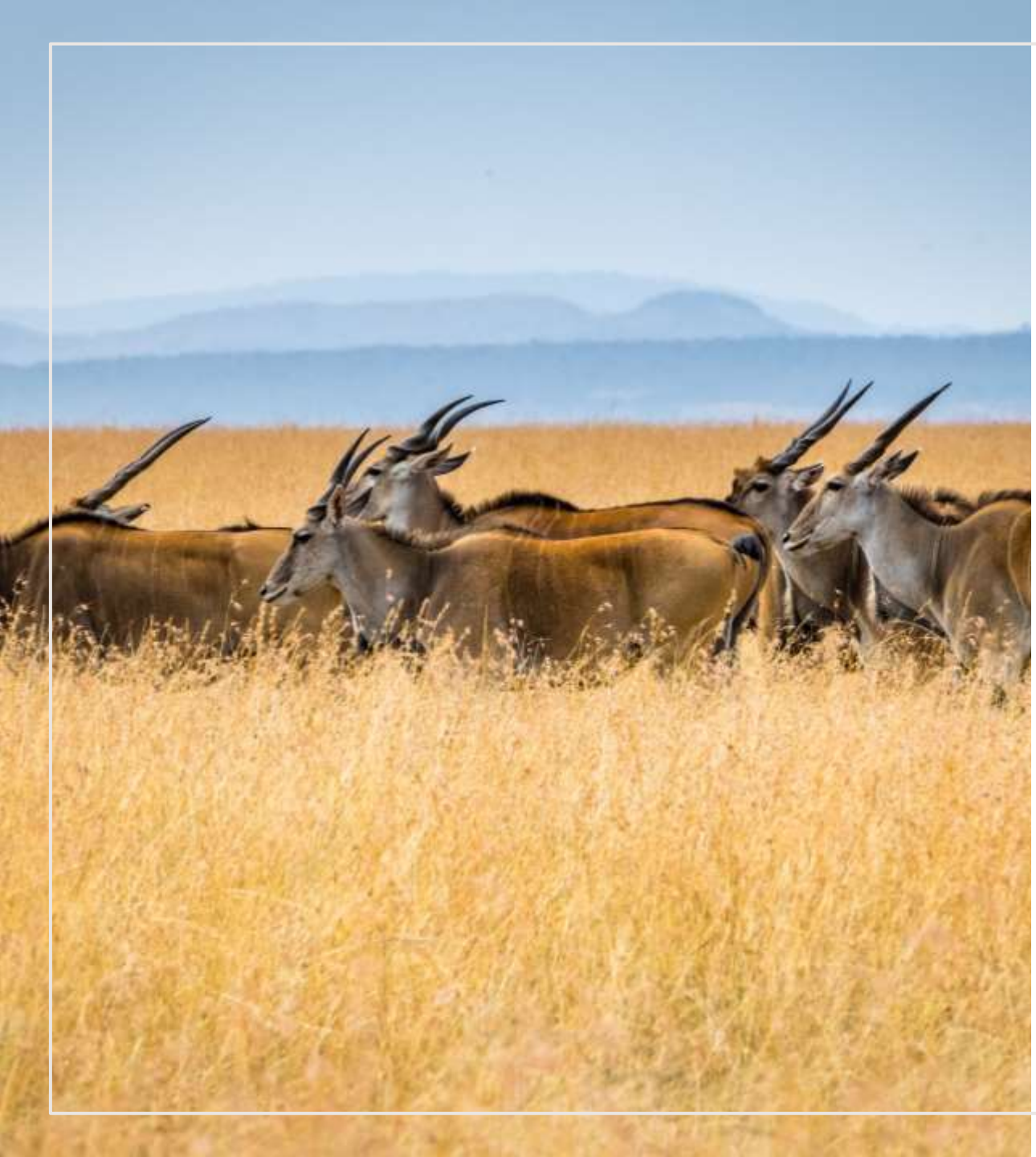

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Biodiversity Fundamentals for Practitioners

Aime Rankin – Associate Programme Officer (UNEP-WCMC)

Alfred Muge – Associate Programme Officer (UNEP-WCMC)

Bálint Ternyik – Associate Programme Officer (UNEP-WCMC)

TotalEnergies

08 - 09 NOVEMBER 2022

OVERVIEW

YESTERDAY

- Fundamentals of biodiversity and conservation
- The big picture - International, national, and sectoral policies on biodiversity
- Introduction to the Proteus Partnership

TODAY

- From global- to site-level: Screening for biodiversity sensitivity
- Critical Habitat (IFC PS6)
- The long-term: Monitoring, reporting and verification

ABOUT THIS TRAINING

- This training course was developed by UNEP-WCMC in consultation with TotalEnergies through the Proteus Partnership. It draws on material developed under the Proteus Partnership, and with reference to material co-developed by UNEP-WCMC and other organisations specifically for the energy sector.

- This training course has been created for TotalEnergies and includes material provided by TotalEnergies, including information on TotalEnergies policies and processes, and case studies from current and past operations. The inclusion of this material does not imply endorsement by the United Nations Environment Programme, UNEP-WCMC, or the authors.

- The designations employed and the presentation of the material in this training course do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory or city or area or its authorities, or concerning the delimitation of its frontiers or boundaries. For general guidance on matters relating to the use of maps in publications please go to un.org/Depts/Cartographic/english/htmain.htm

- The views expressed in this training course are those of the authors and do not necessarily reflect the views of the United Nations Environment Programme. We regret any errors or omissions that may have been unwittingly made.

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From global- to site-level: Screening for biodiversity sensitivity

Aime Rankin – Associate Programme Officer (UNEP-WCMC)

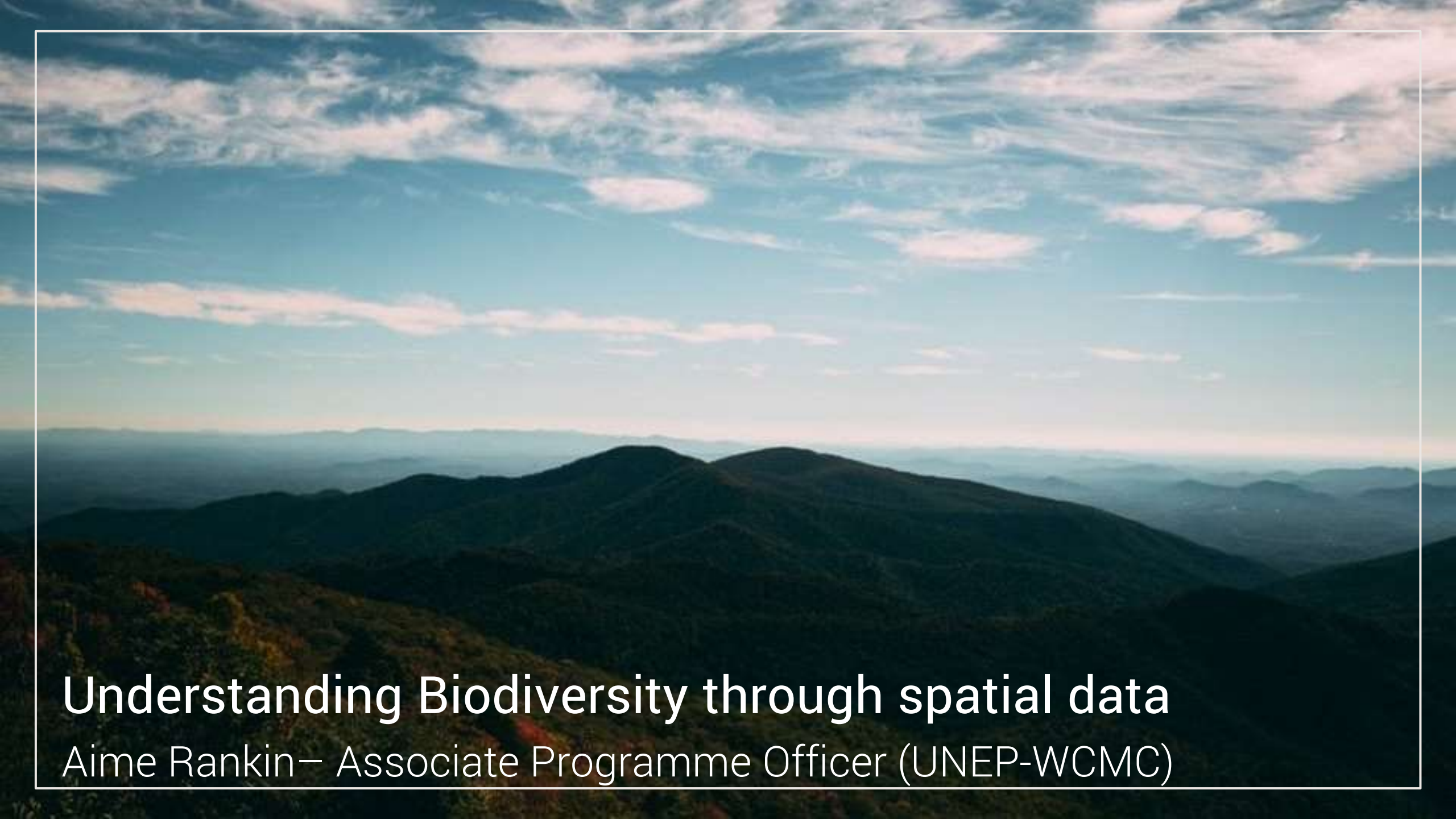
TotalEnergies

09 NOVEMBER 2022

OVERVIEW

FROM GLOBAL- TO SITE-LEVEL: SCREENING FOR BIODIVERSITY SENSITIVITY

- Understanding Biodiversity through spatial data
- A look at datasets available through Proteus
- Practicalities and Limitations
- What key biodiversity features do TotalEnergies screen for?



Understanding Biodiversity through spatial data

Aime Rankin– Associate Programme Officer (UNEP-WCMC)

WHAT IS BIODIVERSITY? – A RECAP

"Biological diversity means the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems…; this includes diversity within species, between species and of ecosystems."

(Convention on Biological Diversity 1992)

Genes (diversity within species)

Species (diversity between species)

Ecosystems (diversity of ecosystems)

WHERE IS BIODIVERSITY?

- Can we answer the question where is biodiversity?
  - At least in a useful way for business planning?

- Data if used appropriately can be a powerful Tool in helping us understand biodiversity
  - But it can also lead to skewed or biased messaging if interpreted wrongly or through one particular lens in isolation.

- Purpose of this introduction is to demonstrate different lenses

Lens #1

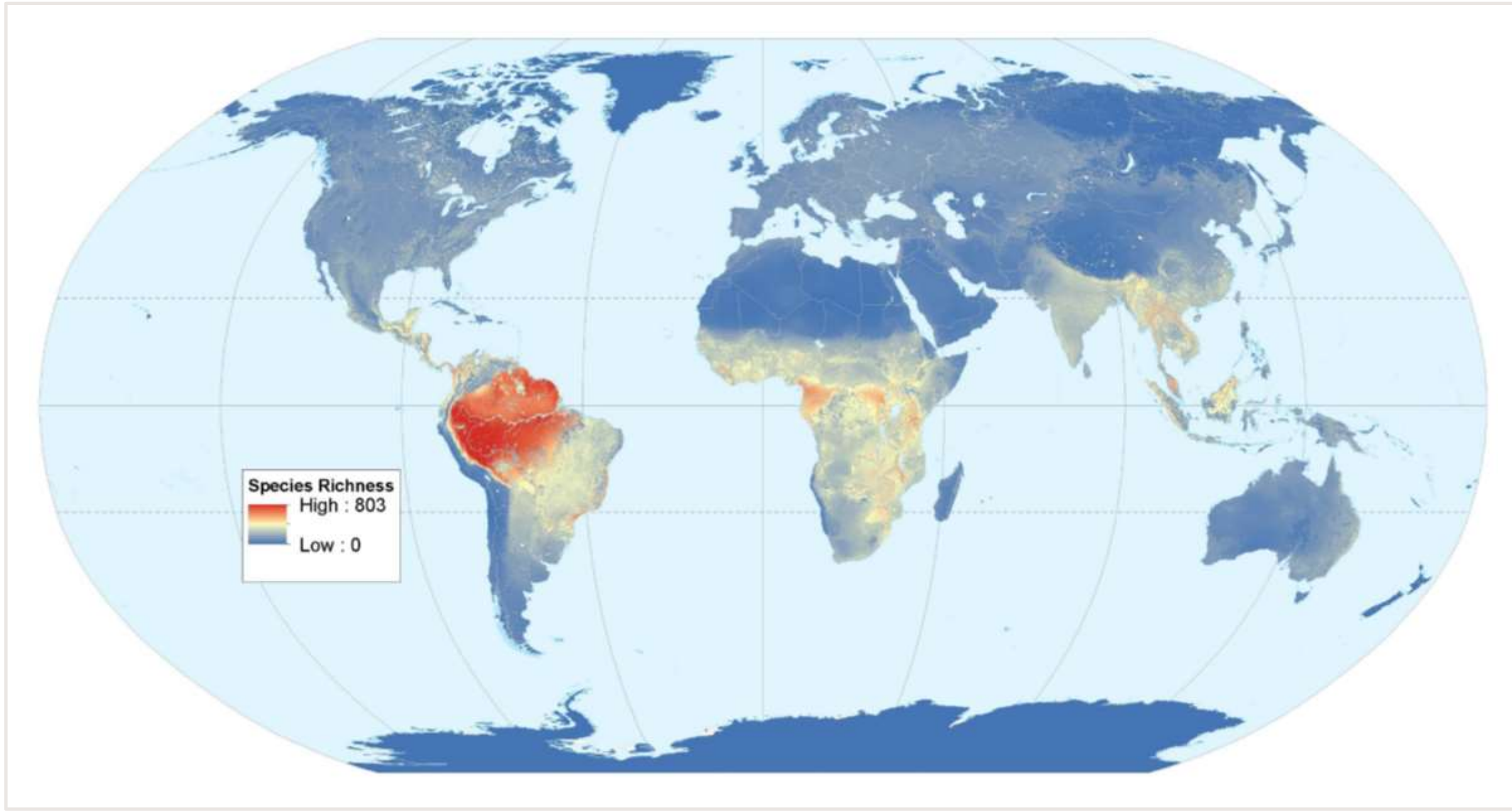
Mapping biodiversity through species distribution…

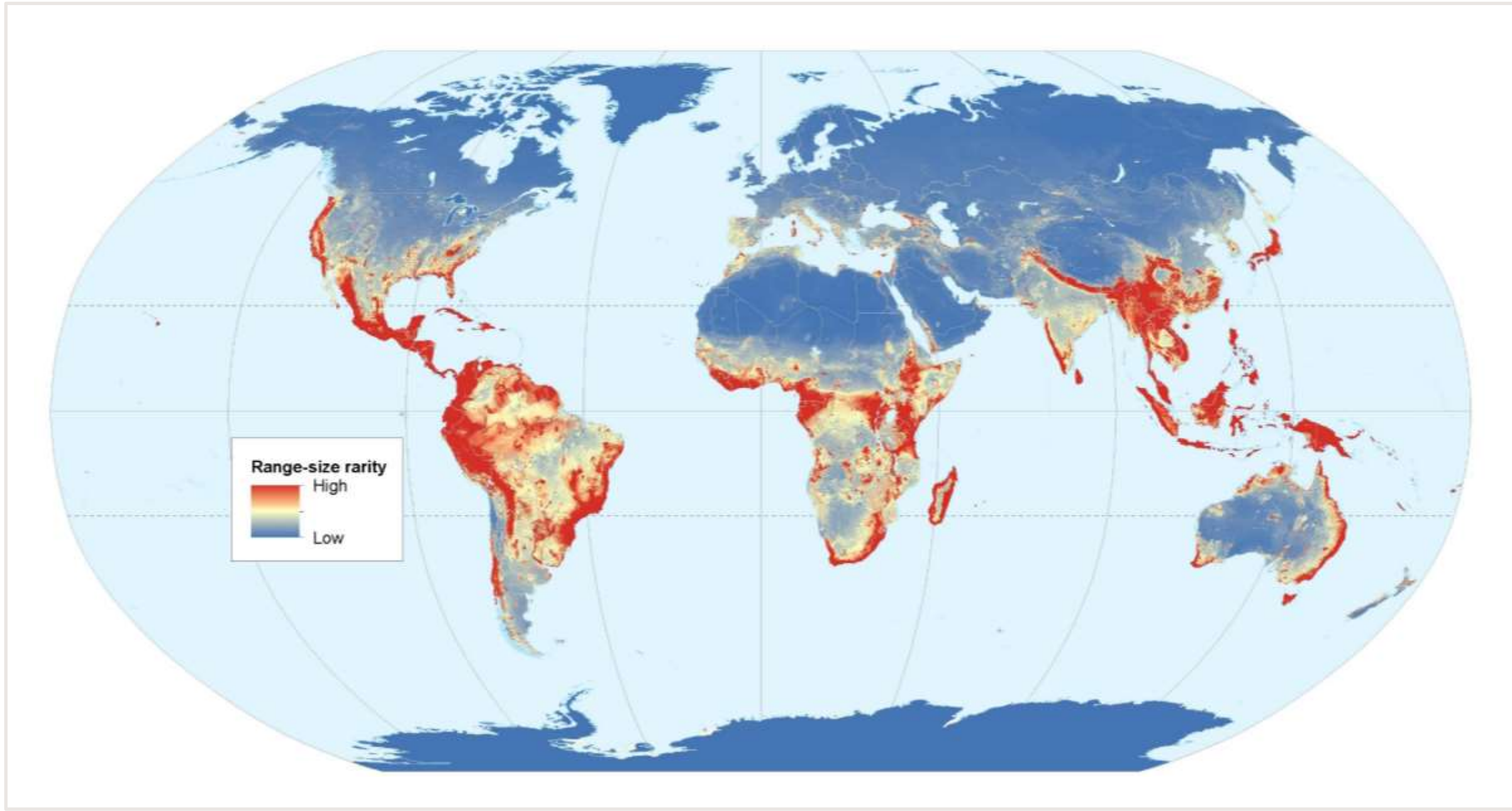
WHAT IS A SPECIES?

“Groups of actually or potentially interbreeding natural populations, which are reproductively isolated from other groups.”

(Mayr 1942)

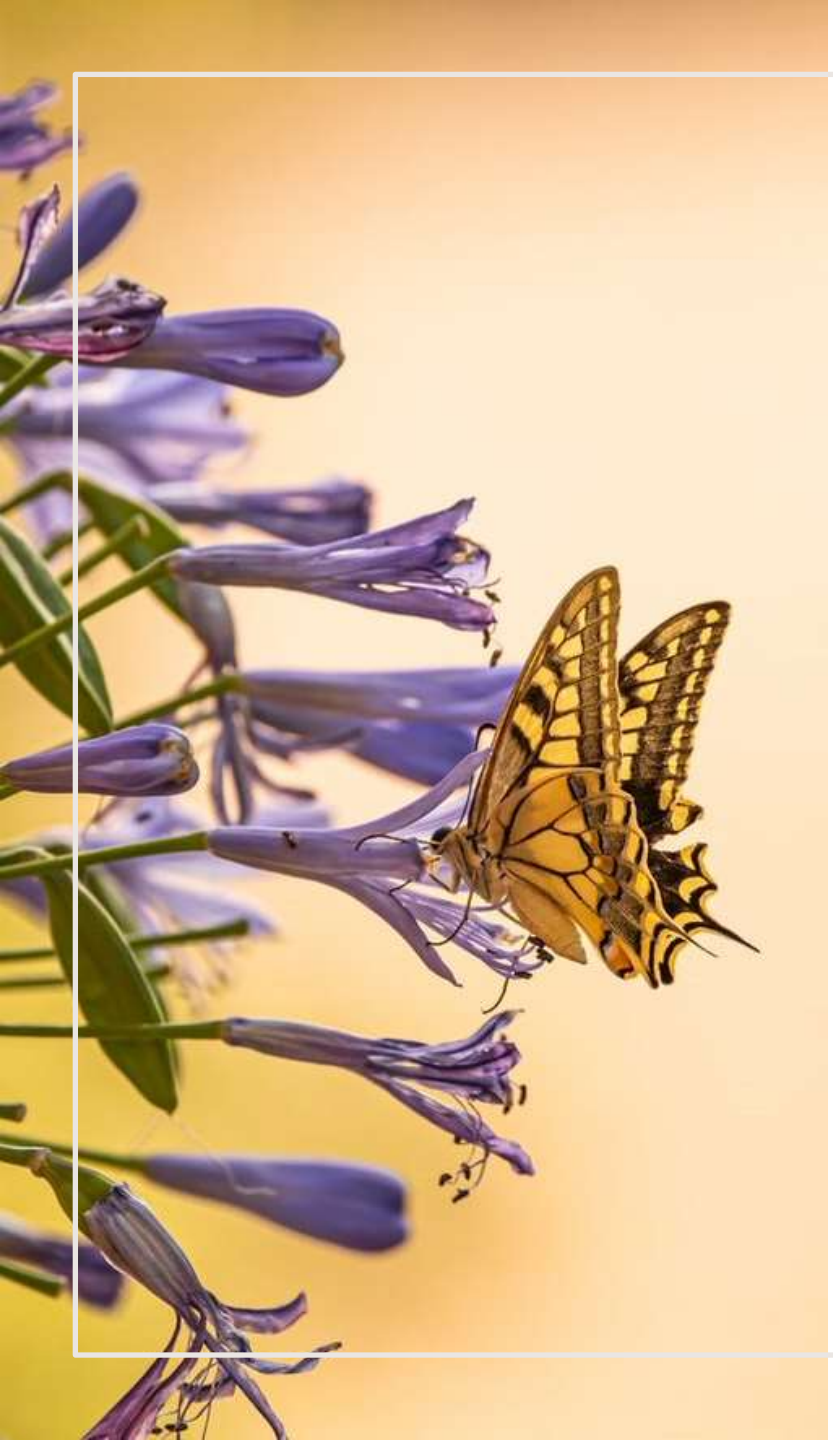
- Species are seen as the fundamental units of conservation.
- Provides a way of quantifying biodiversity, and its loss.
- Many conservation strategies and international Multilateral Environmental Agreements (CITES, CMS) are focused on species.


Species Richness
High : 803
Low : 0


Range-size rarity
High
Low

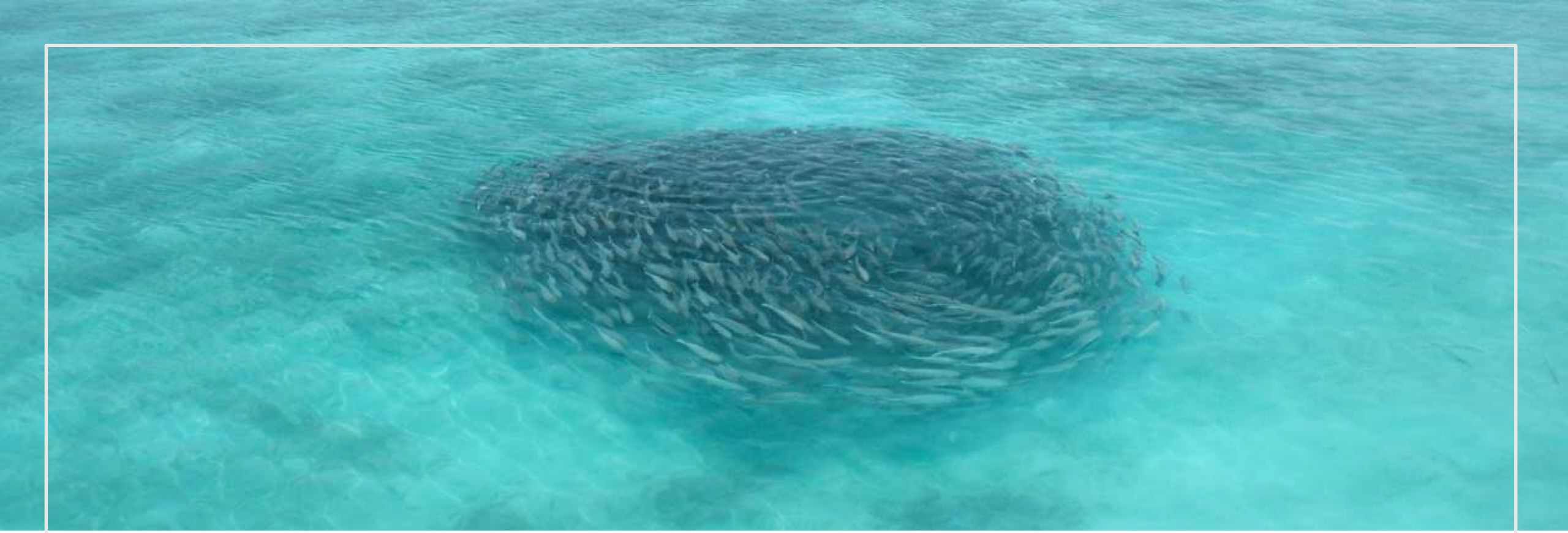
CAN SPECIES BE USED AS A PROXY FOR BIODIVERSITY?

- Estimated ~8.7 million species globally
- 2.1 million species have been described
- Many species still awaiting description
  - Over 142,500 species have been assessed for the IUCN Red List
  - Goal of 160,000 species assessed
  - Not yet representative and with significant gaps
  - 150,000 – 200,000 species would make the Red List representative.



MAPPING SPECIES DISTRIBUTION…

- We only have spatial data for < 1% of total estimated species



Lens #2

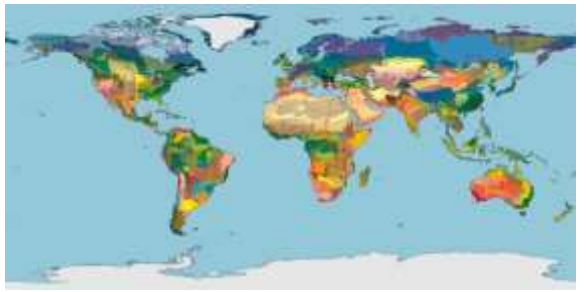
Mapping biodiversity through habitats or ecoregions…

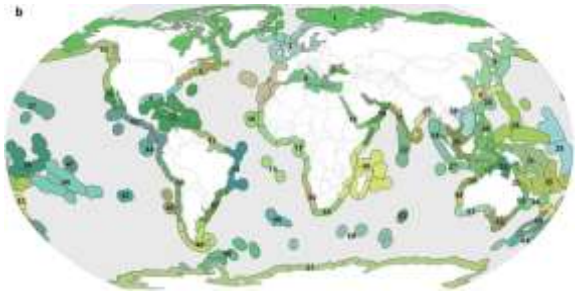
WHAT ARE HABITATS AND ECOREGIONS?

Habitat: The place or type of site where an organism or population naturally occurs.

Ecosystem: A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

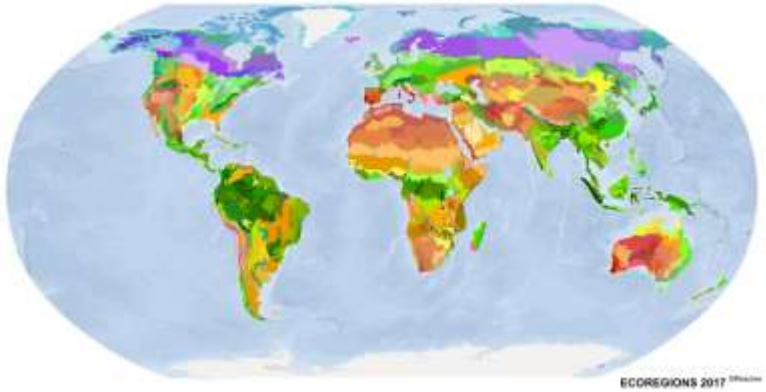
Ecoregion: A relatively large unit of land or water containing a geographically distinct assemblage of species, natural communities, and environmental conditions.





