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Sharks on the menu:
**A review and critical analysis of the regulation of
sharks internationally and in South Africa**

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Master of Laws (Environmental Law) degree

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ABSTRACT

Industrial fishing practices and market-demand for shark products (in particular meat and fins) are decimating shark populations in many parts of the world, threatening stock collapses, species extinctions and broader ecological impacts. This dissertation explores the development of the international legal regime applicable to the conservation and management of sharks, and seeks to document and provide a critical analysis of the fisheries management and conservation instruments and measures that apply or can be applied to sharks. This is followed by a review and critical analysis of the South African legal regime applicable to the conservation and management of sharks, which to the writer's knowledge has not been clearly documented in referenced research. Both the international and South African regulatory regimes relating to the conservation and management of sharks are characterized by fragmentation, lack of co-ordination and enforcement challenges that risks duplication of effort and regulatory gaps. However, it is argued that the existing mix of hard and soft law instruments does provide a suite of regulatory options, guiding principles and frameworks which, if effectively coordinated, refined, implemented and enforced, could go a long way towards protecting sharks from overexploitation internationally and within South African waters. It is argued that the precautionary and ecosystems approaches need to be applied at both a national and international level to ensure that sharks are managed in an ecologically sustainable manner. Where appropriate, a moratorium (or at least a significant limitation) on the killing of sharks (through both directed and by-catch fisheries) should be imposed until such time as sufficient scientific data is available to demonstrate that shark fishing does not pose a significant risk of serious or irreversible harm. It is argued further that South Africa needs to make a serious commitment to improving shark conservation and management measures by making sufficient human and financial resources available to achieve its shark conservation and management objectives, and that the fragmented national legal regime could be enhanced and rationalised by promulgating a single shark-specific regulation that deals specifically with the conservation and management of sharks.

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ACRONYMS

CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CBD	Convention on Biological Diversity, 1992
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973
CMS	Convention on Migratory Species, 1975
COFI	Committee on Fisheries [FAO]
COP	Conference of the Parties
CPUE	Catch Per Unit Effort
CPCs	Contracting Parties and Cooperating Non-Contracting Parties, Entities or Fishing Entities
EAF	Ecosystems Approach to Fisheries
FAO	Food and Agriculture Organisation [of the UN]
GFCM	General Fisheries Commission for the Mediterranean
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
IOCT	Indian Ocean Tuna Commission
IPOA-Sharks	International plan of action for the conservation and management of sharks
IISD	International Institute for Sustainable Development
IUCN	International Union for the Conservation of Nature
MOU-Migratory Sharks	Memorandum of Understanding on the conservation of migratory sharks [CMS]
MPA	Marine Protected Area
NAFO	Northern Atlantic Fisheries Organisation
NEAFC	Northeast Atlantic Fisheries Commission
NPOA-Sharks	National plan of action for the conservation and management of sharks
RFMO	Regional Fisheries Management Organisation
SAR	Shark Assessment Report
SEAFO	Southeast Atlantic Fisheries Organization
SSG	Shark Specialist Group [of the IUCN]
TAC	Total Allowable Catch
TAE	Total Allowable Effort
UN	United Nations
UNCLOS	United Nations Conference on Environment and Development, 1992
UNFSA	United Nations 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, 1995
UPCL	Upper Precautionary Catch Limit
VMS	Vessel Monitoring System
WCPFC	Western and Central Pacific Fisheries Commission

1. SHARKS IN PERIL

While sharks have been consumed by humans in some coastal areas since at least the fourth century,¹ for the most part these small-scale, localised fishing efforts had little adverse impact on the ecological sustainability of shark populations and habitats. However, a combination of modern technology (improved ships, freezing of shark catches at sea and advanced fishing methodologies), increased demand for shark products² (and in particular meat and fins), and access to distant markets has resulted in an ‘increase in effort and yield of shark catches, as well as an expansion of the areas fished’.³ It has been estimated that the number of sharks killed and passing through the fin trade alone amounts to between 26 and 73 million sharks a year.⁴ If illegal, unreported or unregulated (IUU) catches, as well as legal catches of sharks for other purposes (e.g. meat) were taken into account, this figure would be much higher.

These high levels of shark catches have given rise to concern in the international community over the status of shark stocks, and since the early 1990s has led to calls for increased monitoring, research and management of shark stocks.⁵ These concerns were based on an understanding that sharks are particularly vulnerable to overfishing as they have a ‘close stock-recruitment relationship, long recovery times in response to overfishing (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)’.⁶ While there is generally a lack of knowledge regarding sharks (including population sizes and catch data),

¹ Vennuccini S ‘Shark utilization, marketing and trade’ (1999) *FAO Fisheries Technical Paper 389* at paragraph 6.1. Available online at: <http://www.fao.org/docrep/005/x3690e/x3690e0o.htm#bm24> (last accessed 22 January 2014).

² Camhi MD *et al* ‘The conservation status of pelagic sharks and rays’ (2007) *Report of the IUCN Shark Specialist Group Pelagic Shark Red List Workshop* at p30. Available online at: http://www.iucnssg.org/tl_files/Assets/pdf/Reports/SSG%20pelagic_report_final.pdf (accessed 26 January 2012). Other shark uses include production of leather or cartilage, fishmeal and liver oil, as well as the use of skeletons (cartilage is used in a number of pharmaceutical products for the treatment of pain and cancer, despite efficacy being unproven) and teeth (by collectors or as a curiosity).

³ FAO ‘International plan of action for the conservation and management of sharks (IPOA-Sharks)’ at p1. Available online at: <http://www.fao.org/DOCREP/006/X3170E/x3170e03.htm> (accessed 20 May 2011).

⁴ IUCN Shark Specialist Group ‘How many sharks are killed annually each year’ (2010). Available online at: <http://www.iucnssg.org/index.php/faqreader/items/how-many-sharks-are-killed-annually-each-year> (accessed 3 July 2012).

⁵ Camhi MD *et al* (n2). It is also relevant to note that the FAO reported that as at 2005, estimates showed that 25 percent of the fish stock groups monitored by the FAO were either overexploited, depleted or recovering from depletion. Some fisheries that are exploited ‘solely or partially in the high seas, especially straddling stocks and highly migratory oceanic sharks, are most seriously affected’. See also FAO ‘The State of the World Fisheries and Aquaculture 2006’ (2007), cited in Kidd M ‘International fisheries: an overview of the international legal response’ in Couzens E & Honkonen T (eds), *International Environmental Law-making and Diplomacy Review 2008* (2009) at p31.

⁶ Camhi MD *et al* (n2).

the prevailing view is that it is necessary to manage both directed shark catches and multispecies fisheries where sharks represent a significant by-catch.⁷ It is relevant to note, however, that legal fishing does not necessarily equate to sound management, as permitting systems do not necessarily constrain the species taken or the quantity of catch.⁸ Despite being regulated internationally, regionally and locally, commercial fishing is one of the primary causes of shark mortality.

A recent study estimates that one-quarter of chondrichthyans⁹ are threatened with extinction worldwide,¹⁰ and reaffirms that the main threat is overexploitation through targeted fisheries and as by-catch, followed by habitat loss, persecution and climate change. The report indicates that over one-third of threatened sharks and rays are subjected to targeted fishing, while some of the most threatened species are taken as by-catch. Demand for fins is a major driver of shark and ray mortality (over half of the high-volume or high-value species in the global fin trade are threatened), while demand for meat, liver oil and gillrakers also contributes to mortality. Coastal species are exposed to both fishing and habitat degradation, with about one-third of threatened sharks and rays suffering negative impacts from residential and commercial developments, mangrove destruction, river engineering and pollution.¹¹ These and other anthropogenic activities (such as aquaculture, ecotourism, dredging, mining, catchment area clearing, dumping, nutrient enrichment and introduction of exotic organisms) 'can lead to broad-scale degradation of a species habitat range or loss of critical habitat such as nursery, pupping and mating areas or migration lanes of a species'.¹² Sharks are also persecuted for various reasons, including their perceived risk to humans (shark control nets and drum lines) and interference with spearfishing.¹³ The report also indicates that while the threatened status of only one species had been linked directly with climate change, some sharks are sensitive to climate change, and it is anticipated that the status of some shark

⁷ Ibid.

⁸ Lack M & Sant G 'Illegal, unreported and unregulated shark catch: a review of current knowledge and action' (2008) at p4. Available online at: http://www.trqafffic.org/species-reports/traffic_species_fish30.pdf (accessed 3 August 2011).

⁹ Chondrichthyans are a class of cartilaginous fish, which includes sharks, rays and skates.

¹⁰ Dulvy NK *et al* 'Extinction risk and conservation of the world's sharks and rays' (2014) *eLife Journal*. Available online at <http://elife.elifesciences.org/content/3/e00590> (accessed 25 January 2014).

¹¹ Ibid.

¹² FAO 'Fisheries Management 1. Conservation and Management of Sharks' (2000) *FAO Technical Guidelines for Responsible Fisheries* 4 Suppl. 1-1 at p3. Available online at: <ftp://ftp.fao.org/docrep/fao/003/x8692e/x8692e00.pdf> (accessed 13 January 2012).

¹³ Dulvy *et al* (n10).

species will ‘change rapidly in climate cul-de-sacs, such as the Mediterranean Sea’.¹⁴

While it is generally recognised that sharks, as apex predators, perform an important ecological function, the impact on ecosystems of the removal of top predators is largely unknown. Lack and Sant argue that ‘[t]hese features, together with a lack of information about many shark species and their exploitation, should elicit a precautionary response. However, the response has been slow and piecemeal’.¹⁵ Ward and Myers¹⁶ point out that the mechanisation of fishing (since the eighteenth century) and the expansion of human activities into the open ocean have resulted in dramatic ecosystem changes. The authors report that apex predators have been selectively removed as a consequence. The ecological role of these apex predators influences the diversity and abundance of organisms lower in the food chain, and ‘[t]rophic cascades occur when a reduction in predator abundance results in alternating increases and declines in lower trophic levels’.¹⁷ Ward and Myers explain that while the open ocean is fairly resistant to trophic cascades, a reduction in apex predators negatively affects the survival of same-species juveniles as there are less large predators to ‘crop down’ the competitors and predators of their juveniles (also known as the ‘cultivation effect’). What is clear is that healthy marine ecosystems are necessary for sustainable fisheries, and that current fishery management does not adequately protect marine ecosystems from these impacts.

Within this context, the following section of this dissertation provides a review and critical analysis of the development of the international regulatory regime directly and indirectly applicable to shark conservation and management. This is followed by a review and critical analysis of the shark conservation and management regulatory regime in South Africa.

¹⁴ Ibid.

¹⁵ Lack M & Sant G ‘Confronting shark conservation head on!’ (2006) *TRAFFIC International* at p1. Available online at: www.traffic.org/species-reports/traffic_species_fish4.pdf (accessed 9 August 2011).

¹⁶ Ward P & Myers RA ‘Shifts in open-ocean fish communities coinciding with the commencement of commercial fishing’ (2005) 86 *Ecology* 835 at p835. Available online at:

<http://www.esajournals.org/doi/abs/10.1890/03-0746> (last accessed 24 January 2014).

¹⁷ Ibid, p835.

2. INTERNATIONAL REGULATION OF SHARKS

In light of the heavy impacts upon many shark species of overfishing and other threats, and given that many of the most affected species are migratory and can be found in both national and international waters, international law has a critical role to play in the conservation¹⁸ and management¹⁹ of sharks. In addition to providing direct regulatory and enforcement measures, international legal instruments also provide the frameworks for the implementation of these measures at a regional, sub-regional and national level. While space constraints preclude a lengthy discussion of the relationship between international and national law here, it should be understood that in the field of environmental law national systems are significantly influenced by international ideas and norms.

