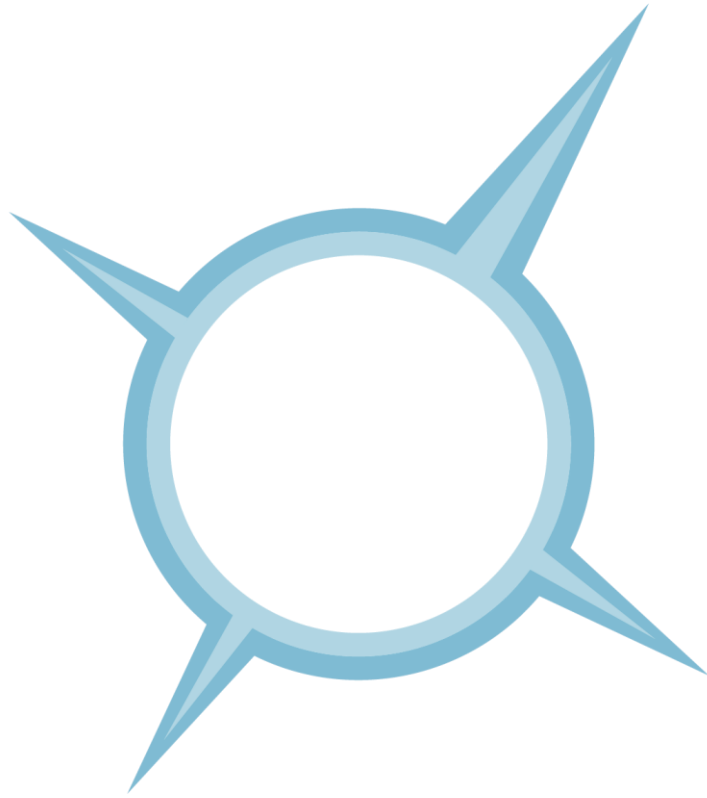




Proteus Annual Meeting

28th - 29th June 2016

David Attenborough Building, Cambridge, UK



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**United Nations Environment Programme
World Conservation Monitoring Centre**

The background of the slide is a composite image. The top half shows a lush mangrove forest with dense green foliage and prominent, arching prop roots extending over a body of water. The bottom half shows an underwater view of a vibrant coral reef with various types of coral in shades of green and blue.

Strengthening biodiversity conservation at the land & seascape scale

Naomi Kingston, Head of Protected Areas Programme, UNEP-WCMC

naomi.kingston@unep-wcmc.org



“Habitat fragments lose species after they are isolated because these islands are no longer part of a larger natural system (...) What we have learned was that conservation depends not only on the protection by also on connection.”

Lovejoy and Wilson, 2015

Landscape fragmentation, alteration, degradation

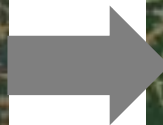


Images courtesy of Google Earth



Photo: Neil Burgess

2000

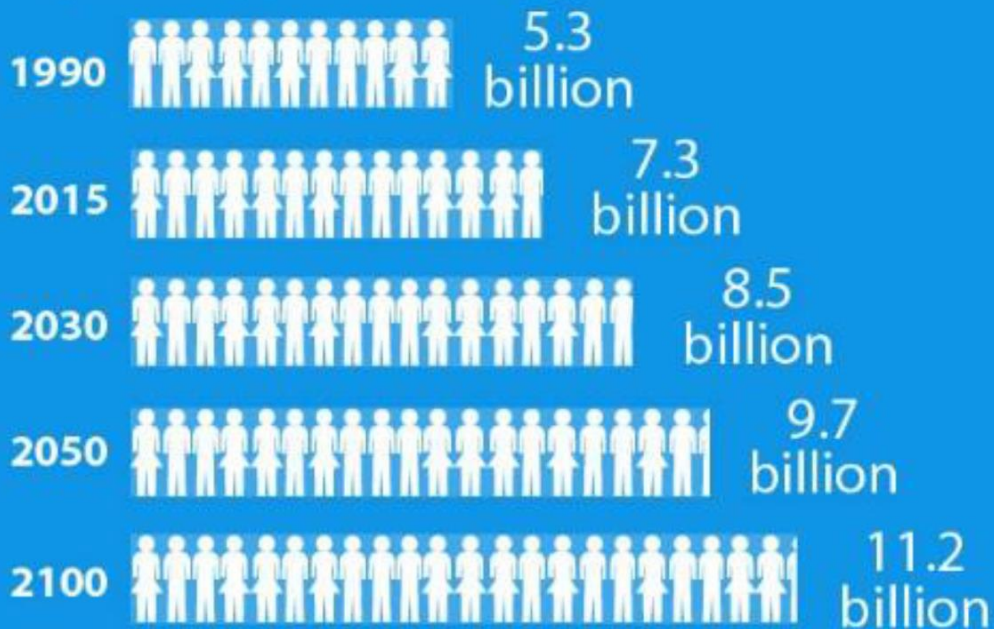


2010



World Population

Projected world population until 2100



Source: United Nations Department of Economic and Social Affairs,
Population Division, *World Population Prospects: The 2015 Revision*
Produced by: United Nations Department of Public Information



Why connectivity is important?

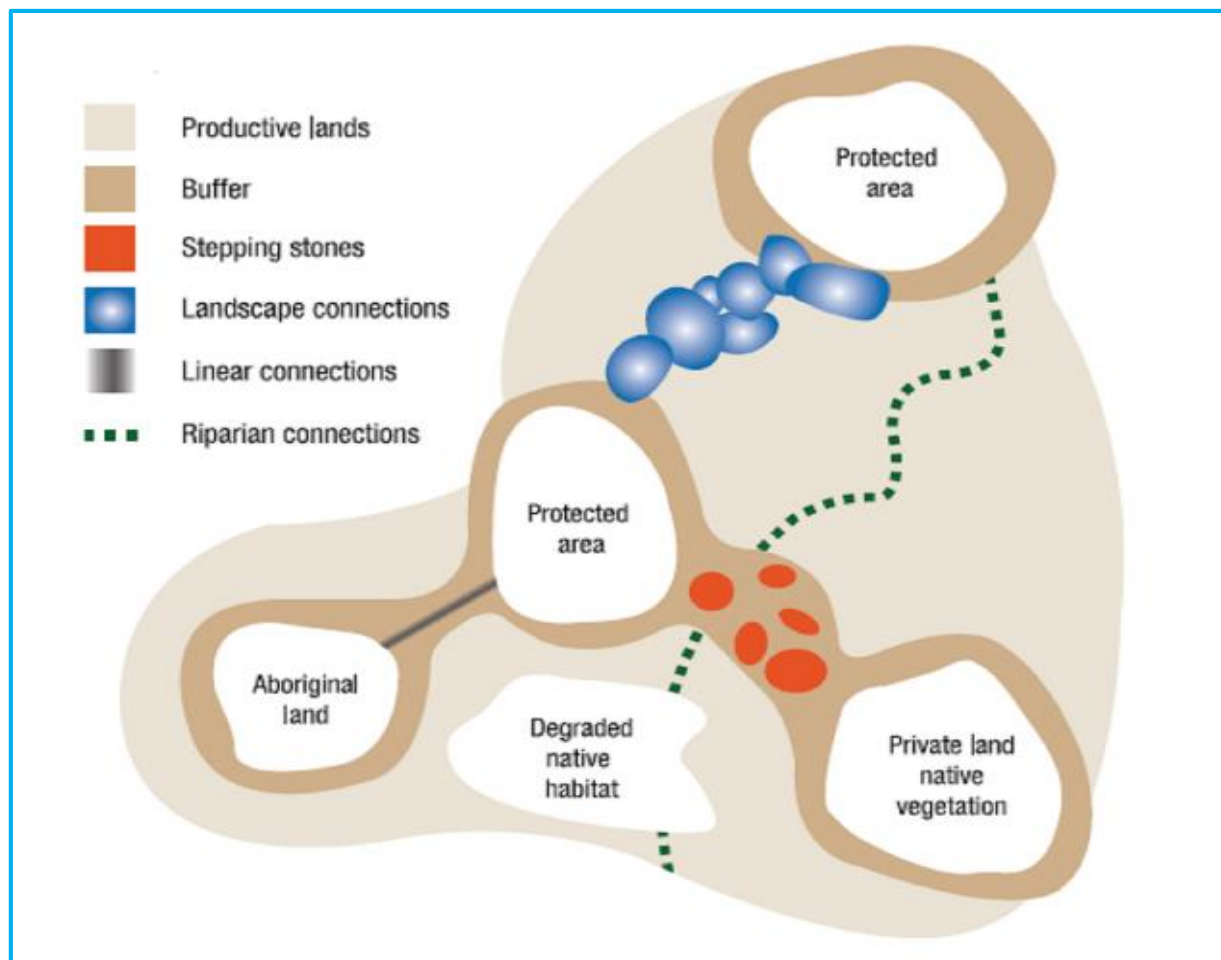
Nature:

- Maintenance of ecosystem functions
- Retention of habitat
- Protection of wild species
- Securing of migration routes
- Mitigation of climate change impacts

People:

- Access to valued places
- Securing supply of ecosystem services
- Long term local development opportunities (e.g. employment, stewardship payments etc.)

Areas for Connectivity Conservation



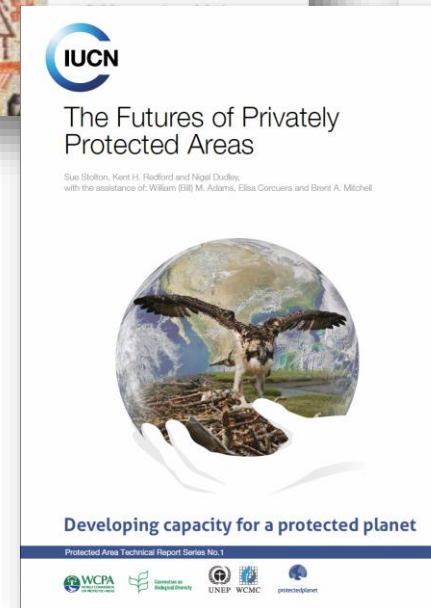
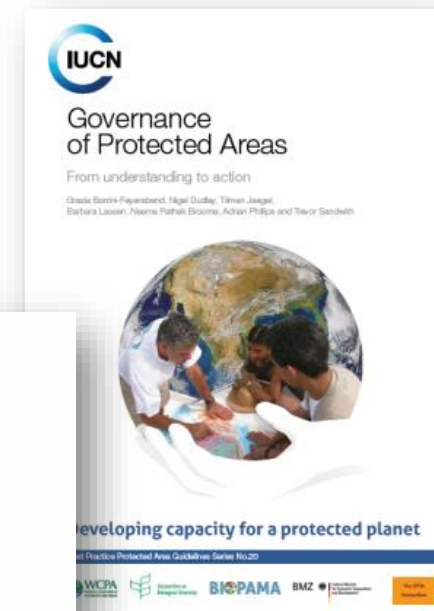
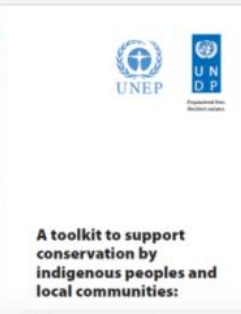
Adapted from the National Wildlife Corridors Plan (2012)

Recognition of conservation value of different governance models & land tenures

Indigenous peoples' and local communities conserved territories & areas

Privately protected areas

Other effective area based conservation measures



Example from Australia

Great Eastern Ranges Initiative

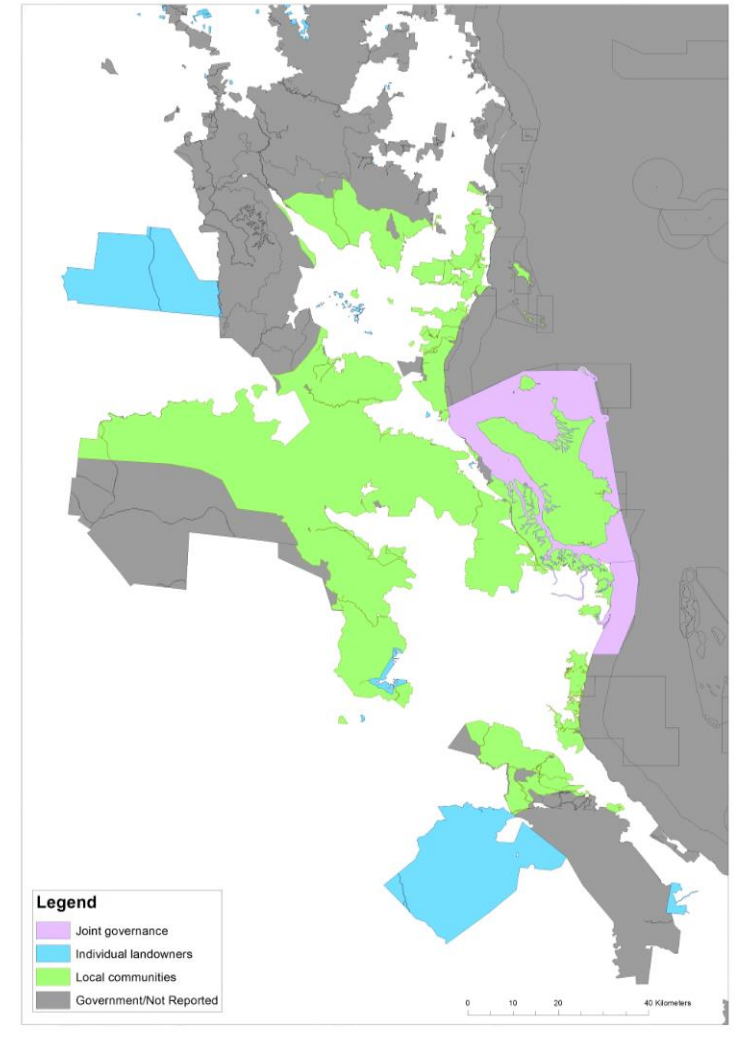


The Great Eastern Ranges Initiative is a landscape-scale conservation corridor that stretches along the eastern coast of Australia from Victoria to far north Queensland.

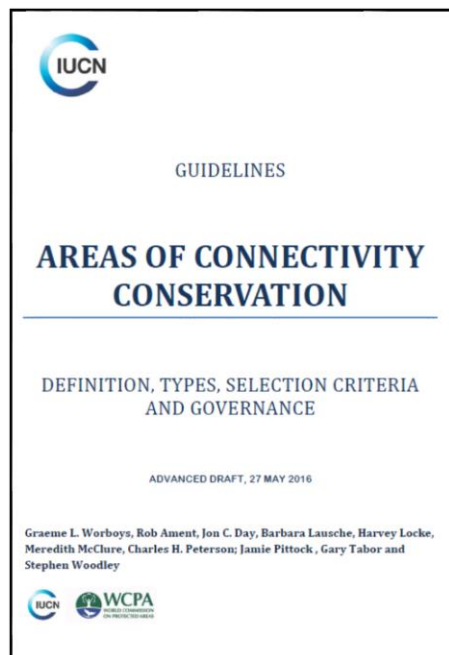
The Initiative is a strategic response to mitigate the potential impacts of climate change, invasive species, land clearing and other environmental stresses on an area that contains high biodiversity.

The Great Eastern

Ranges corridor stretches over 3,600 kilometers and encompasses the longest adjoining mountain forests and woodland systems in Australia. Nearly two thirds of the threatened species and three quarters of the vegetation communities found in Australia are in the Great Eastern Ranges corridor.



IUCN identify 4 types of Connectivity Areas



- 1 – Terrestrial**
- 2 – Freshwater**
- 3 – Marine**
- 4 – Air**

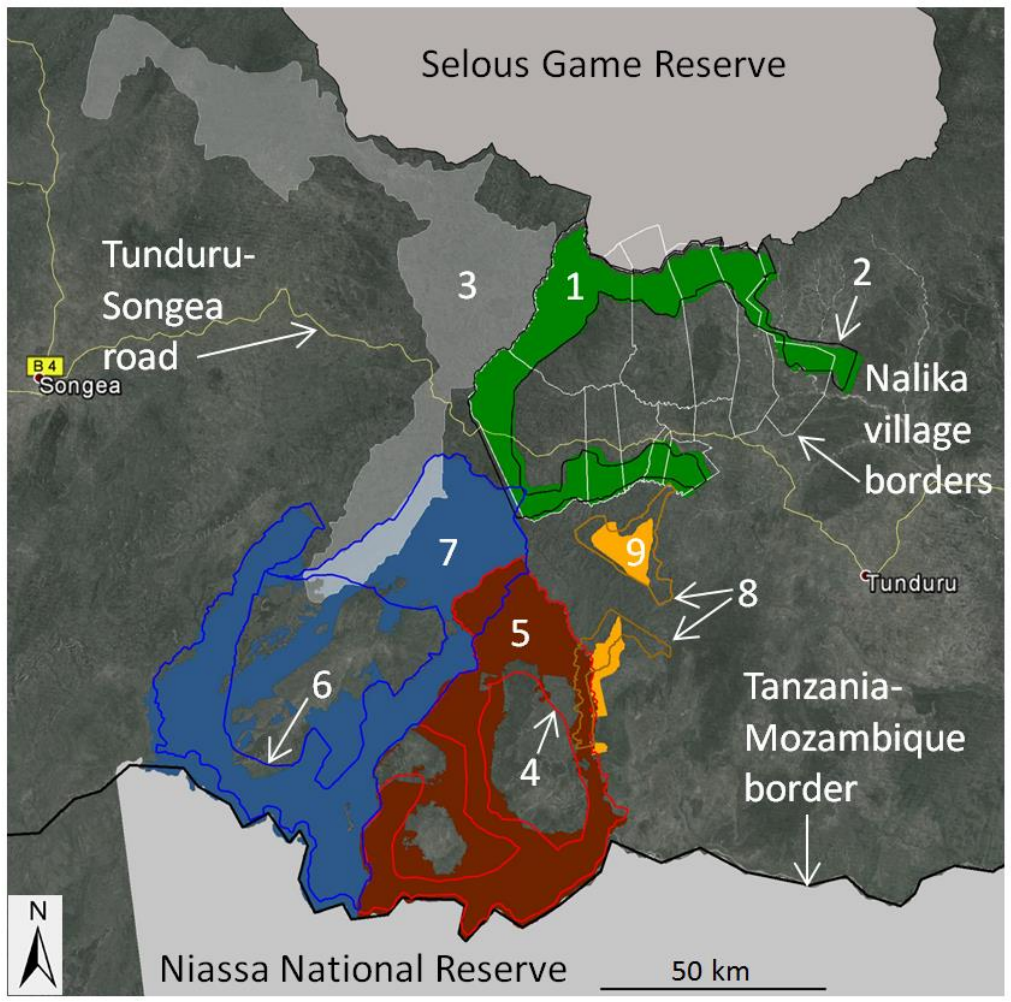


<http://wcmc.io/acc-guidelines>

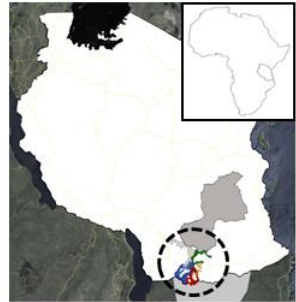
TYPE 1: TERRESTRIAL CCAs

TYPE 1a: Terrestrial species movement (ecological and evolutionary processes) CCA

