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The FAO International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks)

(Document submitted by FAO)



**The FAO International Plan of Action for the Conservation
and Management of Sharks (IPOA-Sharks) and related
issues**

a paper prepared for

**The Second Meeting on International Cooperation on
Migratory Sharks under the Convention on Migratory
Species**

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1. Introduction

Sharks, skates, rays and chimaeras (Class Chondrichthyes) are a group of approximately 1,000 species of fish generally characterized by slow growth, late maturity and low fecundity¹. These characteristics result in low productivity and high vulnerability to overfishing, i.e., stocks can only sustain moderate level of fishing and are slow to recover from situations of overfishing and stock depletion. Although their overall contribution to capture fisheries is low (approximately 1% of the global marine catches), sharks have received substantial public attention in the last decade because of their vulnerability and frequently poor conservation status.

There are many different types of fisheries targeting or interacting with sharks, including coastal hook and gillnet fisheries, demersal trawl, deepwater and some pelagic fisheries. Different types of products are commercialized domestically or in international trade, such as meat, fins, teeth, etc. The relative contribution of these different fishery types and uses to the overall mortality of sharks varies among species.

International trade in shark products (including fins and meat) has been recognized as major driver for the exploitation of some shark species. Increased concerns about the threatened status of shark species targeted for international trade has led to proposals for listing shark species in the Appendices of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). The whale shark, *Rhincodon typus*, and the basking shark, *Cetorhinus maximus*, were included in CITES Appendix II (controlled trade) in 2002. The white shark, *Carcharodon carcharias*, was included in CITES Appendix II in 2004. All species of sawfishes (Family Pristidae) were included in CITES Appendix I (no trade allowed) in 2007. In addition, two proposals concerning important commercially-exploited sharks (*Squalus acanthias* and *Lamna nasus*) were proposed but rejected by CITES Parties in 2007.

Concerns about the expanding catches of sharks and their potential negative impacts on shark populations have led to an increased level of international attention to the management of shark fisheries, particularly during the last decade. The objective of this paper is to provide a brief overview of internationally agreed fishery instruments of relevance to the conservation and management of sharks. The main focus of the paper is on the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks), developed by FAO in 1999 with the objective to ensure the conservation and long term sustainable use of sharks, including species that are target and non-target of fisheries. The paper reports on the progress towards the implementation of the IPOA-Sharks and discusses some of the factors that are governing its implementation.

¹ Musick J.A. and Bonfil, R. (eds.). 2005. Management techniques for elasmobranch fisheries. FAO Fisheries Technical Paper 474. 251 p.

2. International fishery instruments of relevance to the conservation and management of sharks

2.1. United Nations Convention on the Law of the Sea (UNCLOS)²

The United Nations Convention on the Law of the Sea (UNCLOS), adopted on 10 December 1982 (United Nations, 1982) and which entered into force on 16 November 1994, established overarching rules governing all uses of the world's oceans and seas and their resources. Of particular relevance to fisheries are their Part V (articles 55 to 75) on the Exclusive Economic Zone (EEZ), and Part VII on the High Seas (articles 86 to 120). UNCLOS recognizes the sovereign rights of the coastal States for the purpose of exploring and exploiting, conserving and managing fishery resources in their EEZs, calling upon the coastal States to adopt conservation and management measures to promote the optimum utilization of fishery resources in their EEZs. With respect to exploited stocks or stocks of associated species occurring both within the EEZ and in the area beyond and adjacent to the zone, UNCLOS calls upon the coastal States and States fishing in the high seas to seek agreement upon the measures necessary for the conservation of those stocks in the adjacent high seas area.

UNCLOS also calls upon the coastal States and other States fishing highly migratory species to cooperate in ensuring conservation and promoting the optimum utilization of those resources in their whole area of distribution. A list of highly migratory species is included in Annex I of UNCLOS. The list recognizes some 52 species of sharks, including *Hexanchus griseus*, *Cetorhinus maximus*, *Rhincodon typus*, Family Alopiidae, Family Carcharhinidae, Family Sphyrnidae and Family Isurida. Although the list was not based on a scientific definition based on the actual behavior of the species, the species listed are in general capable of migrating relatively long distances, and stocks of these species are likely to occur both within EEZs and on the high seas.