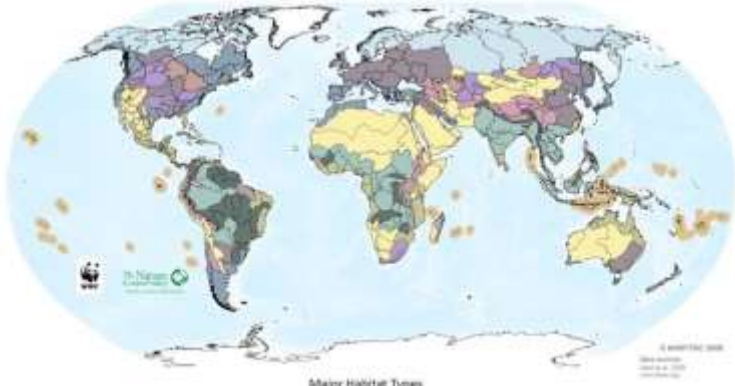
MAPPING ECOREGIONS AND HABITATS

Ecoregions: Terrestrial



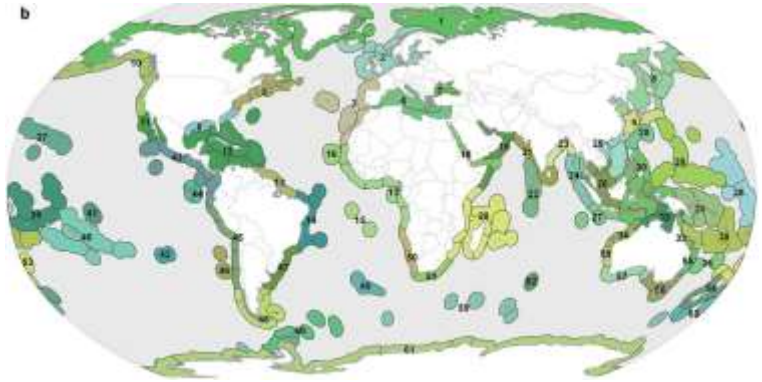
Dinerstein et al. 2017 *BioScience* 67:6

Ecoregions: Freshwater



Abell et al. 2008 BioScience 58:403

Ecoregions: Marine

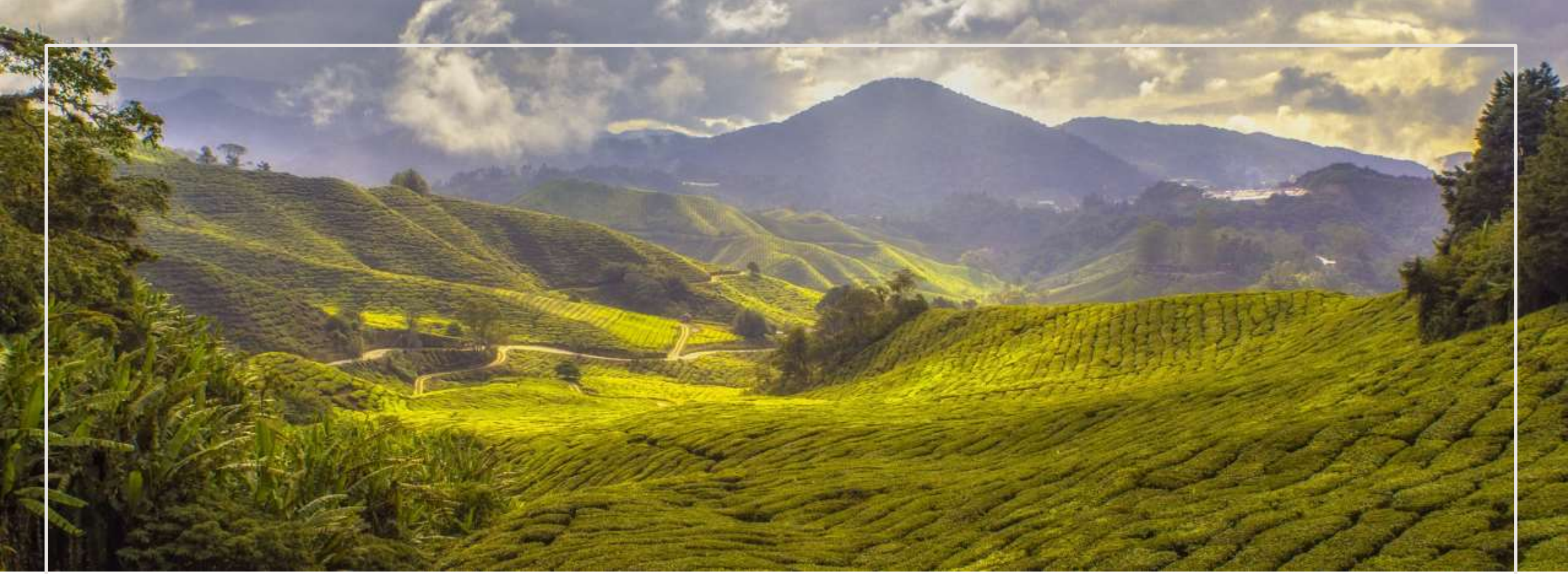


Spalding et al. 2007 BioScience 57:573

Habitats: Forest Density

MAPPING HABITATS…

- Habitats show geographical variation but what about biodiversity value?

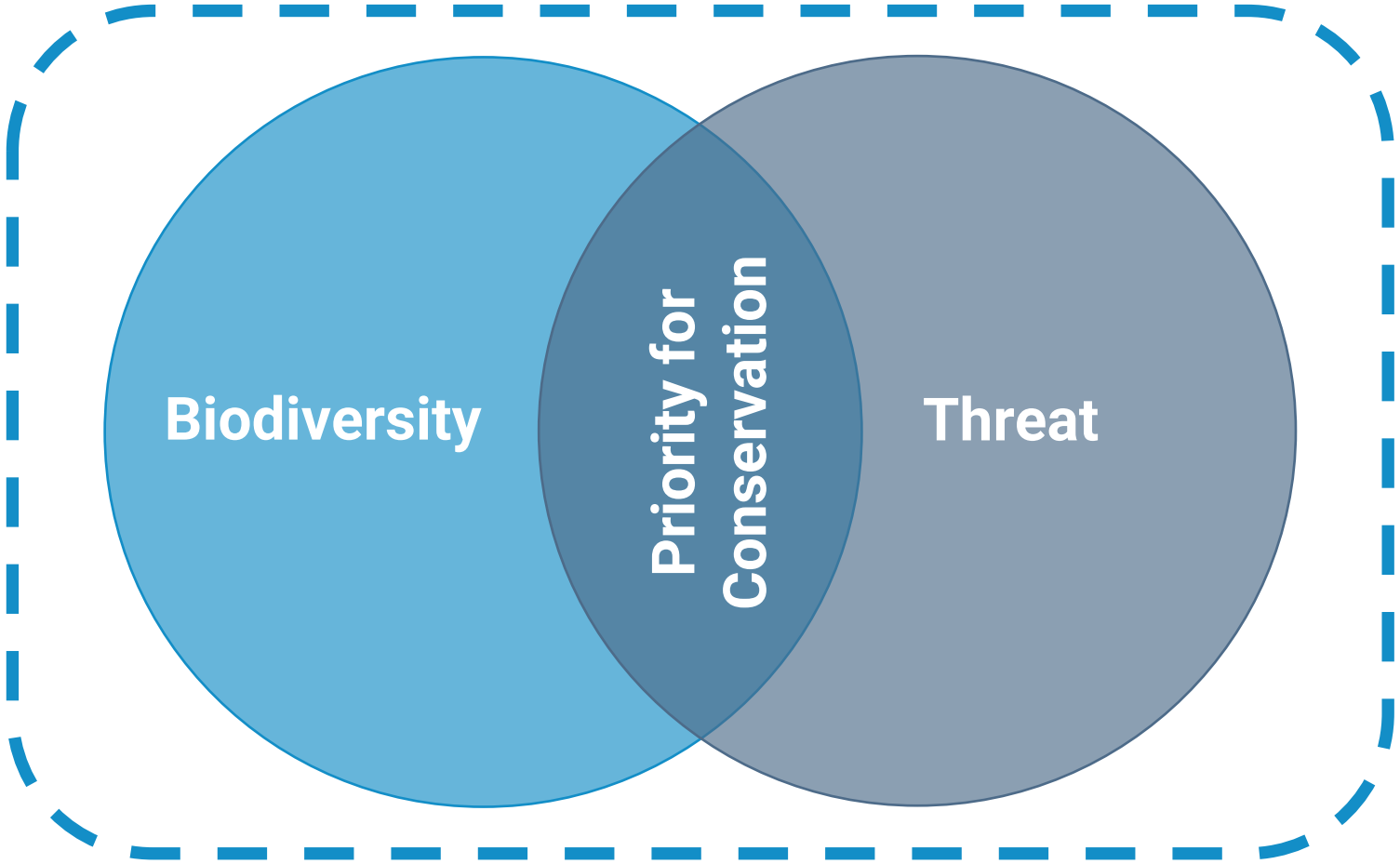


Lens #3

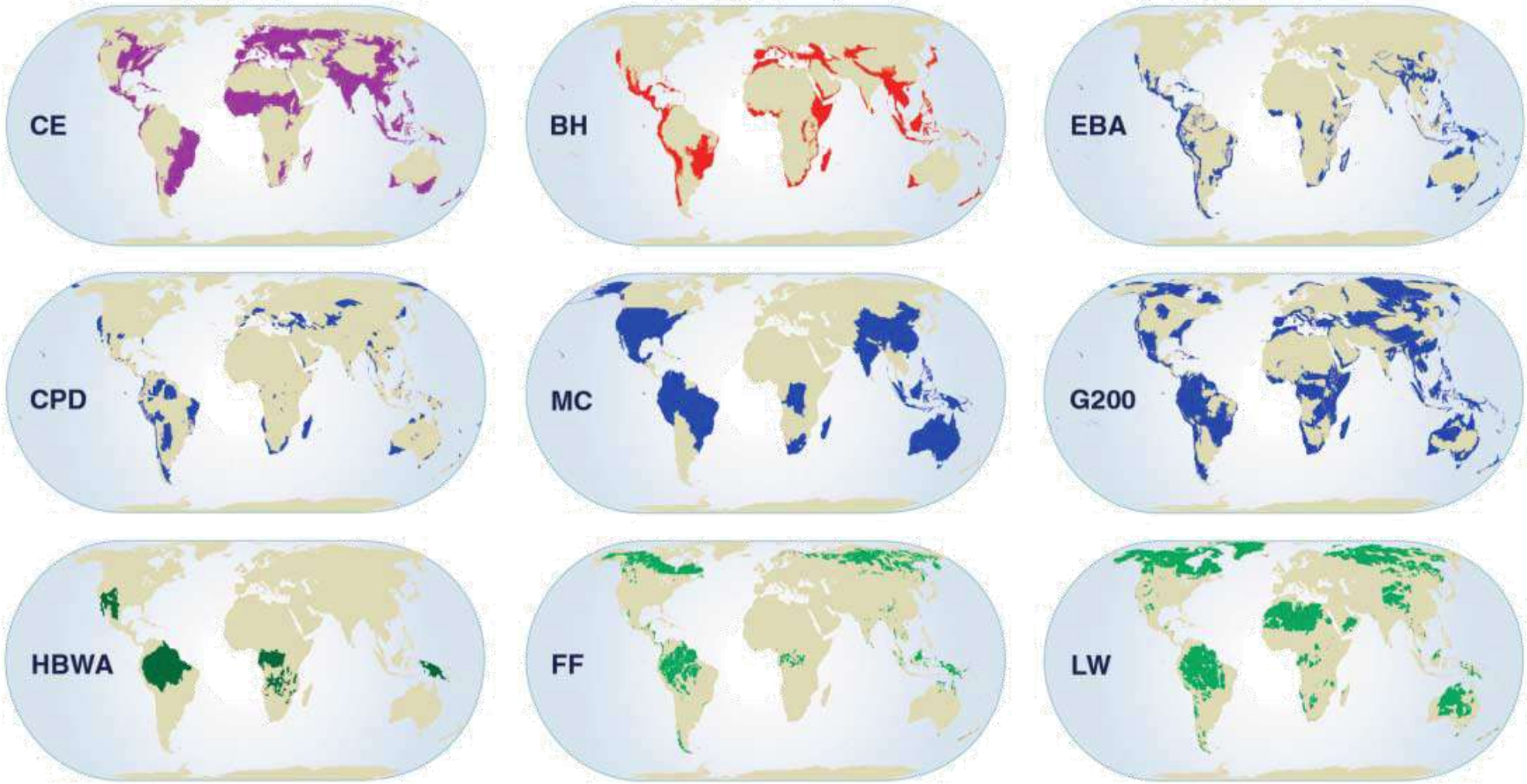
Mapping biodiversity by identifying priorities…

WHAT CRITERIA SHOULD WE USE FOR PRIORITISATION?

- Distinctiveness of biodiversity features
- Threats to biodiversity and degree of protection

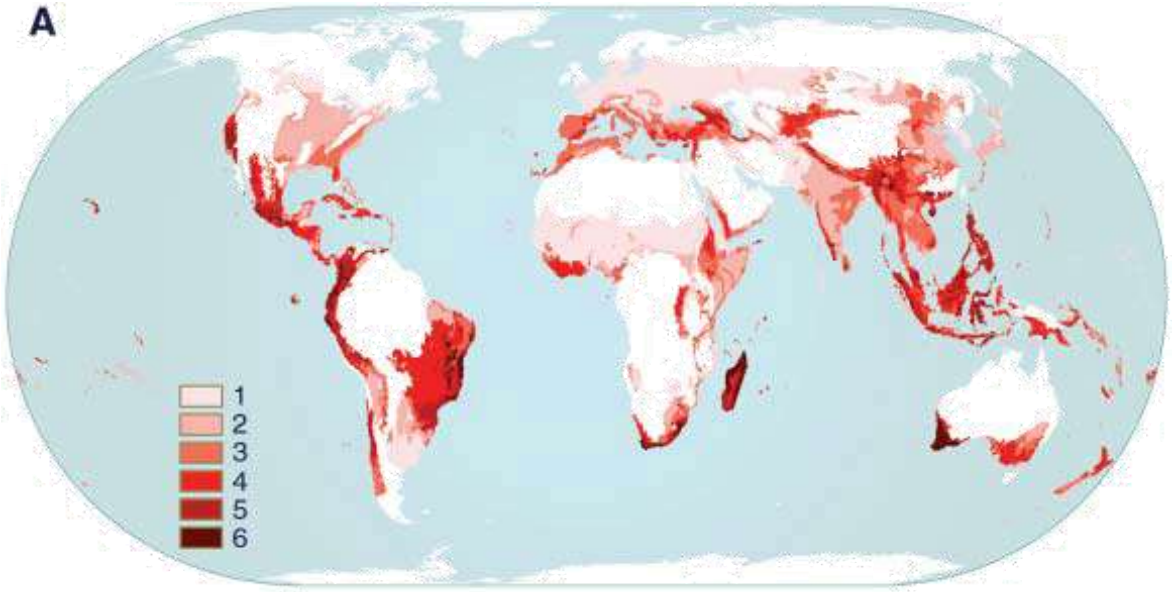


BIODIVERSITY IS EVERYWHERE

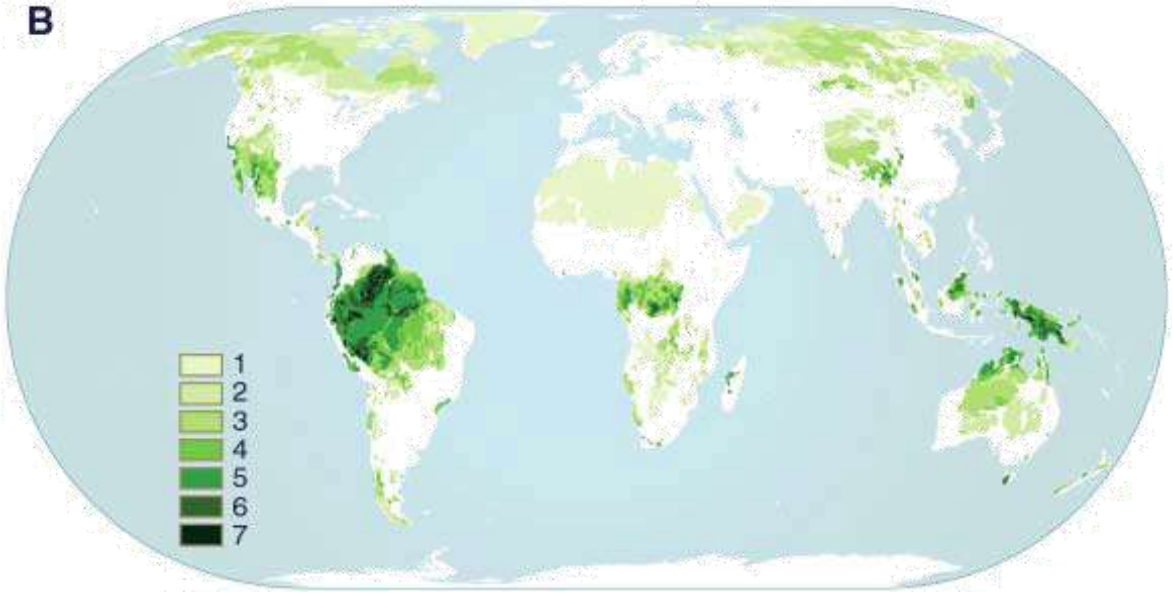


Brooks et al. 2006 *Science* 313:58

Reactive

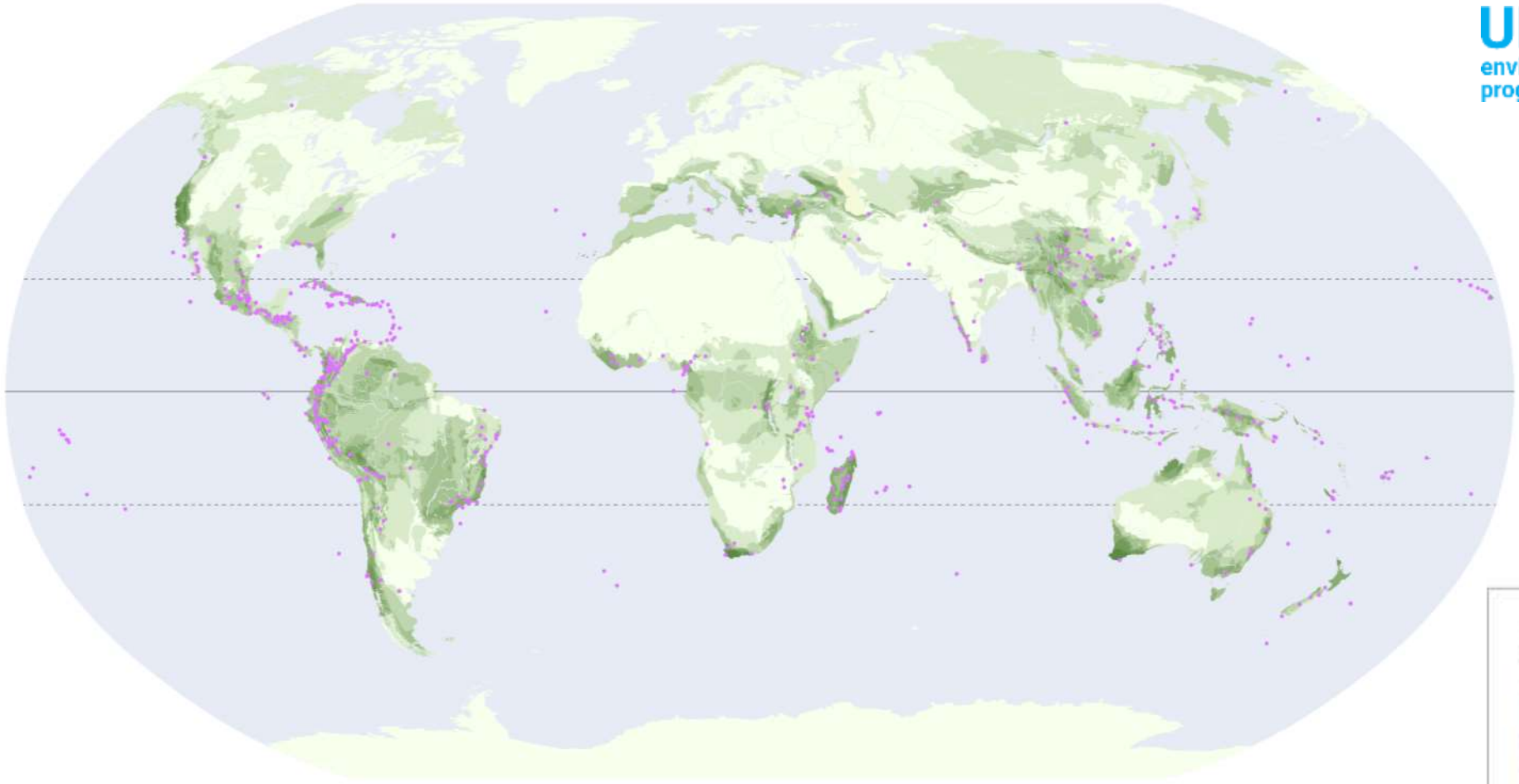


Proactive



Brooks et al. 2006 *Science* 313:58

PRIORITY BASED ON CONSENSUS



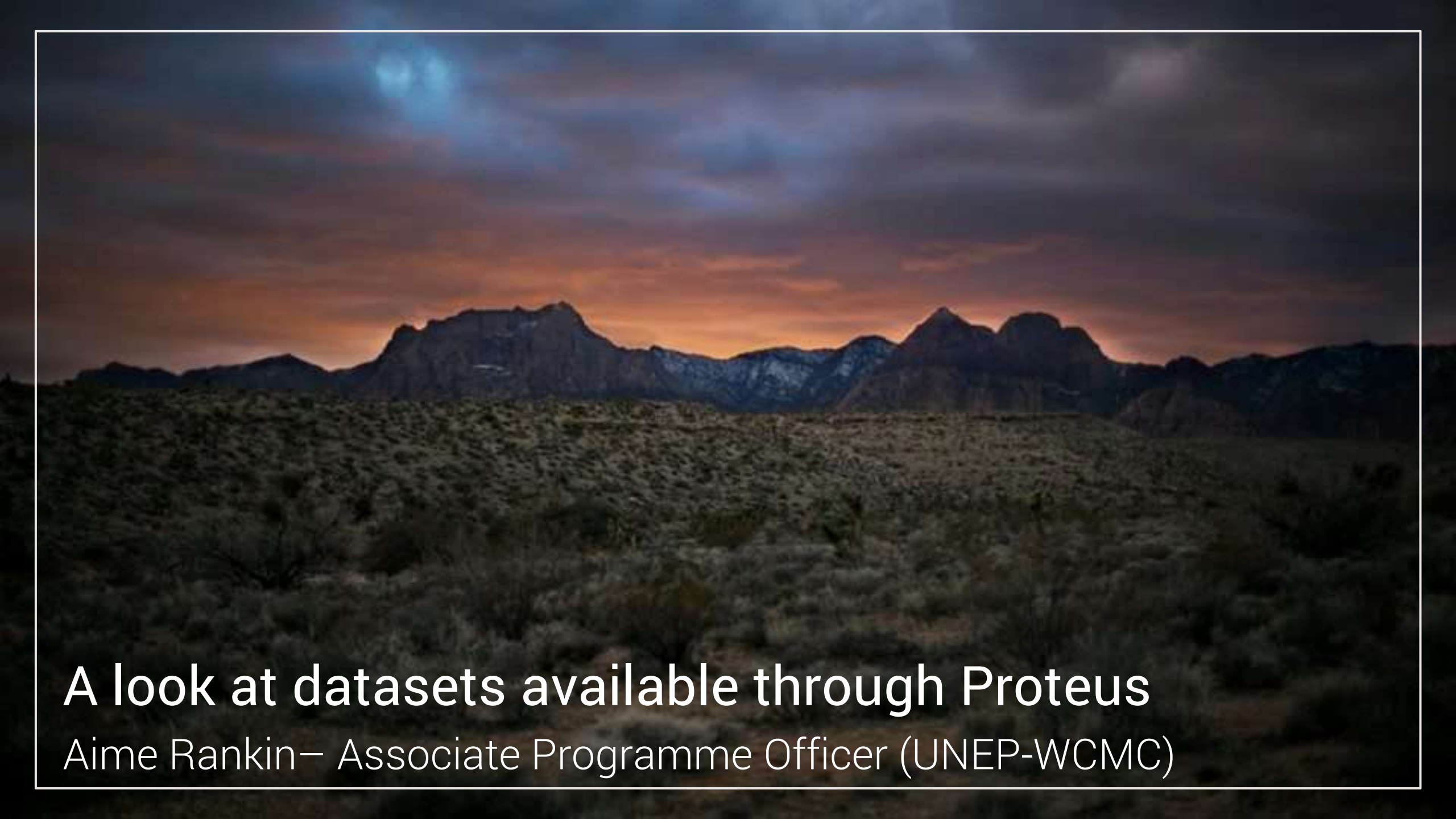
UNEP-WCMC. 2008. *Carbon and Biodiversity: a demonstration atlas*

WHERE IS BIODIVERSITY?

