



# Offshore Marine Protected Areas (MPAs)

Jason Flower, Project Researcher  
jflower@ucsb.edu



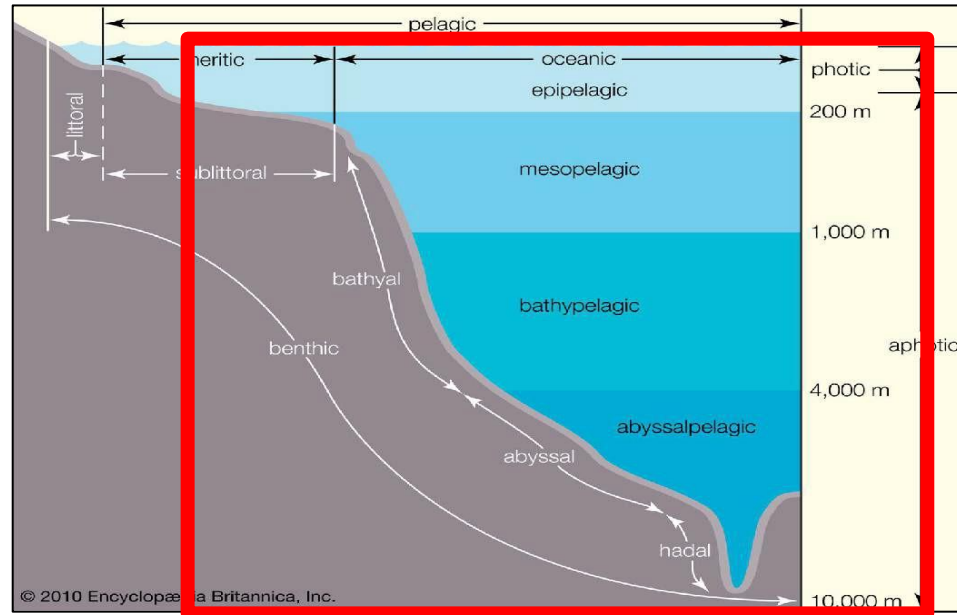
# Overview

- Characteristics of the offshore environment
- Why protect offshore environments?
- Benefits of offshore networks of MPAs
- Examples of data available for Maldives offshore waters

# Characteristics of the offshore environment

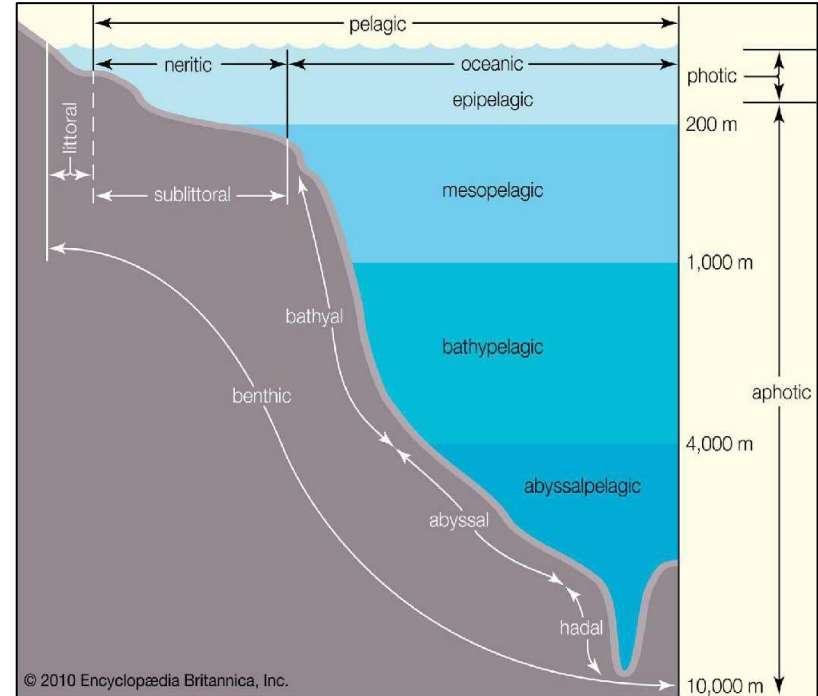
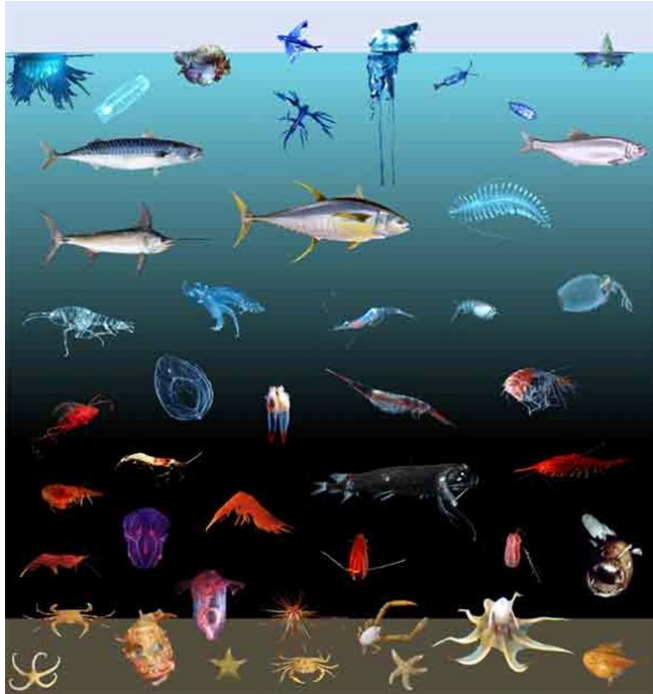
# What is the offshore environment?

