Fragmented governance: Reconciling legal strategies for shark conservation and management

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A B S T R A C T

Sharks play a critical role in the ocean environment yet many species are under threat. Over the last ten years, the international community has taken significant steps to protect shark species and address the threats to them through the adoption and implementation of international laws, plans and programmes. Nevertheless, despite the attention given to this issue, many shark species continue to deteriorate in numbers. While the reasons for this decline are complex and varied, regulatory fragmentation is one contributing factor. Legal regulation is a critical element in achieving effective conservation and management of sharks. This article considers the international laws, plans and programmes that seek to conserve shark species, explores the current fragmented regime and outlines possible strategies to overcome this challenge and enhance shark protection in the future.

1. Introduction

There are at least 400 species in the class Chondrichthyes, which evolved 400 to 450 million years ago [1]. Shark species are found almost everywhere in the world with a diverse array of habits and habitats. They may be highly migratory or have a narrow range and live in shallow or deep water, and may be pelagic or bottom dwelling [2]. Some are apex predators [3] and others are themselves eaten [4]. Sharks are usually scavengers and therefore play an important part in consuming dead and weaker members of other species [2]. Deterioration of shark numbers affects the stability of the entire marine system [2,3], and in particular vulnerable ecosystems such as coral reefs [5].

There appears little doubt that many shark species are declining in numbers [5–7]. What is also clear is that data is incomplete for many species and their status is largely unknown [8]. Catch statistics have generally been inadequate to assist with the management of individual species [9–11]. Nevertheless, it is well known that shark species are particularly vulnerable to over-exploitation and are also susceptible to collapse because they tend to slow growing and late maturing with low reproduction rates [12,13]. This is particularly so for the larger species [14].

Sharks are impacted by the same environmental degradation that affects many species: habitat loss, ecosystem impacts, climate change. More particularly they are under threat from over-fishing as a target species (for meat and fins) or as a non-target but commercially valuable harvest or as bycatch [15,16].

The shark market has grown considerably in recent decades, particularly in relation to fins [13,14].

Regulatory efforts are one way to improve the conservation and management of sharks, and these have been pursued at the local, national, regional and international level. As this article will explain, this layered approach presents both problems as well as positive opportunities. For many years, the vulnerability of shark species was not addressed at the international level. However, particularly in the last 10 years, efforts have been made to put

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1 Here the term ‘shark’ is used to refer to the entire class of chondrichthyes and includes sharks, rays, skates and chimaera.
2 Examples of shallow water sharks are the grey nurse, the hammerhead, the sandbar, the great white and the tiger shark. Pelagic sharks include shortfin makos and whale sharks. Deep water sharks include catsharks, goblin sharks and megamouth sharks.
3 Such as the great white shark and shortfin mako.
4 Such as by whales, killer whales and larger sharks.
5 For example, sharks consume groupers which in turn feed on algae-grazing parrotfish. When shark numbers decrease the grouper numbers increase and

(footnote continued)
laws and plans into place for shark management. At the national level, on the one hand, there is an opportunity for states or communities to tailor conservation measures to respond to the particular behaviour and habitats of certain shark species, as well as cater to local fishing interests or cultural practices. On the other hand, in the absence of local or national action, the regional and international regimes have permitted gaps in regulation, resulting in poor implementation and hence inadequate conservation efforts. For an effective regulatory approach to shark conservation and management, there must be interaction between the different levels of law-making to create an appropriate blend of consistency and scope for targeted action where needed, while still ensuring that the measures put in place enhance efforts to conserve and manage shark species. Equally, the different management tools relied upon, such as protecting habitats, controlling catch quantity and trade measures, may further cause gaps or overlaps for shark protection. These efforts should also be harmonised.

