The Value of Oceanic Marine Reserves for Protecting Highly Mobile Pelagic Species: Coral Sea Case Study

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The paper was commissioned to examine the value of establishing large ocean reserves, free of fishing and extractive industries, to protect highly mobile fish of the open ocean (pelagic species). The paper uses the proposed large, world-class, highly protected marine park in the Coral Sea as a case study.

EVIDENCE WORLDWIDE

- During WWII a large area of the North Sea (575,000 km^2) was closed to fishing for six years. Fisheries catch data show conclusively an increased abundance in pelagic species and larger proportions of older fish (in general, older fish produce more offspring than younger fish).
- A temporary longline fishery closure to protect billfish (marlin, swordfish and sailfish) in a part of their range off Baja California, Mexico from 1977–1980 (4 years) resulted in a striped marlin population increase of up to 22%.
- The recovery of whales after reduced whaling and the establishment of large whale sanctuaries demonstrate the benefits of marine reserves that cover only parts of species' ranges.

THE CORAL SEA MARINE PARK PROPOSAL

- The proposed reserve is almost 1 million km^2, making it large enough to protect a significant portion (if not all) of the home ranges and life cycles of many pelagic species that reside within it.
- It is large enough to also encompass a wide variety of features on the seafloor (for example, seamounts, trenches) and in the water column (for example, upwellings of nutrient-rich water) that provide key habitat for pelagic species at vulnerable times (feeding and breeding).

PELAGIC SPECIES IN THE CORAL SEA

- Highly mobile pelagic species display predictable movement patterns, where the majority (70-90%) of the population moves no farther than 600 nautical miles (nm).
- While up to 600 nm may take some pelagic species into the EEZs of adjacent countries (Papua New Guinea, the Solomon Islands and New Caledonia), there is a high likelihood that they may spend 50% of their time inside the Coral Sea, effectively complying with guidelines for adequate protection.
- The following information from a variety of studies relates to species caught either commercially and recreationally:

Yellowfin Tuna

- Most yellowfin tunas tagged by the CSIRO in the Coral Sea were caught close to the release area.
- Of 273 yellowfin tunas tagged by game fishers, most were recaptured within the Australian Fishing Zone less than 600 nm from release.

Bigeye Tuna

- Most bigeye tunas tagged by the CSIRO in the Coral Sea were caught close to the release area.
- One study found that 90% of tuna captured were within 150 nm of the tagging location

Albacore Tuna

- The average distance travelled in one study was 859 km.

Broadbill Swordfish

- Median movement of tagged fish was 744 km

Striped Marlin

- 90% of 360 tagged individuals were recaptured less than 1,000 km from the tagging location
- Average distance travelled for all individuals recaptured from 2006 to 2008 was 214 nm.

Black Marlin

- Average distance travelled for all individuals recaptured from 2006 to 2008 was 727.5 nm

POSTSCRIPT

- Since the paper was published, the IUCN has assessed the following pelagic species found in the Coral Sea and determined that they be added to the Red List of Threatened Species:
    - Bigeye tuna and blue marlin: vulnerable
    - Yellowfin tuna, albacore tuna and striped marlin: near threatened.

A copy of the report can be downloaded at: http://www.protectourcoralsea.org.au/about/resources

Protect our Coral Sea is a coalition of 11 Australian and international conservation groups, which is calling on the federal government to establish a large, world-class, highly protected marine park in Australia's Coral Sea that will provide a safe haven for marine life and recognise its historic significance.

For more information visit: www.protectourcoralsea.org.au.