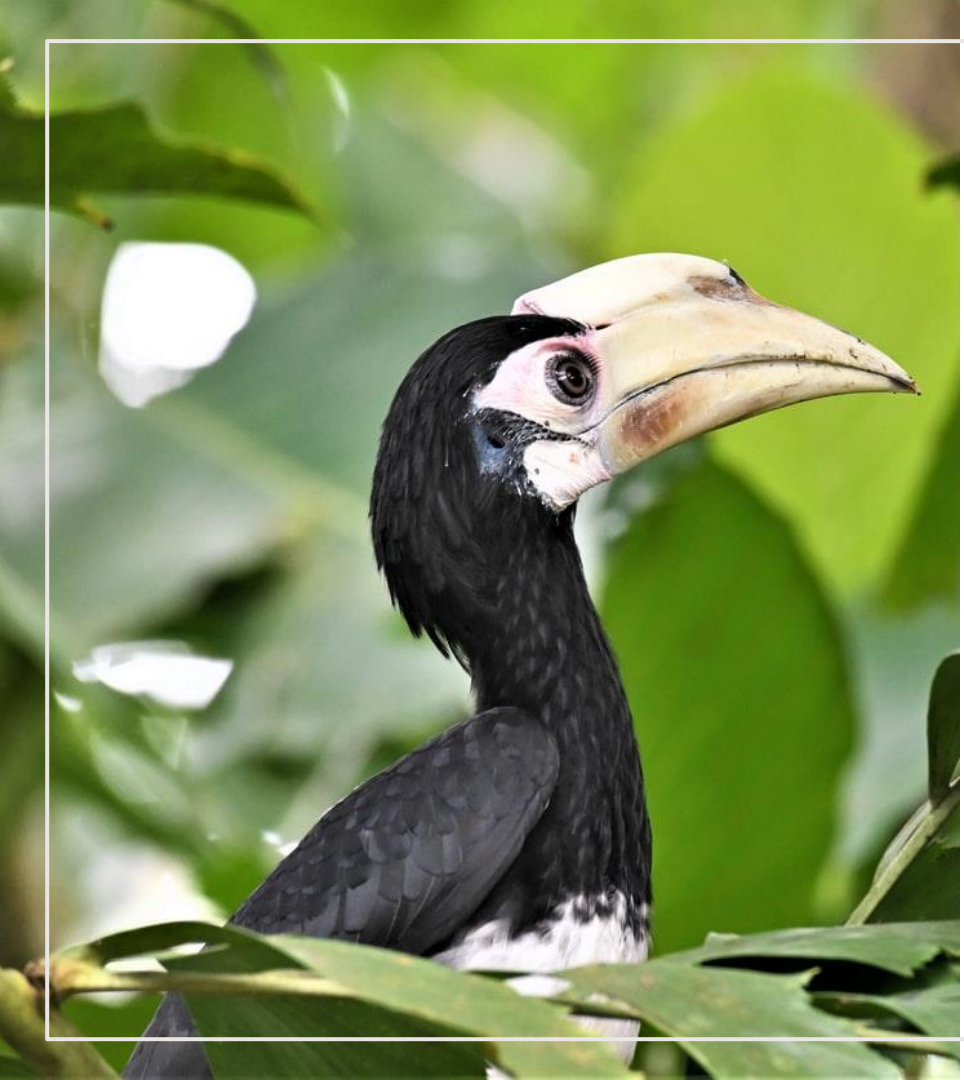


proteus

Introduction to IBAT

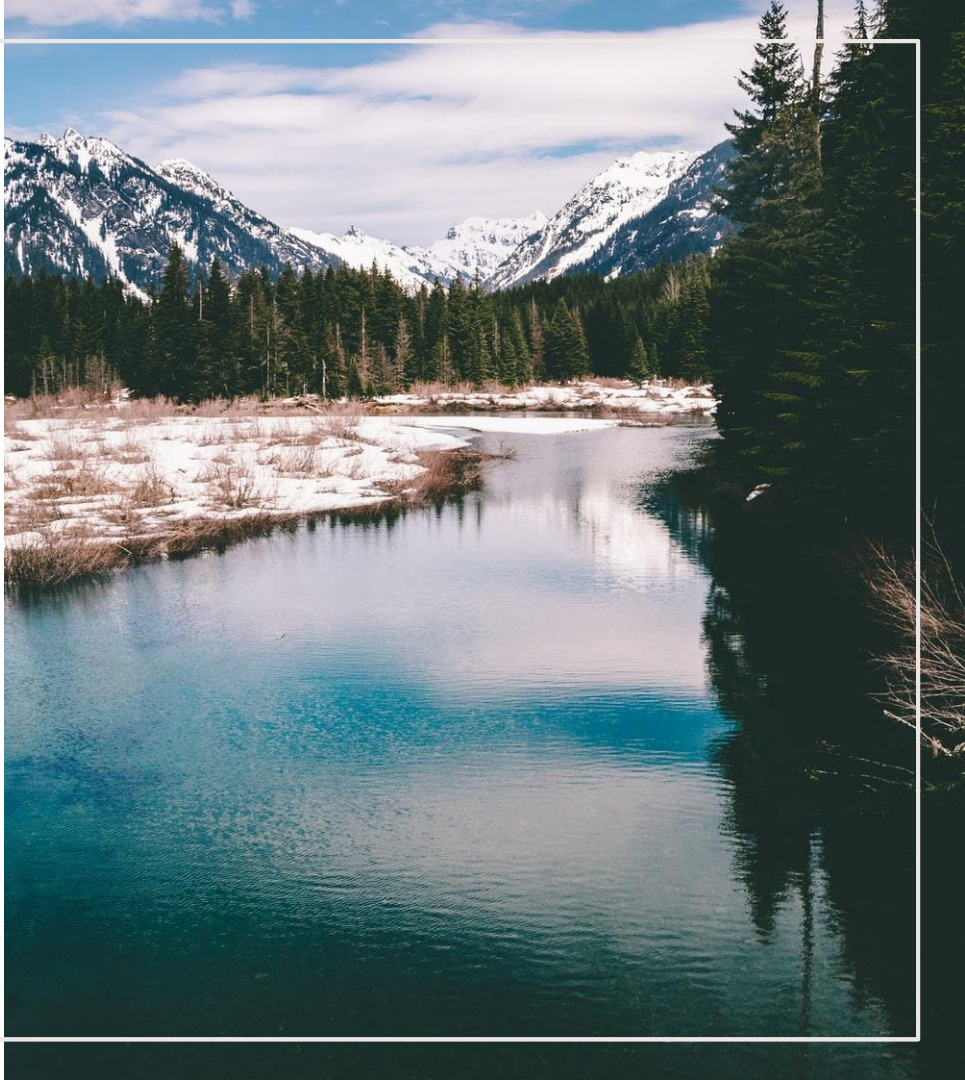
Jacob Bedford, Programme Officer, UNEP-WCMC

