CYMIE PAYNE
RUTGERS UNIVERSITY
INTERNATIONAL UNION FOR CONSERVATION OF NATURE

Governing Climate Change and Marine Biodiversity Loss: Can We Walk and Chew Gum at the Same Time?

University of Houston Law Center
17 February 2022

Marie Sklodawska-Curie lecture series with the University of Lyon, sponsored by the EU

ABNJ is not a blank space, it is a shared space

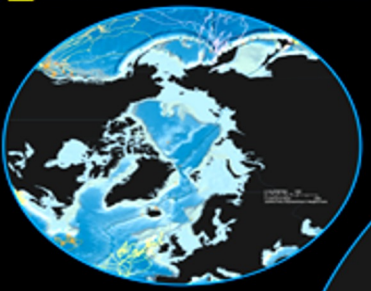
Ocean Life

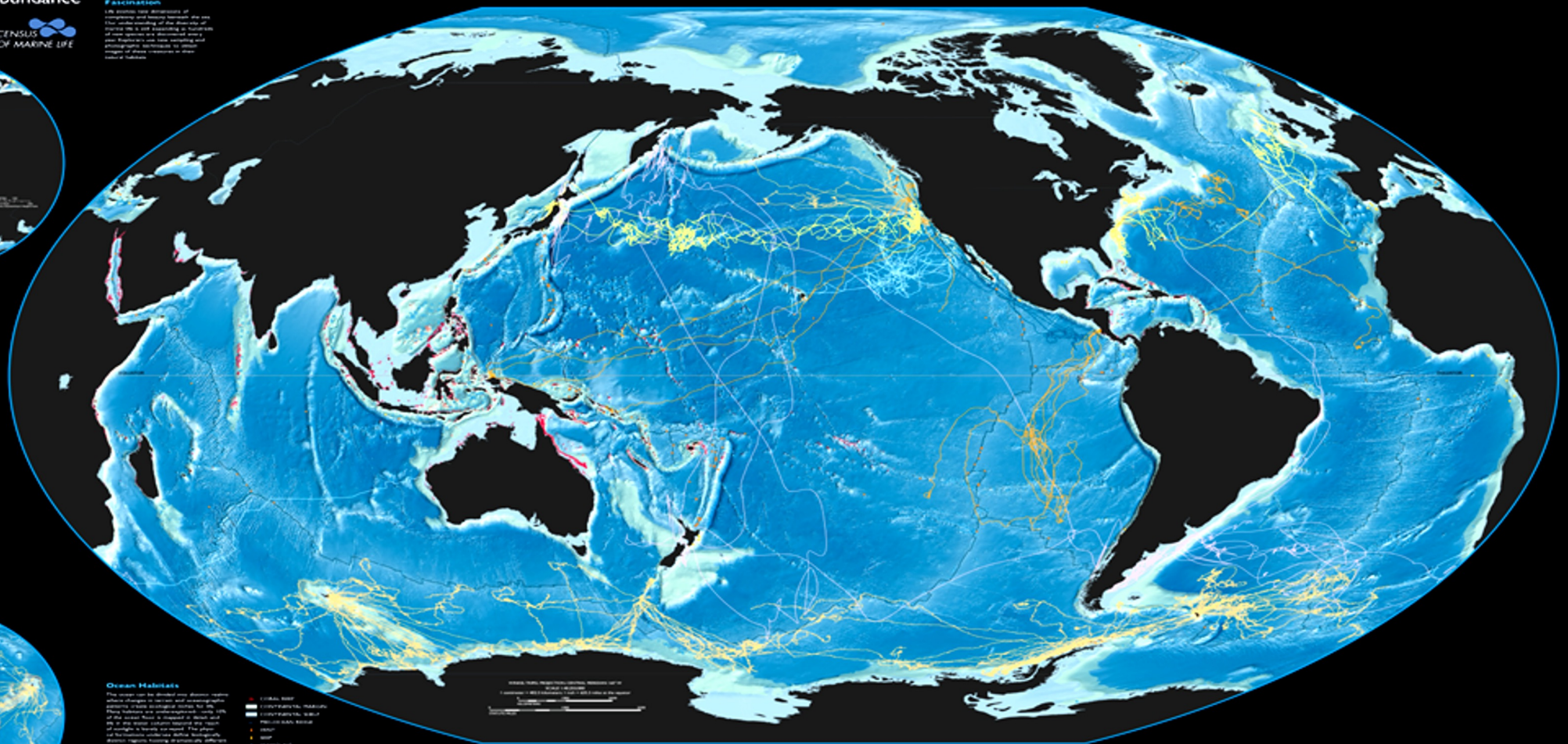
Diversity, Distribution, Abundance

NATIONAL GEOGRAPHIC

CENSUS OF MARINE LIFE

CENSUS OF MARINE LIFE



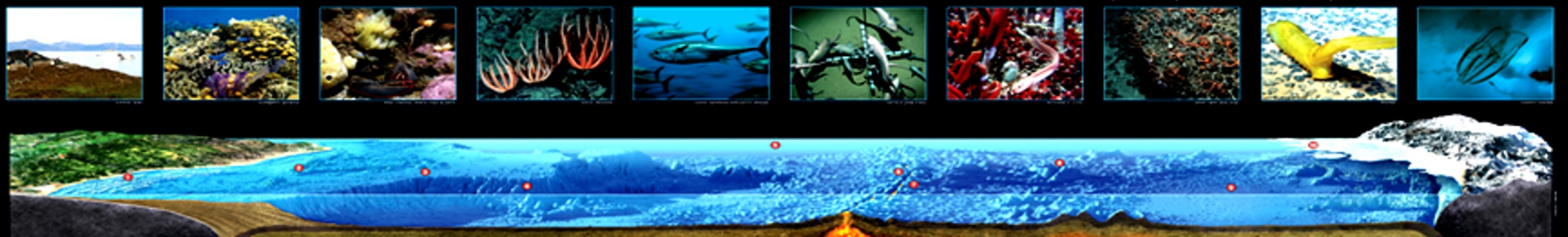


Discovery and Fascination

Ocean Habitats

Polar Regions

www.coml.org



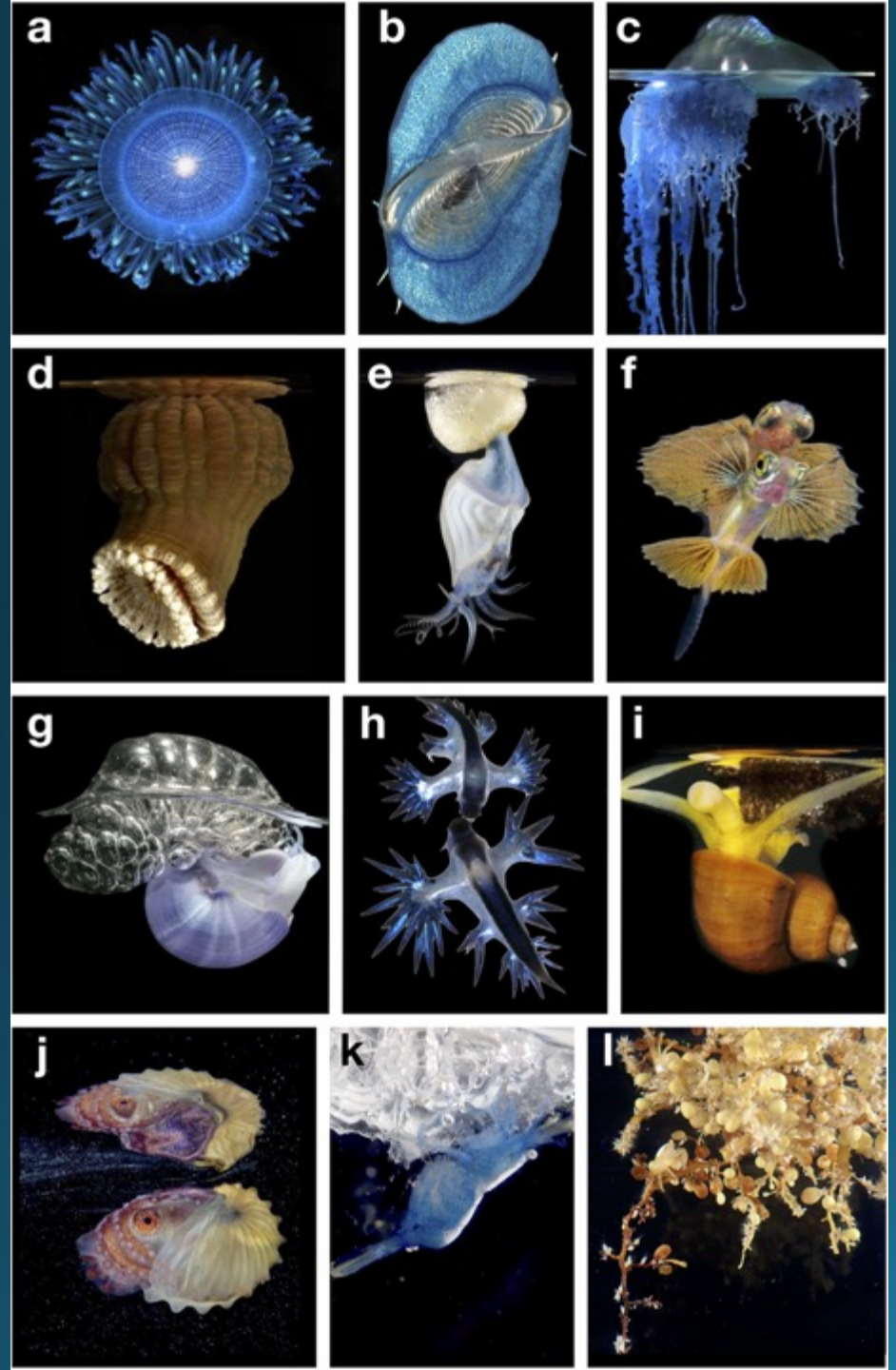


Fig 1. Diverse members of the ocean surface ecosystem. (a) Blue button *Porpita* sp. viewed from above, (b) by-the-wind sailor *Velella* sp. viewed from above, (c) Portuguese man-o-war *Physalia* sp. viewed from the side, with the float above the surface, (d) the floating anemone *Actinecta* sp. viewed from the side, with the aboral float at the surface, (e) buoy barnacle *Dosima fascicularis* viewed from the side, with aboral white