What's the value in marine growth?

Lessons learned on its role in ecosystem function, restoration and future conservation management

J Murray Roberts

mara

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underwater Technology

Technical Paper

The Occurrence of the Coral *Lophelia pertusa* and Other Conspicuous Epifauna around an Oil Platform in the North Sea

J. M. ROBERTS

Scottish Association for Marine Science, Dunstaffnage Marine Laboratory, Oban, Argyll PA37 1QA, UK

October 1999

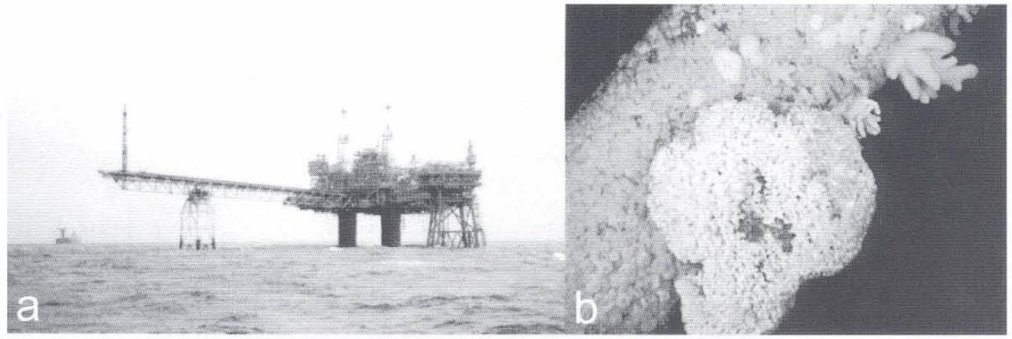


Figure 2 (a) The Beryl Alpha platform in the northern North Sea showing the flare and its supporting tower. (b) A single colony of *Lophelia pertusa* growing on this flare support tower at a water depth of 72 m. The colony is approximately 30 cm in diameter and 20 cm in height and is surrounded by sea anemones (probably *Metridium senile*) and above several colonies of *Alcyonium digitatum* are visible.

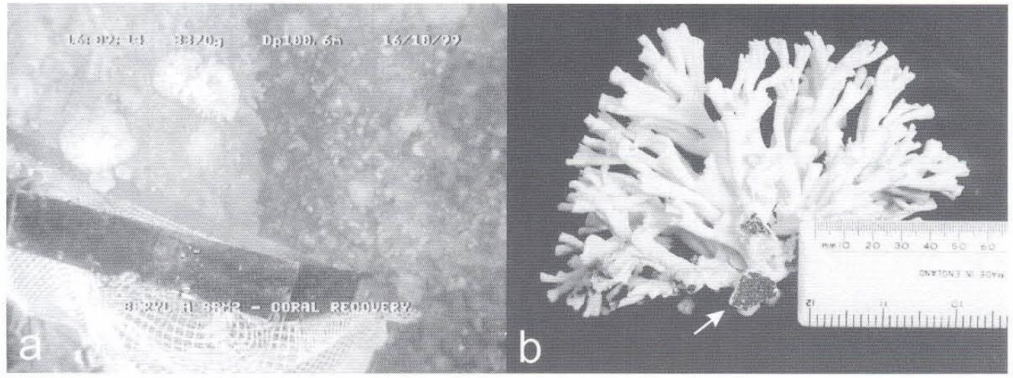


Figure 3 (a) Coral sampling using a net and scraper attached to the ROV manipulator arm from a riser on a single point mooring serving the Beryl Alpha platform in the northern North Sea. (b) The recovered coral skeleton showing the point at which it attached to the riser surface (arrowed).