- Areas deeper than ~80m (ecological definition)
- 98% of Maldives EEZ is deeper than 80m
- Includes both benthic and pelagic zones



# What is the offshore environment?

- Different species are found at different depths



# What do we find offshore?

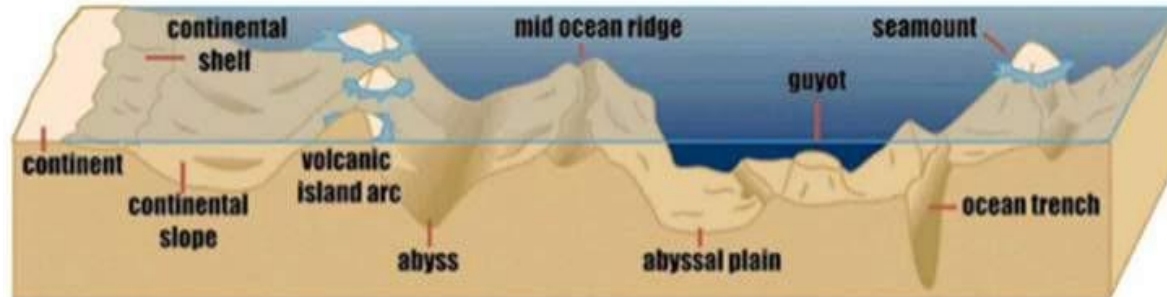


# What do we find offshore?

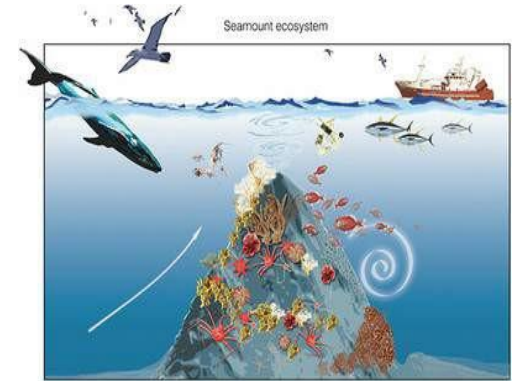
Diverse habitats and benthic features support different species:

- ✓ Shelf
- ✓ Seamounts
- ✓ Canyons
- ✓ Ridges
- ✓ Terraces
- ✓ Escarpments
- ✓ Basins