TYPE 1b: Terrestrial large scale migration CCA



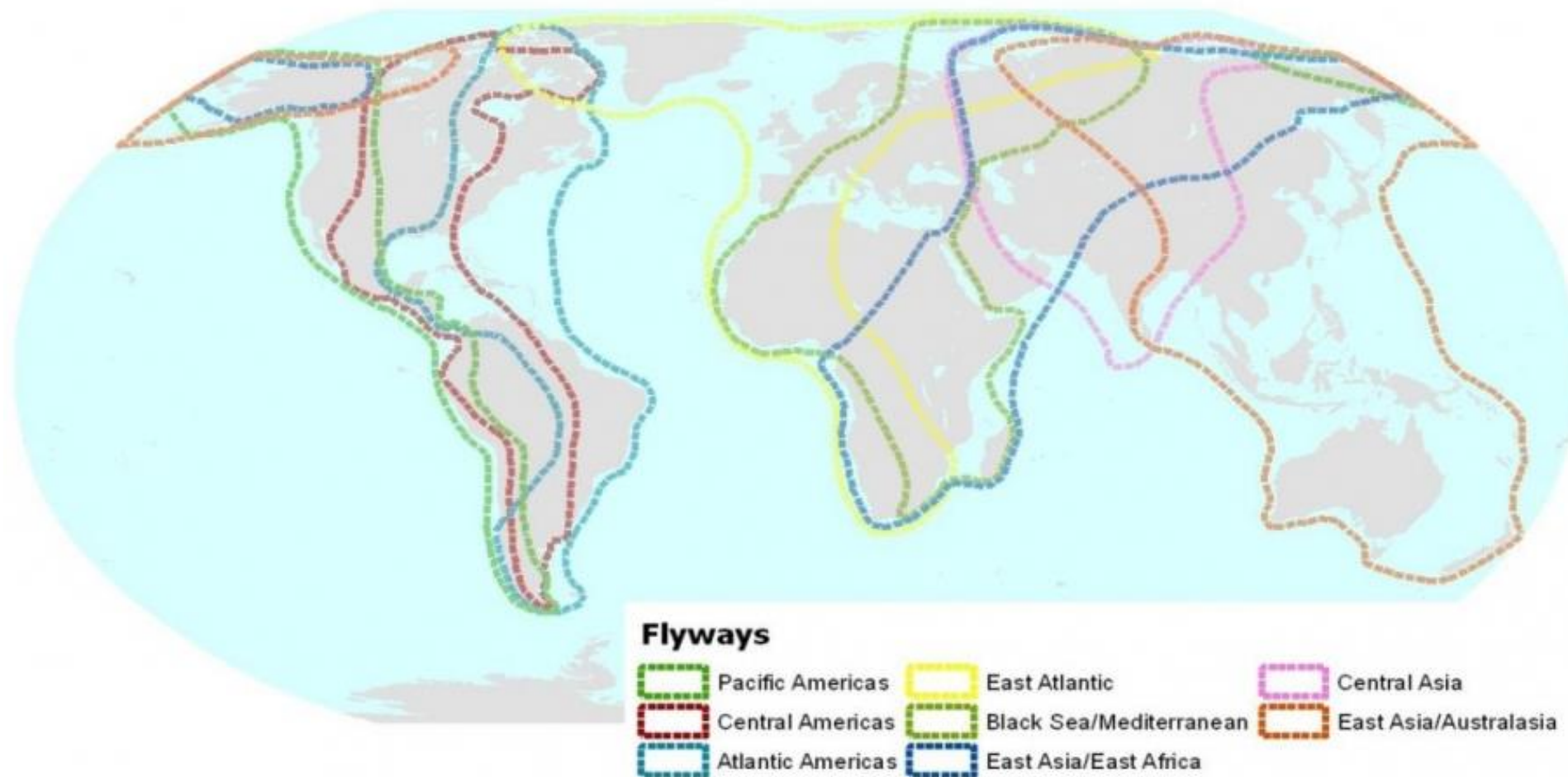
- 1. Nalika (Tunduru District Office)
- 2. Nalika (SNWPC/TAWIRI, WWF)
- 3. Mbarangandu (SNWPC/TAWIRI, WWF)
- 4. Kisungule (SNWPC/TAWIRI)
- 5. Kisungule (WWF)
- 6. Kindamba (SNWPC/TAWIRI)
- 7. Kindamba (WWF)
- 8. Chingoli (SNWPC/TAWIRI)
- 9. Chingoli (WWF)



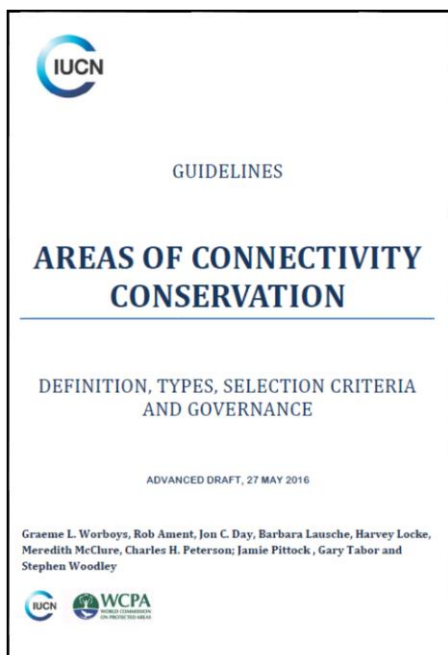
TYPE 4: AIR CCAs

TYPE 4a: Bird Flyway - Large Scale CCA

TYPE 4b: Flight Migration -Large Scale –(Non Birds) CCA



4 foundation concepts & 19 criteria



Strategic connectivity conservation					Connectivity integrity		Active and effective governance and management				Community involvement and benefits to people			
Strategic biodiversity conservation					Restoration of connectivity		Active management				Community involvement			
Interconnected protected areas					Working landscape or seascape		Governance - Co-ordination Group				Healthy communities			
Large-scale or significant area					Mostly undisturbed		Planned approach				Benefits for agriculture or fishery			
Climate change response							Research				Equity and benefits to people			
Species conservation							Instruments				Cultural connections			
Strategic restoration							Effectiveness evaluation							



UNEP Connectivity Conservation Strategy

To strengthen the protection of biodiversity, enhance the provision of ecosystem services, and increase resilience to climate change through better connected land and seascapes.

UNEP Connectivity Conservation Strategy

Outcome:

Effectiveness and governance of conservation areas is improved by mainstreaming connectivity conservation within national landscape/seascape planning systems

Output A:

Information and knowledge products on connectivity conservation produced and delivered

2015-2016

Output B:

Policy and legislative tools and methodologies for achieving connectivity developed and disseminated

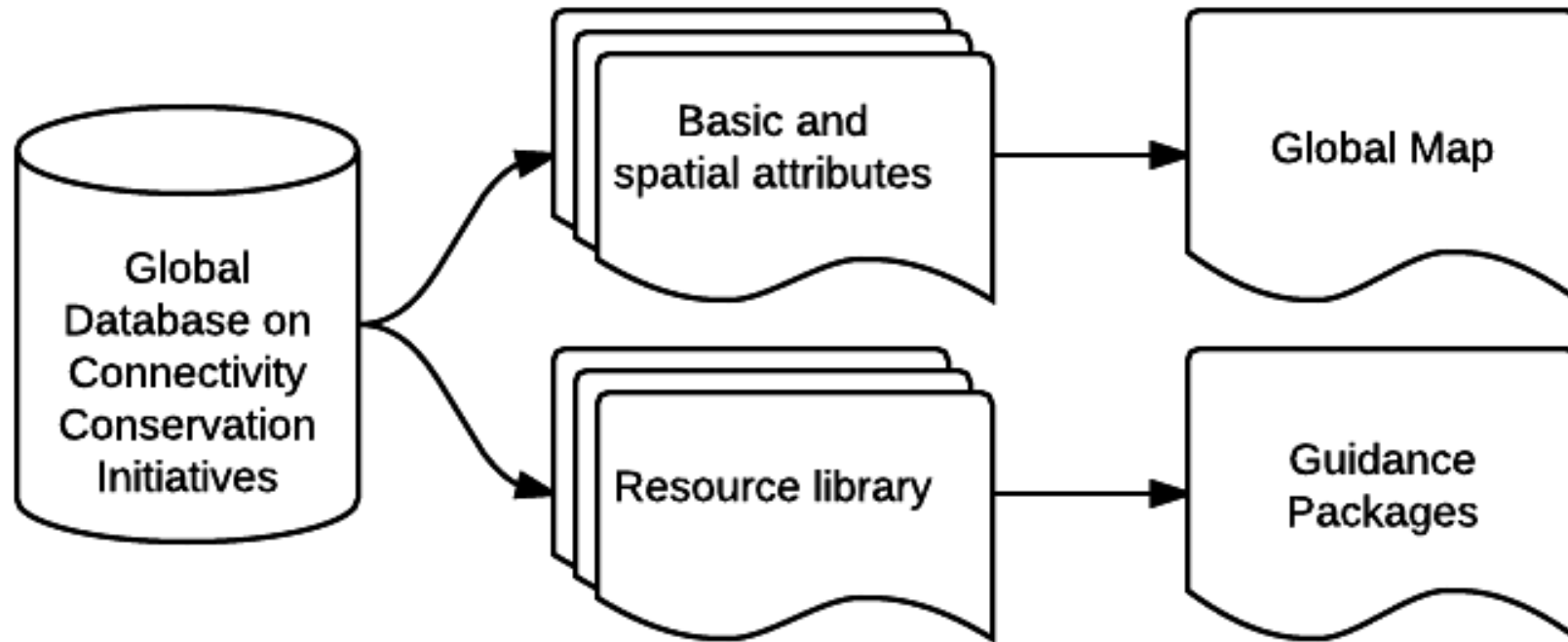
2016-2017

Output C:

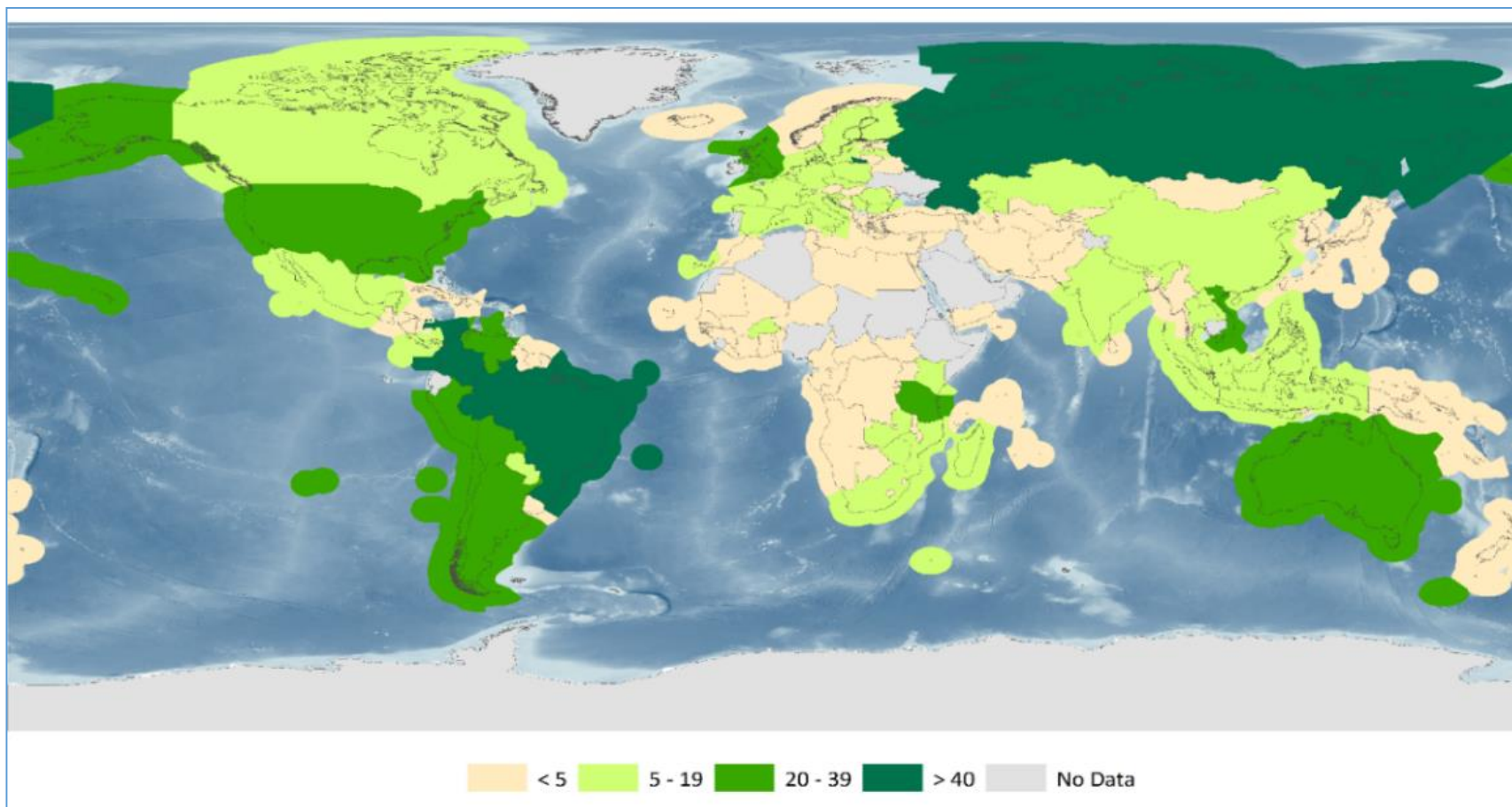
Technical capacity support for the establishment of pilot connectivity conservation areas provided

2017-2018

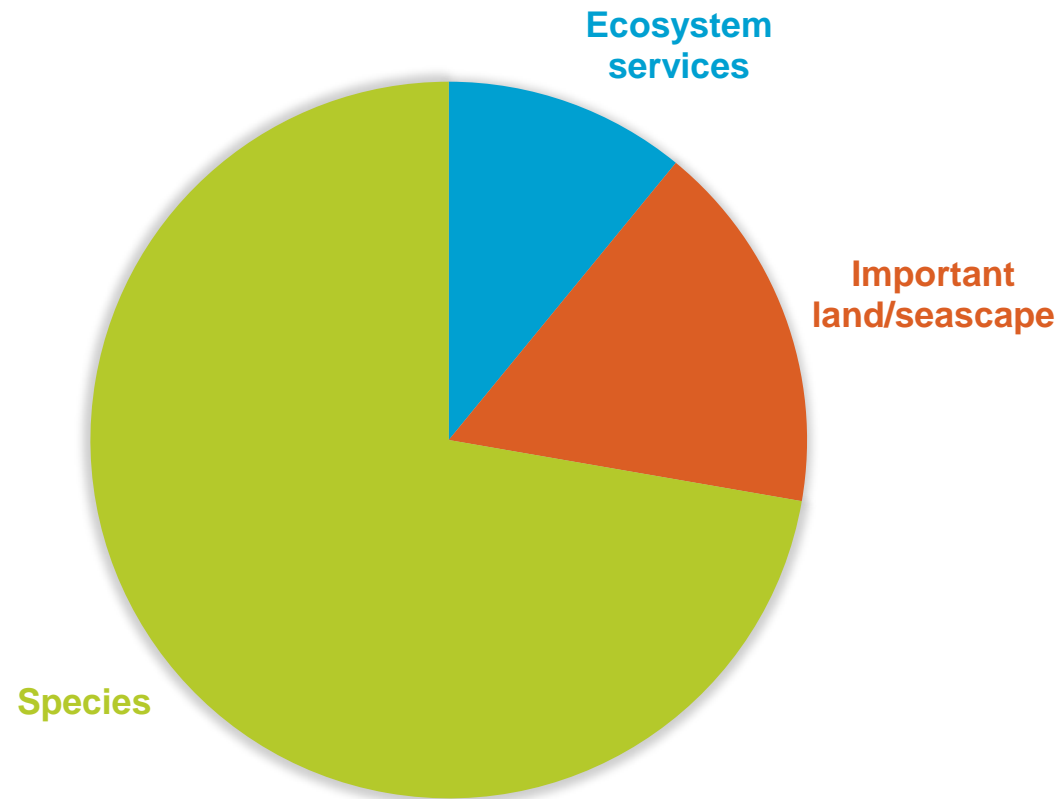
Output A: Knowledge Products



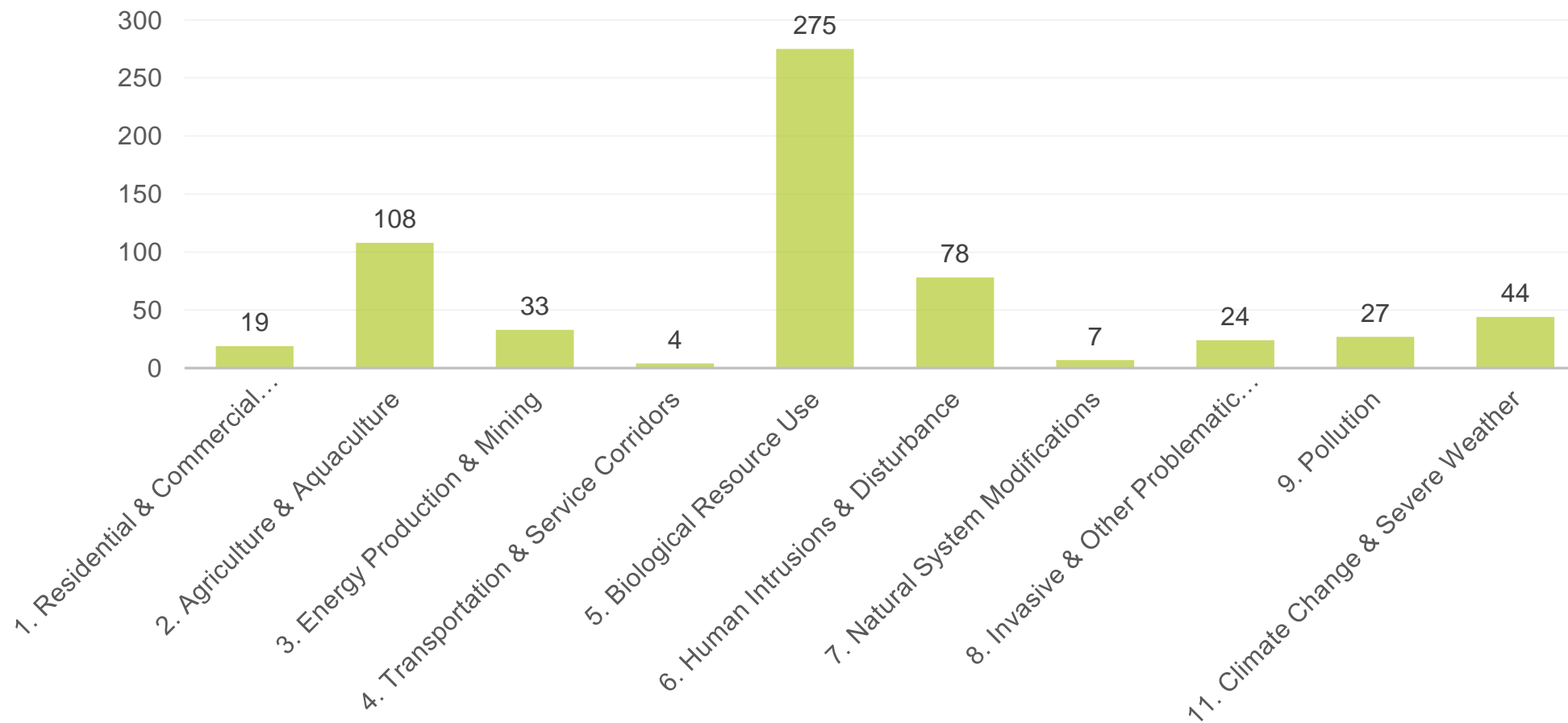
Baseline data on CCI - *number per country*



