

The international and national frameworks for conservation and management of sharks

Recommendations for Ecuador

Sarah Fowler



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Recommendations for Ecuador

*Contribution to Ecuador's Draft National Plan of Action for the
Conservation and Management of Sharks*

Sarah Fowler

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1. Introduction

The International Plan of Action for the Conservation and Management of Sharks (IPOA–Sharks, see Annex I) was developed by FAO in order to identify the actions required for sustainable shark management within the context and framework of the Code of Conduct for Responsible Fisheries. It was adopted by the 23rd Session of the UN FAO Committee on Fisheries (COFI) in 1999, calling upon all States to produce a Shark Assessment Report (SAR) and, if they have shark fisheries, to develop and implement National Plans of Action (NPOAs, or Shark Plans) by the following COFI session in 2001.

The overall objective of the IPOA–Sharks is to ensure the conservation and management of sharks and their long-term sustainable use. It embraces the precautionary approach and encompasses all chondrichthyan fisheries, whether target or bycatch, industrial, artisanal or recreational, within the context of four main elements: species conservation, biodiversity maintenance, habitat protection and management for sustainable use. It is supported by Technical Guidelines (FAO Marine Resources Service, 2000) addressed to decision-makers and policy-makers associated with the conservation and management of chondrichthyans. These provide general advice and a framework for States to use when developing Shark Assessment Reports, National Shark Plans and joint Shark Plans for shared transboundary species of sharks.

The IPOA–Sharks envisages the development of National Shark Plans that identify research, monitoring and management needs for all chondrichthyan fishes that occur in State waters. In implementing the IPOA, States are also urged to ensure effective conservation and management of sharks that are transboundary, straddling, highly migratory and high seas stocks. The guiding principles of the IPOA–Sharks and the Technical Guidelines are that States contributing to fishing mortality of a species or stock should participate in its conservation and management, and that shark resources should be used sustainably.

This document presents a brief summary of the recent (and continually changing) status of IPOA–Sharks implementation internationally and lessons learnt in other countries during the development of their National Shark Plans. It outlines the international context for shark conservation and management, particularly in those conservation and management fora applicable to Ecuador, and identifies major gaps in national legislation and other important considerations relevant to shark conservation and management. Contents for the Ecuadorian Shark Plan are suggested, such that it meets the requirements of the FAO IPOA–Sharks. Finally, this document identifies a draft list of priorities that the Plan may address, based upon the assessment by IUCN and INP of the economic and social constraints in Ecuador, for discussion by a National workshop in 2006.

This document follows the precedent set by FAO and other bodies, by using the term ‘sharks’ to refer to all members of the chondrichthyan or cartilaginous fishes, including sharks, skates, rays, guitarfishes, sawfishes and chimaeras.

2. International context for shark conservation and management

Ecuador is Party to or a Member of the following international and regional agreements or arrangements that are of relevance to the State's shark conservation and management activities. The relevance of each of these with regards the National Shark Plan is briefly outlined below, with full texts reproduced in the appendices to this report.

2.1 *United Nations General Assembly (UNGA)*

The United Nations has raised the issue of shark conservation and management during its last three General Assemblies (2003–2005), noting concerns over the economic and cultural importance of sharks, their biological importance to the marine ecosystem and vulnerability to overfishing, the need for sustainable management of populations and fisheries, and the disappointing lack of progress with implementation of the IPOA–Sharks. Annex II presents the relevant sections of the Fisheries Resolutions for 2003 to 2005 and the section of the Secretary General's report for 2005 that refers to sharks.

In summary, these UNGA Resolutions have called upon States to implement the IPOA by developing and implementing national and regional plans of action, undertaking shark stock assessments, improving the collection of catch and scientific data, and to consider adopting conservation and management measures for directed and nondirected fisheries that have a significant impact on vulnerable or threatened shark stocks. Specified measures include banning directed shark fisheries conducted solely for the purpose of harvesting fins, minimizing waste and discards from shark catches, and encouraging the full use of dead sharks. The need for assistance to and capacity-building within developing States and the importance of cooperation through regional and subregional organisations are acknowledged in all the Resolutions. FAO has been requested to assist in these tasks.

2.2 *United Nations fisheries instruments and agreements*

United Nations Convention on the Law of the Sea (UNCLOS, 1982)

Ecuador has not yet signed UNCLOS and its associated Agreements, including the **Fish Stocks Agreement** ('Agreement for the implementation of the provisions of the Convention relating to the conservation and management of straddling fish stocks and highly migratory fish stocks' 1995). A large number of Ecuadorian shark species (and other fish species) are listed on Annex I (Highly migratory species) of UNCLOS (see Annex V to this report). Signatory States are called to cooperate with a view to ensuring the sustainability of these stocks throughout the region, both within and outside the areas under their national jurisdiction.

Code of Conduct for Responsible Fisheries

Ecuador has subscribed to the Rome Declaration on the implementation of the Code of Conduct for Responsible Fisheries, adopted by the FAO Ministerial meeting on Fisheries in 1999. This declaration accords highest priority to achieving sustainability of both capture fisheries and aquaculture within the framework of the ecosystem approach, bearing in mind the special circumstances and needs of developing countries. It also attaches high priority to the implementation of its associated International Plans of Action: for the Management of Fishing Capacity, for the Conservation and Management of Sharks and for Reducing Incidental Catch of Seabirds in Longline Fisheries, and to achieving a balance between harvesting capacity and available fisheries resources.

Although the UN FAO Code of Conduct for Responsible Fisheries and International Plans of Action including the Shark Plan) are voluntary, they have been formulated so as to be interpreted and applied in conformity with the relevant roles of international law. These not only include UNCLOS and the Fish Stocks Agreement, but also the measures outlined by the International Conference on Responsible Fishing and 'Declaration of Cancún' (1992), and the 1992 Rio Declaration on Environment and Development, particularly Chapter 17 of Agenda 21. Some of the Code's provisions have or may be given binding effect by other obligatory legal instruments. UN Food and Agriculture Organisation Committee on Fisheries (FAO COFI)

As a member of FAO COFI, Ecuador is also urged to implement the FAO International Plans of Action adopted in 1999, including the IPOA–Sharks (see Annex I). Ecuador's activities in this area are described in section 3. Since Ecuador's Shark Plan is the subject of this report, no further detail is provided here, but see section 3.

2.3 Inter-American Tropical Tuna Commission (IATTC)

Regional Fisheries Bodies (RFBs, see www.fao.org/fi/body/rfb/index.htm) include both management, advisory and scientific fisheries bodies. Ecuador is a Contracting Party to the **Inter-American Tropical Tuna Commission (IATTC)**, which sets management measures, and a member of **OLDEPESCA, Organizacion Latinoamericana de Desarrollo Pesquero**, which provides scientific and management advice (see 2.7 below).

Before 2005, the only measures for the conservation and management of sharks implemented by IATTC were undertaken within the context of its overall data collection and monitoring duties, rather than as a specific fisheries management activity. This changed with the adoption in June 2005 of an IATTC Shark Resolution, possibly as a result of the increasing numbers of requests from FAO and CITES for RFOs to initiate shark fishery management activities. The Resolution was co-sponsored by the United States, the European Union, Japan and Nicaragua, with support from Ecuador, Costa Rica, Panama and Mexico, and adopted by consensus of the 15 IATTC Parties.

The IATTC Resolution requires its Contracting Parties to undertake the following actions (the full text is presented in Annex III):

- establish a National Shark Plan,
- ensure that shark catches are fully utilised,
- limit the weight of shark fins to no more than 5% of the weight of carcasses on board,
- prohibit fishing vessels from retaining on board, transshipping, landing or trading in any fins harvested in contravention of the Resolution, and
- report recent and historical data for catches, effort by gear type, landing and trade of sharks by species, including available historical data, and to provide a comprehensive annual report of the implementation of the Resolution to the IATTC Secretariat. (The Commission may assist developing Contracting Parties with the collection of data on shark catches.)

Contracting Parties are also encouraged, where possible, to:

- release alive unutilised shark bycatch taken in fisheries regulated by IATTC,
- undertake research to identify ways to make fishing gears more selective, and
- conduct research to identify shark nursery areas.

2.4 Convention on International Trade in Endangered Species of Wild Fauna and Flora

The Convention on International Trade in Endangered Species (CITES) was established in recognition that international cooperation is essential for the protection of certain species from over-exploitation through international trade. It came into force in 1975, creating the international legal framework for the prevention of trade in endangered species of wild fauna and flora and for the effective regulation of international trade in other species which may become threatened in the absence of such regulation (www.cites.org, Wijnstekers 2003). Almost one hundred and eighty countries are now Party to CITES.

CITES is one of the most influential and effective international instruments regulating natural resource use, in that it enables Parties to take effective measures (e.g. trade suspensions in specimens of CITES-listed species) to enforce the provisions of the Convention and to prohibit trade in specimens that would violate these provisions (Wijnstekers 2003, Reeve 2002).

Appendix I of CITES currently lists about 820 species that are threatened with extinction and for which no international trade is allowed (except under exceptional circumstances). Trade in the approximately 29,000 species listed on Appendix II is subject to strict regulation and monitoring to ensure that it is not detrimental to the survival of the listed species. Appendix III lists about 230 species identified by certain Parties as subject to regulation within their jurisdiction in order to prevent or restrict exploitation, and as requiring the co-operation of other Parties in the control of trade.

Proposals to add or remove species from Appendices I and II must receive a two-thirds majority vote at meetings of the Conference of Parties (CoP) to CITES (held every two to three years) or by post for acceptance. Species may be added to Appendix III by any range State at any time, following consultation with other Parties.

Implementing CITES for listed shark species

Three shark species are currently listed on CITES, all of them (basking shark *Cetorhinus maximus*, whale shark *Rhincodon typus*, and white shark *Carcharodon carcharias*) on Appendix II. Ecuador is a range state for all three of these species. These listings only affect international trade, which is allowed to take place provided that certain conditions (set out in Article IV of the Convention, see Annex IV) are met. These provisions are summarised below.

Exporting listed species: international exports from Ecuador of these species or their products must be accompanied by a CITES export permit. Such a permit can only be granted if Ecuador's Scientific Authority has advised that this export will not be detrimental to the survival of the species (for example, because it comes from a sustainably managed stock), and the Management Authority is satisfied that it was not captured illegally. If a specimen is to be exported live (unlikely for any of these three species), then shipping conditions must also be approved by the Management Authority.

Importing listed species: imports of these species can only be accepted if an appropriate export or re-export permit is first presented and approved by Ecuador's CITES Management Authority. This could include the need for a permit in order to import to Ecuador specimens caught on the high seas. However, not only are such captures unlikely, but a definition of 'introduction from the sea' has not yet been agreed within CITES.

The aim of these listings is not to ban trade, but to ensure that fisheries supplying international trade products are sustainable. If Ecuador is to export any of these listed species, it is essential that Ecuador's Scientific Authority for sharks is able to determine the effects of trade on the sustainability of wild populations. They must, therefore, be adequately informed on the fisheries and the status of listed stocks. It would be possible for Ecuador to appoint a fisheries specialist to this role.

Some CITES Parties have taken out reservations on these shark listings, which mean that they are effectively not Party to CITES with respect to these species.

Resolutions and Decisions

CITES's other major role in promoting the sustainable management of wild species (arguably as important, if not more important than species listings on its Appendices), is through the adoption of Resolutions and Decisions. Ecuador has recently played an important role in promoting shark conservation and management through this application of CITES, by successfully submitting a Resolution on the Conservation and Management of Sharks (CoP12 Doc. 41.2, see www.cites.org) to the 12th Meeting of the Conference of Parties to CITES in 2002. The text of the Resolution adopted by the Conference is presented in Annex IV and is still in force, but should be read in combination with the current Decisions (adopted by the 13th Conference of Parties) and associated recommendations of the Animals Committee, also presented in Annex IV.

The following are of relevance for Ecuador and may need to be taken into consideration when the Shark Plan is developed:

Parties are encouraged by Res. Conf. 12.6 to:

- obtain information on implementation of IPOA-Sharks from their fisheries departments, and report directly on progress to the CITES Secretariat and at future meetings of the Animals Committee [the next meeting is in Lima, Peru, July 2006]
- contribute financially and technically to the implementation of the IPOA-Sharks;
- continue to identify endangered shark species that require consideration for inclusion in the Appendices, if their management and conservation status does not improve; and

Parties' Management Authorities are encouraged to collaborate with their national Customs authorities to expand their current classification system to allow for the collection of detailed data on shark trade including, where possible, separate categories for processed and unprocessed products, for meat, cartilage, skin and fins, and to distinguish imports, exports and re-exports. Wherever possible these data should be species-specific.