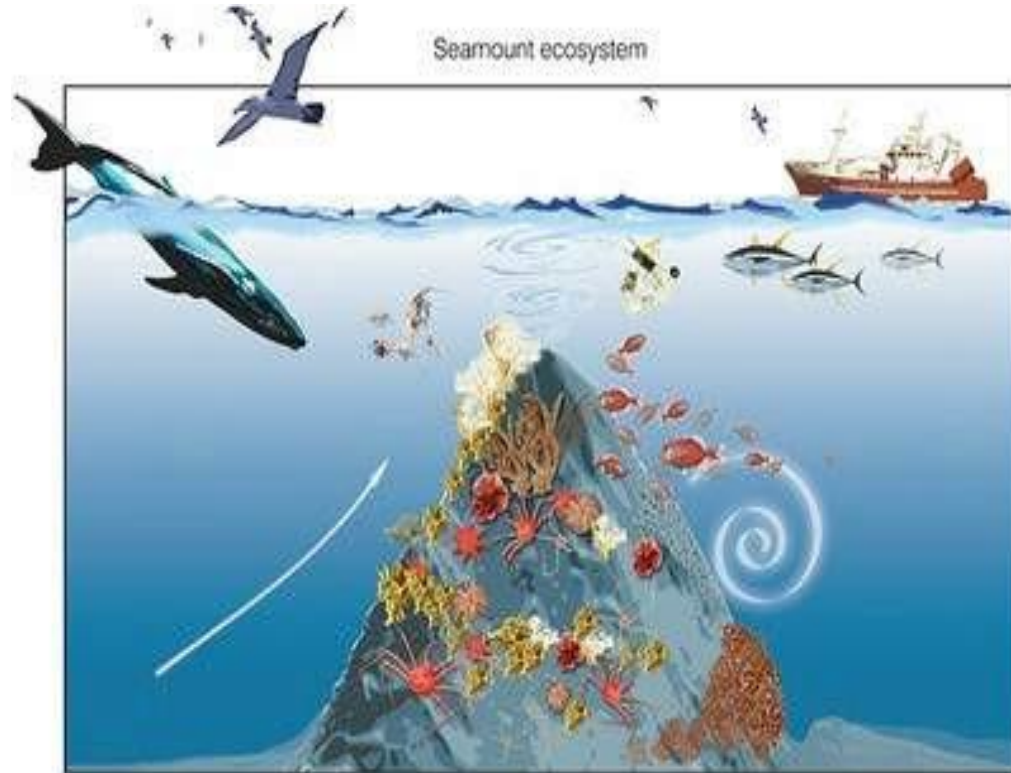
## Features of the Ocean Floor



Sensitive benthic ecosystems, e.g. seamounts

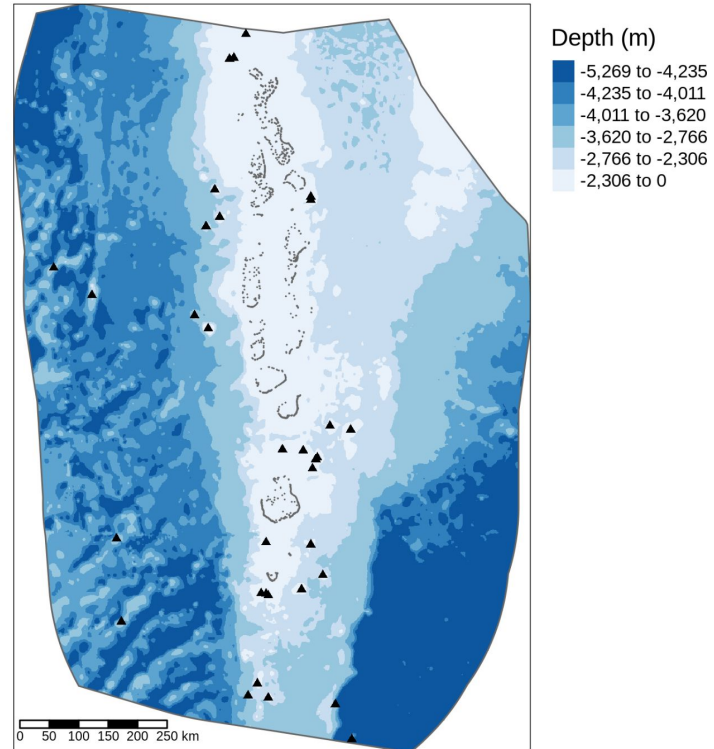


# Seamounts are biodiversity hotspots





# Seamounts in Maldives



# Hydrographic features

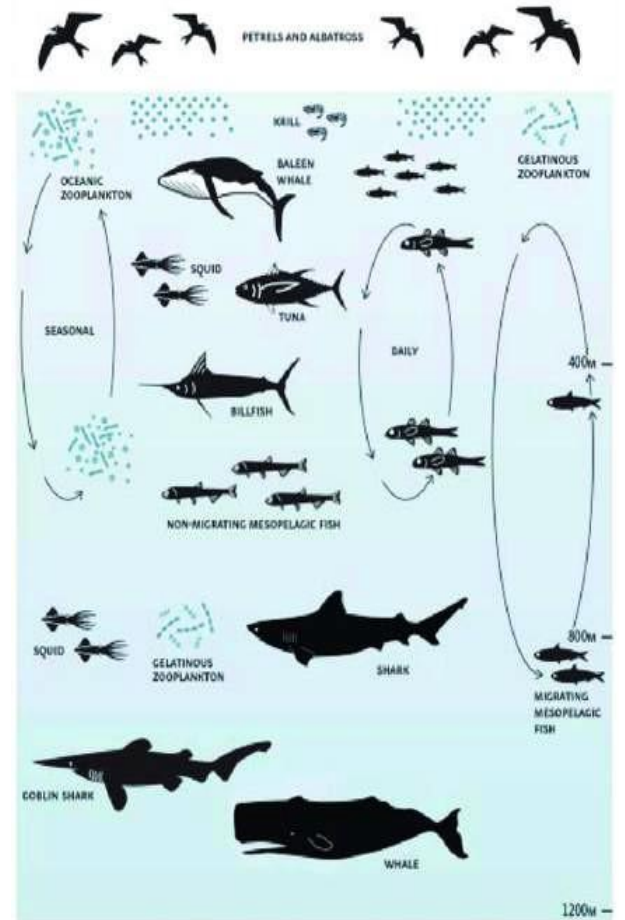