Shell

05/09/2023

AGENDA

- Introduction to STAR
- How STAR is calculated
- Global data layers for estimated Potential STAR
- Applications of STAR
- Benefits and limitations of STAR
- Areas for further development
- Accessing STAR



Introduction to STAR

Sumatran Orangutan
Pongo abelii
Critically endangered

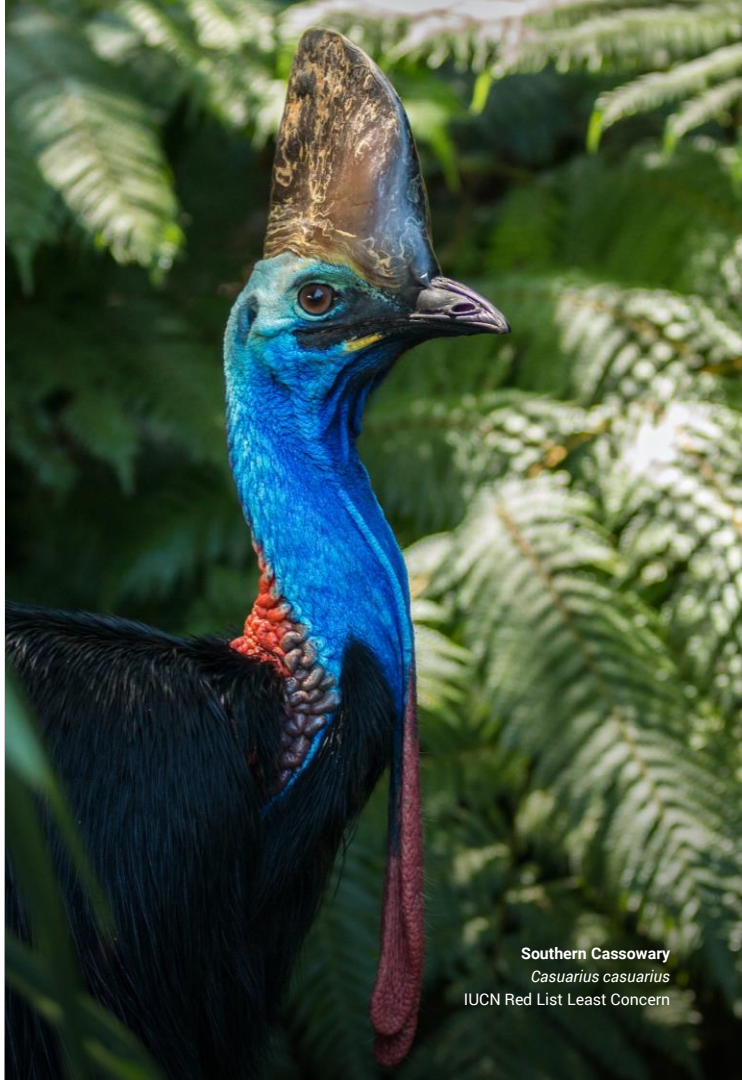
What is STAR?

STAR is a **biodiversity metric** based on the IUCN Red List of Threatened Species.

It represents the potential to reduce species extinction risk.

The STAR methodology has been applied to produce two complementary global data layers of estimated Potential STAR scores:

1. **Threat abatement ($STAR_T$)** – actions to address threats.
2. **Restoration ($STAR_R$)** – actions to restore species habitat.



Southern Cassowary
Casuarius casuarius
IUCN Red List Least Concern

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STAR – a standardised and scaleable measure of biodiversity impact

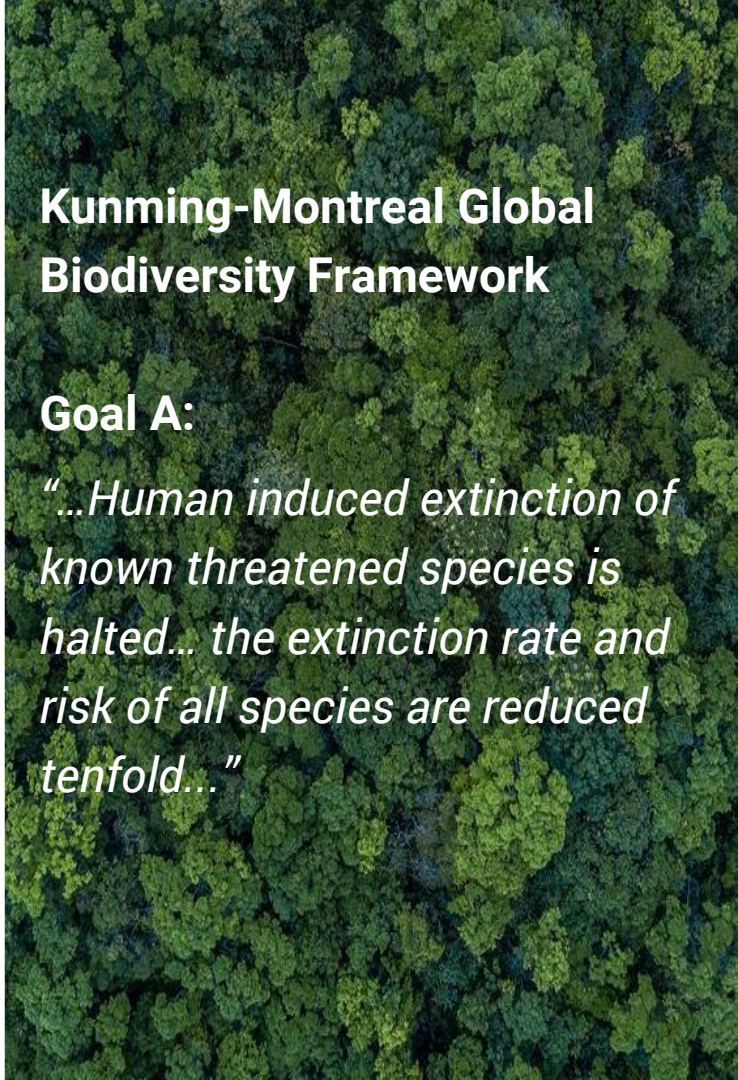
There is urgent need for biodiversity metrics

- To set targets, guide investment, assess gains and contributions
- That are informative and easy to use
- That can be shared across business, government and civil society

Species biodiversity metrics and prioritisation tools have been limited by

- Lacking clear quantification to enable comparison between sites
- Lacking transferability

Species Threat Abatement and Restoration (STAR)
provides a standardised, scaleable and globally applicable metric to measure reductions in species extinction risk.