Fishing in what is now the high seas was not perceived as a major problem requiring priority attention during the negotiating process of UNCLOS. Therefore, with respect to the highly migratory and other fishery resources occurring partly or entirely in the high seas, UNCLOS limited itself to providing general principles for their conservation, optimum utilization and management, calling upon all States to cooperate towards the further development and implementation of these general principles. However, as UNCLOS was being adopted and as more coastal States claimed their rights and jurisdiction over fisheries in their EEZ, large distant-water fishing fleets were displaced from some of their traditional coastal fishing grounds and the pressure to fish in the high seas grew rapidly and without much control. Inadequate management and overfishing soon became problems in the high seas, and thus the increased need to control and reduce fishing fleets operating on the high seas as there were indications that excessive fishing was jeopardizing the sustainability of high seas fishery resources.

2.2. United Nations Fish Stocks Agreement (FSA)

The escalating magnitude of problems affecting high seas fisheries led governments to reinforce the UNCLOS and elaborate further its provisions in the 1993 FAO Agreement to

² Extracted from Maguire, J.-J.; Sissenwine, M.; Csirke, J.; Grainger, R.; Garcia, S. 2006. The state of world highly migratory, straddling and other high seas fishery resources and associated species. FAO Fisheries Technical Paper. No. 495. Rome: FAO. 2006. 84p.

Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (entered into force in 2003) and in the 1995 Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks (also known as the UN Fish Stocks Agreement - FSA). The FSA entered into force in 2001 and is currently the main instrument that governs the conduct of national fishing vessels operating in the high seas and at the same time provides guidance for specialized regional agreements for the conservation and management of straddling and highly migratory resources³.

According to the FSA, in order to sustainably manage fisheries in the high seas countries shall cooperate either directly or through regional fisheries organizations or arrangements. These organizations are commonly referred to as Regional Fishery Bodies (RFB).

The general objective of the FSA is to ensure the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks (Article 2). Article 5 elaborates the general principles for sustainable fisheries, including the definition and adoption of harvesting limits imposed by biological and ecological constraints, the need for scientific research, monitoring, control, surveillance and enforcement of regulations, and the management of distribution of benefits. In terms of principles for the sustainable management of fisheries within biological and ecological limits, specific provisions are made for: establishment of target or limit reference points; application of the precautionary approach; the consideration of ecosystem linkages; and the management of fishing capacity (Table 1).

Table 1. Selected principles and supporting articles of the UN Fish Stocks Agreement for the sustainable management of fisheries within biological and ecological limits⁴.

Principle/articles	Intentions/Outputs
Ecosystem considerations <i>5e; 5f; 5g; 7.2</i>	Scope and jurisdiction congruent with ecosystem components and boundaries Consideration of ecosystem linkages of the fisheries (e.g., discards; catch by lost gears; by-catch; impacts on endangered species) Measures to minimize ecosystem impacts
Precautionary approach <i>5c; 6.2; 6.3a; 6.3c; 6.6; 6.7; 10j</i>	Explicit references to precaution and the need to take account of uncertainties Prescription of decision rules or management procedures for dealing with risk and uncertainty Development of data collection and research programs
Reference points <i>5a,b; 6.3b; 6.4</i>	Identification of stock-specific reference points Correspondence of stock statuses with reference points Measures applied to restore depleted stocks
Managing fishing capacity <i>5h</i>	Explicit reference to the need to evaluate, prevent and eliminate excess fishing capacity Knowledge of fishing capacity Measures implemented to limit, reduce or eliminate overfishing and excess fishing capacity

In accordance with the principles of the FSA, some RFBs are taking measures to better monitor and manage fisheries targeting or interacting with sharks. For instance, finning bans have been adopted by the International Commission for the Conservation of Atlantic Tunas

³ Kimball, L.A. 2001. International Ocean Governance: Using International Law and Organizations to Manage Marine Resources Sustainably. IUCN, Gland, Switzerland and Cambridge, UK. 124 pp.