In this article, the international legal regime will be examined, with a focus on the international environmental laws and fisheries regulations relevant to shark conservation and management as well as the International Plan of Action adopted by the Food and Agriculture Organization (IPOA-Sharks), which has provided the impetus (or not) for regional and national plans of action. The synergies and voids that have occurred through shark management and conservation efforts at the different levels of law-making are then explored, and an analysis of the fragmentation that exists in the current governance regime is provided. From this understanding, preliminary recommendations are made in relation to areas in need of reform if regulatory responses are to be an effective tool in protecting sharks.

2. The international legal regime

The international laws that protect and manage sharks can be divided into several categories: conservation approaches that include listing of specific species and requiring habitat protection, as well as fisheries regulations. Each of these is considered below.

2.1. Conservation—listing of species

There are two main international treaties that create mechanisms to protect certain endangered or threatened species on an inter-state level. The Convention on the International Trade in Endangered Species and Wild Fauna and Flora (CITES) provides a means for states parties to control or prohibit international trade in threatened or endangered species. There is a constant tension in this regime between interests in trade with those of conservation, and there have been particular challenges in relation to exploitable marine species being listed because of the high commercial stakes involved.

Parties to CITES decide whether species should be listed in one of three Appendices. Appendix I is reserved for species threatened with extinction and prohibits international trade in these species (including their body parts). Unless there are exceptional circumstances, states are able to enter reservations to the listing of a species, but these should also be harmonised.

For species listed in Appendix II, there is a recognised need for trade regulation through the use of import and export permits in order to prevent the species from becoming threatened with extinction. Rather than prohibiting trade, the listing in Appendix II is intended to enable the tracking of trade. At present, three shark species are listed in Appendix II: the great white, basking and whale sharks. A small number of states have filed reservations to the listing of these shark species. There is a further possibility of individual states opting to list a species on Appendix III, which may be done without the agreement of other state parties. This listing is a way to alert other states to a species of concern and open up the possibility of ‘cooperation of other parties in the control of trade’. At the 2010 CITES Conference in Doha, proposals were submitted to list an additional eight species of sharks on Appendix II, but these were unsuccessful.

The same approach of listing species to enhance conservation and management is followed under the Convention on the Conservation of Migratory Species of Wild Animals (CMS). Migratory species are listed in Appendix I to the CMS if they are endangered throughout all or a significant proportion of their range. Once listed, states parties that are ‘range states’ are prohibited from taking the species. ‘Range states’ are defined in the CMS to include states that exercise jurisdiction over any part of the range of a migratory species, as well as states that have vessels registered to them that take migratory species on the high seas. A listing in Appendix I of the CMS therefore has significant coverage, provided states with vessels engaged in taking the species are parties to the CMS and do not enter reservations to the listing. The three shark species protected under CITES are afforded Appendix I protection under CMS: the basking, great white and whale sharks. A listing under Appendix II of CMS requires range states to enter into agreements with each other for the benefit of the species.

Four shark species listed in Appendix II are: spiny dogfish, porbeagle, shortfin mako and longfin mako.

Under the auspices of the CMS, states adopted in 2010 a Memorandum of Understanding (MoU). The fundamental principles in Section 3 of the MoU highlight the need for cooperation among governments, international organisations, non-governmental organisations and other stakeholders, as well as the role of states to take measures to improve the conservation status of sharks and the establishment of other management plans consistent with the MoU. Another fundamental principle of the MoU is the ecosystem and precautionary approach. Further sections of the MoU address the objectives of conserving and managing migratory sharks and outlines measures that may be taken to meet these objectives. A Conservation Plan is to be attached – once it is finalised – to the MoU as a separate annex. Although non-binding and with limited species coverage, the
the 1995 Fish Stocks Agreement.22 UNCLOS recognises coastal organisations.24 On the high seas, states are also to cooperate in states to cooperate either directly or through international stocks and highly migratory species, UNCLOS imposes duties on (NPOAs) for the conservation and management of sharks. It covers both target species and bycatch,26 and applies to states whether sharks but not addressing bycatch issues[21]. These issues are compounded by the gaps and inconsistencies across the different organisations in the steps they are each taking in relation to shark management.