Kunming-Montreal Global Biodiversity Framework

Goal A:

"…Human induced extinction of known threatened species is halted… the extinction rate and risk of all species are reduced tenfold..."

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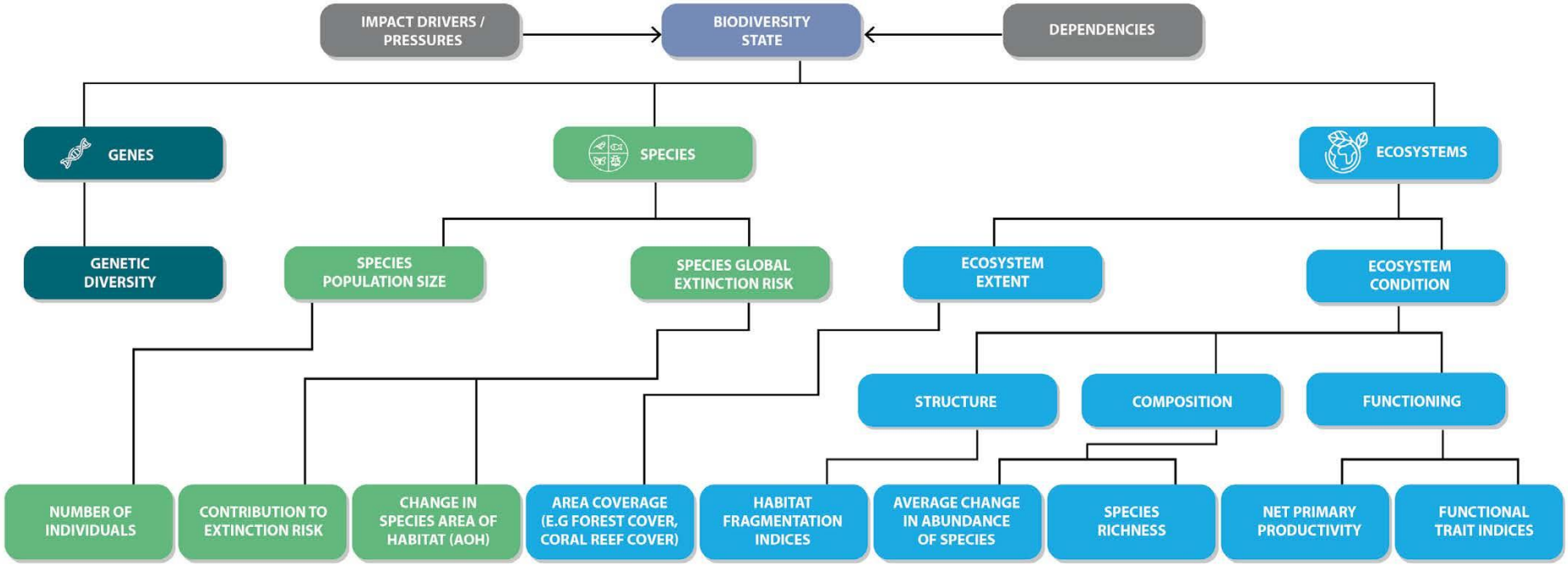

UNEP-WCMC, Capitals Coalition, Arcadis, ICF, WCMC Europe (2022)

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Business application of STAR

STAR can enable companies to:

- Set and measure progress on species-focused targets for nature
- Quantify contributions towards wider national or international conservation goals
- Guide and prioritise investments in species conservation
- Undertake a portfolio assessment of biodiversity opportunity and risk
- Identify potential impacts across supply chains

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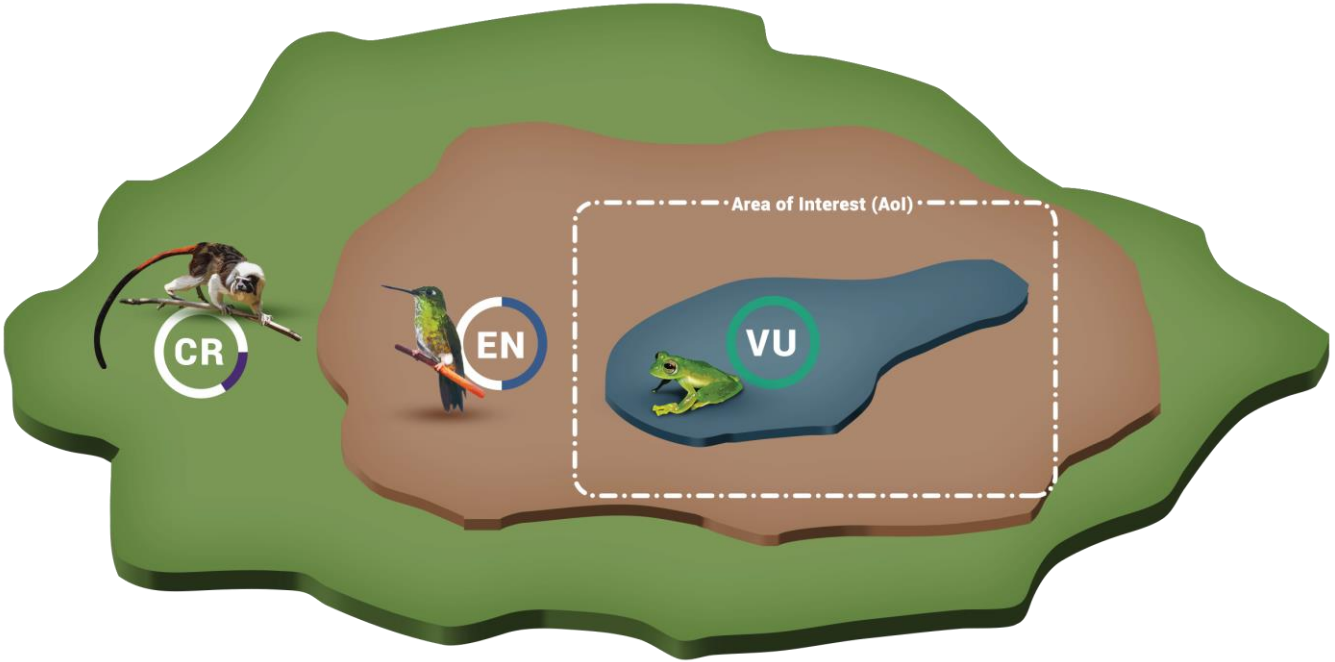
How STAR is calculated

STAR scores are based on the number of threatened species and proportion of their ranges within an area of interest



STAR scores are derived based on threatened species' current and restorable Area of Habitat (AoH).

The number of threatened species and the proportion of AoH for each at a site determines the score.

