Shark and ray fisheries

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Sharks and rays are under heavy pressure from fishing and habitat damage around the world, with many populations now depleted and some species considered to be under serious threat. This sheet provides some background to this issue and guidance as to how MPAs might contribute to their conservation and sustainable management.

Sharks and rays, with over 50 and 30 species respectively in the WIO, are cartilaginous fish in the Subclass Elasmobranchii. Contrary to popular belief, most sharks are not dangerous to people. Many elasmobranchs are docile and include plankton feeders such as manta rays and whale sharks. Sharks and rays have little capacity to recover from intense exploitation because of their conservative life histories. They are among the latest maturing and slowest reproducing vertebrates, and their biology is more comparable to large mammals than to the bony fishes. For example, some species produce only one or two pups, and not until the adults are 10-15 years old, and in some species 20-25 years old. Many species are now considered to be at risk, particularly those that are readily caught in nets or are targeted in fisheries. Over 55 species of elasmobranchs are listed on the *IUCN Red List* (many as Data Deficient, meaning that insufficient information is available to assign a category – see sheet H1), and others are currently being assessed. Although populations of some species are still abundant in the WIO (e.g. Dusky shark and Great White shark), there are rapid declines in other parts of the world.

EXPLOITATION

Sharks and rays are directly targeted in some fisheries and caught as bycatch in others. Illegal off-shore fishing is one of the major threats because of demand for a wide range of products:

- Shark and ray meat is eaten fresh or salted and sun-dried and is a valuable food item in many WIO countries. Prices of shark meat are similar to those for other fish.
- Shark fins have a particularly high value and sharks are increasingly caught for these alone, with the rest of the carcass wasted. Dried shark fins are used for soup in many Asian countries. In the WIO, fishers are likely to get far higher prices for shark fins than for the meat.

S. Wells

Black-tip reef sharks off Aldabra, clearly showing the fins that are the main reason for the fishery for sharks.

- Sharks have enormous livers that are rich in oil, and in Eastern Africa this has traditionally been and continues to be used as a wood preservative for small boats. It is also used in the textile, leather, lubricant, cosmetics and pharmaceutical industries, and is now recognised as a important natural treatment for certain cancers which may increase its value.
- Shark curios or memorabilia, such as entire jaws, dried and varnished, or teeth set in jewellery are of secondary value (but can be very valuable and in certain cases may drive a fishery), as is shark skin for watch-straps or specialised furniture sandpaper.

MANAGEMENT

For much of the WIO there are inadequate data on the status of populations and no reliable statistics for the fisheries, which means that information to guide management is lacking. Despite the 'boom and bust' nature characterising most shark fisheries, with recent evidence of collapse in some cases after only a few years of fishing, most are not monitored or regulated.

The International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks), developed by FAO's Technical Working Group on the Conservation and Management of Sharks in 1999, is a voluntary agreement to promote the conservation and sustainable management of sharks and their long-term sustainable use. It has three guiding principles:

- **Participation** - States that contribute to fishing mortality on a species or stock should participate in its management.
- **Sustaining stocks** - Management and conservation strategies should aim to keep total fishing mortality for each stock within sustainable levels by applying the precautionary approach.
- **Nutritional and socio-economic considerations** - Management and conservation objectives and strategies should recognize that in some low-income food-deficit regions and/or countries, shark catches are a traditional and important source of food, employment and/or income. Such catches should be managed on a sustainable basis to provide a continued source of food, employment and income to local communities.

However, due primarily to lack of resources, progress with implementation of the IPOA-Sharks has been very slow. Regional cooperation and education at all levels of society are urgently needed. In the case of some inshore species, for example reef sharks, MPAs may be the only hope for their recovery and survival.

KEY POINTS FOR THE MPA

- ❑ **Include shark sightings in monitoring programmes and encourage research on this group. This will help to improve knowledge of the biology and status of these species; if an MPA has significant populations of these species obtain expert advice.**
- ❑ **Identify and protect critical habitats, including nursery, aggregation and breeding areas.**
- ❑ **Ensure that any legal shark fishery within the MPA is monitored and assessed, and help to develop measures that will ensure its sustainability.**
- ❑ **Educate stakeholders on the value of sharks, both as top predators maintaining the health and balance of ecosystems, and also for ecotourism (diving and snorkelling with species such as manta rays and sharks).**
- ❑ **Work with SCUBA diving operators to promote better understanding and respect for sharks, and ensure that codes of conduct for shark watching are observed (e.g. no shark feeding, keep a safe distance).**
- ❑ **Document and report and where possible help to halt illegal fishing practices, especially by off-shore fishing fleets.**

Sources of further information

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IUCN/SSC Shark Specialist Group
www.flmnh.ufl.edu/fish/organisations/ssg/ssg.htm

TRAFFIC **www.traffic.org**

Shark Trust **www.sharktrust.org**

CASE STUDY

The role of MPAs in shark conservation in South Africa

South Africa has the most advanced shark conservation and management activities underway in the region, with a comprehensive national shark management strategy approved by the government. For more than 10 years, there has been a strict daily bag limit for sharks, with several species (including the Sawfish, Great White and Ragged-tooth) totally protected. Where sharks form the basis of a commercial fishery or permitted bycatch, only whole sharks may be landed in order to avoid "finning" and hence wasting the resource. The value of sharks to tourism is increasingly recognised. Diving with sharks has become a major attraction at several sites, including the Maputaland MPA of the Greater St Lucia Wetland Park for Raggedtooth/Nurse and Whale sharks, the new Aliwal Shoal MPA for Raggedtooth and Tiger sharks and Dyer Island near Cape Town for White sharks.

South Africa has a long history of shark research, largely as a result of problems experienced with shark attacks in the 1960s. This resulted in the establishment of the Natal Sharks Board, which operates 29 km of shark gill nets at 38 locations along 320 km of KwaZulu-Natal coast, aimed at reducing the risk of shark attacks. Each set of nets is serviced about 20 times per month and sharks that have been caught are removed. Although shark netting reduces the possibility of attacks on bathers, it carries a high ecological cost (up to 1000 sharks may be caught a year in South Africa, as well as by-catch such as turtles). However, it has generated much valuable scientific data. Current practice is to release and tag live animals from the nets and in some cases to replace nets with baited drum lines that have less impact on shark populations and avoid by-catch.

Shark netting is not appropriate in an MPA, even if water sports are a feature of the MPA. There has been moderate success with a personal electrical shark repellent that may help MPA managers in locations where aggressive sharks are a problem. However, it is more effective to manage the behaviour of people (e.g. ensuring that they do not approach sharks inappropriately).

Natal Sharks Board **www.shark.co.za**

Lemm, S. & Attwood, C. 2003. *State of Marine Protected Area Management in South Africa*. WWF-SA, Marine Coastal Management. 110pp + Appendices 1-6.

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Many sharks, such as this white tip reef shark, are accidental catches of gill net fishing.