Notwithstanding this critical role of international law in regard to shark conservation and management, there are currently no hard law instruments (international or bilateral treaties) specifically committed to shark conservation and management.²⁰ There are also no regional fisheries management organisations (RFMOs) specifically committed to shark conservation and management. Where shark conservation and management measures are in place, they have been criticised for being ‘generic (rather than species-specific), ... indirect, operating through controls on finning rather than control on catch or mortality, and ... generally poorly enforced’.²¹ While regulatory efforts to improve shark conservation and management have been pursued at an international, regional and national level, the international regime has been reactive rather than holistic in its evolution, resulting in ‘both horizontal and vertical

¹⁸ The term ‘conservation’ is distinguishable from the term ‘preservation’. Conservation is generally regarded as the saving (or protection) of natural resources (including living resources) for human benefit, while preservation focusses on saving (or protecting) such resource from the adverse impacts of human activities (with the natural world regarded as having intrinsic value. See Connelly J and Smith G *Politics and the Environment* (1999) at pp8-9. Conservation and the concept of sustainable use of natural resources are closely associated, with it being recognised that special protection should be given to unique areas, representative ecosystems and habitats of rare and endangered species, and that ecosystems and marine resources should be managed to ensure ‘optimum sustainable productivity’ without endangering other ecosystems or species. It is also recognised that living resources should not be used beyond their capacity for regeneration, and that irreversible damage (to species and the ecosystems within which they function) is to be avoided. See Birnie *et al International Law and the Environment* (2009, 3rd edition) at p199.

¹⁹ The term ‘management’ in the context of fisheries has no clear or generally accepted definition, although the FAO has suggested as a working definition that management is the integrated process of information gathering, analysis, planning, consultation, decision-making, allocation of resources and formulation and implementation, with enforcement as necessary, of regulations or rules which govern fisheries activities in order to ensure (amongst other things) the continued productivity of the resources. See FAO Fisheries Management 4 – Fisheries Management’ (1997) FAO Technical Guideline for Responsible Fisheries, p7. Available online at: <ftp://ftp.fao.org/docrep/fao/003/w4230e/w4230e00.pdf> (accessed 28 January 2014).

²⁰ Camhi *et al* (n2) at p35.

²¹ Lack & Sant (n8) at p3.

fragmentation’.²² Horizontal fragmentation has occurred in part as a result of laws being developed within both the environmental conservation and natural resource management areas, where there is an ‘underlying tension between conservation efforts in environmental laws and the utilisation focus of fisheries regulations’.²³ Notwithstanding this tension, the further evolution of the various regimes around the underlying concepts of sustainability and the precautionary and ecosystems approaches to fisheries management does present the opportunities for harmonisation. Vertical fragmentation has occurred as a consequence of legal approaches being ‘divided between, and in some cases duplicated, at different levels of governance’.²⁴ This vertical fragmentation is not necessarily negative, as it results in a layered approach that also presents positive opportunities (such as implementing regulatory measures at a national level that addresses species-specific problems while taking local factors into account).²⁵

While a number of international agreements ‘can be invoked to address the conservation needs of ... sharks ... [t]hese agreements ... provide only a framework for management: RFMOs and fishing nations must still implement and enforce the measures necessary to ensure the well-being of ... shark populations’.²⁶ These hard law instruments concern the regulation of fishing, as well as conservation of wildlife and biodiversity. The regime mix is supplemented by soft law instruments developed with a view to conserving and managing sharks.

2.1 Fisheries management

2.1.1 Background

It has been pointed out that law is capable of serving a number of functions in relation to living natural resources. Amongst other things, it can determine who has ownership or access to a resource (a distributive function), it can seek to preserve a resource at sustainably exploitable levels (a conservatory function), and it can prohibit exploitation or forms and methods of exploitation (a proscriptive function).²⁷ The notion that species require

²² Techera EJ & Klein N ‘Fragmented governance: reconciling legal strategies for shark conservation and management’ (2011) 35 *Marine Policy* 73 at p75. Available online at: <http://foodweb.uhh.hawaii.edu/MARE%20594/shark%20conservation.pdf> (accessed on 3 August 2011).

²³ *Ibid*, p76.

²⁴ *Ibid*.

²⁵ *Ibid*, p73-74.

²⁶ *Ibid*.

²⁷ Birnie *et al* (n19) at pp593-594.

conservation and management under an international legal regime is a relatively recent concept, and the development of international legal obligations and principles to do so on a sustainable basis only arose as a consequence of the over-exploitation of living resources (which lead to stock failures and threats of extinctions).²⁸ Because these stocks included species that migrate outside of areas of national jurisdiction (including many shark species), regulation at a national level only is insufficient. Living resources found in areas beyond national jurisdiction (including on the high seas) have long been regarded as ‘common property’, and the doctrine of freedom of access for all states applied. The first attempts to develop international regulatory instruments for living resources failed to distinguish such resources clearly from other natural resources, and living resources ‘were long regarded as being as “mineable” as minerals’.²⁹

After World War II, the international law responded to the trend towards commercial fishing effort by ‘extending the zones in which coastal states exercise sovereignty over natural marine resources, while simultaneously confirming states’ traditional rights to fish in the high seas’.³⁰ According to Birnie *et al*, the first multilateral attempt to codify and develop an international fisheries law culminated in the 1958 Geneva Convention on Fisheries Conservation and Management.³¹ In terms of this Convention, it was recognised that coastal states had a ‘special interest’ in the conservation of high-seas fisheries adjacent to their territorial seas, while the 1958 Geneva Convention on the High Seas reiterated the customary freedom to fish on the high seas (while also requiring that reasonable regard had to be given to the interests of other states).³² The Geneva Convention on the Territorial Sea and Contiguous Zone and the Geneva Convention on the Continental Shelf were also adopted in 1958. These attempts to address jurisdictional issues were not successful, and led to new claims for extended fisheries jurisdiction.³³ Of significance, Iceland declared a twelve nautical mile territorial sea and found itself in a dispute with the United Kingdom (UK). Although this dispute was settled by negotiation, in 1972 Iceland extended its exclusive fishery zone to fifty nautical miles. This led to disputes with the UK and Germany, which were referred to the International Court of Justice (ICJ). The ICJ in the *Icelandic Fisheries*

²⁸ Ibid at p594.

²⁹ Ibid.

³⁰ Glazweski J *Environmental Law in South Africa* (2005, 2nd edition) at p407.

³¹ Birnie *et al* (n19) at p709.

³² Ibid.

³³ Ibid.

cases upheld Iceland's claim to a twelve mile nautical zone, but recognised that the UK and Germany had not accepted Iceland's claims to an exclusive zone beyond this limit. While confirming that the UK and Germany retained rights to fish in the zone beyond Iceland's twelve mile nautical zone, the ICJ held that the parties' respective rights were not absolute. The ICJ held further that 'the former *laissez-faire* treatment of the living resources of the high seas has been replaced by a recognition of a duty to have due regard to the rights of other states and the needs of conservation for the benefit of all'.³⁴ The necessity for cooperation where natural resources are shared was further emphasized in the *Gulf of Maine*³⁵ and *Jan Mayen*³⁶ cases (which dealt with delimiting maritime boundaries between overlapping continental shelves and exclusive fisheries or economic zones).

Despite these early treaty efforts, many fisheries continued to decline,

... partly because of the inadequacies of scientific knowledge and management theory; partly because such advice as scientists gave was not followed; partly because there was no attempt to limit effort and little attempt to limit the number of vessels having access; and partly because of the lack of fully international inspection and enforcement.³⁷

Birnie *et al* express the view that these weaknesses were derived primarily from the common-property (or free access doctrine) and the limited powers of fisheries commissions.³⁸

2.1.2 United Nations Convention on the Law of the Sea

The determination of the extent of the territorial sea and the establishment of coastal state jurisdiction over marine living resources beyond the territorial sea were finally clarified by the adoption of the United Nations Convention on the Law of the Sea, 1982 (UNCLOS),³⁹ which came into force on 16 November 1994.⁴⁰ UNCLOS is regarded as the principal

³⁴ *Icelandic Fisheries* cases - (UK v Iceland) 31, para 72; (FRG v Iceland) 200, para 64, cited in Birnie *et al* (n19) at p710.

³⁵ *Gulf of Maine Case*, ICJ Reports (1984) 246, cited in Birnie *et al* (n19) at p710.

³⁶ ICJ Reports (1993) 38, cited in Birnie *et al* (n19) at p710.

³⁷ Birnie *et al* (n19) at p712

³⁸ *Ibid.*

³⁹ Glazewski (n30) at p408.

⁴⁰ CMS 'The FAO international plan of action for the conservation and management of sharks (IPOA-Sharks) and related issues - a paper prepared for the 2nd meeting on international cooperation on migratory sharks under the CMS' (2008) at p5. Available on line at:

http://www.cms.int/bodies/meetings/regional/sharks/Docs%20Rome%20Mtg/Shk2_Doc_5_FAO_IPOA_CMS_3Dec_Eonly.pdf (last accessed 8 February 2014).

framework convention for the management of the world's oceans and its resources,⁴¹ and has been described as providing the international basis for the protection and sustainable development of the marine and coastal environment and its resources.⁴²

UNCLOS sets out rights and obligations of coastal and flag states relating to the conservation and management of living resources located within different maritime zones,⁴³ provides that the sovereignty of a coastal state extends beyond its land territory and internal sea to an adjacent belt of sea described as the territorial sea,⁴⁴ and recognises that each state has the right to establish the breadth of its territorial sea up to a limit not exceeding 12 nautical miles.⁴⁵ While ships enjoy the right of innocent passage through the territorial sea,⁴⁶ coastal states are entitled to adopt laws and regulations relating to innocent passage to conserve marine living resources and prevent infringement of their fisheries laws.⁴⁷

UNCLOS also recognises the right of coastal states to Exclusive Economic Zones (EEZ) beyond and adjacent to territorial seas, which zones are not to extend beyond 200 nautical miles from the baselines used to measure the territorial sea.⁴⁸ Coastal states have sovereign rights for *inter alia* exploiting, conserving and managing natural resources (including living resources such as sharks) in these zones.⁴⁹ Coastal states are required to determine the total allowable catch (TAC) of living resources within their EEZs, and are required to take into account the best scientific advice available in ensuring (through proper conservation and management measures) that living resources are not endangered by over-exploitation.⁵⁰ These measures are to be designed to maintain or restore populations of harvested species at

⁴¹ Fischer J *et al* 'Review of the implementation of the international plan of action for the conservation and management of sharks' (2012) *FAO Fisheries and Aquaculture Circular No. C1076* COFI/2012/SBD.8 at p3. Available online at: <http://www.fao.org/docrep/017/i3036e/i3036e00.htm> (accessed 27 July 2012).

⁴² United Nations Conference on Environment and Development, 1992, Agenda 21 paragraph 17.1. Available online at: <http://sustainabledevelopment.un.org/content/documents/Agenda21.pdf> (accessed 25 January 2014).

⁴³ *Ibid.*

⁴⁴ United Nations Convention on the Law of the Sea, 1982 (in force 16 November 1994), convention text available online at: http://www.un.org/Depts/los/convention_agreements/texts/unclos/UNCLOS-TOC.htm (accessed 27 July 2012). See article 2.1.

⁴⁵ Article 3. UNCLOS stipulates baselines for determining the territorial sea in articles 5, 6 and 7. Article 15 deals with delineation where coasts are opposite to or adjacent to each other.

⁴⁶ Article 17. Passage is innocent provided it is not prejudicial to peace, good order or security of the coastal state. Passage by a foreign ship is considered prejudicial if it engages *inter alia* in fishing (see article 19(i)).

⁴⁷ Articles 21 (d) and (e).

⁴⁸ Article 57.