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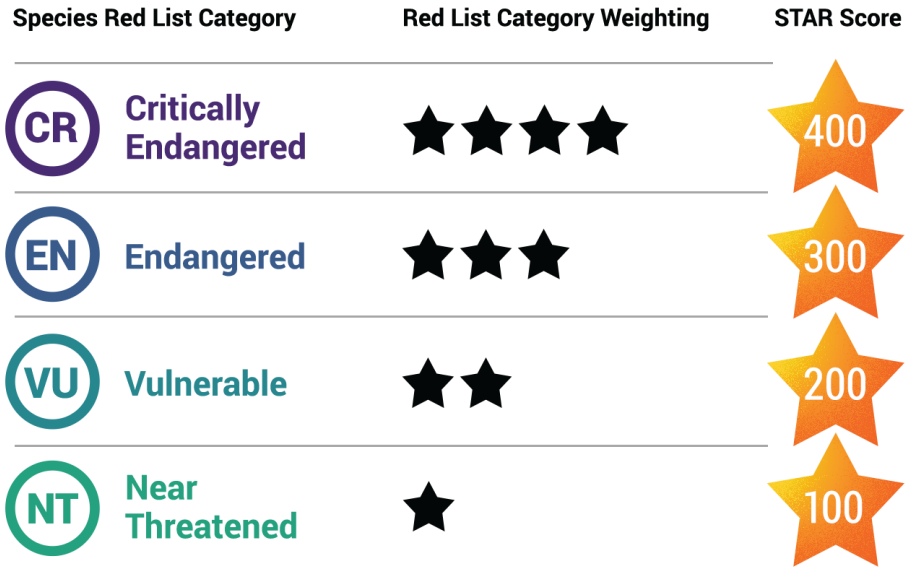
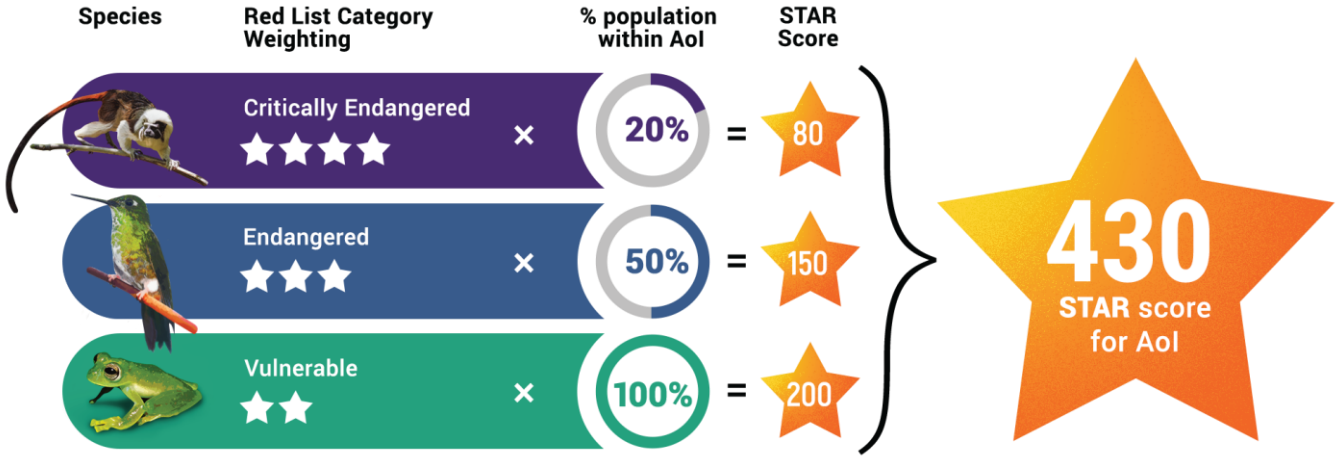
Weighted species values are combined to produce STAR scores



Weighted species values are combined to produce STAR scores



The total of STAR values across all included species represents the global threat abatement effort needed for all these species to become Least Concern.

STAR scores for a given area of interest (AoI) show the potential contribution to reducing global species extinction risk.

STAR scores can also be further broken down by threat type

Species	IUCN Red List category	IUCN Red List category weight	Population in AoI (%)	Invasive species	Energy & mining	Biol Res Use	Agriculture	Climate change	Pollution	Potential $STAR_T$
1	EN	3 ★★★	5%	0	0	2	9	4	0	15
2	VU	2 ★★	10%	8	9	0	0	3	0	20
3	CR	4 ★★★★	2%	0	0	4	3	0	1	8
4	NT	1 ★	7%	0	0	3	4	0	0	7
			Total Potential $STAR_T$	8	9	9	16	7	1	50 STAR score for AoI
			(% of total STAR score for AoI)	(16%)	(18%)	(18%)	(32%)	(14%)	(2%)	

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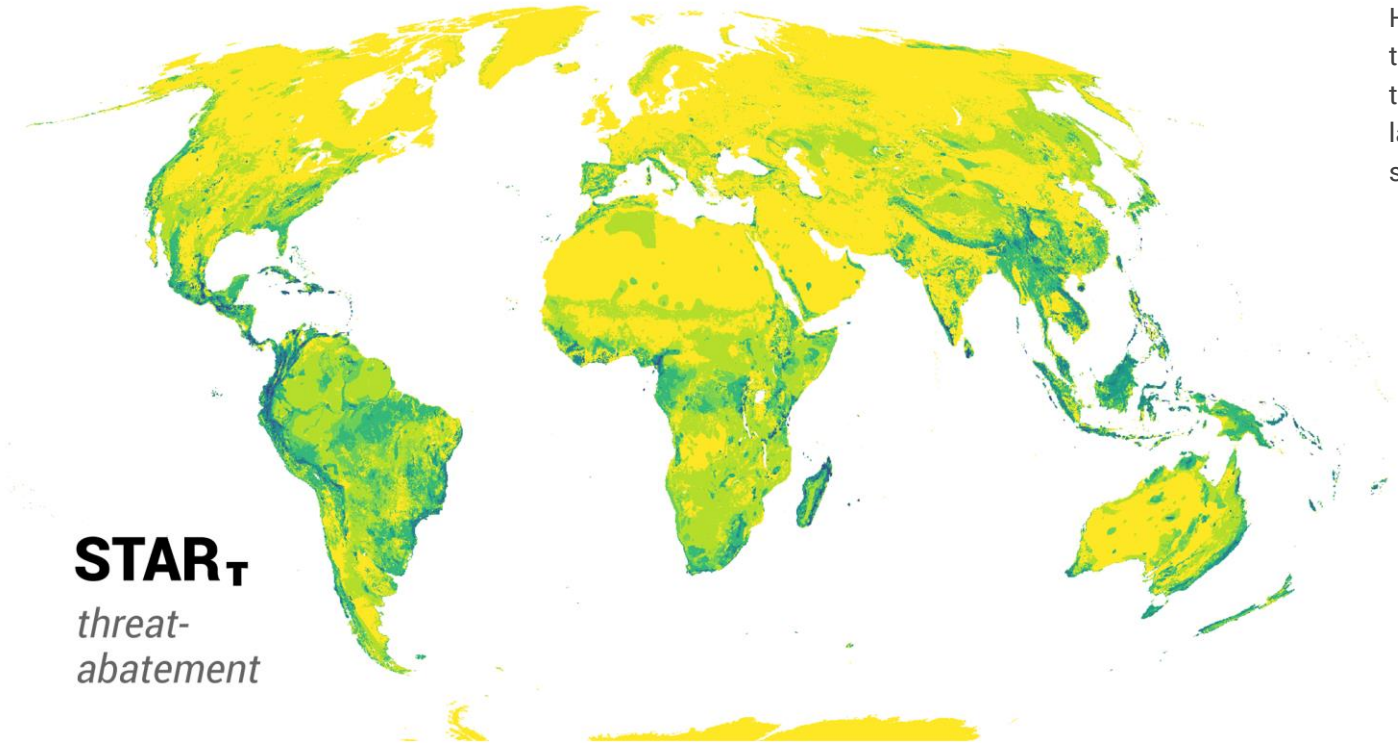
Global data layers for estimated Potential STAR