1999

United Nations A/RES/61/105

General Assembly

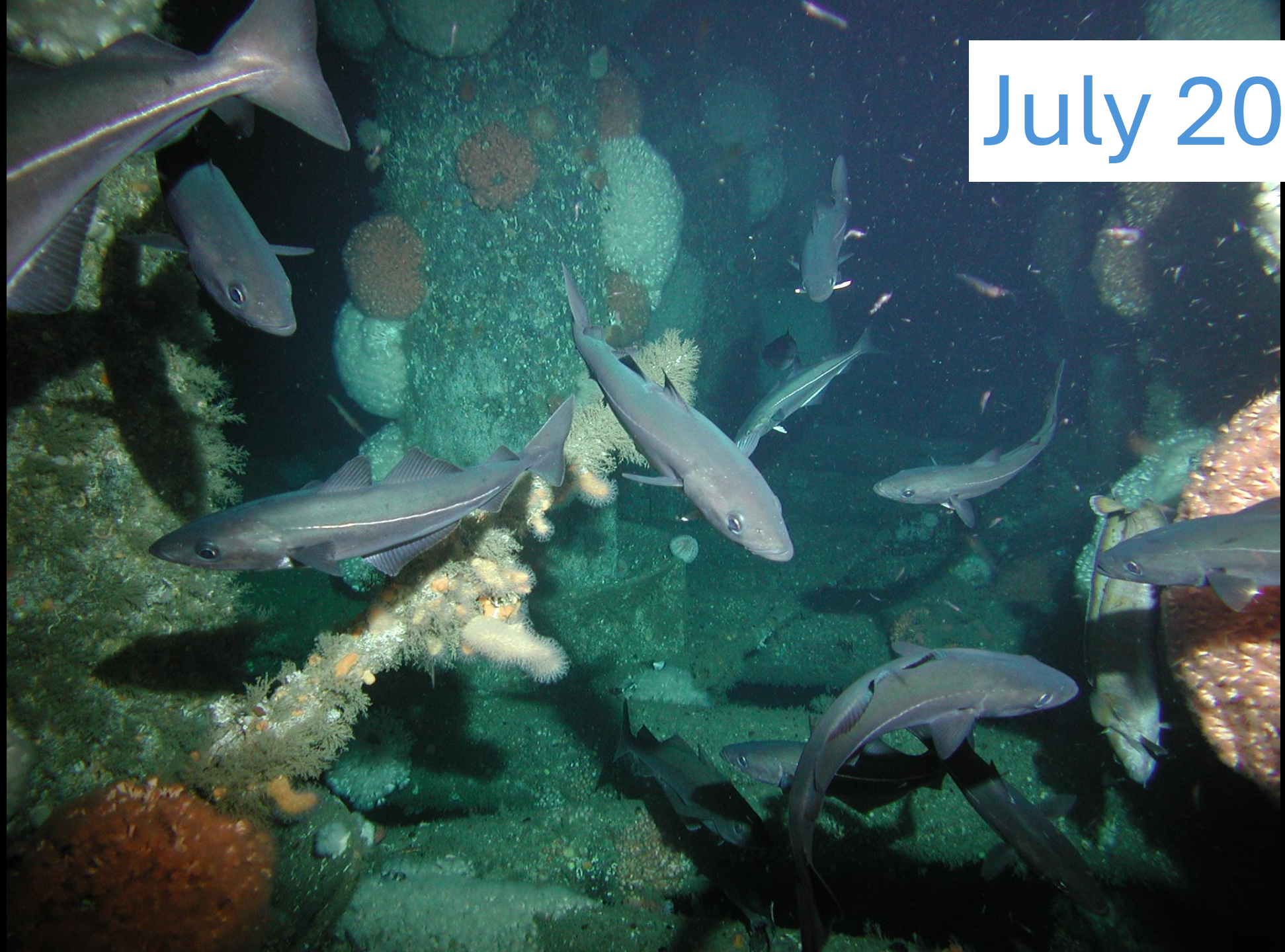
Distr.: General
6 March 2007

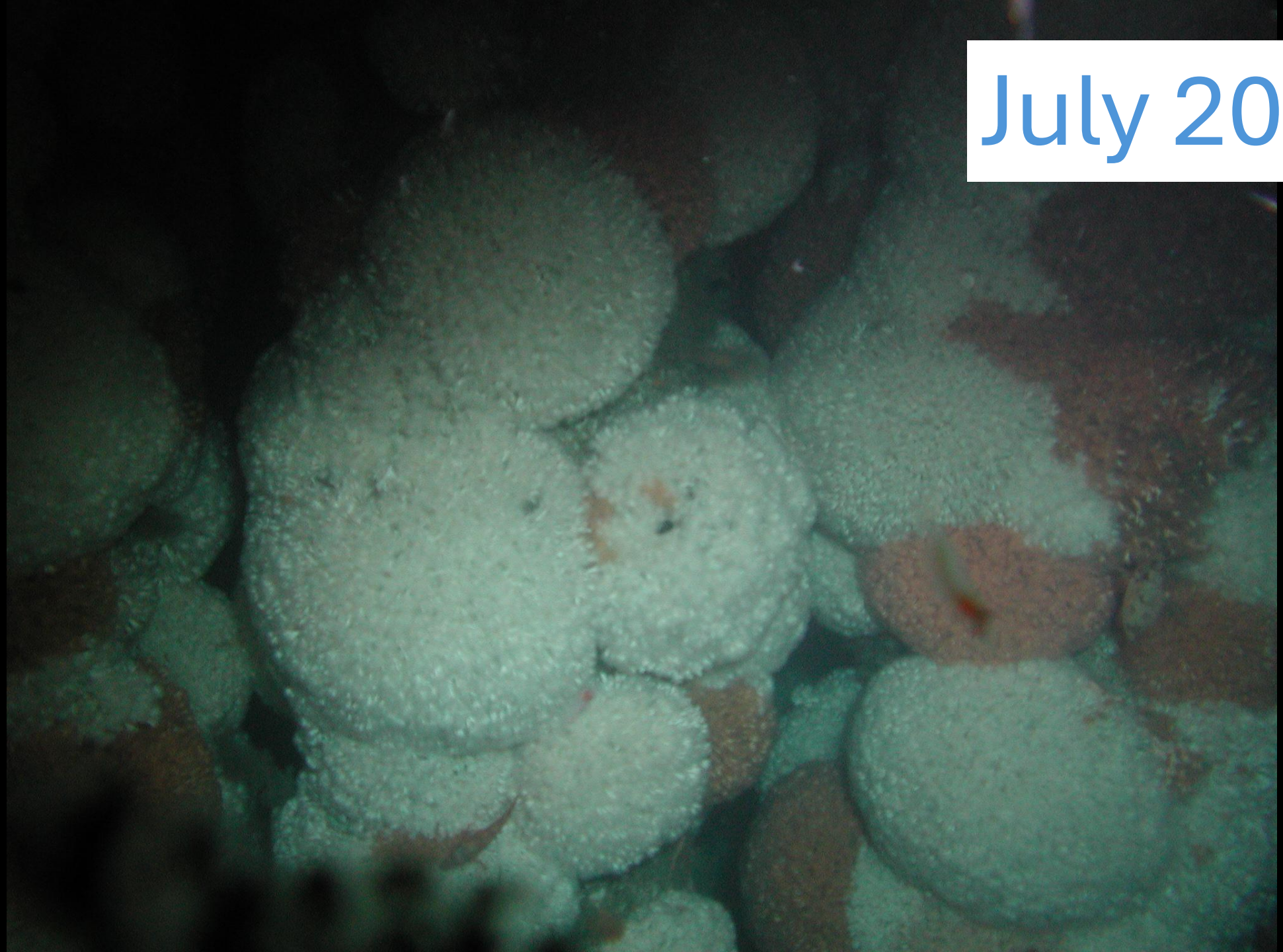
Sixty-first s
Agenda item

80. *Calls upon* States to take action immediately, individually and through regional fisheries management organizations and arrangements, and consistent with the precautionary approach and ecosystem approaches, to sustainably manage fish stocks and protect vulnerable marine ecosystems, including seamounts, hydrothermal vents and cold water corals, from destructive fishing practices, recognizing the immense importance and value of deep sea ecosystems and the biodiversity they contain;