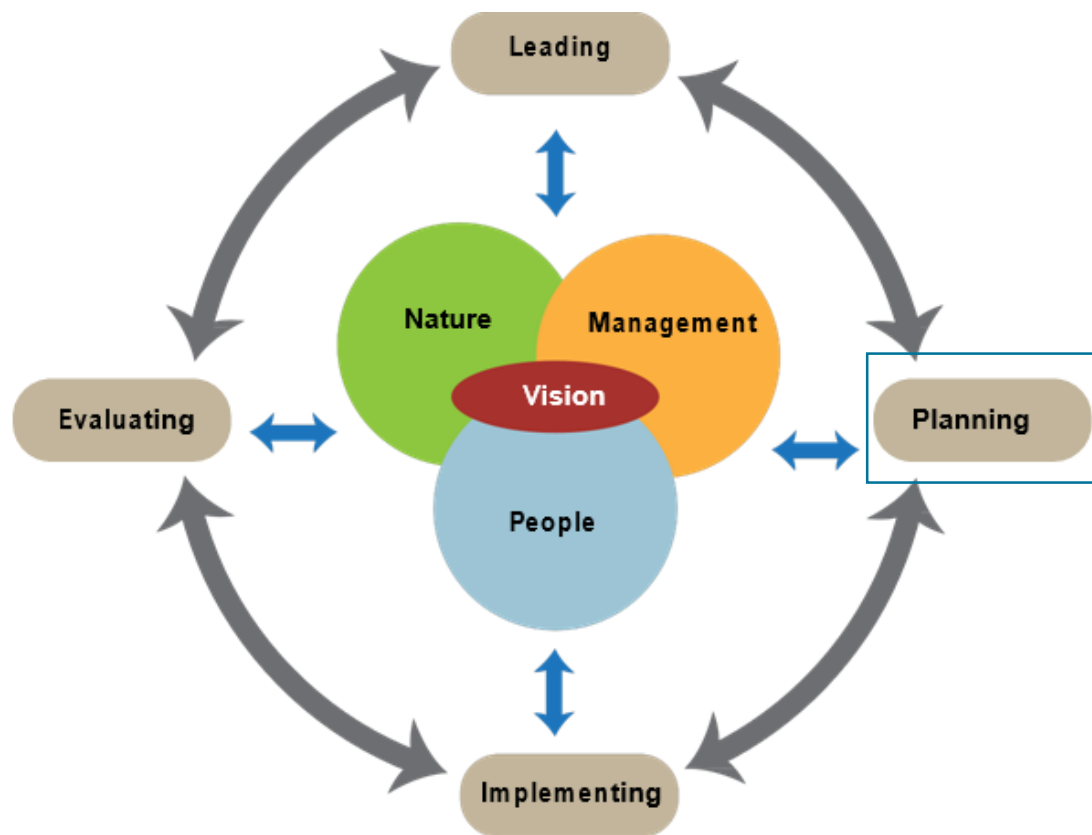
Baseline data on CCIs – *primary features*



Baseline data on CCI - *main threats*



Resource library - *Guidance packages*



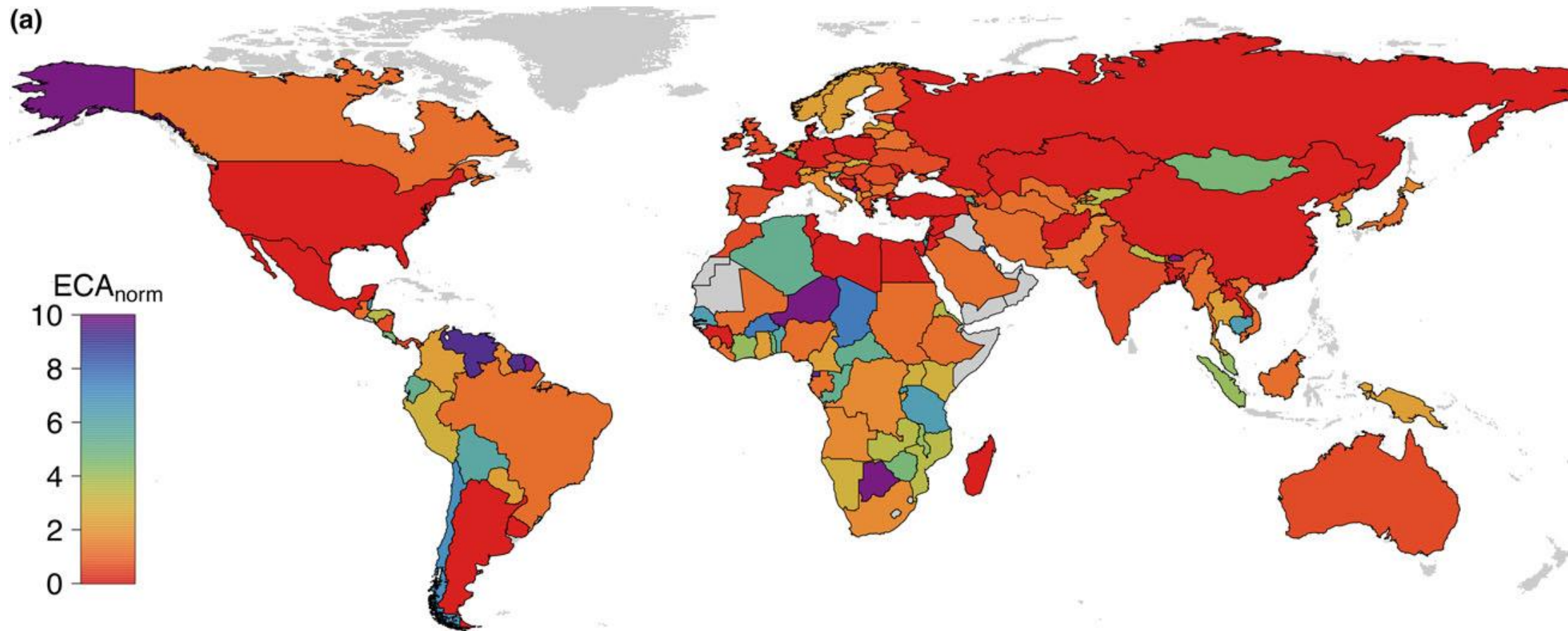
Package I: Integrating connectivity into spatial conservation planning at the land/sea-scape scale.

Package II: 'Implementing connectivity initiatives at the land/sea-scape scale'



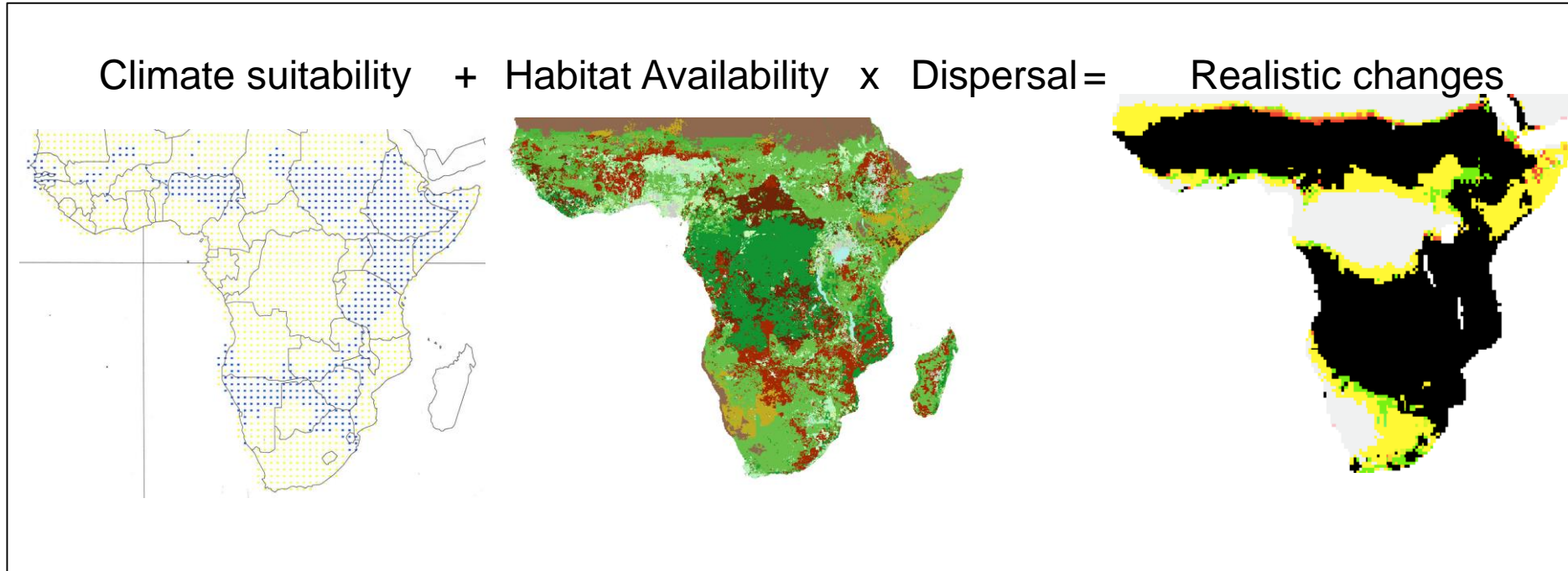
Prioritising areas for Connectivity

Potential global Connectivity Analysis

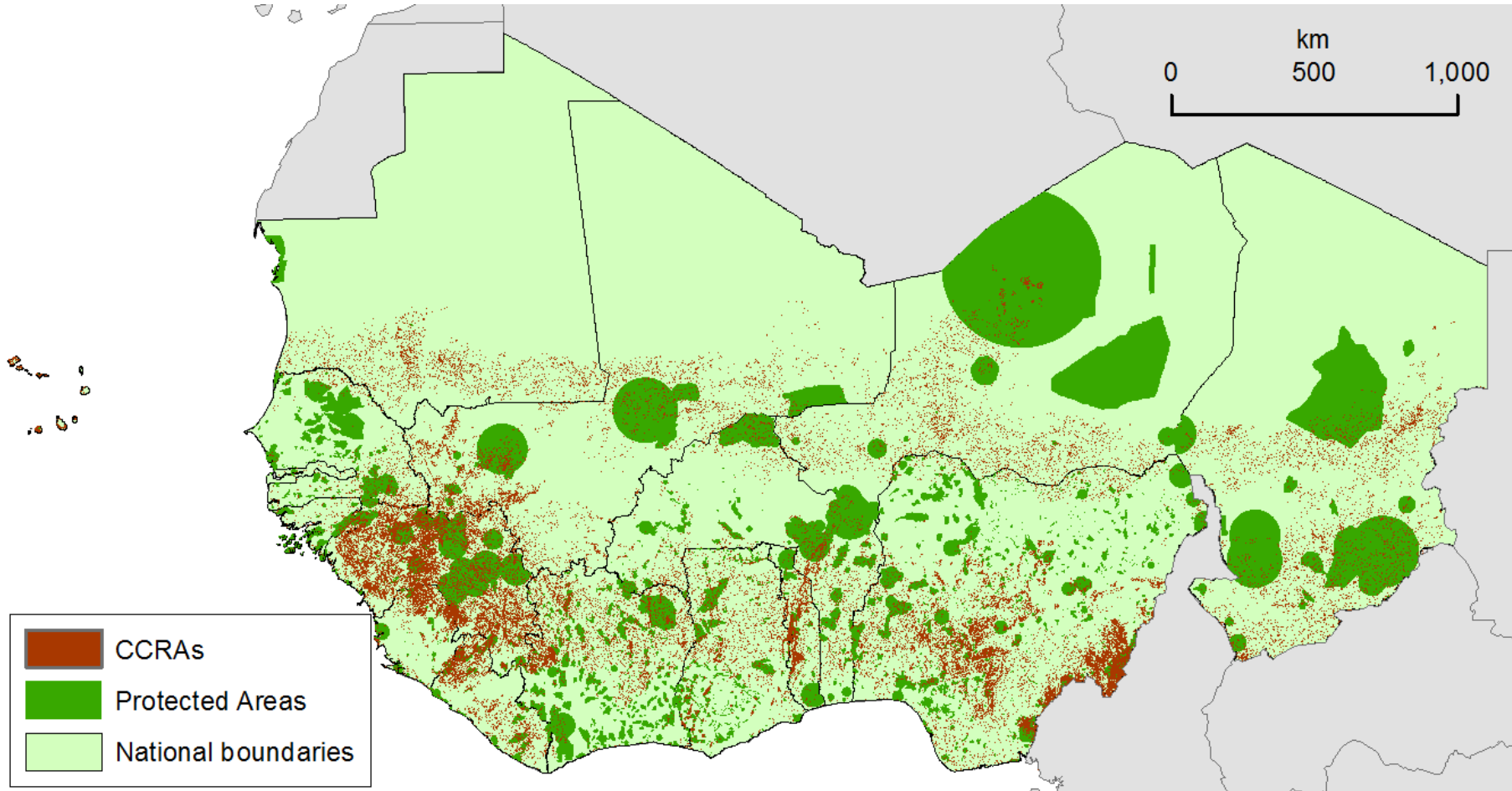


Santini et al. 2015

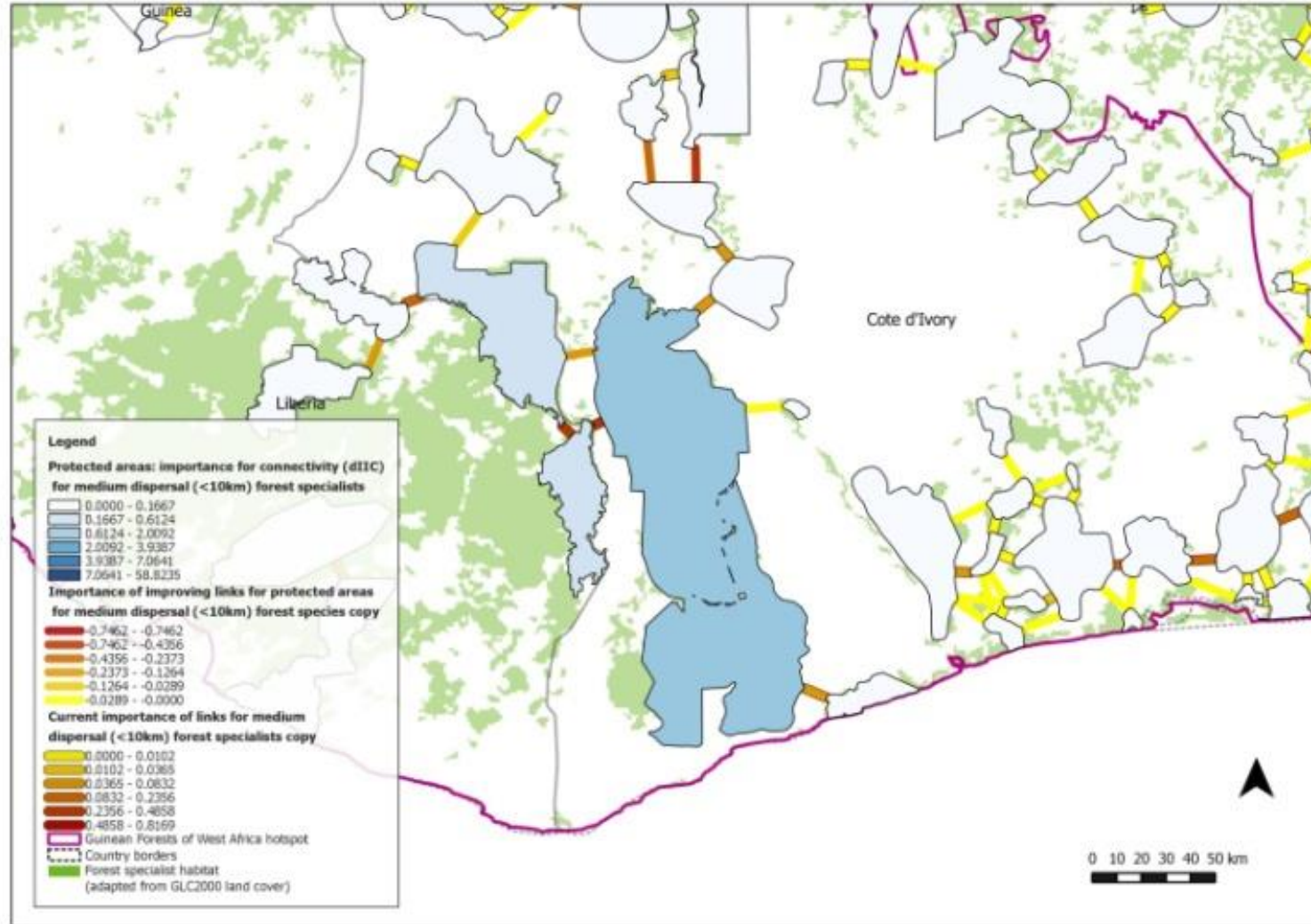
Modelling species response to climate change