- Biodiversity is everywhere
- No single map of areas of biodiversity importance
- Need to consider multiple dimensions of biodiversity values and the variety and purpose of maps available
- Interpretation of available information is essential

MENTI QUIZ

Go to www.menti.com and use the code 8885 0930



A look at datasets available through Proteus

Aime Rankin– Associate Programme Officer (UNEP-WCMC)

WHAT ARE PROTECTED AREAS? – A RECAP

"A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values." (IUCN 2008)

Key features

- Ability to delineate
- Management of the area
- Core objective of nature conservation

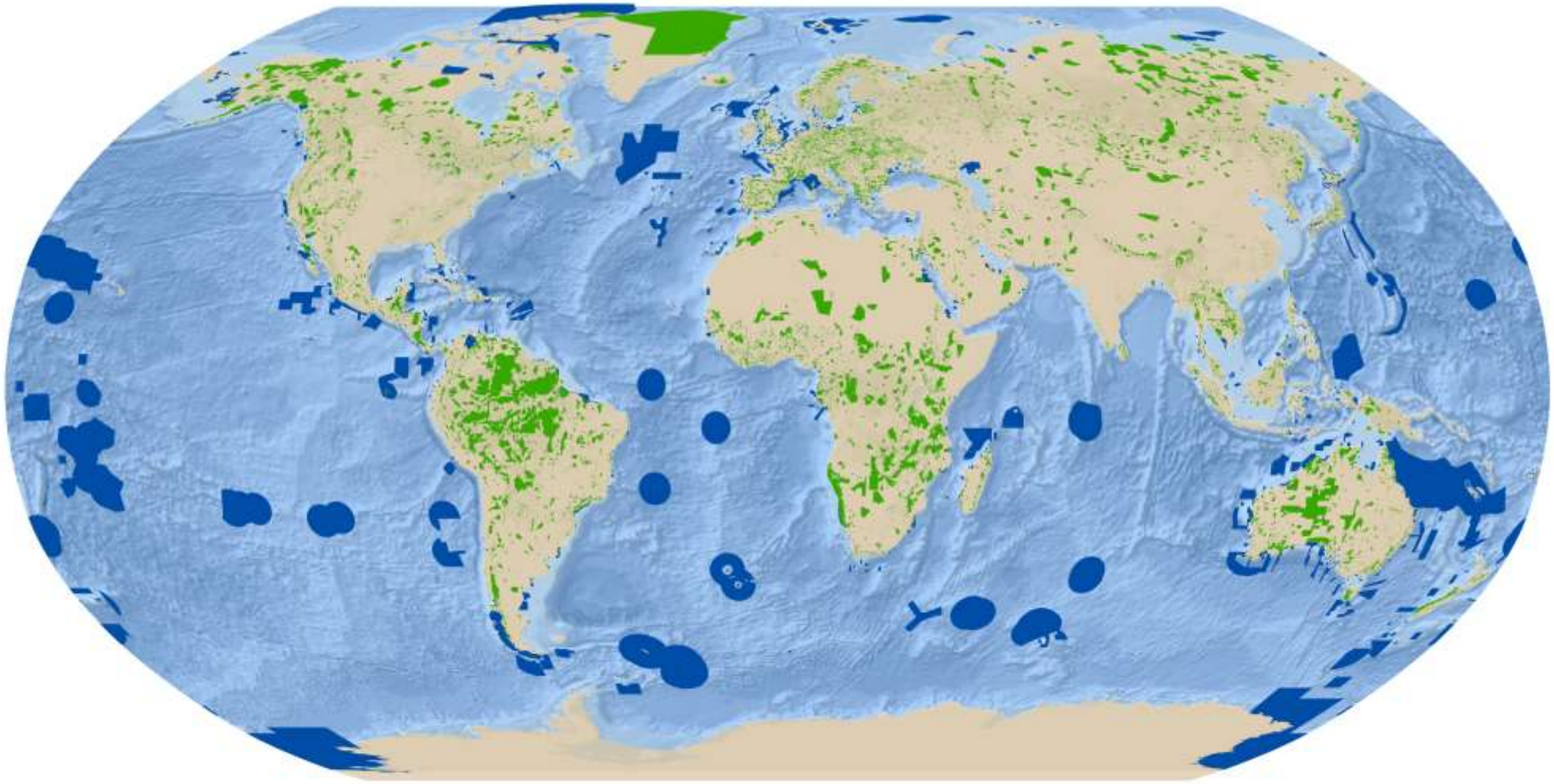
Effective means

- National law
- International conventions & agreements
- Customary law or land tenure

Governance

- Government
- Shared
- Private
- Community

THE WORLD DATABASE ON PROTECTED AREAS

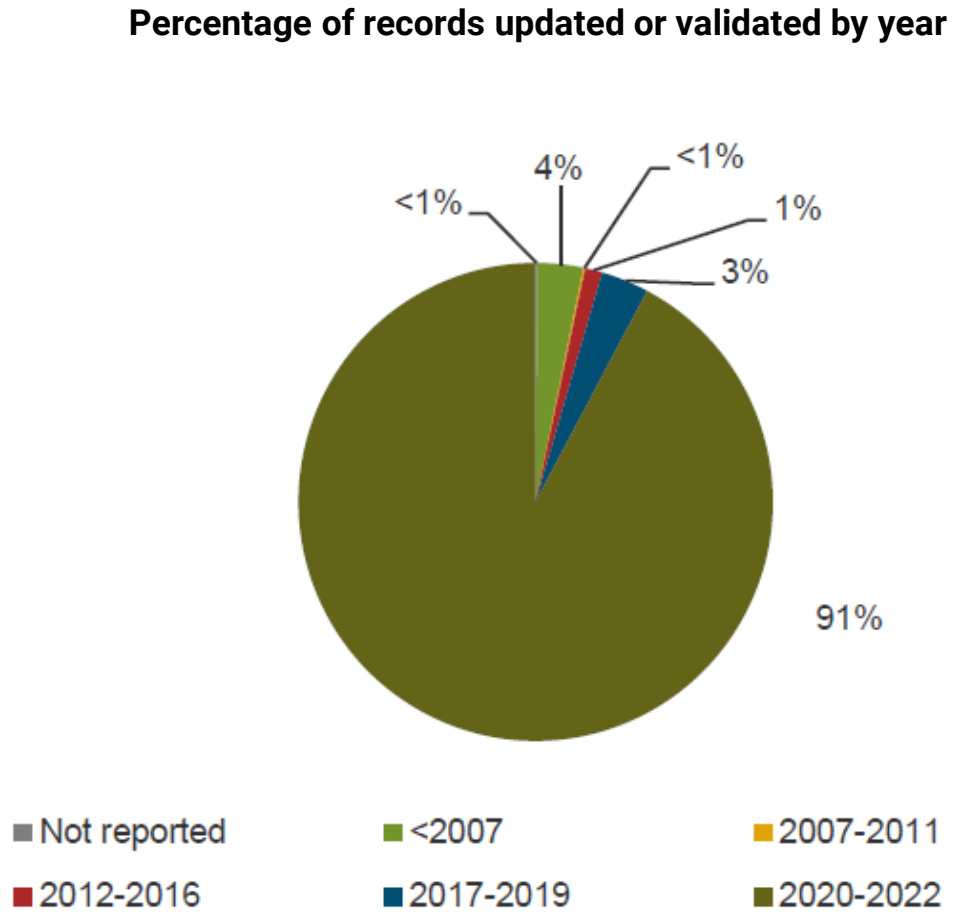


Source: UNEP-WCMC and IUCN (2022). Protected Planet: The World Database on Protected Areas (WDPA) [On-line], November 2022, Cambridge, UK: UNEP-WCMC. Available at www.protectedplanet.net

Terrestrial protected areas Marine and coastal protected areas

FIVE YEAR UPDATE FREQUENCY TARGET

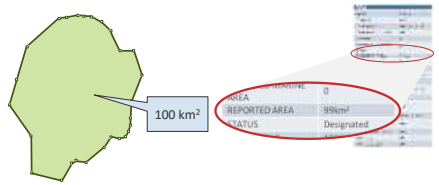
- Most of the WDPA has been updated in the last five years.
- Focus on Proteus Partner priority countries.
- Some countries are challenging to update.



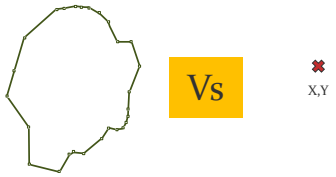
QUALITY INDICATORS FOR EACH COUNTRY

Spatial Detail

% of records where the Reported Area matches the calculated area



% of records which have a polygon boundary (preferred)

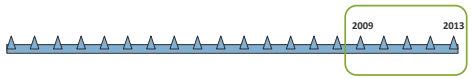


Completeness of Attributes

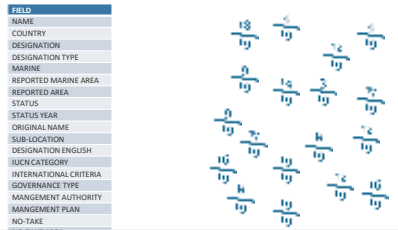
Agreement within Data

Year of Update

% of records updated or validated in the last 5 years



% of attributes completed (up to 20 attributes per record)



UNESCO WORLD HERITAGE SITES

"To be included on the world heritage list, sites must be of outstanding universal value and meet at least one out of ten selection criteria." (World heritage convention)

Cultural World Heritage Sites

Cultural world heritage sites

- 897 sites, point data only
- Deliberately excluded from WDPA

Natural and mixed world heritage sites

- 250 sites, all polygon data
- Included in the WDPA

Natural and Mixed World Heritage Sites

MONTHLY UPDATES

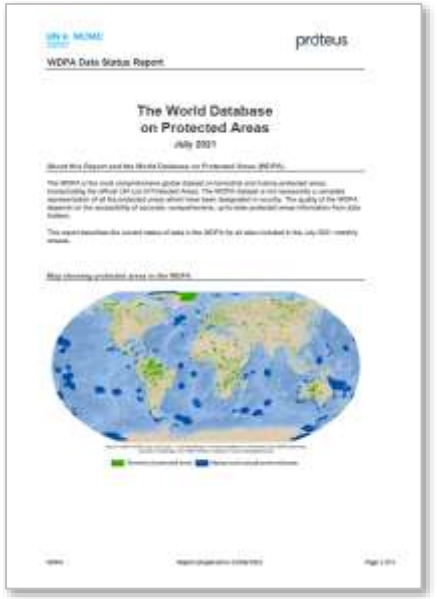
UN environment programme WCMC proteus

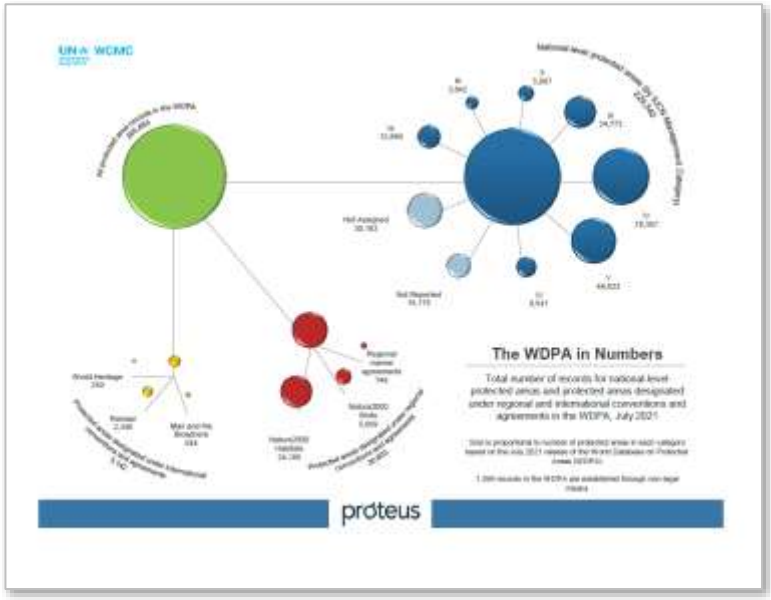
Download the November 2022 WDPA release

The total number of protected area records in this release is **285,457** comprising **273,195** polygons and **12,262** points. Please click on the links below to access the data factsheet and infographic for this release of the WDPA.

Data Factsheet

Infographic

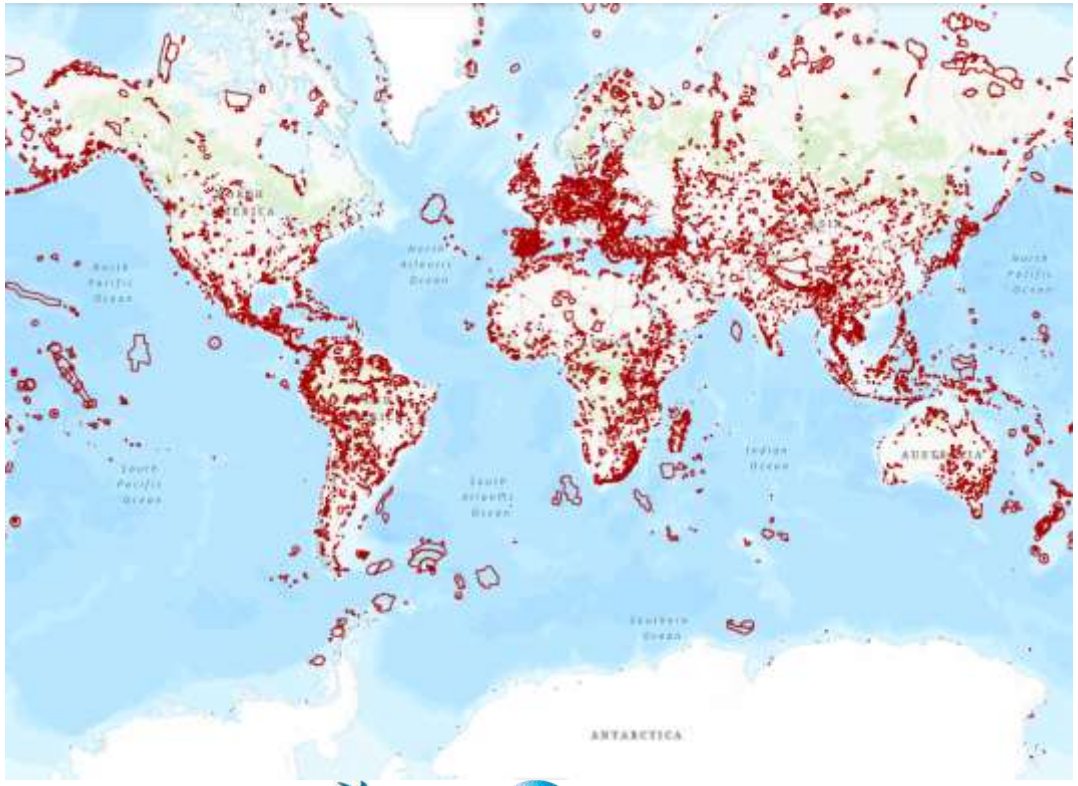




KEY BIODIVERSITY AREAS – A RECAP

"Sites contributing significantly to the global persistence of biodiversity."
(IUCN 2016)

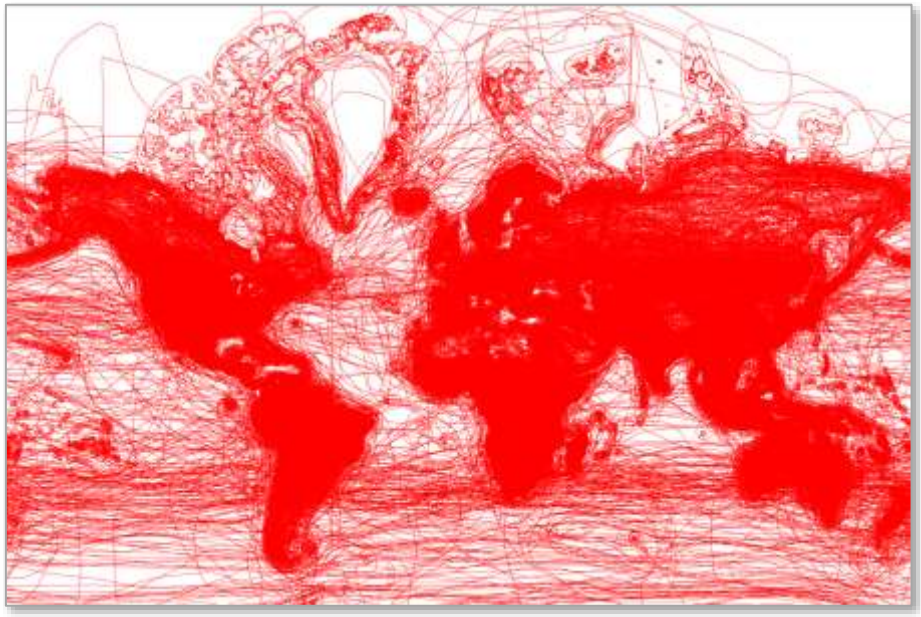
- Originally identified for birds.
- Now expanded to other taxa.
- New criteria across taxa and realms promote KBAs as the key biodiversity site designation.
- Over 16,000 identified so far.



BirdLife INTERNATIONAL · IUCN · asa · CONSERVATION INTERNATIONAL · CRITICAL ECOSYSTEM PARTNERSHIP FUND · gef · GLOBAL WILDLIFE CONSERVATION · NatureServe · RAINFOREST TRUST · rspb giving nature a home · WCS · WWF

IUCN RED LIST OF THREATENED SPECIES

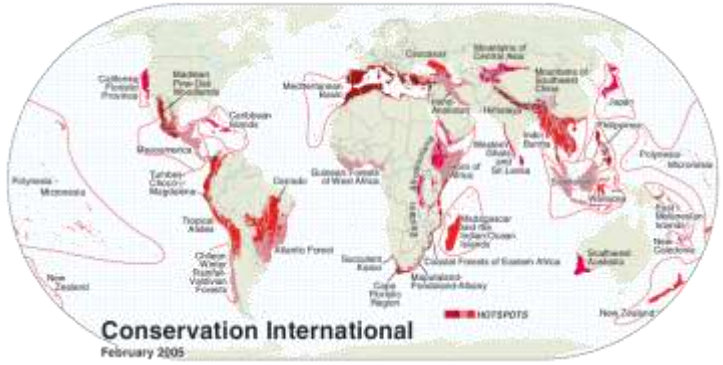
- The IUCN Red List of Threatened Species
- Most consistent global dataset of species ranges (approximately 94,000 species)
- Holds information on species that have been assessed by IUCN
- Species are assigned a threat category as part of assessment
- Range maps are based on limits of distribution (or Extent of Occurrence, EOO)



REGIONS OF CONSERVATION IMPORTANCE

Biodiversity Hotspots

- Areas of the world in which there are large numbers of endemic plant species and where less than 30% of the natural habitat remains



Biodiversity Hotspots

High Biodiversity Wilderness Areas (HBWAs)

- 5 of the 24 major wilderness areas that hold globally significant levels of biodiversity

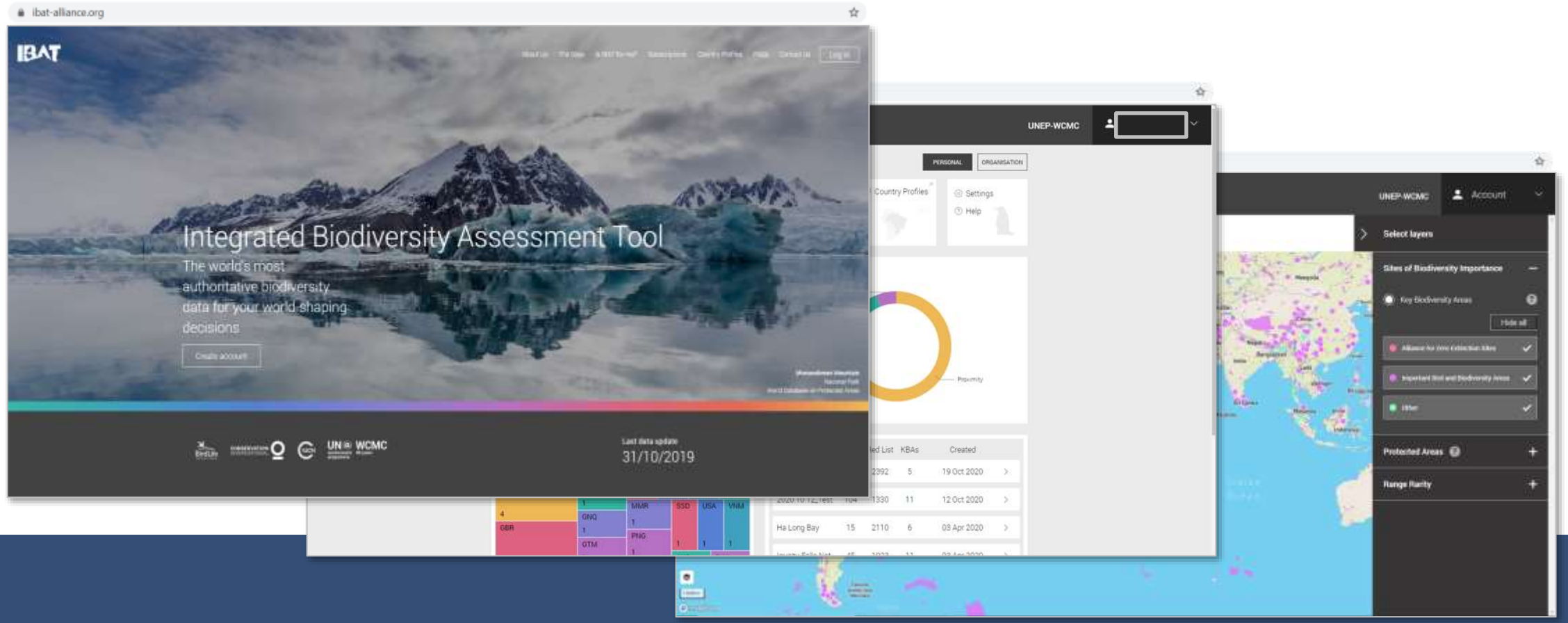
High Biodiversity Wilderness Areas

Endemic Bird Areas (EBAs)

- Natural areas of bird endemism where distributions of two or more restricted-range bird species overlap

*Can be accessed on request – email Proteus@unep-wcmc.org

INTEGRATED BIODIVERSITY ASSESSMENT TOOL



CONSERVATION INTERNATIONAL

IUCN

BirdLife INTERNATIONAL

UN environment programme WCMC

WHAT IS IBAT?

- A web-based map & reporting Tool that provides fast, easy & integrated access to critical biodiversity information.
- An alliance between:

- The source of the most globally authoritative biodiversity data:
  - The World Database on Protected Areas
  - The World Database of Key Biodiversity Areas
  - The IUCN Red List of Threatened Species
- A link between the private sector and biodiversity conservation.

IBAT DATASETS

The World Database on Protected Areas (Updated monthly)

The World Database of Key Biodiversity Areas (Updated at least 3 times a year)

The IUCN Red List of Threatened Species (Updated at least 3 times a year)

* IBAT is the only place where each of these datasets is available for commercial users

KEY FEATURES OF IBAT

Features

- Ability to draw polylines and polygons
- Upload multiple sites (csv, shp, KMZ, KML)
- Download data per specified area
- Create portfolio of ‘Projects’ (sites)
- Site page giving overview of a site
- Multiple report types: Proximity, IFC PS6/World Bank ESS6, Freshwater, Multi-site
- Ability to view all data in the IBAT map

Real-time updates

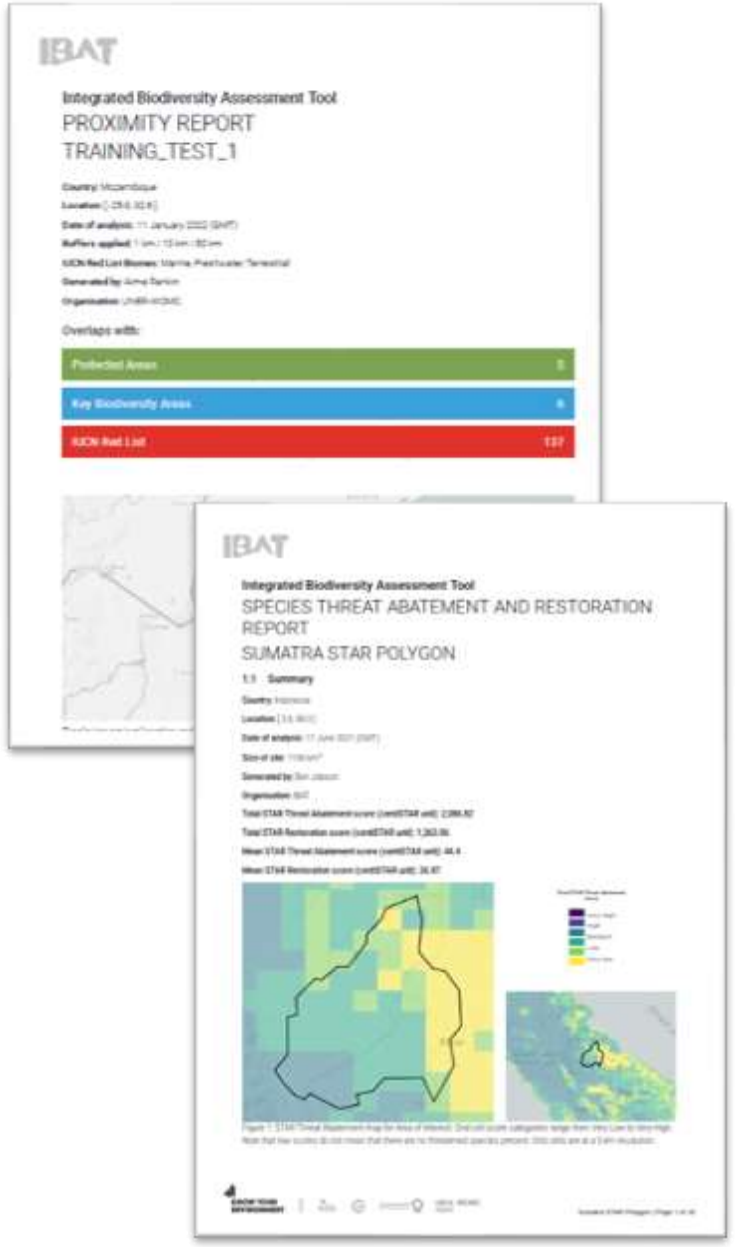
- Protected Areas
- Key Biodiversity Areas
- Red List of Species data
- Species Threat Abatement and Restoration

Committed to continuous improvement and user support

- Fully maintained
- Scientifically robust
- Committed to innovation and new functionality

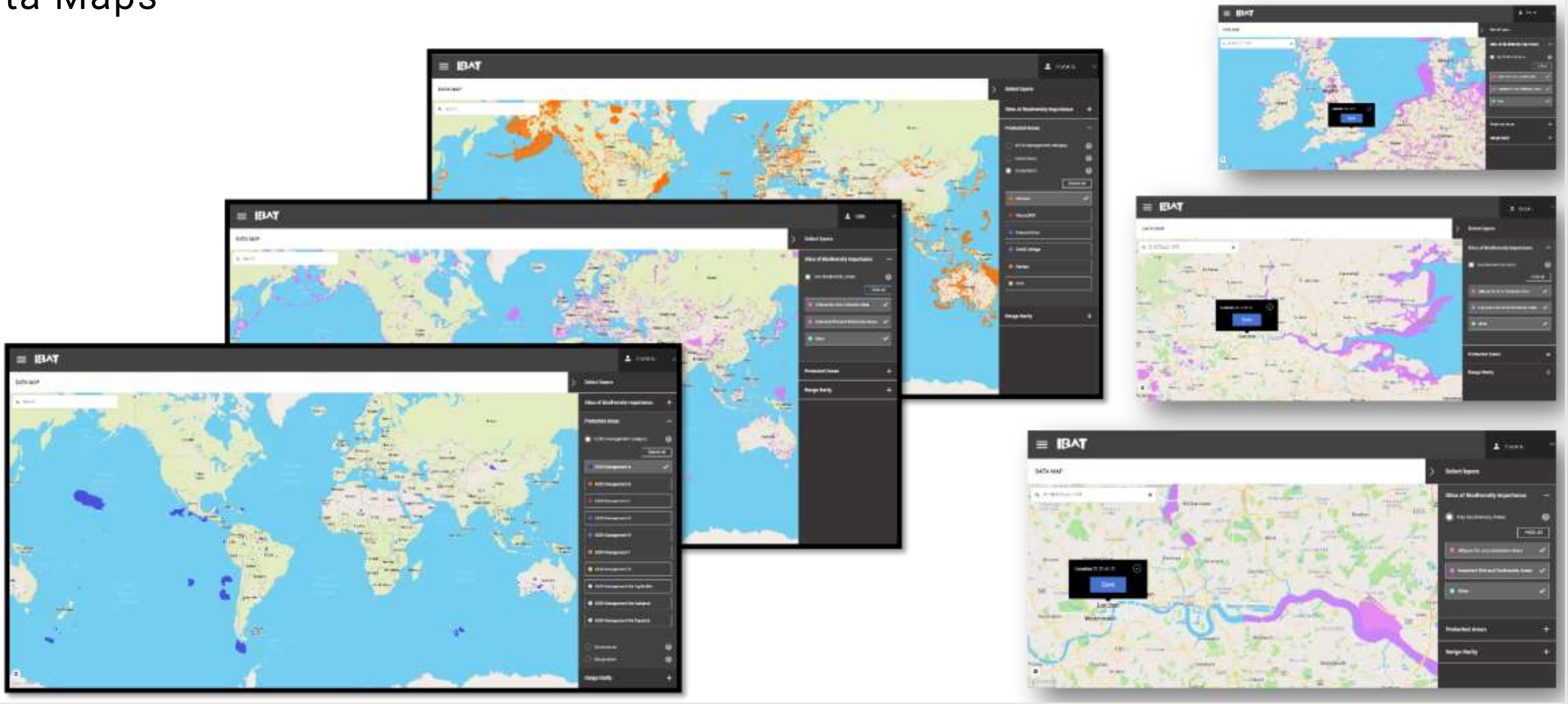
IBAT REPORTS

- **Proximity Reports –** Early-stage biodiversity risk screening for a single site.
- **Freshwater –** Single site with potential to impact freshwater ecosystems
- **World Bank Group Risk Reports –** Single site with specific reference to PSS6 and ESS6.
- **Multi site –** IBAT Multi-site reports designed to help companies reporting for GRI/ SASB, and certification schemes.
- **STAR –** Identify areas where actions to abate threats or undertake restoration can help reduce species extinction risk



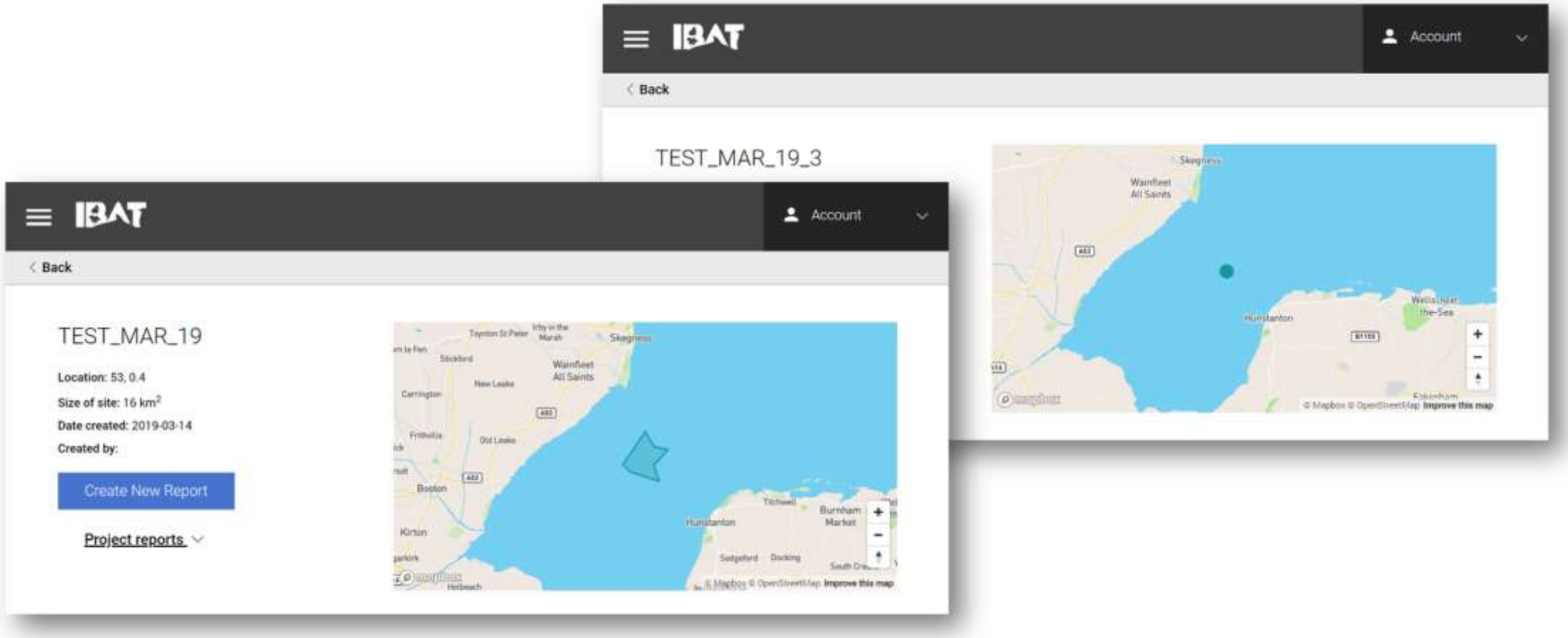
WHAT IS AVAILABLE THROUGH IBAT?