61/105. Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments

Dec 2006


July 2002



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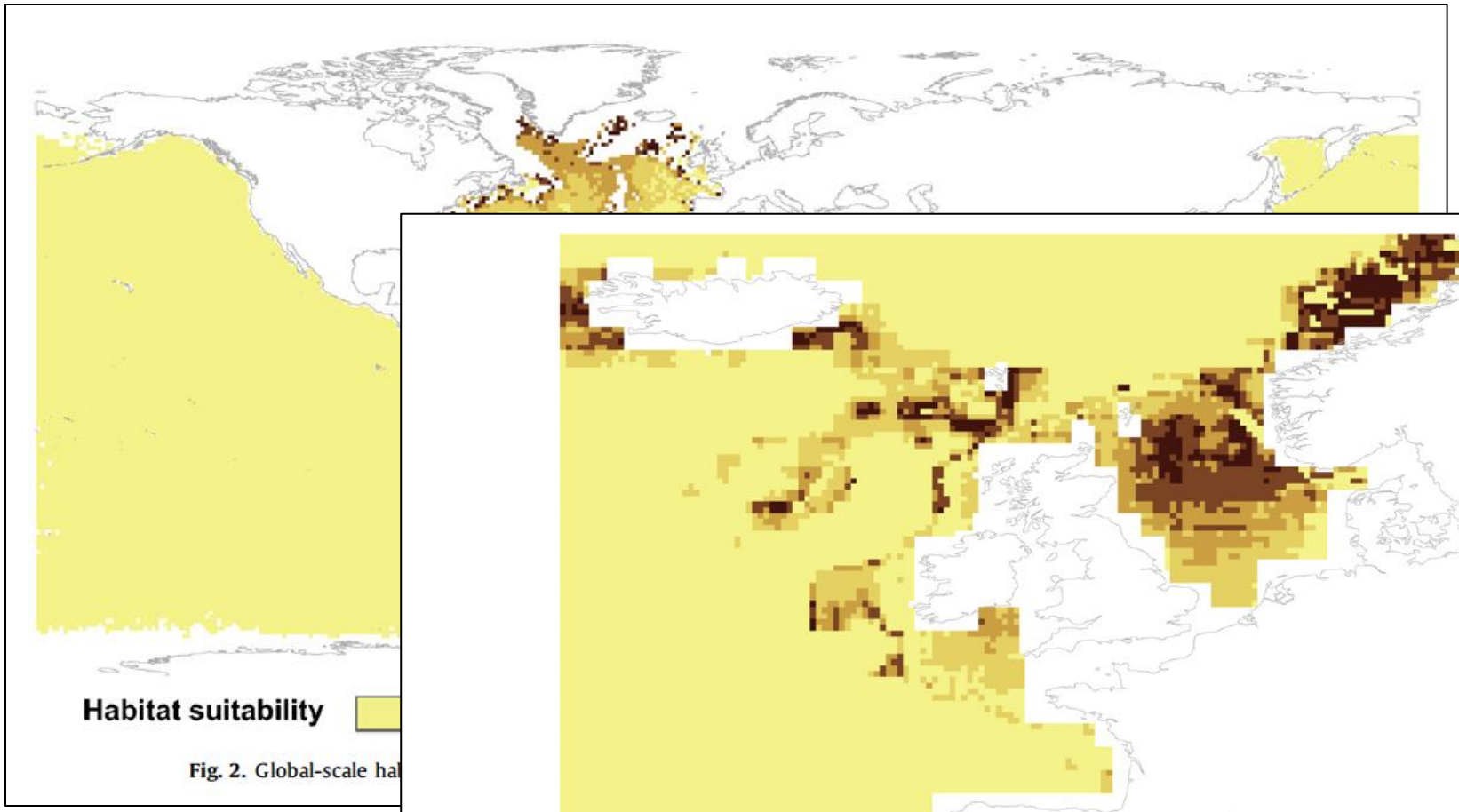

Fig. 2. Global-scale hal

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Predicting suitable habitat for the cold-water coral *Lophelia pertusa* (Scleractinia)

Max Wisshak[b], James C. Orr[c], J. Murray Roberts[a,d]

ience, Dunstaffnage Marine Laboratory, Oban, Argyll PA37 1QA, UK
en University, Loewenichstr. 28, D-91054 Erlangen, Germany
International Atomic Energy Agency, 4 Quai Antoine 1er, MC 98000, Monaco
sity of North Carolina at Wilmington, 5600 Marvin K. Moss Lane, Wilmington, NC 28409, USA

2008

Fig. 3. Regional-scale habitat suitability map generated using *L. pertusa* records on the regional scale. High percentages indicate more suitable habitat.

2016-20

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PRIMARY RESEARCH ARTICLES

Global Change Biology WILEY

Climate-induced changes in the suitable habitat of cold-water corals and commercially important deep-sea fishes in the North Atlantic