Decision 13.42, directed to Parties, encouraged or asked them to:

- improve their data collection and reporting to FAO of catches and landings of and trade in sharks, at the species level where possible, recognizing that *inter alia* this may be a first step towards the development and implementation of Shark Assessment Reports and National Plans of Action or other relevant national instruments;
- seek assistance from FAO or other appropriate organizations to build capacity to manage their shark fisheries; and
- take note of the species-specific recommendations in CoP13 Doc. 35 Annex 2 with a view to ensuring that international trade is not detrimental to the status of these species.

The species-specific recommendations are outlined in Annex IV. The Animals Committee recommendations concerning species that may be of particular relevance to Ecuador are as follows:

Freshwater Stingrays Family Potamotrygonidae

Range States for these species [*are recommended to*] jointly examine cross-border trade that may be facilitating illegal trade and consider Appendix III listings, where appropriate, to control illegal exports.

Sawfishes Family Pristidae

Parties that are or have been range states for the [Critically Endangered] Pristidae undertake, as a matter of urgency, a review of the status of these species in their coastal waters, rivers and lakes, and, if necessary, introduce conservation and trade measures to reduce extinction risk.

Gulper sharks Genus Centrophorus

An FAO Deep Sea Workshop in December 2003 (Irvine 2005) had recommended that “a precautionary approach to the management of these and other deep sea species is absolutely essential”, including monitoring of catches, landings and trade at species level, preparation of good identification guides, improved use of observers, and development of standard carcass forms to improve reporting, which should include both species and their products. The Animals Committee recommends that Parties support this approach.

Requiem sharks Genus Carcharhinus, Guitarfishes/Shovelnose rays Order Rhinobatiformes, and Devil rays Family Mobulidae

The Animals Committee recommends that Range States pay particular attention to the management of fisheries and trade in these taxa, including undertaking reviews of their conservation and trade status. It was noted that many of the Carcharhinid sharks were high seas pelagic species that could only be managed through the joint efforts of States, Regional Fisheries Management Organizations and other international bodies.

Additional Recommendations

The Animals Committee’s full provisional list of species of potential concern also included Family Squatinidae Angel sharks, Family Odontaspidae Sandtiger sharks, and Family Alopidae Thresher sharks.

Parties were also urged, through FAO and regional fisheries organizations, to:

- develop, adopt and implement new international instruments and regional agreements for the conservation and management of sharks, particularly on the high seas where the provisions of the Fish Stocks Agreement need to be implemented for sharks, and where multilateral fisheries access of partnership agreements are operating;
- consider recommendations for activities and guidelines to reduce mortality of endangered species of sharks in bycatch and target fisheries, and to develop waterproof shark identification guides for fishermen to improve shark species identification and data collection.

2.5 Convention on Migratory Species (CMS)

Ecuador has been Party to the Convention on the Conservation of Migratory Species (CMS), or the Bonn Convention, since 2004. CMS has 92 Parties, who recognise the need for countries to co-operate in the conservation of animals that migrate across national boundaries, if an effective response to threats operating throughout a species' range is to be made. A regional structure (Africa, America and the Caribbean, Asia, Europe and Oceania), provides a framework within which Parties may adopt strict protection measures for endangered migratory species (listed under Appendix I), or conclude Agreements for the conservation and management of migratory species with an unfavourable conservation status (listed in Appendix II). These Agreements are open to accession by all Range States of the species concerned, not just to the CMS Parties. They may cover any species that would benefit significantly from international co-operation and listed marine species include cetaceans, sea turtles and three species of shark. The whale shark *Rhincodon typus* was listed on Appendix II in 1999, the white shark *Carcharodon carcharias* on Appendices I and II in 2002, and the basking shark *Cetorhinus maximus* also on both Appendices in 2005. Several years after the listing of whale sharks, no conservation and management agreement has been adopted for this or other shark species, but the 8th Conference in 2005 agreed to begin the development of a CMS Instrument for the conservation of all migratory shark species listed on CMS. Progress towards this goal will start in 2006.

2.6 United Nations Environment Programme (UNEP) Regional Seas Programme for the South East Pacific

This Regional Seas Programme includes the Lima Convention for the Protection of the Marine Environment and Coastal Areas of the South-East Pacific and the Action Plan for the Protection of the Marine Environment and Coastal Areas of the South-East Pacific, together with associated projects: the Programme of Management of Coastal Resources (PMRC), Regional Programme on Environmental Education to the Sustainable Development of the South East Pacific, and the Global International Waters Assessment for the Sub-region 64 Humboldt Current. Actions for sharks are not (yet) specified under any of these initiatives.

2.7 Organizacion Latinoamericana de Desarrollo Pesquero, OLDEPESCA

OLDEPESCA is not a management body, but provides scientific and management advice.

The 17th Conference of OLDEPESCA Ministers, September 2005, approved a proposal for a cooperative 90-day project for the development of National Plans of Action for the conservation and management of sharks (OLDEPESCA-XVII-2005-DT.6), together with a proposal that FAO coordinates these activities. Beneficiary countries would be Cuba, Bolivia, Ecuador, Guyana, Mexico, Peru and Venezuela. The project would identify the actions necessary for the development, implementation and evaluation of National Shark Plans, and apply these in each State, simultaneously raising State capacity for the development and implementation of these measures. Implementation will depend upon funds from and cooperation by FAO.

3. Status of IPOA–Sharks implementation

3.1 *International status*

Although, when the IPOA–Sharks was adopted in 1999, FAO COFI urged shark fishing States to implement it within two years, progress has been extremely slow. Concern over lack of implementation has been voiced in several international fora, including by FAO COFI, the United Nations General Assembly, and meetings of the Parties to CITES. Reviews of implementation are regularly undertaken by FAO and the Animals Committee of the Convention on International Trade in Endangered Species (CITES), and most recently in the UN General Assembly Secretary General’s report (see Annex II). This summary is based primarily on the reviews presented to the 13th meeting of the Conference of Parties to CITES in late 2004 (Anon. 2004) and FAO COFI in early 2005 (FAO 2005). It suggests reasons for the poor implementation of the IPOA and derives lessons learnt from these analyses.

The number of States that might be expected at least to undertake SAR can be estimated on the basis of the number of States reporting chondrichthyan landings to FAO (113 countries are listed on the FAO database) and the number exporting shark fins to Hong Kong (86-125 States: Clarke and Mosqueira 2002, Rose 1996). Progress by early 2001, the target implementation date, was very disappointing, with only 29 States reporting to FAO COFI on progress with IPOA implementation. Of these, just six had a SAR or NPOA available for review. In fact, none of the 18 major shark-fishing nations (defined as those whose annual landings as reported to FAO exceeded 10,000 tonnes in 2000) had produced a SAR by September 2002. Only two had completed a NPOA, and a draft NPOA had been prepared by the European Union (on behalf of its member States).

The most recent review (presented to CITES in 2004) identified some degree of progress by 65 States. Of these, 47 States (including Ecuador) had reported they were working towards implementation, five States had draft Shark Assessment Reports or Shark Plans, and 12 States reported that they had completed one or more of these documents (although several of these were not in the public domain).

FAO (2005) notes that about 30% of its Members had made an assessment on the need for a Shark Plan, and one third of these have developed and implemented a plan. This represents only about 11% of the shark catching nations, signifying that more progress should be made.

3.2 *Regional Fisheries Bodies*

Until very recently, the majority of Regional Fisheries Bodies (RFBs) appeared not to be implementing the IPOA–Sharks, which means that there has been very little improvement in the collection and management of catch and trade data. This situation has arisen due to lack of resources and technical support (FAO has many other higher priorities for intervention) and because the IPOA–Sharks is wholly voluntary. States and Fisheries Management Organisations are not obliged to undertake any of the actions urged by FAO in the IPOA and it appears that few consider it to be a priority. The past year has, however, seen a number of Shark Resolutions adopted by RFBs, as noted above for IATTC and the proposal from OLDEPESCA (the latter is an advisory, not a management body). Five RFBs, including IATTC, have reported to FAO on their efforts to assist in the implementation of the IPOA–Sharks. IATTC’s actions (as reported in FAO 2005) included releasing live shark bycatch, and surveying, assessing and analysing shark populations.

3.3 Ecuador

As noted above, Ecuador places a high priority on implementation of the FAO Action Plans. Indeed, Ecuador reported to FAO COFI in 2001 that a Shark Assessment Report was available (possibly Martinez 1999?) and that a Shark Plan was in preparation.

The recent reports produced on shark fisheries in Ecuador (Martinez 1999, Herrera et al. 2003, Coello 2005) highlight a serious lack of information about the status of shark populations in Ecuadorian waters, which is a major impediment to developing science-based management measures. Both biological information and fisheries statistics are incomplete for sharks.

In August 2003, the Sub-secretary of State for fisheries resources (Subsecretaría de Recursos Pesqueros) and the National fisheries Institute (Instituto Nacional de Pesca) organized a workshop to establish policies and strategies as a basis for the development of the NPOA-Sharks. The workshop involved representatives of FAO in Ecuador, fisheries authorities, the Galapagos National Park, universities, NGOs and representatives of artisanal and industrial fishermen, all of whom agreed to contribute towards the development of the NPOA-Sharks. They agreed on the urgent need to conserve and manage shark populations to ensure their sustainable use, to strengthen the legal framework, to establish consultation mechanisms, to support shark conservation efforts in the Galapagos Marine Reserve and to improve scientific knowledge on shark populations.

4. Analysis of Ecuadorian regulations related to sharks

The legal framework for the conservation and management of sharks in Ecuador is inadequate and requires strengthening. Only three relevant regulations currently exist (Martinez and Viteri 2005, Coello 2005).

4.1 Mainland shark fishing regulations

Ecuadorian fisheries regulations prohibit target shark fisheries, but permit the landing of bycatch taken by fisheries targeting other species (*Art. 1 del acuerdo No. 097 de la Subsecretaria de Recursos Pesqueros sobre regulaciones sobre la captura y comercializacion del tiburón, 1993*). This bycatch is very important to artisanal fishers, representing up to 30% of the income of fishermen from three landing sites in the province of Manabi (Martinez and Viteri 2005). Most of this income is obtained from the sale of shark fins.

There are no other management or regulatory measures for shark fisheries on the mainland.

It is unclear whether the local fisheries for angel sharks *Squatina* spp. (the species represented are uncertain) and various batoids (rays) are technically bycatch fisheries, a major component of multispecies fisheries, or target fisheries. Elasmobranchs are also taken in large numbers as bycatch in the shrimp fishery. All of these sources of shark mortality require careful management.

Mainland fishers land their shark bycatch whole, with fins still attached. Shark meat, although very low value, is marketed and consumed nationally, with small quantities exported to Colombia or Peru. There is also some utilisation of cartilage and jaws (of higher value than meat), and sometimes skin (which is of very low value). Although the fins represent by far the largest proportion of fisher income from sale of fisheries bycatch, and until recently there has been a strong export market for the fins from these sharks (see below), no evidence has been reported of shark finning (the landing of fins after the discard of carcasses at sea) off the mainland coast.

Concern has been expressed that the small size of many landed sharks indicates an unsustainable fishery, and that more specific fisheries regulations for the conservation and management of sharks should be implemented within the framework of a national Shark Management Plan. Options for such management are outlined below.

4.2 Galapagos Marine Reserve Regulations

The Galapagos Marine Reserve Regulations prohibit all shark fisheries, whether target or bycatch, and also prohibit transporting and trading in sharks or their products within or from the Archipelago (*Reglamento de Pesca Artesanal de la RMG, Art. 69*).

These Regulations have not been effective. Illegal fisheries targeting shark fins in order to supply the high value international trade in this product are apparently increasing within the reserve, despite efforts to control them. The practice of finning seems to be limited within Ecuadorian waters to the Galapagos Archipelago. Shark fins obtained illegally in the Marine Reserve that were formerly landed on the Ecuador mainland are now exported by boat to adjacent States, because of the recent prohibition of shark fin exports from Ecuador.