2.4. International plan of action for sharks

A vital complement to these conservation and management regimes established by treaty is the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks), which was adopted by the FAO Committee on Fisheries in 1999. The IPOA-Sharks is a voluntary international instrument. In essence, it calls upon states to develop national plans of action (NPOAs) for the conservation and management of sharks. It covers both target species and bycatch,26 and applies to states whether sharks are caught in their waters or elsewhere by their nationals. The IPOA-Sharks comprises principles, objectives and implementation procedures to achieve this goal, and includes suggested contents for national shark plans and assessment reports.27 The provisions draw together many existing mechanisms on biodiversity conservation and sustainable fisheries management: for example, the identification of vulnerable and threatened species, improved data collection, assessment and reporting, sustainable use of target species and full utilisation of dead sharks.28

The IPOA-Sharks addresses shark conservation and management in a more comprehensive way than is achieved in the treaties previously discussed in this part. One of its core problems, from a legal perspective, is that it does not create binding rights and obligations on states, because it is not a treaty or 'hard' law. Instead, it serves as a framework for regulatory action at the regional and national levels. The uptake at the national level has been slow, as is discussed further below, but notable developments are the adoption of a regional plan of action in the South Pacific, and a proposed plan of action to be adopted by the European Union. This interaction at international, regional and national levels contributes to the problem of fragmented governance, which is next addressed.

3. The fragmented governance regime

It is clear from the above that the current regime for the protection of sharks has not evolved holistically. Its evolution has, to a great extent, been reactionary resulting in both horizontal and vertical fragmentation. In addition, each of the existing
international laws has weaknesses and gaps. These issues must be addressed if the international regulatory framework for shark conservation and management is to be effective.29

Horizontal fragmentation has occurred because laws have been developed within both the environmental conservation and natural resource management areas. Essentially there is an underlying tension between conservation efforts in environmental laws and the utilisation focus of fisheries regulations. This fragmentation is compounded by the lack of uniformity at the national level. While some countries have implemented laws and policies to conserve and manage sharks these provide different approaches and levels of protection. This dissonance is problematic because it is known that many species travel through different state waters.30 Therefore if one range state has weaker laws, this may undermine conservation and management efforts in another.

Vertical fragmentation results from legal approaches that are divided between, and in some cases duplicated at, different levels of governance including the international, regional, national and local jurisdictions. International law provides a framework, albeit with weaknesses that are considered further below, that relies heavily on regional and national implementation. However, little assistance is provided for building capacity at the state level. For example, many countries struggle to implement international law in multi-jurisdictional or legally pluralist contexts. The international regime could provide much greater guidance and facilitate the sharing of best practice regulatory options to overcome these issues. Lastly, little attention is paid to the local level and those that rely upon marine species for food and livelihoods. Some community-based fisheries management projects have proven successful.31 If these are to be scaled up to deal with the local issues. Some community-based fisheries management projects have proven successful.31 If these are to be scaled up to deal with the local issues, then must be integrated with national and regional regimes.

Furthermore, despite a number of pieces of international law, weaknesses and governance gaps remain. CMS and CITES provide the only ‘hard’ law obligations in this area, but their scope of operation is limited and even those protections are only available to a very small number of shark species. The CBD sets out broad goals of conserving and sustainably using species but its wording is ‘soft’, permitting states a wide scope of action, or inaction. UNCLOS obligations are general only and the FAO IPOA-Sharks is voluntary. Gaps exist particularly in relation to high seas governance where state control is at its weakest. Furthermore, there is a lack of international law for habitat conservation of non-migratory sharks. Finally, there are also loopholes associated with particularly destructive practices such as shark finning, which is not universally banned or even consistently regulated [15].