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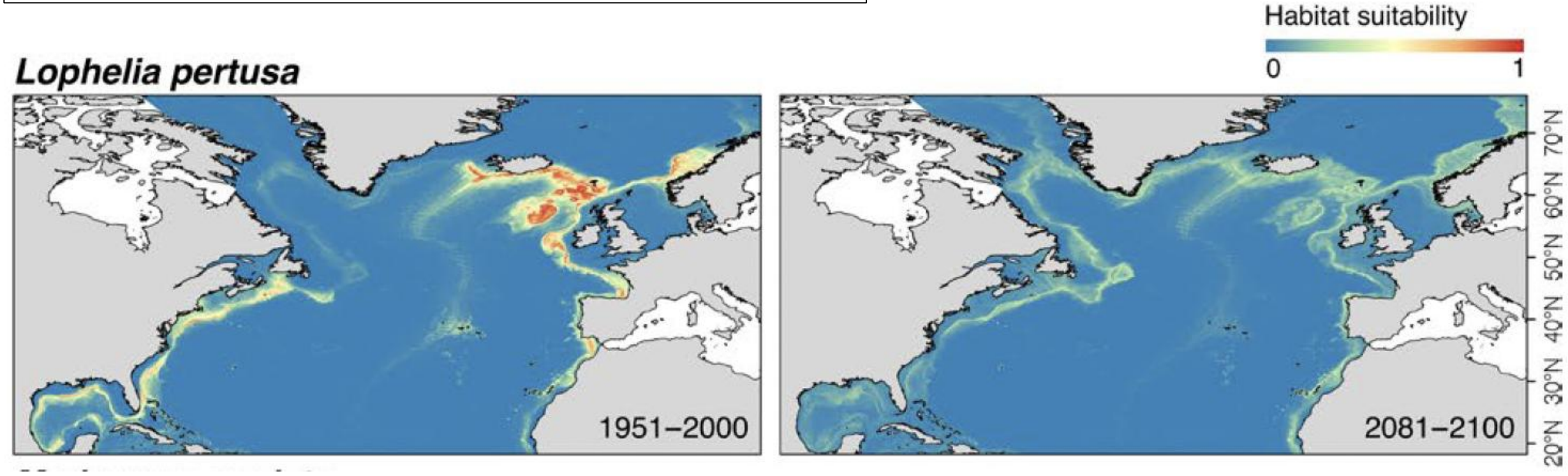
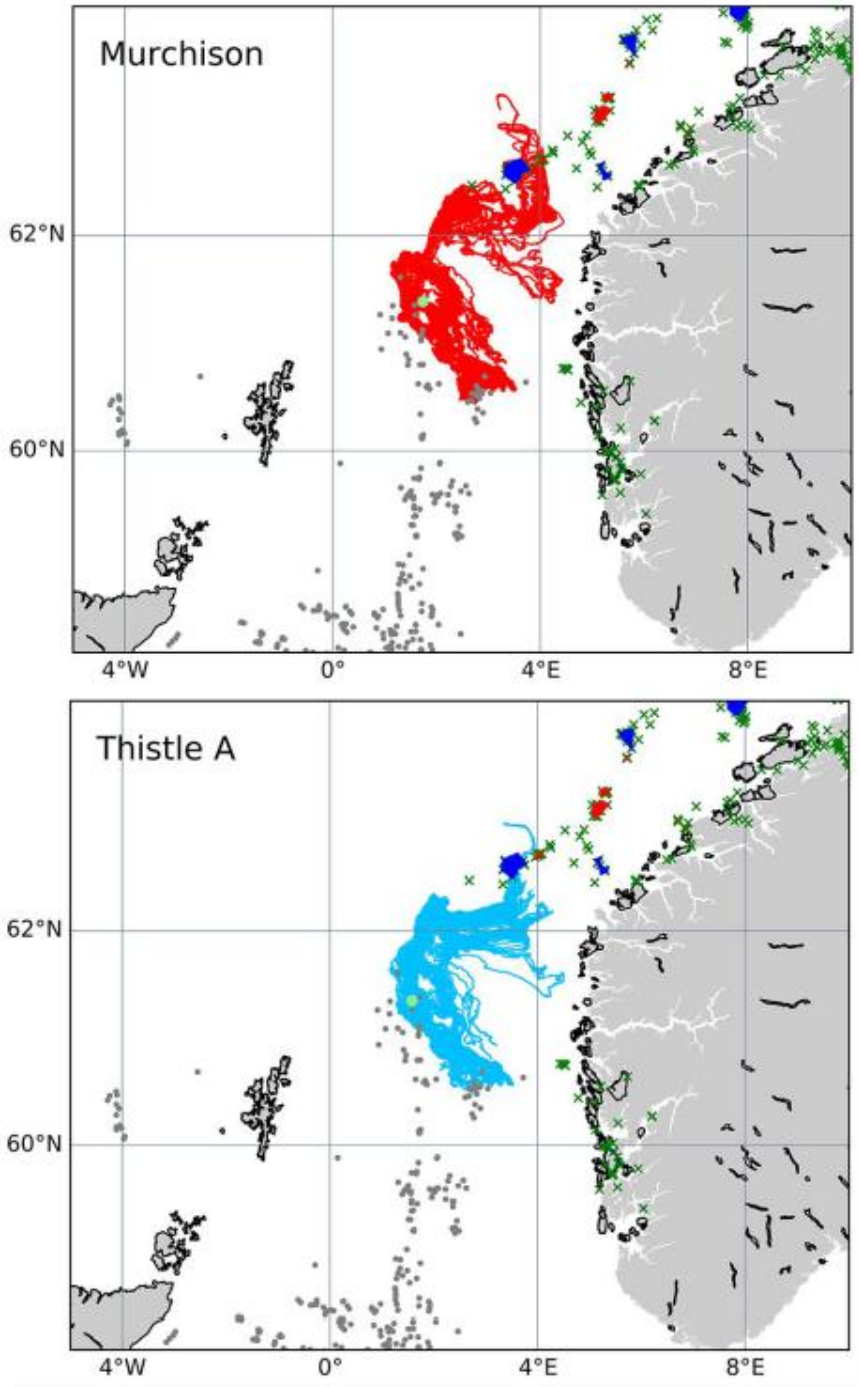
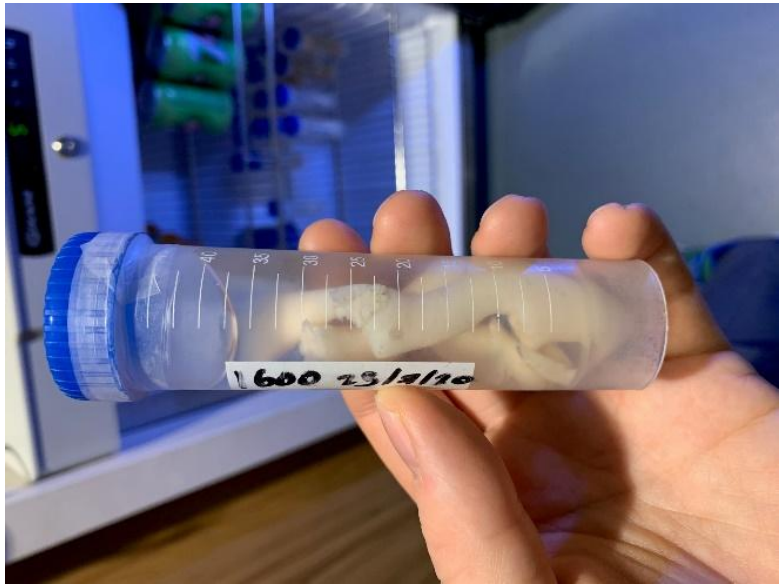


INSITE Phase 1
Modelled coral larval dispersal





Coral larvae dispersed from UK platforms potentially disperse downstream to marine protected areas; F. Macphail (Shell) samples corals from the BA jacket (July 2020)