float at the water's surface, (f) a young flying fish (family Exocoetidae) viewed from below, reflected in the surface above, (g) violet snail *Janthina* sp. viewed from the side, with a large bubble raft made from snail mucus emerging from the water, (h) blue sea dragons *Glaucus* sp. viewed from above with dark blue ventral surfaces, (i) the snail *Recluzia* sp. viewed from the side oral end, (j) paper nautilus *Aurgonaut* sp. viewed from the side and reflecting off the water's surface, (k) a shrimp in the family Hippolytidae, clinging to a discarded *Janthina* bubble raft, (l) seaweed *Sargassum* sp. with a small sargassum crab *Portunus sayi*. Images a–e and g–i by Denis Riek, f and j by Songda Cai, k and l by Rebecca R. Helm.

Helm RR (2021) The mysterious ecosystem at the ocean's surface. PLOS Biology 19(4): e3001046. https://doi.org/10.1371/journal.pbio.3001046

UNIVERSITY OF CALIFORNIA SANTA CRUZ

Smithsonian Conservation Biology Institute
Migratory Bird Center

nature ecology & evolution

ARTICLES

https://doi.org/10.1038/s41559-018-0646-8

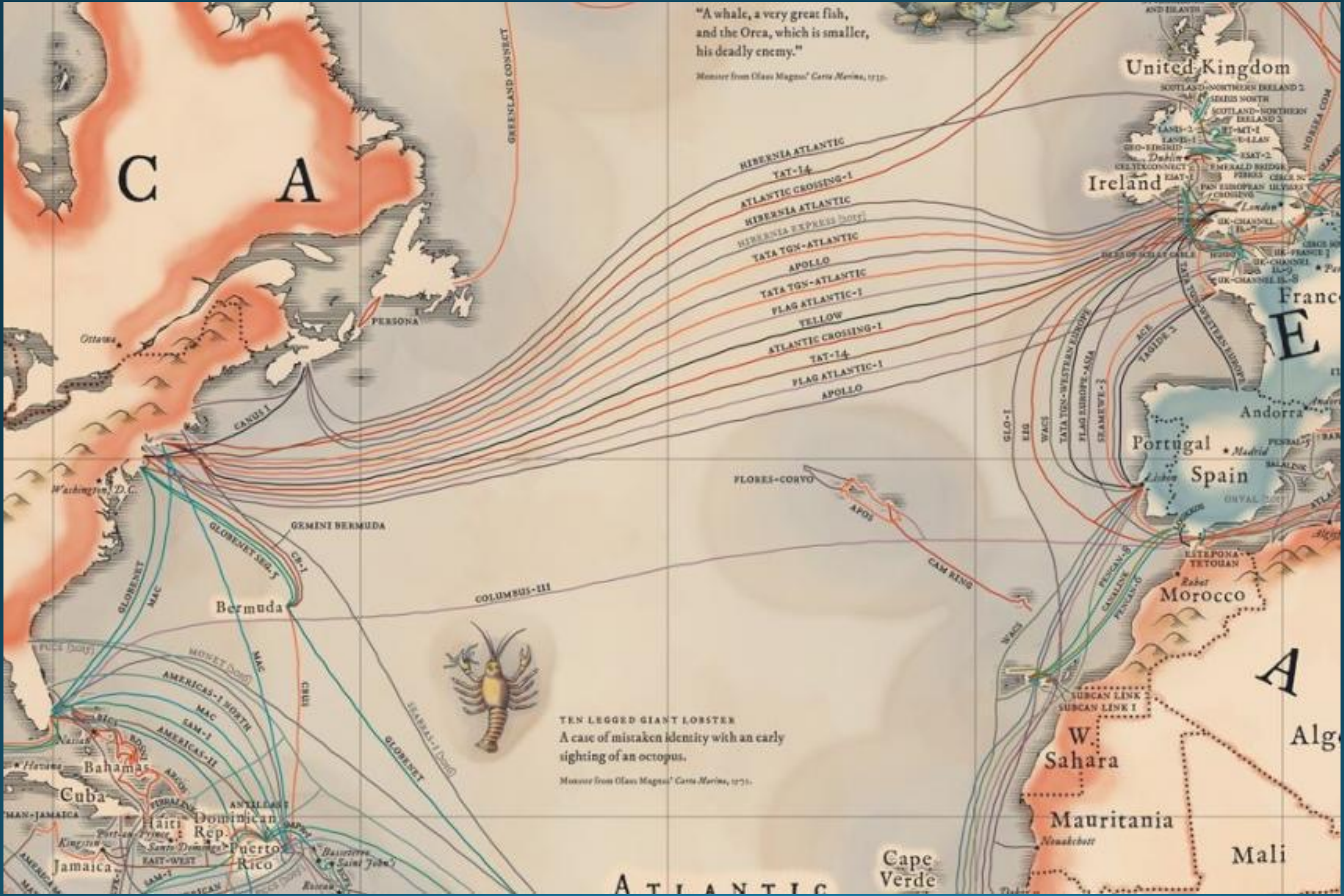
The political biogeography of migratory marine predators