5. Addressing weaknesses in existing international law

Most importantly, the tension between conservation and fisheries regimes must be addressed. A first step in this process is engagement with the issue, rather than attempts to maintain artificial silos,32 and the identification of synergies between existing systems of governance. This involves ensuring that there is a forum for communication and cooperation between the various actors. In many cases, the specific bodies involved in these governance issues have been separate and worked apart from each other. For example, at the international level, the FAO is the UN body with responsibility for fishery issues. In terms of conservation, it has been UNEP that has taken a lead role complemented by the various treaty bodies. This has led some commentators to call for the establishment of an international commission for the conservation and management of sharks [26]. At the national level, fisheries management often falls under an entirely different ministry and departmental structure to environmental conservation. Therefore, in order to facilitate cooperation, spaces must be identified for these actors to come together. Such a forum must also provide for cross-disciplinary communication between, for example, scientists, law- and policy-makers and economists all of whom are critical in ensuring the integration of environmental, socio-cultural and economic concerns.

This leads to the second principal weakness, the lack of reliable and comprehensive data in relation to species, habitats, catch and trade of sharks. The lack of scientific information in relation to specific shark species hampers both sustainable fisheries and conservation efforts. It can be seen from the IUCN Red List [27] that there is little or no data for many species.33 The FAO does

4. The possibility of harmonisation

From a legal perspective, this fragmentation does not appear to be inevitable. There are a number of common factors between the various regimes and different levels of governance that favour a more harmonised approach. First, both conservation and fisheries laws have an underlying goal of sustainability and this principle has been incorporated into various of the laws considered in Part 2.32 Secondly, the actors and key stakeholders involved in the various governance frameworks are the same. At the international and regional levels, the primary decision-makers are states. At the lower governance levels, non-state actors have greater input and their involvement in decision-making percolates up to influence the policy position of states. Increasingly, the views of scientists and conservation advocates are feeding directly into international and regional fora.

Yet perhaps most importantly for this article, the legal tools utilised in each regulatory environment and at every level of governance are common. For example, both conservation and fisheries laws use geographically based management tools. In conservation terms, marine protected areas or reserves are designated with restrictions placed on the use that can be made of those sites. In the fisheries sector, zones restrict harvesting effort and distinctions may be drawn between, for example, commercial, recreational and indigenous fishing areas. A further example involves species restrictions that are used in all regimes. In conservation, species are identified as endangered and protected through a listing process. In fisheries, species may also be controlled by listing with controls being placed on the size and quantity that may be harvested. In addition technical measures are used to further restrict behaviour, equipment regulations and seasonal closures for example.

None of these tools is novel; the challenge today is to identify the most effective mix of regulatory options for each country and species.
collect data, which is available on the FAO Fishstat Capture Production Database [28]. But the information issue is compounded for sharks by the lack of specificity in the current reporting of harvesting and bycatch.ub. Furthermore, the reason for fluctuations from year to year is difficult to determine.26

At all levels of governance, monitoring and enforcement of shark regulation remain significant issues, and pose similar problems vis-à-vis other commercial fisheries. Incentivising compliance is also an important issue and in this context research in relation to attitudes towards sharks is essential. Wherever possible, cultural drivers, local knowledge as well as governance options should be utilized. For example, ecotourism could be a means to increase awareness of the conservation status of sharks and provide alternatives to the harvesting of sharks.