⁴⁹ Article 56.1.

⁵⁰ Articles 61.1 and 61.2.

levels that can produce the maximum sustainable yield (MSY),⁵¹ as qualified by relevant environmental and economic factors. Coastal states are required to promote the objective of optimum utilisation of the living resources in their EEZs,⁵² and to give other states access to any surplus where a coastal state does not have the capacity to harvest the TAC.⁵³ Glazewski points out that in order to prevent overfishing, it is necessary to know what quantity of fish can be taken without resulting in overfishing. The author indicates that research suggests that fished stocks decrease in size but grow rapidly in an effort to reach their previous size, and that this rate of growth is greatest when a stock has been reduced to a particular size (although this is variable between different species). The MSY is the level at which the greatest quantity of fish can be caught without the total size of the stock being adversely affected. Glazewski states that while MSY was initially regarded as the principal objective of fisheries management, it has limitations. Problems include accurately assessing the MSY for a particular stock, while the model also fails to take into account interactions between different species. Economics can also influence the optimal level of fishing.⁵⁴ Notwithstanding these limitations, the concept of MSY continues to find application in international instruments and measures. The concept was reaffirmed in the Outcomes Document (the 'Future We Want') of the United Nations Conference on Sustainable Development, 2012 (Rio+20), which included a commitment to intensify efforts 'to meet the 2015 target as agreed to in the Johannesburg Plan of Implementation to maintain or restore stocks to levels that can produce maximum sustainable yield on an urgent basis',⁵⁵ albeit with a further commitment to 'enhance and manage bycatch, discards and other adverse ecosystem impacts from fisheries, including by eliminating destructive fishing practices'.⁵⁶ While these observations relating to MSY apply generally to fishing, they are equally pertinent to directed and by-catch shark fisheries.

⁵¹ Article 61.3. Writing in 1977, Larkin expressed serious misgivings about the MSY model, suggesting that even in respect of a single species, it is unlikely that MSY based on an analysis of historic fishery statistics is attainable on a sustained basis, and that it is associated with a high risk of recruitment failure in less productive sub-stocks. See Larkin PA 'An Epitaph for the concept of Maximum Sustainable Yield' (1977) *Transactions of the American Fisheries Society* Vol. 106 at p4. Available online at: <http://www.pewenvironment.org/news-room/fact-sheets/fishing-to-the-limits-the-trouble-with-maximum-sustainable-yield-and-the-need-for-target-and-limit-reference-points-85899452066> (accessed 16 January 2014).

⁵² Article 62.1.

⁵³ Article 62.2.

⁵⁴ Glazewski (n30) at p404.

⁵⁵ Rio+20 'Outcome of the Conference' (2012) A/Conf.216/L.1, article 168. Available online at: http://www.uncsd2012.org/content/documents/774futurewewant_english.pdf (accessed 28 January 2014).

⁵⁶ *Ibid.*

States whose nationals fish in another state's EEZ must comply with the conservation measures established by coastal states, including laws and regulations dealing *inter alia* with licencing, fixing of quotas, regulating seasons and areas for fishing, stipulating fishing gear requirements, research, the placement of observers on vessels, and enforcement measures.⁵⁷ UNCLOS also makes provision for agreeing measures for conservation and development of stocks where they occur in more than one EEZ or within an EEZ and areas beyond and adjacent to the zone,⁵⁸ an important provision in the context of migratory shark species. UNCLOS requires coastal states and other states whose nationals fish in the region for highly migratory species listed in Annex I (which includes several shark species⁵⁹) to cooperate (directly or through appropriate international organisations) to ensure conservation and to promote optimum utilisation within and beyond the EEZ.⁶⁰ Importantly, coastal states are empowered to take necessary measures (including boarding, inspection, arrest and judicial proceedings) to ensure compliance with laws and regulations adopted in conformity with UNCLOS.⁶¹

Part VII of UNCLOS relates to the high seas, which are all seas not within the EEZ, territorial sea or internal waters of a state.⁶² It reaffirms that the high seas are open to all states, but that this freedom of the high seas (which includes freedom of fishing) is to be exercised with due regard to the interests of other states.⁶³ The hot pursuit of a foreign ship may be undertaken when the competent authorities of a coastal state have good reason to believe that the ship has violated its laws or regulations in its territorial seas or EEZ.⁶⁴ All states have the right for their nationals to engage in fishing on the high seas, subject *inter alia* to their treaty obligations, and to the rights and interests of coastal states.⁶⁵ UNCLOS also imposes a duty on all states to take, or cooperate with other states in taking, necessary measures for the conservation of the living resources of the high seas,⁶⁶ and to cooperate with each other in the conservation and management of living resources in all areas of the high

⁵⁷ Article 62.4.

⁵⁸ Article 63.

⁵⁹ Annex I lists the following oceanic sharks: *Hexanchus griseus* (bluntnose sixgill shark); *Cetorhinus maximus* (basking shark); Family *Alopiidae*; *Rhincodon typus* (whale shark); Family *Carcharhinidae*; Family *Sphyrnidae*; Family *Isurida*.

⁶⁰ Article 64.

⁶¹ Article 73.

⁶² Article 86.

⁶³ Article 87.

⁶⁴ Article 111.

⁶⁵ Article 116.

⁶⁶ Article 117.

seas. Where their nationals exploit the same resources or different resources in the same area, states are required to cooperate to establish sub-regional or regional fisheries management organisations with a view to taking the measures necessary for conservation of the living resources concerned.⁶⁷ In determining TAC and establishing other conservation measures for the living resources of the high seas, states are required to take measures which can produce MSY (based on the best scientific evidence available), and are also required to consider the effects on associated or dependent species (with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened).⁶⁸

UNCLOS imposes an obligation on states to protect and preserve the marine environment,⁶⁹ while acknowledging that states have the sovereign right to exploit their natural resources pursuant to their environmental policies.⁷⁰ Various measures are prescribed relating to pollution of the marine environment, with the further requirement that these measures should include those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threated or endangered species and other forms of marine life.⁷¹

It has been pointed out that the 1982 UNCLOS was negotiated and adopted as a package deal, and required compromises on various issues. Articles relating to fisheries are closely related to other provisions dealing with territorial seas, high seas and the settlement of disputes. The compromises were at times achieved through the use of ambiguous language, while some of the more difficult issues (such as agreeing formulae for allocating fishing quotas and calculations of the MSY) were left for determination by subsequent agreements, by coastal states or even by decisions of international tribunals.⁷²

⁶⁷ Article 118.

⁶⁸ Article 119.

⁶⁹ Article 192.

⁷⁰ Article 193.

⁷¹ Article 194. Birnie *et al* comment that this clause is important even though UNCLOS does not make specific reference to biological diversity. The authors take the view that it is clear from the totality of articles 192 to 196 that these provisions were never intended to be limited to pollution, but embrace protection of ecosystems, conservation of depleted or endangered species of marine life as well as control of alien species. See Birnie *et al* (n19) at p745. However, this view is not universally accepted. For example, Morishita states that article 194 'is about marine pollution and apparently does not directly pertain to fisheries management. See Morishita J 'What is the ecosystem approach for fisheries management?' (2008) 32 *Marine Policy* 19 at p20. Available online at: bim.aseanbiodiverstiy.org/elib/reference/download.php?refNo=00019&fileld=19 (last accessed 8 February 2014).

⁷² Birnie *et al* (n19) at p715.

Birnie *et al* caution that '[n]otwithstanding the very widespread adoption of the 200-mile EEZ, the over-exploitation of fish stocks ... shows that the UNCLOS strategy for sustainable fishing has not worked as intended'.⁷³ The authors attribute this to a failure by some coastal states to ensure sustainable fishing within their EEZ's and the reality that many fish stocks are highly migratory. An unintended consequence of establishing EEZ's is that '[f]ishing effort on the high seas has not been eliminated by the extension of coastal-state jurisdiction, but transferred beyond 200 miles, and competition for stocks made more intense'.⁷⁴ A shift in focus to the high seas of some large distant-water fishing fleets resulted in excessive fishing that threatens the sustainability of high seas fisheries.⁷⁵

While UNCLOS provides an international basis for the protection and sustainable development of living marine resources (including sharks), it is clear that its effectiveness is reliant on implementation and enforcement by nation states (including coastal states and states whose nationals fish for sharks on the high seas). While many oceanic sharks are highly migratory species covered by UNCLOS, it has been suggested that the 'inability of RFMOs to stem dramatic declines in pelagic sharks [demonstrates that] the effective implementation of UNCLOS objectives has yet to be realized for these ... target pelagic species'.⁷⁶

2.1.3 FAO Compliance Agreement

The creation in 1945 of the Food and Agriculture Organisation (FAO) provided the UN with a means to promote the establishment of regional fisheries bodies, and to monitor and coordinate their activities. The FAO is responsible for promoting and recommending national and international action relating to the conservation of natural resources, and for the adoption of improved agricultural methods (agriculture is defined as including fisheries and marine products).⁷⁷ The FAO represents various and sometimes competing interests of its members, and with regard to fisheries it 'has eschewed any attempt at a global or regional managerial role, confining itself instead to promoting effective management of world fishery

⁷³ Ibid, p731.

⁷⁴ Ibid, p732.

⁷⁵ CMS (n40) at p5.

⁷⁶ Camhi *et al* (n2) at p35.

⁷⁷ FAO Constitution 1945, article I. Text available online at:

<http://www.jus.uio.no/english/services/library/treaties/14/14-01/food-organization.xml> (last accessed 8 February 2014).

resources'.⁷⁸ FAO reports have highlighted problems with estimating maximum sustainable yield (MSY) and the saturation of maximum catch limits, and have also brought to light issues relating to biological degradation and economic waste.⁷⁹

The 1993 FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (FAO Compliance Agreement) elaborates on the responsibility of flag states for their vessels fishing on the high seas. In terms of this agreement, flag states are required to take necessary measures to ensure that their vessels do not engage in any activity that undermines the effectiveness of conservation and management measures (which would include measures to conserve and manage sharks). The FAO Compliance Agreement applies to all fishing on the high seas, and also provides for the systematic exchange of information regarding high seas fishing vessels.⁸⁰

2.1.4 UN Fish Stocks Agreement

The United Nations 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 (UNFSA) was adopted on 4 August 1995, and came into force as from 11 December 2001.⁸¹

This agreement was adopted to reinforce UNCLOS and the FAO Compliance Agreement as a result of the 'escalating magnitude of problems affecting high seas fisheries'⁸² 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 resources'.⁸³ Kidd suggests that the UNFSA is probably the most important multilateral fisheries convention,⁸⁴ while Birnie *et al* explain that the UNFSA is an attempt to deal with unsustainable fishing by

⁷⁸ Birnie *et al* (n19), p713.

⁷⁹ Ibid, p714.

⁸⁰ Fischer *et al* (n41) at p3.

⁸¹ United Nations 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, 1995 (in force 2001). Text of agreement available online at: http://www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm (accessed 28 July 2012).

⁸² CMS (n40) at pp5-6, citing Kimbell LA 'International ocean governance: using international law and organisations to manage marine resources sustainably' (2001) IUCN 124.

⁸³ Ibid.