4.3 Shark fin export Regulation

Ecuador recently issued a regulation (*Decreto Ejecutivo 2130, Registro Oficial 437 de 7 de Octubre de 2004*) prohibiting export of shark fins from the country, in an attempt to control or eliminate the finning problem in the Galapagos.

There is concern that this regulation has not been effective in restricting this illegal activity in the Galapagos, but has merely increased the illegal fin trade that now passes through neighbouring States instead.

An associated concern is that this regulation did not consider its socio-economic impact upon mainland fishermen. Although mainland fishers continue to land bycaught sharks, shark fin exporters can no longer legally export these products and the fin market has collapsed. Mainland fishers have therefore lost between 10% and 30% of their total income from fisheries (Martinez and Viteri 2005). This has resulted in several strikes by fishermen and increasing levels of conflict between the fisheries and conservation sectors. It seems probable that illegal export of fin products from legal mainland fisheries, as well as from Galapagos, is now taking place.

5. Loopholes for consideration in the Shark Plan

It is widely accepted that there is an urgent need to conserve and manage shark populations in order to ensure their sustainable use, to strengthen the legal framework, to establish consultation mechanisms, to support shark conservation efforts in the Galapagos Marine Reserve, and to improve scientific knowledge on shark populations as an essential basis for all of the above. To do (in any State) requires the following challenges to be addressed:

- ensuring that data collection, assessment and research are sufficient and adequate;
- achieving sustainable management of fisheries, particularly for multispecies fisheries that take species of different productivity, or species that are taken in two or more fisheries;
- achieving consistent and complementary management arrangements across fisheries, particularly where the fisheries extend across administrative boundaries;
- ensuring that adequate resources are assigned to the above.

Bearing in mind these challenges and the current legal and administrative situation in Ecuador, the following three legal loopholes (5.1–5.3) have been identified for discussion and consideration during the process of developing Ecuador’s Shark Plan. Three additional very important practical issues that also require careful consideration when developing Ecuador’s Shark Plan follow (5.4–5.6). Addressing these practicalities is also vital if appropriate shark fisheries management and conservation measures are to be defined, developed, implemented and enforced.

5.1 *Sustainable commercial and bycatch shark fisheries management measures*

There are no sustainable commercial shark fisheries management regulations in Ecuador. These need to be planned, developed and implemented under Ecuador’s Shark Plan. Whenever possible, these regulations should be species-specific and they should cover both target/important multispecies fisheries (e.g. for *Squatina* spp.) and major bycatch fisheries (e.g. long line and shrimp fisheries).

Such regulations would normally include both technical conservation measures (for example, minimum or maximum landing sizes for particular species, fishing gear controls, closures of nursery grounds, and shark finning bans) and direct conservation measures such as limits on catches, and/or on overall fishing effort. These two forms of management should always be used together, but direct management measures can be less restrictive in those cases when technical measures are very effective. The history of fisheries management worldwide has repeatedly demonstrated that reliance solely upon technical conservation measures when there is an important market for the fishery products almost inevitably results in increased fishing effort and stock depletion.

In those cases where shark stocks are shared with neighbouring States, or migrate between state and international waters, national fisheries regulations will not be sufficient to ensure their sustainable management. In such cases regional management measures are required, for example through IATTC or new arrangements. Species that are particularly likely to require collaborative management are listed on UNCLOS Annex I (see Annex V to this report).

5.2 Species-specific conservation measures for threatened sharks

Several threatened shark species, some of which listed on international biodiversity conventions, occur within Ecuador's waters. These species are unlikely to be the subject of large-scale target commercial fisheries, but they may occur as bycatch in commercial fisheries, be targeted opportunistically where there is a market for their products, or sought as trophies by recreational fishers. Some of the following listed species or taxa may require particularly careful management in Ecuadorian waters through the introduction of fisheries regulations, quotas, bans or even strict protection through national conservation law, if national populations are not to be depleted or driven to extinction. Such initiatives will also enable Ecuador to implement the recommendations of international bodies. National management may also contribute to regional initiatives for the conservation and management of some of these species, for example, as required under the Convention on Migratory Species:

Basking shark *Cetorhinus maximus* (CITES Appendix II, CMS Appendix I and II)

Whale shark *Rhincodon typus* (CITES Appendix II, CMS Appendix II)

White shark *Carcharodon carcharias* (CITES Appendix II, CMS Appendix I and II)

CITES Animals Committee taxa of concern that could benefit from either conservation or fisheries management measures (several are also listed on UNCLOS Annex I) include the following:

Angel sharks, Family Squatinidae

Deepwater gulper sharks, Genus *Centrophorus*

Devil rays, Family Mobulidae

Freshwater Stingrays, Family Potamotrygonidae

Guitarfishes/Shovelnose rays, Order Rhinobatiformes

Requiem sharks, Genus *Carcharhinus*,

Sandtiger sharks, Family Odontaspidae

Sawfishes, Family Pristidae

Thresher sharks, Family Alopidae

Additional species may be identified as the programme to assess the threatened status of all chondrichthyan fish progresses (www.redlist.org).

Species that urgently require strict protection through biodiversity conservation laws certainly include the Critically Endangered sawfishes Pristidae.

Other possible candidates for conservation measures (whether through strict protection, quotas or critical habitat protection) may include the mantas and devil rays Mobulidae, freshwater stingrays Potamotrygonidae and some of the sandtiger sharks Odontaspidae. Some of these species are of high ecotourism or ornamental trade value, but they are also very vulnerable to overexploitation in target or bycatch fisheries.

The angel sharks, deepwater gulper sharks, and guitarfishes are often of commercial fisheries importance and there are local fisheries for *Squatina* spp. in Ecuador. Fisheries for all of these species, however, whether target or bycatch, require particularly careful management. *Squatina* species have been rapidly depleted by unregulated commercial exploitation worldwide. Some

deepwater shark stocks have been reduced to less than 10% of their former levels by only a few years of commercial deepwater fishing. Since the remaining populations of these sharks usually continue to be depleted through bycatch in fisheries for more abundant bony fishes or invertebrates, several species are now threatened with extinction.

Other species, including the carcharhinid and thresher sharks, will usually need to be covered by precautionary fisheries management measures.

5.3 *Shark finning regulations*

Ecuador has recently applied a ban on international shark fin trade throughout the country in order to regulate the practice of illegal shark fishing in the Galapagos Marine Reserve. This has, perhaps predictably, resulted in conflicts with legal shark fishers on the mainland who lost a significant part of their fishery income as a result. There is also some doubt whether this measure has been effective in preventing illegal shark fishing in the Galapagos; fins are now landed in or transported to neighbouring States instead.

A shark finning ban within Ecuadorian waters, ideally requiring sharks to be landed whole and prohibiting the carriage of detached shark fins on board fishing vessels, should be equally effective in addressing illegal activities in Galapagos (particularly if combined with adequate enforcement at mainland landing points). It would also permit legal shark fin exports from mainland bycatch to continue while enabling Ecuador to meet the recommendations on finning from various international bodies described earlier in the report, including the IATTC Resolution.

The diversion of illegal fin landings from Ecuador to neighbouring States highlights the importance of similar finning bans being implemented throughout the region, as envisaged under the IATTC Resolution.

5.4 *Enforcement of fisheries management and conservation measures*

The importance of strengthening Ecuador's capacity to implement and enforce fisheries management and conservation measures has been highlighted by the unsuccessful ban on shark fisheries within the Galapagos Marine Reserve. Although raised here, because of its fundamental importance for shark conservation, this consideration applies equally to all fisheries management in Ecuador.

5.5 *Consultation with stakeholders*

The FAO IPOA-Sharks notes the importance of improving and developing "frameworks for establishing and co-ordinating effective consultation involving all stakeholders in research, management and educational initiatives within and between States" (see Annex I). Inadequate consultation with stakeholders prior to the introduction of the ban on international trade in shark fins, and the subsequent unrest caused among artisanal fishers, highlights the importance of incorporating consultation during the development of the Shark plan and associated regulations. Stakeholder consultation should not, however, be restricted to fishers. Sharks are also an economically important resource for the ecotourism industry, and of high biodiversity value.

5.6 Scientific and fisheries data collection, collation and analysis

The provision, collation and analysis of sound scientific data, from both research and fisheries monitoring programmes, are of fundamental importance for all fisheries conservation and management initiatives, not solely those focused on sharks. They enable management needs to be identified and revised as necessary, and provide the data needed by managers if they are to determine whether management is being implemented effectively and providing the desired results for both the human community and fish stocks.

Providing these data services is also one of the most challenging tasks facing governments and their fisheries and wildlife managers. The problem of technical capacity to identify species is relatively easily overcome, compared to the major institutional challenge associated with providing the staff, resources and logistics necessary to put trained staff into the field. On the other hand, having fisheries staff in the field undertaking data collection is also a potentially valuable contribution to stakeholder consultation and enforcement activity.

Obtaining such field data, although of fundamental importance, is of limited value if they are not collated into a database and processed in order to provide basic fisheries information.

6. Draft contents for an Ecuadorian Shark Plan

It is recommended that the Ecuadorian Shark Plan be comprised of the following sections. Some of these sections need only be summaries and can refer to more detailed information in other documents, such as the Shark Assessment Report. Comments are provided in “[*italics*]”.

1. Introduction

1.1 Issues

[Including, but not restricted to, those raised in section 4.4 above]

1.2 Key elements

FAO (2000) identifies four elements of the IPOA-Sharks relating to the principles of ‘ecologically sustainable development’ and ‘inter-generation equity’, in that they should provide ongoing benefits to successive generations of humans:

- The management requirements of shark fishery resources for sustainable use
- The particular conservation needs of some shark and other chondrichthyan species
- The need for maintenance of biodiversity through viability of shark populations
- The need for habitat protection

FAO (2000) also notes the advantages in establishing shark fisheries and shark conservation objectives within the ‘sustainable development reference system’ (SDRS), as described in the FAO Technical Guidelines for Responsible Fisheries No. 8, *Indicators for sustainable development of marine capture fisheries*. The SDRS framework identifies the following (bulleted) four dimensions within which to establish ‘criteria’, set ‘objectives’ and organize related ‘indicators’ and their respective ‘reference points’ (or reference values):

- Economic
- Social
- Ecological, and
- Governance

It may be useful to bear these elements in mind when developing and agreeing Priorities and Actions for the Shark Plan.

1.3 Timetable for implementation

In view of the considerable length of time necessary to move from the current status of shark stocks and their conservation and management in Ecuador towards rebuilt, sustainably managed stocks and fisheries, the timetable for implementation of the FAO IPOA-Sharks needs to be far longer than the four-year review process recommended by FAO. Ecuador’s Shark Plan will also need to progress in incremental steps towards the ultimate objectives set by FAO. It is therefore necessary that measures adopted under the Shark Plan should be applied, monitored, evaluated and revised as necessary on a continuous schedule over a period of several decades, but that the whole document be reviewed and amended as necessary every four years.

1.4 Delivery, monitoring and reporting

Delivering the objectives of the Shark Plan in Ecuador will require cooperation between a wide range of national and regional government bodies, industry stakeholders (fisheries, processing, trading and ecotourism) and non-governmental organisations. INP may find it useful to set up a **Shark Plan Implementation Group** to ensure coordination between these bodies. This group could be used to reach agreement on the objectives of the Plan, to monitor progress in meeting its objectives of the Shark Plan, and to make amendments as necessary.

The FAO IPOA calls for a report to COFI on progress every two years. It would be helpful to set the Implementation Group's meeting schedule for reporting on its progress in implementing the Shark Plan so that it corresponds with the FAO schedule. Thus, the Shark Plan could be reviewed (as suggested in 1.3 above) shortly before alternate meetings of FAO COFI.

2. Aims and Objectives

2.1 The overall aim of Ecuador's Shark Plan is:

“To ensure the conservation, management and long term sustainable use of sharks, skates, rays and chimaeras occurring in Ecuador's EEZ and taken in target and incidental fisheries by Ecuador's artisanal and commercial fleets, and to ensure conformity with fisheries and environmental policies in national, regional and international law and other agreements.”

[The above is a suggestion/draft for discussion. The overall aim can then be followed by the list of ten objectives given below, each of which is drawn from paragraph 22 of the FAO IPOA–Sharks. Each objective can be accompanied by a brief summary of the issues associated with this objective, and strategies for working towards achieving the objective.]