Identification of climate resilient areas (future climate stability) in relation to protected areas



Connectivity of conservation areas in the landscape for species dispersal

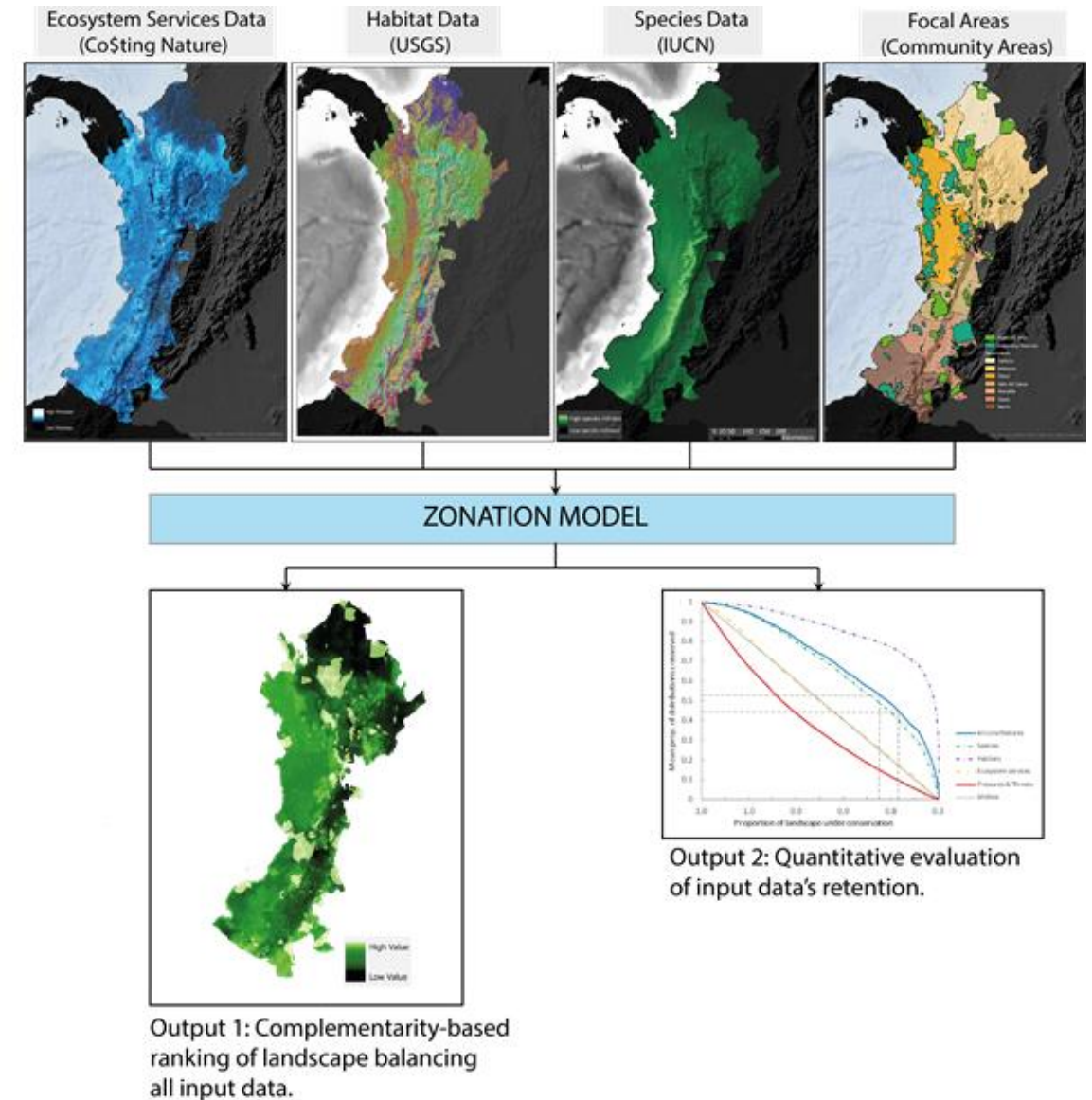


Why is spatial conservation prioritisation important?

- **Emphasis on the importance of taking an ecosystem management approach to conservation planning**
- **Alongside protected areas & rare species, includes components such as ecosystem services and connectivity**
- **Demarcate areas most valuable for conservation and conversely those areas most suited for human development**
- **Uses include: reserve selection and expansion, impact avoidance, biodiversity offsetting and climate change planning... as well as many more!**

Example in Choco region of Colombia

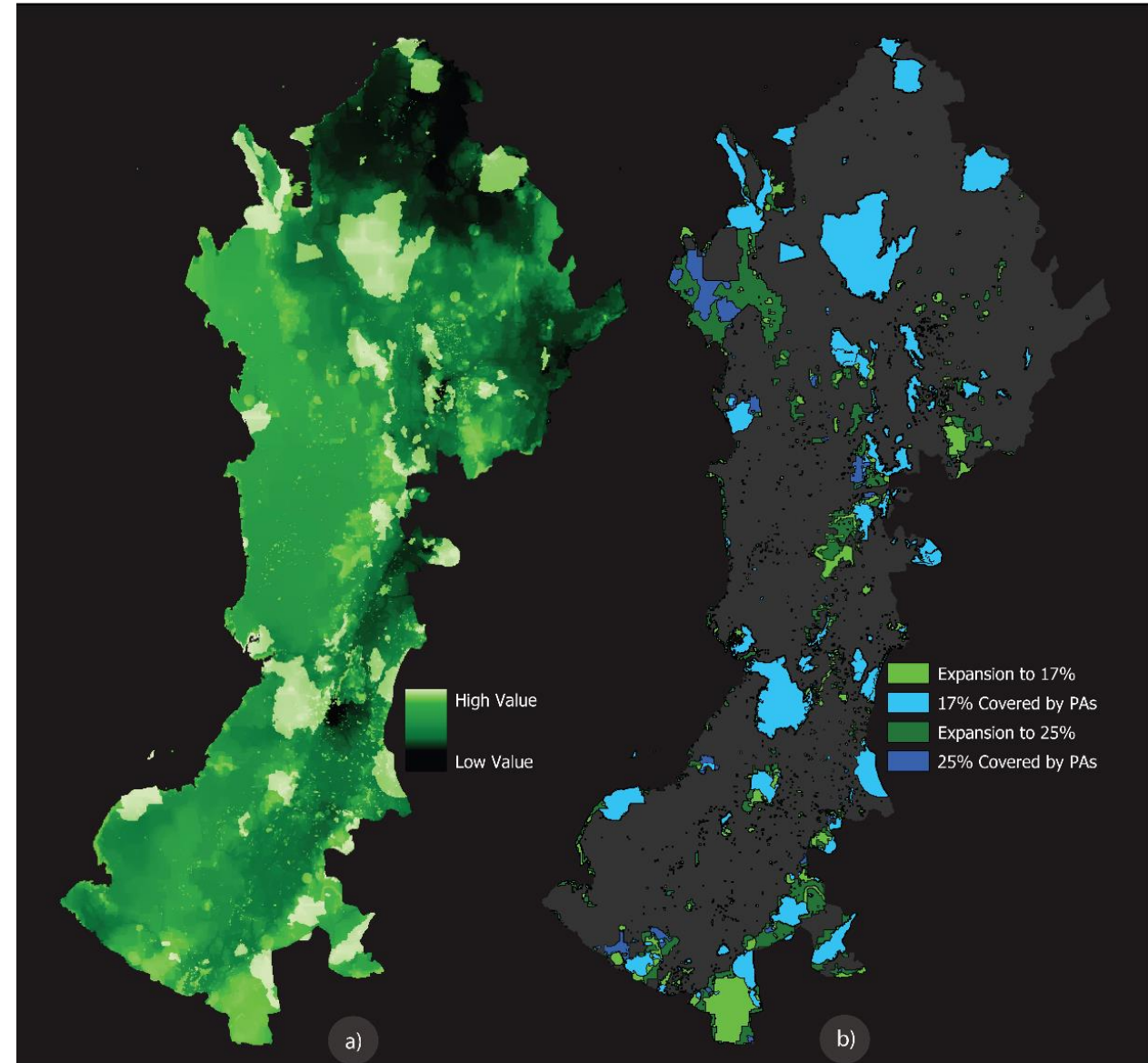
- Collate key datasets to input
- Set objectives for analysis
- Priority ranking can be mapped
- Make recommendations



How is this used?

- **Evaluate the performance of the existing protected area (PA) network**
- **Identify opportunities for expansion of the PA network**
 - where to expand to cover 17% of the region
 - where to create connectivity corridors

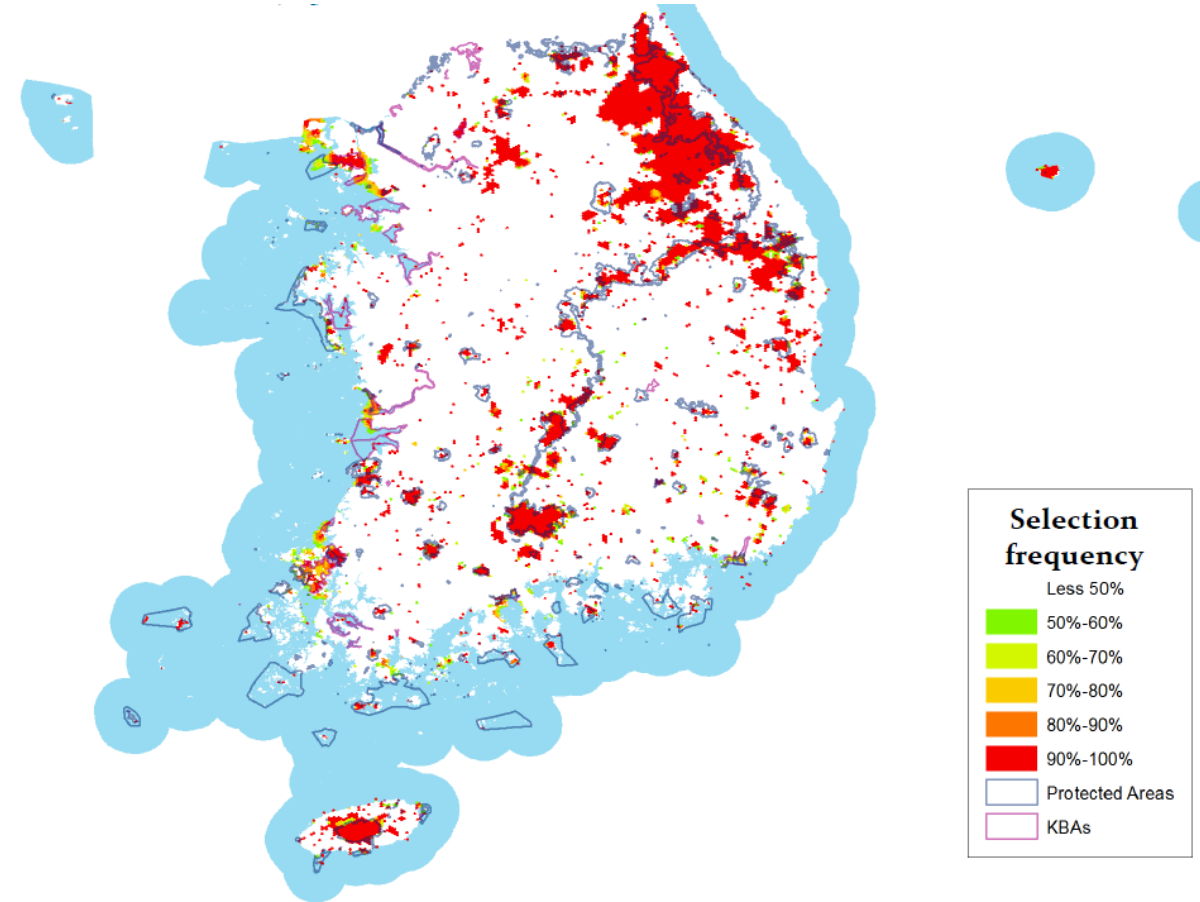
UNEP-WCMC, 2015 for Rainforest Trust



Example of Republic of Korea

Aim:

To assess the status of Korea's protected area network and propose priorities for expansion to support the implementation of international and national biodiversity targets



Other Important Considerations

Underlying data

- **Utility of the analysis is reliant upon the quality of the underlying data**
- **The time and effort going into data collation and formatting is significant**

Ground truthing

- **Spatial prioritisation tools should be regarded as decision support tools as opposed to decision making tools**
- **The quality of the results should be verified and the subsequent conservation success monitored by experts**

Conclusions

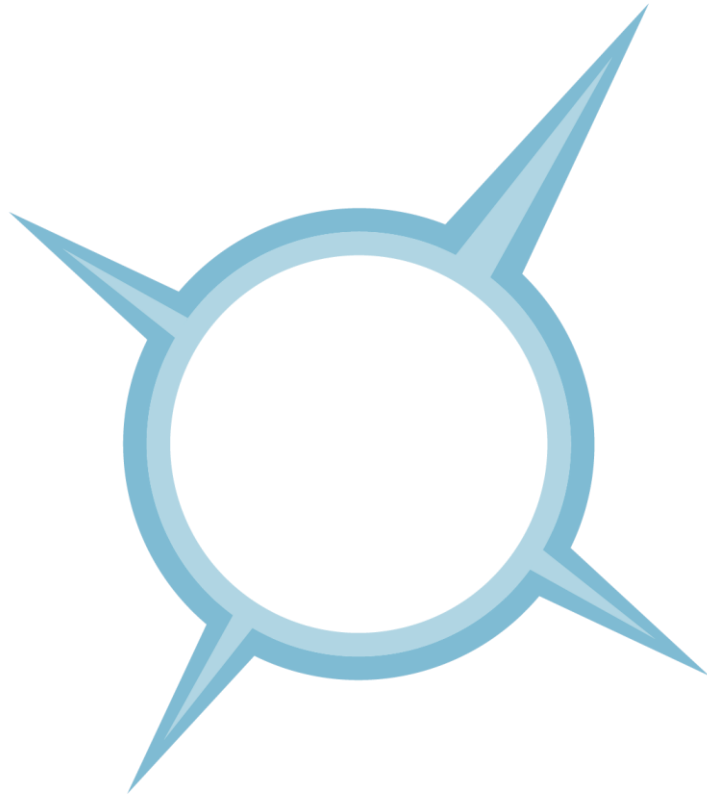
- **Land/sea-scape scale conservation has the potential to create a more robust conservation estate that can simultaneously conserve biodiversity features and ecological processes of interest**
- **Spatial conservation prioritisation enables this holistic, land/sea-scape scale approach**
- **More efficiently balance conservation goals with current threats and future pressures**



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Diving deeper into seascape connectivity



School of hammerhead, Galapagos.

Dr Steve Fletcher
Head of Marine Programme





UNEP



WCMC



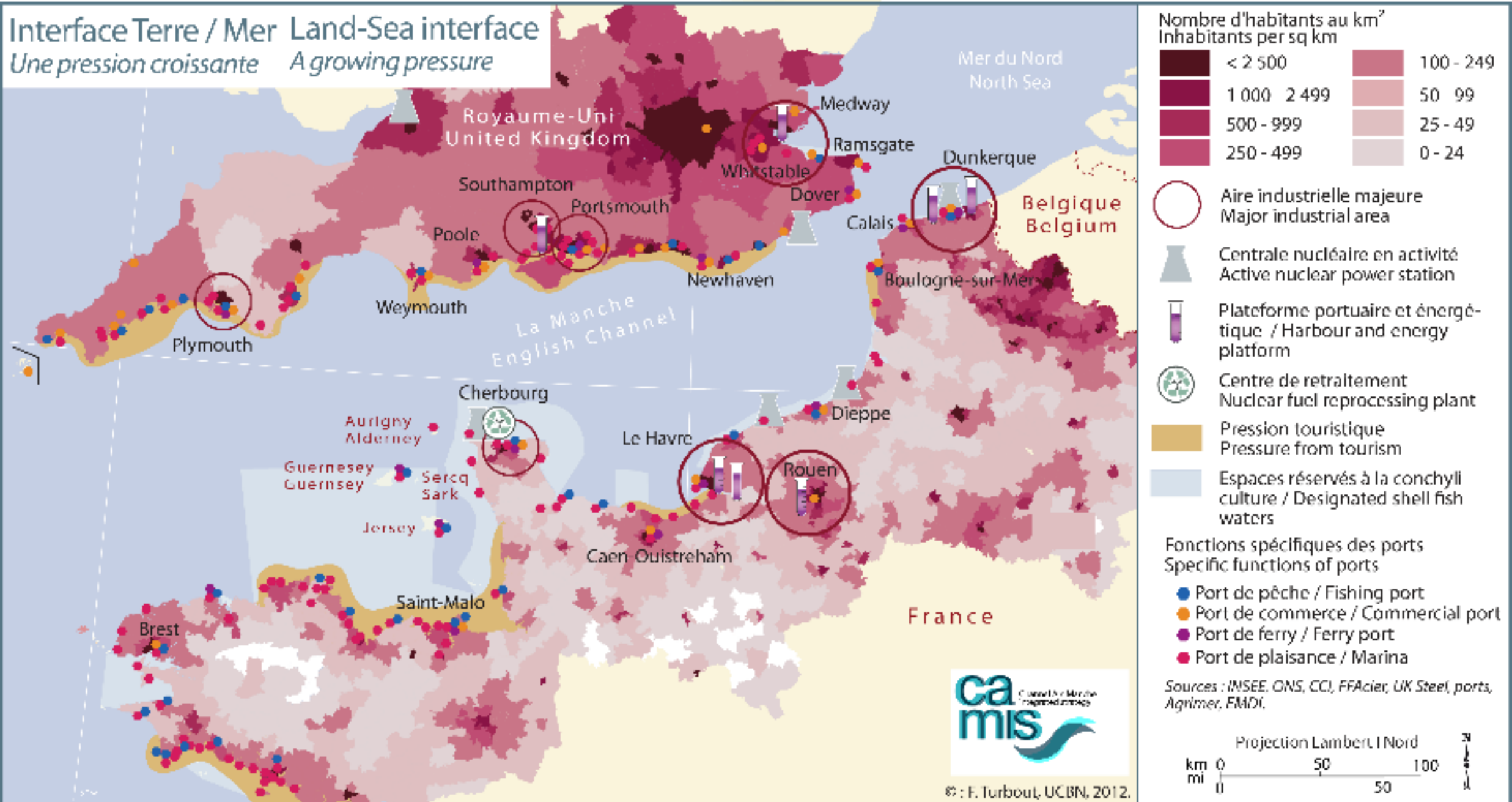
Sperm whale off of Sri Lanka.

