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MARINE PROTECTION IN THE SOUTHERN OCEAN

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Marine Protection in the Southern Ocean

1. Introduction

CCAMLR was established to manage sustainably the marine resources south of the Antarctic Convergence. The Convention provides for the designation of closed areas for the purposes of conservation or scientific study. Article IX-2(g) of the Convention enables conservation measures to be established for:

> *"the designation of... closing areas, regions or sub-regions for the purposes of scientific study or conservation, including special areas for protection and scientific study".*

Although Conservation measures have been adopted to close selected areas (e.g., CMs 72/XII and 73/XII) and small marine areas attached to CEMP sites, CCAMLR has not considered developing a system of representative marine protected areas.

On land the Antarctic Treaty system has developed a comprehensive system for specially protected areas (Annex V of the Environmental Protocol to the Antarctic Treaty). No such equivalent system has been developed to protect marine areas.

Marine reserves have a great potential to retain or restore biodiversity at the species and community level primarily by preventing depletion of harvested species from direct harvest, indirect bycatch, and habitat alteration and by providing habitat protection and maintenance of ecological processes (Roberts et. al., 1995; Bohnsack 1996). In other regions, reserves have been used to protect nursery grounds, as a means to protect critical areas in an ecosystem, (e.g., spawning grounds), and as a means by which localized impacts may be avoided, and to provide invaluable sites to study habitats and species (eg Ballentine 1995).

Marine Protected Areas (MPAs) in general, which may include closed areas or which may themselves be a closed area in their entirety, can also play a critical role in protecting marine biodiversity, including ecosystem structure and function, and provide baseline information on unfished stocks which is important for sustainably managing commercial species. Marine reserves, which are closed areas or no-take zones, have been used in other areas of the world to prevent over-harvesting (e.g., Maria Island in Tasmania).

2. Benefits of marine reserves

The benefits of marine reserves to fisheries management and the protection of biodiversity has been reviewed in a number of papers (eg Roberts et al 1995, and Rowley 1992).

Roberts et al (1995) in their review noted that:

"Marine reserves seemed to be an ideal biological solution to several fishery related problems because:

- Marine Fishery Reserves are an appropriate way of providing protection to a multispecies assemblage....
- If large enough, MFRs could protect spawning potential ratios of individual stocks.
- Closed areas would benefit surrounding fisheries by exporting larvae and adult and juvenile biomass, providing insurance against stock collapse.
- MFRs eliminate selective fishing from closed areas.
- On the water enforcement would be simplified in MFRs.
- Bycatch mortality would be eliminated in reserves.
- MFRs would provide control areas for monitoring and for better understanding natural processes and the biology of exploited species.
- MFRs could function and provide stock protection without data intensive collection programs."

Other potential benefits of marine reserves include:

- the development of unharvested baselines from which to measure the effects of harvesting;
- the maintenance of genetic diversity and moderate the impacts on biodiversity of fishing effects (eg Rowley 1992);
- increasing the ability of marine ecosystems to withstand environmental perturbations.

3. IUCN and marine protected areas

Through its World Commission on Protected Areas, IUCN has been carrying out a program to promote the establishment and management of marine protected areas (MPAs) around the world. Resolution 17.38, adopted at the 17th IUCN General Assembly in 1993, defines the goal for

marine conservation and means to achieve the goal as:

> "to provide for the protection, restoration, wise use, understanding and enjoyment of the marine heritage of the world in perpetuity through the creation of a global representative system of marine protected areas and through the management...of human activities that use or affect the marine environment."

The IUCN also adopted the following definition of Marine Protected Area (MPA):

> "Any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which have been reserved by law or other effective means to protect part or all of the enclosed environment."

Resolution 17.38 emphasized that "the marine environment must be managed in an integrated way if it is to be able to sustain human use in the future, without progressive degradation." This follows from IUCN's policy on marine conservation which incorporates human use of the marine environment and advocates that ecologically compatible and legitimate uses of the marine environment and its resources must be recognized and accommodated but that they must be sustainable, not abolished.

IUCN's definition of an MPA covers a wide range of types of protected areas including zoned multiple-use areas (which may or may not incorporate closed areas to fishing), sites designed exclusively as no-take-zones, and areas with some protection but where certain forms of fishing are still permitted (Kelleher and Kenchington 1991). Recent studies suggest that closed areas or no-take zones may be of particular value in fisheries management (see for example Roberts et al 1995).