$STAR_T$ threat abatement



High scores indicate areas that currently contain many threatened species and a large proportion of individual species' ranges.

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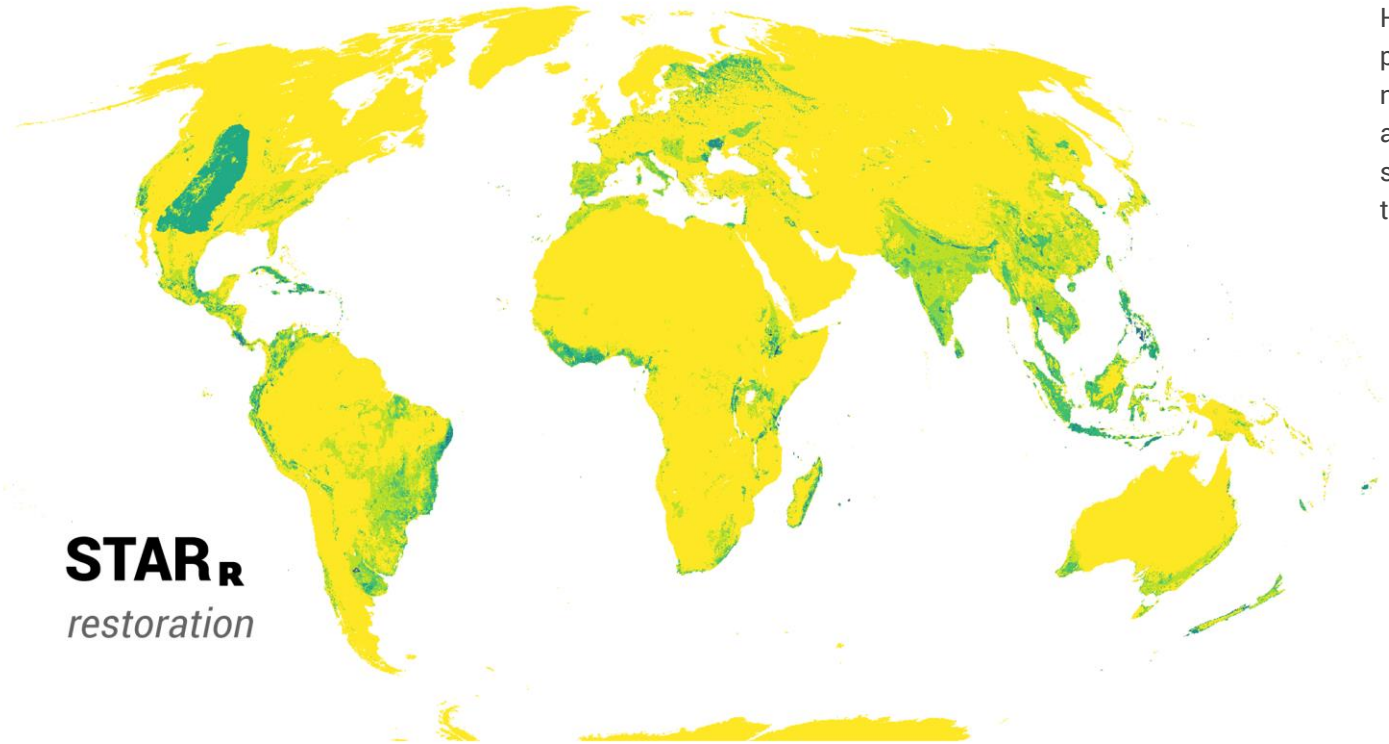
$STAR_R$ restoration



High scores indicate areas that previously supported high numbers of threatened species, a large proportion of individual species' ranges, and/or species that are severely threatened.

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Applications of STAR

Business application of Potential Estimated STAR: **Screening**

Available in IBAT

STAR is valuable for screening as it allows *quantitative comparison* of opportunities and risks:

- Screening for **opportunities** to invest in the conservation and restoration actions with greatest impact for species

- Screening for **risks** associated with business operations (in combination with other biodiversity information)

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Business application of Potential Calibrated STAR: **Planning**

Not in IBAT

- **Target setting**: to set ‘targets’ for nature, focused on species extinction risk.

- **Mitigation planning**: to plan and prioritise mitigation effort.