⁸⁴ Kidd M (n5) at p32.

building on the existing provisions of UNCLOS.⁸⁵ The UNFSA in effect amends other regional fisheries treaties covering straddling and highly migratory stocks, and provides guidance on the evolution of articles 63 and 116-9 of UNCLOS.⁸⁶

The objective of the UNFSA⁸⁷ is to ensure the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks through effective implementation of the relevant provisions of UNCLOS, and thus applies to the highly migratory shark species listed in Annexure I of UNCLOS. It applies primarily to straddling and highly migratory fish stocks beyond areas of national jurisdiction (i.e. on the high seas), although articles 6 and 7 also apply to the management of such stocks in areas under national jurisdiction.⁸⁸

The UNFSA requires coastal states and states fishing on the high seas to adopt measures to ensure the long-term sustainability of these fish stocks while also promoting their optimum utilization.⁸⁹ These measures are to be based on best scientific evidence, and are to be designed to maintain or restore stocks at levels capable of producing MSY. Importantly, the UNFSA also provides that states shall apply the precautionary approach, specifying that the absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures. States are required to assess the impacts of fishing, other human activity and environmental factors on target stocks and related species (i.e. species belonging to the same ecosystem or associated with or dependent on the targeted stocks).⁹⁰ Where necessary, states are required to adopt conservation and management measures for target and related species with a view to maintaining or restoring populations above levels at which their reproduction may become seriously threatened.⁹¹

Given problems relating to shark by-catch and disposing of finned shark carcasses at sea, it is relevant to note that the UNFSA imposes an obligation on states to minimise (amongst other things) waste, discards, catch of non-target species and impacts on associated or dependent species (and in particular endangered species) through measures that include the use of

⁸⁵ Birnie *et al* (n19) at p734.

⁸⁶ *Ibid.*

⁸⁷ Article 2.

⁸⁸ Article 3.

⁸⁹ Article 5.

⁹⁰ Article 5(d).

⁹¹ Article 5(e).

selective, environmentally safe and cost-effective fishing gear and techniques.⁹² Further provisions deal with protection of marine biodiversity,⁹³ measures to prevent overfishing and excess fishing capacity,⁹⁴ collection and sharing of data,⁹⁵ promotion of scientific research and development of technologies that promote conservation and management,⁹⁶ and implementation and enforcement through monitoring, control and surveillance.⁹⁷ The FAO has expressed the view that the UNFSA is important as not only does it implement article 64 of UNLCOS dealing with highly migratory species, but also obliges contracting parties to minimise by-catch (including sharks).⁹⁸

The precautionary approach outlined in the UNFSA has particular relevance to shark conservation and management in light of the paucity of information regarding many shark species and stocks. Article 6 of the UNFSA deals specifically with the application of the precautionary approach, and specifies that states shall apply the approach widely to conservation, management and exploitation of straddling and highly migratory fish stocks in order to protect living marine resources and the marine environment. States are required to be more cautious when information is uncertain, unreliable or inadequate (as is the case with information relating to many shark species), and the absence of adequate scientific information is not to be used as a reason for postponing or failing to take conservation and management measures.⁹⁹ Given ongoing concern over the deterioration in number of many shark species, it would appear that the precautionary approach as envisaged in the UNFSA has not been widely embraced with a view to improving shark conservation and management.

In terms of the UNFSA, coastal states and states whose nationals fish on the high seas are required to cooperate directly or through regional fisheries management organisations (RFMOs) to ensure effective conservation and management of straddling and highly migratory fish stocks (including the shark species and families listed in Annexure I of UNCLOS).¹⁰⁰ While these provisions are also relevant to sharks, no RFMO has been

⁹² Article 5(f).

⁹³ Article 5(g).

⁹⁴ Article 5(h).

⁹⁵ Article 5(j).

⁹⁶ Article 5(k).

⁹⁷ Article 5(l).

⁹⁸ Fischer *et al* (n41) at p4.

⁹⁹ See in particular articles 6.3 to 6.7.

¹⁰⁰ Article 8.1.

established specifically to address shark conservation and management.¹⁰¹ Sharks deserve special attention ‘because they are more vulnerable than other fish, require urgent and specialized attention even in the absence of accurate data’.¹⁰² While this may justify the application of the precautionary approach to shark fisheries, it is also arguable that shark conservation and management could be enhanced by the establishment of shark-specific RFMOs. RFMOs are discussed in more detail in section 2.1.7 below.

Duties of flag states are dealt with in Part V of the UNFSA. States are required to take such measures as may be necessary to ensure that vessels flying their flags comply with sub-regional and regional conservation and management measures. Flagged vessels fishing on the high seas should only be authorised where the state is able to effectively exercise its responsibilities in respect of UNCLOS and the UNFSA.¹⁰³ Measures to be taken by a state in respect of flagged vessels are also set out.¹⁰⁴ It follows that where shark conservation measures are agreed in sub-regional or regional conservation and management measures, flag states will have a duty under the UNFSA to control vessels through licensing or permits (and by establishing applicable regulations in this regard), prohibit unlawful high seas fishing, and prevent flagged vessels from conducting unauthorised fishing within areas under the national jurisdiction of other states. National records of vessels authorised to fish on the high seas must be maintained,¹⁰⁵ and requirements for marking fishing vessels and gear (in accordance with internationally recognisable systems)¹⁰⁶ and for timely reporting of vessel position must be established. Requirements must also be established for recording data on target and non-target species caught, fishing effort¹⁰⁷ and for verifying the catch of such species (through observer programmes, inspection schemes, unloading reports, supervision of transshipments, monitoring of landed catches and market statistics).¹⁰⁸ Flag state measures are also to include monitoring, control and surveillance of vessels, their fishing operations and related activities.¹⁰⁹ Flag states are required to take measures to regulate transshipment on the high

¹⁰¹ Techera & Klein (n22) at p75.

¹⁰² Van Osch S ‘Save our sharks: using international fisheries law within regional fisheries management organizations to improve shark conservation’ (2012) 33 *Michigan Journal of International Law* 383 at p431. Available online at: <http://mjionline.org/wordpress/wp-content/uploads/2012/04/v33n2-vanOsch.pdf> (accessed 28 January 2014).

¹⁰³ Article 18.2.

¹⁰⁴ Article 18.3.

¹⁰⁵ Article 18.3(c).

¹⁰⁶ Article 18.3(d).

¹⁰⁷ Article 18.3(e).

¹⁰⁸ Article 18.3(f).

¹⁰⁹ Article 18.3(g)(i)-(iii).

seas to prevent conservation and management measures from being undermined,¹¹⁰ and to ensure the regulation of fishing activities to achieve compliance with sub-regional, regional and global measures, including measures aimed at minimising catches of non-target species (such as any measures aimed at minimising shark by-catch).

Kidd points out that control, surveillance, compliance and enforcement mechanisms are a prerequisite for effective fisheries management, and that such mechanisms are implemented primarily by sub-regional and regional fisheries management organisations (referred to collectively herein as RFMOs) and arrangements.¹¹¹ The same point holds true for effective shark conservation and management. Compliance and enforcement is dealt with in part VI of the UNFSA, which provides wide powers relating to inspection and boarding of vessels suspected of violating conservation and management measures (such as those that may be applicable to sharks), although the capacity of many coastal and flag states to utilise these powers is questionable. Article 19 imposes various obligations on flag states, including obligations to enforce measures irrespective of where violations occur, to investigate and report alleged violations, to require their flagged vessels to give stipulated information to investigating authorities, to detain vessels and refer cases for prosecution, and to prevent any vessel involved in the commission of a serious violation from fishing on the high seas until sanctions imposed by the flag state have been complied with. Sanctions must be adequate to secure compliance and discourage violations, and offenders should be deprived of the benefits of their illegal activities. Measures may include refusal, withdrawal or suspension of authorisation to serve as masters or officers on such vessels.¹¹² Article 20 provides for international cooperation in enforcement, including assistance to flag states investigating an alleged violation.¹¹³ Where there are reasonable grounds for believing that a vessel on the high seas has been engaged in unauthorised fishing within an area under the jurisdiction of a coastal state, the flag state may be requested to immediately and fully investigate the matter. The flag state may authorise the relevant authorities of the coastal state to board and inspect the vessel on the high seas.¹¹⁴

Interestingly, the UNFSA also provides that in any high seas area covered by an RFMO, a

¹¹⁰ Article 18.3(h).

¹¹¹ Kidd (n5) at p34.

¹¹² Article 19.2.

¹¹³ Article 20.2.

¹¹⁴ Article 20.6.

state party member or participant may board and inspect fishing vessels flying the flag of another state party to the UNFSA (whether or not they are a member of an RFMO for the purpose of ensuring compliance with conservation and management measures for straddling or migratory stocks established by that RFMO¹¹⁵). Where an inspecting state investigates, it is required to communicate the results to the flag state, which is in turn required to either fulfill its enforcement obligations (if the evidence so warrants), or to authorise the inspecting state to take enforcement action as specified by the flag state.¹¹⁶ If there are clear grounds for believing that a vessel which has been boarded and inspected has committed a serious violation, and if the flag state either fails to respond or take action, the inspectors may remain on board and secure evidence, and may require the Master to assist with the investigation and bring the vessel without delay to the nearest port.¹¹⁷ Serious violations are specified, and include fishing without a license, failing to maintain accurate catch records, fishing in closed areas or closed seasons, directed fishing for a stock subject to a moratorium prohibiting fishing, using prohibited fishing gear etc.¹¹⁸ Duly authorised inspectors have the authority to inspect the vessel, its license, gear, equipment, records, facilities, fish and fish products. These inspectors also have the authority to inspect any relevant documents that are necessary to verify compliance with the relevant conservation and management measures.¹¹⁹

Article 23 deals with port state measures, and provides that a port state may inspect documents, fishing gear and catch on vessels voluntarily in its ports.¹²⁰

In light of the above, it is evident that UNCLOS as elaborated upon by the UNFSA provides a complex regulatory regime that could, if implemented effectively, be applied to the management and protection of highly migratory and straddling shark species;¹²¹ albeit in circumstances where shark conservation and management measures have been agreed within an RFMO (although no RFMO has been established specifically for the purposes of addressing shark conservation and management). This would extend to powers to board and inspect other state party vessels in any high seas areas covered by the RFMO where such

¹¹⁵ Article 21.

¹¹⁶ Article 21.7.

¹¹⁷ Article 21.8.

¹¹⁸ Article 21.11.

¹¹⁹ Article 22.2.

¹²⁰ Article 23.

¹²¹ As Lack & Sant explain, because UNCLOS identifies oceanic sharks as highly migratory species (in Annexure I), the UNFSA applies directly to management of these species. See Lack & Sant (n15) at pp2-3.

vessels are reasonably suspected of having violated the applicable conservation and management measures, and to inspect fishing vessels voluntarily in its ports. However, the successful exercising of such powers is dependent on the capacity (and commitment) of coastal and flag states to effectively enforce the conservation and management measures agreed to.

2.1.5 FAO Code of Conduct

Adopted in 1995, the Code of Conduct for Responsible fisheries (FAO Code of Conduct) has been described as ‘[t]he main overarching framework for the work of the FAO on sustainable fisheries management’.¹²² Although a voluntary instrument, the FAO Code of Conduct provides principles and standards applicable to the conservation, management and development of all fisheries.

Article 7 of the FAO Code of Conduct recognises that long-term sustainable use of fisheries resources is the overriding objective of conservation and management. To this end, states and RFMOs are encouraged to adopt appropriate measures (based on best scientific evidence available) which are designed to maintain or restore stocks at levels capable of producing MSY (as qualified by relevant environmental and economic factors). These measures seek to ensure that excess fishing capacity is avoided and that exploitation of stocks remains at economically viable levels, that economic conditions under which fishing industries operate promote responsible fishing, that biodiversity and ecosystems are conserved and endangered species protected, that depleted stocks are allowed to recover or are actively restored, that adverse environmental impacts on the resources are assessed and corrected, and that environmentally safe and cost-effective fishing gear and techniques are developed (to minimise pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species and impacts on associated or dependent species).¹²³

Since its adoption, complementary voluntary instruments have been elaborated within the overall framework of the FAO Code of Conduct to strengthen its implementation on particular issues. These include four international plans of action (IPOAs) (including one on

¹²² CMS (n40) at p7.

