South Pacific Regional Fisheries Management Organisation

11th Meeting of the Science Working Group

Lima, Peru, 15-19 October 2012

SWG-11-INF-07

Factsheet – Salas y Gomez and Nazca Ridges

Salas y Gómez and Nazca

Treasures in the High Seas of Southeastern Pacific

The area beyond national jurisdiction covers over 415,000 km2 of seafloor, and it is only comparable in high, length and wide with Chile-Argentina section of the Andes-mountains.

Deep sea Anglerfish have small poorly developed eyes but detect movement and prey through a well-defined lateral line system visible as a line of silvery.

Coldwater corals adorn the rocky surfaces of these majestic and ancient deep-sea mountains in the high seas of the South-Eastern Pacific (see map). These ridges contain the highest levels of endemism recorded; 46% of invertebrates and 41% of fishes are unique of this area. The seamounts form an extraordinarily rich habitat for endangered species, including leatherback turtle – the biggest-growing sea turtle of all. This is also where the largest ever known animal – the blue whale – is recorded as coming, probably to reproduce. Nazca ridge is a key breeding zone for the over-exploited Chilean jack mackerel and recruitment ground for swordfish.

FEATURE DESCRIPTION

The Salas y Gómez and Nazca ridges are a long chain of tall seamounts and guyots that vary greatly in depth, and are isolated from the nearest continental margin by a deep trench. The ridge area beyond national jurisdiction contains about 110 seamounts with summits at fishable depths down to 2'000 m, representing 41% of the seamounts in the south-eastern Pacific Ocean. The benthic and benthopelagic invertebrates and fishes of the area are much more closely related to the Indo-West Pacific than to the eastern Pacific fauna.

The Nazca area is influenced slightly by the eastern boundary currents of the South Pacific anticyclonic gyre. The Humboldt current carries subantarctic water north, along the coast of Chile towards the equator. At approximately 20° S, influenced by the southeast trade winds and coastal configuration, the current turns westward, away from the coast influencing Nazca area with nutrient-rich waters.

THE HIGH SEAS OF SALAS Y GÓMEZ AND NAZCA RIDGES

The ridges function as recruitment and nursery areas for swordfish and are part of the breeding zone described for Chilean jack mackerel.

171 species of fish belonging to 31 families have been recorded. 41% of fishes are endemic.

25 species of deepsea coral have been recorded in Salas y Gomez and Nazca ridges.

So far, 226 species of benthic and benthopelagic invertebrates and 171 fish species of 64 genera are known to inhabit the 22 explored seamounts of the ridges. Considering the overall number of seamounts in the region, many more species can be expected. Further, the bottom areas of Salas y Gómez and Nazca ridges have not been sampled biologically. The area is a biodiversity hotspot with one of the highest levels of marine biological endemism, amounting to 41.2% of fish species and 46.3% of benthic invertebrates even surpassing the rates for hydrothermal vent ecosystems.

The ridges offer habitat to a number of low resilience and long-lived species like deep water sharks, oreos, alfonsino, and reef-builder corals (e.g., *Madrepora oculata*). They are likely to be speciation centers and provide the only extensive hard substrate available for propagation of benthic suspension feeders like black (Antipatharia) and stony corals (Scleractinia), of which at least 19 genera have been recorded, with many more species.

The seamounts of the ridges were found to host aggregations of vertically migrant, seamount-associated mesopelagic fishes and migratory pelagic fishes: Pelagic sharks, in particular schools of large adult male blue sharks have been observed to aggregate over Nazca ridge. Also bigeye thresher sharks (*Alopias superciliosus*) were more abundant over seamounts than in the surroundings. The ridges function as recruitment and nursery areas for swordfish (*Xiphias gladius*) and are part of the breeding zone described for Chilean jack mackerel (*Trachurus murphyi*).

The high pelagic productivity indicated by the formation of Taylor caps and local upwelling processes observed over the Nazca Ridge may support blue whales (*Balaenoptera musculus*), for which it is considered to be a likely reproductive zone and stepping stone during their extensive migrations. Salas y Gómez ridge is located at the center of the foraging area for leatherback sea turtles (*Dermochelys coriacea*) in the South Pacific Gyre and, based on that, it has been postulated as an ecologically or biologically significant marine area (EBSA)

WHY SHOULD WE CONSERVE IT?

Based on an integrated analysis conducted by WWF, these relatively well investigated ridges meet all scientific criteria for ecologically or biologically significant marine areas (EBSAs) as agreed by the Convention on Biological Diversity in 2008 (Annex I of CBD Decision IX/20). Furthermore, experts convened by the Global Ocean Biodiversity Initiative (GOBI) and the Census of Marine Life on Seamounts (CENSEAM) in December 2010 based upon data and information on seamount fauna, concluded that the area highly met the criteria for naturalness, biodiversity and special importance for life-history stages of species, unique habitats and emphasized that its vulnerability is considerable. The ridges' ecosystems are likely to meet the criteria of the Food and Agriculture Organization (FAO) to be classified as vulnerable marine ecosystems (VMEs). Moreover, an adjacent area, in Chilean jurisdictional waters, has been recently declared no-take Marine Protected Area (named *Motu Motiro Hiva* in Rapa Nui language), confirming the need for conservation.