Lion
Panthera leo
Vulnerable

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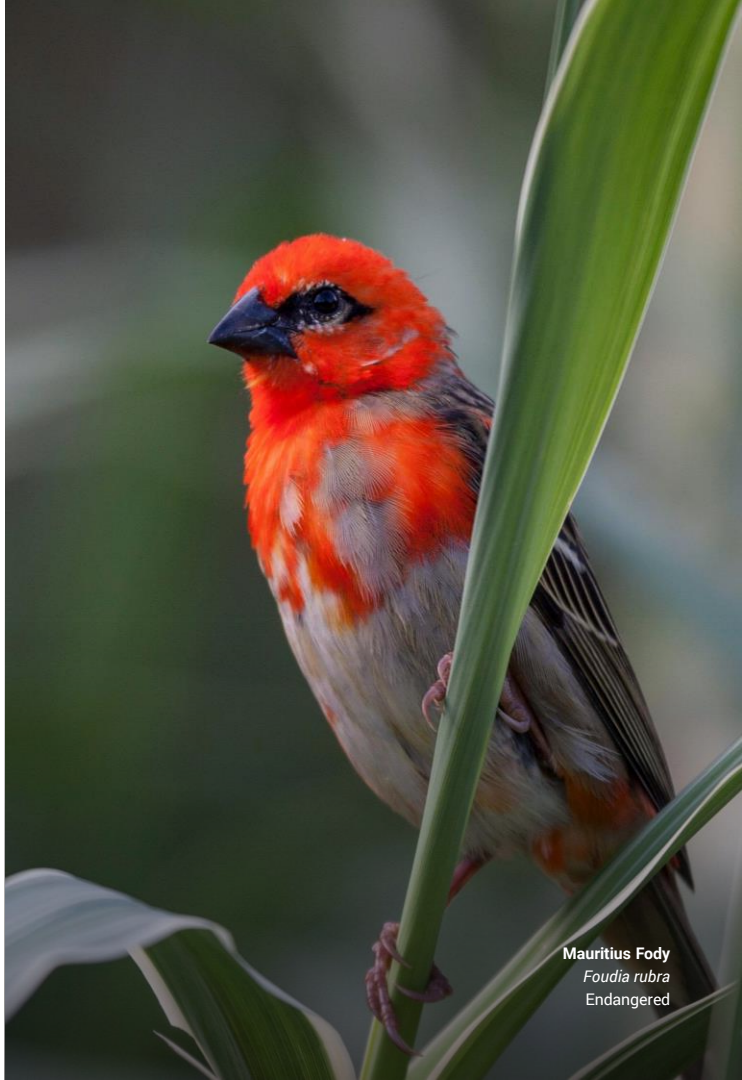
Business application of Realised STAR: **Tracking**

Not in IBAT

- Future development of STAR will allow it to be used to track and report progress towards conservation goals.
- STAR can be integrated within supply chain assessments to measure and track biodiversity and threats.
- May require additional information to understand full biodiversity significance, particularly ecosystem extent and health.



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Three phases of STAR outputs

STAR typology	Description	Uses	Effort required
Potential STAR (estimated) **(Available in IBAT)**	STAR score derived using the global STAR layers	Screening and initial planning	Low – desk-based exercise
Potential STAR (calibrated) **(Not in IBAT)**	Ground-truthed, validated, version of Potential STAR (estimated)	Planning interventions	Moderate to high - requires information from the field
Realised STAR **(Not in IBAT)**	STAR score of the actual conservation gains achieved	Corporate tracking and reporting of progress	Moderate to high – requires assessment and tracking of threat levels

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Screening, planning and tracking using STAR

Powered by RED LIST

EVALUATE OPPORTUNITIES AND IDENTIFY ACTIONS

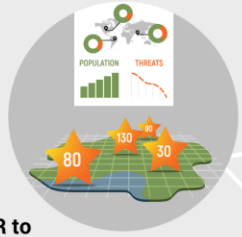
to help achieve commitments to nature

A company purchases cotton from India, Brazil and the USA. They have a **commitment to protect biodiversity** in their production sites. They **use STAR to review these sites and find that the most important threat** is the impact of water pollution on globally threatened frogs in Brazil

Company **uses STAR to identify actions** to reduce species extinction risk — in this case improving water quality

Company **develops targets and action plan** to work with farmers to reduce pollutants known to kill threatened amphibians

Company **implements action plan to reduce water pollution**. Monitoring shows that pollutant levels decline



Company **uses STAR to track and report** progress towards achievement of threat reduction targets

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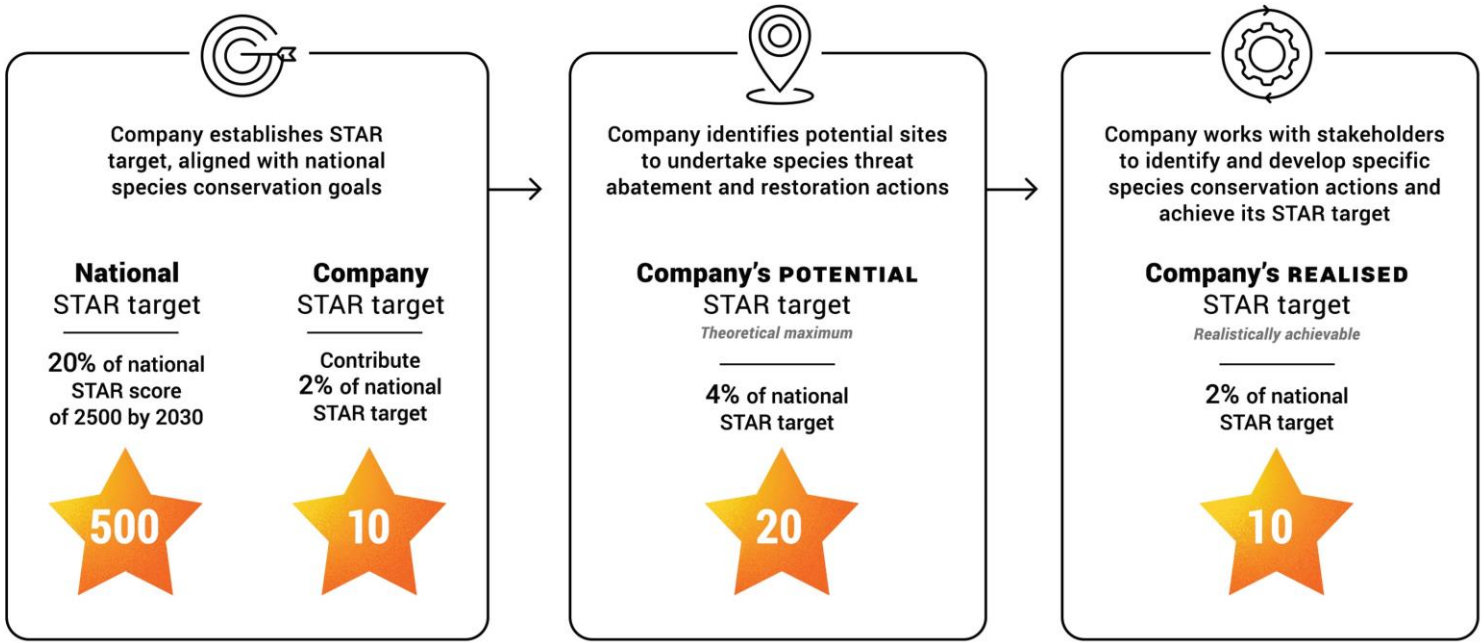
Example: Using STAR to set and achieve targets

Large consumer goods company looking to contribute towards global and national conservation goals