6. Strengthening the IPOA-Sharks

The IPOA-Sharks addresses the limited coverage of shark species under CITES and CMS. The strength of its approach is that it is comprehensive as it considers the multiple pressures placed upon sharks and in theory applies to all species. Three areas of weakness can be seen: it is only voluntary, its implementation is patchy and there is no consistency between the NPOAs that have been implemented by states [11]. To date only 14 countries have developed plans [29].37 While the IPOA-Sharks requires states to report on the progress of the assessment, development and implementation of shark plans38 it is unclear whether this has been done.39 To address these issues it may be possible to develop a legally binding compliance agreement. This approach was taken in relation to the voluntary Code of Conduct for Responsible Fisheries [32], which was subsequently followed by the FAO Compliance Agreement [33]. However, given that few countries have undertaken shark assessment reports and developed NPOAs, a first step will be to encourage broader compliance by states. One of the reasons for the poor uptake may be that the development of NPOAs is just ‘too hard’. In order to overcome this, the FAO could also consider drafting a ‘model’ NPOA or a range of options from which states can choose that suit their particular circumstances. Again a similar approach was taken by the FAO in developing the Model Scheme on Port State Measures to facilitate compliance with the FAO International Plan of Action to combat illegal, unreported and unregulated fishing [34]. In the longer term the FAO could establish an online database of NPOAs to facilitate the sharing of best practice.40

7. Conclusion

Legal regulation is a critical element in achieving effective conservation and management of sharks. In order to improve the governance regime it is necessary to overcome the fragmentation identified above. Top-down standard setting through international law remains important. But equally critical are mechanisms for local to global information exchange. A cooperative information exchange takes on considerable importance when it is recalled that reliable data is essential for the formulation of appropriate regulatory tools at all levels of governance. The absence of necessary data should not be the foundation for a failure to act [14]. Rather, precautionary approaches become appropriate and it is essential for regulatory mechanisms to be ecosystem-based.

Any new or improved legal governance regime for sharks must be flexible. Regulatory mechanisms currently in place or developed in the future must be monitored on an ongoing basis. This practice is essential to determine whether the regulatory mix is achieving positive biodiversity outcomes. If not, then the measures must be reviewed. Furthermore, it is clear that much scientific research is being undertaken in relation to sharks, including work on species habitats, ranges and behaviour, as well as various human impacts upon sharks. As new information becomes available, this research must be taken into account and regulatory mechanisms such as marine protected areas and fishing restrictions, altered accordingly. Other disciplines remain relevant as well, including education and economics, in shaping a sustainable governance regime.

It is acknowledged that multi-faceted approaches are needed but fragmented legal systems can lead to gaps, duplications in efforts, as well as overlapping regimes, which in turn result in conflicts. Coherent and comprehensive legal strategies are critical to ensure improved biodiversity outcomes and complement the efforts of all stakeholders in the sustainable conservation and management of shark species and their habitats. Undoubtedly much more research needs to be undertaken to explore the various legal options. Only by engaging with this need, and the issues articulated in this article, will the future of sharks be assured.

References


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35 Lack and Sant [12] report that only 20% of shark catch data reported to the FAO is on a species basis. The data that is available often simply indicates the gross shark catch in tonnages, which is of limited informational value in designing regulatory tools to conserve and manage individual species. See for example FAO Yearbook 2006, Fishery and Aquaculture Statistics, which reports under one category ‘sharks, rays and chimaeras’.

36 For example, if the total catch decreases, this could be because there is a decline in species numbers, deterioration of reporting, improvements in the identification of species, successful implementation of regulatory measures, or a combination of all of the above [12,13].37 However, this figure may be inaccurate. In 2009, it indicated that 50% of ‘members’ had conducted assessment of the need for an NPOA for sharks and 90% of ‘members’ had developed and implemented NPOAs [30]. Given that there are more than 170 members of FAO signed up to the Code of Conduct for Responsible Fisheries, it may be that other states have not passed on their NPOA to FAO and therefore it is not on the website.

38 IPOA-Sharks, paragraph 28.

39 Reporting is required to be done biannually as part of the reporting on the Code of Conduct for Responsible Fisheries. While the FAO includes annual progress reports on its website, none contain specific reference to the contents or effectiveness of NPOAs [31].

40 Again this has been done in relation to illegal, unreported and unregulated fishing [35].


Model scheme on port measures to combat illegal, unreported and unregulated fishing. Available from; <http://www.fao.org/docrep/010/a0985t/a0985t00.htm> [accessed 2 July 2010].