¹²³ FAO Code of Conduct for Responsible Fisheries, article 7, available online at: <ftp://ftp.fao.org/docrep/fao/005/v9878e/v9878e00.pdf> (first accessed 1 December 2011).

sharks).¹²⁴ A number of technical guidelines have also been elaborated, including guidelines on the conservation and management of sharks and on the ecosystems approach to fisheries (EAF).

It was agreed at the 27th session of the FAO's Committee on Fisheries (COFI)¹²⁵ in 2007 that, while progress had been made in implementing the FAO Code of Conduct, more needed to be done by members (individually and collectively). The main constraints identified were institutional, human resource and financial weakness, while suggested solutions included more training, more means, and improved and stronger institutions.¹²⁶

(a) IPOA-Sharks

Following increased concern about the expanding catches of sharks and the potential negative impacts of these on shark populations, a proposal was made at the 22nd session of COFI in 2007 that the FAO should organise an expert consultation to develop guidelines leading to a Plan of Action aimed at improving the conservation and management of sharks.¹²⁷

The outcome of this process was the development of the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks). The IPOA-Sharks¹²⁸ is a voluntary legal instrument that was 'elaborated within the framework of the Code of Conduct for Responsible Fisheries'.¹²⁹ It applies to fishing in respect of all chondrichthyans, including sharks.¹³⁰ In terms of its guiding principles, states that contribute to fishing mortality on a shark species or stock should participate in its management. Furthermore, management and conservation strategies should aim to keep mortality within sustainable levels by applying the precautionary approach, while recognising that sharks should be managed on a sustainable basis as they are a traditional source of food, employment and income in some areas. The stated objective of IPOA-Sharks is therefore to ensure the conservation and management of

¹²⁴ The other IPOAs are: IPOA: Reducing Incidental Catch of Seabirds in Longline Fisheries; IPOA: Management of Fishing Capacity; and IPOA: Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing.

¹²⁵ CMS (n40).

¹²⁶ Ibid, p8.

¹²⁷ FAO (n3) at p2.

¹²⁸ Ibid, at p1.

¹²⁹ s10. Article 2(d) of the FAO Code of Conduct for Responsible Fisheries states that one of the objective of the Code is to provide guidance which may be used where appropriate in the formulation and implementation of international agreements and other legal instruments, both binding and voluntary.

¹³⁰ s11.

sharks, as well as their long-term sustainable use.¹³¹ States were encouraged to have their first shark plans prepared by the COFI session in 2001.¹³²

The implementation section of IPOA-Sharks stipulates that the plan applies to states where sharks are caught in their territorial water or EEZ by their own or foreign fishing vessels, as well as to states whose vessels catch sharks on the high seas.¹³³ It provides that states ‘should’ adopt national plans of action for the conservation and management of shark stocks (NPOA-Sharks) if their vessels conduct directed shark fisheries or catch sharks in regular non-directed fisheries. The IPOA-Sharks suggests that the experience of RFMOs should be taken into account when developing NPOA-Sharks.¹³⁴

Importantly, each state is responsible for developing, implementing and monitoring its own national shark plan of action (NPOA-Sharks). As Techera and Klein point out, the IPOA-Sharks serves as a regulatory framework at a regional and national level,¹³⁵ and that the provisions of the IPOA-Sharks ‘draw together many existing mechanisms on both 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’.¹³⁶ The IPOA-Sharks provides that states should carry out regular shark stock status assessments, which should be reported as part of any NPOA-Sharks and should also be made available to relevant RFMOs and to the FAO. The plan emphasizes the importance of sharing shark stock assessments, especially where trans-boundary, straddling, highly migratory and high seas shark stocks are concerned.¹³⁷

The IPOA-Sharks stipulates that NPOA-Sharks 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 use;
- identify and provide special attention to vulnerable or threatened shark stocks;

¹³¹ s16.

¹³² s20.

¹³³ s17.

¹³⁴ s18.

¹³⁵ Techera & Klein (n22) at p75.

¹³⁶ Ibid.

¹³⁷ s21.

- improve and develop frameworks for consultation involving stakeholders in research, management and educational initiatives (within and between States);
- minimise unutilized incidental catches of sharks;
- contribute to protection of biodiversity and ecosystem structure and function;
- minimise waste and discards from shark catches in accordance with Article VII.2.2(g) of the Code of Conduct;
- encourage full use of dead sharks;
- facilitate improved species-specific catch and landings data and monitoring of shark catches; and
- facilitate the identification and reporting of species-specific biological and trade data.¹³⁸

These aims are laudable, as although they are grounded on the notion of sustainable use of sharks as a fishing resource, consumptive use is balanced by the concepts of biological sustainability and rational long-term use, as well as the aims of protecting vulnerable or threatened shark stocks, biodiversity and ecosystems.

The IPOA-Sharks stresses that states should strive to cooperate through RFMOs with a view to ensuring the sustainability of shark stocks, including the development of regional or sub-regional Shark Plans;¹³⁹ and encourages states to strive to ensure effective coordination and management of trans-boundary, straddling, highly migratory and high seas shark stocks where these are exploited by two or more states.¹⁴⁰ States are also encouraged to collaborate in research, training and the production of information and educational material.¹⁴¹ Appendix A provides suggested content for NPOA-Sharks, while Annexure B provides suggested content for shark assessment reports (SAR). The IPOA-Sharks indicates that the FAO will support states in preparing and implementing NPOA-Sharks,¹⁴² and will also report biennially through COFI on the state of progress of the IPOA-Sharks.¹⁴³

In 2005, an expert consultation was held to review the effectiveness of the IPOA-Sharks.¹⁴⁴ It was noted in the report that while some countries had made excellent progress in implementing NPOA-Sharks, ‘[i]n sad contrast, the majority of countries have not made progress in implementing effective fisheries management and conservation of their

¹³⁸ s22.

¹³⁹ s25.

¹⁴⁰ s26.

¹⁴¹ s27.

¹⁴² s29.

¹⁴³ s31.

¹⁴⁴ FAO ‘Report of the FAO expert consultation on implementation of the FAO international plan of action for the conservation and management of sharks’ (2005) FAO Fisheries Report No.795. Available online at <ftp://ftp.fao.org/docrep/fao/009/a0523e/a0523e00.pdf> (first accessed 1 December 2011).

elasmobranch resources'.¹⁴⁵ Concern was expressed that the plan was 'slipping off' relevant agendas despite shark-related problems intensifying over time. Failure to implement the plan at national levels was attributed in part to confusion over whether it was a declaration of intention to act or whether it required a programme of operational actions. Other identified concerns included a lack of guides (to facilitate species identification), population biology information, funds and human resources, as well as competition with other management imperatives, lack of data on fishing effort and catch (to inform management decision-making), lack of capacity in developing nations, and low political priority. The existence of tensions between national departments responsible for conservation and resource management respectively was also noted.¹⁴⁶ It was recognised that there was a need to address lack of sustained funding, that countries with skills and expertise should share with those without, that opportunities to involve industry participation and support was required (e.g. through product levies),¹⁴⁷ and that the support and involvement of RFMOs should be sought. The voluntary nature of the shark plan was identified as a major concern. Notwithstanding this, no agreement on a mandatory approach was reached, and a suggestion that an arrangement along the lines of the FAO Compliance Agreement be developed received little support.¹⁴⁸

The 27th session of COFI in 2007 concurred that despite efforts to implement IPOA-Sharks by some countries, further intensive work was required. Information available at the time indicated that of the 31 top shark fishing nations (which accounted for 90 percent of world elasmobranch catches), only ten (i.e. about one-third) had developed NPOA-Sharks.¹⁴⁹

In December 2008, the FAO reported to the CMS on progress made with regard to implementation of the IPOA-Sharks,¹⁵⁰ and emphasized its commitment to encourage and facilitate the implementation of the plan. It had prepared and published field guides to assist in monitoring and management of shark fisheries, and had provided technical assistance to a number of member states and regions in the development of sustainable fisheries

¹⁴⁵ Ibid, at p5.

¹⁴⁶ Ibid, p8.

¹⁴⁷ Ibid, p9.

¹⁴⁸ Ibid, pv.

¹⁴⁹ FAO 'Report of the technical workshop on the status, limitations and opportunities for improving the monitoring of shark fisheries and trade' (2008) at p1. Available online at:

<http://www.fao.org/docrep/012/i1121e/i1121e.pdf> (accessed 5 December 2011).

¹⁵⁰ CMS (n40).

management plans for shark fisheries. Reference was also made to efforts to strengthen the implementation of other instruments that indirectly affected shark fisheries (including the FAO's Code of Conduct and Guidelines on Ecosystems Approach to Fisheries) and to the organisation of a technical consultation to draft a legally binding instrument on port state measures to deter IUU fishing. The FAO reported that one-third of the top shark fishing nations (accounting for 90% of world elasmobranch catches) had developed NPOA-Sharks (a positive spin on the same figures reported at the 27th session of COFI in 2007). It was noted further in the report that, while there were major concerns about the conservation, species diversity and potential local extinction of shark species, the quality of reported catch statistics in many countries was 'insufficient to confidently monitor or measure changes in taxonomic composition of the catch at an appropriate level'.¹⁵¹ Effective monitoring was being complicated by IUU fishing,¹⁵² and reference was made to recent study in which it was suggested that the estimated shark biomass in the fin trade could be three to four times higher than the equivalent shark catch figures reported in the FAO fisheries statistics database.¹⁵³ This discrepancy was attributed to factors such as unrecorded shark landings, shark catches being recorded in generic categories, and a suspicion that shark finning and carcass disposal at sea was ongoing.¹⁵⁴

The FAO reported to the CMS that, in response to these problems with the quality of catch statistics for sharks, a technical workshop¹⁵⁵ was held with a view to improving shark monitoring (which it recognised could make a 'considerable contribution to the successful implementation of national, regional and international efforts to shark conservation and sustainable use').¹⁵⁶ The FAO reported that while some level of success had been achieved, a considerable amount of work was still required to improve the conservation status of sharks. Based on its experience with international fishery instruments relevant to the conservation and management of sharks, the FAO suggested that a number of factors were inhibiting progress. These factors included a low priority placed on shark fisheries in many countries (which in turn influenced allocation of fisheries management resources), and the poor quality of fisheries information and data on sharks (as a consequence of the lack of resources devoted

¹⁵¹ Ibid, p12.

¹⁵² Ibid.

¹⁵³ Ibid, referring to Clark *et al* 'Global estimates of shark catches using trade records from commercial markets' (2006) 9 *Ecology Letters* 1115.

¹⁵⁴ CMS (n40) p12.

¹⁵⁵ FAO (n149).

¹⁵⁶ CMS (n40) p13.

to fisheries work in general). It was recognised that there was a need to: sensitize managers and stakeholders on the importance of basic information on shark catches (as a basis for shark management); adopt an ecosystems approach to fisheries interacting with sharks (in order to reduce indirect shark mortality); and improve capacity building and funding.¹⁵⁷ It was reported further that the FAO technical workshop had made a number of recommendations for developing and implementing NPOA-Sharks. Improving information on the main shark species being caught was identified as a priority, and it was recommended that this information should have reference to the number of sharks taken, the socio-economic importance of shark fishing to fishing communities, and conservation concerns (e.g. sharks listed under CITES). The technical workshop also recommended improved communication between agencies responsible for fisheries management and conservation (to ensure that NPOA-Sharks reflected the actual fishery situation and were not impractical to implement in the context of fishery management), sensitisation of key stakeholders on the importance of shark management, stakeholder participation, and realistic, achievable plans (which were to include a step-by-step approach to implementation).¹⁵⁸ Lack and Sant support the FAO technical workshop's recommendation of a more pragmatic, step-by-step approach, arguing that this 'suggests that the focus should be on achieving the principles of the IPOA-Sharks rather than relying solely on the development of an NPOA-Sharks to deliver the outcomes sought',¹⁵⁹ and that taking 'small, incremental steps is preferable to having an NPOA that is ambitious but not implemented or an NPOA that simply restates the IPOA-Sharks, without genuine political will for implementation'.¹⁶⁰

In 2011, the 29th session of the COFI¹⁶¹ reported a marked improvement in the conduct of assessments for the IPOA-sharks, and suggested that this reflected the heightened international attention being given to shark management and related issues. 65 percent of member states had indicated that they had shark plans in place, while 86 percent of the remaining members had advised that they intended to develop a shark plan. Unfortunately, no assessment was available to show whether or not the established NPOA-Sharks were being

¹⁵⁷ Ibid, p14.