Data Maps



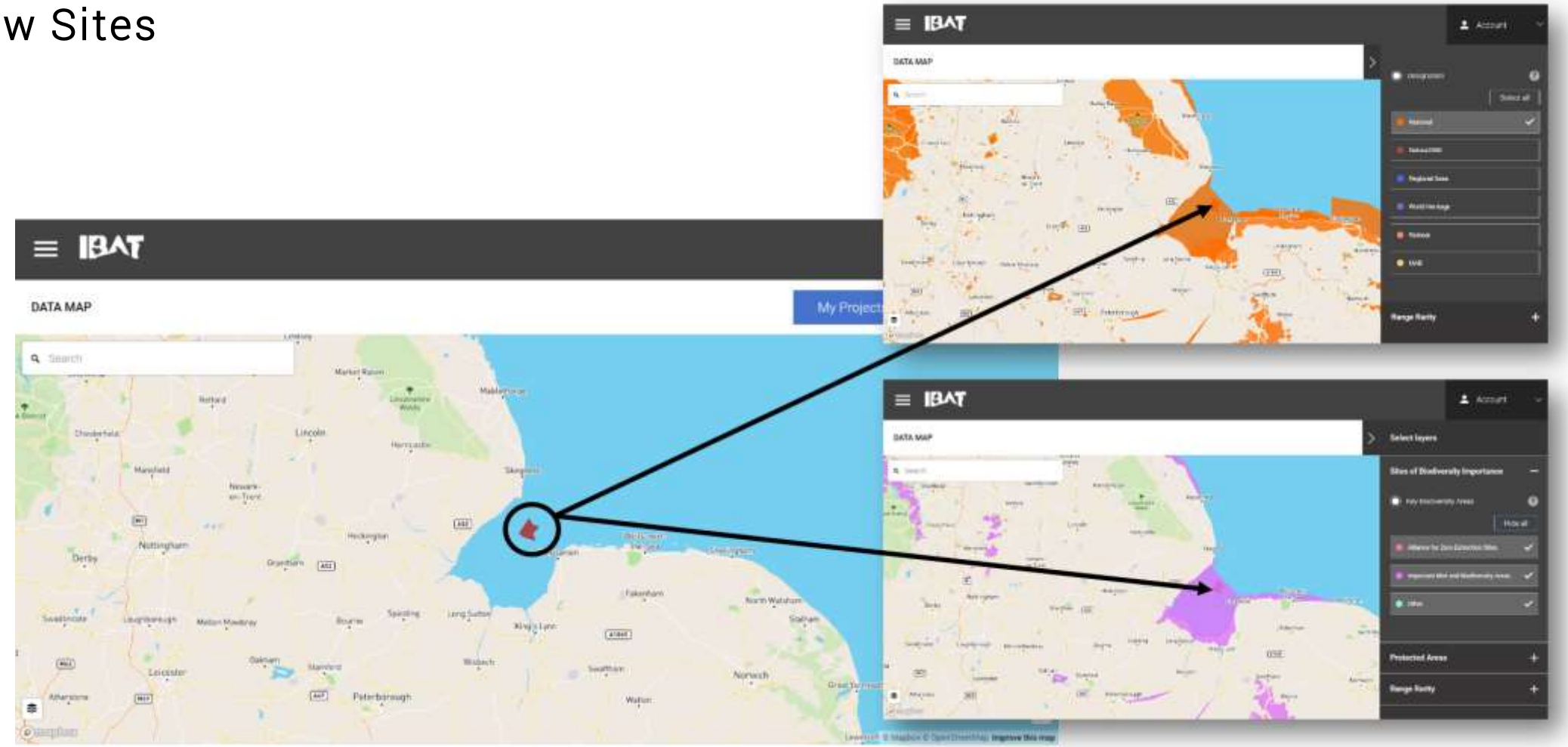
WHAT IS AVAILABLE THROUGH IBAT?

Create and save sites

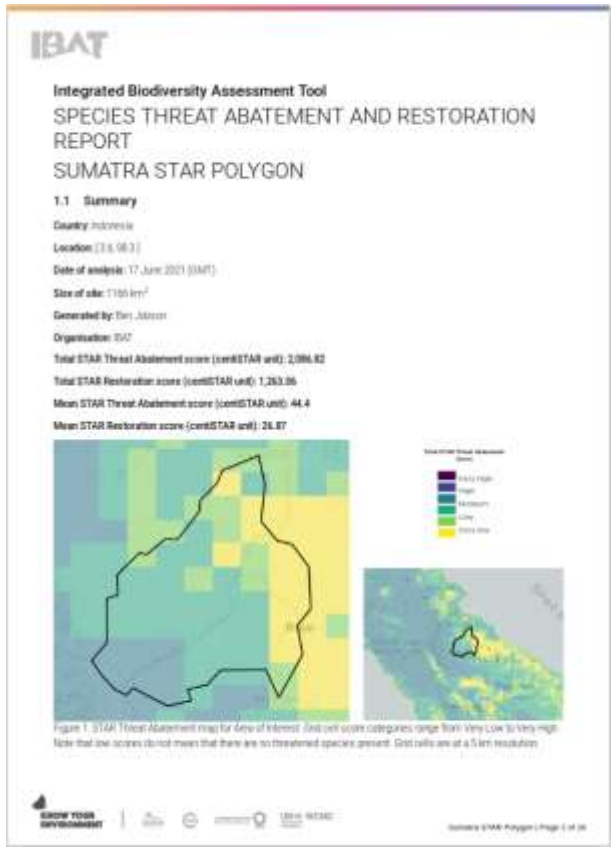


WHAT IS AVAILABLE THROUGH IBAT?

View Sites



SPECIES THREAT ABATEMENT AND RESTORATION METRIC (STAR)



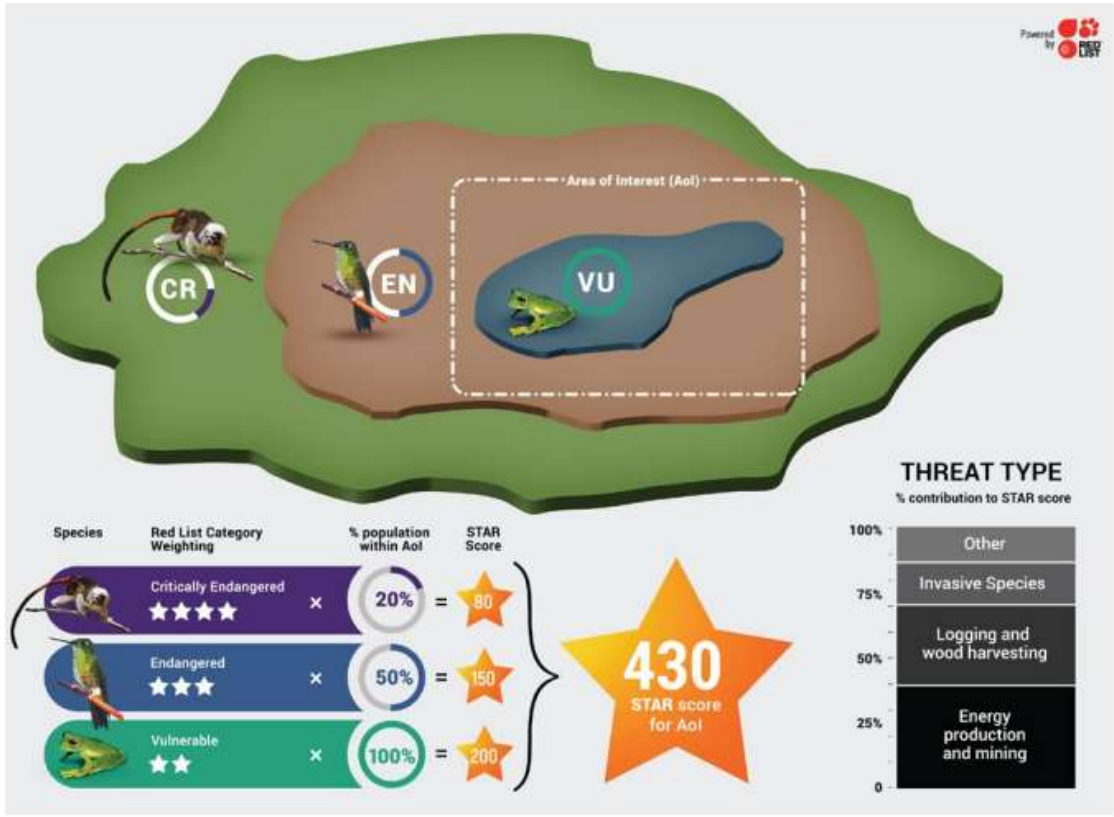
IBAT

Integrated Biodiversity Assessment Tool

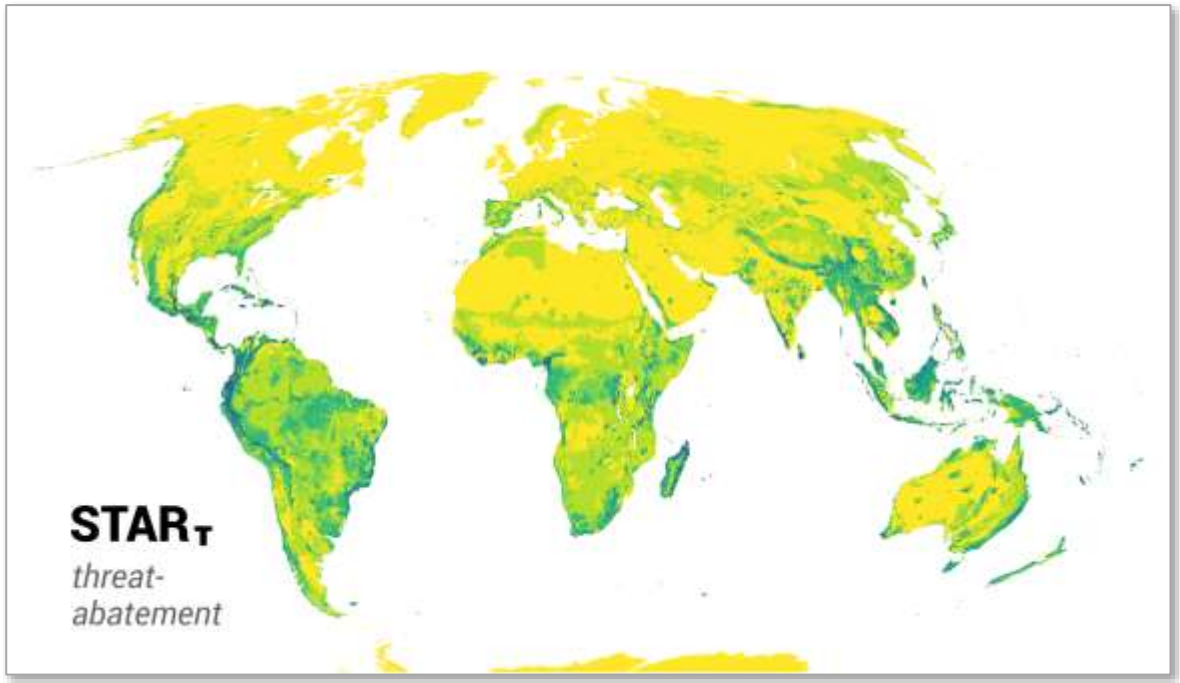
SPECIES THREAT ABATEMENT AND RESTORATION REPORT

SUMATRA STAR POLYGON

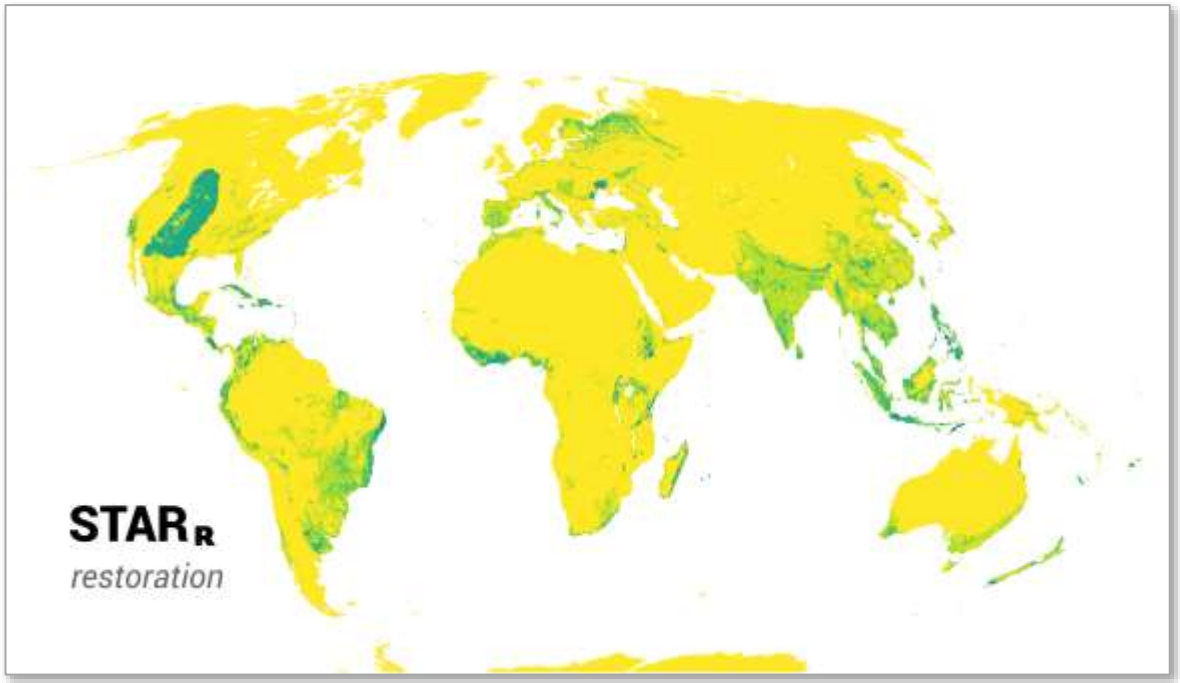
1.1 Summary



SPECIES THREAT ABATEMENT AND RESTORATION METRIC (STAR)

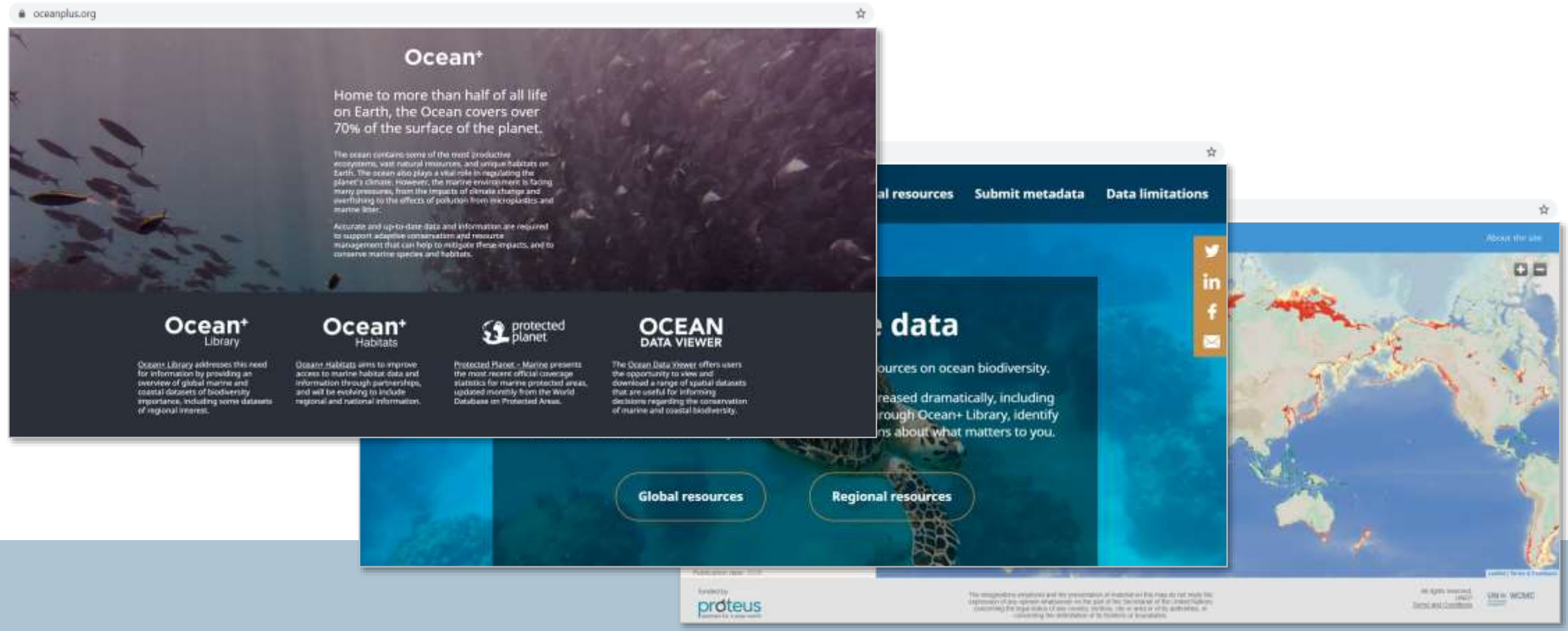


High scores indicate areas that currently contain many threatened species and a large proportion of individual species' ranges.



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.

OCEAN+ AND THE OCEAN DATA VIEWER



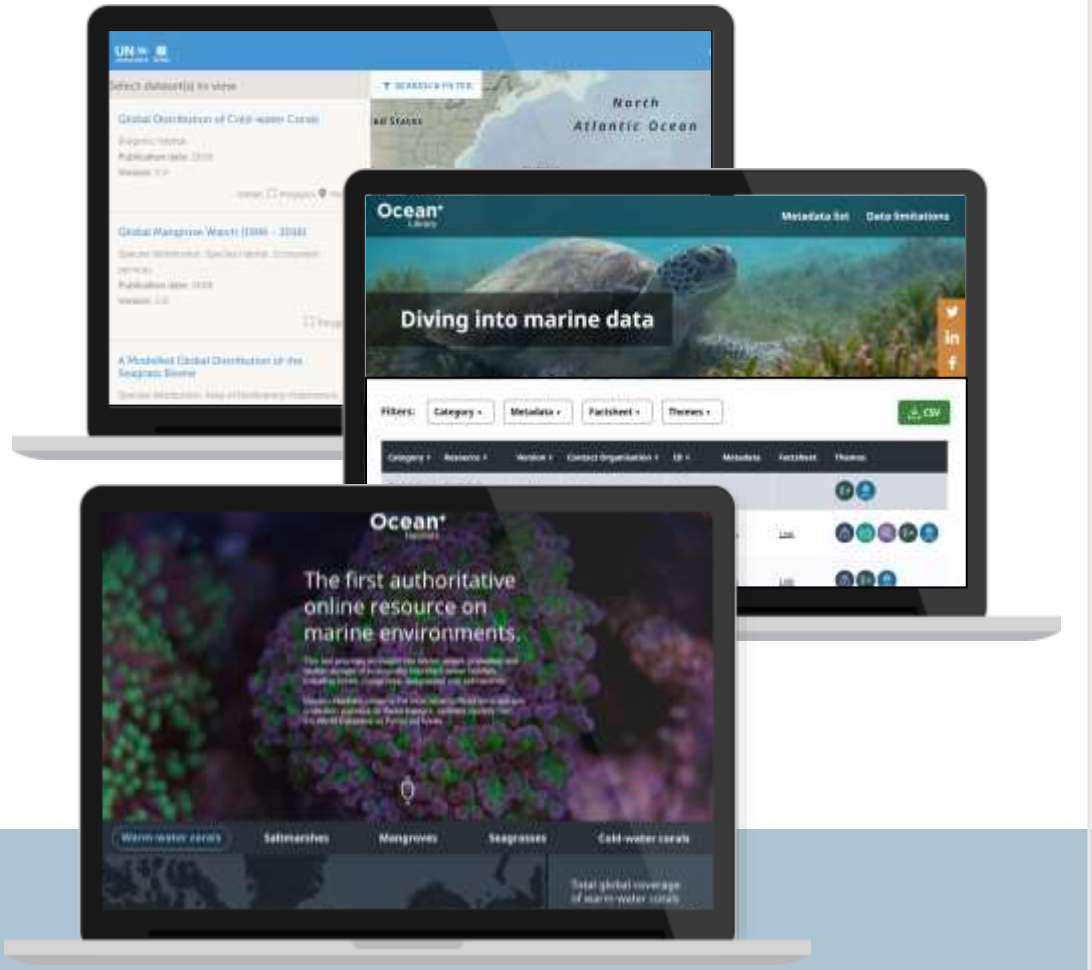
GEO BON

UN environment programme WCMC

proteus

WHAT IS OCEAN+?

- **Aim**: to match available data and information with the needs of decision-makers.
- **Mission:** To strengthen access to — and use of — ocean and coastal biodiversity information and spatial data, supporting the transition to a healthy ocean.



GEO BON UN environment programme WCMC proteus

OCEAN+ LIBRARY

- A library of 190+ resources of data and information relevant to marine and coastal biodiversity, and for uses related to:

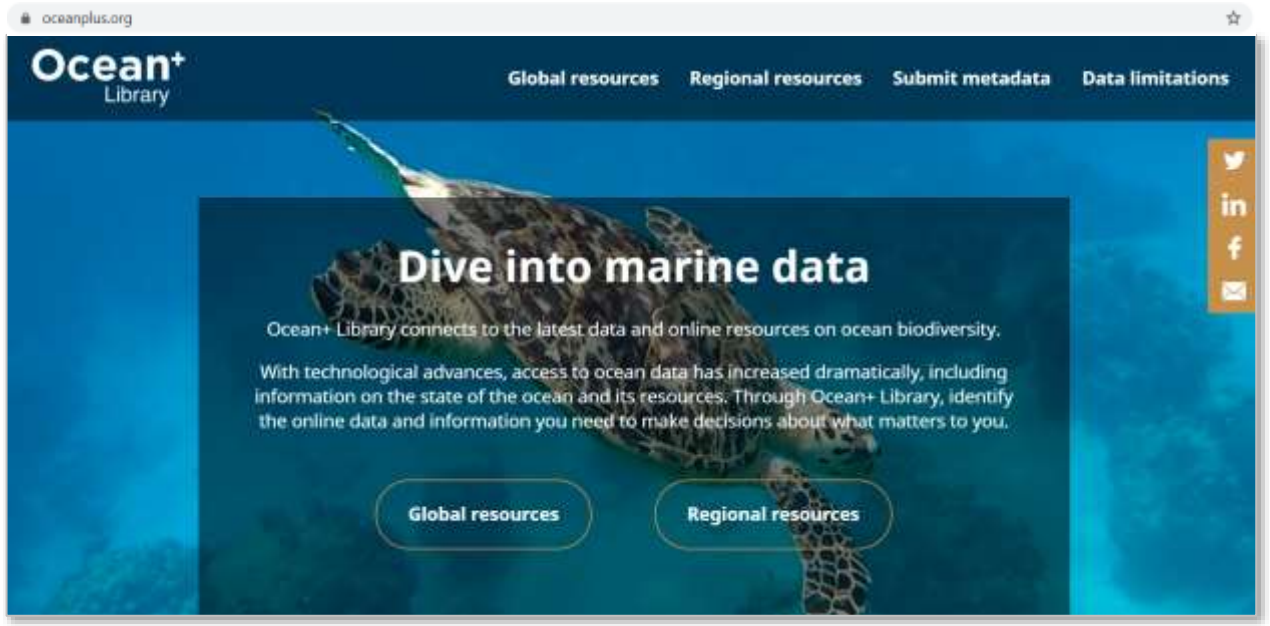
Marine spatial planning

Education

Environmental impact assessment

Ecosystem assessment

Ecosystem services



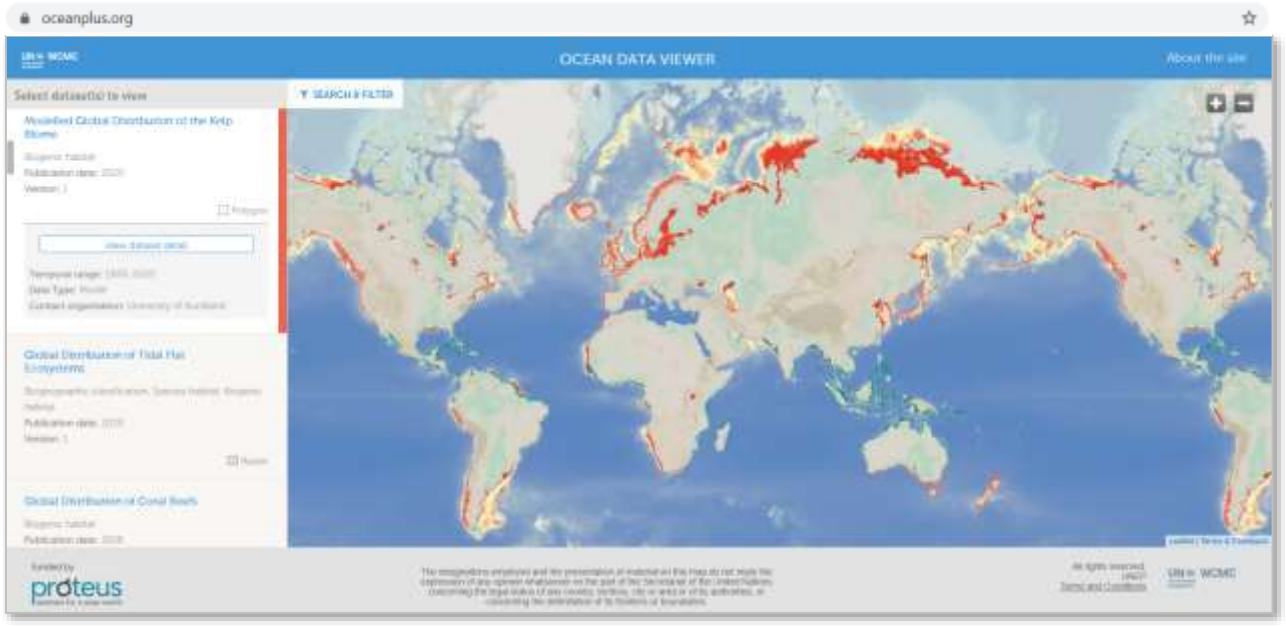
OCEAN+ DATA VIEWER

- A portal for viewing and downloading spatial datasets useful for managing and conserving marine and coastal biodiversity.
- Provides easy access to view and download spatial data to inform decisions.