## Hydrographic features

- Currents, fronts, eddies, upwelling, downwelling, and high productivity areas
- Can aggregate marine life into ‘hotspots’
- Many features can be persistent and recurring

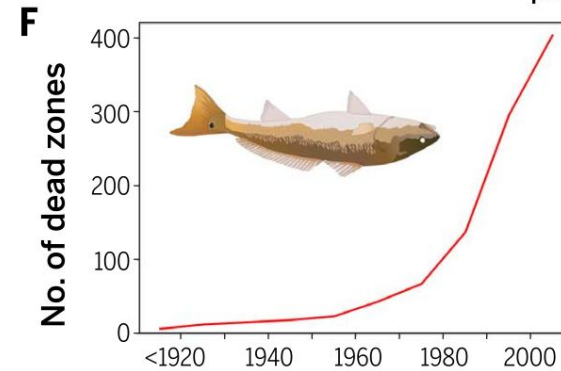
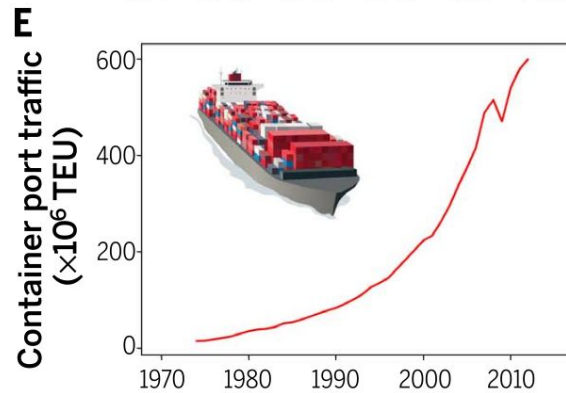
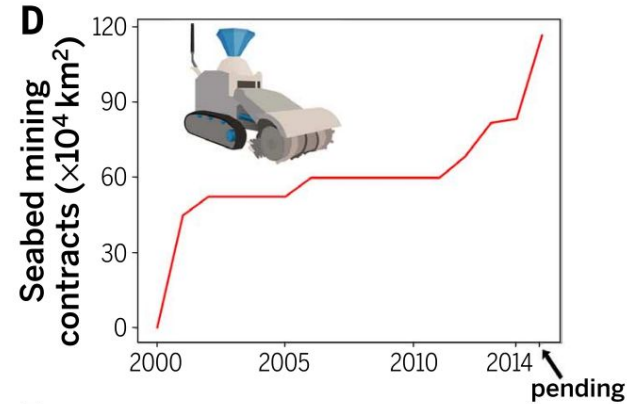
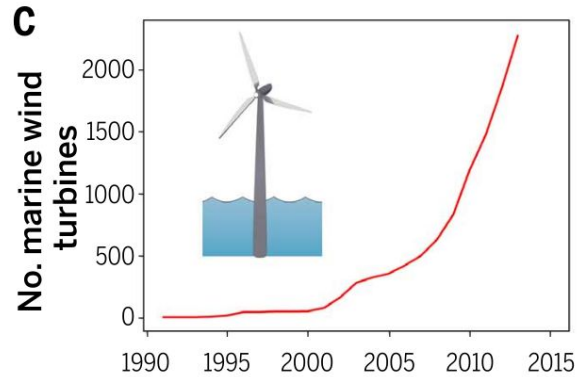
# Offshore ecosystem processes