© Shane Gross, 2014 (Image ID: 103313360).
Used under license from Shutterstock.com



Interface Terre / Mer Land-Sea interface

Une pression croissante A growing pressure





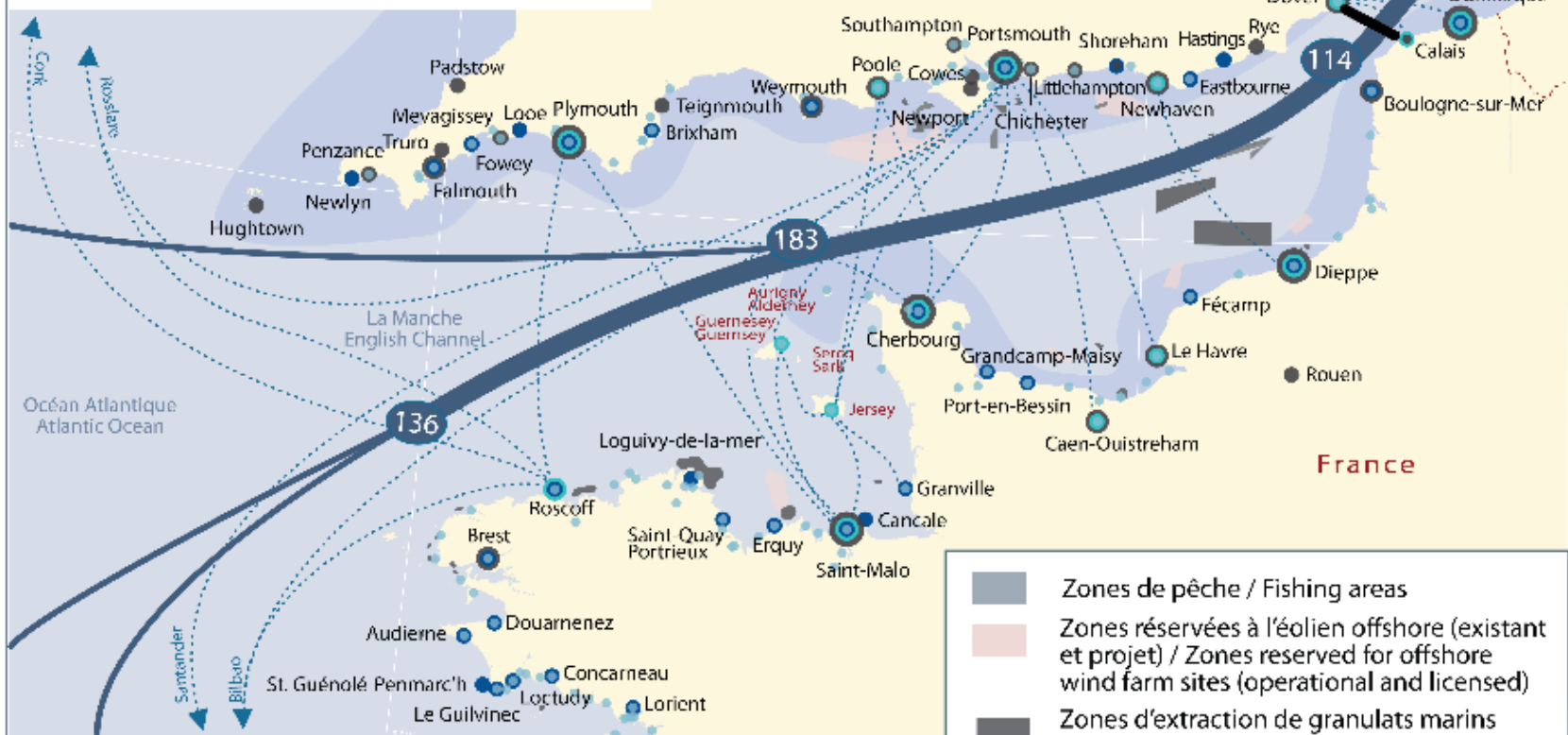
UNEP



WCMC



L'activité humaine en mer
 Un espace maritime convoité
 Human activities at sea
 A coveted maritime area



183 Nombre moyen de navires enregistrés par jour auprès des CROSS (Base de données "Traffic 2000") / Average number of ships passing per day recorded by CROSS (Database "Traffic 2000")

- Type de port / Sort of ports
- Port de pêche / Fishing port
 - Port de commerce / Commercial port
 - Port de ferry / Ferry port
 - Port de plaisance / Marina

- Zones de pêche / Fishing areas
- Zones réservées à l'éolien offshore (existant et projet) / Zones reserved for offshore wind farm sites (operational and licensed)
- Zones d'extraction de granulats marins (existant et projet) / Aggregate dredging sites (operational and licensed)
- Lignes de ferry / Ferry routes
- Tunnel sous la Manche / Channel Tunnel

Sources : Brittany Ferries, LD Lines, P&O Ferries, Condor Ferries, Celtic Links, Irish ferries, Norfolkline, FranceAgriMer 2011, Système d'information halieutique de l'Ifremer 2011, UK Sea Fisheries Statistics 2010, Ministère de Pêche des territoires et du logement, CFMFC, DEHA, Crown Estate, Base Traffic 2000, Atlas transmanche-Espace Manche.



© : F. Turbaut. UCBN, 2012.



UNEP



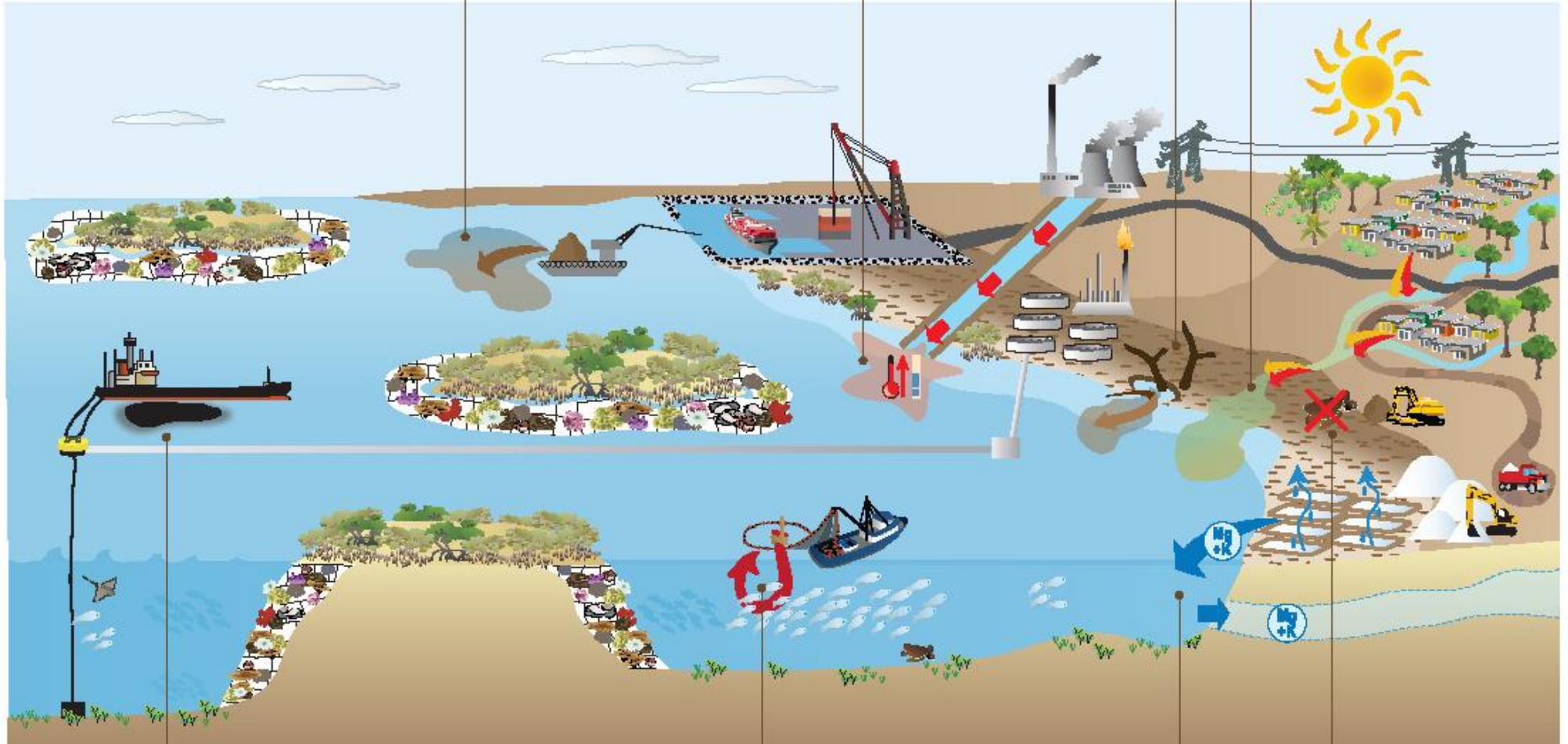
WCMC

With increased **port development** and subsequent deep-sea dredging activities, sediment may be deposited on corals.

Used to cool **power plants**, seawater discharged from an open system may affect sea temperatures and pH, leading to mangrove death and a reduction in fisheries.

While banned, **mangrove cutting or destruction** makes the coast more vulnerable to erosion and destroys fish nursery habitat.

The direct release of **urban area waste and sewage** into tributaries or the sea may cause an excess of nutrients and toxics.



With an increasing number of **ships and tankers** at single point moorings, there is an enhanced risk of oil spills.

Increasingly intensive **fishing** pressure and increased **bycatch** may lead to biodiversity loss and fisheries declines.

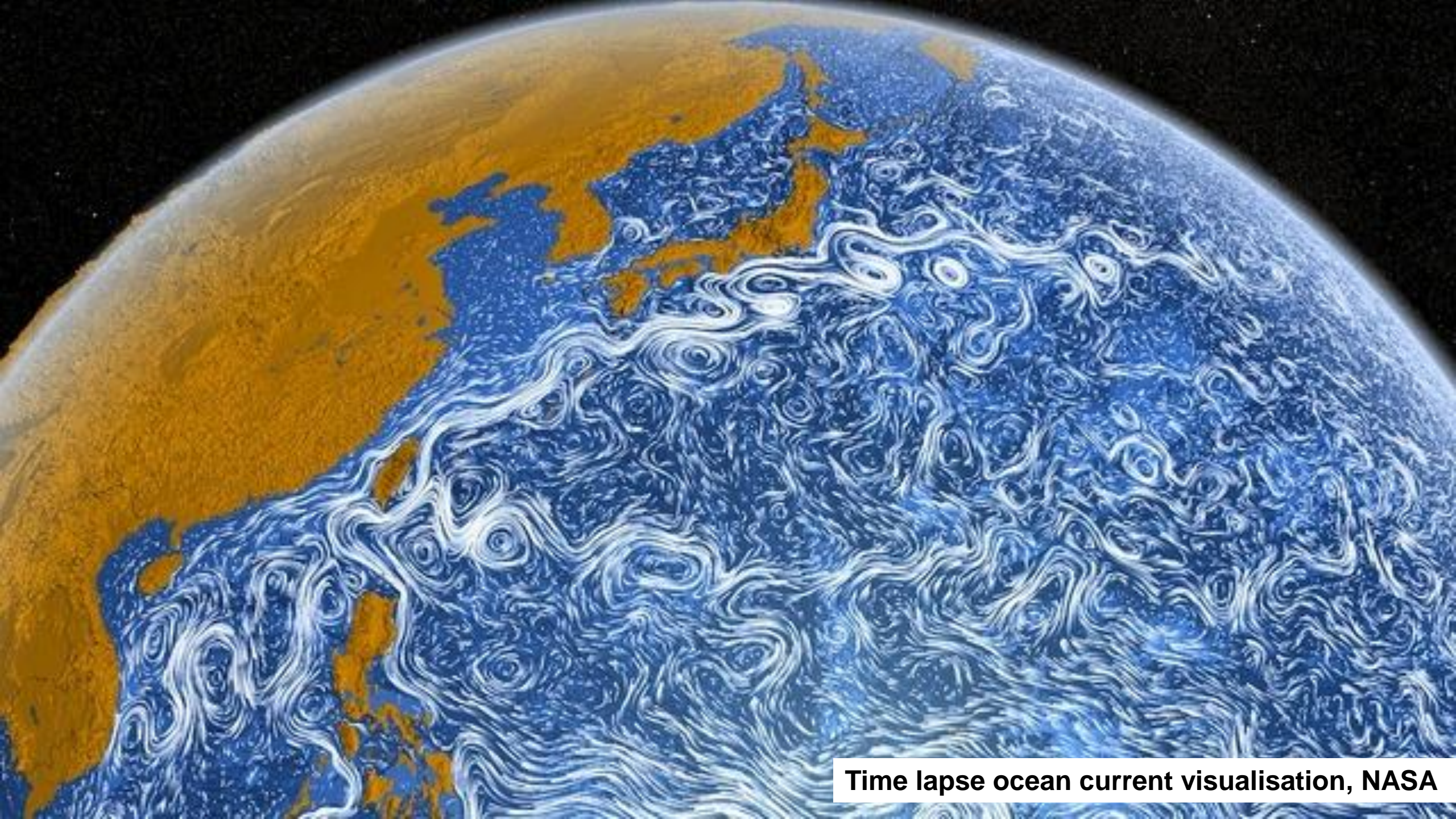
Evaporative **salt pans** discharge bittern, (concentrated magnesium and potassium salts) into the sea, potentially increasing salinity in the groundwater and soil.

Unregulated **coastal development** and **illegal mining** can result in fewer sea turtle nesting sites.