More than 2.5 million records of marine and coastal habitats

More than 2.1 million km^2 of marine and coastal areas mapped

More than 30 marine datasets available for use*



OCEAN+ HABITATS

- **Aim**: strengthen transparency around the state of marine and coastal ecosystems at a national and regional level to help countries track progress toward their performance against global targets.
- Demand from businesses to better understand risks in the marine environment.
- Requests from regulators when reviewing Environmental Impact Assessments.


Warm-water corals


Cold-water corals

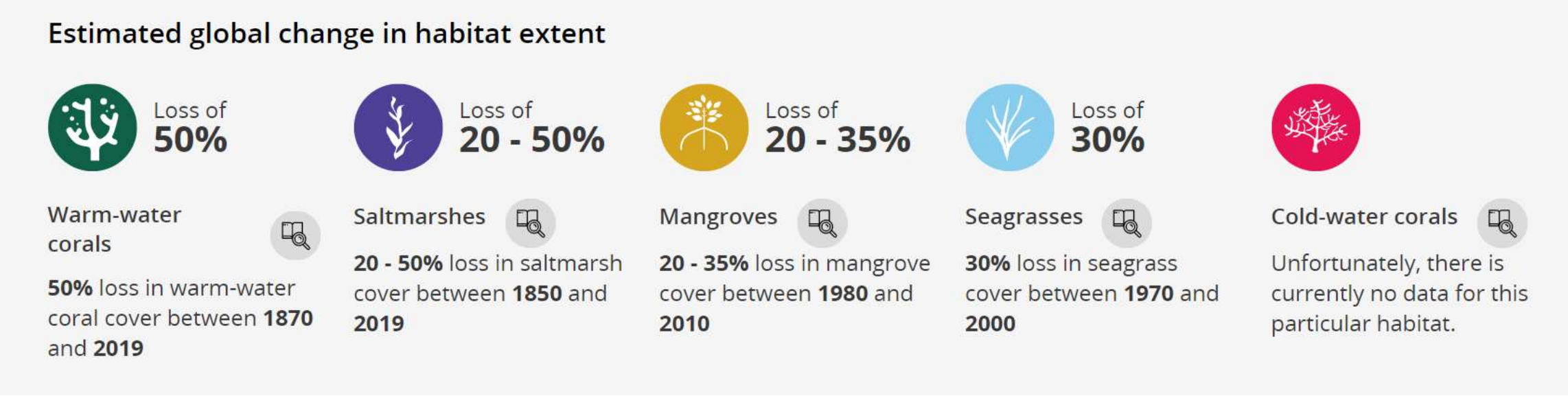

Seagrasses


Saltmarshes


Mangroves

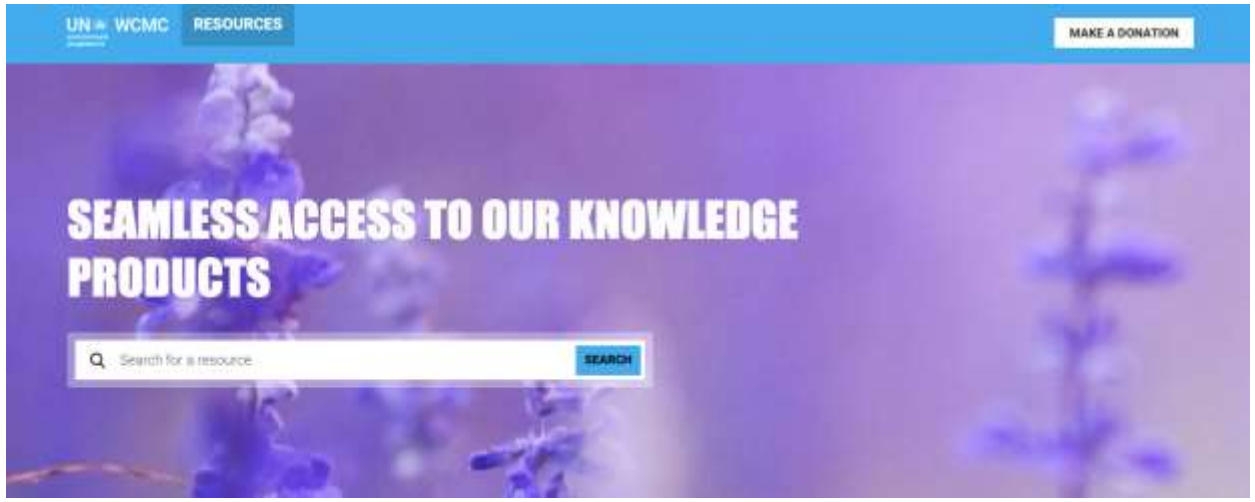
OCEAN+ HABITATS

- Developing national, regional and global inventories of ocean habitat occurrence, with statistics on coverage and progress toward targets.



ADDITIONAL DATASETS

- UNEP-WCMC provides a wide range of additional datasets to Partners



MENTI QUIZ

Go to www.menti.com and use the code 8885 0930

Data use and Limitations

Aime Rankin– Associate Programme Officer (UNEP-WCMC)

COMMON DATASET LIMITATIONS

- Absence of evidence is not evidence of absence
- Data gaps and comprehensiveness
- Misalignment across datasets
- Overlapping features
- Update frequency
- Heterogeneity in terminology and designations

ABSENCE OF EVIDENCE IS NOT EVIDENCE OF ABSENCE

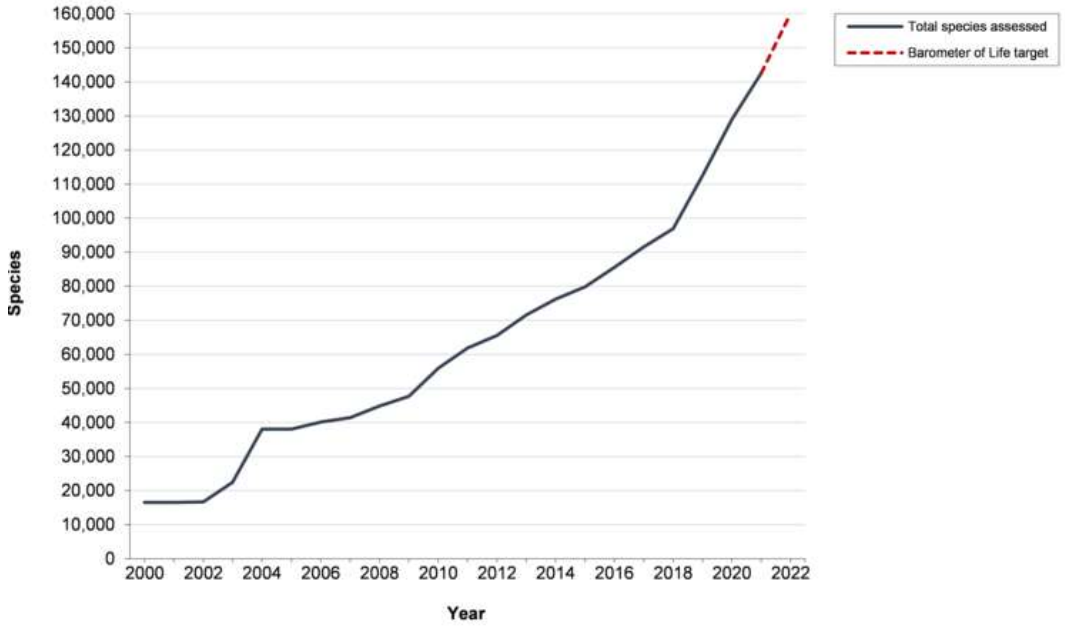
Example: Data gaps in marine habitat datasets on the Ocean Data Viewer

- "Global Distribution of Coral Reefs"
- Compiled by several different sources
- Uses remotely-sensed data
- Only a portion of the coral reef was detected due to high turbidity
- Suggest ground-truthing (e.g. Habitat Validation Tool)
- Engage with local communities and their knowledge

DATA GAPS AND COMPREHENSIVENESS

Example: Representativeness of IUCN Red List

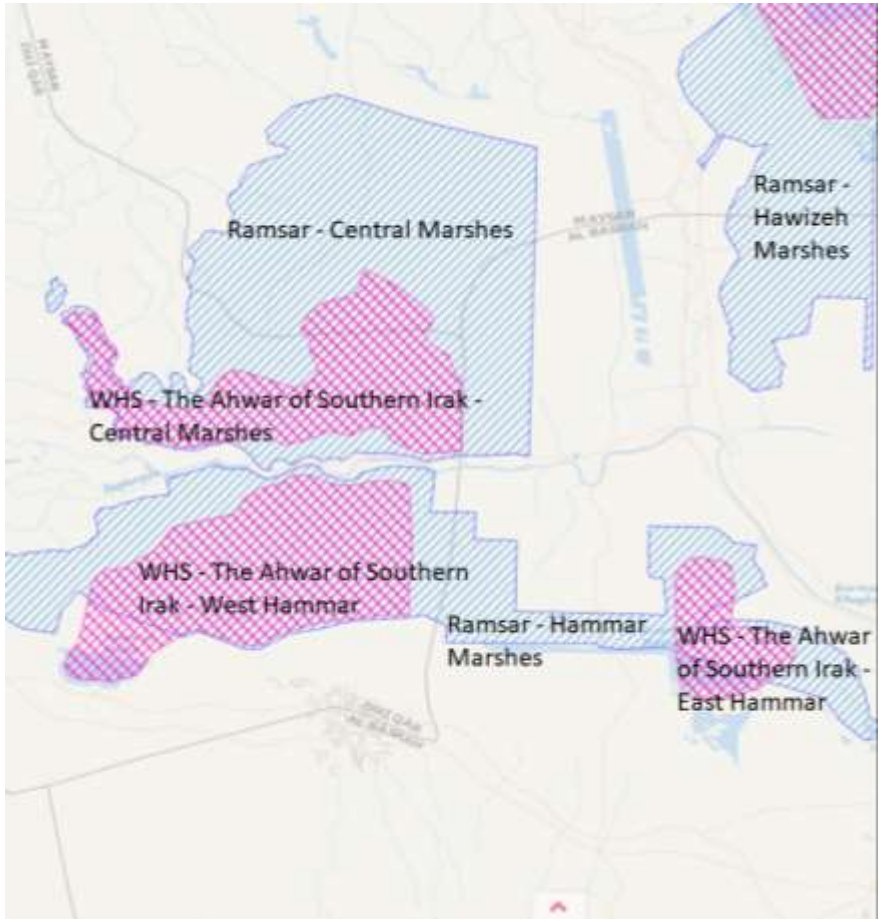
- The IUCN Red List contains data for 142,577 assessed species as of July 2021
- BUT… Estimated 8.7 million species on Earth (if not more)
- Under-represented taxonomic groups:
  - Marine and freshwater fishes 54%
  - Invertebrates 2%
  - Plants 11%
  - Fungi <1%



BUFFER AREAS

Example: Ramsar Sites

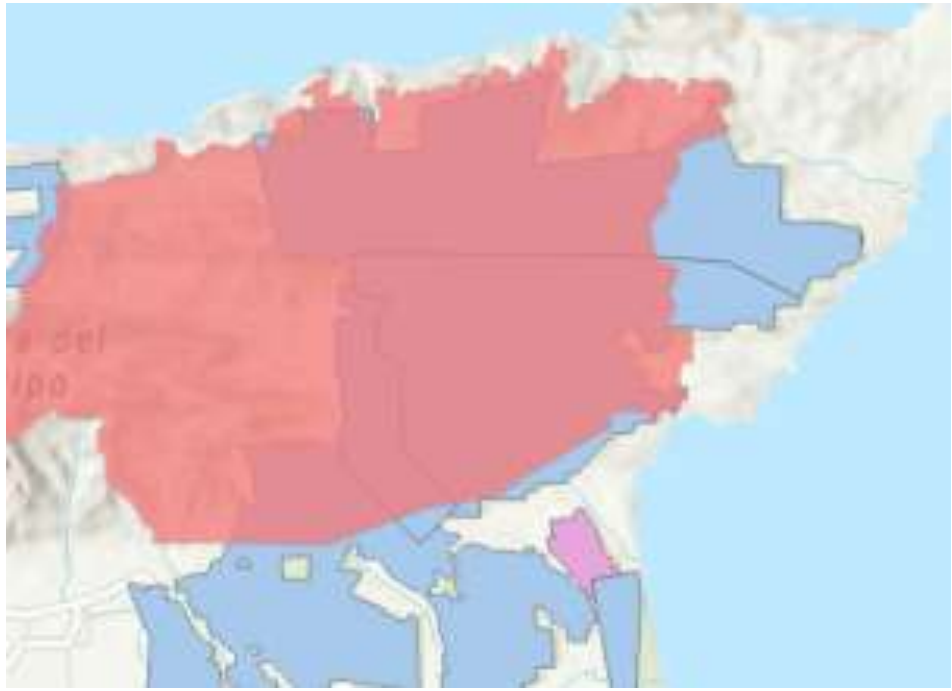
- Marshland areas (Iraq)
- TotalEnergies contacted UNEP-WCMC to ask about site buffers, we checked sources and:
  - It is not common that Ramsar sites have buffers.
  - Ramsar site boundaries are confirmed by national data providers.
  - No mention of additional buffers was noted.



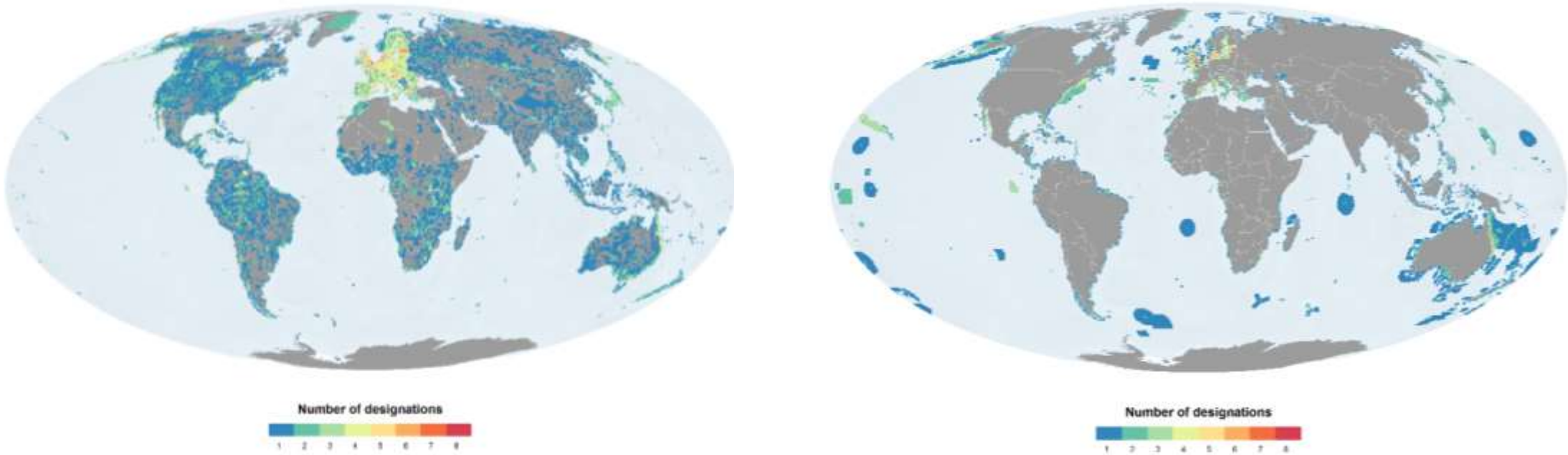
MISALIGNMENT ACROSS DATASETS

Example: Misalignment between KBA and protected area

- Misalignment of the boundaries of a KBA (red) and those of a protected area (blue) in Trinidad and Tobago.
- Polygons should have been aligned since the KBA is based on the protected area.
- **Cause:** data come from two different datasets
  - KBA from World Bird and Biodiversity Database (WBDB)
  - Protected areas from WDPA
- **Question:** which data is the correct data to use?



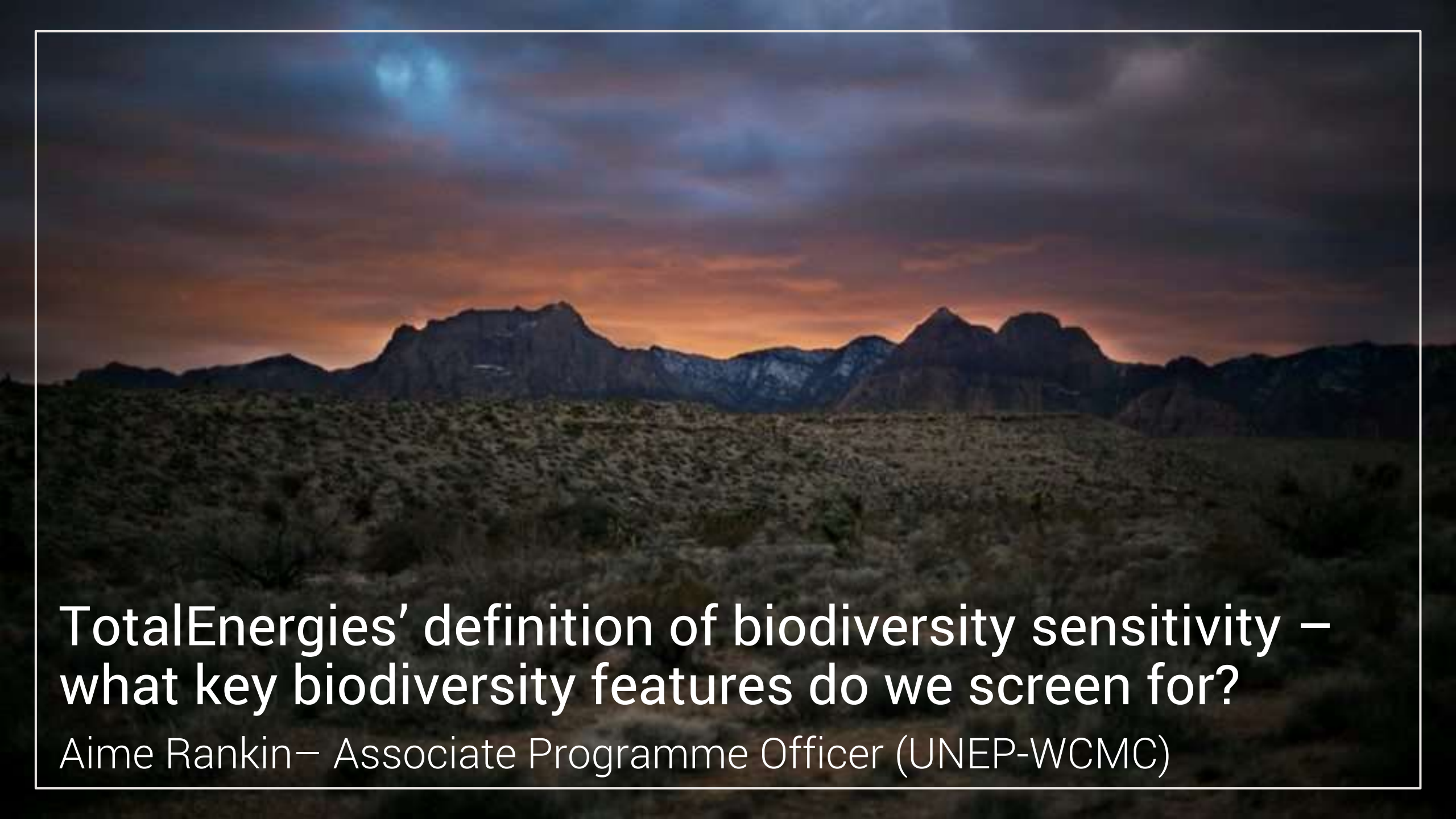
OVERLAPPING FEATURES



Heat map of overlapping designations in the terrestrial realm (left) and marine realm (right) (Deguignet et al. 2018)

UPDATE FREQUENCY

Biodiversity feature	Update frequency	Dataset and download source
Protected Areas		
Areas designated under international conventions and agreements -Natural and mixed World Heritage sites -Wetland of International Importance (Ramsar sites) -UNESCO-MAB Biosphere Reserve	Monthly	**Dataset:** IUCN and UNEP-WCMC, The World Database on Protected Areas (WDPA) **Download source:** Monthly WDPA release email.
Areas designated under regional conventions and agreements -Regional Seas (Marine Protected Areas) -Natura 2000 Network		
National-level protected areas -IUCN Category Ia, Ib, II, III, IV, V, VI, Not Assigned, Not Reported		
Cultural World Heritage sites	Annually	**Dataset:** UNESCO (2021) Cultural World Heritage sites. **Download source:** Monthly WDPA release email
IBAT: Species ; Priority sites for biodiversity		
Alliance for Zero Extinction Sites	Twice per year	**Dataset:** BirdLife International, on behalf of the KBA Partnership, Key Biodiversity Areas **Download Source:** Integrated Biodiversity Assessment Tool, (IBAT), https://ibat-alliance.org/data-download
Important Bird and Biodiversity Areas		
Key Biodiversity Areas (non AZE-IBA)		
Species range GIS data		**Dataset:** IUCN The IUCN Red List of Threatened Species.. **Download Source:** Integrated Biodiversity Assessment Tool, (IBAT), https://ibat-alliance.org/data-download
ODV: Coastal and marine datasets		
Datasets curated by UNEP WCMC: Seagrasses, Saltmarshes, Mangroves, Warm-water coral reefs, Cold-water coral reefs	Under continuous improvement Ad hoc releases	**Reference:** Provided in metadata sheets available on Ocean Data Viewer **Download Source:** Ocean Data Viewer (ODV), http://data.unep-wcmc.org/ **Note:** All datasets available as Web Map Service via the ODV.

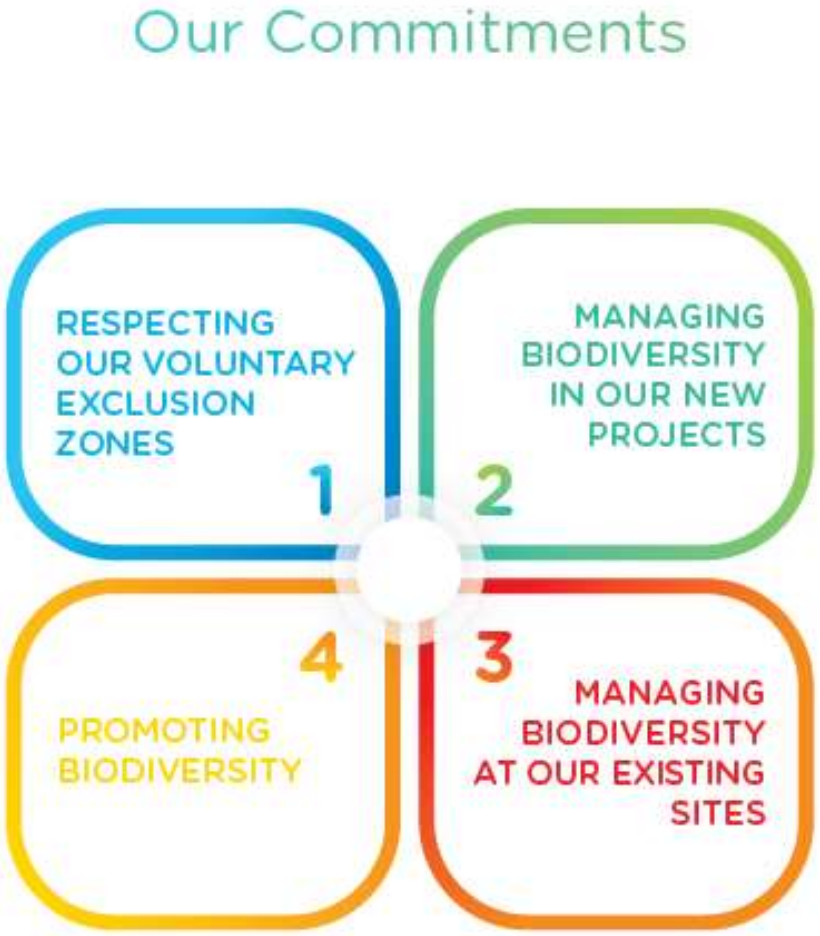


TotalEnergies' definition of biodiversity sensitivity – what key biodiversity features do we screen for?

Aime Rankin– Associate Programme Officer (UNEP-WCMC)

IMPORTANCE OF BIODIVERSITY SCREENING DATA & TOOLS IN TOTALENERGIES

- Voluntary exclusion zones: identifying UNESCO WHS
- Informing biodiversity level risks for projects
- Informing the Existing Sites 2025 programme
- Promoting biodiversity



BeST OVERVIEW

‘Biodiversity Screening Tool’ (BeST) is an internal screening Tool which uses Proteus, IBAT and other global GIS datasets. It aims to:

- Inform on potential **biodiversity risk** of a study area, to support decision-making
- Provide a **biodiversity sensitivity profile** based on key themes for a study area
- Provide a **harmonized approach** to biodiversity screening across the Company

BeST V4.0

The 4th version of ‘Biodiversity Screening Tool’ (BeST v4.0) is under development in 2022.

BeST v4.0 will have new data layers to improve assessment.

BeST v4.0 with see a revamping of some of its core parameters (i.e. STAR, Climate Change Vulnerability layer etc.).