Autumn-Lynn Harrison[1,2*], Daniel P. Costa[1], Arliss J. Winship[3,4], Scott R. Benson[5,6], Steven J. Bograd[7], Michelle Antolos[1], Aaron B. Carlisle[8,9], Heidi Dewar[10], Peter H. Dutton[11], Salvador J. Jorgensen[12], Suzanne Kohin[10], Bruce R. Mate[13], Patrick W. Robinson[1], Kurt M. Schaefer[14], Scott A. Shaffer[15], George L. Shillinger[8,16,17], Samantha E. Simmons[18], Kevin C. Weng[19], Kristina M. Gjerde[20] and Barbara A. Block[8]

During their migrations, marine predators experience varying levels of protection and face many threats as they travel through multiple countries' jurisdictions and across ocean basins. Some populations are declining rapidly. Contributing to such declines is a failure of some international agreements to ensure effective cooperation by the stakeholders responsible for managing species throughout their ranges, including in the high seas, a global commons. Here we use biologging data from marine predators to provide quantitative measures with great potential to inform local, national and international management efforts in the Pacific Ocean. We synthesized a large tracking data set to show how the movements and migratory phenology of 1,648 individuals representing 14 species—from leatherback turtles to white sharks—relate to the geopolitical boundaries of the Pacific Ocean throughout species' annual cycles. Cumulatively, these species visited 86% of Pacific Ocean countries and some spent three-quarters of their annual cycles in the high seas. With our results, we offer answers to questions posed when designing international strategies for managing migratory species.

Graphics credit: Autumn-Lynn Harrison, Ph.D.

Antarctic blue whale (Photo: Mike Johnson)


"A whale, a very great fish, and the Orca, which is smaller, his deadly enemy."
C A
GREENLAND CONNECT
United Kingdom
Ireland
HIBERNIA ATLANTIC
TAT-14
ATLANTIC CROSSING-1
HIBERNIA ATLANTIC
TATA TGN-ATLANTIC
APOLLO
TATA TGN-ATLANTIC
FLAG ATLANTIC-1
YELLOW
ATLANTIC CROSSING-1
TAT-14
FLAG ATLANTIC-1
APOLLO
PERSONA
CANUS 1
Ottawa
Washington, D.C.
GEMINI BERMUDA
GLOBENET
MAC
CB-1
Bermuda
COLUMBUS-III
FLORES-CORVO
CAM RING
AMERICAS-1 NORTH
SAM-1
AMERICAS-II
GLOBENET
TEN LEGGED GIANT LOBSTER
A case of mistaken identity with an early sighting of an octopus.
France
E
Andorra
Portugal
Spain
Madrid
Lisbon
GLO-1
WACS
TATA TGN-WESTERN EUROPE
SEAMEWE-3
ACE
TAGIDE 2
ESTEPONA-TETOUAN
Rabat
Morocco
SUBCAN LINK 2
SUBCAN LINK 1
W. Sahara
A
Alg
Mauritania
Nouakchott
Mali
Cape Verde
ATLANTIC
Bahamas
Cuba
Havana
Haiti
Dominican Rep.
Puerto Rico
Jamaica
Kingston
Port-au-Prince
Santo Domingo
EAST-WEST
ANTILLAS 1

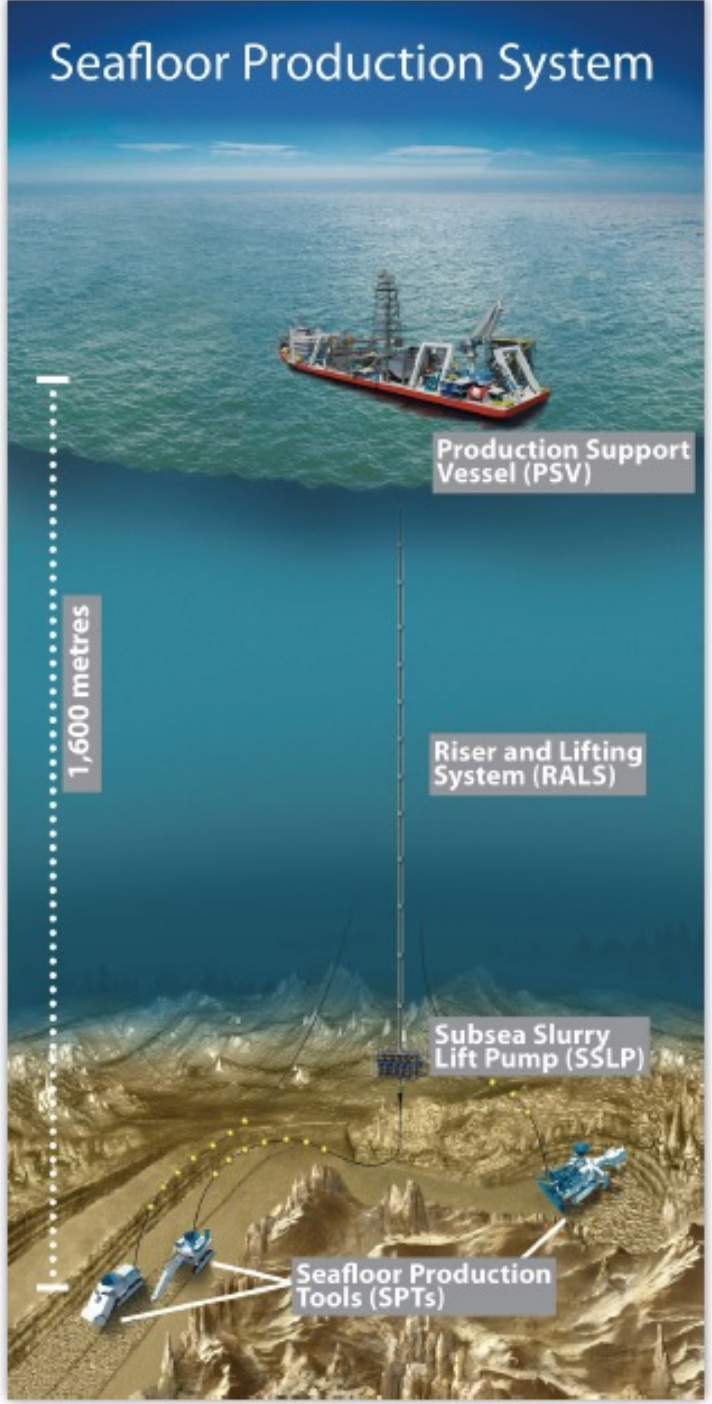

MarineTraffic
Vessel, Port, etc.
S21°36'59.68
E147°26'04.33
(-21.6166, 147.4345)
ELANDRA EAGLE [MH]
Destination: CNJNZ
171818 vessels on map
172K
6K
3000 km
2000 mi
Leaflet
Map data ©2018
Terms of Use
Greenland
Canada
United States
Russia
Finland
Ukraine
Kazakhstan
China
Mongolia
Turkey
Iraq
Iran
Afghanistan
Pakistan
India
Thailand
Algeria
Libya
Egypt
Mali
Niger
Chad
Sudan
Nigeria
Ethiopia
Kenya
DRC
Brazil
Bolivia
Botswana
Australia
North Pacific Ocean
South Pacific Ocean
Indian Ocean