Henry L-A, Mayorga-Adame CG, Fox AD, Polton JA, Ferris JS, McLellan F, McCabe C, Kutti T, Roberts JM (2018) Ocean sprawl facilitates dispersal and connectivity of protected species. Nature Scientific Reports 8: 11346

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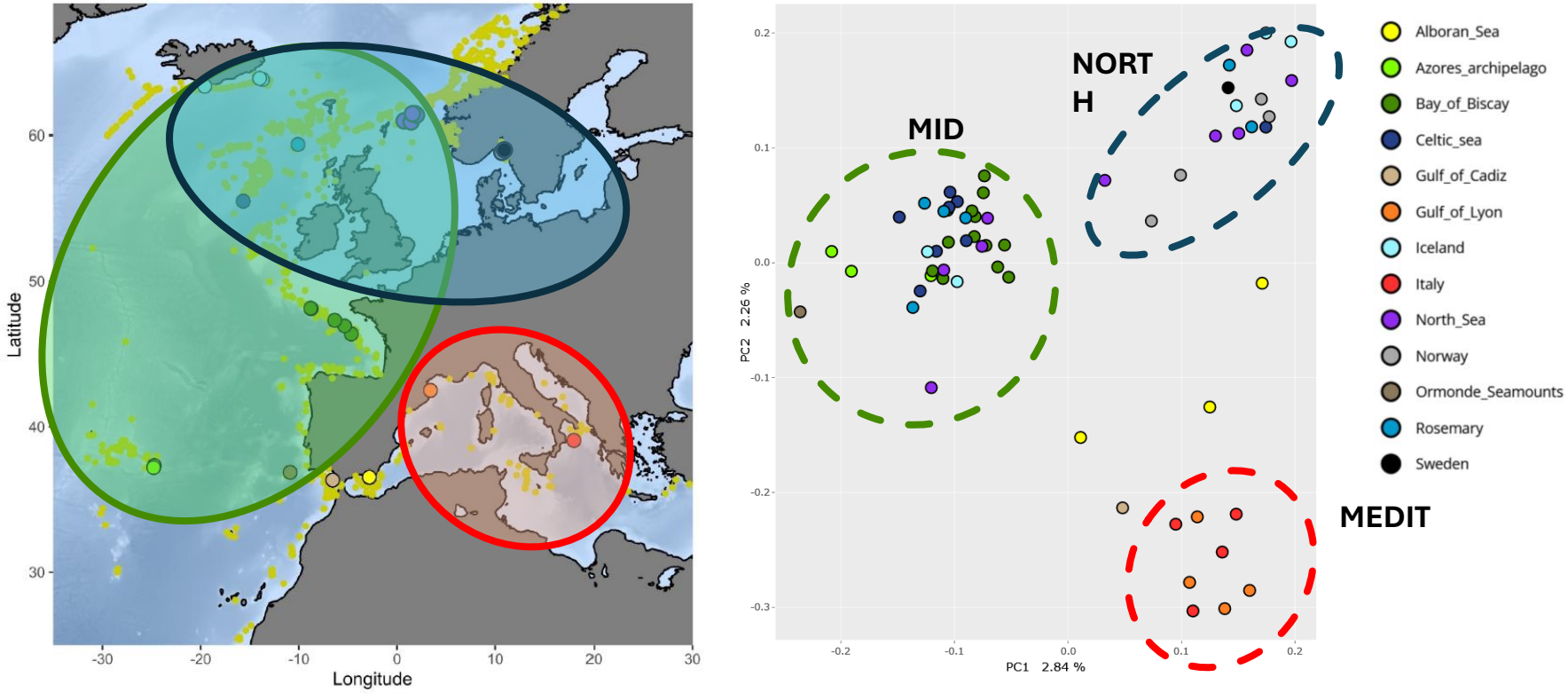
Coral lineages in the NE Atlantic

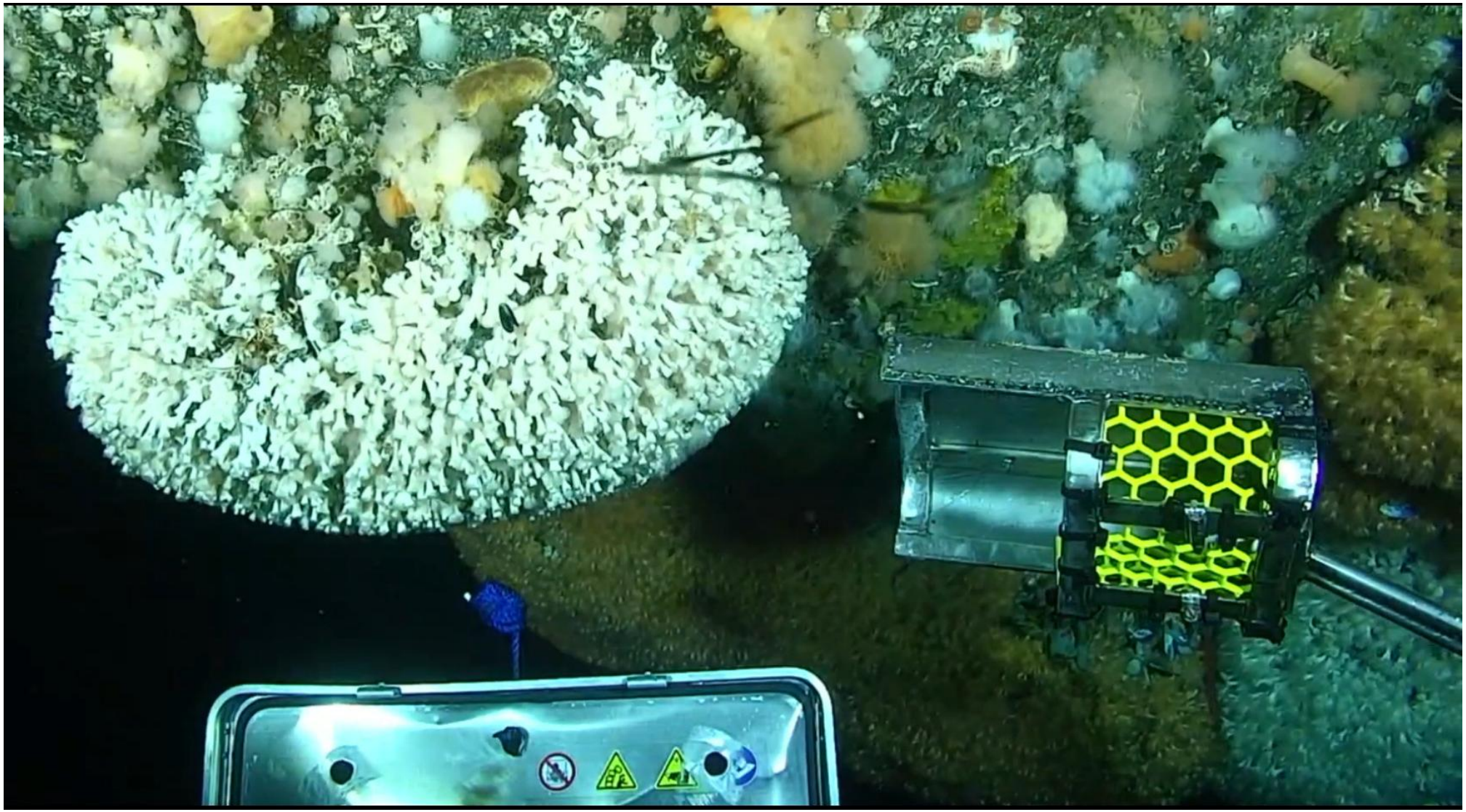
91 samples from North Atlantic and Mediterranean Sea