Objective 1: Ensure that shark catches from directed and non-directed fisheries are sustainable

Issues: *[This paragraph might refer to any relevant current objectives for sustainable shark stock and fisheries management and how these could be improved through the Shark Plan. It could also refer to the current lack of information against which to assess sustainability of shark fisheries and the efficacy of management measures in Ecuador, thus the need for interim precautionary adaptive management pending improved data and ability to develop management strategies based on stock assessments.]*

Strategies: *[Suggestions taken from the FAO IPOA include: Ascertain control over access of fishing vessels to shark stocks; decrease fishing effort in any shark where catch is unsustainable. It is also important to “introduce precautionary adaptive management in the interim, while data collection and analysis programmes are still being developed.]*

Objective 2: Assess threats to shark populations, determine and protect critical habitats and implement harvesting strategies consistent with the principles of biological sustainability and rational long-term economic use

Issues: *[The lack of research and monitoring activity targeted at sharks in Ecuador, hence the lack of data, is in itself a threat. It also means that other threats to populations cannot be assessed, and sustainable harvesting strategies based on these data cannot yet be developed.]*

Strategies: [Improve data collection and analysis; identify and protect nursery grounds, breeding aggregations and sites of ecotourism importance; introduce sustainable management of shark populations.]

Objective 3: Identify and provide special attention, in particular to vulnerable or threatened shark stocks

Issues: [This has, to some extent, been undertaken by the CITES Animals Committee on a global basis. Ecuador may also wish to consider which of its national shark stocks are particularly vulnerable or threatened – for example those that are also of ecotourism importance in the Galapagos Marine Reserve.]

Strategies: [From the FAO IPOA: Facilitate and encourage research on little known shark species. Also: improve protection measures for threatened species and populations of ecotourism importance; develop appropriate management measures for species listed on international conventions.]

Objective 4: Improve and develop frameworks for establishing and co-ordinating effective consultation involving all stakeholders in research, management and educational initiatives within and between States

Issues: [The problems that arose through lack of consultation with stakeholders are referred to above and should be considered here.]

Strategies: [Develop a consultation framework involving fishers, the ecotourism industry and environmental NGOs for discussion of conservation and management actions arising from the development of the Shark Plan.]

Objective 5: Minimize unutilized incidental catches of sharks

Issues: [This is included in the IATTC Resolution. It appears that incidental catches, particularly in artisanal fisheries, is utilised. The ban on shark fin exports, if maintained, could make it uneconomical for artisanal fishers to utilize other portions of the catch and mean that this becomes a higher priority in Ecuador's coastal waters. It may also need to be addressed in commercial fisheries.]

Strategies:

Objective 6: Contribute to the protection of biodiversity and ecosystem structure and function

Issues: [Very little is known about habitats used by sharks throughout their lifecycle. Knowledge of their role in the ecosystem is also limited, but may be important, particularly in protected marine ecosystems such as the Galapagos.]

Strategies:

Objective 7: Minimize waste and discards from shark catches in accordance with article 7.2.2.(g) of the Code of Conduct for Responsible Fisheries (for example, requiring the retention of sharks from which fins are removed)

Issues: [The prohibition of utilisation and export of shark fins by artisanal and commercial fishers following the introduction of Decreto Ejecutivo 2130, Registro Oficial 437, and the socio-economic impacts thereof.]

Strategies: *[Implement the IATTC resolution and address illegal shark fishing in the Galapagos Marine Reserve by introducing a regulation prohibiting shark finning and carriage of detached fins on board fishing vessels.]*

Objective 8: Encourage full use of dead sharks

Issues: *[closely linked with objective 7 and raises many of the same issues – these two objectives could be merged; they were only included as separate items in the original FAO IPOA–Sharks in order to reflect the high profile of the finning:full utilisation debate.]*

Strategies: *[From FAO IPOA: Improve the utilization of sharks caught.]*

Objective 9: Facilitate improved species-specific catch and landings data and monitoring of shark catches

Issues: *[Of fundamental importance for all fisheries in Ecuador, not just for shark fisheries. Training of fisheries staff in species identification and providing species identification sheets is a relatively straightforward process, but ensuring the adequate collection and reporting of data is one of the most difficult fisheries management measures to implement (for practical, economic and technical reasons).]*

Strategies: *[From FAO IPOA: Train all concerned in identification of shark species; improve data collection and monitoring of shark fisheries.]*

Objective 10: Facilitate the identification and reporting of species-specific biological and trade data

Issues: *[This is a regularly repeated request from CITES and FAO. Since it requires parts of sharks to be identified to species level, it is as difficult if not more difficult than Objective 9 for fisheries staff to implement. It may, however, prove to be possible through traders and exporters, who often have very good knowledge of the products that they handle.]*

Strategies: *[From FAO IPOA: Obtain utilization and trade data on shark species.]*

3. Priorities and actions

This section should be completed following discussion at the workshop. Suggested priorities are outlined in the following chapter (6) of this report.

4. Legal, institutional and management framework requirements

To be agreed following development of priorities and actions

5. Human resources and capacity building requirements

To be developed and agreed as noted above

6. National and regional fishery management data and research

The following sections can be very brief summaries of information presented in the Shark Assessment Report or taken from earlier sections of this document (for example, 5.9).

6.1 Brief shark fishery descriptions

6.2 Associated species as discarded bycatch

6.3 Species identification, distribution and stock structure of harvested species

6.4 Associated species as discarded bycatch

6.5 Fishery monitoring and data collection methods

6.6 Scientific research

6.7 Data management

6.8 Stock assessment information

6.9 Identification of species requiring 'special management'

7. Fishery management and species conservation

7.1 Resource constraints

7.2 Sustainable Development Reference System (SDRS) criteria, objectives, indicators and reference points

7.3 Options for regulating fishing

7.4 Bycatch reduction

7.5 Encouragement of full utilization

7.6 Biodiversity and ecological considerations

7. Shark conservation and management priorities

The following suggestions are made for shark conservation and management priorities. These have been developed in a form that can be incorporated into section 3 of the suggested Shark Plan contents and are intended for discussion at the National Workshop. There are several ways in which these priorities can be developed or categorised; by activity or by theme/desired output. Both are presented here. The first three very broad priorities are improved 'management', improved 'resources' and implementation of 'reviews'.

1. to introduce fisheries and conservation management measures, based on existing knowledge of biology and other data available. The precautionary approach should be applied where such data are not available;
2. to improve the resources available to shark monitoring and research, enabling the initiation of a significantly improved programme of research, monitoring, data collation and analysis to inform future management measures;
3. to introduce and implement a continual process of reviews of data, research outputs and fisheries performance, in order to amend the Shark Plan and fine-tune future management decisions.

These can also be made more detailed and specific, as outlined below:

7.1 *Priorities for sustainable use*

1. Improve technical capacity, data collection and scientific research at species level on:
 - Catches
 - Effort
 - Landings
 - International trade
2. Introduce adaptive precautionary management in the absence of stock assessments, including measures to prevent targeted fisheries for stocks that are considered likely to have been depleted below safe biological limits.
3. Control fishing mortality by:
 - limiting fishing effort and/or catches
 - employing biological controls, such as legal minimum sizes, or maximum sizes to protect breeding stock
 - employing technical controls, such as fishing mesh or hook sizes, closed seasons and closed areas
 - closing target fisheries harvesting depleted or threatened stocks.
4. Determine biological stock structure of species occurring in Ecuadorian waters
5. Develop stock assessments and provide fisheries advice.

7.2 Priorities for species conservation

1. Initiate a programme to assess the presence and status of important and vulnerable shark stocks
2. Identify species/stocks in need of special protection; a suggestion would be to start with threatened species in the IUCN Red List, and species with low biological productivity.
3. Identify the major threats to each species/stock
4. Introduce appropriate conservation and fisheries management measures for each species/stock (e.g. legal protection, prohibition of certain fishing gears, closed or restricted areas)

7.3 Priorities for biodiversity maintenance

1. Identify threats to shark biodiversity arising from increased mortality, loss or degradation of habitat, environmental changes, competition with other species, or other ecological changes.
2. Assess the urgency of each threat and the extent to which these may feasibly be addressed through management.
3. Introduce appropriate measures for the management of shark biodiversity.

7.4 Priorities for habitat protection

1. Identify critical shark habitats (particularly pupping, egg laying and nursery grounds, and seasonal feeding or breeding aggregations).
2. Identify the main threats to these habitats and to their use by sharks.
3. Introduce appropriate management to address threats to shark biodiversity.

7.5 Actions for the delivery of priorities

It is suggested that a number of measurable actions also be identified, each focused on the delivery of one or more conservation and management priorities. These actions should be assigned to the most appropriate timescale for delivery (these have provisionally been categorised in this document as 'urgent', 'short term' and 'medium to long-term'). The following table, including initial suggestions of timescales for action, has been prepared for discussion.

Priority area	Activities	Time scale		
		Urgent	Short term	Medium to long term
Improve technical capacity of staff	Species identification training (workshops, identification sheets)	X		
	Design and implementation of INP database	X		
	Data entry training (software, databases)	X		
	Training in Informatics, Database methods and software, analysis, modelling etc.		X	
	Implementation of Wide Area Network		X	
Improve data availability and quality	Improve collection of field data on catches and landings, including observer programme	X	X	X
	Improve collection and collation of effort data		X	X
	Collect and collate international trade data		X	X
	Collaborative Pilot Data Collection Programme with FENACOPEC/ Escuela de Pesca/ Universidad/ industry		X	
	Trawl survey data entry		X	
	Collect and provide improved data for IATTC	X	X	X
Data analysis and provision of scientific advice	Stock assessments for shelf species	X	X	X
	Analysis of IATTC bycatch data	X	X	X
	Trawl survey data analysis		X	X
	Analysis of shrimp fishery bycatch		X	X
	Seek to develop OLDEPESCA's capacity for technical advice on shark fisheries		X	X
Introduction of management programmes, including adaptive management in data-poor situations	Introduce <i>Squatina</i> fisheries management	X	X	X
	Introduce batoid fisheries management	X	X	X
	Management through IATTC and other regional arrangements of high seas, migratory and straddling shark stocks		X	X
	Introduce fishing vessel licensing programme to improve effort data and develop effort controls		X	X
	Introduce effort, catch, biological and technical controls for shark fisheries (target and bycatch)		X	X
	Consider time/area closures in areas where high shark bycatch occurs			
	Evaluate and introduce necessary management measures for species of national, regional and international conservation concern	X	X	X
	Ensure that deepsea fisheries are only initiated as advised by FAO and managed accordingly	X	X	X
Conservation	Protect endangered species	X	X	X

Priority area	Activities	Time scale		
		Urgent	Short term	Medium to long term
actions	Introduce/improve protection of stocks of importance for ecotourism	X	X	X
	Evaluate status of potentially vulnerable species and introduce appropriate management		X	X
Increase scientific research output to support conservation and management actions	Extension of annual Trawl Survey Programme	X	X	X
	Undertake rapid assessments to rank the vulnerability of sharks to bycatch. Develop appropriate mitigation measures	X	X	X
	Develop new research programmes to support conservation and management advice		X	X
Improve, where necessary, management and legislative framework	Review industry, policies, legislation, regulations and compliance	X	X	X
	Introduce/improve stakeholder participation	X	X	X
	Introduce, where necessary, new regulations		X	
	Introduce finning ban to achieve compliance with IATTC Resolution and improve domestic management	X		
Trade monitoring and controls	Monitor domestic markets	X	X	X
	Control international trade in shark fins	X		
	Monitor and control international trade in other products, as recommended by CITES and FAO		X	X
	Develop scientific capacity to implement CITES listings		X	X
Manage the Shark Plan	Establish Shark Plan Implementation Group	X		
	Provide biennial reports to FAO on progress with the Ecuador Shark Assessment Report and NPOA		X	X