Connectivity occurs at large scales: horizontally and vertically and offshore to nearshore



Why protect offshore environments?

# Human uses of the offshore environment



# Human uses of the offshore environment

Examples:

- Fishing
- Seabed mining
- Shipping
- Submarine cables
- Mariculture

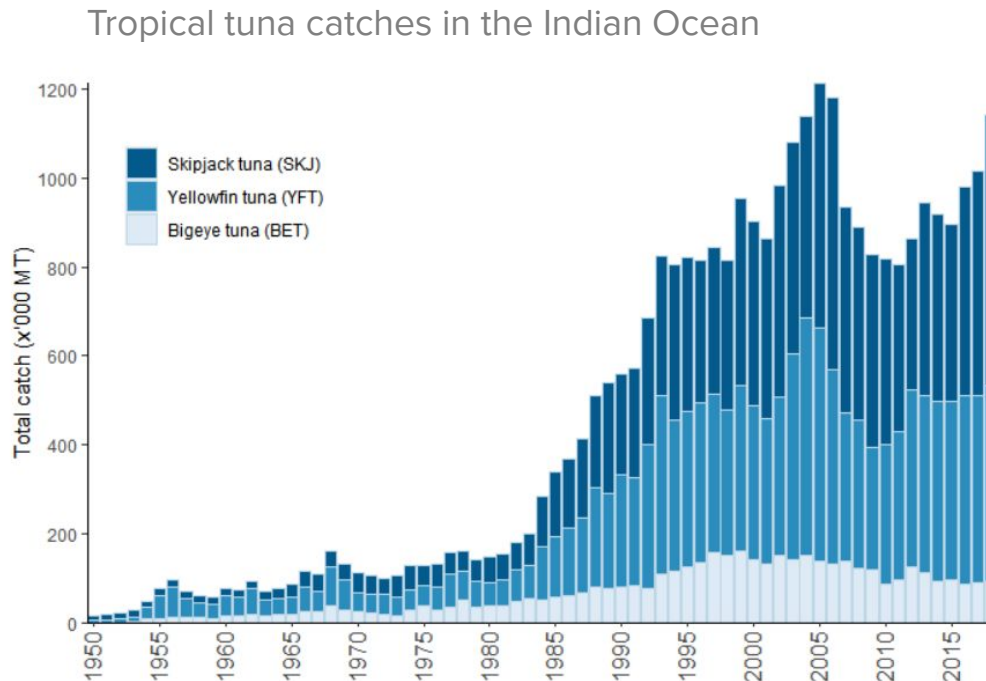


Figure from Maldives Tuna Management Plan 2020 (draft)

# Why protect the offshore?

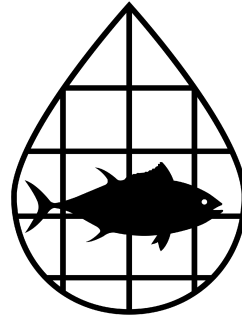
- Promote the recovery of highly mobile species (e.g. tuna)
- Help stabilize catches outside protected areas
- Protect biodiversity and ecological processes
- Enhance coastal fisheries
- Increased resilience to climate change



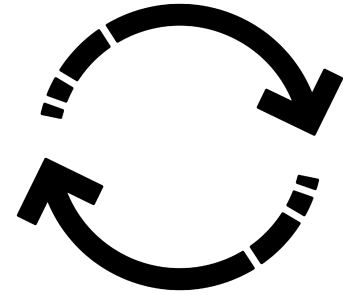
# Why protect offshore?