⁴ Vasconcellos, M. 2008. Managing conflicts between fisheries and conservation in the open ocean: an overview of the measures adopted by Regional Fisheries Bodies. Proceedings of the Fourth World Fisheries Congress. Vancouver, British Columbia, Canada, 2 – 6 May 2004. American Fisheries Society Symposium 49: 1493-1502.

(ICCAT), Inter-American Tropical Tuna Commission (IATTC), Indian Ocean Tuna Commission (IOTC), Northwest Atlantic Fisheries Organization (NAFO), Northeast Atlantic Fisheries Commission (NEAFC), and South-East Atlantic Fisheries Organisation (SEAFO). ICCAT and IATTC have also established catch monitoring programs to assess the status of the main stocks of sharks and to estimate the magnitude of shark bycatch mortality.

In a recent review of the state of highly migratory, straddling and high sea stocks, Maguire et al. (2006) concluded that approximately 40% of the stocks of oceanic migratory sharks have an unknown status. Of the remaining stocks with known status, more than half are overexploited or depleted. The authors concluded that it was difficult to evaluate the actual impact of FSA on the status of stocks because of: (1) limitations of available data, and (2) the short time since the FSA came into force. The limitations of data have many facets, including the poor knowledge of stock structure and the lack of a global dataset allowing the catch from straddling and high seas stocks to be separated from the catches from EEZ stocks of the same species. As put by the authors “even if the data limitations did not exist, one would not reasonably expect a measurable resource response in the brief time elapsed since the FSA entered into force in 2001. It takes time to establish new regional fishery management organizations (a key element of the Agreement) where they do not exist. Translating conceptual objectives and strategic approaches embodied in the Agreement (such as the precautionary approach) into operational protocols, developing global databases, monitoring systems, and adequate national instruments to assist the flag State and port State in facing their responsibility also demands time and resources. Most importantly, stocks do not respond instantly to new conservation measures. For fish stocks that have been overexploited and depleted, the recovery process follows a sequence of regulations that effectively reduce fishing mortality, allowing more fish in the population to survive, grow and reproduce, producing more abundant future generations (environmental conditions permitting). Inevitably, the biological process takes at least a generation or more.”

Maguire et al. 2006 suggested some key actions upon which good performance of the FSA could be predicated, including improvements on the available information on stocks and fisheries, the application of the precautionary approach, reducing excess fishing capacity and implementing the ecosystem approach.

2.3. FAO Code of Conduct for Responsible Fisheries and complementary instruments

The main overarching framework for the work of FAO on sustainable fisheries management is the Code of Conduct for Responsible Fisheries, which was adopted in 1995 by FAO member countries. The Code is a voluntary instrument that provides principles and standards applicable to the conservation, management and development of all fisheries. Article 7 of the Code, on Fisheries Management, is central for the sustainable management of capture fisheries. Compliance with the principles contained in Article 7 would adequately address many of the concerns related to the conservation and management of sharks. It prompts States, for instance, to cooperate to ensure effective conservation and management of these resources, to avoid excess fishing capacity, to conserve biodiversity and protect endangered species, to foster the recovery of depleted stocks, to assess and mitigate adverse environmental impacts on the resources resulting from human activities, and to minimize pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species and other impacts on associated or dependent species.

Since the adoption of the Code, complementary voluntary instruments have been elaborated within the overall framework of the Code of Conduct to strengthen its implementation on particular management issues. The instruments include four International Plans of Action⁵ (IPOAs) and the Strategy for Improving Information on Status and Trends of Capture Fisheries (STF). A number of technical guidelines have also been elaborated. Of particular relevance to this paper are guidelines on the conservation and management of sharks and on the Ecosystem Approach to Fisheries (EAF)⁶.

Governments, in cooperation with their industries and fishing communities, have the responsibility to implement the Code and related instruments. FAO, in accordance with its mandate, is fully committed to assisting Member countries, particularly developing countries, in the efficient implementation of the Code. The Organization is also responsible for reporting to the Committee on Fisheries (COFI) on progress towards the implementation of the Code. At the Twenty-seventh session of COFI, held in 2007⁷, the Committee agreed that while there had been progress in implementation of the Code, there was more that needed to be done by Members individually and collectively. The main constraints and solutions to the Code's implementation identified by COFI included, on the one hand, institutional, human resource and financial weakness, and on the other hand, the need for more training, more means and improved and stronger institutions. Developing State Members called, specifically, for more technical and financial assistance to implement fisheries management in line with the Code's guidelines.