Three lineages:
1. Mediterranean
2. Lusitan
3. Boreal

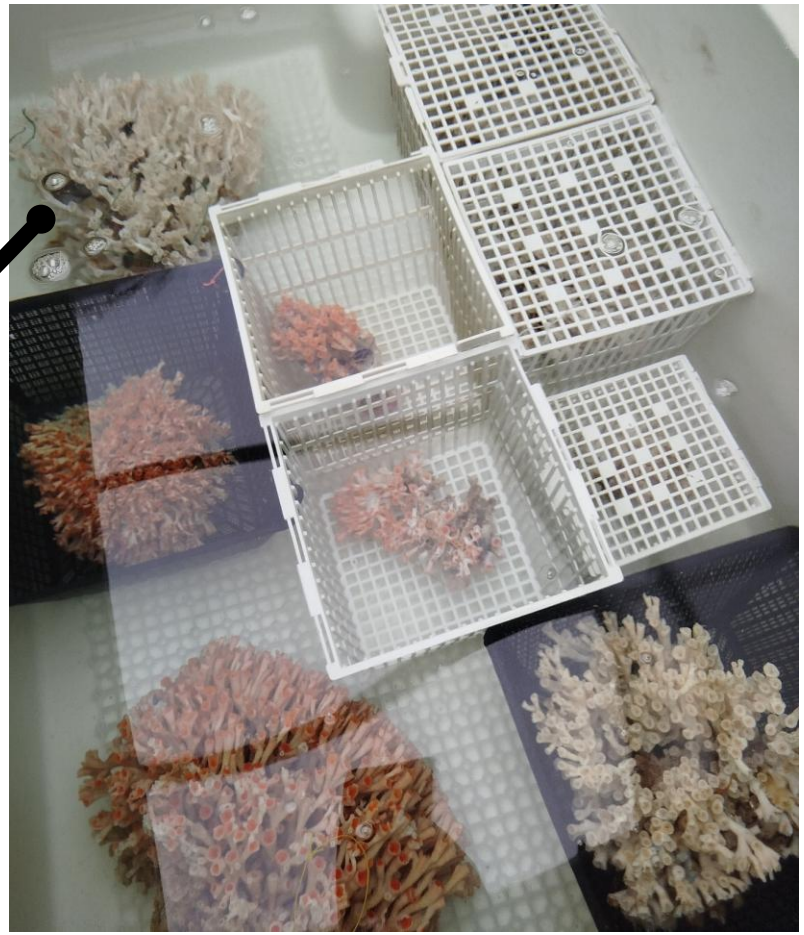
Overlaps in North Sea platforms



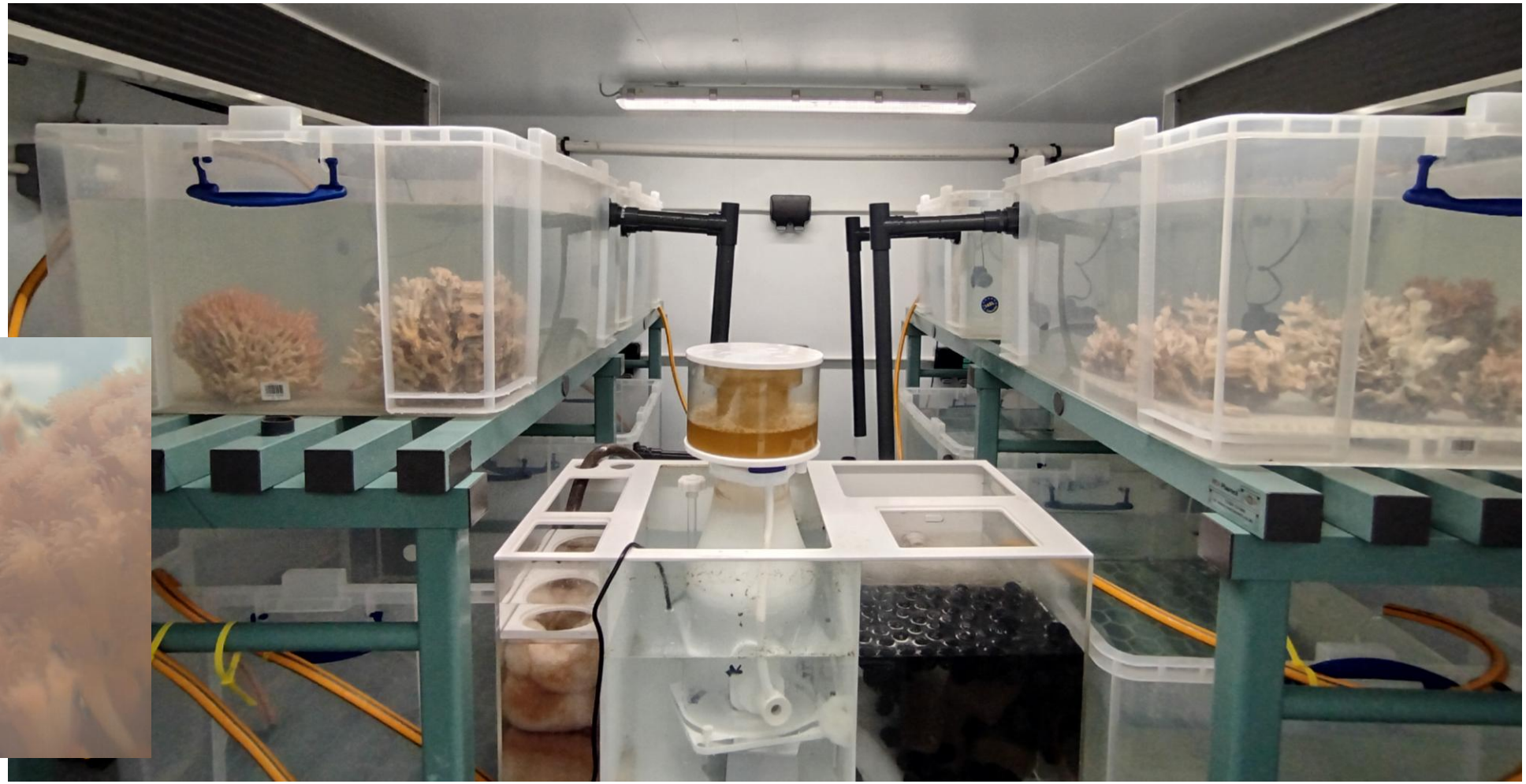
(Left) Sampling maps of *L. pertusa* in the NE Atlantic and Mediterranean Sea. Coloured points represent localities and yellow spots record the known occurrence. Imagine modified from iAtlantic D1.5 (Jollivet et al., 2024). **(Right)** Principal component analysis (PCA) with first two components for *L. pertusa*. Colours represent sampling localities, each point corresponds to an individual, and ellipses indicate genetic groups: Mediterranean (MEDIT), Lusitan (MID) and Boreal (NORTH). Image courtesy of TL Adrien and S Arnaud-Haond (IFREMER).