Bibliography

- Anonymous. 2004. Conservation and management of sharks. CoP13 Doc. 35. CITES, Geneva, Switzerland. www.cites.org
- Bonfil, R. 1994. *Overview of world elasmobranch fisheries*. FAO Fisheries Technical Paper, No. 341. United Nations Food and Agriculture Organization, Rome.
- Camhi, M., Fowler, S., Musick, J., Brautigam, A., and Fordham, S. 1998. *Sharks and their relatives - ecology and conservation*. Occasional Paper of the IUCN Species Survival Commission No. 20. IUCN/SSC Shark Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK. iv + 39 pp.
- Clarke, S. and Mosqueira, I. 2002. A preliminary assessment of European participation in the shark fin trade. *Proc. 4th Europ. Elasm. Assoc. Meet., Livorno (Italy), 2000*. Vacchi M., La Mesa G., Serena F., & B. Séret, eds. ICRAM, ARPAT-GEA & Soc. Fr. Ichyol, 2002: 65-72.
- de Klemm, C. and Shine, C. 1993. *Biological Diversity Conservation and the Law*. IUCN, Gland, Switzerland and Cambridge, UK. xix + 292 pp.
- FAO Marine Resources Service. 2000. Fisheries Management. I. Conservation and management of sharks. *FAO Technical Guidelines for Responsible Fisheries*. No. 4, Suppl. 1. FAO, Rome. 37pp.
- FAO. 2005. Progress in the implementation of the Code of Conduct for Responsible Fisheries and related International Plans of Action. COFI/2005/2. FAO, Rome, Italy.
- Herrera, M., P. Zarate, P. Guerrero and N. Gaibor (2003) Los tiburones en las pesquerías de Ecuador. Unpublished report.
- IUCN Species Survival Commission's Shark Specialist Group and TRAFFIC. 2002a CITES Animals Committee Document 18.2. <http://www.cites.org/eng/cttee/animals/18/E18-19-2.pdf>
- Irvine, S.B. 2005. Report of the workshop on conservation and management of deepwater chondrichthyan fishes, Dunedin, New Zealand, 2003. In FAO, 2005. *Report on DEEP SEA 2003, an International Conference on governance and management of deep-sea fisheries*. FAO Fisheries Report No. 772. Appendix V. pp. 64–69.
- Martinez, J. 1999. Casos de estudios sobre el manejo de las pesquerías de tiburones en el Ecuador. In: Shotton, R. (ed) *Case studies of the management of elasmobranch fisheries*. FAO Fisheries Technical Paper 378, Volumes 1 and 2, Food and Agriculture Organization, Rome.
- Martinez, C. and C. Viteri, 2005. Estudio Socioeconomico de al captura de tiburones en aguas continentales del Ecuador. Quito, Agosto 2005.
- Reeve, R. 2002. *Policing International Trade in Endangered Species: the CITES Treaty and Compliance*. Earthscan and The Royal Institute of International Affairs, London, UK.
- Rose, D.A. 1996. *An overview of world trade in sharks and other cartilaginous fishes*. TRAFFIC International.
- Weber, M.L. and Fordham, S.V. 1997. *Managing shark fisheries: opportunities for international conservation*. TRAFFIC International and the Center for Marine Conservation.
- Wijnstekers, W. 2003. *The Evolution of CITES*. A reference to the Convention on International Trade in Endangered Species of Wild Fauna and Flora. 7th edition. CITES Secretariat, Geneva, Switzerland.

ANNEXES

Annex I. UN FAO International Plan of Action for the Conservation and Management of Sharks (IPOA–Sharks)

Food and Agriculture Organization of The United Nations

Rome, 26-30 October 1998

Introduction

1. For centuries artisanal fishermen have conducted fishing for sharks sustainably in coastal waters, and some still do. However, during recent decades modern technology in combination with access to distant markets have caused an increase in effort and yield of shark catches, as well as an expansion of the areas fished.
2. There is concern over the increase of shark catches and the consequences which this has for the populations of some shark species in several areas of the world's oceans. This is because sharks often have a close stock-recruitment relationship, long recovery times in response to over-fishing (low biological productivity because of late sexual maturity; few off-spring, albeit with low natural mortality) and complex spatial structures (size/sex segregation and seasonal migration).
3. The current state of knowledge of sharks and the practices employed in shark fisheries cause problems in the conservation and management of sharks due to lack of available catch, effort, landings and trade data, as well as limited information on the biological parameters of many species and their identification. In order to improve knowledge on the state of shark stocks and facilitate the collection of the necessary information, adequate funds are required for research and management.
4. The prevailing view is that it is necessary to better manage directed shark catches and certain multispecies fisheries in which sharks constitute a significant bycatch. In some cases the need for management may be urgent.
5. A few countries have specific management plans for their shark catches and their plans include control of access, technical measures including strategies for reduction of shark bycatches and support for full use of sharks. However, given the wide-ranging distribution of sharks, including on the high seas, and the long migration of many species, it is increasingly important to have international cooperation and coordination of shark management plans. At the present time there are few international management mechanisms effectively addressing the capture of sharks.
6. The Inter-American Tropical Tuna Commission, the International Council for the Exploration of the Sea, the International Commission for the Conservation of Atlantic Tunas, the Northwest Atlantic Fisheries Organization, the Sub-regional Fisheries Commission of West African States, the Latin American Organization for Fishery Development, the Indian Ocean Tuna Commission, the Commission for the Conservation of Southern Bluefin Tuna and the Oceanic Fisheries Programme of the Pacific Community have initiated efforts encouraging member countries to collect information about sharks, and in some cases developed regional databases for the purpose of stock assessment.
7. Noting the increased concern about the expanding catches of sharks and their potential negative impacts on shark populations, a proposal was made at the Twenty-second Session of the FAO Committee on Fisheries (COFI) in March 1997 that FAO organize an expert consultation, using extra-budgetary funds, to develop Guidelines leading to a Plan of Action to be submitted at the next Session of the Committee aimed at improved conservation and management of sharks.
8. This International Plan of Action for Conservation and Management of Sharks (IPOA-SHARKS) has been developed through the meeting of the Technical Working Group on the Conservation and

Management of Sharks in Tokyo from 23 to 27 April 1998¹ and the Consultation on Management of Fishing Capacity, Shark Fisheries and Incidental Catch of Seabirds in Longline Fisheries held in Rome from 26 to 30 October 1998 and its preparatory meeting held in Rome from 22 to 24 July 1998².

9. The IPOA-SHARKS consists of the nature and scope, principles, objective and procedures for implementation (including attachments) specified in this document.

Nature and Scope

10. The IPOA-SHARKS is voluntary. It has been elaborated within the framework of the Code of Conduct for Responsible Fisheries as envisaged by Article 2 (d). The provisions of Article 3 of the Code of Conduct apply to the interpretation and application of this document and its relationship with other international instruments. All concerned States³ are encouraged to implement it.

11. For the purposes of this document, the term “shark” is taken to include all species of sharks, skates, rays and chimaeras (Class *Chondrichthyes*), and the term “shark catch” is taken to include directed, bycatch, commercial, recreational and other forms of taking sharks.

12. The IPOA-SHARKS encompasses both target and non-target catches.

Guiding principles

13. *Participation.* States that contribute to fishing mortality on a species or stock should participate in its management.

14. *Sustaining stocks.* Management and conservation strategies should aim to keep total fishing mortality for each stock within sustainable levels by applying the precautionary approach.

15. *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.

Objective

16. The objective of the IPOA-SHARKS is to ensure the conservation and management of sharks and their long-term sustainable use.

Implementation

17. The IPOA-SHARKS applies to States in the waters of which sharks are caught by their own or foreign vessels and to States the vessels of which catch sharks on the high seas.

18. States should adopt a national plan of action for conservation and management of shark stocks (Shark-plan) if their vessels conduct directed fisheries for sharks or if their vessels regularly catch sharks in non-directed fisheries. Suggested contents of the Shark-plan are found in Appendix A. When developing a Shark-plan, experience of subregional and regional fisheries management organizations should be taken into account, as appropriate.

1 See: “Report of the FAO Technical Working Group on the Conservation and Management of Sharks”. Tokyo, Japan, 23-27 April 1998. FAO Fisheries Report No. 583.

2 See Report: “Preparatory Meeting for the Consultation on the Management of Fishing Capacity, Shark Fisheries and Incidental Catch of Seabirds in Longline Fisheries.” Rome, 22-24 July, 1998. FAO Fisheries Report No. 584.

3 In this document, the term “State” includes Members and non-members of FAO and applies *mutatis mutandis* also to “fishing entities” other than States.

19. Each State is responsible for developing, implementing and monitoring its Shark-plan.

20. States should strive to have a Shark-plan by the COFI Session in 2001.

21. States should carry out a regular assessment of the status of shark stocks subject to fishing so as to determine if there is a need for development of a shark plan. This assessment should be guided by article 6.13 of the Code of Conduct for Responsible Fisheries. The assessment should be reported as a part of each relevant State's Shark-plan. Suggested contents of a shark assessment report are found in Appendix B. The assessment would necessitate consistent collection of data, including inter alia commercial data and data leading to improved species identification and, ultimately, the establishment of abundance indices. Data collected by States should, where appropriate, be made available to, and discussed within the framework of, relevant subregional and regional fisheries organizations and FAO. International collaboration on data collection and data sharing systems for stock assessments is particularly important in relation to transboundary, straddling, highly migratory and high seas shark stocks.

22. The Shark-plan should aim to:

- Ensure that shark catches from directed and non-directed fisheries are sustainable;
- Assess threats to shark populations, determine and protect critical habitats and implement harvesting strategies consistent with the principles of biological sustainability and rational long-term economic use;
- Identify and provide special attention, in particular to vulnerable or threatened shark stocks;
- Improve and develop frameworks for establishing and co-ordinating effective consultation involving all stakeholders in research, management and educational initiatives within and between States;
- Minimize unutilized incidental catches of sharks;
- Contribute to the protection of biodiversity and ecosystem structure and function;
- Minimize waste and discards from shark catches in accordance with article 7.2.2.(g) of the Code of Conduct for Responsible Fisheries (for example, requiring the retention of sharks from which fins are removed);
- Encourage full use of dead sharks;
- Facilitate improved species-specific catch and landings data and monitoring of shark catches;
- Facilitate the identification and reporting of species-specific biological and trade data.

23. States which implement the Shark-plan should regularly, at least every four years, assess its implementation for the purpose of identifying cost-effective strategies for increasing its effectiveness.

24. States which determine that a Shark-plan is not necessary should review that decision on a regular basis taking into account changes in their fisheries, but as a minimum, data on catches, landings and trade should be collected.

25. States, within the framework of their respective competencies and consistent with international law, should strive to cooperate through regional and subregional fisheries organizations or arrangements, and other forms of cooperation, with a view to ensuring the sustainability of shark stocks, including, where appropriate, the development of subregional or regional shark plans.

26. Where transboundary, straddling, highly migratory and high seas stocks of sharks are exploited by two or more States, the States concerned should strive to ensure effective conservation and management of the stocks.

27. States should strive to collaborate through FAO and through international arrangements in research, training and the production of information and educational material.

28. States should report on the progress of the assessment, development and implementation of their Shark-plans as part of their biennial reporting to FAO on the Code of Conduct for Responsible Fisheries.

Role of FAO

29. FAO will, as and to the extent directed by its Conference, and as part of its Regular Programme activities, support States in the implementation of the IPOA-SHARKS, including the preparation of Shark-plans.

30. FAO will, as and to the extent directed by its Conference, support development and implementation of Shark-plans through specific, in-country technical assistance projects with Regular Programme funds and by use of extra-budgetary funds made available to the Organization for this purpose. FAO will provide a list of experts and a mechanism of technical assistance to countries in connection with development of Shark-plans.

31. FAO will, through COFI, report biennially on the state of progress in the implementation of the IPOA-SHARKS.

Appendix A to the IPOA–Sharks

Suggested Contents of a Shark-plan

I Background

When managing fisheries for sharks, it is important to consider that the state of knowledge of sharks and the practices employed in shark catches may cause problems in the conservation and management of sharks, in particular:

- Taxonomic problems
- Inadequate available data on catches, effort and landings for sharks
- Difficulties in identifying species after landing
- Insufficient biological and environmental data
- Lack of funds for research and management of sharks
- Little coordination on the collection of information on transboundary, straddling, highly migratory and high seas stocks of sharks
- Difficulty in achieving shark management goals in multispecies fisheries in which sharks are caught.