¹⁵⁸ Ibid, p13.

¹⁵⁹ Lack M & Sant G 'The future of sharks: a review of action and inaction' (2011) *TRAFFIC International* at p17. Available online at <http://www.traffic.org/fish/> (last accessed 8 February 2014).

¹⁶⁰ Ibid.

¹⁶¹ FAO 'Progress in the Implementation of the Code of Conduct for Responsible Fisheries and Related Instruments, including International Plans of Action' (2011) COFI/2011/2 at p7. Available online at: <http://www.fao.org/docrep/meeting/021/k9050E.pdf> (accessed 5 December 2011).

successfully implemented. In response to this shortcoming, the Committee requested the FAO to prepare a report (for presentation at the 30th session of COFI) on the extent of the implementation of the IPOA-Sharks and the challenges being faced by members in implementing the instrument.¹⁶²

This report was completed in 2012,¹⁶³ and provided a summary of information on the top 26 shark-fishing nations¹⁶⁴ and on regional shark measures taken by RFMOs.¹⁶⁵ The report noted that global reported shark catches showed a significant decline of 20 percent during the period 2000 to 2009 (from approximately 900,000 tons to approximately 750,000 tons). Of 143 countries that had submitted shark catch reports to the FAO, 48 had adopted NPOA-Sharks. 18 of the top 26 shark-fishing nations (i.e. two-thirds) responsible for 84 percent of global shark catches were reported to have adopted NPOA-Sharks. This indicated a significant improvement in uptake from the one-third reported in 2007. It was noted further that the extent of reporting on the status of shark fisheries varied considerably, and that most NPOA-Sharks made reference to applicable legislation but did not all explain how the plan was integrated with existing legal and fisheries management systems. A few states (e.g. New Zealand and the United States of America (USA)) had integrated their NPOA-Sharks into a larger policy statement on shark conservation and management, whilst top shark-fishing states were noted to have included measurable targets and timeframes in their NPOA-Sharks (enabling a review of the implementation of these NPOA-Sharks). Some states and member organisations (e.g. Australia, New Zealand, Malaysia and the European Union) had also set up competent review bodies to oversee progress made with regard to the conservation and management of sharks.¹⁶⁶

While some progress seems to have been made in implementing the IPOA-Sharks, there continues to be doubt regarding the extent to which states have implemented the content of their respective NPOA-Sharks.¹⁶⁷ Lack and Sant published a review of global progress in

¹⁶² FAO 'Report of the 29th session of the Committee on Fisheries' (2011) at paragraph 8j. Available online at: <http://www.fao.org/docrep/014/i2281e/i2281e00.pdf> (accessed 6 December 2011).

¹⁶³ Fischer *J et al* (n41) at p3.

¹⁶⁴ *Ibid*, p9. The 26 countries (beginning with the country with the largest globally reported catches) were: Indonesia, India, Spain, Taiwan, Argentina, Mexico, USA, Pakistan, Malaysia, Japan, France, Thailand, Brazil, Sri Lanka, New Zealand, Portugal, Nigeria, Iran, UK, Republic of Korea, Canada, Peru, Yemen, Australia, Senegal and Venezuela.

¹⁶⁵ Namely the CCAMLR, CCSBT, GFCM, IATTC, ICCAT, IOTC, NAFO, NEAFC, SEAFO and WCPFC.

¹⁶⁶ Fischer *et al* (n41) at p64.

¹⁶⁷ Lack & Sant (n159) at p16.

managing shark fisheries by assessing the nature and extent of shark management measures put in place by the top 20 shark-catching states (based on shark data provided to the FAO). The authors reported that none of the main elements of the IPOA-Sharks had been properly implemented, and complained that they were unable to confirm the status of shark management arrangements.¹⁶⁸ As a consequence, the authors were unable to support a contention that NPOA-Sharks have delivered effective shark management. A central weakness with the IPOA-Sharks is that it does not create binding rights and obligations on states, while the required interaction at international, regional and national levels arguably contributes to the problem of fragmented governance.¹⁶⁹

(b) *FAO Guidelines on Ecosystems Approach to Fisheries*

The FAO Technical Guidelines on Ecosystems Approach to Fisheries (EAF Guidelines)¹⁷⁰ are a complementary instrument that, according to the FAO, is becoming the main reference framework for its work on fisheries, and provides a systematic approach to implementing the principles contained in the FAO Code of Conduct.¹⁷¹ The importance of EAF was recognised by 47 states that participated in the 2011 Reykjavík Conference on Responsible Fisheries in the Marine Ecosystem,¹⁷² while the Plan of Implementation of the World Summit for Sustainable Development in Johannesburg in 2002 encouraged the application of EAF by 2010 with a view to ensuring sustainable development of the world's oceans.¹⁷³ The EAF Guidelines were published by the FAO in 2003, and are intended to provide guidance on how to translate the policy goals and aspirations of sustainable development into operational objectives, indicators and performance measures.

While the EAF Guidelines are a voluntary instrument, they reflect a merging of ecosystems and fisheries management approaches that emphasizes the need to maintain or improve ecosystem health and productivity in order to maintain or increase fisheries production for

¹⁶⁸ Ibid.

¹⁶⁹ Techera & Klein (n22) at p75.

¹⁷⁰ FAO 'Fisheries Management 2 - The ecosystems approach to fisheries' (2003) FAO Technical Guidelines for Responsible Fisheries 4 Suppl.2, available online at:

<ftp://ftp.fao.org/docrep/fao/005/y4470e/y4470e00.pdf> (accessed 26 January 2014).

¹⁷¹ CMS (n40) at p8.

¹⁷² Ibid. See also Morishita (n71) at p19.

¹⁷³ Plan of Implementation of the World Summit on Sustainable Development, Johannesburg Declaration on Sustainable Development, 2002, Part IV s30d. Available online at: <http://www.un-documents.net/jburgpln.htm> (accessed 25 January 2014).

both present and future generations.¹⁷⁴ The guidelines include the recognition that responsible fisheries management requires the consideration of the broader impact of fisheries on the ecosystem as a whole.¹⁷⁵ The FAO expresses the view that the EAF Guidelines are important to the conservation and management of sharks given the overfished status of many shark species and their generally low resilience to fishing mortality, the importance of shark mortality in mixed-species fisheries and as by-catch, and the expected food web effects of removing sharks from the role of top predators in their ecosystem.¹⁷⁶

2.1.6 Port State Measures Agreement

Adopted in 2009, the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (Port State Measures Agreement)¹⁷⁷ seeks to combat IUU fishing. It aims to prevent illegally caught fish from passing through ports and into international markets. Foreign vessels are required to give advance notice and request permission prior to entering ports, where regular inspections are to take place. Vessels found with illegally caught fish can be denied use of the port and/or its services. Given that IUU fishing is one of the primary threats to vulnerable shark species, successful implementation of the Port State Measures Agreement has the potential to improve efforts to conserve and manage sharks.¹⁷⁸

2.1.7 RFMOs

As mentioned in paragraph 2.1.4 above, the UNFSA requires coastal states and states whose nationals fish on the high seas to cooperate directly or through RFMOs to ensure effective conservation and management of straddling and highly migratory fish stocks (including the shark species and families listed in Annexure I of UNCLOS).¹⁷⁹ The provisions of international law relating to ‘harvested species’ and ‘associated or dependent species’ apply to sharks as they are taken through targeted fishing and as by-catch species in fisheries under the jurisdiction of coastal states and on the high seas. Consequently, international law provisions relating to shark conservation and management by individual states and by

¹⁷⁴ FAO (n170) at p11.

¹⁷⁵ Ibid, p13.

¹⁷⁶ CMS (n40) at p9.

¹⁷⁷ Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, 2009, available online at: http://www.fao.org/fileadmin/user_upload/legal/docs/2_037t-e.pdf (accessed 26 January 2014).

¹⁷⁸ Fischer (n41) at p4.

¹⁷⁹ Article 8.1.

RFMOs are applicable:

[t]o various extents, RFMOs ... have obligations under their conventions to manage sharks. These obligations arise because the convention specifically includes some shark species in the management mandate and/or requires the RFMO to ensure the sustainability of non-target or dependent species.¹⁸⁰

RFMOs are responsible for the management of multinational fisheries in international waters, and are supported by other regional fisheries bodies which provide scientific assessment and management advice (including advice on sharks).¹⁸¹ Kidd points out that the effectiveness of the UNFSA is dependent upon the creation and effective operation of RFMOs.¹⁸² In effect, the regulation of fisheries and implementation of recommendations is left to RFMOs and individual fishing nations, and as of 2007 'all of the major shark-fishing nations and entities, except for Yemen, were members of at least one RFMO'.¹⁸³

While coastal and fishing states are required to act individually and through RFMOs to manage shark species, a lack of commitment has resulted in few effective and dedicated measures to ensure the conservation of shark species.¹⁸⁴ For the most part, the constituting conventions (or agreements) for RFMOs predate the adoption of principles and requirements by UNCLOS, the UNFSA and the FAO Code of Conduct. As a consequence, the precautionary and ecosystem approaches were not originally embedded in these constituting conventions or in the RFMOs created thereunder. Many RFMOs were established to address the needs of fisheries for the most valuable bony fish (cod, flatfish, billfish and tuna), and no RFMOs have been established specifically for sharks.¹⁸⁵ While existing RFMOs have begun focusing on shark management needs through the collection of species-specific fisheries data, 'no RFMO has to date adopted a regional Shark plan in accordance with FAO's ... IPOA-Sharks'.¹⁸⁶ In addition, no clear catch limits have been set for pelagic sharks. Notwithstanding this, all RFMOs have recognised the obligation to introduce mitigation measures to minimise the adverse impacts on shark species, while many parties at COP15 (CITES) suggested that RFMOs were the most appropriate fora in which to deal with shark

¹⁸⁰ Lack & Sant (n15) at p3.

¹⁸¹ These regional fisheries bodies include, for example, the International Council for the Exploration of the Sea (for the Northeast Atlantic) and the Secretariat of the Pacific Community (for the South Pacific).

¹⁸² Kidd (n5) at p32.

¹⁸³ Camhi *et al* (n2) at p32.

¹⁸⁴ Lack & Sant (n15) at p4.

¹⁸⁵ Camhi *et al* (n2) at p32. See also Techera & Klein (n22) at p75.

¹⁸⁶ Camhi *et al* (n2) at p32.

conservation and management (although this view has been criticised due to the perceived poor performance of RFMOs).¹⁸⁷

The first significant step taken by an RFMO in international shark conservation and management was the adoption in November 2006 of a new conservation measure (CM 32-18) by the Commission for the Conservation of Marine Living Resources (the Commission) established under the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR).¹⁸⁸ In terms of this measure, directed commercial fishing for sharks in the Convention Area was prohibited (pending scientific investigation and reporting on the potential impacts of this fishing activity), while sharks caught as accidental by-catch were to be released alive (as far as possible).¹⁸⁹ While this conservation measure is consistent with the precautionary approach and the CCAMLR's objective of conserving Antarctic marine living resources, it has been criticised for not adopting controls on shark finning in respect of by-catch,¹⁹⁰ and for failing to place a limit on shark by-catch (a gap that resulted in unlimited quantities of sharks caught as by-catch being retained).¹⁹¹ Noting that CM 32-18 was silent on the issue of shark finning, the USA introduced a proposal to amend the conservation measure to require that all sharks caught within the Convention Area and which could not be released alive be landed with their fins naturally attached.¹⁹² Unfortunately, consensus was not reached and the proposal failed.