Recover overharvested species, protect species, enhance biodiversity



Enhance pelagic fisheries



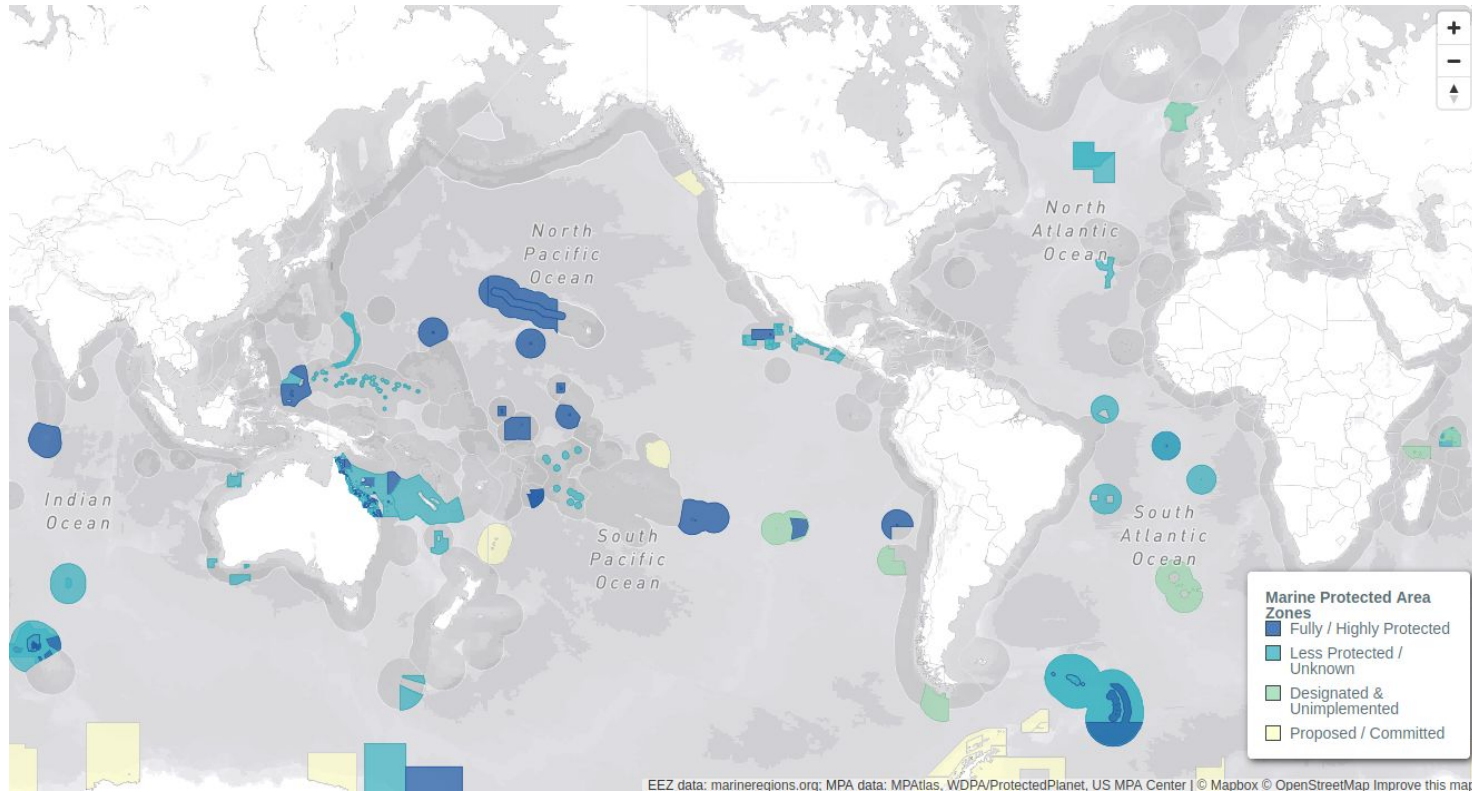
Healthy offshore promotes a healthy nearshore environment



# 30% protection target

- UN Convention on Biodiversity draft post-2020 proposal: “protect and conserve through well connected and effective system of protected areas and other effective area-based conservation measures at least 30 percent of the planet”
- Evidence from nearshore MPAs strongly suggests 30% to benefit fisheries and conservation e.g. Bohnsack et al., 2000; Gaines et al., 2010; O’Leary et al., 2016; Krueck et al., 2017