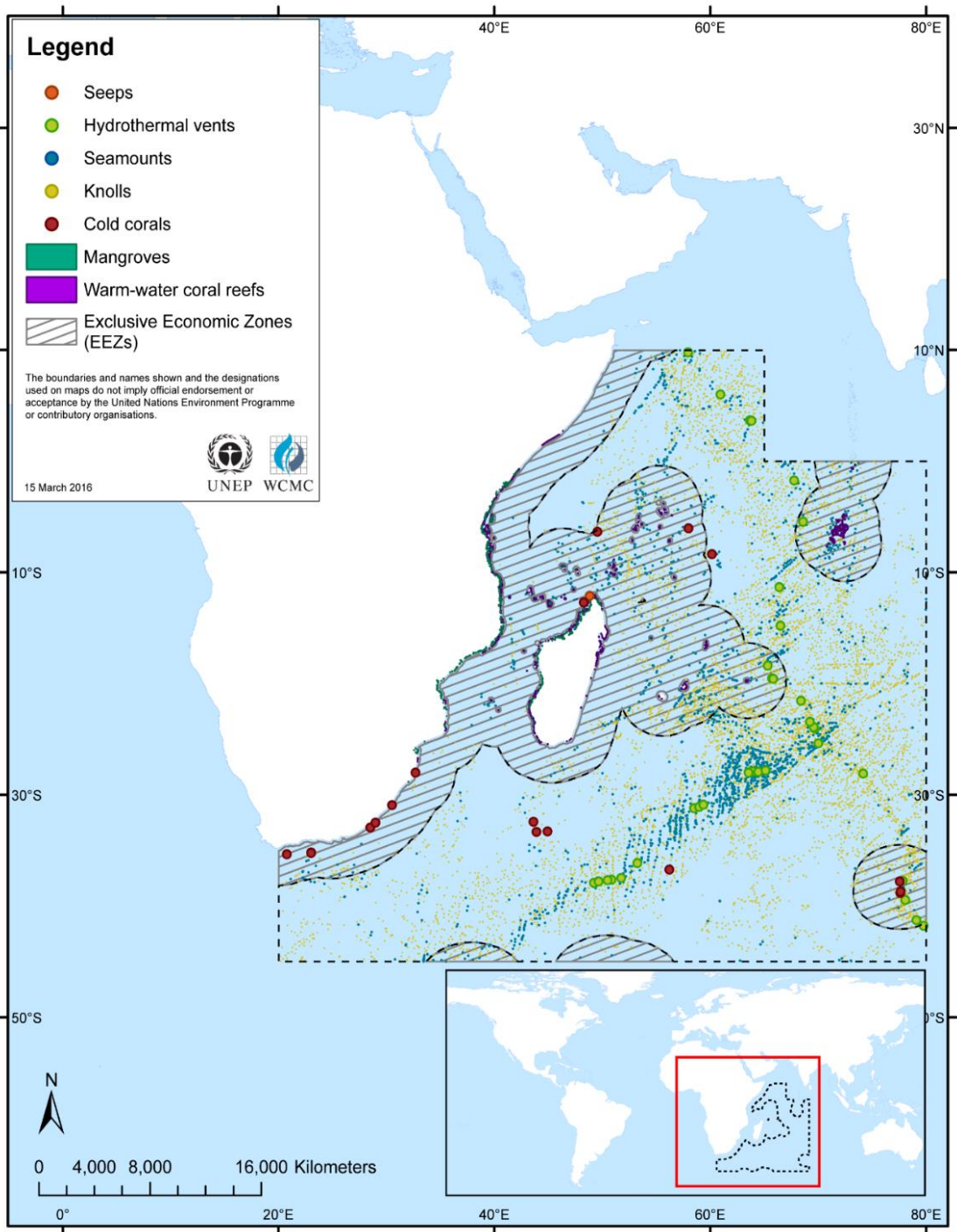
Cumulative impacts

Overfishing





Time lapse ocean current visualisation, NASA



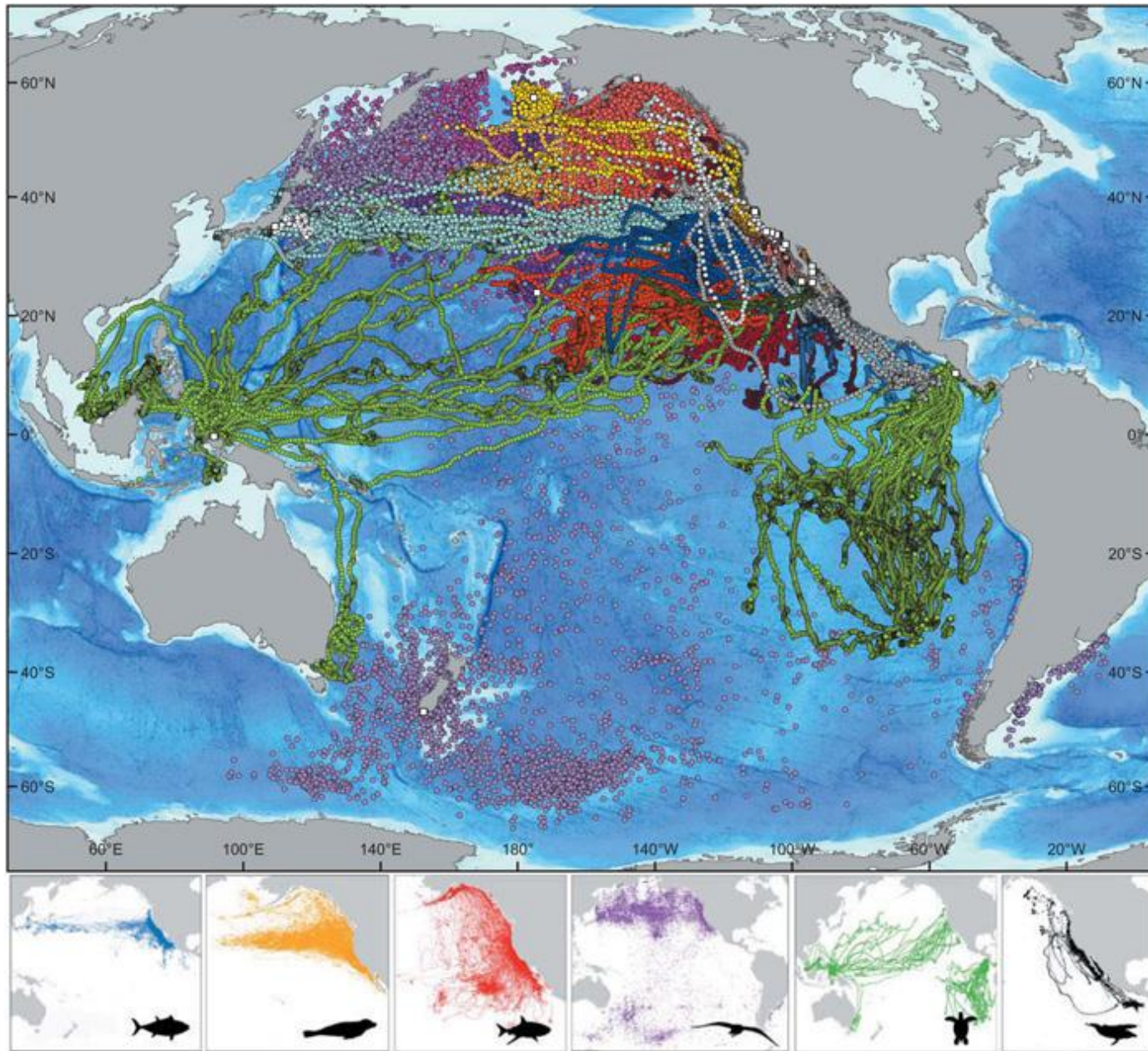
Known biogeographic characteristics in the Western Indian Ocean



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Tracking of selected species in the North Pacific, 2011.

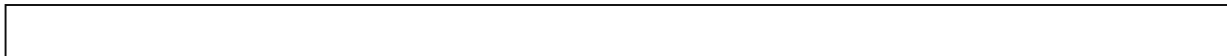
Tagging of Pacific Predators Project, 2011



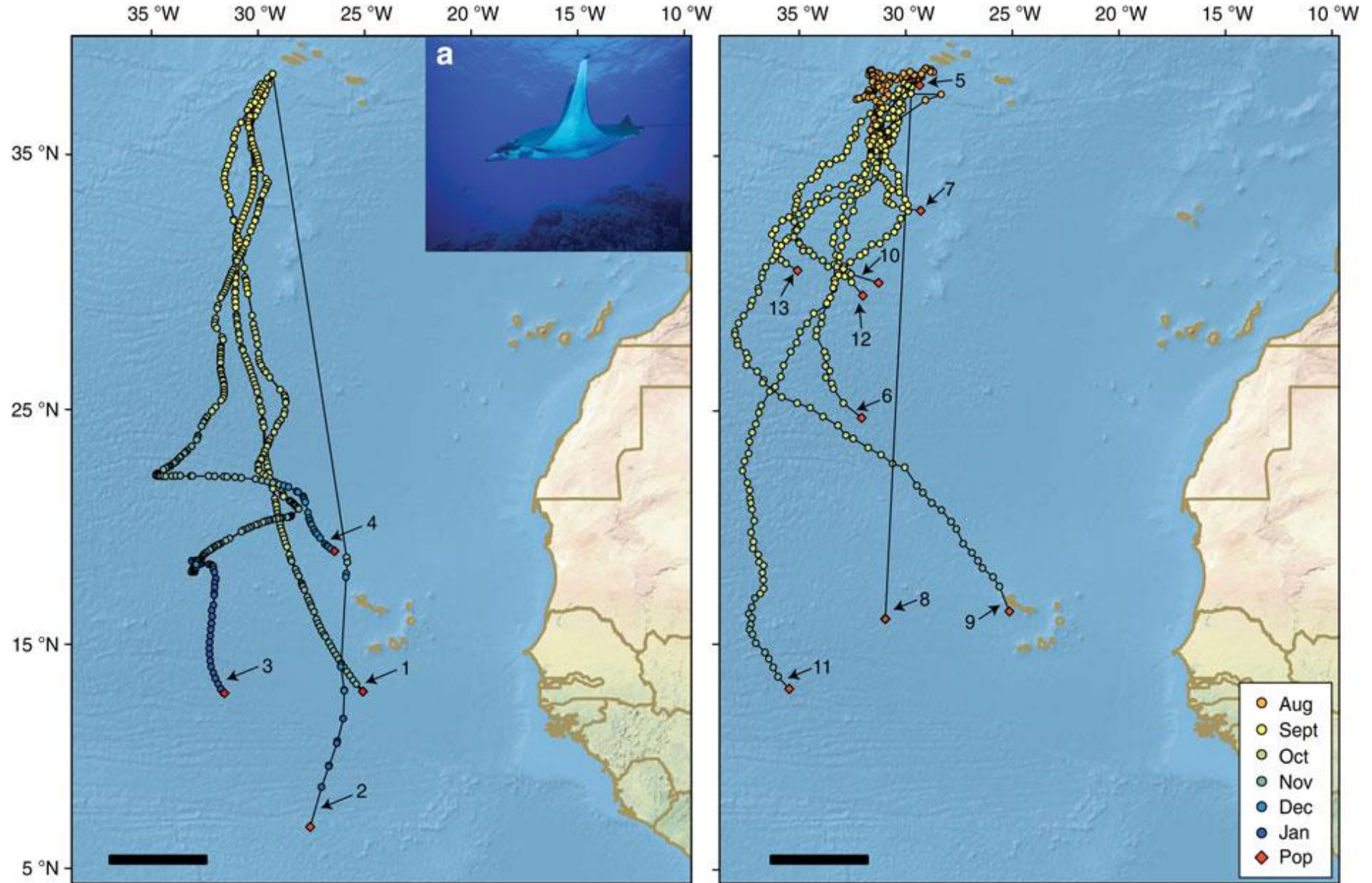
UNEP



WCMC

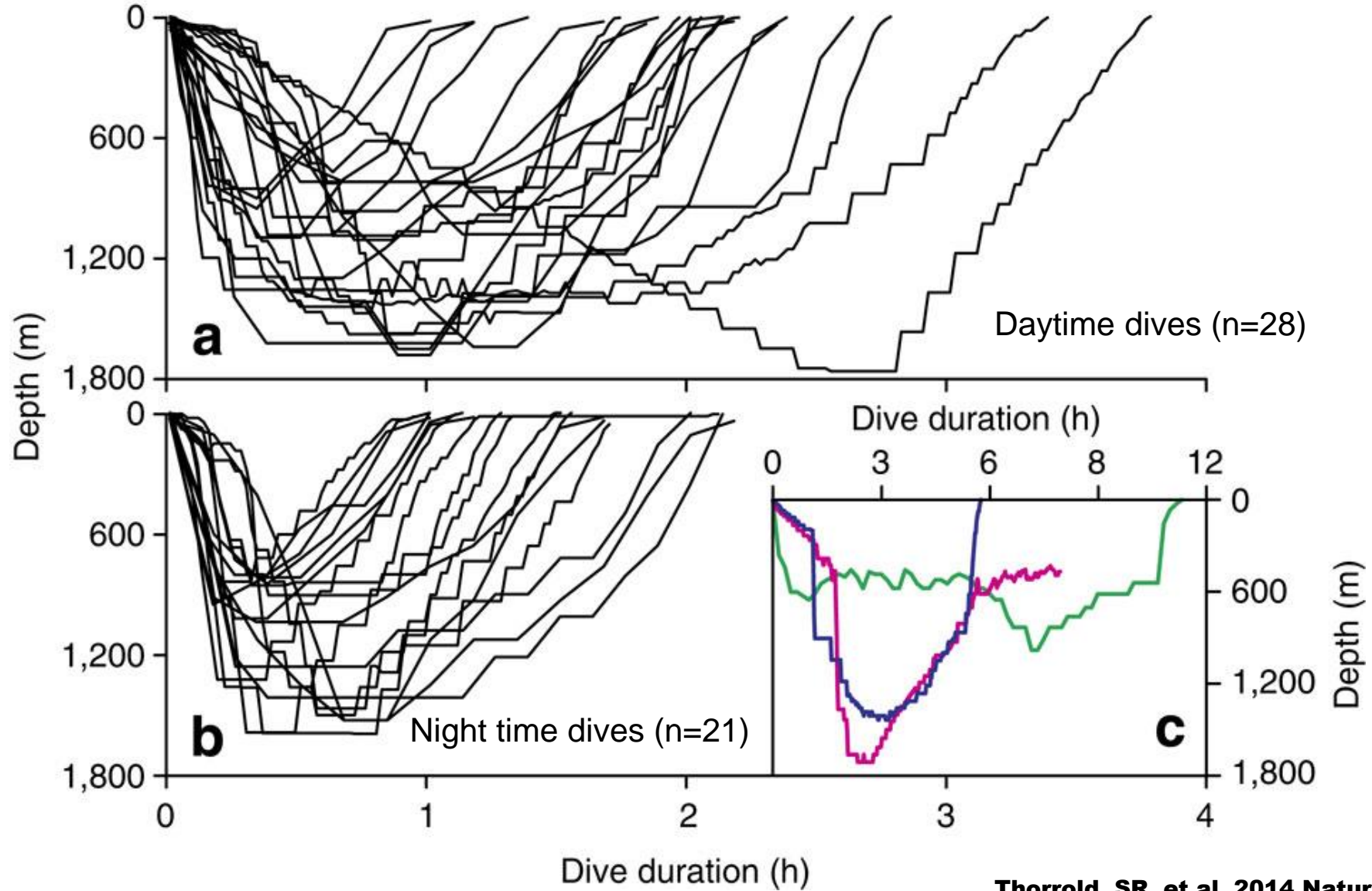


Horizontal movements of devil rays tagged in the Azores

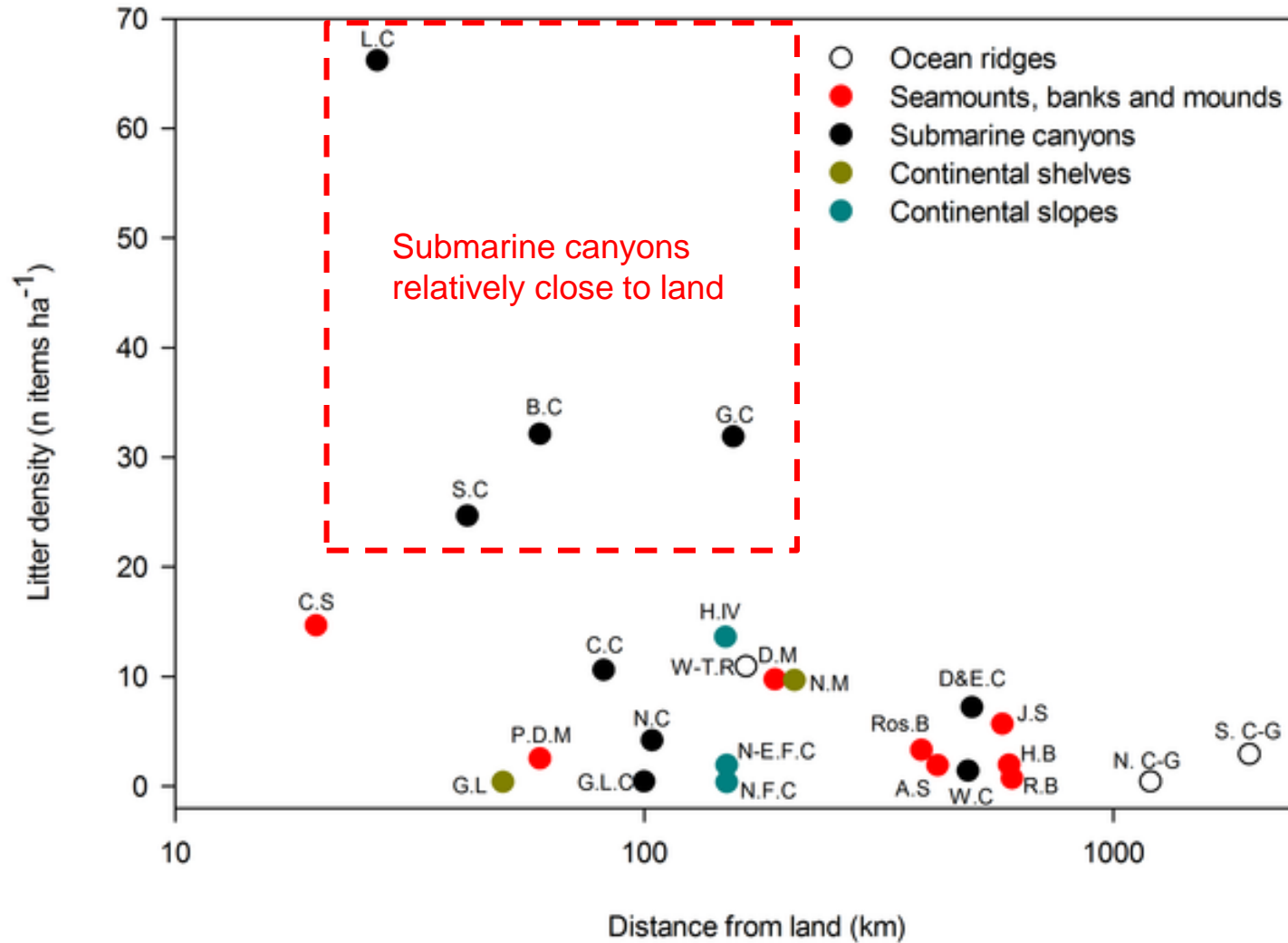


Thorrold, SR. et.al. 2014 Nature Communications

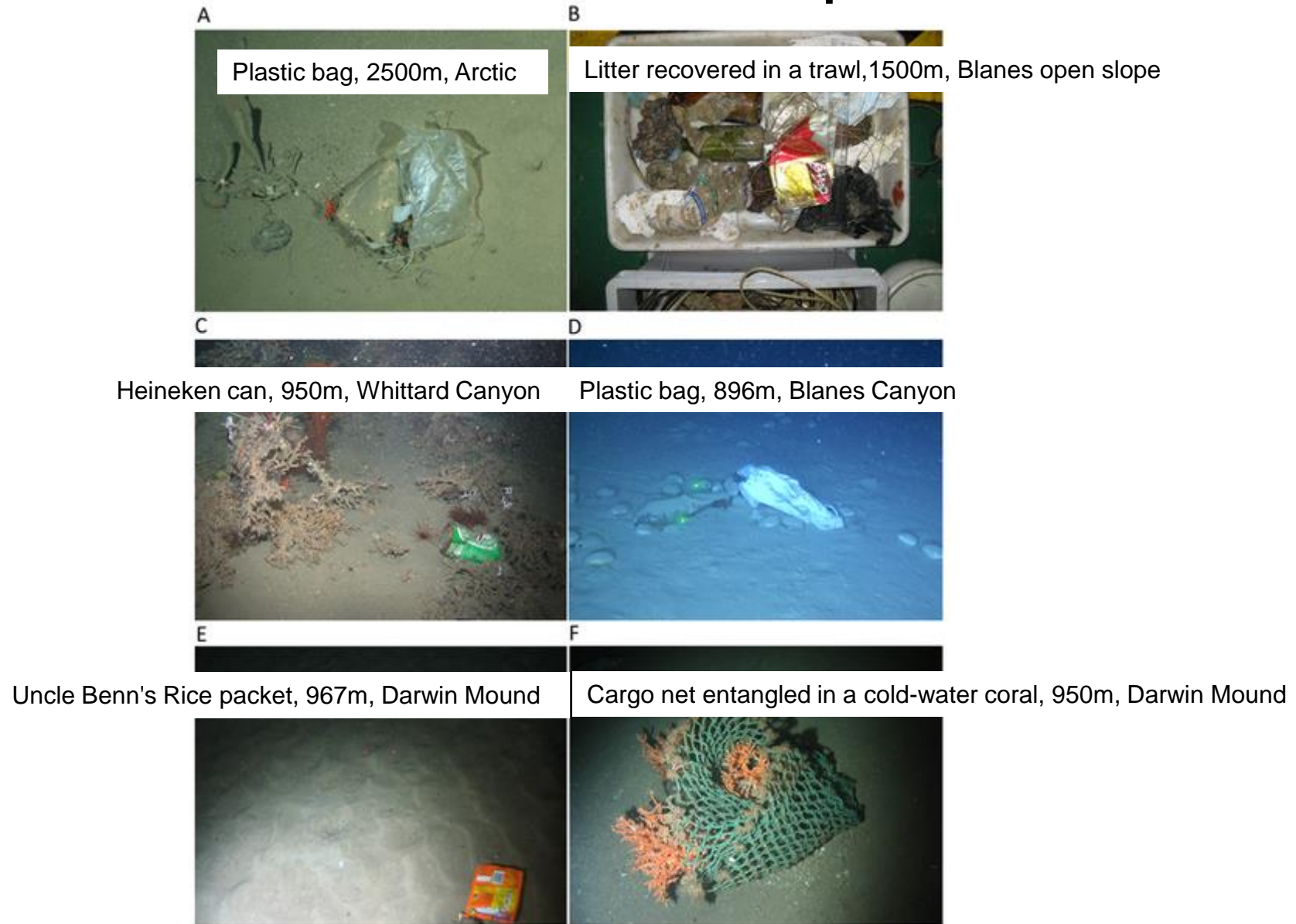
Diving behaviour of devil rays links surface waters and deep ocean