2.4 Ecosystem approach to fisheries

A complementary instrument that is becoming the main reference framework for the work of FAO on fisheries management is the Guidelines on EAF. The EAF and the Code of Conduct for Responsible Fisheries both strive for the same goals of responsible fisheries, with EAF providing a systemic approach to implementing the principles contained in the Code. The role and importance of EAF was recognized by the 47 countries participating in the Reykjavík Conference on Responsible Fisheries in the Marine Ecosystem, held in October 2001 and by the World Summit for Sustainable Development in Johannesburg in 2002. The Plan of Implementation of this Summit included an exhortation to encourage the application by 2010 of the ecosystem approach. The EAF Guidelines published by FAO in 2003, directly address the issue of EAF implementation by providing guidance on how to translate the economic, social and ecological policy goals and aspirations of sustainable development of EAF into operational objectives, indicators and performance measures. Other complementary guidelines and publications that deal with the broader aspects of EAF or address and expand on specific aspects of its implementation are also available⁸. In addition, several projects and other FAO activities address EAF through concerted efforts aimed at simultaneously

⁵ International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (adopted in 1999), International Plan of Action for the Conservation and Management of Sharks (adopted in 1999), International Plan of Action for the Management of Fishing Capacity (adopted in 1999) and the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (adopted in 2001).

⁶ FAO Fisheries Department. The ecosystem approach to fisheries. FAO Technical Guidelines for Responsible Fisheries. No. 4, Suppl. 2. Rome, FAO. 2003. 112 p.

⁷ FAO. 2007. Report of the Twenty-seventh session of the Committee on Fisheries. Rome, 5–9 March 2007. FAO Fisheries Report. No. 830. Rome, FAO. 74 p.

⁸ Publications available at www.fao.org.

achieving progress in several if not most of the relevant aspects of EAF in selected locations or ecosystems⁹ .

The importance and relevance of EAF to the conservation and management of sharks is evident considering the overfished status of many species and their generally low resilience to fishing mortality, the importance of mortality in mixed-species fisheries and of the bycatch in fisheries targeted at other species, and the expected food web effects of removing sharks from the role of top predators in their ecosystem. Conservation and management of sharks have frequently emerged as priorities in FAO projects and activities on the implementation of EAF at national and regional level^{10,11,12} . In the case of highly migratory sharks, the adoption and implementation of an EAF by relevant RFMOs would represent a major step towards improving their sustainable use and conservation.

The activities being implemented by FAO under the Code of Conduct for Responsible Fisheries have directly and indirectly enabled the Organization to assist and improve capacity of Member countries and interested parties in the management and conservation of sharks. The single most direct program of work of FAO on sharks is implemented under the International Plan of Action for the Conservation and Management of Sharks, which is described in more detail below.

3. FAO International Plan of Action for the Conservation and Management of Sharks

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 COFI, in March 1997, that FAO organize an expert consultation to develop Guidelines leading to a Plan of Action to be submitted to the next Session of the Committee aimed at improved conservation and management of sharks. The International Plan of Action for Conservation and Management of Sharks (IPOA-Sharks) was developed through the meeting of the Technical Working Group on the Conservation and Management of Sharks in Tokyo, in April 1998 and the Consultation on Management of Fishing Capacity, Shark Fisheries and Incidental Catch of Seabirds in Longline Fisheries held in Rome in October 1998 and its preparatory meeting held in Rome in July 1998. The text of the IPOA-Sharks was endorsed at the 23rd Session of COFI held in Rome in 1999.

The IPOA-Sharks is a voluntary instrument elaborated within the framework of the Code of Conduct for Responsible Fisheries. The objective of the IPOA-Sharks is to ensure the conservation and management of sharks, including species that are target and non-target in

⁹ FAO. 2006. Implementing the ecosystem approach to fisheries, including deep-sea fisheries, biodiversity conservation, marine debris and lost or abandoned fishing gear. Committee on Fisheries Twenty-seventh Session, Rome, Italy, 5–9 March 2007. COFI/2007/8.