# Examples of MPAs that include offshore habitat



Source: <https://mpatlas.org/>

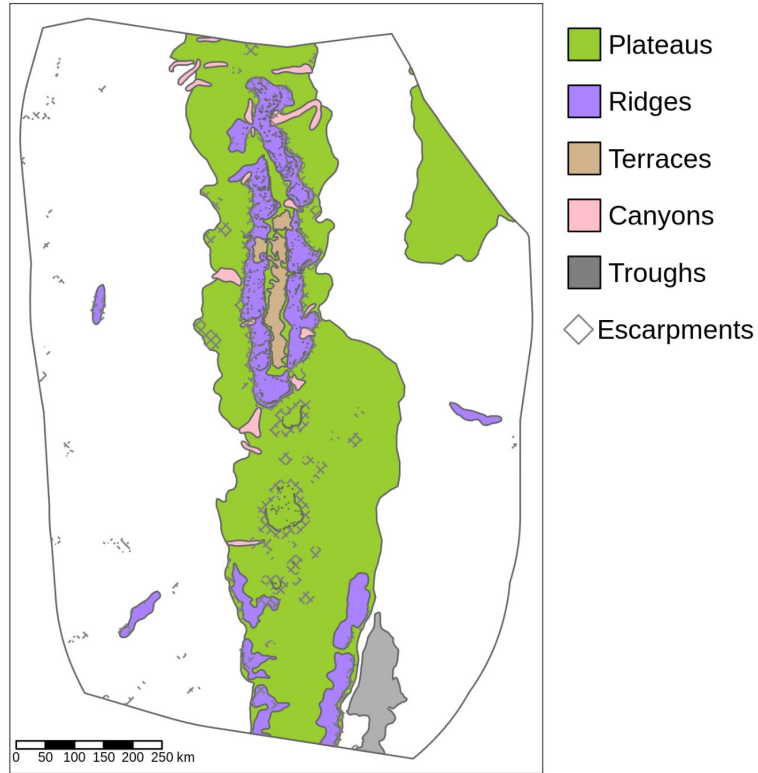
Benefits of offshore networks of MPAs

# MPA network benefits

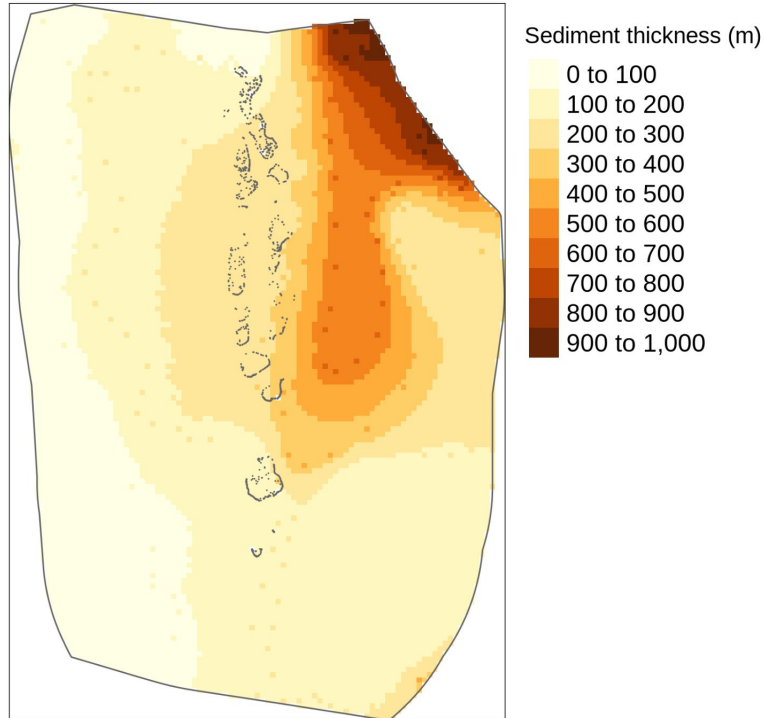
- Design guidelines suggest including 3 replicate MPAs within each bioregion
  - insurance against losing all examples of habitat/ population
- MPA networks can cover key life history stages for species
- Ensure protection of endemic/ range limited species
- Facilitate recovery following climate related disturbances
- Help ensure sustainable exploitation