Shark finning has been addressed to a certain extent by a number of other RFMOs. The International Commission for the Conservation of Atlantic Tunas (ICCAT)¹⁹³ pioneered this

¹⁸⁷ Humane Society International 'Shark conservation – policy and recommendations to the Australian government' 2010 at p13. Available online at:

http://www.hsi.org.au/editor/assets/conservation_prg/Shark%20Conservation%20Policy_revised2010.pdf (last accessed 8 February 2014). The Humane Society International concede that RFMOs should deal with the by-catch of sharks, but believe this should not be to the exclusion of other action under CITES.

¹⁸⁸ Available online at: http://www.ccamlr.org/pu/e/e_pubs/bd/pt1.pdf (first accessed 16 January 2012). The CCAMLR was established under the Antarctic Treaty (1959), article IX(f), available online at http://www.ats.aq/documents/keydocs/vol_1/vol1_2_AT_Antarctic_Treaty_e.pdf (accessed 26 February 2012).

¹⁸⁹ Conservation Measure 32-18(2006) on the conservation of sharks in accordance with Article IX(f) of the CCAMLR. The Commission was established in terms of Article VII of the Convention for the Conservation of Marine Living Resources. While the Convention does not refer specifically to sharks, its terms are sufficiently broad to include sharks in its conservation and management mandate. Available online at: http://www.ccamlr.org/pu/e/e_pubs/bd/pt1.pdf (accessed 16 January 2012).

¹⁹⁰ Lack & Sant (n15) at p8.

¹⁹¹ Camhi *et al* (n2), p34

¹⁹² <http://www.ccamlr.org/en/system/files/e-cc32-end-of-meeting-report.pdf> (accessed 14 January 2014).

¹⁹³ Hurry GD *et al* 'Report of the independent review: international commission for the conservation of Atlantic tuna' (2008) at p66. Available online at <http://www.iccat.int/Documents/Meetings/Docs/Comm/PLE-106->

approach by adopting a recommendation stipulating that Contracting Parties and Cooperating Non-Contracting Parties, Entities or Fishing Entities (CPCs) shall require their vessels to restrict the amount of fins onboard to no more than 5% of the weight of sharks onboard.¹⁹⁴ ICCAT formulated a number of resolutions and recommendations relating to shark conservation and management.¹⁹⁵ These resolutions relate to stock assessments of short-fin mako and blue sharks, as well as requirements that CPCs should provide catch and fishing effort data (on short-fin mako, blue and porbeagle sharks), encourage live releases, promote full utilisation, and voluntarily agree not to increase effort (on short-fin mako, blue and porbeagle sharks) pending a determination of sustainable harvest levels.¹⁹⁶ Other RFMOs took similar action over the following years,¹⁹⁷ and followed ICCAT's lead by adopting 'virtually identical resolutions mandating data collection, finning bans, full utilisation, and encouraging live release and implementation of the IPOA-Sharks'.¹⁹⁸

Despite these positive developments, RFMOs have been criticised for adopting few binding measures for sharks beyond finning restrictions, for failing to implement the resolutions and recommendations relating to shark conservation and management,¹⁹⁹ and for failing to establish catch limits for pelagic sharks.²⁰⁰ For example, a 2008 independent panel review of ICCAT queried the effective implementation of these measures due to the lack of reporting data on shark catch combined with ineffective monitoring, and suggested that this could inhibit the effective management of shark fisheries and by-catch.²⁰¹ The panel expressed the view that 'the conclusion could be drawn that some parties to ICCAT hold in contempt the resolutions and recommendations in relation to the management of sharks and shark by-catch

[ENG.pdf](#) (accessed 26 January 2012). ICCAT is the management body responsible for Atlantic Bluefin, a fishery that catches 350 species of pelagic and coastal sharks through targeted fisheries and as by-catch.

¹⁹⁴ ICCAT Resolution 04-10: Recommendation by ICCAT concerning the conservation of sharks caught in association with fisheries managed by ICCAT (entered into force 13 June 2005) at p85. Available online at: http://www.iccat.es/Documents/Recs/ACT_COMP_2011_ENG.pdf (first accessed 26 January 2012).

¹⁹⁵ ICCAT 'Compendium management recommendations and resolutions adopted by ICCAT for the conservation of Atlantic tunas and tuna-like species' (2011) at pp83-87. Available online at: http://www.iccat.es/Documents/Recs/ACT_COMP_2011_ENG.pdf (first accessed 26 January 2012).

¹⁹⁶ Hurry GD *et al* (n193) at p66.

¹⁹⁷ Including the Northern Atlantic Fisheries Organisation (NAFO), the General Fisheries Commission for the Mediterranean (GFCM), the Indian Ocean Tuna Commission (IOTC), the Inter-American Tropical Tuna Commission (IATTC), the Western and Central Pacific Fisheries Commission (WCPFC), the Southeast Atlantic Fisheries Organization (SEAFO), and the Northeast Atlantic Fisheries Commission (NEAFC).

¹⁹⁸ Camhi *et al* (n2) at p34.

¹⁹⁹ Lack & Sant (n15) at p9.

²⁰⁰ *Ibid*, p34.

²⁰¹ Hurry GD *et al* (n193) at p66.

and the provision of related data'.²⁰² In a report of the IUCN Shark Specialist Group (SSG), Camhi *et al* also expressed concern over the implementation of existing RFMO resolutions and recommendations relating to sharks, and suggested that one of the shortcomings was that few of the required actions were mandatory.²⁰³ The authors point out that while most RFMOs have effective finning bans, other recommendations (for example regarding live release, research on gear selectivity and nursery habitat) are couched in weak exhortative language (such as 'where possible', 'are encouraged to', and 'to the extent practical'), and that no enforcement mechanisms or sanctions have been established to encourage compliance. Citing Gilman, Camhi *et al* suggest that while gear modifications and improved fishing practices could reduce the incidental catch of pelagic sharks, these measures would only be implemented when 'the incentive to avoid sharks is greater than the incentive to retain them'.²⁰⁴ The authors emphasise the importance of reducing shark fishing mortality if impacts on IUCN Red List status species (such as hammerhead and silky sharks) are to be reduced, and express concern that IUU fishing of managed shark species continues to increase in some areas.²⁰⁵ The authors also report that compliance with RFMO resolutions and recommendations continues to be low, and that there have been 'increasing reports of finning violations and illegal and unauthorised shark fishing, including incidents in protected waters'.²⁰⁶ RFMOs have also been criticised for not listening to scientific advice. An example of this was the failure to implement recommendations to prevent targeted fishing of porbeagle sharks in the North Atlantic, and a subsequent failure to prohibit landings of these catches. Another example was the setting of an international quota for the thorny skate (a world first for an elasmobranch) by the Northern Atlantic Fisheries Organisation (NAFO), but at levels higher than recommended by its own scientists. In 2008, the Northeast Atlantic Fisheries Commission (NEAFC) adopted a ban on targeted fishing for spiny dogfish without addressing by-catch.²⁰⁷

As mentioned above, RFMOs have introduced finning restrictions. By 2009, nine RFMOs had adopted finning 'bans' through a fin-to-carcass ratio system where fins are not to exceed 5% of the dressed carcass weight. However, Camhi *et al* point out that this measure could be

²⁰² Ibid.

²⁰³ Camhi *et al* (n2) at p32.

²⁰⁴ Ibid.

²⁰⁵ Ibid.

²⁰⁶ Ibid, p34, citing Lack and Sant (n8).

²⁰⁷ Ibid, p34.

improved by requiring that sharks be landed with their fins naturally attached, as this enhances shark identification and enables landing records and trade products to be species-specific. This view is consistent with a policy recommendation²⁰⁸ adopted at the 4th IUCN World Conservation Congress, 2008, that urged states with shark fisheries to require that sharks be landed with their fins naturally attached at the point of first landing (while allowing partial detachment to permit efficient storage). Camhi *et al* express the view that it is difficult to gauge the effectiveness of existing finning bans due to monitoring and enforcement difficulties.²⁰⁹ The authors acknowledge that seizures for ratio violations have occurred in domestic and international waters, but argue that while:

... properly enforced finning bans may serve as a means to curb shark mortality (due primarily to limitations on vessel hold capacity), full utilisation of sharks is by no means a panacea. These are still indirect management tools focused largely on waste reduction, and cannot ensure healthy shark populations, especially when they contain enforcement loopholes. Recovery of threatened pelagic shark species and sustainable use of others ... will require the establishment and enforcement of catch limits to cap, reduce or minimise shark mortality until better species specific data and robust population assessments are available as a basis for management.²¹⁰

In summary, RFMOs have made some progress in implementing measures aimed at shark conservation and management. However, significant concerns remain regarding the effective implementation and enforcement of these measures by CPCs. As a consequence, data on shark fisheries catch and effort remains poor, a problem compounded by no catch limits having been set for targeted and by-catch shark species. While finning ‘bans’ have been introduced by most RFMOs, these do not include a requirement for sharks to be landed with their fins naturally attached (resulting in difficulties in species and product identification). Techera and Klein point out that while RFMOs have considered shark regulation within the context of by-catch, ‘difficulties associated with these measures include limited species coverage, non-binding obligations, lack of clarity on finning practices and prohibiting targeting of fishing operations against sharks but not addressing bycatch issues’.²¹¹ The authors express the view that RFMOs add to the problem of fragmentation due to ‘gaps and

²⁰⁸ IUCN ‘Global policy against shark finning’ (2008) Policy Recommendation 4114. Available online at: http://intranet.iucn.org/webfiles/doc/IUCNPolicy/Resolutions/2008_WCC_4/English/REC/rec_4_114_global_policy_against_shark_finning.pdf (accessed 14 January 2014).

²⁰⁹ Camhi *et al* (n2) at p35.

²¹⁰ Ibid.

²¹¹ Techera & Klein (n22) at p75.

inconsistencies across the different organisations in the steps they are each taking in relation to shark management'.²¹²

2.2 Conservation of wildlife and biodiversity

Independently of the development of an international legal regime for fisheries management, various other regulatory regimes evolved over time relating to conservation of wildlife and biodiversity. The two main international treaties that create mechanisms to protect certain endangered or threatened species at the inter-state level are the Convention on International Trade in Endangered Species of Wild Fauna and Flora and the Convention on Migratory Species; while the Convention on Biological Diversity seeks to conserve biological diversity and promote sustainable, fair and equitable use of its benefits.

2.2.1 CITES

(a) General

The Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973 (CITES), came into force in 1975. 179 states were parties to the Convention by 2013.²¹³ CITES seeks to regulate trade in animal and plant products derived from species that are, or are likely to become, threatened with extinction as a result of international trade. It provides a legal framework to monitor and control the international trade in such species, and is regarded as 'one of the most effective agreements in regulating natural resource use'.²¹⁴ CITES provides a mechanism for state parties to control and even prohibit international trade in threatened or endangered species. Notwithstanding this, tension between conservation and trade interests exists within CITES, in particular where species with high commercial value are concerned.²¹⁵ This tension can be seen in the various attempts made to list shark species under CITES, especially where the meat or fins for these species have high economic value.

Listing in Appendix I of CITES is reserved for all species threatened with extinction which are, or may be, affected by trade. CITES requires that trade in such listed species be subject to particularly strict regulation (in order not to further endanger their survival) and must be

²¹² Ibid.