II Content of the Shark-plan

The Technical Guidelines on the Conservation and Management of Sharks, under development by FAO, provide detailed technical guidance, both on the development and the implementation of the Shark-plan. Guidance will be provided on:

- Monitoring
- Data collection and analysis
- Research
- Building of human capacity
- Implementation of management measures

The Shark-plan should contain:

A. Description of the prevailing state of :

- Shark stocks, populations;
- Associated fisheries; and,
- Management framework and its enforcement.

B. The objective of the Shark-plan.

C. Strategies for achieving objectives. The following are illustrative examples of what could be included:

- Ascertain control over access of fishing vessels to shark stocks
- Decrease fishing effort in any shark where catch is unsustainable
- Improve the utilization of sharks caught
- Improve data collection and monitoring of shark fisheries
- Train all concerned in identification of shark species
- Facilitate and encourage research on little known shark species
- Obtain utilization and trade data on shark species

Appendix B

Suggested contents of a shark assessment report

A shark assessment report should *inter alia* contain the following information:

- Past and present trends for:
 - Effort: directed and non-directed fisheries; all types of fisheries;
 - Yield: physical and economic
- Status of stocks
- Existing management measures:
 - Control of access to fishing grounds
 - Technical measures (including by-catch reduction measures, the existence of sanctuaries and closed seasons)
 - Others
 - Monitoring, control and surveillance
- Effectiveness of management measures
- Possible modifications of management measures

Annex II. Shark text in Fisheries Resolutions of UNGA Sessions

Resolution adopted by the UN General Assembly 58th session (2003)

58/14. Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments

Extracts from preliminary paragraphs:

Recognizing further the economic and cultural importance of sharks in many countries, the biological importance of sharks in the marine ecosystem, the vulnerability of some shark species to over-exploitation and the need for measures to promote the long-term sustainability of shark populations and fisheries,

Reaffirming its support for the initiative of the Food and Agriculture Organization of the United Nations and relevant regional and subregional fisheries management organizations and arrangements on the conservation and management of sharks, while noting with concern that only a small number of countries have implemented the International Plan of Action for the Conservation and Management of Sharks, adopted by the Food and Agriculture Organization in 1999,

...

Expressing concern at the reports of continued loss of seabirds, particularly albatrosses, as a result of incidental mortality from longline fishing operations, and the loss of other marine species, including sharks and fin-fish species, as a result of incidental mortality, and noting with satisfaction the imminent entry into force of the Agreement for the Conservation of Albatrosses and Petrels under the Convention on the Conservation of Migratory Species of Wild Animals,

...

Extracts from operative paragraphs:

18. Urges States to develop and implement national and, as appropriate, regional plans of action to put into effect the international plans of action of the Food and Agriculture Organization of the United Nations, namely the International Plan of Action for the Management of Fishing Capacity, the International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries, the International Plan of Action for the Conservation and Management of Sharks and the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing;

...

47. Calls upon States, the Food and Agriculture Organization of the United Nations and subregional or regional fisheries management organizations and arrangements to implement fully the International Plan of Action for the Conservation and Management of Sharks as a matter of priority, inter alia, by conducting assessments of shark stocks and developing and implementing national plans of action, recognizing the need of some States, in particular developing States, for assistance in this regard;

48. Urges States, including those working through subregional or regional fisheries management organizations and arrangements in implementing the International Plan of Action for the Conservation and Management of Sharks, to collect scientific data regarding shark catches and to consider adopting conservation and management measures, particularly where shark catches from directed and nondirected fisheries have a significant impact on vulnerable or threatened shark stocks, in order to ensure the conservation and management of sharks and their long-term sustainable use, including by banning directed shark fisheries conducted solely for the purpose of harvesting shark fins and by taking measures for other fisheries to minimize waste and discards from shark catches, and to encourage the full use of dead sharks;

49. Urges all States to cooperate with the Food and Agriculture Organization of the United Nations in order to assist developing States in implementing the International Plan of Action for the Conservation and Management of Sharks, including through voluntary contributions to work of the organization, such as its FishCODE programme;

50. Invites the Food and Agriculture Organization of the United Nations, in consultation with relevant subregional or regional fisheries management organizations or arrangements, to prepare a study relating to the impact on shark populations of shark catches from directed and non-directed fisheries and their impact on ecologically related species, taking into account the nutritional and socioeconomic considerations as reflected in the International Plan of Action for the Conservation and Management of Sharks, particularly as they relate to small-scale, subsistence and artisanal fisheries and communities, as well as updating Technical Paper 389 of the Food and Agriculture Organization, entitled "Shark utilization, marketing and trade", in order to facilitate improved shark conservation, management and utilization, and to report to the Secretary-General for inclusion in a fisheries-related report as soon as practicable;

....

Resolution adopted by the UN General Assembly 59th session (2004)

59/25. Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments

Extracts from preliminary paragraphs:

Recognizing further the economic and cultural importance of sharks in many countries, the biological importance of sharks in the marine ecosystem, the vulnerability of some shark species to over-exploitation, the need for measures to promote the long-term sustainability of shark populations and fisheries and the relevance of the International Plan of Action for the Conservation and Management of Sharks, adopted by the Food and Agriculture Organization of the United Nations in 1999, in providing development guidance of such measures,

Reaffirming its support for the initiative of the Food and Agriculture Organization of the United Nations and relevant regional and subregional fisheries management organizations and arrangements on the conservation and management of sharks, while noting with concern that only a small number of countries have implemented the International Plan of Action for the Conservation and Management of Sharks,

.....

Expressing concern, while recognizing considerable efforts to reduce by-catch in longline fishing through various regional fisheries management organizations, at the reports of continued loss of seabirds, particularly albatrosses, as a result of incidental mortality from longline fishing operations, and the loss of other marine species, including sharks, fin-fish species and marine turtles, as a result of incidental mortality,

.....

Extracts from operative paragraphs:

72. *Calls upon* States, the Food and Agriculture Organization of the United Nations and subregional or regional fisheries management organizations and arrangements to implement fully the International Plan of Action for the Conservation and Management of Sharks as a matter of priority, inter alia, by conducting assessments of shark stocks and developing and implementing national plans of action, recognizing the need of some States, in particular developing States, for assistance in this regard;

73. *Urges* States, including those working through subregional or regional fisheries management organizations and arrangements in implementing the International Plan of Action for the Conservation and Management of Sharks, to collect scientific data regarding shark catches and to consider adopting conservation and management measures, particularly where shark catches from directed and

nondirected fisheries have a significant impact on vulnerable or threatened shark stocks, in order to ensure the conservation and management of sharks and their long-term sustainable use, including by banning directed shark fisheries conducted solely for the purpose of harvesting shark fins and by taking measures for other fisheries to minimize waste and discards from shark catches, and to encourage the full use of dead sharks;

74. *Requests* the Food and Agriculture Organization of the United Nations to develop programmes to assist States, including developing States, in carrying out the tasks mentioned in paragraph 73 above, in particular the adoption of appropriate conservation and management measures, including the banning of directed shark fisheries conducted solely for the purpose of harvesting shark fins;

75. *Reaffirms* the requests contained in paragraph 50 of its resolution 58/14, and invites the Food and Agriculture Organization of the United Nations to report to the Secretary-General, for inclusion in his report on sustainable fisheries, on progress regarding the preparation of the study mentioned therein, as well as the programmes mentioned in paragraph 74 above, and to consider at the sixty-second session of the General Assembly whether additional action is required;

76. *Reiterates* the crucial importance of cooperation by States directly or, as appropriate, through the relevant regional and subregional organizations, and by other international organizations, including the Food and Agriculture Organization of the United Nations through its FishCODE programme, including through financial and/or technical assistance, in accordance with the Agreement, the Compliance Agreement, the Code and the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing and the International Plan of Action for the Conservation and Management of Sharks, to increase the capacity of developing States to achieve the goals and implement the actions called for in the present resolution;

....

Resolution adopted by the UN General Assembly 60th session (2005)

60/31. Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments

Extracts from preliminary paragraphs:

Recognizing further the economic and cultural importance of sharks in many countries, the biological importance of sharks in the marine ecosystem, the vulnerability of certain shark species to over-exploitation and the need for measures to promote the long-term sustainability of shark populations and fisheries, and the relevance of the 1999 Food and Agriculture Organization of the United Nations International Plan of Action for the Conservation and Management of Sharks in providing development guidance of such measures,

Reaffirming its support for the initiative of the Food and Agriculture Organization of the United Nations and relevant regional and subregional fisheries management organizations and arrangements on the conservation and management of sharks, while noting with concern that only a small number of countries have implemented the 1999 Food and Agriculture Organization of the United Nations International Plan of Action for the Conservation and Management of Sharks,

Expressing concern over reports of continued losses of seabirds, particularly albatrosses and petrels, as well as other marine species, including sharks, fin-fish species and marine turtles, as a result of incidental mortality in fishing operations, particularly longline fishing, and other activities, while recognizing considerable efforts to reduce by-catch in longline fishing through various regional fisheries management organizations and arrangements,

.....

Extracts from operative paragraphs:

X. Capacity-building

83. Reiterates the crucial importance of cooperation by States directly or, as appropriate, through the relevant regional and subregional organizations, and by other international organizations, including the Food and Agriculture Organization of the United Nations through its FishCode programme, including through financial and/or technical assistance, in accordance with the Agreement, the Compliance Agreement, the Code and the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing and the International Plan of Action for the Conservation and Management of Sharks, to increase the capacity of developing States to achieve the goals and implement the actions called for in the present resolution;

.....

Secretary General's Report on Sustainable Fisheries (A/60/189, 2005)

Extracts from: III. Responsible fisheries in the marine ecosystem

C. Towards ensuring the conservation and management of sharks

49. The International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) has been developed to address widespread concern over the increase in shark fishing and its consequences for the populations of certain shark species. The goal of IPOA-Sharks is to control directed shark fisheries and fisheries in which sharks constitute a significant by-catch to ensure the conservation and management of sharks and their long-term sustainable use. To that end, States are invited to adopt national plans of action for the conservation and management of shark stocks if their vessels conduct directed fisheries for sharks or if their vessels regularly catch sharks in non-directed fisheries. National plans should contain an assessment of the prevailing state of shark stocks and populations, associated fisheries and management frameworks and their enforcement, and strategies for achieving the objective of IPOA-Sharks, including: controlling access of fishing vessels to shark stocks; decreasing fishing effort for any stock where the catch is unsustainable; improving the utilization of sharks caught; improving data collection and the monitoring of shark species; providing training in identification of shark species; facilitating and encouraging research on little known shark species; and obtaining utilization and trade data on shark species.

50. According to FAO, only about 30 per cent of States replying to a survey reported having made an assessment of the need for a national plan and only one in three, about 11 per cent, have actually developed and implemented IPOA-Sharks. These results indicate that more progress is needed in the implementation of the Plan.¹⁸ In its resolution 59/25, the General Assembly called on States to fully implement IPOA-Sharks and, where directed and non-directed fisheries have a significant impact on vulnerable or threatened shark stocks, to ban directed shark fisheries for the sole purpose of harvesting shark fins and to minimize discards of shark catches by encouraging the full use of dead sharks.

51. **States:** the United States and the United Kingdom reported that they have adopted national plans of action for the conservation and management of sharks. The United States has banned the practice of shark finning in areas under its jurisdiction and by its nationals.¹⁹ The United States has initiated training opportunities and policy dialogues within APEC concerning shark conservation and management and is working with other partners to disseminate the manual, *Elasmobranch Fisheries Management Techniques*,²⁰ which is aimed at assisting developing countries in the preparation of national shark fisheries management plans. The United Kingdom indicated that some territories have already collected catch statistics for sharks, although they have not yet introduced specific conservation and management measures for the species. The United Kingdom stressed that there are no direct shark fisheries in maritime areas under its jurisdiction, and that it does not support shark finning or other destructive practices, as a matter of policy.