GHG pollution for the ocean causes:

- Warming of the water > *changes habitats , species migrate or perish*
- Acidification > *destroys bodies of essential life forms*
- Deoxygenation > *catastrophic food web collapse*
- Affecting human health, survival, food, conflict

Other threats include:

- overfishing;
- noise, ocean-, and land-based pollution;
- habitat destruction, destruction of life forms, pollution from deep seabed mining



An example of a commercial seabed mining system. © Nautilus minerals

Deep Seabed Mining:

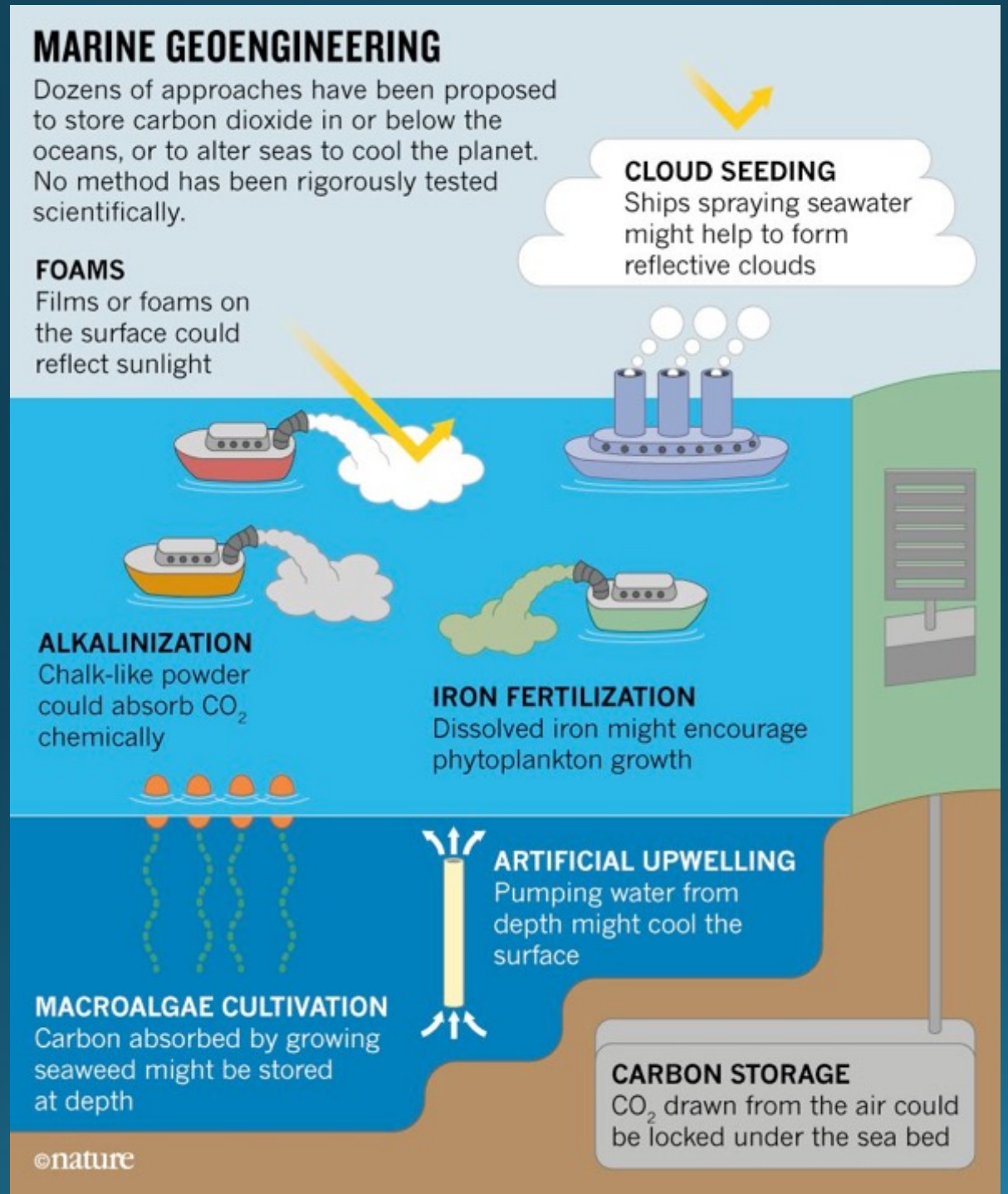
- 2-year rule

Or …

- "Precautionary Pause": Can mining be done safely for the environment? Should mining be done at all?

MARINE GEOENGINEERING

Dozens of approaches have been proposed to store carbon dioxide in or below the oceans, or to alter seas to cool the planet. No method has been rigorously tested scientifically.



nature Vol 461|24 September 2009

FEATURE

A safe operating space for humanity

Identifying and quantifying planetary boundaries that must not be transgressed could help prevent human activities from causing unacceptable environmental change, argue **Johan Rockström** and colleagues.

Johan Rockström, Will Steffen, Kevin Noone, Åsa Persson, F. Stuart Chapin III, Eric F. Lambin, Timothy M. Lenton, Marten Scheffer, Carl Folke, Hans Joachim Schellnhuber, Björn Nykvist, Cynthia A. de Wit, Terry Hughes, Sander van der Leeuw, Henning Rodhe, Sverker Sörlin, Peter K. Snyder, Robert Costanza, Uno Svedin, Malin Falkenmark, Louise Karlberg, Robert W. Corell, Victoria J. Fabry, James Hansen, Brian Walker, Diana Liverman, Katherine Richardson, Paul Crutzen & Jonathan A. Foley