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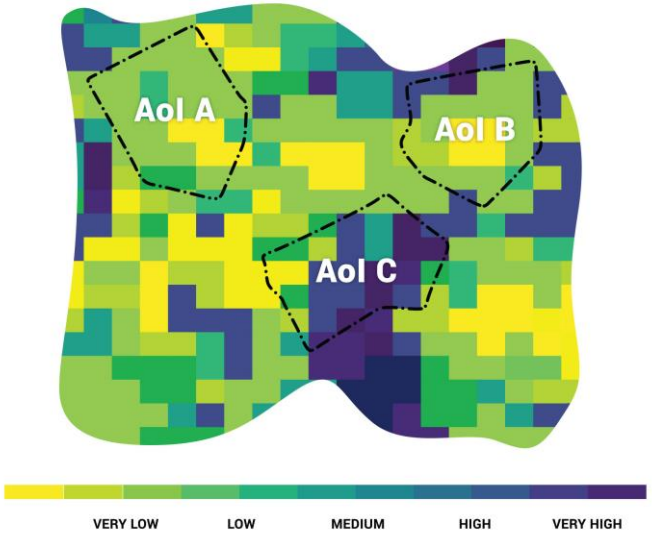
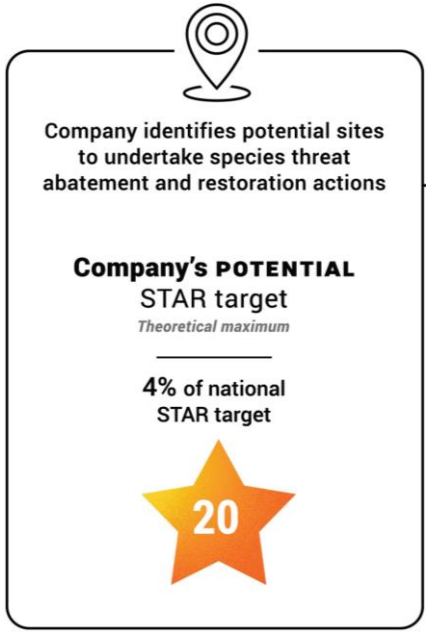
Step 2: Identifying potential sites to undertake species threat abatement and restoration actions



Area of Interest (AoI)	Potential $STAR_T$	Potential $STAR_R$	Total
A	6	6	12
B	7	8	15
C	14	6	20



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Step 3: At selected site(s), identify specific conservation actions to achieve target

To meet its STAR target of 10, company identifies:

1. **Actions to abate threats** posed by farming/ranching and invasive species = predicting a realised **STAR$_T$ of 8**

Threat type	Potential STAR$_T$	Realised STAR$_T$*
Farming	**8**	**5**
Climate change	1	0
Invasive species	**4**	**3**
Other	1	0
Total	**14**	**8**

*i.e., the maximum STAR score that can realistically be achieved through species conservation actions

2. **Actions to restore degraded habitat** = predicting a realised **STAR$_R$ of 2**, and a **total STAR of 10**

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STAR public and private sector uses

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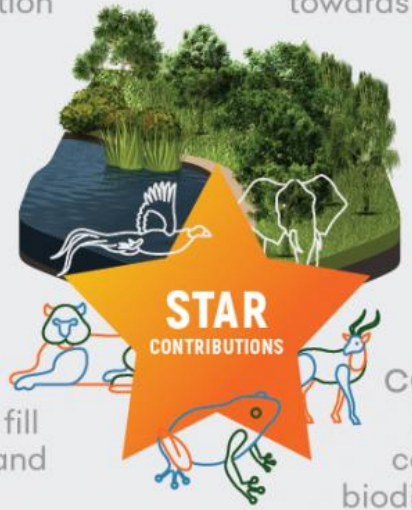
SPECIES THREAT ABATEMENT AND RESTORATION METRIC

Uses

GOVERNMENTS
Assess actions by sector and location

CONVENTIONS
Apportion contributions towards global targets

INVESTORS
Compare investments by contributions to biodiversity



BUSINESSES
Report and disclose contributions to averting extinctions

NGOs
Identify gaps to fill across actions and locations

COMMUNITIES
Measure local contributions to biodiversity targets

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Additional applications of STAR

nature sustainability

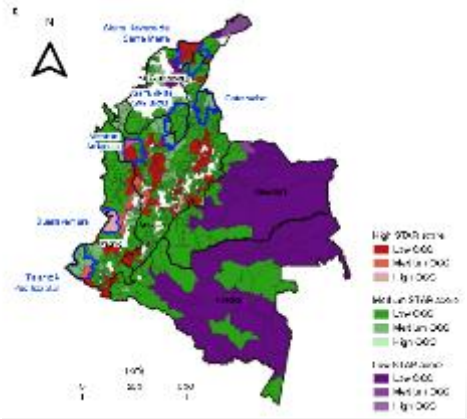
ARTICLES

https://doi.org/10.1038/s41893-022-00871-2

Check for updates

An investment strategy to address biodiversity loss from agricultural expansion

Camila Guerrero-Pineda[1,2], Gwenllian D. Iacona[1,2,3], Louise Mair[4], Frank Hawkins[5], Juha Siikamäki[5], Daniel Miller[6,7] and Leah R. Gerber[1,2]



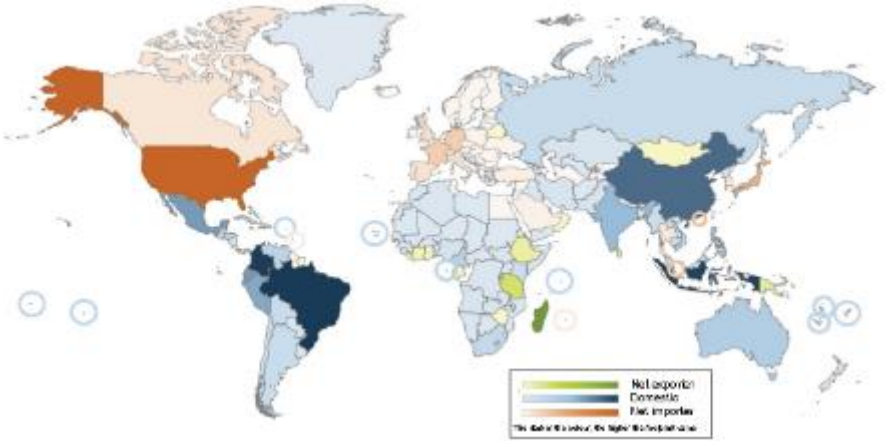
scientific reports

Check for updates

OPEN

Quantifying and categorising national extinction-risk footprints

Amanda Irwin[1], Arne Geschke[1], Thomas M. Brooks[2,3,4], Juha Siikamaki[5], Louise Mair[6] & Bernardo B. N. Strassburg[7,8]