52. Croatia, European Community, Myanmar, New Zealand, the Philippines and Serbia and Montenegro indicated that they have not yet adopted any national plans of action to conserve and manage sharks,

although EC, New Zealand and the Philippines intend to do so in the near future. Both EC and New Zealand have legislation in line with IPOA-Sharks, EC stated that many rules in its Common Fisheries Policy are in accordance with IPOA-Sharks, including monitoring of catches; collection of scientific data on shark catches, including fishing efforts, landings and discards, biological parameters, scientific surveys and prices at the first sale, as minimum data requirements; conduct of specific research on shark biology and exploitation; adoption of catch limitations for a number of species in the Community EEZ; and prohibition of shark fisheries for the sole purpose of selling shark fins. Portugal requires that fishers who separate shark fins on board keep the remaining parts of the shark, in accordance with Community legislation. In the Philippines, the National Fisheries Research and Development Institute routinely collects scientific data regarding shark catches and the authorities are considering the banning of shark fisheries under the so-to-be adopted national plan of action. New Zealand indicated that some species of sharks are already under its Quota Management System, which makes their reporting mandatory. Myanmar stated that shark fisheries are prohibited in maritime areas under its jurisdiction and that, since May 2004, it has already declared two shark fishing protected areas. Pakistan reported that it had no direct shark fisheries in its waters and that sharks caught by other fisheries are fully utilized. Others stated that they do not have any shark fisheries, but collect scientific data on sharks (Croatia, Kuwait, Qatar and Saudi Arabia), and/or are involved in conservation measures on the advice of the competent RFMO (Cambodia and Kuwait). Morocco and Qatar encourage the full use of dead sharks taken as incidental catch and Qatar prohibits the export of sharks or any part thereof, such as shark fins.

53. FAO reported that in 2004 it had not received any requests for assistance in the implementation of IPOA-Sharks. It pointed out that in order to assist developing countries have sufficient financial and technical resources dedicated to the task. Most countries have few, if any, existing elasmobranch management activities on which to build programmes of assistance. Nonetheless, FAO has undertaken a number of activities that could benefit the conservation and management of sharks. In cooperation with APEC, it is publishing a study on elasmobranch fisheries management techniques to facilitate national management initiatives at the operational level. It is also developing a revised and expanded version of the catalogue "Sharks of the World" and a catalogue of batoids of the world (skates and rays). It is mapping elasmobranch distribution and preparing a digital archive of shark and ray illustrations and pamphlets.

54. With regard to the preparation of the study referred to in General Assembly resolutions 58/14 and 59/25, FAO indicated that it had not taken any step to update the study. This would be a major undertaking and it is not included in the FAO programme of work and budget, nor have funds been sought to support the work.

55. **RFMOs:** most RFMOs providing information indicated that they had made efforts to implement IPOA-Sharks, although they do not have a regional plan of implementation. Measures include releasing shark by-catch alive (CCAMLR, IATTC and ICCAT), distributing publicity materials to fishing vessel operators, providing advice in the formulation of management plans (CECAF), collecting bycatch data on sharks (ICCAT, IPHC and NAFO), adopting resolutions on shark fisheries that promote the full use of dead sharks, encouraging the implementation of national plans of action (ICCAT), and assessing shark populations (IATTC and ICCAT). NAFO announced that it is now regulating the conservation and management of the elasmobranch skates through TAC and quotas, thus becoming the first RFMO to manage an elasmobranch. Some RFMOs that had not taken measures indicated that they would do so in the near future (CPPS), that shark bycatch was not a problem in their convention areas (NASCO) or that insufficient resources and a lack of interest on the part of members had prevented them from doing so. Members of SPC consider that current shark catch or by-catch levels in their region are sustainable, while other fisheries are considered to be unsustainable and in need of more attention.

56. **Other competent bodies:** the UNDP/GEF YSLME Programme has initiated activities associated with the conservation and management of sharks, including assessment of the status of commercially important stocks, quantification of carrying capacity, maximum sustainable yield for fisheries and the development of mechanisms for regular assessments and the protection of vulnerable and endangered species. Such mechanisms will be implemented by the adoption of best practice measures. The UNDP/GEF BCLME is currently gathering baseline data on the capture of pelagic sharks by tuna longline fishing vessels in maritime areas under its purview as a first step towards assessing the severity of the

problem. Follow-up recommendations will subsequently be made to mitigate the impacts of longlining on sharks. In addition, because bronze whaler sharks migrate between Angola and Namibia, their joint management by the two countries is currently being implemented through the programme.

57. CITES reports that several shark species have been included in the Convention's appendices and additional species may be proposed for inclusion at the fourteenth session of the Conference of Parties in 2007. Previous CITES Conferences have adopted a number of resolutions on the conservation and management of sharks and CITES has convened a workshop on the topic.

58. Since 2002, the Southeast Asian Fisheries Development Center (SEAFDEC) has implemented a regional programme on the management of fisheries and the utilization of sharks in South-East Asia. The programme involves a regional study on the implementation of the IPOA-Sharks and includes the collection of data and information at the national level on the status of shark resources and their utilization. All members have reaffirmed their intention to develop a national plan of action on sharks in 2005 and the programme will support them in the formulation and implementation of their national plans.

59. **Non-governmental organizations:** a number of non-governmental organizations have initiated activities in various forums to promote the conservation and management of sharks, in accordance with the IPOA-Sharks. WWF has worked with ICCAT and NAFO as well as CITES to promote the adoption of measures related to sharks. In its assessment of RFMOs, WWF is gathering data on measures taken by these organizations and arrangements to conserve and manage sharks.

Annex III. Inter-American Tropical Tuna Commission Resolution

Resolution C-05-03 on the Conservation of Sharks caught in association with fisheries in the Eastern Pacific Ocean, 73rd Meeting, Lanzarote (Spain) June 2005

The Inter-American Tropical Tuna Commission (IATTC):

Recalling that the United Nations Food and Agriculture Organization (FAO) International Plan of Action for the Conservation and Management of Sharks calls on States, within the framework of their respective competencies and consistent with international law, to cooperate through regional fisheries organizations with a view to ensuring the sustainability of shark stocks as well as to adopt a National Plan of Action for the conservation and management of sharks;

Considering that many sharks are part of pelagic ecosystems in the Convention area, and that sharks are captured in fisheries targeting tunas and tuna-like species;

Recognizing the need to collect data on catch, effort, discards, and trade, as well as information on the biological parameters of many species, as part of shark conservation and management;

Concerned that an extensive unregulated shark fishery is reported to be conducted in the eastern Pacific Ocean (EPO) by a large number of shark-fishing vessels, including some slightly smaller than 24 m length overall, about which the Commission has little information;

Noting that the IATTC has adopted, in its Consolidated Resolution on Bycatch, a requirement for fishermen on purse-seine vessels to release unharmed non-target species, to the extent practicable, including sharks, and that governments with longline fleets also provide the required bycatch information as soon as possible;

Believing that specific measures to be respected by vessels of all fishing gears are necessary for the conservation of sharks in the EPO;

Resolves as follows:

1. Each Party and co-operating non-party, co-operating fishing entity or regional economic integration organization (collectively "CPCs") should establish and implement a national plan of action for conservation and management of shark stocks, in accordance with the FAO International Plan of Action for the Conservation and Management of Sharks.
2. In 2006, the IATTC, in cooperation with scientists of CPCs and, if possible, the Western and Central Pacific Fisheries Commission, shall provide preliminary advice on the stock status of key shark species and propose a research plan for a comprehensive assessment of these stocks.
3. CPCs shall take the measures necessary to require that their fishers fully utilize any retained catches of sharks. Full utilization is defined as retention by the fishing vessel of all parts of the shark excepting head, guts, and skins, to the point of first landing.
4. CPCs shall require their vessels to have onboard fins that total no more than 5% of the weight of sharks onboard, up to the first point of landing. CPCs that currently do not require fins and carcasses to be offloaded together at the point of first landing shall take the necessary measures to ensure compliance with the 5% ratio through certification, monitoring by an observer, or other appropriate measures.
5. The ratio of fin-to-body weight of sharks described in paragraph 4 shall be reviewed by the Working Group on Stock Assessment and reported back to the Commission in 2006 for revision, if necessary.
6. Fishing vessels are prohibited from retaining on board, transshipping, landing or trading in any fins harvested in contravention of this Resolution.
7. In fisheries for tunas and tuna-like species that are not directed at sharks, CPCs shall encourage the release of live sharks, especially juveniles, to the extent practicable, that are caught incidentally and are not used for food and/or subsistence.

8. CPCs shall, where possible, undertake research to identify ways to make fishing gears more selective.
9. CPCs are encouraged, where possible, to conduct research to identify shark nursery areas.
10. The Commission shall consider appropriate assistance to developing CPCs for the collection of data on shark catches.
11. Each CPC shall annually report data for catches, effort by gear type, landing and trade of sharks by species, where possible, in accordance with IATTC reporting procedures, including available historical data. CPCs shall send to the IATTC Secretariat, by May 1, at the latest, a comprehensive annual report of the implementation of this Resolution during the previous year.
12. Paragraphs 2-11 of this resolution apply only to sharks caught in association with fisheries managed by IATTC.

Annex IV. CITES Shark Resolution, Decisions and Listings

Resolution Conf. 12.6 on the Conservation and management of sharks

RECOGNIZING that sharks are particularly vulnerable to overexploitation owing to their late maturity, longevity and low fecundity;

RECOGNIZING that there is a significant international trade in sharks and their products;

RECOGNIZING that unregulated and unreported trade is contributing to unsustainable fishing of a number of shark species;

RECOGNIZING the duty of all States to cooperate, either directly or through appropriate sub-regional or regional organizations in the conservation and management of fisheries resources;

NOTING that IUCN – The World Conservation Union’s Red List of Threatened Species (2000) lists 79 shark taxa (from the 10 per cent of taxa for which Red List assessments have been made);

RECOGNIZING that the International Plan of Action on the Conservation and Management of Sharks (IPOA-sharks) was prepared by FAO in 1999 and that all States whose vessels conduct directed fisheries or regularly take sharks in non-directed fisheries are encouraged by COFI to adopt a National Plan of Action for the Conservation and Management of Shark Stocks (NPOA-Sharks);

NOTING that, through the adoption of Resolution Conf. 9.17 and Decisions 10.48, 10.73, 10.74, 10.93, 10.126, 11.94 and 11.151, Parties to CITES have previously recognized the conservation threat that international trade poses to sharks;

NOTING that two shark species are currently listed in Appendix III of CITES;

WELCOMING the report adopted at the 18th meeting of the Animals Committee that noted that CITES should continue to contribute to international efforts to address shark conservation and trade concerns;

NOTING that States were encouraged by FAO to have prepared NPOAs for sharks by the COFI 24th session held in 2001;

NOTING that there is a significant lack of progress with the development and implementation of NPOAs;

CONCERNED that insufficient progress has been made in achieving shark management through the implementation of IPOA-Sharks except in States where comprehensive shark assessment reports and NPOA-Sharks have been developed;

CONCERNED that the continued significant trade in sharks and their products is not sustainable;

THE CONFERENCE OF THE PARTIES TO THE CONVENTION

AGREES that a lack of progress in the development of the FAO IPOA-Sharks is not a legitimate justification for a lack of further substantive action on shark trade issues within the CITES forum;

INSTRUCTS the CITES Secretariat to raise with FAO concerns regarding the significant lack of progress in implementing the IPOA-Sharks, and to urge FAO to take steps to actively encourage relevant States to develop NPOA-Sharks;

DIRECTS the Animals Committee to continue activities specified under Decision 11.94 beyond the 12th meeting of the Conference of the Parties, and to report on progress at the 13th meeting of the Conference of Parties;

DIRECTS the Animals Committee to critically review progress towards IPOA-Sharks implementation (NPOA-Sharks) by major fishing and trading nations, by a date one year before the 13th meeting of the Conference of the Parties to CITES;

DIRECTS the Animals Committee to examine information provided by range States in shark assessment reports and other available relevant documents, with a view to identifying key species and examining these for consideration and possible listing under CITES;

ENCOURAGES Parties to obtain information on implementation of IPOA-Sharks from their fisheries departments, and report directly on progress to the CITES Secretariat and at future meetings of the Animals Committee;

URGES FAO COFI and Regional Fisheries Management Organizations to take steps to undertake the research, training, data collection, data analysis and shark management plan development outlined by FAO as necessary to implement the IPOA-Sharks;

ENCOURAGES Parties to contribute financially and technically to the implementation of the IPOA-Sharks;

DIRECTS the Animals Committee to make species-specific recommendations at the 13th meeting and subsequent meetings of the Conference of the Parties if necessary on improving the conservation status of sharks and the regulation of international trade in these species;

RECOMMENDS that Parties continue to identify endangered shark species that require consideration for inclusion in the Appendices, if their management and conservation status does not improve; and

REQUESTS Management Authorities to collaborate with their national Customs authorities to expand their current classification system to allow for the collection of detailed data on shark trade including, where possible, separate categories for processed and unprocessed products, for meat, cartilage, skin and fins, and to distinguish imports, exports and re-exports. Wherever possible these data should be species-specific.