ASSESSING SENSITIVITY USING THE BeST TOOL

Screening for sensitivity of a project area/ natural environment:

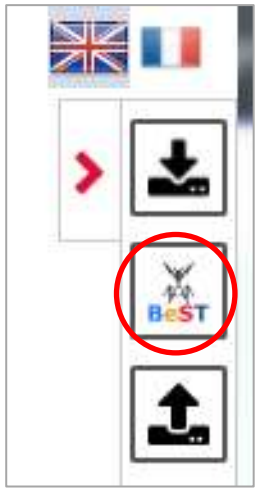
- **No go:** UNESCO WHS and Arctic sea ice
- **Legally Protected areas:** UNESCO WHS, protected areas (including IUCN Cat I – VI), Ramsar Sites
- **Sensitive areas of biodiversity:** Key Biodiversity areas, Alliance for Zero Extinction sites, highly threatened / unique ecosystems
- **IFC Critical Habitat**
- **Species conservation:** IUCN Red List threatened species (CR, EN, VU)
- **Region of conservation importance** hotspot biodiversity areas, wilderness areas, endemic bird areas
- **Habitat cover** (natural/ semi-natural, agriculture, artificial)

BeST WORKFLOW

Step 1.
Select Study Area & buffer
using GIS Tool

Step 2.
Run Extraction & download biodiversity data (zip)
using BeSt Widget

Step 3.
Upload data & launch BeST screening run & report



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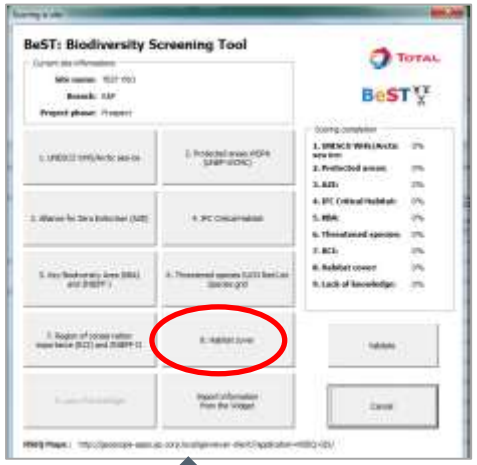
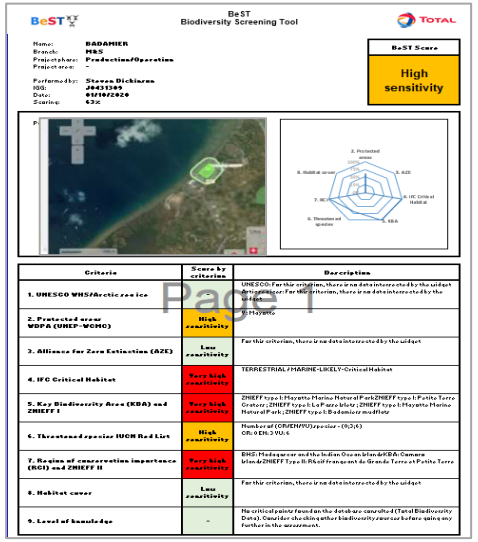


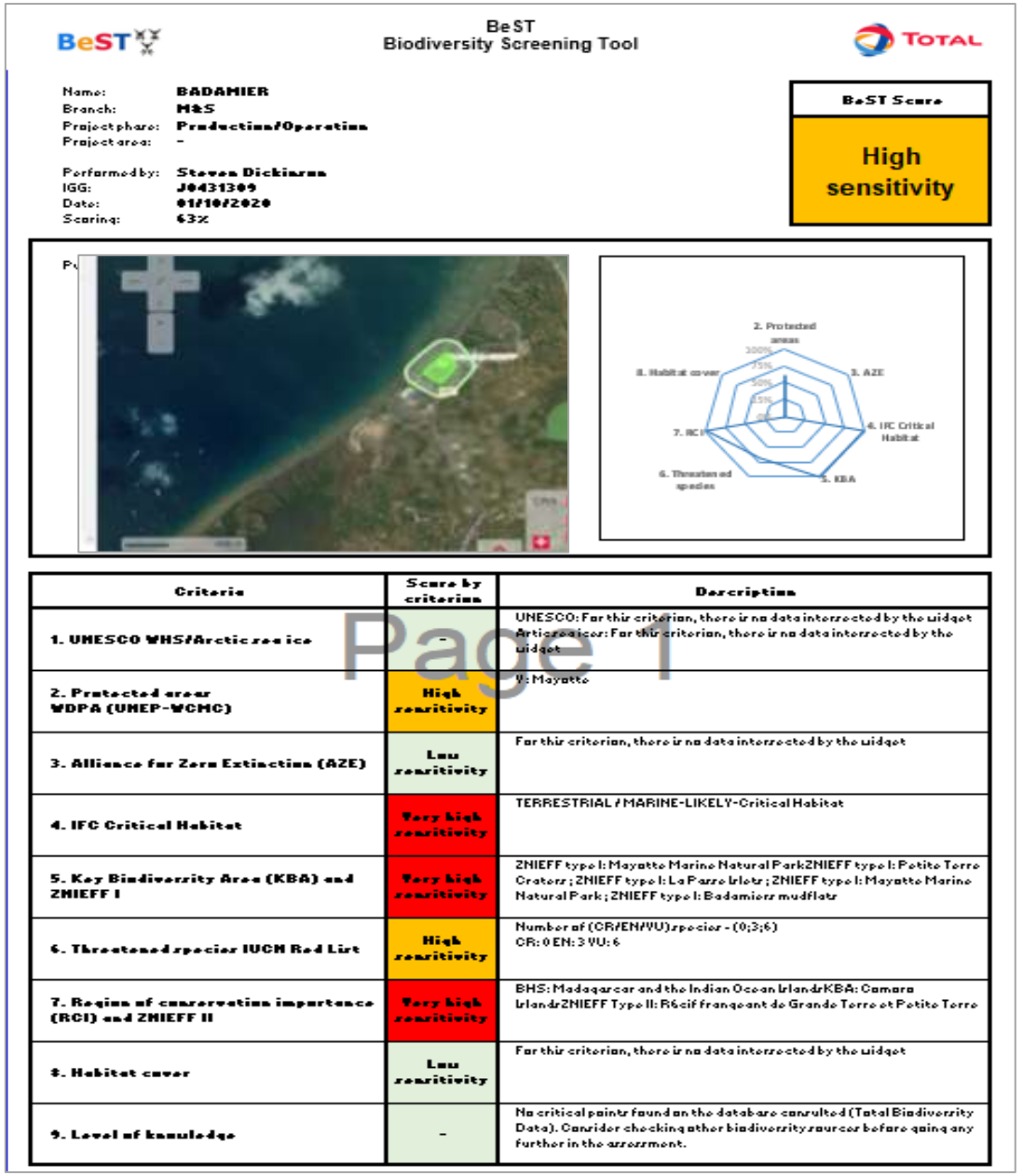


ASSESSING SENSITIVITY USING THE BeST TOOL

Low sensitivity (D : 1-24%)	Moderate sensitivity (C: 25 - 49 %)	High sensitivity (B : 50 – 74%)	Very high sensitivity (A : 75 – 99%)	UNESCO WHS / Arctic sea ice	Warning
1- The site is not located (partially opr entirely) in a protected area 2- The species listed in the IUCN red lists are considered vulnerable (VU) 3- The site is mainly covered by modified habitats (e.g., industries, agricultural lands, artificial forests)	1- There is a protected area near the site, but there is non-significant potential impact on it 2- The species listed in the IUCN red lists are considered endangered (EN) or vulnerable (VU) 3- The site is covered by modified habitats, which do not have an ecological interest (e.g., non-primal forest, steppes, meadows)	1- The site is partially or entirely located in a protected area (categories IUCN III à VI) or International (Natura 2000, Man and Biosphere), or on a regulated zone at a local scale, on which the project could have a potential impact 2- The species listed in the IUCN red lists are considered critically endangered (CR), endangered (EN) or vulnerable (VU) 3- Very sensible ecosystems (e.g., primal forests, tundra, mangroves, wetlands, coral reefs) internationally known as "Key Biodiversity Areas" 4- The site is located in a "Potential" critical habitat	1- The site is entirely located in a protected area (categories IUCN Ia, Ib and II) or International (Ramsar), on which the project could have significant impacts 2- The species listed in the IUCN red lists are considered critically endangered (CR), endangered (EN) or vulnerable (VU) 3- The site is located in a "Likely" critical habitat	1- The Group made a commitment not to engage in oil and gas exploration or extraction operations at natural sites included on the UNESCO World Heritage List of June 4, 2013 2- TOTAL does not conduct any exploration activities of oil fields under sea ice in polar areas	1- There is a Lack of data, and the site is located into a Natural habitat type OR 2- The arctic sea ice or a UNESCO WHS site are within 5km from the study area

BeST: RATING AND PROFILE

- Report provides a BeST Score based on overall sensitivity
- Each criteria are listed and scored with a description for further information



BeST
Biodiversity Screening Tool

TOTAL

Name: BADAMIER
Branch: M&S
Project phase: Production/Operation
Project area: -

Performed by: Steven Dickinson
IGG: J0031309
Date: 01/10/2020
Scoring: 63%

BeST Score

High sensitivity

Criteria	Score by criterion	Description
1. UNESCO WHS/Arctic sea ice	-	UNESCO: For this criterion, there is no data intersected by the widget Arctic sea ice: For this criterion, there is no data intersected by the widget
2. Protected areas WDPA (UNEP-WCMC)	High sensitivity	1: Mayotte
3. Alliance for Zero Extinction (AZE)	Low sensitivity	For this criterion, there is no data intersected by the widget
4. IFC Critical Habitat	Very high sensitivity	TERRESTRIAL / MARINE-LIKELY-Critical Habitat
5. Key Biodiversity Area (KBA) and ZNIEFF I	Very high sensitivity	ZNIEFF type I: Mayotte Marine Natural ParkZNIEFF type I: Petite Terre Craters ; ZNIEFF type I: La Parre Islets ; ZNIEFF type I: Mayotte Marine Natural Park ; ZNIEFF type I: Badamiers mudflats
6. Threatened species IUCN Red List	High sensitivity	Number of (CR/EN/VU) species - (0;3;6) CR: 0 EN: 3 VU: 6
7. Regions of conservation importance (RCI) and ZNIEFF II	Very high sensitivity	BHS: Madagascar and the Indian Ocean IslandsKBA: Comoro IslandsZNIEFF Type II: Récif frangeant de Grande Terre et Petite Terre
8. Habitat cover	Low sensitivity	For this criterion, there is no data intersected by the widget
9. Level of knowledge	-	No critical points found on the databases consulted (Total Biodiversity Data). Consider checking other biodiversity sources before going any further in the assessment.

AVAILABLE DATASETS IN HSE MAPS (KOMPASS)

- Arctic sea ice
- UNESCO World Heritage sites
- World Database on Protected Areas (WDPA)
- Priority sites for biodiversity via IBAT
  - IUCN Red List species ranges
  - Key Biodiversity Areas
  - STAR metric
- Global Critical Habitat (IFC PS6) screening layer
- Marine and coastal datasets via Ocean+
- Natural areas of ecological fauna and flora interest (ZNIEFF)
- Ecological Land Units (USGS/ESRI)
- Intact forest landscapes
- Terrestrial Ecoregions of the World (World Biomes, WWF)

GROUP DISCUSSION

- How are you currently using biodiversity data within your role / area of the business?
  - At what stage of the project planning or implementation process?
  - Any case studies or examples you'd like to share of using the BeST Tool?
  - Any data limitations / considerations you've encountered?

IN SUMMARY

- Biodiversity can be mapped via species distribution, habitats/ecoregions and based on priorities.
- Datasets/platforms available through Proteus include WDPA, UNESCO World Heritage Sites, KBAs, IUCN Red List, STAR, Ocean+, Ocean Data Viewer etc.
- Be aware of the potential limitations when using biodiversity datasets.
- Absence of evidence is not evidence of absence.
- TotalEnergies uses the BeST Tool to assess sensitivity of a project. TotalEnergies Kompass HSE Maps and the Biodiversity Data Guide Book contains guidance on datasets (many of which are also available under Proteus).

Break (15 mins)

Defining Critical Habitat, as per IFC Performance Standard 6

Alfred Muge – Associate Programme Officer (UNEP-WCMC)

TotalEnergies

09 NOVEMBER 2022

ABOUT THIS TRAINING

- This training course was developed by UNEP-WCMC in consultation with TotalEnergies through the Proteus Partnership. It draws on material developed under the Proteus Partnership, and with reference to material co-developed by UNEP-WCMC and other organisations specifically for the energy sector.

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Defining Critical Habitat, as per IFC Performance Standard 6

Alfred Muge– Associate Programme Officer (UNEP-WCMC)

WHAT IS THE INTERNATIONAL FINANCE CORPORATION (IFC)?

IFC PERFORMANCE STANDARDS

PS1: Assessment and Management of E&S Risks and Impacts

PS2: Labour and Working Conditions

PS3: Resource Efficiency and Pollution Prevention

PS4: Community Health Safety and Security

PS5: Land Acquisition and Involuntary Resettlement

PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

PS7: Indigenous Peoples

PS8: Cultural Heritage

IFC PERFORMANCE STANDARD 6

Objectives

- To protect and conserve biodiversity
- To maintain the benefits from ecosystem services
- To promote the sustainable management of living natural resources
- Intended to inform IFC investment decisions

Many companies now use the concepts involved – even though they do not receive any IFC funding

ELEMENTS OF PS6

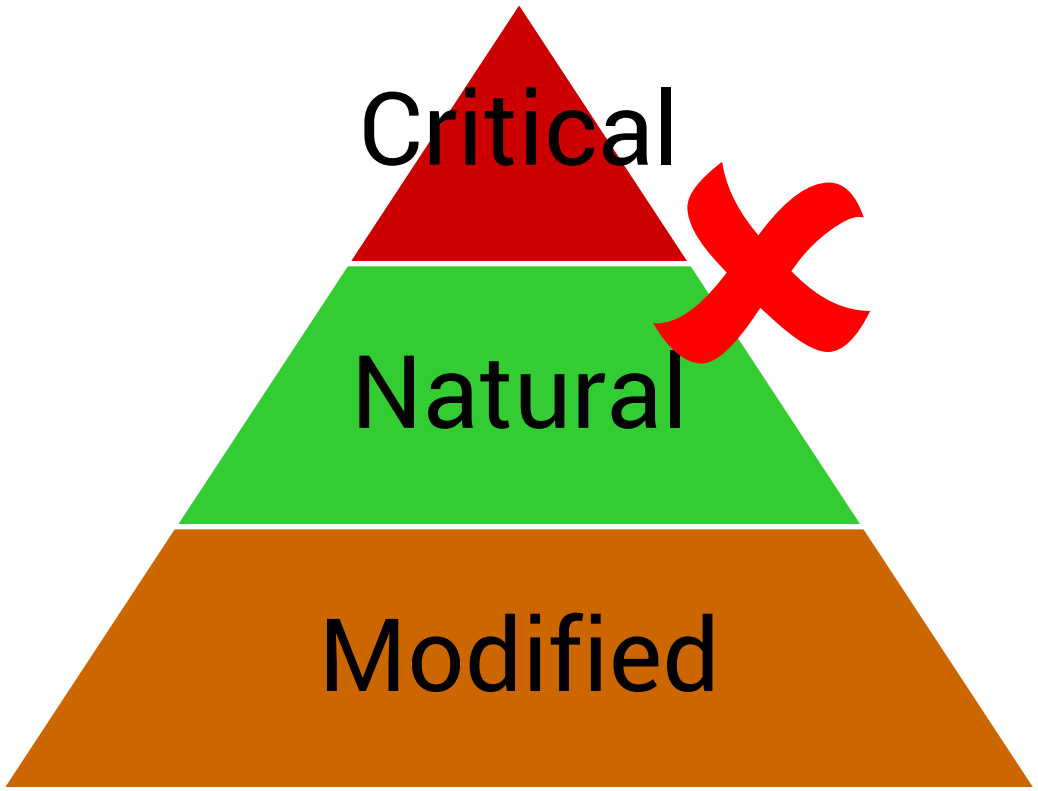
1. Protection and Conservation of Biodiversity
   - Habitats
   - Legally Protected and Internationally Recognised Areas
   - Invasive Alien Species
2. Management of Ecosystem Services
3. Sustainable Management of Living Natural Resources
4. Supply Chains

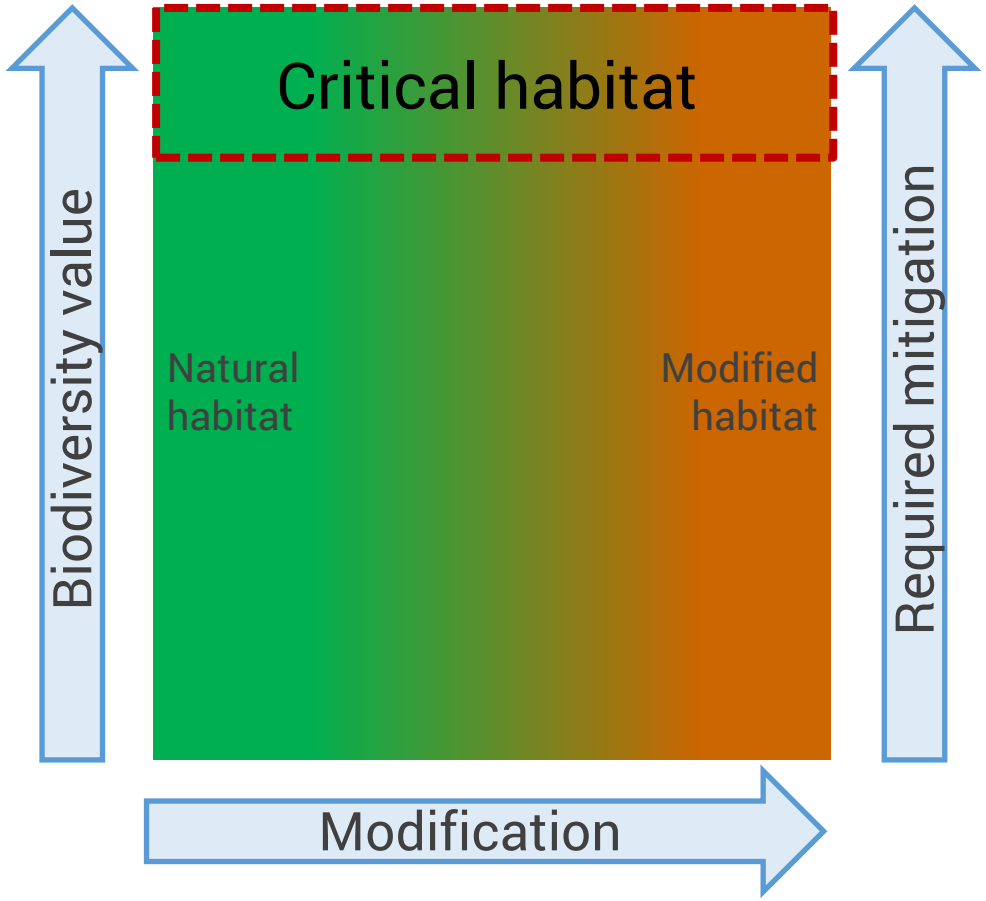
PS6 HABITAT CLASSIFICATIONS

Natural | Modified | Critical

“A terrestrial, freshwater, or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the non-living environment” - IFC PS6 2012

PS6 HABITAT CLASSIFICATIONS

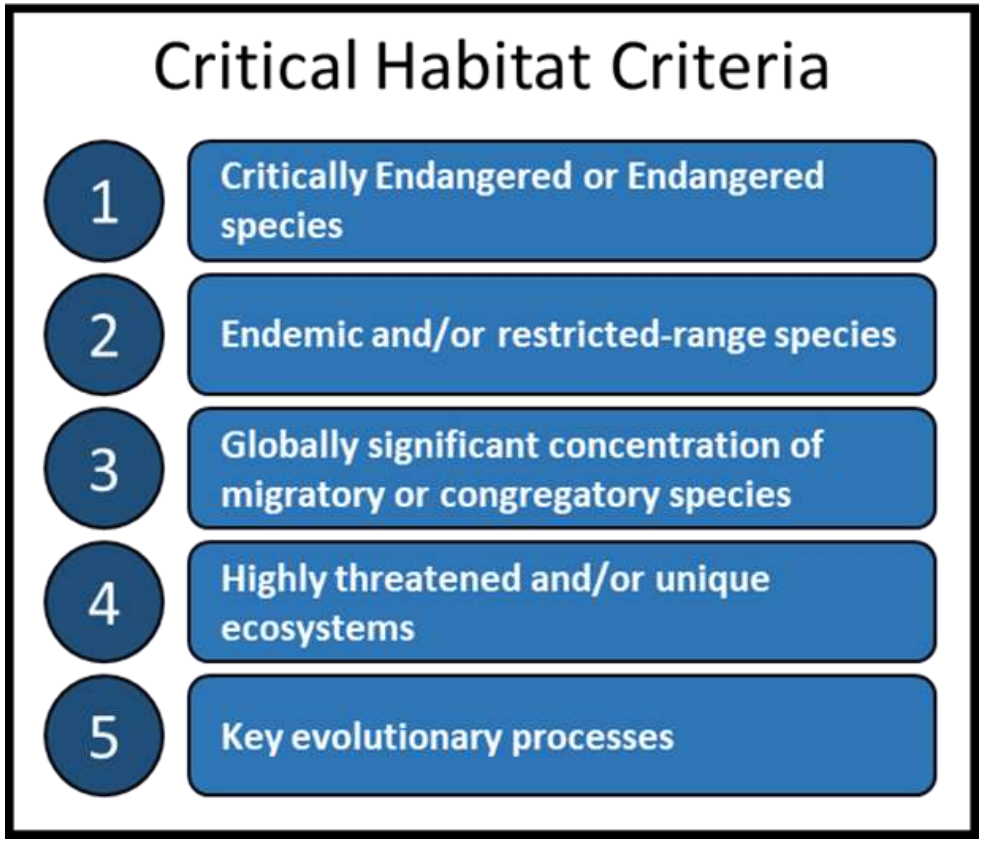




IFC PS6 CRITICAL HABITAT

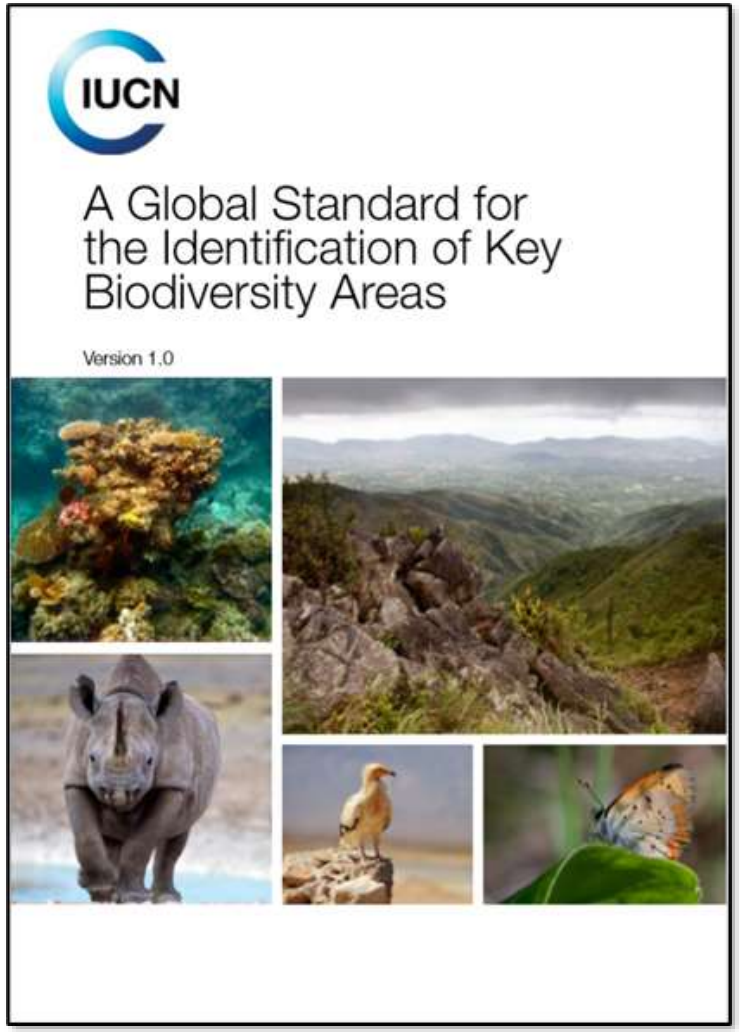
Critical Habitat:

- Areas of high biodiversity value, of significant importance to one of five criteria relating to species, ecosystems, and evolutionary processes.



IFC PS6 CRITICAL HABITAT

- Quantitative thresholds for 4 of the criteria have been established and align with the thresholds for Key Biodiversity Areas
- Key Biodiversity Areas are '*sites contributing significantly to the global persistence of biodiversity', in terrestrial, freshwater and marine ecosystems*.'
- Incorporate elements of biodiversity across genetic, species and ecosystem levels.



IFC PS6 CRITICAL HABITAT SCREENING LAYER

- Identifies areas as Likely or Potential Critical Habitat based on globally compiled datasets.
- 1km^2 resolution raster dataset with the ability to drill down into the underlying causes of Likely or Potential classification.
- Updates in progress

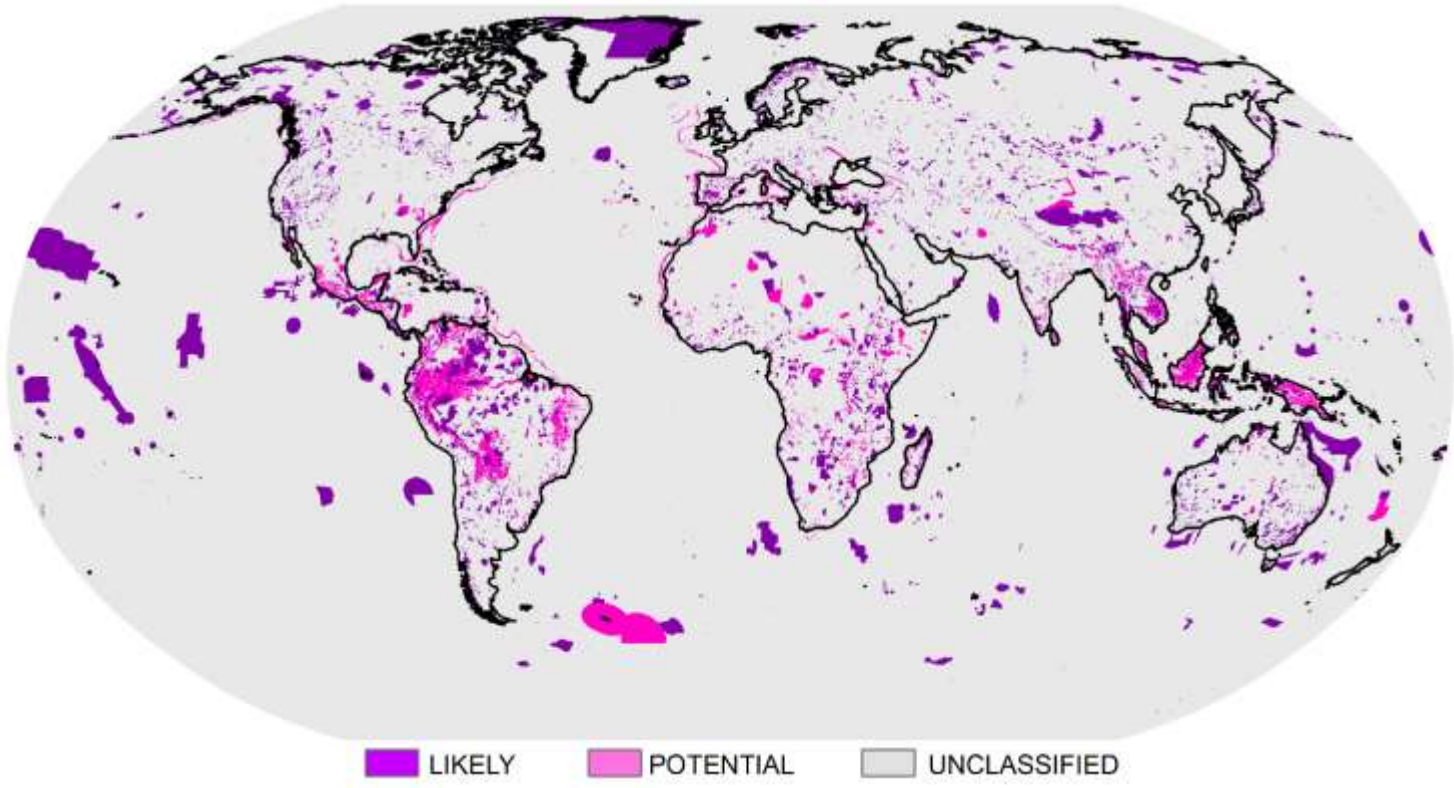


Image: Global distribution of likely and potential Critical Habitat within the Global Critical Habitat screening layer (version 1.0)

MENTI QUIZ

Go to www.menti.com and use the code 8885 0930

QUIZ

Natural, modified and critical habitats should be treated as a hierarchy of importance.

A. True

B. False

QUIZ

Which is not a criteria for critical habitat?

A. Critically endangered species
B. Restricted range species
C. Least threatened ecosystems
D. Key evolutionary processes

IN SUMMARY

- IFC Performance Standard 6 is not just about conservation of biodiversity.
- IFC PS6 has three components for the treatment and classification of habitats: Natural, Modified and Critical.
- Natural, Modified and Critical habitats occur in mosaics across the landscape.
- IFC PS6 Critical Habitat are areas of high biodiversity conservation significance.
- The Critical Habitat Screening Layer aligns with the IFC's definition of Critical Habitat.

proteus

The long-term Monitoring, reporting and verification

Alfred Muge – Associate Programme Officer (UNEP-WCMC)

TotalEnergies

09 NOVEMBER 2022

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OVERVIEW

- Overview of best practice guidance in monitoring and reporting
- Overview of current progress in indicator development
- TotalEnergies case study

Overview of best practice guidance in monitoring and reporting

Alfred Muge– Associate Programme Officer (UNEP-WCMC)

WHAT ARE MONITORING, INDICATORS AND VERIFICATION?

Monitoring	The continuous or frequent standardized measurement and observation of the environment (air, water, land/soil, biota), often used for warning and control
Indicators	A quantitative or qualitative factor or variable that provides a simple and reliable means to measure performance
Verification	The process of establishing the truth, accuracy, or validity of something

Sources: 1) OECD (2007) https://stats.oecd.org/glossary/index.htm; 2) OECD/DAC (2002); 3) Oxford Dictionaries https://en.oxforddictionaries.com/definition/verification

Monitoring

Alfred Muge– Associate Programme Officer (UNEP-WCMC)

WHEN DOES MONITORING TAKE PLACE?