Examples of data available for Maldives  
offshore waters

# Geomorphology

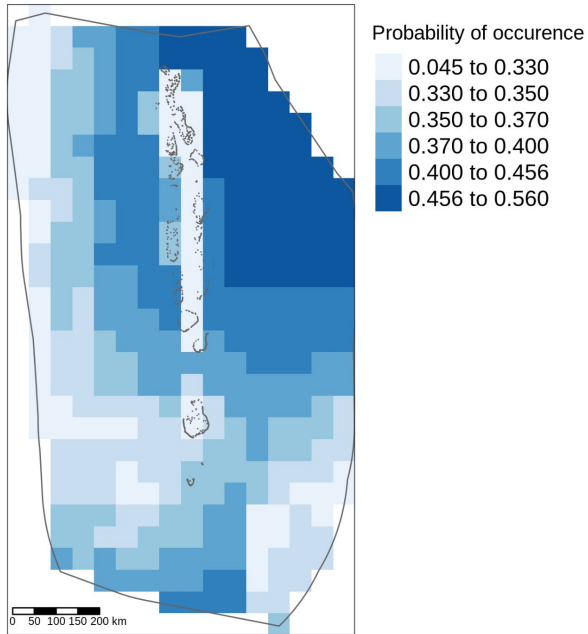


# Sediment thickness

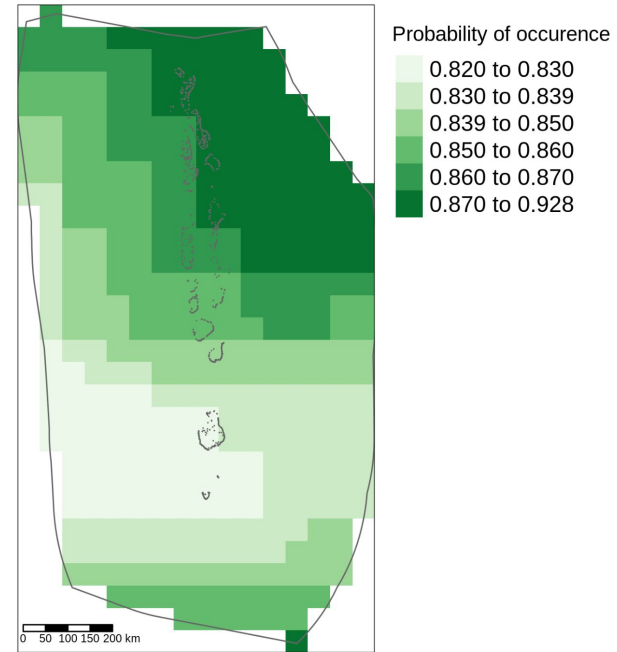


# Species distributions

## Blue whale

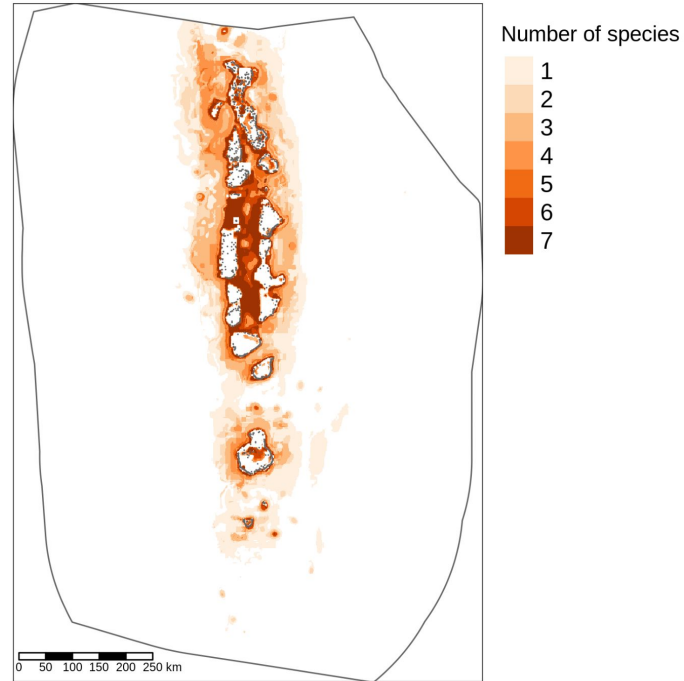


## Skipjack tuna





# Octocoral habitat suitability



# Environmental data