IUCN RED LIST SPECIES

Critically endangered — Leatherback turtle (*Dermochelys coriacea*)

Endangered — Loggerhead turtle (*Caretta caretta*), Blue whale (*Balaenoptera musculus*)

Vulnerable — Shortfin mako (*Isurus oxyrinchus*), Porbeagle (*Lamna nasus*), Bigeyetuna (*Thunnus obesus*)

Near Threatened — Yellowfin tuna (*T. albacares*), Blue shark (*Prionace glauca*), Crocodile shark (*Pseudocarcharias kamoharai*), Prickly shark (*Echinorhinus cookei*), Bluntnose sixgill shark (*Hexanchus griseus*), Galapagos shark (*Carcharhinus galapagensis*)

Results of satellite tagging research allow postulating Nazca ridge as a likely reproductive area for blue whale.

The effective conservation of Nazca ridge, a breeding zone for Chilean jack mackerel, will facilitate the recovery this important international fishery.

Several years of tracking have revealed a consistent foraging area for leatherback turtles in the South Pacific Gyre, justifying the necessity of greater international protection for the giant turtles.

CONSERVATION CONSIDERATIONS

It can be assumed that most seamounts along the Nazca ridge were at least explored once. There is evidence of sporadic deep water fishing for seamount fishes and crustaceans by the USSR/ Russian and Chilean fleet and recently also by Spanish vessels.

Overall, like in other regions, deepwater fishing and the occurrence of vulnerable benthic species coincide to a large extent. There are indications of abundant mega- and macrofauna bycatch in trawls, including large branches of gorgonians. Between 1979/80 and 1987 significant changes in the benthic communities such as loss of antipatharian corals were observed in consequence of bottom trawling. On Salas y Gómez ridge, most of the fishing activity carried out is pelagic.

The area is likely to be on the route of cargo ships that transit between Asia Pacific countries and Chilean ports; therefore, strikes with blue whales may occur.

Currently, seven seamounts are known to carry a cobalt-manganese crust of considerable cobalt grade (up to 2%) which may attract mining activities.

PROPOSED CONSERVATION OBJECTIVES

- Contribute to protect our global marine heritage for future generations.
- Protect and conserve unique seamount communities and associated ecological processes from adverse impacts, especially bottom fishing.
- Protect critical life stages for fishes as the basis for very important commercial fisheries like swordfish and Chilean jack mackerel.
- Ensure the long term recovery, conservation and maintenance of populations of highly mobile and migratory species, specially tunas and pelagic sharks.
- Protect key biological process (i.e. reproduction, foraging) for endangered flagship species like blue whales and leatherback and loggerhead sea turtles.
- Provide reference sites for future scientific research and public education.
- Improve resilience to the accelerating impacts of climate change.

Big pelagic sharks and turtles are also found in the area and may be threatened by longliners.

There is evidence of sporadic deep water fishing for seamount fishes by the USSR/ Russian and Chilean fleet.

Bigeye and Yellowfin tuna are frequent in the area.

PROTECTING THE RIDGES

WWF proposes a network of Marine Protected Areas (MPAs) of multiple uses, with considerable proportions of no-take areas, as the most effective tool to conserve Salas y Gómez and Nazca ridges. Nevertheless, there is no global agreement or mechanism to facilitate the establishment of high seas MPAs. Moreover, the conventional sectoral approach to oceans management hampered efforts to protect specific areas from multiple threats. In consequence, multilateral efforts and collaboration are now required to set up specific measures aimed to conserve and protect the habitat and biodiversity in the high seas of Salas y Gómez and Nazca ridges.

The Lima Convention for the Protection of the Marine Environment and Coastal Area of the South-East Pacific (1981) administrated by the CPPS, and its Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific, may provide the framework for establishing spatial conservation measures either by extending its mandate to the adjacent high seas, or by regulating the activities performed by vessels flagged by contracting parties. Moreover, the CPPS would be the natural choice to propose and lead a regional action plan to conserve and protect these ecosystems which are fragile, vulnerable, of unique natural value, and contain threatened marine fauna.

Fisheries management for non-highly migratory species is subject to regulation by the Convention on the Conservation and Management of the High Seas Fishery Resources of the South Pacific Ocean (SPRFMO), which has freeze the bottom fishing footprint. Nevertheless, fishing with bottom contacting gear within Salas y Gomez and Nazca ridges should be specifically prohibited. A precautionary catch quota on low-resilient species such as alfonsino (*Beryx* spp.) and Cardinalfishes (*Epigonus* spp.) should be agreed and, the overexploited Chilean jack mackerel fishery in the area should be heavily constrained. The conservation of tuna, swordfish and the mitigation of turtle and pelagic shark bycatch will require fisheries management measures by the Inter American Tropical Tuna Commission (IATTC; Antigua Convention). Specific regulations should be applied in the Nazca area to protect juveniles of swordfish.

Mineral prospection, exploration and exploitation should not be permitted in the area by the International Seabed Authority (ISA). In case of verifying this area as a reproductive zone for the endangered blue whale, the International Whaling Commission (IWC) should implement conservation measures and promote research in this area. In addition, cargo ship routes must be evaluated by competent authority (i.e., the International Maritime Organization, IMO) in light of possible interference with blue whale or other big cetaceans in the area.

For full references, please download an extended briefing from
www.wwf.se/wwf/1455095-deep-sea

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- conserving the world's biological diversity
- ensuring that the use of renewable natural resources is sustainable
- promoting the reduction of pollution and wasteful consumption.