Baseline study area → Scoping → Desk studies → Field studies → Baseline report → **Monitoring**

- After ESIA, project permitting and baseline assessment
- Helps to understand if:
  - Impact predictions were accurate
  - Biodiversity management interventions are being effective

Source: CSBI (2015) Good practices for the collection of biodiversity baseline data. Prepared by Gullison, R. E. et al. for the Multilateral Financing Institutions Biodiversity Working Group and the Cross-Sector Biodiversity Initiative. Accessed from http://www.csbi.org.uk/wp-content/uploads/2017/11/Biodiversity_Baseline_JULY_4a-2.pdf

GUIDANCE ON MONITORING

Monitoring should:

- Have a clear objective
- Help identify impacts/risk to biodiversity
- Consider what methods/variables to use
- Use data collected in the field
- Involve data interpretation and report results
- Help inform adaptive management

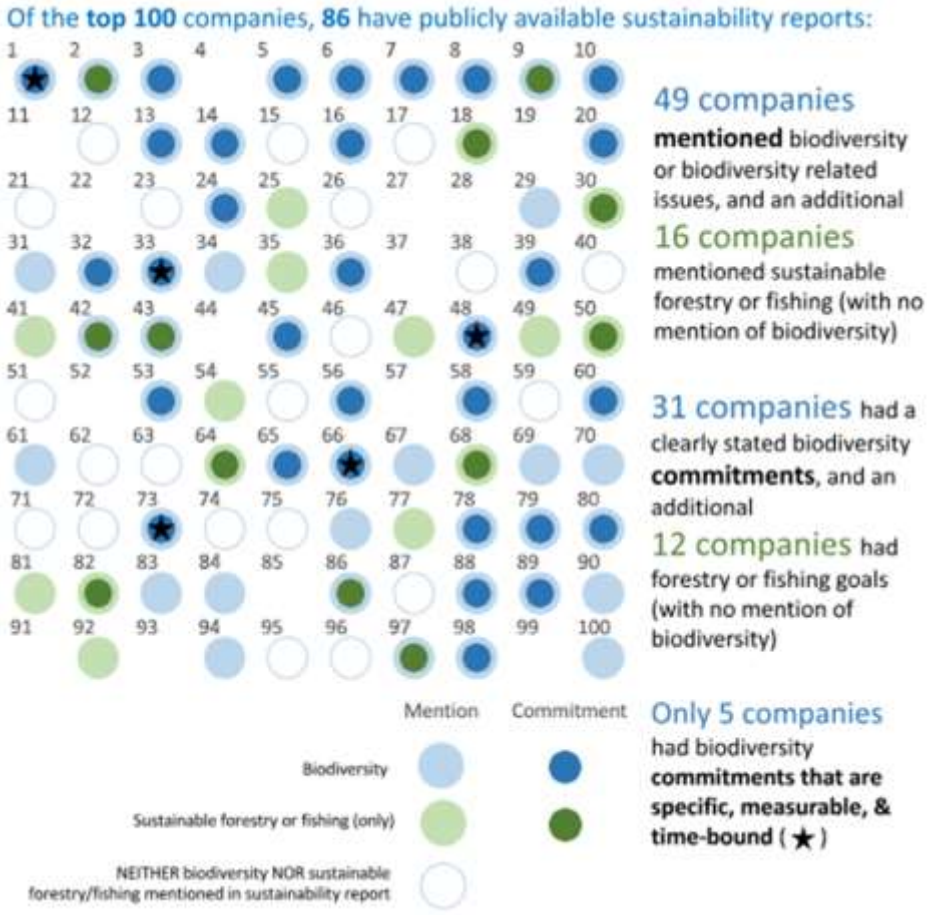
Source: IPIECA (2015) Biodiversity and ecosystem services fundamentals

Reporting

Alfred Muge– Associate Programme Officer (UNEP-WCMC)

GLOBAL BIODIVERSITY REPORTING

- Global reporting is hampered by a lack of broadly agreed measurement approaches
- Progress towards corporate biodiversity commitments are reported on qualitatively rather than quantitatively
- The Sustainable Development Goals most closely related to biodiversity are those most poorly reported against

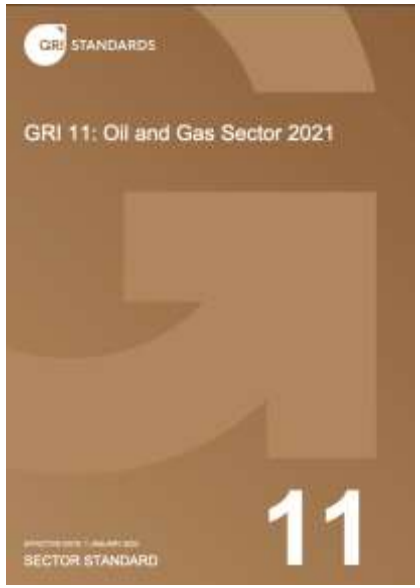


Source: Addison, P. et al (2018) Using conservation science to advance corporate accountability

CURRENT PRACTICE

External reporting schemes:

- GRI – Oil and Gas Sector Standard
- CDSB – Application guidance for biodiversity-related disclosures
- SASB
- CDP
- Voluntary Sustainability Reporting (IPIECA, API, IOGP)
- Dow Jones Sustainability Indices



CURRENT PRACTICE

Internal - Total Energies

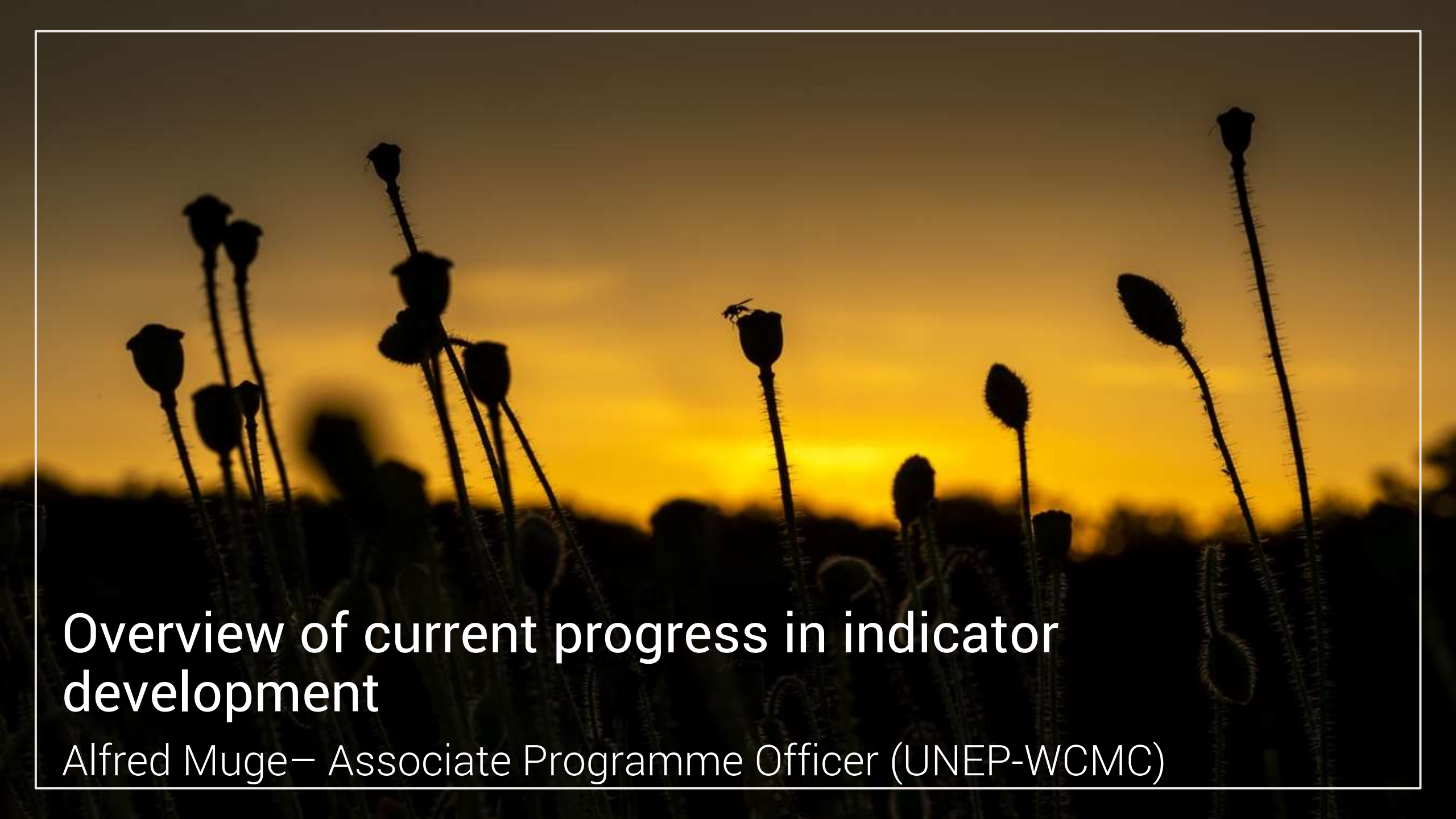
Protocols for onshore and offshore baseline assessments:

GS-GR-HSE-411 Environmental Baseline and Monitoring Studies: Onshore & Coastal Sites

Defines processes and requirements to conduct an EBS to establish a reference environmental status of a geographical area and to carry out environmental monitoring, for any onshore industrial project.

GS-GR-HSE-446 Environmental Baseline and Monitoring Studies: Offshore Sites (soon to be published)

Defines processes and requirements to conduct an EBS before any activity and for carrying out an environmental monitoring study (EMoS) during and after any activity, for an offshore industrial project.



Overview of current progress in indicator development

Alfred Muge– Associate Programme Officer (UNEP-WCMC)

TRENDS IN CORPORATE BIODIVERSITY INDICATORS

- Increasing demand for credible internal assessment, and external reporting and disclosure approaches driven by investors, policy makers and businesses
- Different reporting initiatives often have different information needs.
- Enhanced transparency and better reporting & disclosure.
- Significant progress made, with broad landscapes of metrics, methods and frameworks, including:
  - Aligning Accounting Approaches For Nature (Align)
  - Biodiversity Indicators For Site-based Impacts (BISI)

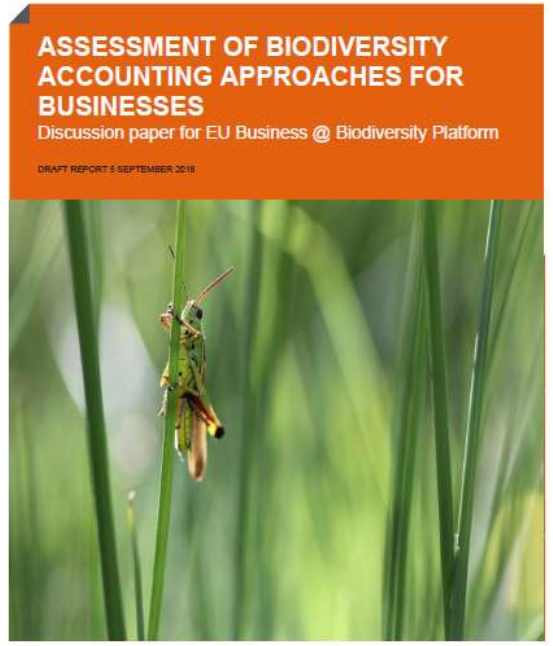
THE EU BUSINESS @ BIODIVERSITY PLATFORM

Initiatives on biodiversity indicators

- Work by Arcadis and the EU B@B Platform has convened ‘measurement approach’ developers and scoped their methodologies.

Assessment

- Many approached rely on ‘pressure-state’ models
- Whole value chain covered (but not by a single approach)
- Focus on impacts, rather than dependencies
- Some common principles shared between approaches



CORPORATE BIODIVERSITY MEASUREMENT LANDSCAPE

BUSINESS APPLICATIONS SUPPORTED	ORGANISATIONAL FOCUS					
	PRODUCT/ SERVICE	SITE/ PROJECT	SUPPLY CHAIN	CORPORATE	PORTFOLIO/ SECTOR	COUNTRY/ REGION
1.Current performance	ABD PBF	ABD LIFE BIE STAR BD BMS BPT	ABD LIFE BD PBF BIM BMS EPL	BD GBS BIE LIFE BIM BMS EPL	BFFI LIFE GBS	ABD LIFE
2.Future performance	PBF	LIFE STAR BPT	LIFE PBF	GBS LIFE	BFFI LIFE GBS	LIFE
3.Tracking target progress	ABD PBF	ABD BIE BD LIFE STAR	ABD STAR BD LIFE	ABD BIE BD LIFE GBS STAR	ABD LIFE BFFI STAR GBS	ABD STAR
4.Comparing options	ABD PBF	ABD STAR BIE	ABD LIFE BIM EPL	ABD BIM BIE GBS EPL	ABD GBS BFFI LIFE	ABD LIFE
5.Third party assessments/ ratings		LIFE		GBS LIFE	GBS LIFE BFFI	LIFE
6.Third party certification		BD LIFE BMS	BD LIFE BMS	BD LIFE BMS	LIFE	LIFE
7.Risk & opportunity assessment	ABD	ABD BIE BPT	ABD EPL	ABD BIE EPL	ABD	ABD
8. Biodiversity accounting		BD	BD	BD		

Source: Adapted from Assessment of Biodiversity Measurement Approaches for Businesses and Financial Institutions – EU B@B Platform

DECISION MAKING AND BIODIVERSITY INDICATORS

There are different decision types to which indicators can be applied including:

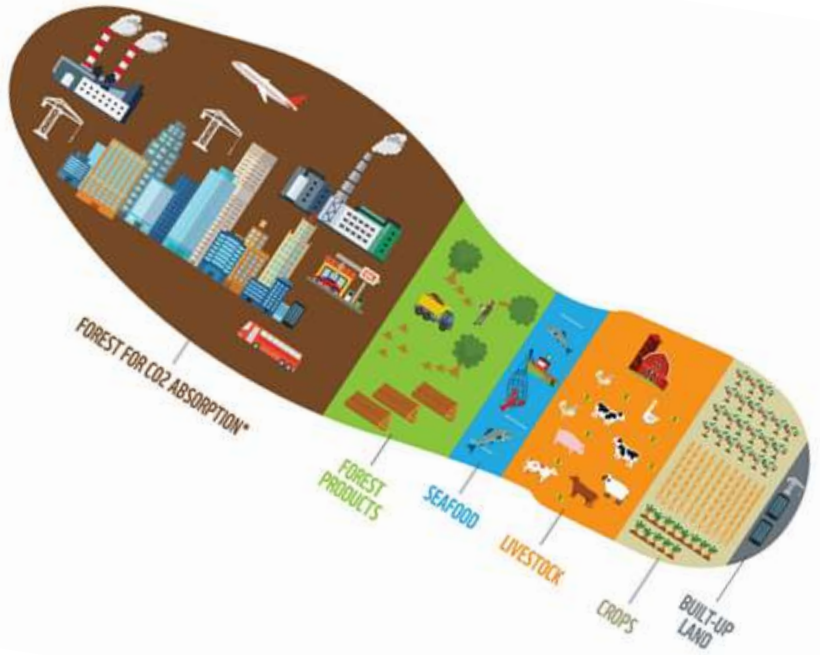
- Establishing corporate baselines and monitoring performance against targets
- Monitoring the effectiveness of biodiversity risk management actions
- Communicating progress to stakeholders
- Identifying risks across a portfolio
- Measuring and monitoring impacts and biodiversity management outcomes

GLOBAL BIODIVERSITY SCORE

Key features – Overall estimate of an organisation's biodiversity footprint through two-stage process:

1. Quantitative assessment of pressures caused by specific economic activities on biodiversity
2. Impacts of these pressures on ecosystems estimated using GLOBIO (Global Biodiversity model)

Business application – assessments of financial asset portfolios, corporate-level assessments (including along value-chain) and country-level assessments



cdc biodiversité | GROUPE Caisse des Dépôts

SPECIES THREAT ABATEMENT & RESTORATION (STAR) METRIC

Key Features – Measures contribution that investments can make to reducing species extinction risk through three-stage process:

1. Assess number and overlap of threatened species ranges at a given location, based on IUCN Red List of Threatened Species
2. Assess impact of pressures on those species
3. Assess effectiveness of pressure alleviation attributable to the investment

Business application – Additive and scalable metric applicable at site or portfolio level; allows comparison across investment targets for financial institutions, governments and businesses

THE BIODIVERSITY CONSULTANCY

IUCN

BirdLife INTERNATIONAL

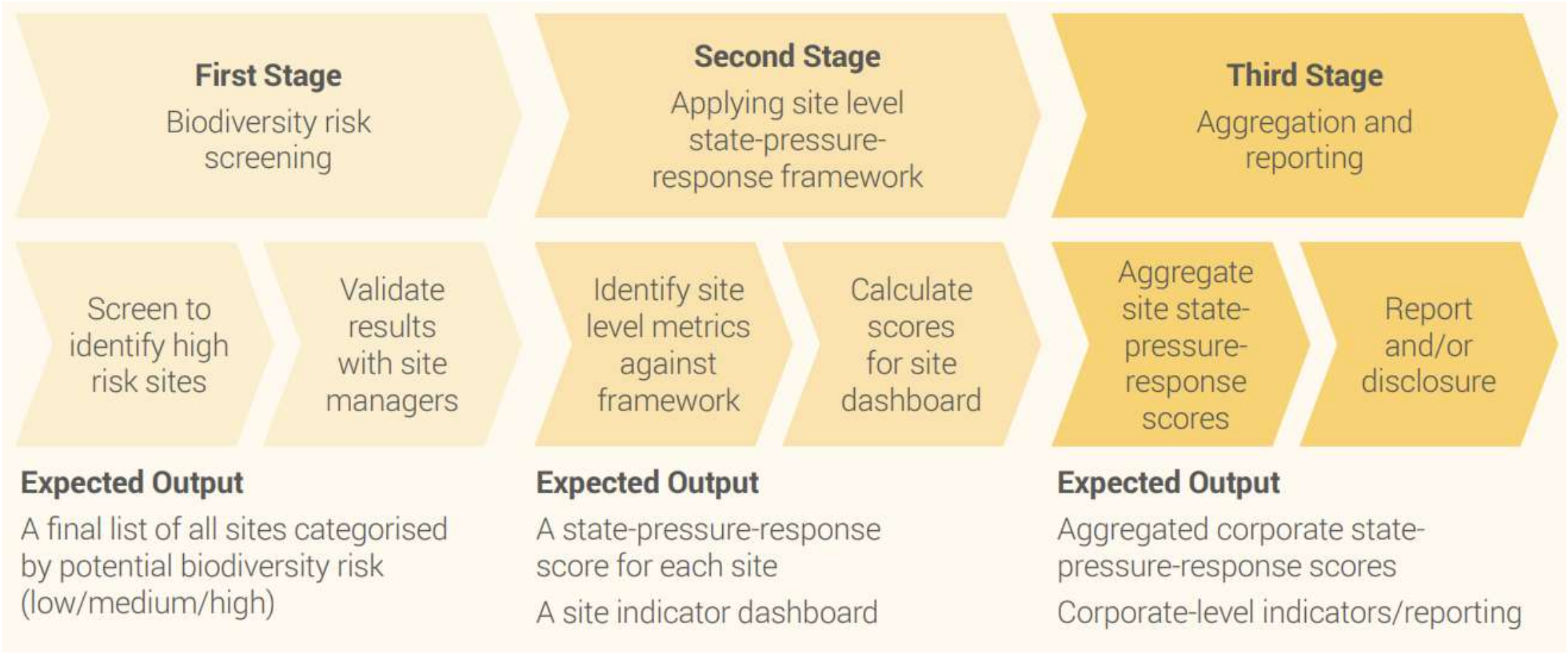
BIODIVERSITY INDICATORS FOR SITE-BASED IMPACTS

Key features – Monitors business risk and management response associated with impacts on biodiversity through three-stage process:

1. Global sensitivity screening of sites in portfolio
2. Development of site-level indicators based on a state-pressure-response (SPR) framework for priority biodiversity features at a given site
3. Aggregation of SPR scores

Business application – site level scores can be aggregated at portfolio level for corporate reporting; targeted at extractive companies but looking to expand to other sectors

BIODIVERSITY INDICATORS FOR SITE-BASED IMPACTS



STATE-PRESSURE-RESPONSE FRAMEWORK

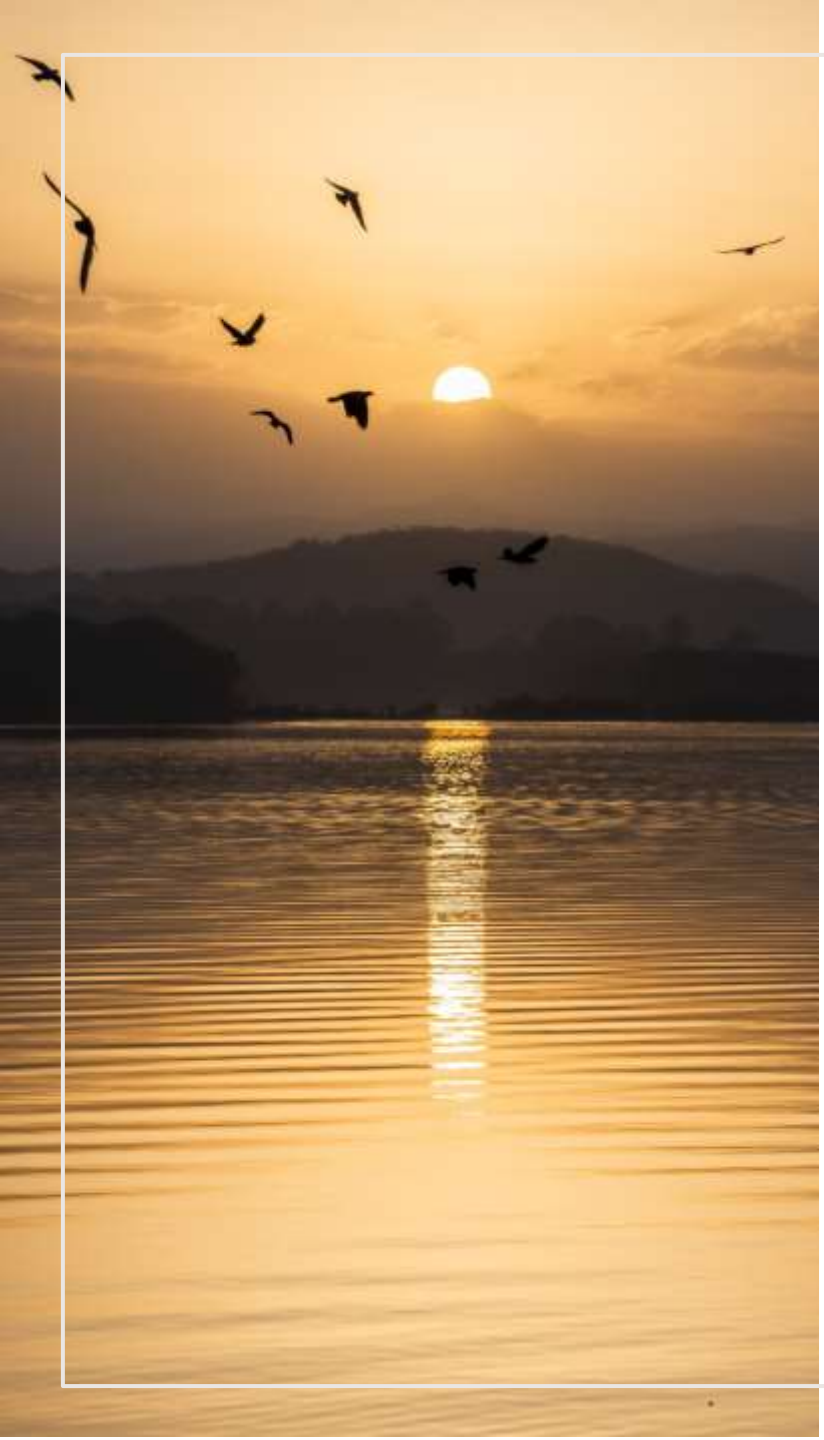
State: indicators for aspects of biodiversity from the site baseline and monitoring

Pressures: indicators for causes of biodiversity loss from EIA and BAP

Responses: indicators for policies or actions to prevent biodiversity loss from site environmental or biodiversity management system

State	Pressure	Response
• Habitat extent • Habitat condition • Tree cover • Local Biodiversity Intactness Index • Mean Species Abundance • Live coral cover • Species occurrence • Species abundance • Percentage of the global species population at site • Wildlife Picture Index	• Physical footprint • Spatial extent of operations • Presence of roads • Extent of habitat loss • Water abstraction • Non-greenhouse gas (GHG) pollution to air (e.g. NOx) • GHG emissions • Waste generation • Noise	• Avoidance of impacts in space or time • Minimisation of impacts • Habitat rehabilitation or restoration • Presence and implementation of management plants for species populations and habitats • Management of invasive species • Reduction of emissions or waste • Reduction of water abstraction • Education, awareness raising, training, capacity building • Alternative livelihood development • Financial expenditure on conservation and management

UNEP-WCMC, Conservational International and Fauna & Flora International (2020). Biodiversity Indicators for Site- based Impacts. Cambridge, UK.



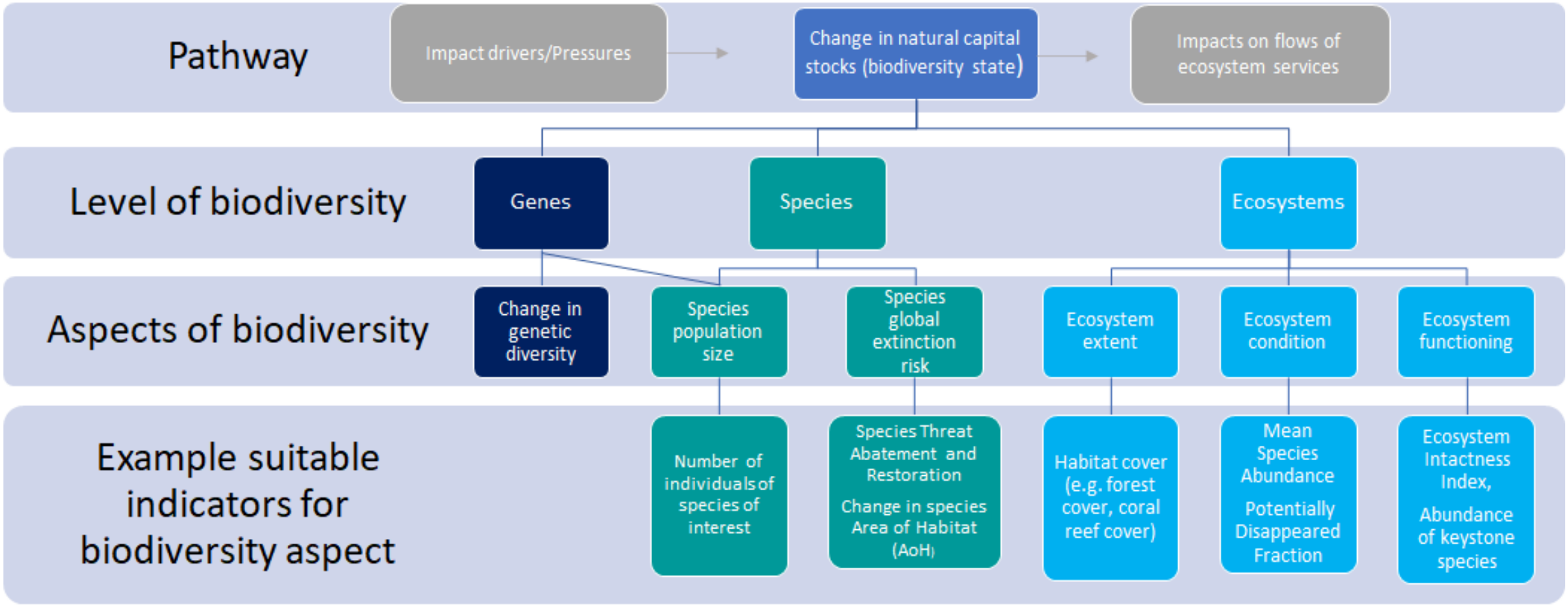
WHAT IS ALIGN?