¹⁰ FAO. 2007. Results and conclusions of the project “Ecosystem approaches for fisheries management in the Benguela Current Large Marine Ecosystem” by Cochrane, K.L.; Augustyn, C.J.; Bianchi, G.; de Barros, P.; Fairweather, T.; Iitembu, J.; Japp, D.; Kanandjembo, A.; Kilongo, K.; Moroff, N.; Nel, D.; Roux, J.-P.; Shannon, L.J.; van Zyl, B.; Vaz Velho, F. 2007..FAO Fisheries Circular. No. 1026. Rome, FAO. 167p.

¹¹ FAO. 2006. Report of the Workshop on the Ecosystem Approach to tuna and shark fisheries management in Papua New Guinea. 13 – 16 March 2006, Crowne Plaza Hotel, Port Moresby, Papua New Guinea. Case Study Report. GCP/INT/920/JPN. 29 p.

¹² FAO. 2006. Report of the Workshop on the Ecosystem Approach to artisanal and coastal gillnet fisheries in Southern Brazil. 22-24 August 2006, Rio Grande, Brazil. Case Study Report. GCP/INT/920/JPN. 35 p.

fisheries, and their long-term sustainable use. It applies to all States that contribute to fishing mortality on a species or stock of sharks.

According to the IPOA-Sharks, 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. Specific guidelines with suggested contents of the Shark-plan were developed by FAO¹³. The proposed contents of the Shark-plans are included as an Annex to this document.

3.1 Guidelines on the implementation of the IPOA-Sharks

According to the guidelines, each State is responsible for developing, implementing and monitoring its Shark-plan. 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 coordinating 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 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.

Where transboundary, straddling, highly migratory and high seas stocks of sharks are exploited by two or more States, the IPOA calls upon the States concerned to ensure effective conservation and management of the stocks. In accordance with UNCLOS, States are also encouraged 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.

3.2 Progress in the implementation of IPOA-Sharks and related instruments

FAO, in accordance with its mandate, is committed to encourage and facilitate the implementation of the IPOA-Sharks and other related instruments, including the preparation and publication of field guides and other information resources to assist in the monitoring and

¹³ FAO. 2000. Fisheries management. 1. Conservation and management of sharks. FAO Technical Guidelines for Responsible Fisheries. No. 4, Suppl. 1. Rome, FAO. 37 p.

management of shark fisheries¹⁴. The Organization has also been providing technical assistance to a number of Member countries and regions to develop sustainable fisheries management plans for shark fisheries¹⁵. Parallel efforts have also been made to strengthen the implementation of instruments that indirectly affect shark fisheries, including the Code of Conduct for Responsible Fisheries and the Guidelines for an Ecosystem Approach to Fisheries (see section 2.3). In addition, regarding IUU and port State measures, FAO is organizing a “Technical Consultation to draft a legally-binding instrument on port State measures to prevent, deter and eliminate illegal, unreported and unregulated fishing (resumed session)” to be held in Rome, 26-30 January 2009. Considering the relevance of IUU fishing to the status of shark stocks, the outcomes of this initiative are expected to have direct consequence to management and conservation of sharks.

Progress towards the implementation of the IPOA is regularly reported to COFI. At the Twenty-seventh session of COFI, held in 2007, many Members referred to their efforts to develop National Plans of Action (NPOAs) to implement the IPOA-Sharks, including reporting on policies and practices in place to ban the catching of some shark species and other measures prohibiting finning and carcass dumping as a means of promoting sustainability. Notwithstanding these initiatives and the progress made in recent years, the Committee concurred that further intensive work was required to improve the implementation of the IPOA-Sharks. The most recent information available to FAO indicates that one third of the top 31 shark fishing nations (accounting for 90% of world elasmobranch catches) have developed National Plans of Action for Sharks.