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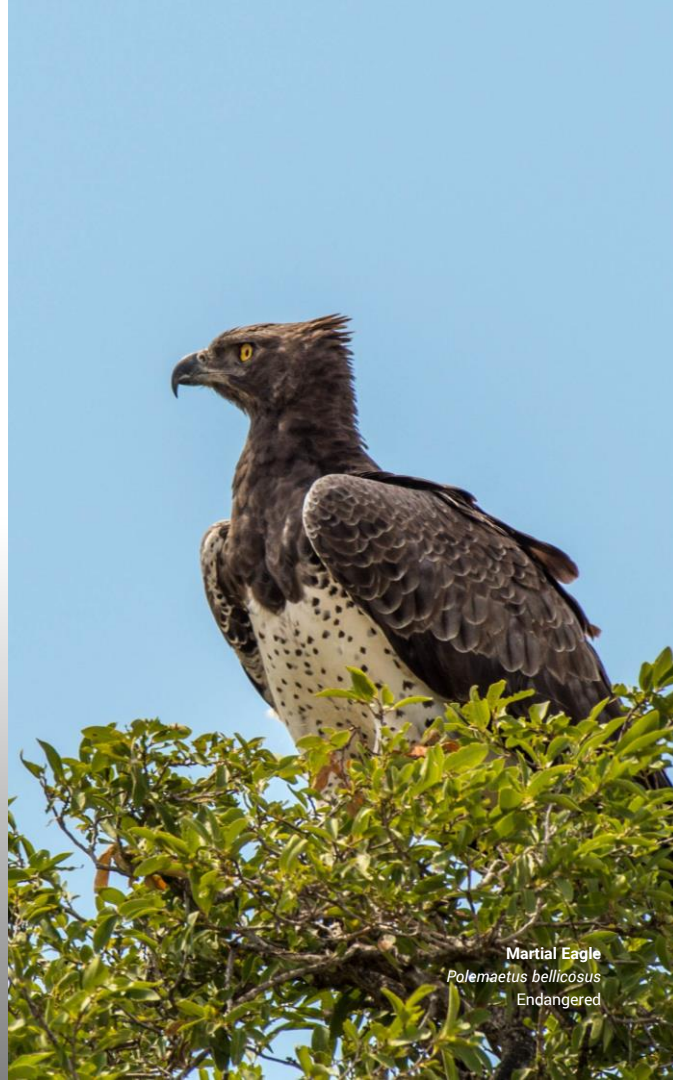
Application of STAR in disclosure and reporting

- Quantitative metric of species extinction risk, that provides a measure of the state of nature.
- Supporting screening for priority locations.
- Setting targets for company contributions towards reducing species extinction risk.
- Monitoring outcomes to track progress towards targets.
- Comparing potential biodiversity impacts of different sites, product groups, and companies.



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Benefits and limitations of STAR

Benefits of STAR

STAR offers businesses an approach that is robust, science-based and easy to use.

- STAR provides a quantitative metric so can feed into comparison and prioritisation of sites.
- STAR can be used to assess biodiversity-related opportunity and risk at multiple scales.
- STAR can be disaggregated by threats, supporting comparison of potential actions at sites.
- STAR can enable companies to set and measure progress on targets and contribute towards wider goals.
- Global layers in IBAT allow potential STAR scores to be estimated for any user-defined Area of Interest.

Indian Pangolin
Manis crassicaudata
Endangered

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Limitations of STAR

- STAR reflects a sub-set of terrestrial biodiversity.
- STAR does not yet reflect differences in the intensity of threats or density of populations across species' ranges.
- Potential STAR assumes threats are equal across a species' range.
- STAR does not capture nationally-listed species or threatened species not currently assessed on the IUCN Red List.
- Positive species conservation actions on the ground may not be reflected in the Potential STAR layer for some time as IUCN Red List updates are periodic.

Black Snub-nosed Monkey
Rhinopithecus bieti
Endangered

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Areas for development and accessing STAR

Saiga
Saiga tatarica
Critically endangered

Further development of STAR in IBAT

Planned improvements to the global STAR functionality in IBAT include:

- Inclusion of additional taxonomic groups including freshwater and marine species.
- Detailed threat mapping across species ranges to improve STAR's ability to identify site-specific threats.
- Updating and refining species range information to capture spatial variation in species' population density.
- Ability to disaggregate STAR site scores for individual species.
- Draft guidance for Calibrated and Realised STAR in development.
- Work underway in IBAT on tabulation and automation to make calibration easier.
- Updated version of STAR to be published in 2024.
- Move from 5 km to 1 km global STAR maps.

Red Panda
Ailurus fulgens
Endangered

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Accessing STAR

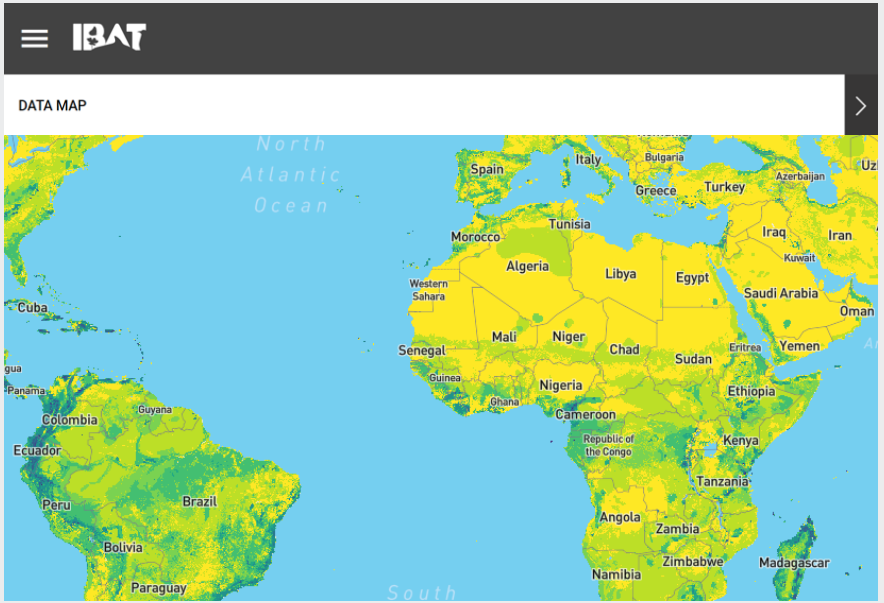
STAR is available on IBAT for commercial users.

Enterprise Plan

- Up to 30 bespoke STAR reports
- Up to 1 million sqkm GIS download for STAR

Sign up through the IBAT Platform (www.ibat-alliance.org).

STAR can be visualised on IBAT's map



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Thank You

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