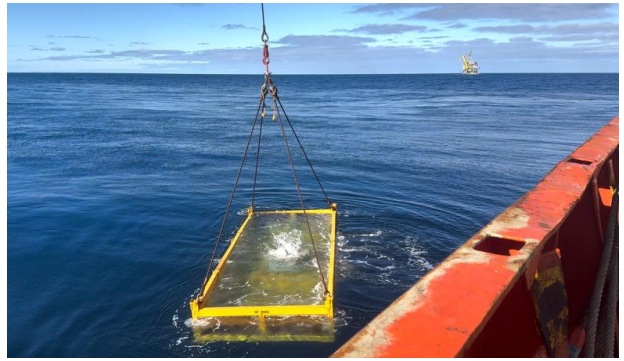
Collection of live corals from oil rigs…



Maintenance at St. Abbs Marine Station



Coral restoration in the Faroe-Shetland Sponge Belt MPA



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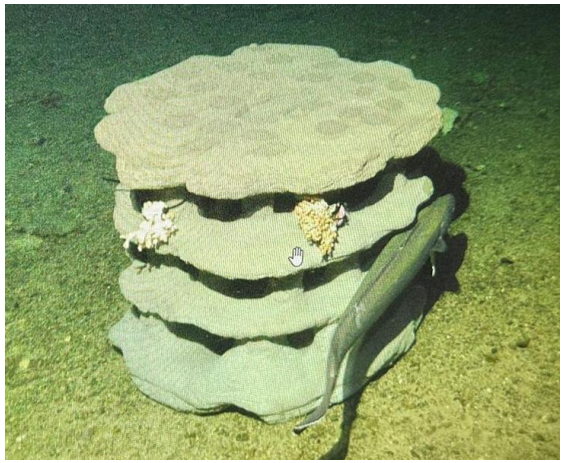
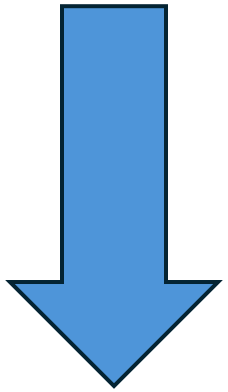
Corals growing on North Sea oil rigs rehomed on artificial reef



Examples environmental benefits include

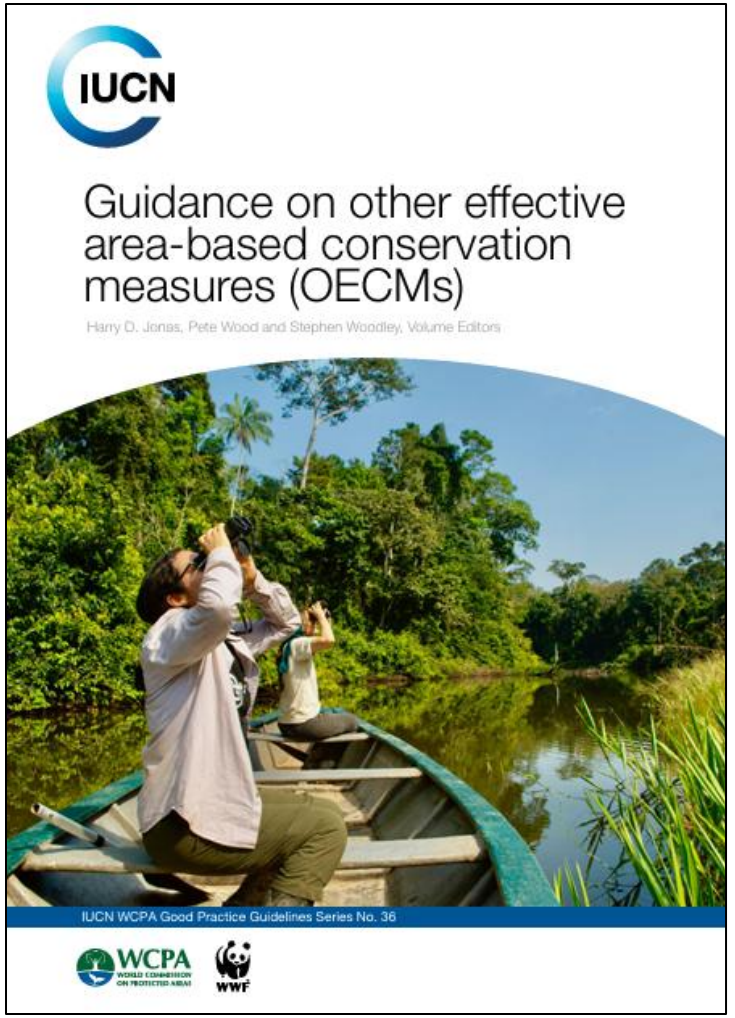
- Supporting species of conservation significance
- Ecological connectivity
- Genetic diversity
- +++