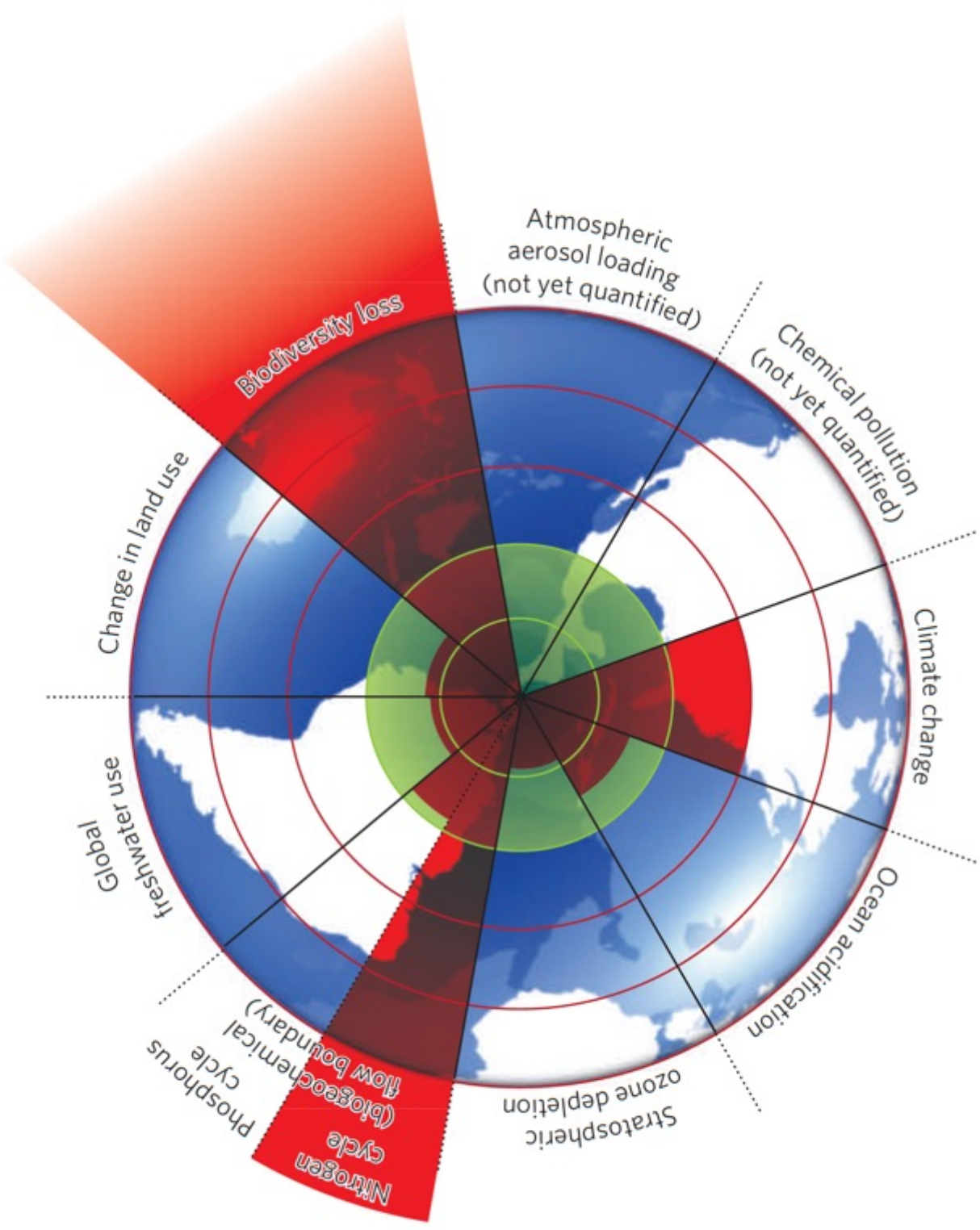


Figure 1 | Beyond the boundary. The inner green shading represents the proposed safe operating space for nine planetary systems. The red wedges represent an estimate of the current position for each variable. The boundaries in three systems (rate of biodiversity loss, climate change and human interference with the nitrogen cycle), have already been exceeded.

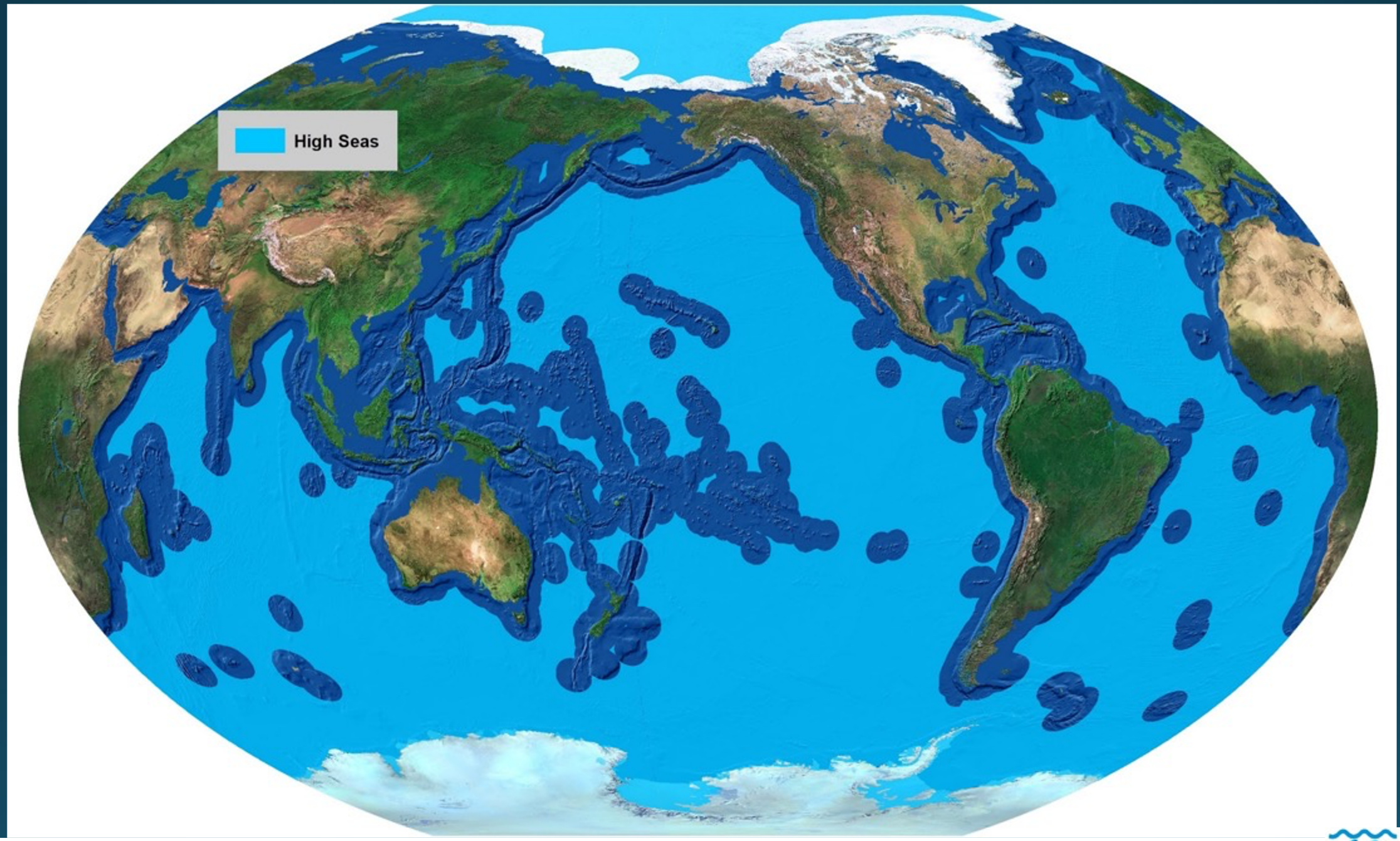
United Nations Third Conference on the Law of the Sea 1973-1982

"Now the uses of the seas are many and interdependent, now the fears and interests of coastal and other states are many and legitimate, now, happily military force cannot be readily used to protect most of the interests at stake. International law, then, has to move quickly in the sea. … The seas—all the seas—cry for regulation as a veritable *res communis omnium*." – Louis Henkin, 65 AJIL 131 (1971)

UNCLOS Article 87 Freedom of the high seas

1. The high seas are open to all States, whether coastal or land-locked. Freedom of the high seas is exercised under the conditions laid down by this Convention and by other rules of international law. ...

2. These freedoms shall be exercised by all States with due regard for the interests of other States in their exercise of the freedom of the high seas, and also with due regard for the rights under this Convention with respect to activities in the Area.



High Seas >60% of Ocean; <1% Protected

CORAL REEFS OF THE HIGH SEAS COALITION

Global Commons

Jutta Brunnée, "Common Areas, Common Heritage, and Common Concern," in *Oxford Handbook of International Environmental Law* (D. Bodansky, J. Brunnée, E. Hey, OUP 2007)

- Common Areas - *high seas*
- Common Concern - *biodiversity*
- Common Heritage – *The Area*

Obligations of States under UNCLOS

Article 117 Duty of States to adopt with respect to their nationals measures for the conservation of the living resources of the high seas

Article 192 General obligation

States have the obligation to protect and preserve the marine environment.