Decisions on sharks in force after the 13th COP

Directed to Parties

13.42 Parties:

a) should request, through their delegations to the 26th meeting of the Committee on Fisheries (COFI) of the Food and Agriculture Organization of the United Nations (FAO) that FAO consider convening a workshop or consultation on the conservation and management of sharks, in time for output to be considered at the 14th meeting of the Conference of the Parties, *inter alia* to:

- i) consider and review progress with the implementation of the IPOA-Sharks; and
- ii) assess the effectiveness and efficiency of current conservation and management measures for sharks and identify any improvements needed;

b) are encouraged to improve their data collection and reporting to FAO of catches and landings of and trade in sharks, at the species level where possible, recognizing that *inter alia* this may be a first step towards the development and implementation of Shark Assessment Reports and National Plans of Action or other relevant national instruments;

c) that require assistance to build capacity to manage their shark fisheries are encouraged to seek such assistance from FAO or other appropriate organizations; and

d) should take note of the species-specific recommendations in document CoP13 Doc. 35 Annex 2 [see *below*] with a view to ensuring that international trade is not detrimental to the status of these species.

Directed to the Animals Committee

13.43 The Animals Committee, taking account of the work of the Food and Agriculture Organization of the United Nations (FAO) on the conservation and management of sharks and on CITES implementation issues relating to listed marine species, shall:

a) review implementation issues related to sharks listed in the CITES Appendices with a view *inter alia* to sharing experiences that may have arisen and solutions that may have been found;

b) identify specific cases where trade is having an adverse impact on sharks, in particular those key shark species threatened in this way;

- c) prepare a report on trade-related measures adopted and implemented by Parties that are aimed at improving the conservation status of sharks; and
- d) report on the above at the 14th meeting of the Conference of Parties.

Species-specific recommendations in document CoP13 Doc. 35 Annex 2

The following recommendations are extracted from the text of the above document, which is not reproduced here in full to minimise length but should be consulted for more information.

Spiny Dogfish Shark *Squalus acanthias*

The Animals Committee concluded that the conservation and management status of the species is unfavorable in most regions, with many Northern Hemisphere populations severely depleted, and recommends the following:

- i. Range States and Regional Fishery Management Organizations should take steps to improve data collection and management for spiny dogfish. In particular, the United States and Canada are encouraged with urgency to work together to link existing assessment programs and establish bilateral, science-based management measures for spiny dogfish.
- ii. Parties that are Member States of the European Union are encouraged with urgency to seek and implement, via national and EU level measures, scientific advice on developing a conservation plan that allows the rebuilding of the stocks of spiny dogfish occurring and harvested in EU waters.
- iii. In regions where information on stock status is poor, range States are encouraged to develop precautionary and adaptive management measures to ensure that spiny dogfish catches are sustainable.
- iv. Parties are encouraged to report dogfish catches, landings and trade data to FAO and to train customs officials in using existing spiny dogfish codes.

Porbeagle Shark *Lamna nasus*

The Animals Committee concluded that North Atlantic populations have been severely depleted and noted that quotas in EU waters apply only to non-EU fleets through access agreements. As these quotas are far higher than can be supported by the stock and do not restrict fishing effort they are not considered to be an effective management measure in this case. The Animals Committee recommended the following:

- i. ICCAT members are encouraged to collect and report data on catches and discards of porbeagle sharks, as per ICCAT Resolution 95-2 which has yet to be complied with, and undertake stock assessments in order to develop management recommendations. Other relevant Regional Fishery Management Organizations are encouraged to establish and implement similar programs.
- ii. The US and Canada are encouraged to enhance existing management for their shared porbeagle stock by establishing a cooperative, bilateral research and fisheries management program.
- iii. The World Customs Organization (WCO) is encouraged with urgency to establish a harmonized international code for porbeagle sharks.

Freshwater Stingrays Family Potamotrygonidae

The Animals Committee recommended that:

- i. Range States for these species jointly examine cross-border trade that may be facilitating illegal trade and consider Appendix III listings, where appropriate, to control illegal exports; and that
- ii. the document be revised, with the addition of more species abundance, distribution and trend data, and submitted to CoP13 or AC21.

Sawfishes Family Pristidae

This entire family (seven species) is being classified by IUCN as Critically Endangered. Records are now extremely rare, but products (particularly fins and rostra) are valuable and still enter trade in small quantities. The Animals Committee recommends that Parties that are or have been range states for Pristidae undertake, as a matter of urgency, a review of the status of these species in their coastal waters, rivers and lakes, and, if necessary, introduce conservation and trade measures to reduce extinction risk (the US has already listed smalltooth sawfish *Pristis pectinata* Latham, 1794, as Endangered and prohibited all take of the species within its 200 mile EEZ).

Gulper sharks Genus *Centrophorus*

These species live in low productivity deep ocean environments. They have low growth, reproductive and metabolic rates and are long-lived, even more so than other deep water sharks. Fisheries are driven by international demand for liver oil and meat and result in extremely rapid stock depletion. An FAO Deep Sea Workshop in December 2003 had recommended that “a precautionary approach to the management of these and other deep sea species is absolutely essential”, including monitoring of catches, landings and trade at species level, preparation of good identification guides, improved use of observers, and development of standard carcass forms to improve reporting, which should include both species and their products. The Animals Committee recommends that Parties support this approach.

School, tope, or soupfin shark *Galeorhinus galeus*

These sharks, valued for their meat and fins, are (or have been) important in target and multispecies fisheries in temperate waters world-wide. Most stocks are shared between several Range States, and in most regions are seriously depleted. Only a small number of States have achieved successful management of this biologically-vulnerable species. The Animals Committee recommends that range States request FAO's assistance with developing a capacity building workshop for this species in order to train managers from developing States and other States where coastal shark fisheries are not being managed. This would also serve as a case study for the management of other coastal shark fisheries. This was drawn to the attention of the FAO observer.

Other priority species

The Animals Committee identified the following three taxonomic groups that contain a significant proportion of species subjected to unregulated unsustainable fishing pressures, leading to severe stock depletion, and whose high value products enter international trade in large numbers:

Requiem sharks Genus *Carcharhinus*

Guitarfishes, Shovelnose rays Order Rhinobatiformes

Devil rays Family Mobulidae

It recommends that Range States pay particular attention to the management of fisheries and trade in these taxa, including undertaking reviews of their conservation and trade status. It was noted that many of the Carcharhinid sharks were high seas pelagic species that could only be managed through the joint efforts of States, Regional Fisheries Management Organizations and other international bodies.

Additional Recommendations

In addition to the above species-specific recommendations, the Animals Committee urges Parties, through FAO, and regional fisheries organizations:

- i. to develop, adopt and implement new international instruments and regional agreements for the conservation and management of sharks, particularly on the high seas where the provisions of the Fish Stocks Agreement need to be implemented for sharks, and where multilateral fisheries access of partnership agreements are operating;
- ii. to consider recommendations for activities and guidelines to reduce mortality of endangered species of sharks in bycatch and target fisheries, and to develop waterproof shark identification guides for fishermen to improve shark species identification and data collection.

Implementing the CITES Appendix II shark listings

Article IV lays down the conditions under which trade in specimens of species included in *Appendix II* must take place.

1. All trade in specimens of species included in Appendix II shall be in accordance with the provisions of this Article.
2. The export of any specimen of a species included in Appendix II shall require the prior grant and presentation of an export permit. An export permit shall only be granted when the following conditions have been met:
 - (a) a Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species;
 - (b) a Management Authority of the State of export is satisfied that the specimen was not obtained in contravention of the laws of that State for the protection of fauna and flora; and
 - (c) a Management Authority of the State of export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment.
3. A Scientific Authority in each Party shall monitor both the export permits granted by that State for specimens of species included in Appendix II and the actual exports of such specimens. Whenever a Scientific Authority determines that the export of specimens of any such species should be limited in order to maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs and well above the level at which that species might become eligible for inclusion in Appendix I, the Scientific Authority shall advise the appropriate Management Authority of suitable measures to be taken to limit the grant of export permits for specimens of that species.
4. The import of any specimen of a species included in Appendix II shall require the prior presentation of either an export permit or a re-export certificate.
5. A re-export certificate shall only be granted when the following conditions have been met:
 - (a) a Management Authority of the State of re-export is satisfied that the specimen was imported into that State in accordance with the provisions of the present Convention; and
 - (b) a Management Authority of the State of re-export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment.
6. The introduction from the sea of any specimen of a species included in Appendix II shall require the prior grant of a certificate from a Management Authority of the State of introduction. A certificate shall only be granted when the following conditions have been met:
 - (a) a Scientific Authority of the State of introduction advises that the introduction will not be detrimental to the survival of the species involved; and
 - (b) a Management Authority of the State of introduction is satisfied that any living specimen will be so handled as to minimize the risk of injury, damage to health or cruel treatment.
7. Certificates referred to in paragraph 6 of this Article may be granted on the advice of a Scientific Authority, in consultation with other national scientific authorities or, when appropriate, international scientific authorities, in respect of periods not exceeding one year for total numbers of specimens to be introduced in such period.

This means that it is essential that Ecuador's Scientific Authority for sharks (and it is possible for a specialist from the Fisheries Department to be appointed in this role) is able to assess the effects of trade on the populations of the species occurring in its country and must therefore be informed on any matter of relevance to that task.

Annex V. Oceanic shark species listed on UNCLOS Annex I

Paragraph 16 of Annex 1 to the UN Convention on the Law of the Sea (UNCLOS) lists the following taxonomic groups of sharks.

“Oceanic sharks: *Hexanchus griseus*; *Cetorhinus maximus*; Family Alopiidae; *Rhincodon typus*; Family Carcharhinidae; Family Sphyrnidae; Family Isurida.”

Family Isuridae is usually known as Lamnidae today. Family Carcharhinidae has 55 species, not all of which are oceanic. The oceanic and highly migratory species listed below should, in theory, be covered by the UN Fish Stocks Agreement. Not all species covered by Annex I and listed here occur in the Eastern Pacific or in Ecuador’s waters.

FAMILY HEXANCHIDAE SIXGILL AND SEVENGILL SHARKS

Hexanchus griseus Bluntnose sixgill shark

FAMILY RHINCODONTIDAE WHALE SHARKS

Rhincodon typus Whale shark

FAMILY ALOPIIDAE THRESHER SHARKS

Alopias pelagicus Pelagic thresher

Alopias superciliosus Bigeye thresher

Alopias vulpinus Thresher shark

Alopias sp [Eitner, 1995] Eastern Pacific thresher

FAMILY CETORHINIDAE BASKING SHARKS

Cetorhinus maximus Basking shark

FAMILY LAMNIDAE MACKEREL SHARKS

Carcharodon carcharias Great white shark

Isurus oxyrinchus Shortfin mako

Isurus paucus Longfin mako

Lamna ditropis Salmon shark

FAMILY CARCHARHINIDAE REQUIEM SHARKS

Galeocerdo cuvier Tiger shark

Rhizoprionodon spp Sharpnose sharks

Isogomphodon oxyrinchus (Müller & Henle, 1839) Daggernose shark

Carcharhinus spp Requiem sharks

Negaprion spp Lemon sharks

Prionace glauca Blue shark

Triaenodon obesus Whitetip reef shark

FAMILY SPHYRNIDAE HAMMERHEAD SHARKS

Sphyrna spp Hammerhead sharks

Eusphyra blochii Winghead shark

Oficina Regional para América del Sur

Av. de los Shyris 2680 y Gasparde Villarroel
Edif. Mita Cobadelsa, PH, Casilla Postal 17-17-626
Quito - Ecuador

Telf: ++593 (2) 2261 075
Fax: ++593 (2) 2263 075
samerica@sur.iucn.org

www.sur.iucn.org



Regional Office for South America

Av. de los Shyris 2680 y Gasparde Villarroel
Edif. Mita Cobadelsa, PH, Casilla Postal 17-17-626
Quito - Ecuador

Telf: ++593 (2) 2261 075
Fax: ++593 (2) 2263 075
samerica@sur.iucn.org

www.sur.iucn.org