The setting aside of areas as no-take marine reserves is consistent with the obligations on states for "in-situ conservation" of biodiversity under the Biodiversity Convention and the provisions of the UN Convention on the Law of the Sea for the conservation of living marine resources (de Fontaubert, Downes and Agardi 1996; Sobel 1993).

4. Examples of marine protection

The creation of marine protected areas is a well-established means to protect the marine environment. MPAs also provide undisturbed and, if they are no-take areas, unexploited sites in which the biological information needed to accurately assess the status of the stocks can be gathered. Without this information, it is not possible to determine sustainable harvest levels.

Many marine protected areas already exist in the world, some of which prohibit fishing activities completely. For example, New Zealand has 14 "no take" reserves, including the Leigh Marine Reserve and the Kermadecs Islands Marine Reserve, which have complete prohibitions on fishing. The Kermadecs Island marine reserve extends out to the 12 nautical miles around each of the Islands.

A system of "no take" reserves could allow depleted stocks to rebuild. By protecting discrete

habitats such as crucial sea mounts or shelves that provide high recruitment, these locations could potentially provide an overflow into areas which could have regulated takes of stock that allow long-term sustainable fishing. Marine reserves provide extra safeguards against over-estimating the sustainable limits for fisheries, which is important because of the uncertainties in managing the marine environment.

The spill-over benefits of marine reserves for adjacent fisheries have been reported by a number of researchers including study of coral reef fisheries in the Philippines (Alcala and Russ 1990) .

Fish populations, including commercial species, have increased within the Leigh reserve in the 16 years of its existence, and in several other "no take" reserves (Ballentine 1995; Sobel, 1993). Similar changes have occurred in other marine reserves in New Zealand, north eastern Mediterranean (Bell, 1983), South Africa (Bennett and Attwood, 1991), Chile (Moreno et al 1986), Belize and Mexico (Baker, Shepherd and Edyvane 1996).

The Rockfish reserve system of the Pacific Coast of North America, Maria Island, and Scandola Nature Reserve are examples of "no take" systems with regulated fishing in adjacent areas. Although these examples are small in area, the results of the positive effects on fish populations have been documented. The Tasmanian marine reserve at Maria Island has been successful in restocking surrounding fisheries.

5. CCAMLR Approach: Use of reserves in fisheries management

To date CCAMLR has focused on identifying sustainable harvest levels and has not devoted significant attention to possible use of closed areas for preventing over-harvesting or looked at the use of closed areas in meeting the objectives of the Convention.

The Commission, through the implementation of Article IX, has identified the need for protecting stocks by establishing catch limits for fisheries. In addition, it is required to provide an analysis of the effectiveness of conservation measures. Given the present illegal and unregulated fisheries, it would be a surprise if the Commission could state that the present system is optimal.

Therefore, the Commission should look for alternative measures such as allowing for the closure of areas for the purpose of conservation and special protection. IUCN believes that given the increased vulnerability of the toothfish stocks due to illegal and unregulated fishing, MPAs are needed to protect areas which are critical to the long-term viability of the species. Furthermore, in consultation with the Scientific Committee, the Commission could identify areas which should be closed based on data collected in accordance with under Article IX.

IUCN has developed criteria that could be applied in identifying suitable areas as candidates for marine protected areas (Kelleher, Kenchington and Bleakley 1994). They include:

- biogeographic importance, including rare or representative biogeographic qualities;
- ecological importance, for example the variety or habitats, the presence of nursery areas for juvenile fish or diversity of species;

- degree of naturalness, the extent to which the area has been subject to human induced change;
- scientific importance for research and monitoring;
- international or national significance of the area.

CCAMLR could look at developing criteria which are appropriate to the area. The establishment of marine protected areas could help ensure the maintenance of healthy stocks and healthy marine ecosystems, thus providing a more secure system to conserve the Antarctic marine environment.

6. Recommendations

IUCN believes it would be desirable for the Commission, in consultation with the Scientific Committee:

- to assess how this potential management tool might be applied to meet the objectives of Convention;
- to develop criteria that could be used to identify areas that might be appropriate to set aside as marine reserves. This criteria could include spawning areas or the foraging ranges of predators.

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