3.3 Implementing the IPOA-Sharks – the way ahead

The FAO Expert Consultation on the Implementation of the IPOA-Sharks¹⁶, held in December 2005, reviewed the available information and national, institutional and personal experiences in relation to factors governing the success of the IPOA-Sharks. Some of the conclusions of the Consultation are reported here since they are of direct relevance to the discussions about ways to improve the implementation of the program.

The view of the Consultation was that the IPOA-Sharks was a beneficial endeavour and that efforts to improve its effectiveness should be strengthened. The Consultation concluded that consideration should be given to re-launching the initiative to re-invigorate the Plan and provide fresh impetus to its activities, considering that there was a concern that the plan was losing importance in relevant agendas.

It was noted that while a few countries had made excellent progress in the implementation of national plans, the majority of the countries had not made progress in implementing effective management and conservation of their elasmobranch resources. A number of possible reasons for that were identified, including:

¹⁴ Field guides and species identification cards have been produced for the Mediterranean Sea, Black Sea, Red Sea and Gulf of Aden (available at www.fao.org).

¹⁵ An updated list of Shark-plans and relevant publications are available at www.fao.org.

¹⁶ FAO. 2006. Report of the FAO Expert Consultation on the Implementation of the FAO International Plan of Action for the Conservation and Management of Sharks. Rome, 6–8 December 2005. FAO Fisheries Report No. 795. Rome, FAO. 24 p.

- the economic importance of shark fisheries in many countries is low and, correspondingly, they are given low priority in the allocation of management resources (funds and experts);
- the political will to insist that management jurisdictions address the problems of elasmobranch population is often weak or lacking;
- management regimes lack the expertise needed to determine which management actions are required and how to rank their importance and expedite their implementation;
- insufficient funding and/or human resources are available to address the problems posed by the management requirements of national elasmobranch resources;
- national initiatives often depend on resources provided by a donor or donors: when the donor programme ceases, so do the programme's activities. A consequence of this is the failure of both recipients of aid and donors to ensure that means are developed to ensure sustainable management once programme assistance stops.

Other particular concerns identified as factors hampering the implementation of effective management of elasmobranch fisheries included:

- the lack of appropriate taxonomic guides to identify species;
- the lack or insufficient information on the population biology of elasmobranch species, both targeted and bycatch species;
- scarce or lacking data, particularly for catch and fishing effort, to inform management decision making.

It has been noted that while there are major concerns about the conservation, species diversity and the potential local extinction of shark species, the quality of the reported catch statistics in many countries is insufficient to confidently monitor or measure changes in taxonomic composition of the catch at an appropriate level^{17/18}. According to the data reported to FAO in 2005, only approximately 23% of the world elasmobranch catches are reported at the species or genus level. The data further indicates that half of the top 31 producers do not report any shark catches at this level of taxonomic resolution.

Illegal, Unregulated and Unreported (IUU) fishing further complicates the ability of States to properly monitor the status of shark resources. A recent analysis of the global shark fin trade indicated, for instance, that the estimated shark biomass in the fin trade can be three to four times higher than the equivalent shark catch figures reported in FAO fisheries statistics database¹⁹. The difference may be attributable to factors such as unrecorded shark landings, shark catches recorded in non-chondrichthyan-specific categories (e.g. marine fish nei), and/or a high frequency of shark finning and carcass disposal at sea, a practice that is prohibited in several countries and RFMOs.

¹⁷ Shotton, R. (ed.) 1999. Case studies on the management of elasmobranch fisheries. FAO Fisheries Technical Paper 378/1. Rome, FAO.

¹⁸ FAO. 2006. FAO Expert Consultation on the implementation of the FAO International Plan of Action for the Conservation and Management of Sharks. Rome, 6 – 8 December 2005. FAO Fisheries Report. No 795. Rome, FAO. 24 p

¹⁹ Clark et al. 2006. Global estimates of shark catches using trade records from commercial markets. *Ecology Letters* 9: 1115–1126.