Article 145 Protection of the marine environment

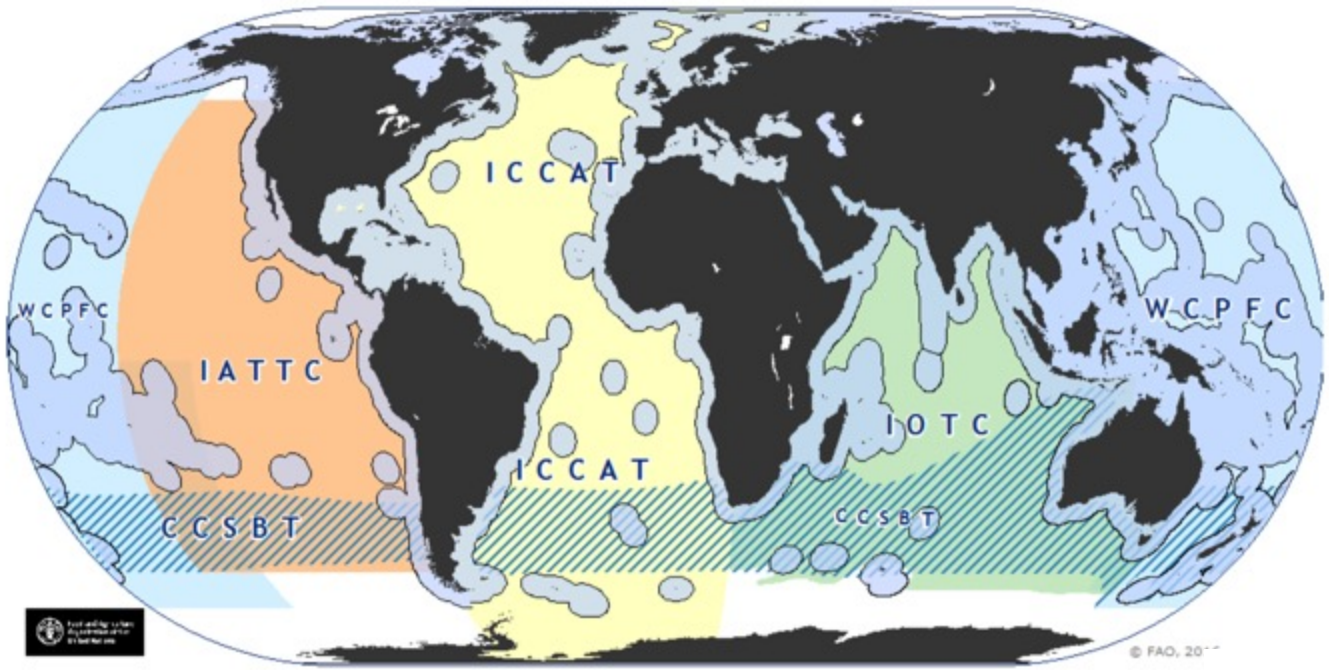
Article 147 Accommodation of activities in the Area and in the marine environment

SUSTAINABLE DEVELOPMENT GOALS

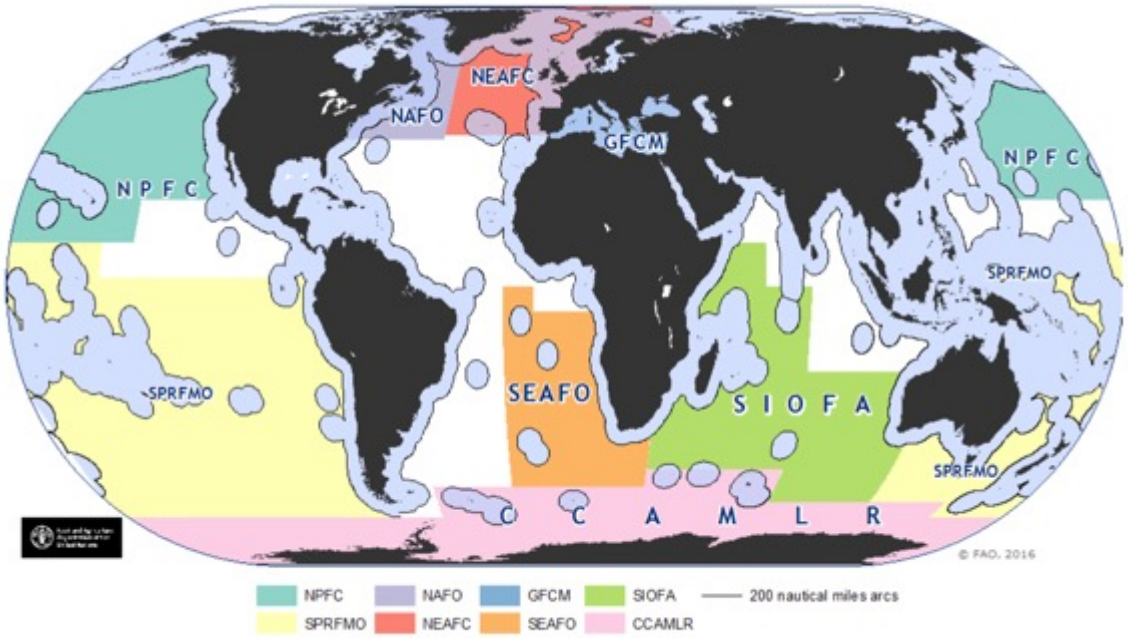
17 GOALS TO TRANSFORM OUR WORLD

Goal 14: Conserve and sustainably use the oceans, seas and marine resources

Regime Fragmentation & Gaps



Map 2. The geographic coverage of Tuna RFMOs. The map was prepared by the FAO.



Map 1. The geographic coverage of General RFMOs. The map was prepared by the FAO.

United Nations A/RES/72/249

General Assembly

Distr.: General
19 January 2018

72/249. International legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction

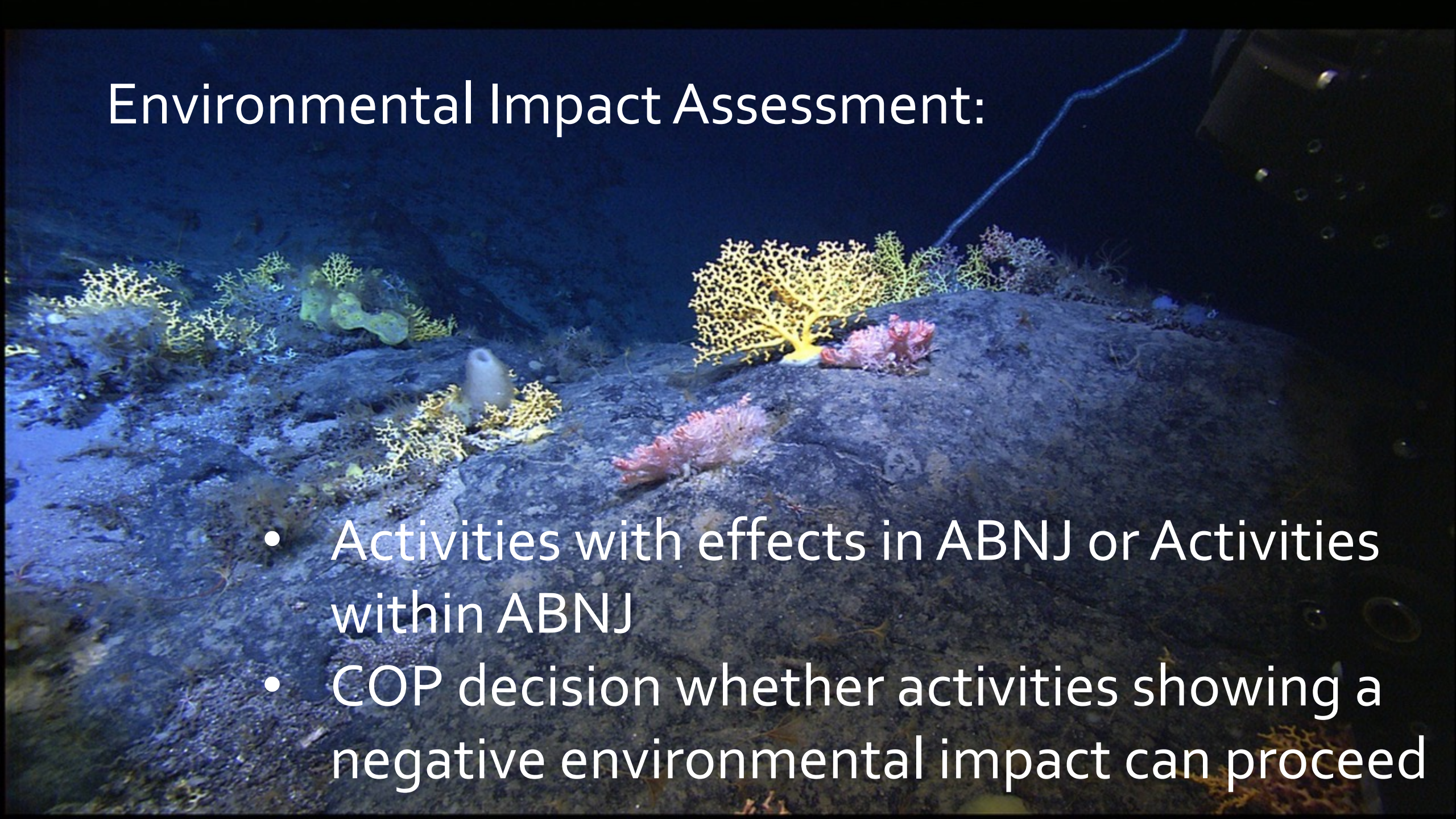
package agreed in 2011, namely, the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, in particular, together and as a whole, marine genetic resources, including questions on the sharing of benefits, measures such as area-based management tools, including marine protected areas, environmental impact assessments and capacity-building and the transfer of marine technology;

BBNJ – Marine Biological Diversity Beyond National Jurisdiction negotiation

- Environmental Assessment
- Area-Based Management Tools, MPA
- Marine Genetic Resources
- Capacity Building and Tech Transfer

Legal analysis of negotiation text at: www.iucn.org/bbnj

Environmental Impact Assessment:



- Activities with effects in ABNJ or Activities within ABNJ
- COP decision whether activities showing a negative environmental impact can proceed

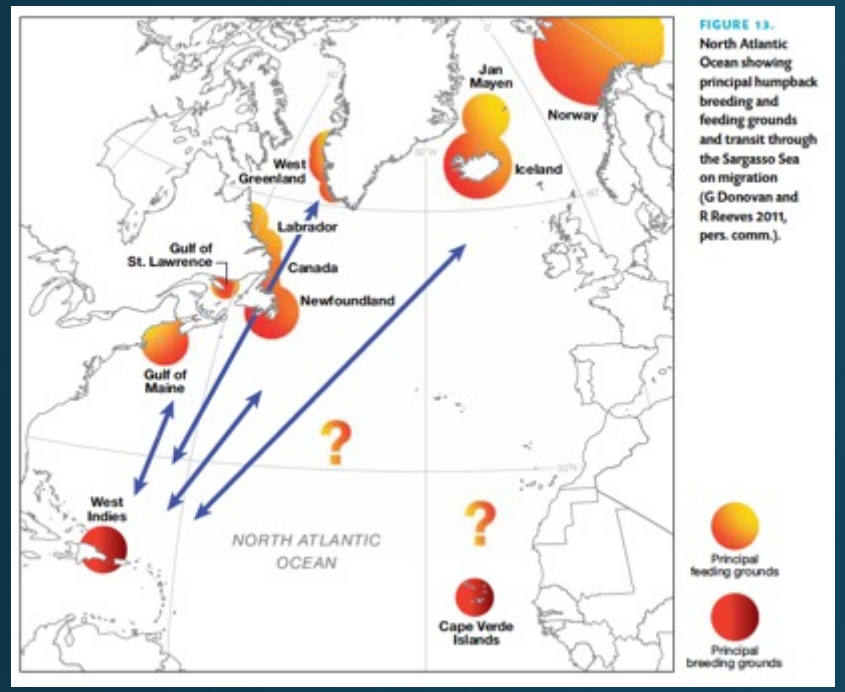
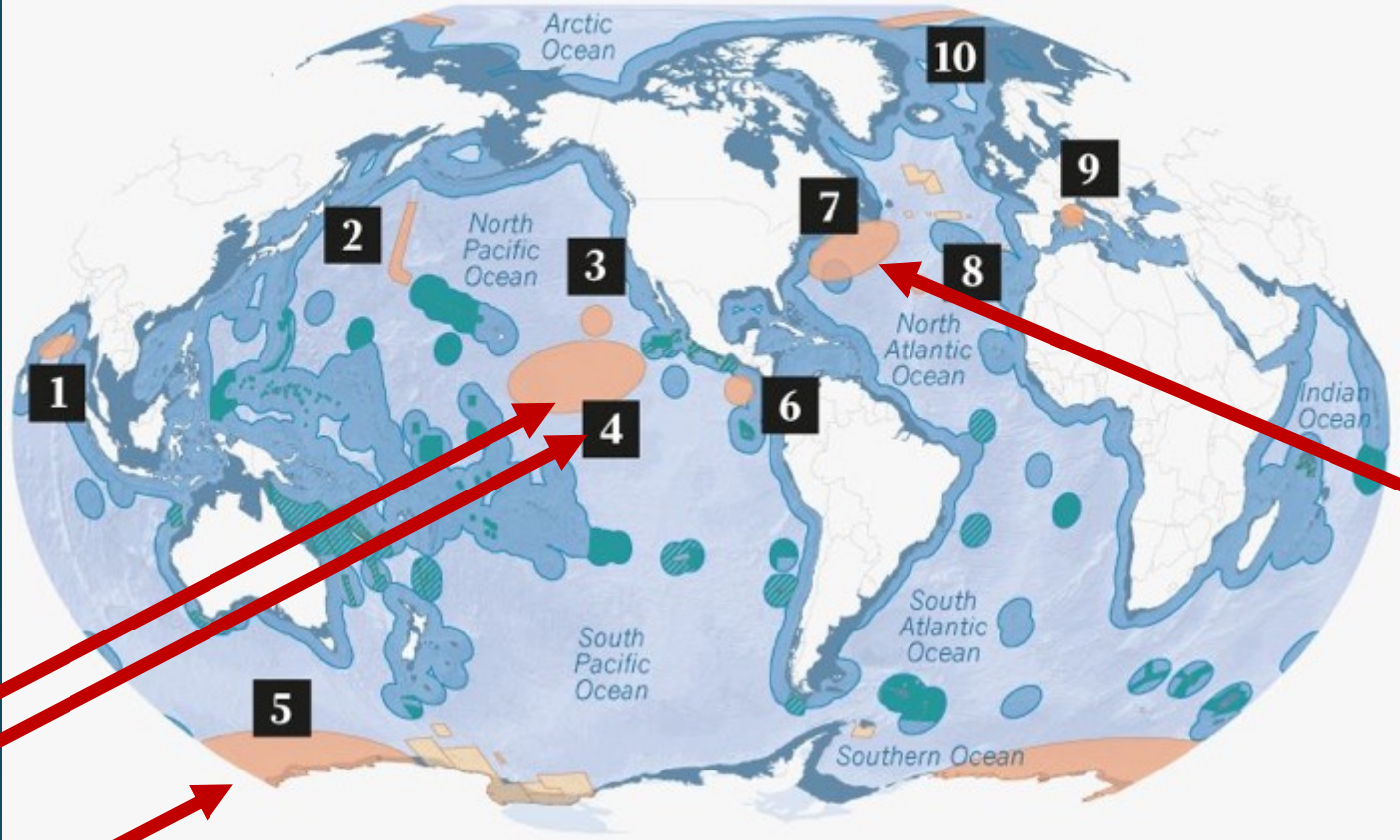