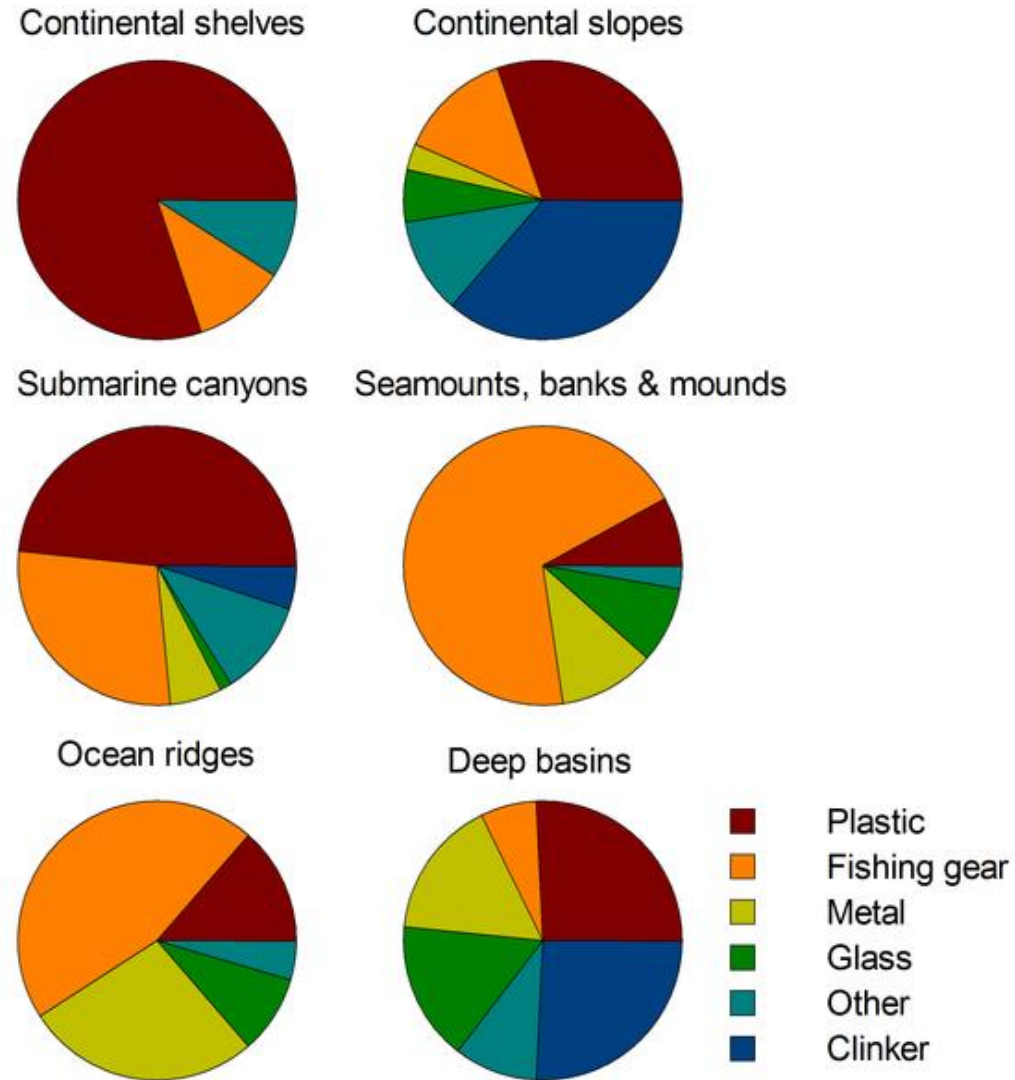
Litter densities (number of items ha²) in different locations across European waters



Litter items on the seafloor of European waters.



Litter composition in different physiographic settings across European waters



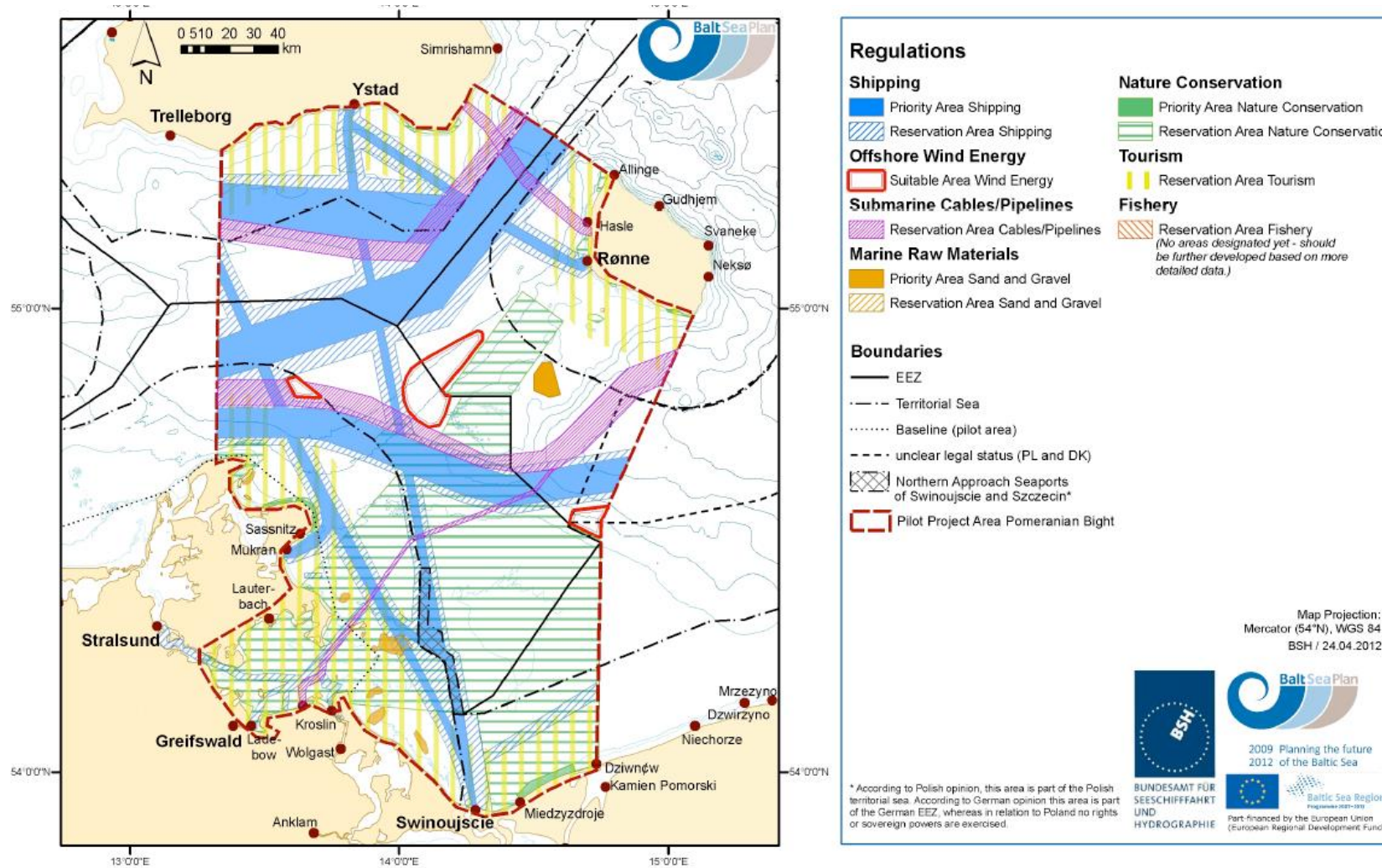
Pham CK, Ramirez-Llodra E, Alt CHS, Amaro T, Bergmann M, et al. (2014) Marine Litter Distribution and Density in European Seas, from the Shelves to Deep Basins. PLoS ONE 9(4): e95839. doi:10.1371/journal.pone.0095839 <http://journals.plos.org/plosone/article?id=info:doi/10.1371/journal.pone.0095839>



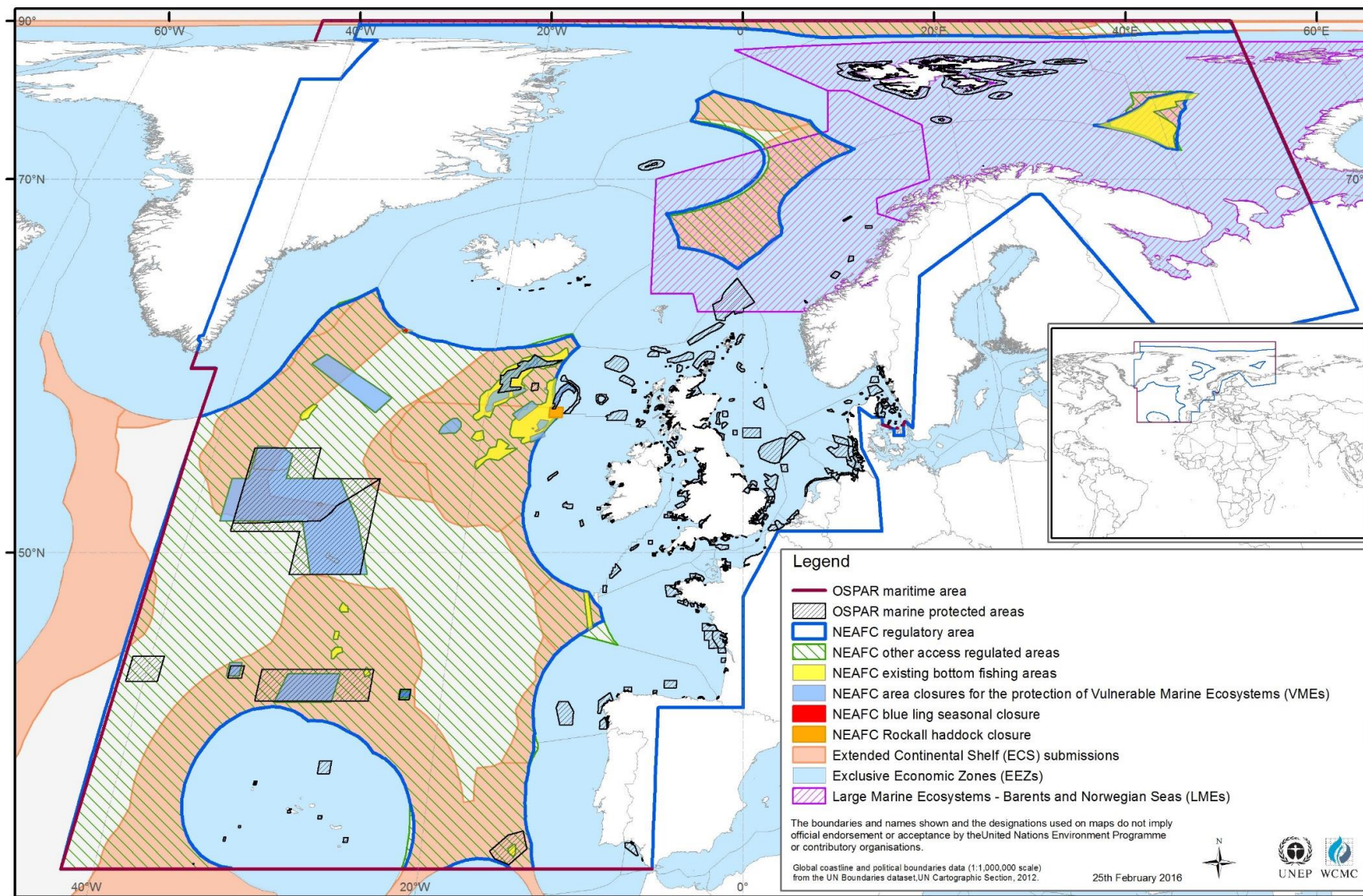
Impacts of land-based activities on marine and coastal resources

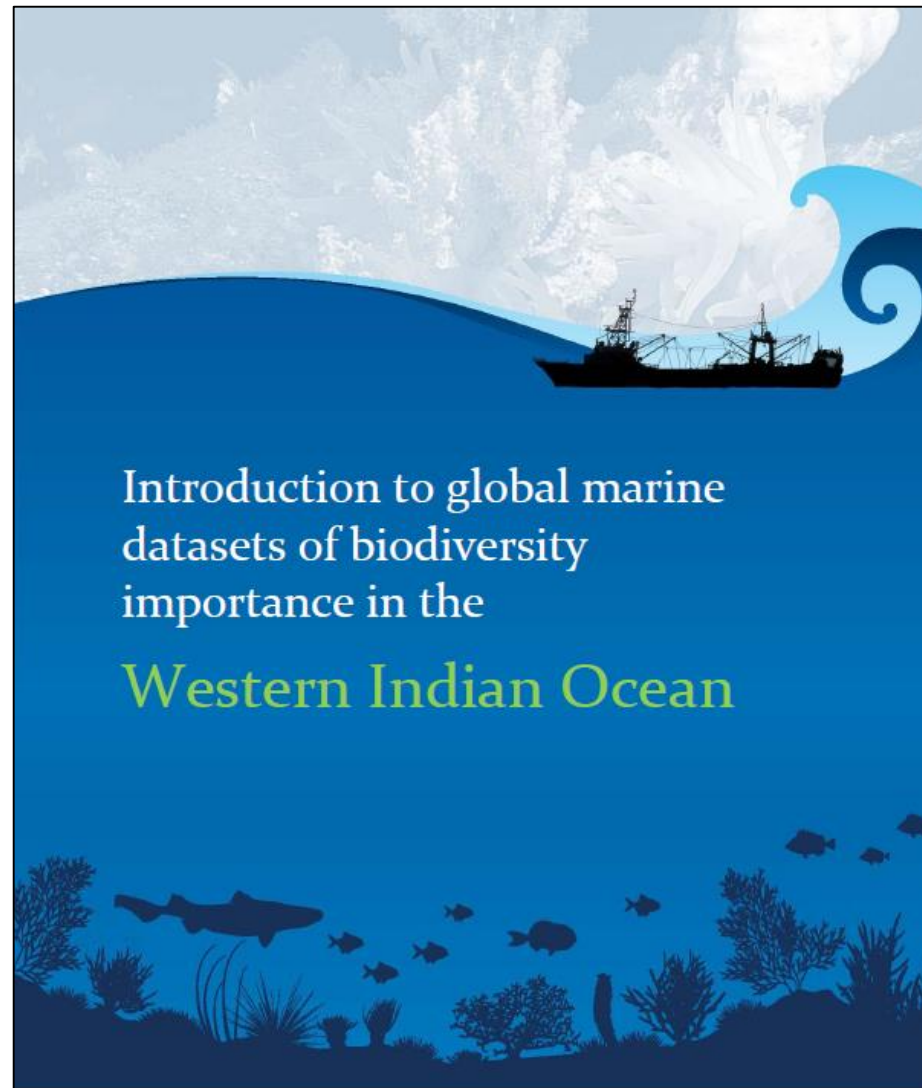


Marine Spatial Planning: evidence-based global advice




Area-based planning in ABNJ in the NE Atlantic







Introduction to global marine
datasets of biodiversity
importance in the
Western Indian Ocean



UNEP



COMMON OCEANS



gef

Human effects on Biodiversity Beyond National Jurisdiction

UNEP-WCMC is leading a study to identify the potential effects of certain activities on BBNJ and how predicted future changes in these activities may alter their effects.



Representation of a simple pressure pathway

Examining:

- Physical loss and damage to the seabed
- Removal of biological resources
- Cumulative effects
- Potential legal approaches

Results will feed into UN BBNJ Prep. Com. process



UNEP



WCMC



School of big eye trevally (*Caranx sexfasciatus*).

© Dray van Beeck, 2014 (Image ID #79760482). Used under license from Shutterstock.com.