In response to the recognised problems with the quality of catch statistics for sharks, FAO recently held a technical workshop on the monitoring of shark fisheries and trade²⁰. It is clear that the improvement of the monitoring of shark fisheries can make a considerable contribution to the successful implementation of national, regional and international efforts to shark conservation and sustainable use. Consequently, the workshop recommended that a first priority step towards the development of NPOA, especially for those countries who struggle with low monitoring and management capacity, is to improve information about catches and life history parameters of the main shark species being caught. These main species should be identified by each country based on the quantity taken as capture (i.e. contribution to food security), socio-economic importance to fishing communities, and other specific needs, such as conservation concerns, including those species listed in the CITES Appendices. The Workshop considered that the above mentioned step is a minimum initial requirement. Countries with better monitoring and management capacity should take further steps toward developing and implementing an NPOA in the full context of the IPOA-Sharks.

In the context of developing and implementing the NPOAs, the workshop further recommended countries to:

- improve communication among different agencies, especially between the ones responsible for fishery management and for species conservation; it was noted that the lack of communication between agencies often results in NPOAs that do not reflect the actual fishery situation and are hard to implement in the context of fishery management;
- ensure key stakeholders are well sensitized on the importance of shark management through improved communication;
- utilize a participatory approach with the involvement of all stakeholders, as broad as practical; and
- make plans as realistic and achievable as possible, including taking a step by step approach to its implementation.

In face of the identified constraints to management and conservation of sharks, such a pragmatic approach may be one way ahead to improve the situation at national level. There is also a need for international action, including through Regional Fisheries Bodies and international organizations, particularly to address the necessary capacity building for species identification and assessing the status of stocks.

Within the means and resources available to it, FAO will continue to provide assistance to Member countries and regions to address these identified constrains. However, the need to address the lack of sustained funding in support of the program remains a critical requirement to strengthen the implementation of the IPOA-Sharks.

4. Concluding remarks

The experience with international fishery instruments of relevance to the conservation and management of sharks shows that while some level of success has been reached in some areas in the relatively short time since their adoption, there is still a considerable amount of work to be done to improve the conservation status of sharks. The lessons learned with these instruments point to some factors that are likely to govern future progress:

²⁰ Technical Workshop on “Status, limitations and opportunities for improving the monitoring of shark fisheries and trade”, FAO, Rome, 3 to 6 November 2008.

- With rare exceptions, shark fisheries have a relatively low social and economic importance in many countries and because of that they often receive low priority in the allocation of management resources. In developing countries in particular, the scarcity of human and financial resources to fisheries management mean that the development and implementation of specific management plans for sharks will often be unfeasible;
- The poor quality of fisheries information and data on sharks is usually a consequence of the lack of financial and human resources devoted by member countries (developing and some developed) to fisheries research work in general, and improving fisheries related information on sharks requires improving fisheries research work in general.
- Within a programme to strengthen fisheries research and monitoring in general, sensitizing managers and stakeholders on the need to improve the collection of basic information on shark catches, including species composition and life history parameters, can make an important contribution to begin building the knowledge base for managing these stocks. The generally poor information available on shark catches on a global basis, justifies giving high priority to actions to improve monitoring of shark catches;
- Considering the importance of indirect sources of mortalities to sharks (e.g. through fisheries bycatch), improvements in their management and conservation will depend to a large extent on the adoption of ecosystem approaches to fisheries that interact with sharks. The incorporation of such approaches by RFMOs - a trend that has been observed in recent years - will be particularly relevant to migratory sharks;
- Capacity building is key to the success of management and conservation programmes, including basic training for the identification of species, the assessment of stocks and the evaluation and implementation of management measures. In this regard, countries and institutions with particular skills and expertise in management of elasmobranch fisheries should be encouraged to share their expertise with other range States with limited capacity;
- Finally, finding creative ways to ensure continuous funding of activities will be vital. As it has been shown, there are already comprehensive instruments in place to guide the conservation and management of sharks. The cases where these instruments have failed or have been slower to deliver the desired outcomes often involved situations of limited and inadequate funding to support research and management activities.

Annex. Suggested contents of a Shark-plan²¹

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.

Content of a Shark Plan

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.

²¹ FAO. 2000. Fisheries management. 1. Conservation and management of sharks. FAO Technical Guidelines for Responsible Fisheries. No. 4, Suppl. 1. Rome, FAO. 2000. 37p.