How do we bring environmental benefits into comparative assessment of decommissioning options?

Final thought: Could MAS be considered OECMs?

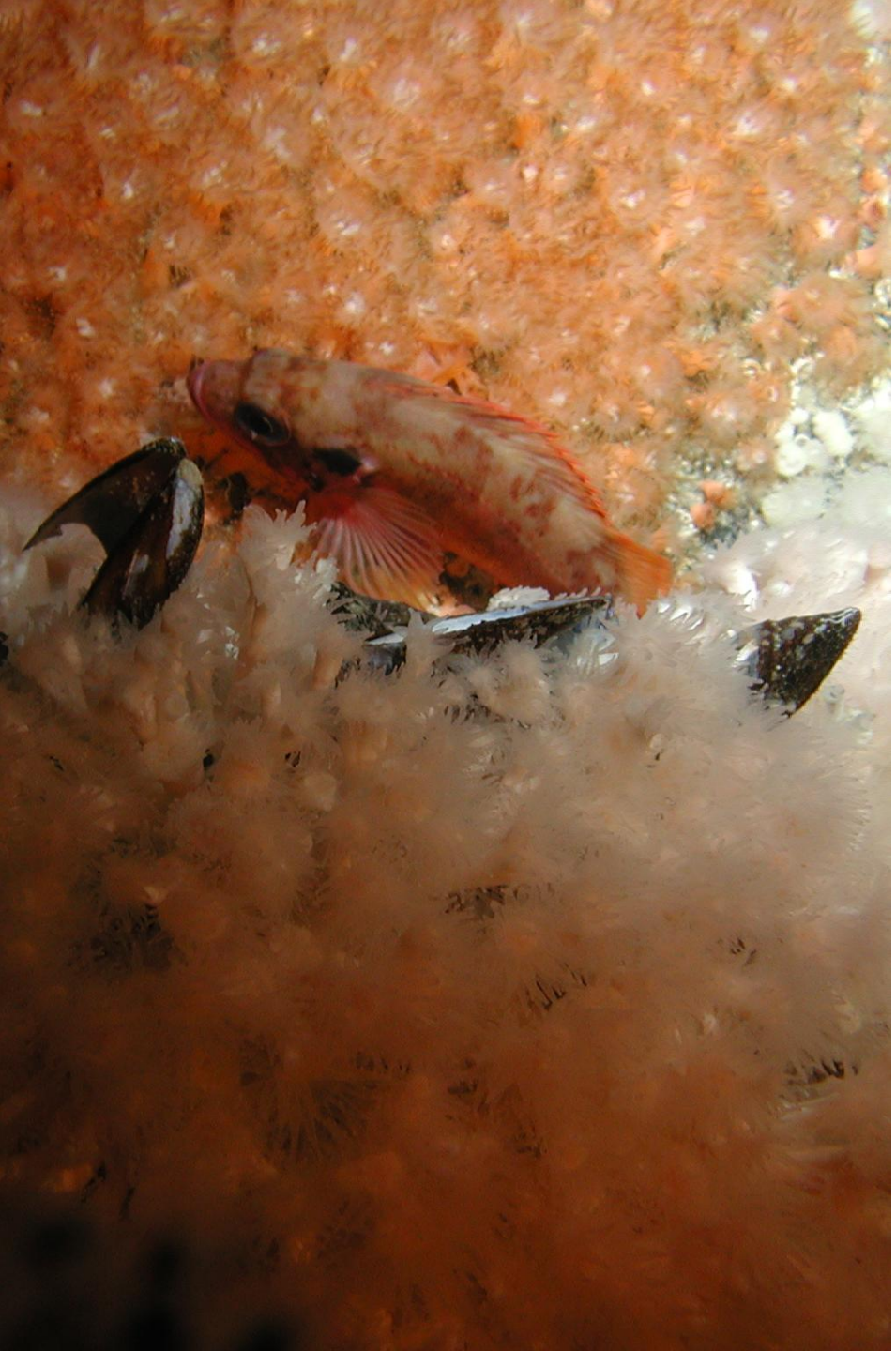
- MPAs and OECMs contribute to 30x30 targets (CBD)
- Conservation is primary objective MPAs
- OECMs are managed for different objectives but they must deliver effective long-term conservation
- OECM concept has not been explored with derogated O&G structures.
- …could it be?



Jonas et al. (2024)

4 main criteria

(Jonas et al., 2024)



Examples of area-based management tools that could meet OECM criteria:

- Locally managed marine areas (LMMAs)
- Indigenous and community conserved areas (ICCAs)
- Fisheries closures, e.g., Vulnerable Marine Ecosystems (VMEs)
- Maple grove forest behind a college campus example

Sites providing conservation may include “permanent exclusion zones around defence or industrial installations where biodiversity thrives because other land uses and disturbance have been banned” (Jonas et al., 2024)

Do we have evidence for structures derogated under OSPAR 98/3? **Can we make these count to recognise their effective contributions to biodiversity?**

Thank you

Murray.Roberts@ed.ac.uk

Platform images courtesy from Lundin Britain Ltd. Reproduced from “Cold-Water Corals: The Biology and Geology of Deep-Sea Coral Habitats”, by J.M. Roberts, A. Wheeler, A. Freiwald, and S. Cairns, Cambridge University Press, 2009

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