FIGURE 13. North Atlantic Ocean showing principal humpback breeding and feeding grounds and transit through the Sargasso Sea on migration (G Donovan and R Reeves 2011, pers. comm.).

Area-Based Management Tools and Protected Areas



- Areas of interest
- Existing high seas MPA
- Exclusive economic zones
- Continental shelf
- National MPAs larger than 100,000 km²
- Yet-to-be-confirmed national MPAs larger than 100,000 km²

1. Bay of Bengal
2. Emperor Seamount Chain
3. White Shark Cafe
4. Clarion Clipperton Zone
5. East Antarctica
6. Costa Rica Dome
7. Sargasso Sea
8. Lost City Hydrothermal Field
9. Pelagos Sanctuary
10. Gakkel Ridge

Capacity Building and Technology Transfer:

- Modalities
- Financing

Marine Genetic Resources

- Common Heritage?
- Access and Benefit Sharing?
- Transparency/Embargo?

Cross-cutting: Institutional structures

CORAL REEFS OF THE HIGH SEAS COALITION

CLIMATE CHANGE?

BBNJ:

Mitigation:

- Environmental Impact Assessment and Strategic Environmental Assessment to plan and screen ocean activities

Adaptation:

- Area-Based Management Tools, Marine Protected Areas

Legal Challenges:

- *Getting strong Enforcement and Compliance; Responsibility and Liability; and Dispute Settlement measures in agreement*

Legal analysis of negotiation text at: www.iucn.org/bbnj

IUCN World Commission on Environmental Law
Commission Mondiale de Droit de l'Environnement | Comisión Mundial de Derecho Ambiental

United Nations

A/RES/72/249

General Assembly

Distr.: General
19 January 2018

"this process and its result should not undermine existing relevant legal instruments and frameworks and relevant global, regional and sectoral bodies"

UN Framework Convention on Climate Change

Preamble

Aware of the role and importance in terrestrial and marine ecosystems of sinks and reservoirs of greenhouse gases,

UNFCCC, Article 4(1)(d)

All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall:

Promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and **oceans** as well as other terrestrial, coastal and **marine ecosystems**

Paris Agreement does not carry through the UNFCCC obligation …

Preamble

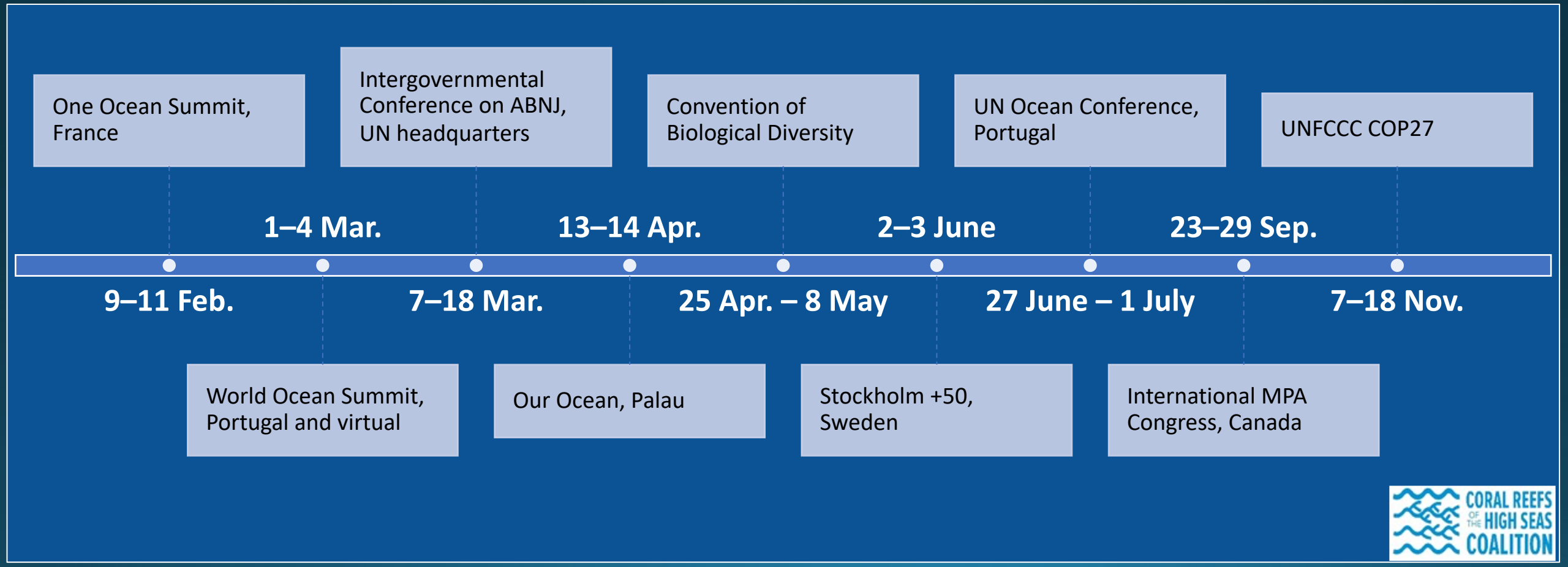
… Noting the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity, recognized by some cultures as Mother Earth, and noting the importance for some of the concept of "climate justice", when taking action to address climate change, …

… only one mention of the ocean in the Paris Agreement

- UNFCCC + Paris Agreement – potential for including ocean
  - In NDCs
  - In Global Stocktake 2023
  - Ocean and Climate Change Dialogues
- UNCLOS – principles of environmental protection, pollution prevention, but needing implementation
- BBNJ – if high ambition – offers an integrated approach
  - Environmental Impact Assessment: cumulative impacts analysis, GHG emissions of high seas activities
  - Area-based management tools/marine protected areas: resilience
  - COP, secretariat and Scientific and Technical Body to support collective action
  - Clearing-house Mechanism: information platform

Thanks to Nilüfer Oral for her insights on UNFCCC/UNCLOS

What's Next?
Upcoming meetings in 2022



CORAL REEFS OF THE HIGH SEAS COALITION

THANK YOU

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