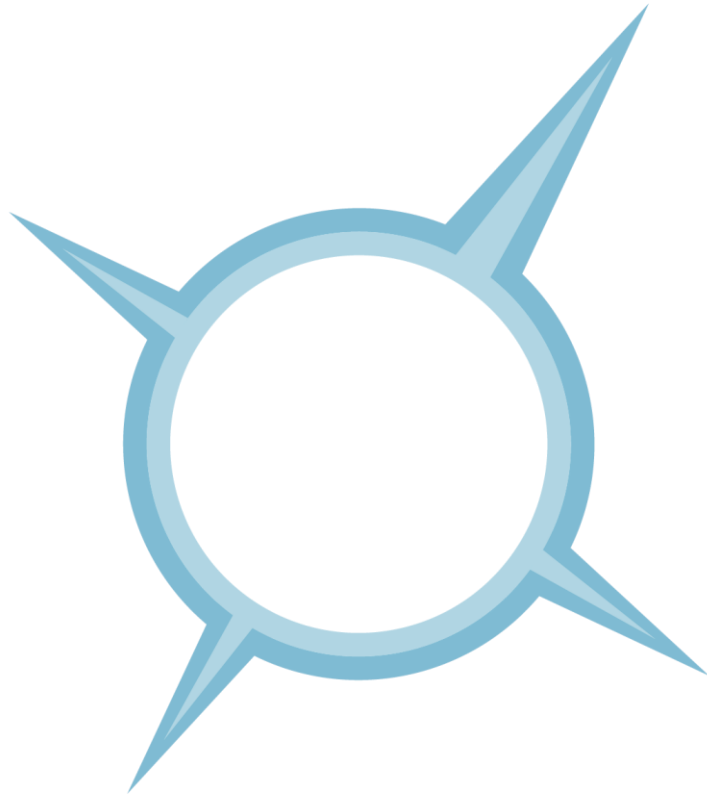
For more information: steve.fletcher@unep-wcmc.org



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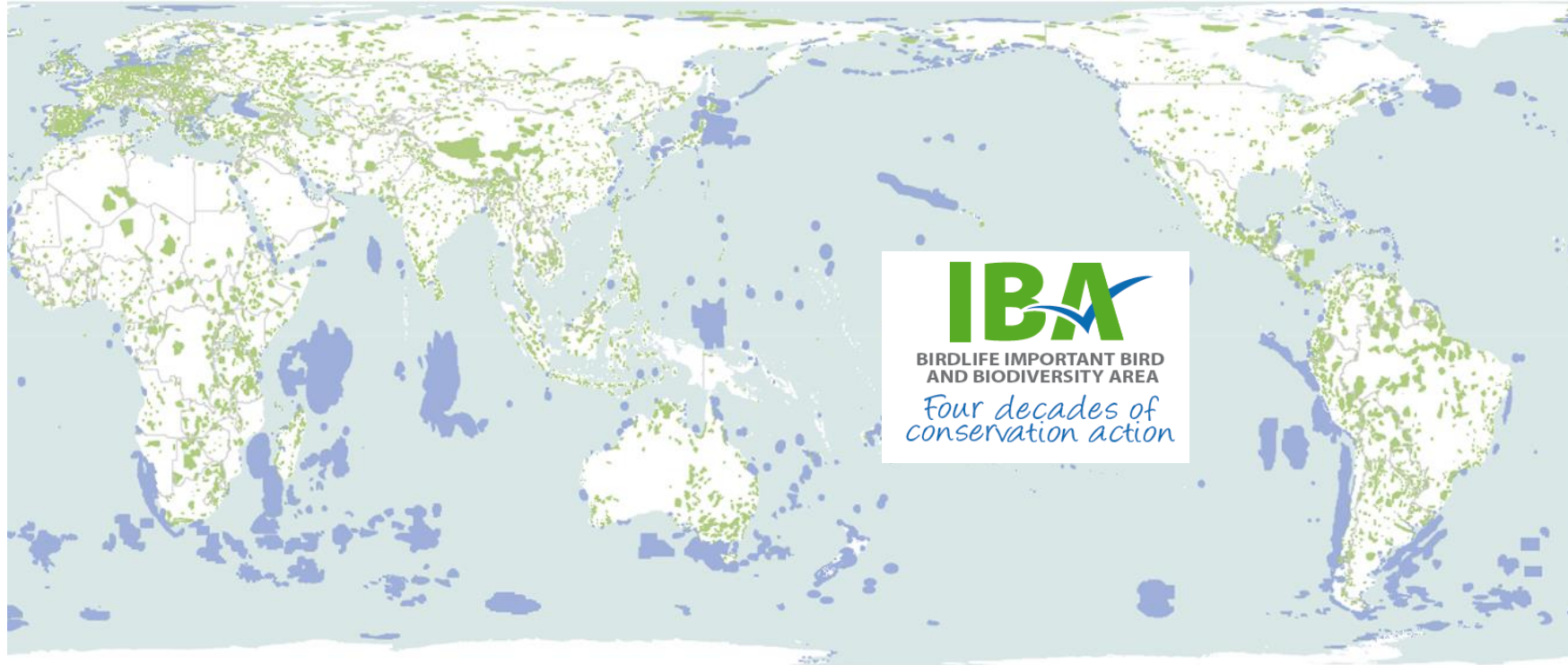
Key Biodiversity Areas – a unified system for
identifying the most important sites for
biodiversity



Partnership for
nature and people

Stuart Butchart, Chief Scientist, BirdLife International

History



- BirdLife has been identifying significant sites for biodiversity since the 1980s
- >13,000 Important Bird and Biodiversity Areas identified on land and at sea using standardised criteria and thresholds

History

ALLIANCE FOR
Zero Extinction

Prime Butterfly Area

IUCN
Freshwater Key Biodiversity Areas

Validated freshwater KBAs from the assessment areas to date: Europe, the Mediterranean Hot

Zoom to country [dropdown] Go

IUCN
The World Conservation Union

**Identification and Gap Analysis
of Key Biodiversity Areas**

Targets for Comprehensive Protected Area Systems

Penny F. Langhammer, Mohamed I. Bakarr, Leon A. Bennun, Thomas M. Brooks,
Rob P. Clay, Will Darwall, Naamal De Silva, Graham J. Edgar, Güven Eken,
Lincoln D.C. Fishpool, Gustavo A.B. da Fonseca, Matthew N. Foster,
David H. Knox, Paul Matiku, Elizabeth A. Radford, Ana S.L. Rodrigues,
Paul Salaman, Wes Sechrest and Andrew W. Tordoff
Peter Valentine, Series Editor

- Similar approaches have been developed for other biodiversity features

A new standard

A Global Standard for the Identification of Key Biodiversity Areas

Version 1.0

Prepared by the IUCN Species Survival Commission and IUCN World Commission on Protected Areas in association with the IUCN Global Species Programme

23 March 2016

- IUCN resolution in 2004
- SSC-WCPA Joint Task Force on Biodiversity and Protected Areas
- Wide consultation with input from experts in NGOs, academia, governments, donors & business
- Consolidated criteria and methodology
- Adopted by IUCN Council April 2016
- Available www.kbaconsultation.org

Recommended citation: IUCN (2016) *A Global Standard for the Identification of Key Biodiversity Areas, Version 1.0. First edition.* Gland, Switzerland: IUCN.

Key Biodiversity Areas



- *Sites that contribute significantly to the global persistence of biodiversity*

KBA Standard aims to:

- Harmonise & unify existing approaches
- Support identification of important sites for elements of biodiversity not considered in existing approaches
- Provide an objective, standard, consistent, repeatable, transparent & rigorous system
- Provide decision-makers with improved understanding of why particular sites are important for biodiversity

KBA Criteria



Criterion A: threatened species and ecosystems

A. Threatened Biodiversity	<i>Biodiversity element at site</i>	<i>% global pop. size/extent</i>	<i>RU¹</i>
A1: Threatened species	(a) CR or EN species	≥0.5%	≥5
	(b) VU species	≥1%	≥10
	(c) CR or EN species Threatened only due to population size reduction in the past or present	≥0.1%	≥5
	(d) VU species Threatened only due to population size reduction in the past or present	≥0.2%	≥10
	(e) CR or EN species	Entire global population size	
A2: Threatened ecosystem types	(a) CR or EN ecosystem type	≥5%	
	(b) VU ecosystem type	≥10%	

KBA Criteria



Criterion B: geographically restricted species & ecosystems

B. Geographically restricted biodiversity	<i>Biodiversity element at site</i>	<i>% global pop. size/extent</i>	<i>RU</i>
B1: Individually geographically restricted species	Any species	≥10%	≥10
B2: Co-occurring geographically restricted species	Restricted-range species: ≥2 species OR 0.02% of total number of species in taxonomic group, whichever is larger	≥1%	
B3: Geographically restricted assemblages	(a) ≥5 ecoregion-restricted species ² OR 10% of the species restricted to the ecoregion, whichever is larger (b) ≥5 bioregion-restricted species ² OR 30% of the bioregion-restricted species known from the country, whichever is larger (c) Part of the globally most important 5% of occupied habitat of each of ≥5 species within a taxonomic group	≥0.5%	
B4: Geographically restricted ecosystem types	Any ecosystem type	≥20%	

KBA Criteria



Criterion C: ecological intactness

C. Ecological integrity Biodiversity element at site ≤2 sites per ecoregion
Wholly intact ecological communities



KBA Criteria



Criterion D: Biological processes: aggregations, refugia & sources of recruitment

D. Biological processes	<i>Biodiversity element at site</i>	<i>% global pop. size</i>
D1: Demographic aggregations	(a) Species aggregation during one or more key stages of its life cycle (b) Among the largest 10 aggregations known for the species	≥1%
D2: Ecological refugia	Species aggregations during periods of past, current or future environmental stress	≥10%
D3: Recruitment sources	Propagules, larvae or juveniles maintaining high proportion of global population size	≥10% ³

KBA Criteria



Criterion E: Quantitative irreplaceability

E: Irreplaceability through quantitative analysis

Biodiversity element at site

Site has high irreplaceability measured by quantitative spatial analysis

Irrepl. score

≥0.90 on 0–1 scale

RU

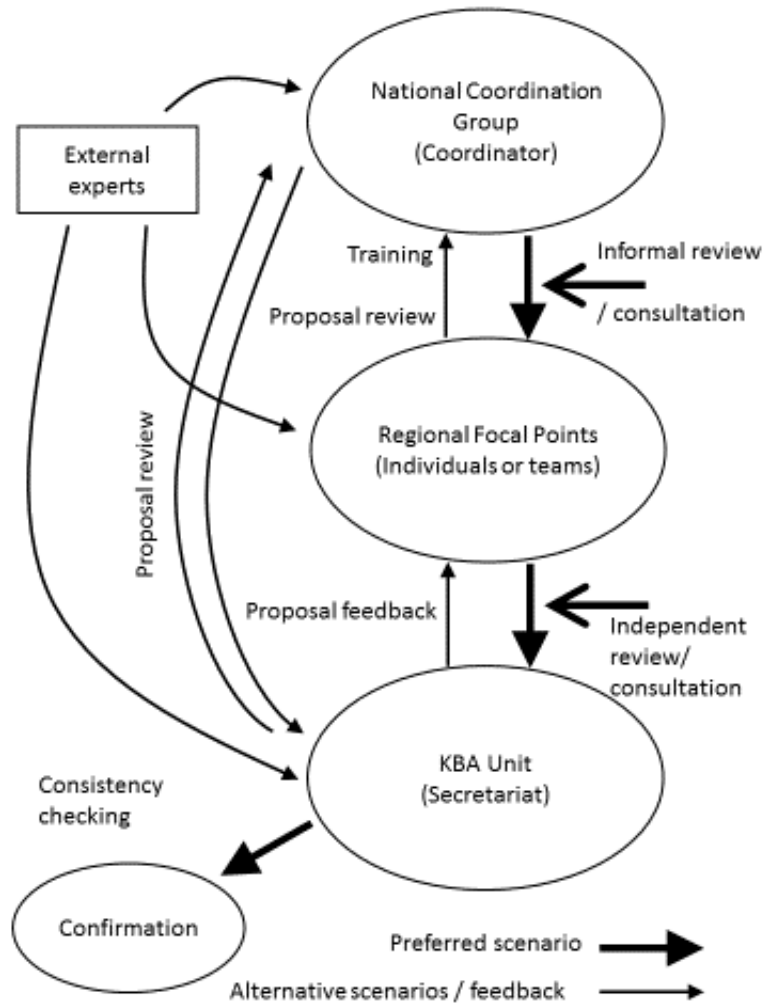
≥10 (or ≥5 for EN/CR sp)

KBA Criteria



- Criteria can be applied to macroscopic biodiversity in terrestrial, inland water and marine environments.
- Not all criteria may be relevant to all elements of biodiversity, but thresholds have been developed to work across all taxonomic groups and ecosystems
- The different criteria address different ways in which sites contribute significantly to the global persistence of biodiversity.
- Sites should be assessed against all relevant criteria, but qualify as KBA if meet thresholds under any criterion

Process of KBA identification



Uses of KBAs



- Strategic expansion of protected areas (CBD Aichi Target 11 & 12, Sustainable Development Goals)
 - Ecologically and Biologically Significant Areas
 - Ramsar Wetlands of International Importance
 - World Heritage Sites
 - Private sector safeguard policies
 - Environmental standards
 - Certification schemes
 - Conservation planning & priority setting
-
- Safeguarding KBAs is complementary to land-/seascape-scale and species-specific management

KBA Partnership



- Launched Sept 2016 at IUCN World Conservation Congress



Partnership for
nature and **people**

Objectives of the KBA Partnership

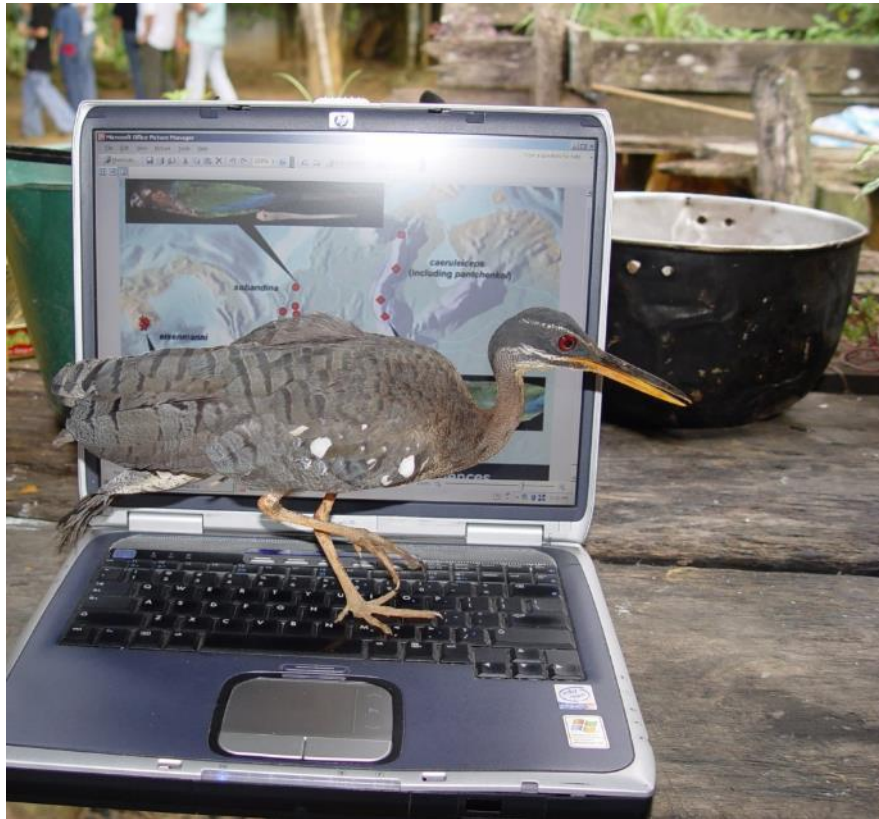


1. To lead, coordinate or support processes to identify, document, update, and monitor KBAs, and maintain these data through time, including through the provision of data, information, analyses, and expertise;
2. To promote and communicate the importance, utility and value of the KBA approach as a tool to inform terrestrial, freshwater and marine conservation-planning, decision-making, and policy-setting.



Partnership for
nature and people

World Database of KBAs



- Data on all KBAs made freely available for non-commercial use
- Launched Sept 2016
- Commercial use will continue to be managed through IBAT



KBAs & businesses

Guiding Principles and Business Management Conditions for Responsible Business Operations in Key Biodiversity Areas (KBA)

A module on how to manage direct, indirect and cumulative impacts linked to business operations on the biodiversity elements for which the site qualifies as a KBA.

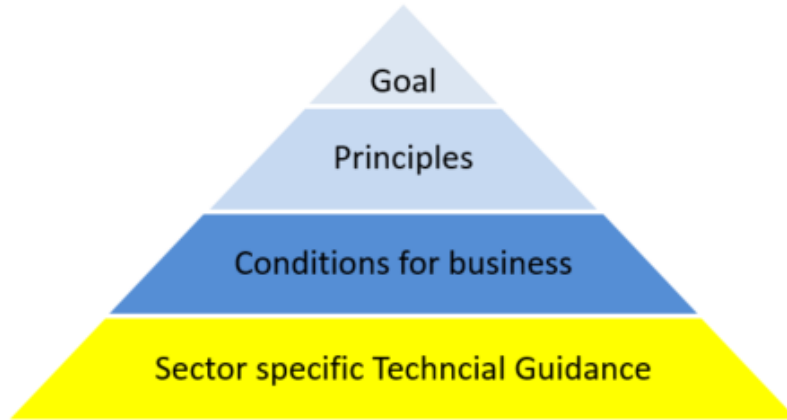
A KBA Partners collaborative project
coordinated by IUCN

“Key Biodiversity Areas are sites that contribute significantly to the global persistence of biodiversity”

Draft 1, June 2016

- Developed by a Scientific Committee comprising KBA Partners
- 1st draft from 3 day meeting in June
- 1st consultations with industry, financial institutions and certification systems reps in July
- Final version to be approved by KBA Committee mid-2017
- Will need sector-specific interpretation guidance
- Current project will develop Technical Guidance for the Mining sector

KBAs & businesses



- **Goal** is about maintaining/enhancing biodiversity of the KBA through mitigating impacts
- **Principles** are about avoiding residual negative impacts & promoting additional conservation actions for the biodiversity for which the site qualifies as KBA

These apply to:

- Project's area of influence
- Projects in or with impacts on KBAs
- Direct, indirect and cumulative impacts
- New and existing projects
- Entire life cycle of the project

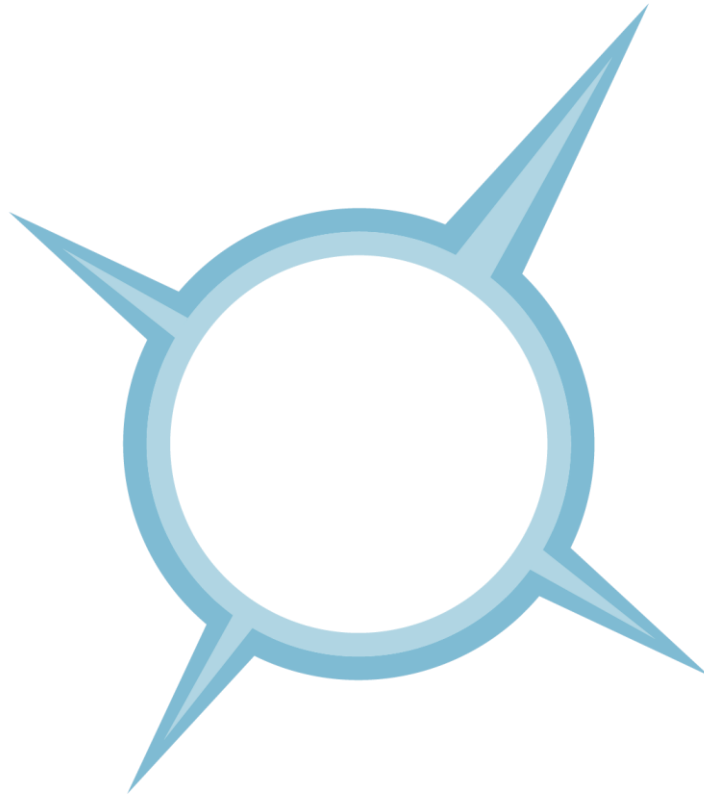
Further information: Giulia.CARBONE@iucn.org



Proteus Annual Meeting

28th - 29th June 2016

David Attenborough Building, Cambridge, UK



ExxonMobil



RioTinto