- Improve clarity and build consensus
- Develop a generally accepted way for businesses to understand their relationship with nature
- Build from and link to existing initiatives and networks
- Guided by what businesses need and the lessons already learned from applying these in practice
- Complement policies within the EC

KEY OUTPUTS

Business engagement process	• To build **awareness** and promote **uptake** of existing and emerging biodiversity measurement approaches. • To facilitate **best practice exchange** and **test**, and/or **validate** proposals for standardised natural capital management accounting practices and guidelines.
Sectoral guidance and links to other initiatives	• To enable business **uptake** and **application** of validated measurement approaches by developing tailored sectoral guidance.
Standardised approach for corporate biodiversity measurement	• To propose a **standardised** approach for measuring biodiversity impacts and dependencies so that they are comparable, credible, practical, and enable integration.
Establish education, research and innovation needs	• To develop a comprehensive analysis of the **training and educational** needs and **research** and **innovation** needs.

ASPECTS OF BIODIVERSITY TO MEASURE AND ASSOCIATED INDICATORS



MENTI QUIZ

Go to www.menti.com and use the code 8885 0930

QUIZ

Monitoring and measurement are two closely related terms.

A. True

B. False

QUIZ

Which is not a stage of BISI?

A. Biodiversity risk screening
B. Project-level framework
C. Site-level framework
D. Aggregation and reporting

QUIZ

Align is applicable to site-based and supply chain companies, as well as the finance sector.

A. True

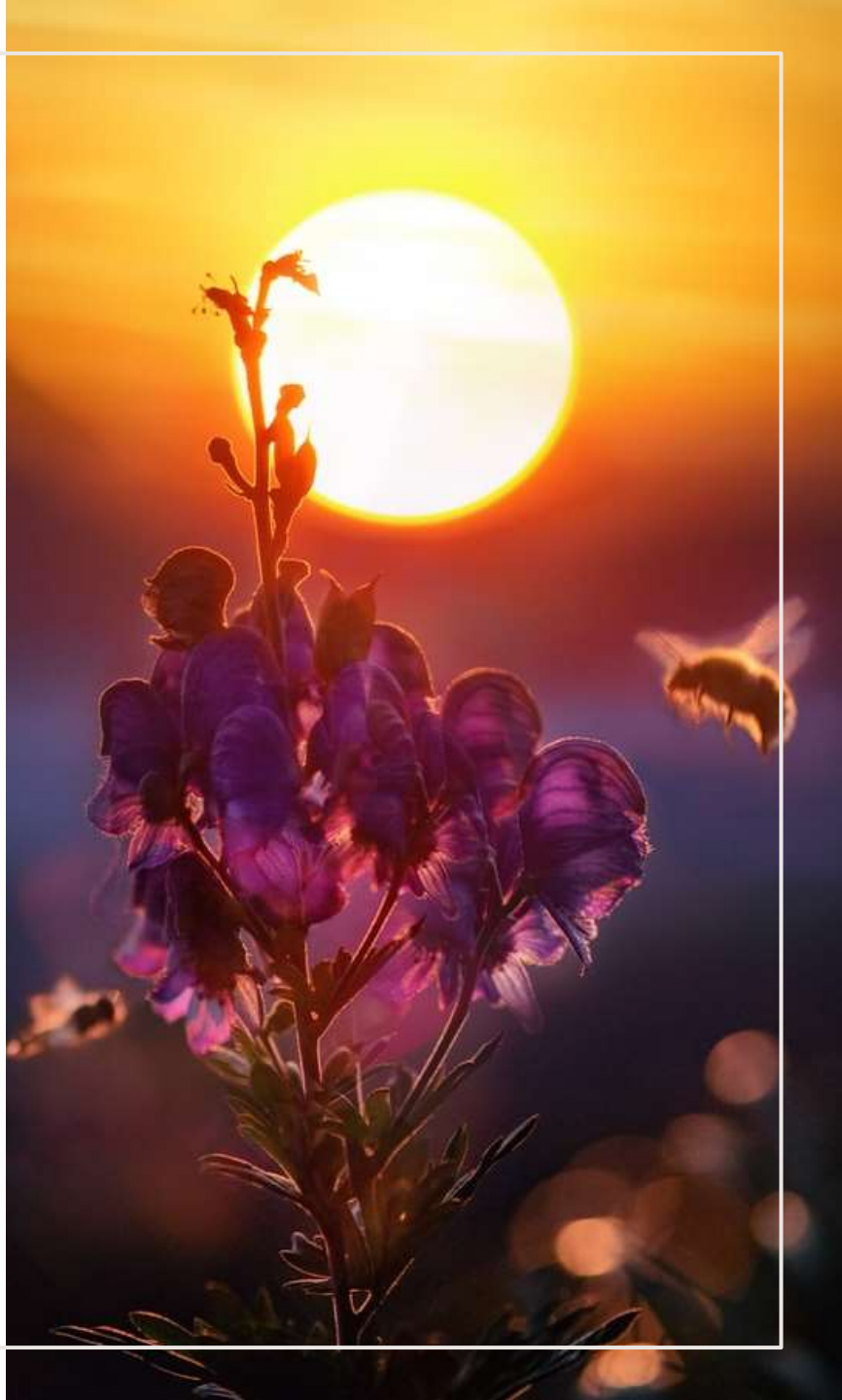
B. False

GROUP DISCUSSION

- What has your experience been with identifying risk and managing compliance with policies and standards?
- How are you currently approaching sustainability reporting and disclosures?

IN SUMMARY

- Impact assessment does not stop at permitting – monitoring is important
- Indicator methodologies are still developing
- Gap between site monitoring and corporate level indicators
- Assurance processes rarely encompass biodiversity
- Pressure growing to demonstrate management of biodiversity impacts

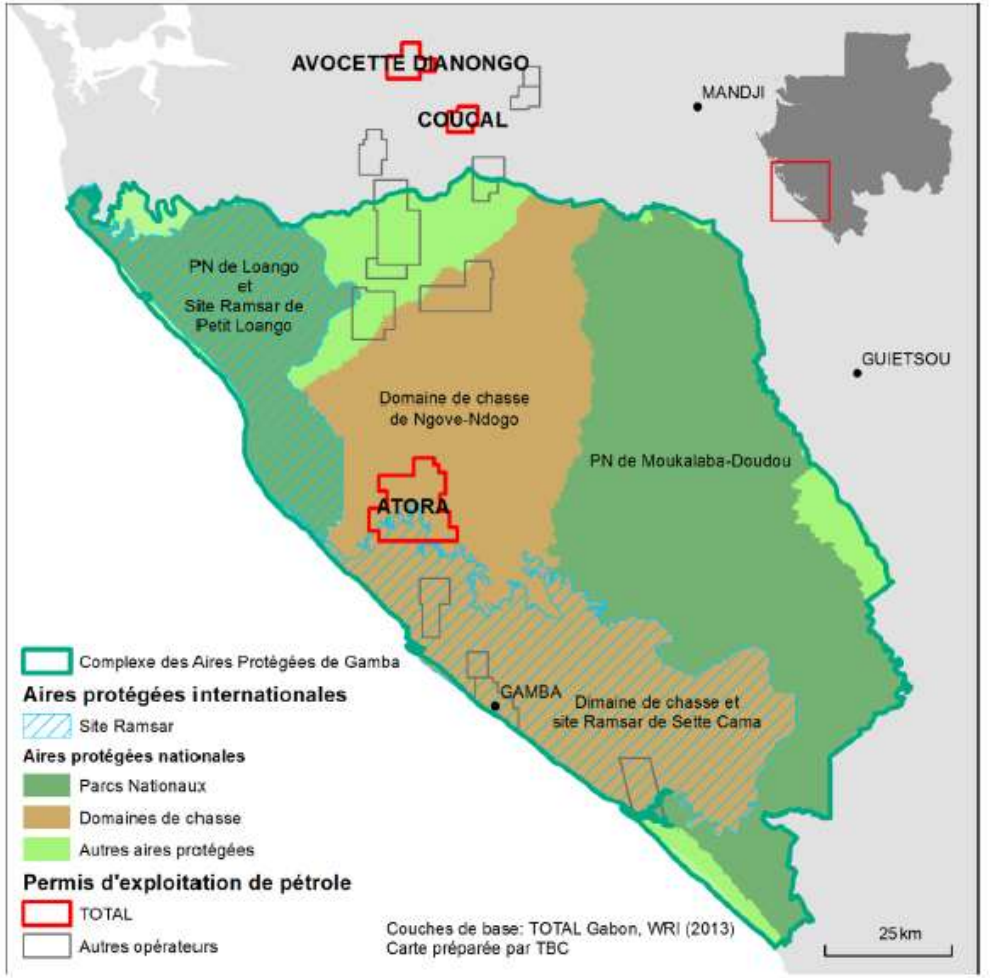


TotalEnergies Case Study: Biodiversity Action Plan for Atora Site, Gabon

Alfred Muge– Associate Programme Officer (UNEP-WCMC)

THE SITE - ATORA

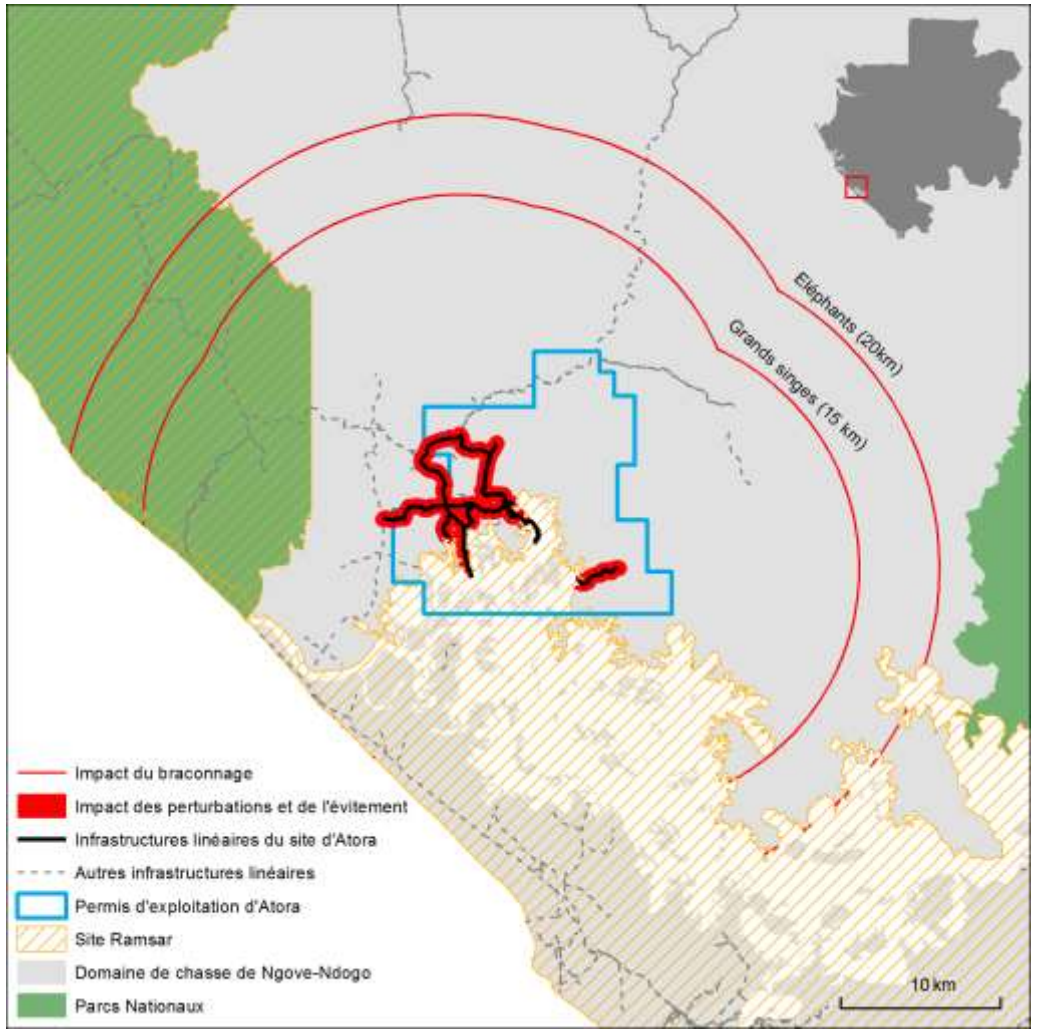
- The site was located in the heart of a protected area (Gamba Protected Areas Complex, IUCN IV).
- This area is recognised by the scientific community as a site rich in biodiversity which requires special attention for conservation.
- TotalEnergies prepared the Biodiversity Action Plan (BAP) for all industrial sites in or adjacent to IUCN I-IV or Ramsar sites.



WHY PREPARE THE BAP?

The objectives of the Atora BAP were to:

- Develop an action plan to mitigate the impacts of the site on biodiversity and compensate for residual impacts
- Communicate to stakeholders to manage the challenges posed by the exceptional biodiversity in Atora
- Identify biodiversity management performance indicators to monitor actions



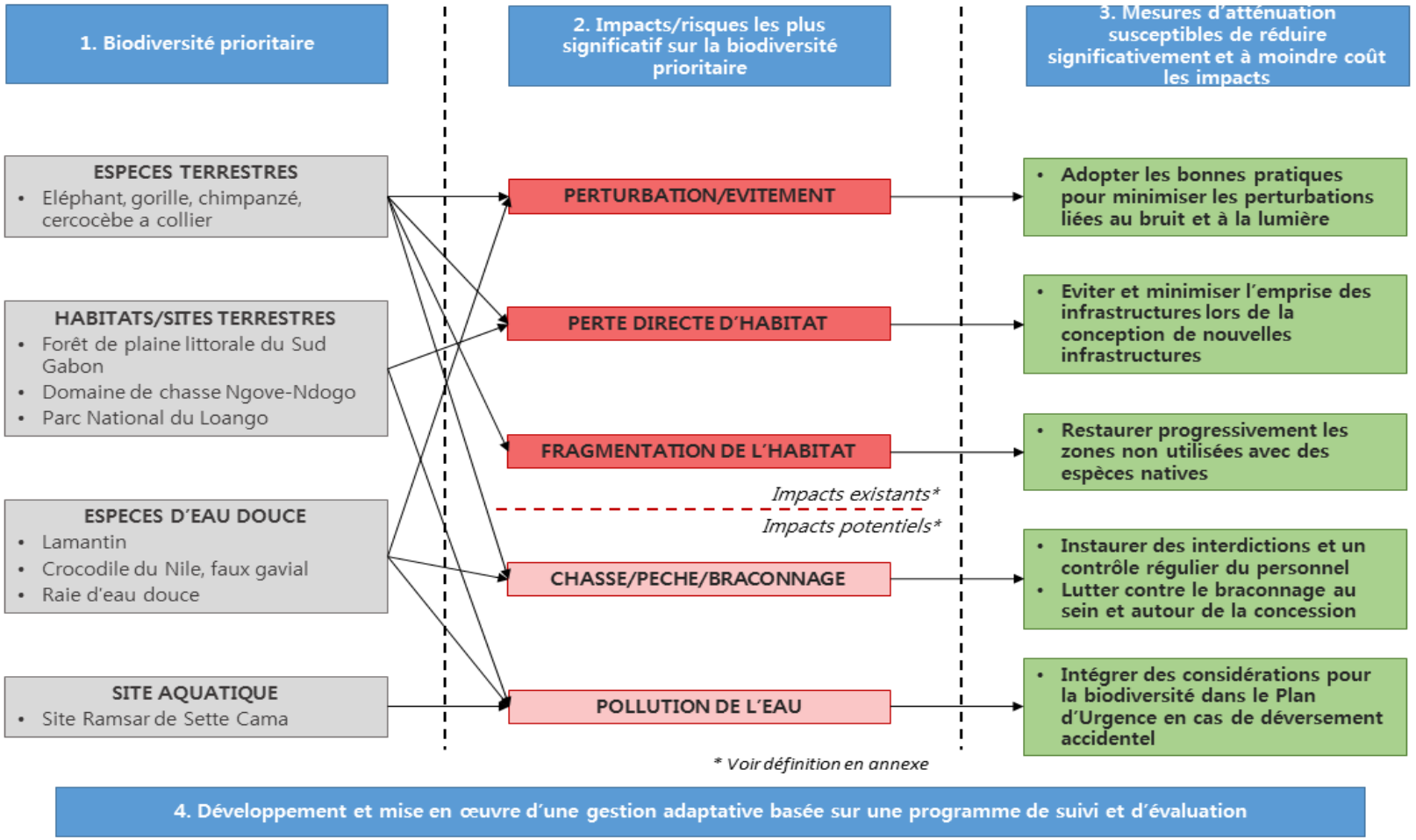
Mapping the impact modelling of the Atora site

SELECTING MONITORING INDICATORS

Monitoring indicators were selecting using the pressure-state-response framework

- **State indicators**: measures the state of biodiversity (e.g. density of elephants in the concession)
- **Pressure indicators**: measures anthropogenic pressures that threaten priority components of biodiversity (e.g. number of elephant carcasses per year)
- **Response indicators**: measures the implementation of the conservation actions planned in the BAP (e.g. number of patrols per month)

FINDINGS AND RECOMMENDATIONS

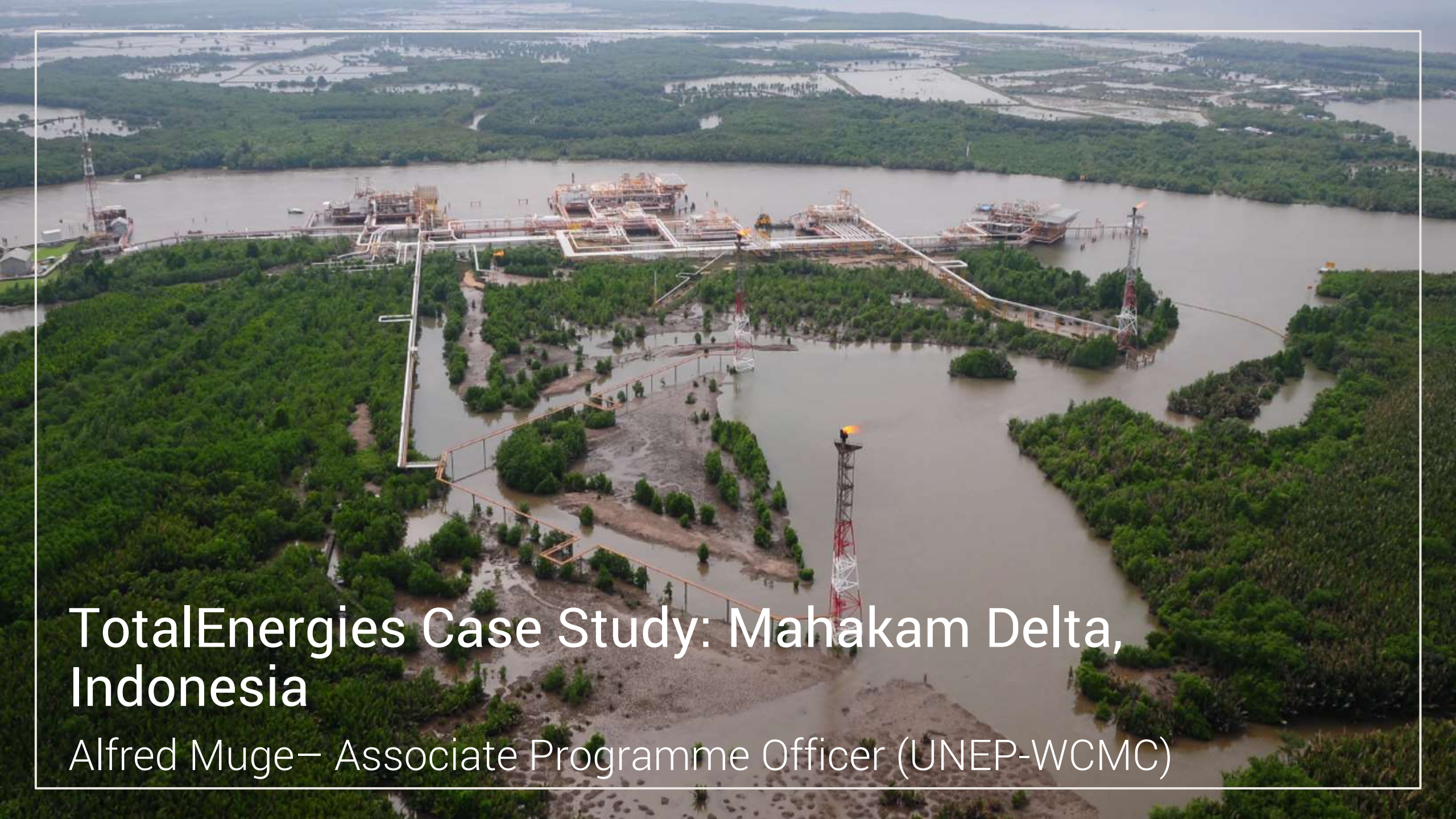


IMPLICATIONS

Balancing operations in areas that are particularly sensitive to biodiversity.

Recommendations given included:

- Consultative meeting to ensure applicability of the BAP for the Atora site
- Implement the BAP with a landscape-wide vision
- Implement a project to compensate for residual impacts on biodiversity
- Update the BAP as a part of M&E

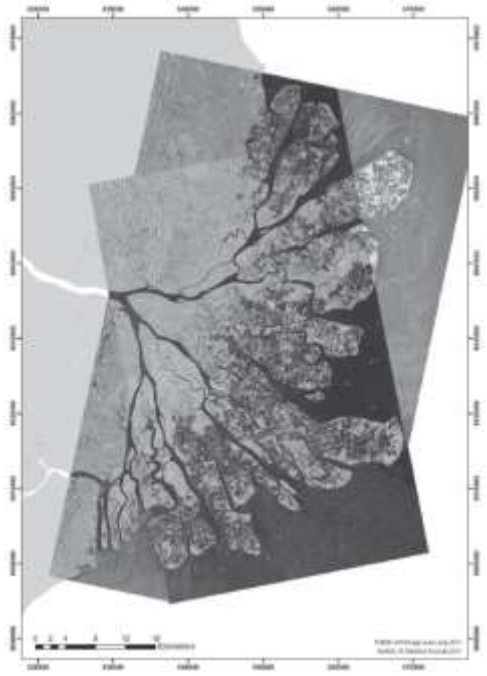


TotalEnergies Case Study: Mahakam Delta, Indonesia

Alfred Muge– Associate Programme Officer (UNEP-WCMC)

ESTABLISHING THE BASELINE

- Examining the zonation of the vegetation
- Assessing the vegetation cover
- Forest physiognomy
- Botanical inventory
- Assessing the fauna diversity
- Understanding vegetation dynamics
- Share finding with the scientific community



MONITORING BIODIVERSITY DURING THE PROJECT

- Comparing satellite and aerial imagery
- Forest inventories
- Adapt monitoring frequency to type of fauna and events of significant environmental changes
- Using indicators and protocol established during the baseline studies
- Results are incorporated into a Biodiversity Action Plan
- Monitoring human activity

LONG-TERM MONITORING AND RESTORATION

1. Understand the ecology of mangrove species potentially impacted by operations
2. Understand the natural hydrology of the site to be restored: flooding duration, height and frequency
3. Identify the obstacles to natural regeneration
4. Design the restoration program
5. Consider plantation in case of adverse conditions to natural recolonization
6. Long-term monitoring and protection of restored areas

TotalEnergies Case Study: Balhaf, Yemen

Alfred Muge– Associate Programme Officer (UNEP-WCMC)

REDUCING IMPACTS ON BIODIVERSITY

- TotalEnergies discovered rich coral reefs during preliminary studies for the Balhaf gas liquefaction plant.
- TotalEnergies modified the facility's design, implemented measures to confine fine particles and turbidity from construction and transplanted certain coral colonies to avoid damage.
- The project was monitored by a scientific committee on biodiversity, including an IUCN member.

SUPPORTING BIODIVERSITY INNOVATION

- Coral reef restoration needed innovative solutions.
- TotalEnergies transplanted coral from one place to another to prevent damage to ecosystems close to their operational site.
- The transplantation method works but there are downsides.
- State-of-the-art REEF technology aims to bridge both gaps.

END OF COURSE SUMMARY

- Biodiversity encompasses all life on Earth. There are different ways we can map biodiversity.
- Many businesses impact and/or depend on biodiversity, either directly or indirectly.
- TotalEnergies has developed a number of approaches and initiatives in support of the biodiversity commitments.
- Proteus provides data and tools to support decision making for TotalEnergies.
- There are a number of approaches for businesses to measure their impacts on biodiversity.

MENTI QUIZ

Go to www.menti.com and use the code 8885 0930

QUIZ

What is your key takeaway from this training?

Open ended

QUIZ

What are the next steps to implement what you have learnt?

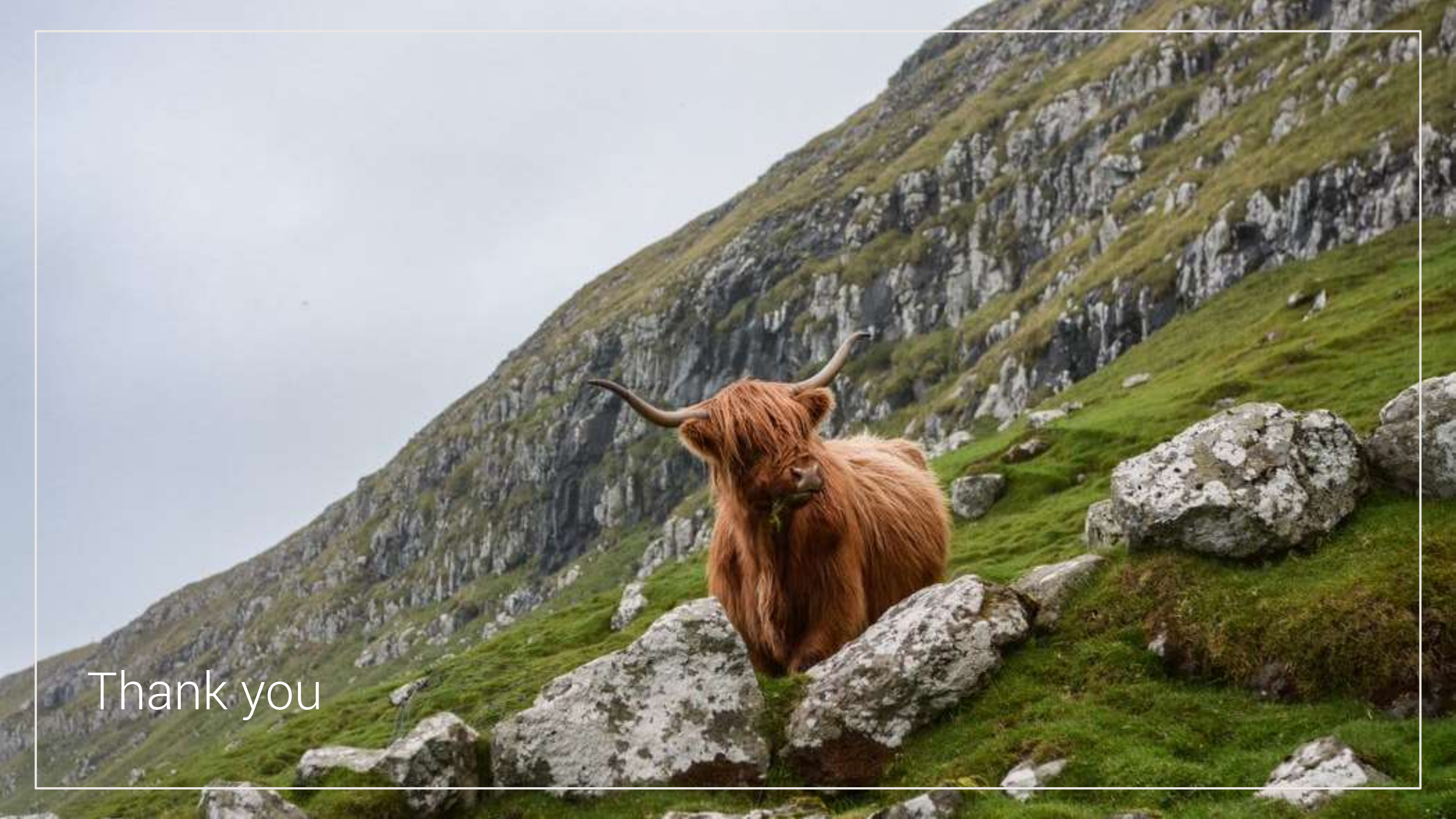
Open ended

The long-term: Monitoring, reporting and verification

TotalEnergies

UN environment programme WCMC

proteus


Thank you

UN environment programme

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