²¹³ CITES 'List of Contracting Parties'. Available online at: <http://www.cites.org/eng/disc/parties/chronolo.php> (accessed 15 Dec 2013).

²¹⁴ Camhi *et al* (n2) at p37, citing Fowler and Cavanagh 2005.

²¹⁵ Techera & Klein (n22) at p74.

authorised only in exceptional circumstances.²¹⁶ International trade in these species or their body parts²¹⁷ is essentially banned²¹⁸ in the absence of import and export permits. Even where a state party enters a reservation against the listing of a species in Appendix I, trade in that species must still be consistent with Appendix II requirements.²¹⁹

Listing in Appendix II of CITES is reserved for species which could become endangered if not subjected to strict regulation. Where necessary, non-endangered species may also be regulated to avoid trade in potentially endangered species (for example by enabling CITES to monitor species that closely resemble or inhabit the same environment as a listed species). Only an export permit from the country of origin is required, which must be presented to the management authority of the country of import. While an Appendix II listing does not prohibit trade in that species, 'trade ... is closely monitored and allowed only after exporting countries provide evidence that such trade is not detrimental to populations of the species in the wild'.²²⁰ It has been pointed out that listing in Appendix II is intended to enable the tracking of trade in listed species.²²¹

Appendix III listings do not require a vote of the state parties, and enforcement is voluntary i.e. an individual state opts to list a species in Appendix III. These species are those which any party identifies as being subject to regulation within its jurisdiction with a view to preventing or restricting exploitation, and where co-operation of other parties is required in the control of the trade. Export permits must be presented upon importation only if the species is exported from a party that recognises the Appendix III restriction. No further restrictions are imposed on parties who do not agree to enforce it.²²² It has been suggested that an Appendix III listing is a way to alert other state parties to a species of concern and to open up the possibility of cooperation in the control of trade in terms of Article II(3) of

²¹⁶ Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973 (in force 1975), convention text available online at: <http://www.cites.org/eng/disc/text.php#III> (accessed 28 January 2012). See article II (1).

²¹⁷ Techera & Klein (n22) at p74.

²¹⁸ Camhi *et al* (n2) at p37

²¹⁹ Techera & Klein (n22) at p74, referring to CITES 'Effects of Reservations' April 19-30 1983 Conference 4.25.

²²⁰ Camhi *et al* (n2) at p37.

²²¹ Techera & Klein (n22) at p74.

²²² Martin JB 'Price of fame: cites regulation and efforts towards international protection of the great white shark' (2007) *George Washington International Law Review* at p208. Available online at: <http://www.animallaw.info/articles/arus39geowashintlrev199.htm> (last accessed 8 February 2014).

CITES.²²³

All CITES parties are obliged to implement the provisions of CITES relating to listed species, unless a party has taken out a reservation in respect of that species. International trade of listed species or their products (including landings from the high seas) is only allowed when accompanied by a non-detrimental finding (NDF) and declaration to the effect that the species was taken legally. According to Camhi *et al*, NDFs define whether the export is detrimental to the survival of the species by focusing on the status of the population, and by assessing whether the trade is promoting an undesirable level of exploitation. The authors are of the view that even a listing under Appendix II provides an important incentive to sustainably manage the listed species, ‘as effective management by all countries exploiting a stock is one of the prerequisites for permitting international trade to take place’.²²⁴ A failure to manage the whole stock would result in an inability to dispose of the species on international markets.

(b) CITES and sharks

In 1994, having noted with concern an increase in the international trade in parts and derivatives of sharks for fins, skins and meat and that the levels of exploitation were in some cases unsustainable and potentially detrimental to the long-term survival of certain shark species, CITES adopted a Resolution²²⁵ urging its parties to submit all available information concerning the trade and biological status of sharks (including historical catch and trade data) to the Secretariat. The FAO and other international fisheries management organisations were requested to establish programmes to further collect and assemble the necessary biological and trade data on shark species. This Resolution ‘turned out to be a watershed event in global shark management’.²²⁶ In addition to stimulating the collection of data on shark catches and trade,²²⁷ it resulted in a report prepared by the IUCN’s Shark Specialist Group (SSG) entitled

²²³ Techera & Klein (n22) at p74.

²²⁴ Camhi *et al* (n2) at p37.

²²⁵ CITES Resolution Conf. 9.17-1. Available at <http://www.cites.org/eng/res/all/09/E09-17.pdf> (accessed 29 January 2012).

²²⁶ Camhi *et al* (n2) at p37.

²²⁷ Research initiatives commenced in 1997 when CITES parties voted to work with the FAO and RFMOs to improve identification methods, increase accuracy of landing records, and monitor the number of sharks taken as by-catch in non-targeted fisheries and sold in international trade. Parties with shark fisheries were encouraged to track information regarding growth rate, life span, sexual maturity and fecundity. They were also encouraged to keep records on distribution of sharks by age and sex, seasonal movements and interactions between populations. Parties were also encouraged to adopt protective regulations at national level and to establish international/regional bodies to co-ordinate management of shark fisheries throughout the geographic range of

Sharks and their Relatives,²²⁸ served as a catalyst for the development of the FAO's International Plan of Action-Sharks (IPOA-Sharks), and laid the basis for the listing of some shark species under CITES.²²⁹

On the face of it, many sharks (and in particular pelagic sharks) are good candidates for listing under CITES given their threatened status and the fact that international trade (e.g. for shark fins and meat) drives over-exploitation.²³⁰ Whale and basking sharks were listed in Appendix II of CITES in 2002, followed by the listing of the great white shark in 2004. Importantly, however, a number of states filed reservations to these listings: Japan, Norway and Palau filed a reservation to the listing of the great white shark; Iceland, Japan, Norway and South Korea filed a reservation to the listing of the basking shark; and Iceland, Indonesia, Japan, Norway, Palau and South Korea filed a reservation to the listing of the whale shark.²³¹

Proposals were submitted to list a further eight shark species in Appendix II at the 2010 CITES conference in Doha. These species included porbeagle,²³² white-tipped, scalloped hammerhead, great hammerhead, smooth hammerhead, spiny dogfish, sandbar and dusky sharks.²³³ The porbeagle shark²³⁴ was listed at the conference, but lost its protection on the last day of the conference following a re-vote pushed by Asian countries, with Japan playing

species subject to exploitation, in order to ensure that international trade was not detrimental to the long-term survival of shark populations. See <http://www.fao.org/DOCREP/006/X3170E/x3170e03.htm> (first accessed 20 May 2011). See also the Shark Specialist Group website at <http://www.iucnssg.org/index.php/ipoas.192> (accessed 20 May 2011).

²²⁸ Camhi *et al* (n2) at p37.

²²⁹ Ibid.

²³⁰ Ibid.

²³¹ Techera & Klein (n22) at p74.

²³² See CITES 'Proposal to include the Porbeagle (*Lamna nasus*) in Appendix II CITES' proposed by the Federal Republic of Germany (on behalf of the member states of the European Community), <http://www.cites.org/common/com/ac/20/E20-inf-06.pdf> (accessed 7 March 2011). The German proposal asserted that an Appendix II listing in accordance with Article II, paragraph 2(a) met the criteria in Resolution Conf. 9.24(Rev.) criterion B(i) and (ii) of Annex 2a (AC19 Doc. 9) for the two North Atlantic Stocks, which it argued had experienced significant and ongoing population declines, and because all of the fins and some of the meat entered international trade. The German proposal argued that the lack of information regarding the Southern Ocean population, where meat and fins from porbeagle by-catch enters international trade, qualified the porbeagle for listing under paragraph 2(b) of Article II, namely species which must be subject to regulation in order that trade in specimens of certain species included in Appendix II in accordance with Article II, paragraph 2(a), may be brought under control. It was argued in the proposal that listing would ... help to ensure that exploitation of this threatened species is regulated and monitored, that international trade is not detrimental to the survival of the species, and would contribute to the implementation of the IPOA-Sharks.

²³³ Techera & Klein (n22) at p74.

²³⁴ The porbeagle shark is valued for its meat (in Europe) and fins. Sonja Fordham, Deputy Chairperson of the IUCN Shark Specialist Group is quoted as stating that fisheries statistics and stock assessments show marked declines or complete population collapse in all areas where the data is available. See <http://www.goalover.org/cites-votes-to-protect-porbeagle-shark/6265> (accessed 7 March 2011).

a leading role in opposing the listings. Not a single marine species gained increased protection at the meeting, and as a consequence trade in these high commercial value sharks could continue without CITES permits.²³⁵

Despite being widely criticised for its failure to provide protection for the proposed shark species, the Secretary-General for CITES defended the Doha conference against being described as a disaster. He explained that it was an important step in the long journey for the conservation of commercial marine species, and that the simple majority reached in respect of three shark proposals was a strong signal to the international community on the urgent need to stop overexploitation. He viewed the rejection of more listings as reflecting a ‘transitional process to adjust existing regimes managing depleted fishery stocks towards something more robust and coherent’,²³⁶ and said that the rejection was a valuable lesson that ‘the solutions to conserve the earth's rich heritage of biological diversity cannot be incompatible with the sustainable development of local communities and national economies’.²³⁷

In 2013, further proposals to list sharks and manta rays in the Appendices to CITES were discussed in Committee I of CITES COP16 in Bangkok, and were voted upon on 14 March 2013. In order for the proposals to succeed, two-thirds of the then 177 CITES member states had to vote in favour.²³⁸ In contrast to the Doha conference three years earlier, proposals to list oceanic whitetip,²³⁹ scalloped hammerhead²⁴⁰ and porbeagle sharks²⁴¹ in Appendix II were passed by secret ballot. Despite reported ‘intense lobbying’ by Japan, an attempt by

²³⁵ UNEP ‘CITES Conference ends without new sharks in its net’. Available online at: <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=617&ArticleID=6515&l=en> (accessed on 10 January 2011).

²³⁶ Ibid.

²³⁷ Ibid.

²³⁸ PEW Charitable Trusts ‘Unprecedented Conservation Win for Sharks and Manta Rays at CITES’ 13 March 2013 press release. Available online at: <http://www.pewenvironment.org/news-room/press-releases/unprecedented-conservation-win-for-sharks-and-manta-rays-at-cites-85899459290/> (accessed 21 November 2013).

²³⁹ CITES COP16 Prop42. The proposal included an annotation to delay the entry into effect by 18 months to resolve ‘technical and administrative’ issues. Available online at: <http://www.cites.org/eng/cop/16/prop/E-CoP16-Prop-42.pdf> (last accessed on 28 January 2014).

²⁴⁰ CITES COP16 Prop.43. The proposal included the great hammerhead shark and smooth hammerhead shark as look-alike species, as well as an annotation to delay the entry into effect by 18 months to resolve ‘technical and administrative’ issues. Available online at: <http://www.cites.org/eng/cop/16/prop/E-CoP16-Prop-43.pdf> (last accessed on 28 January 2014).

²⁴¹ CITES COP16 Prop.44. The proposal included an annotation to delay the entry into effect by 18 months to resolve ‘technical and administrative’ issues. Available online at: <http://www.cites.org/eng/cop/16/prop/E-CoP16-Prop-44.pdf> (last accessed on 28 January 2014).

motion to re-open the shark debate after the proposals had been accepted was defeated by secret ballot.²⁴²

The effect of the listings under CITES is that action will be required to control the international trade in these species, and in particular trade in their fins. Despite its limited scope, the vote was described by the director of environmental policy at The Pew Charitable Trusts as a victory indicating that the ‘global community will collaborate to address the plight of some of the most highly vulnerable species of shark and manta ray species. Today was the most significant day for the ocean in the 40-year history of CITES’.²⁴³ The director also expressed optimism that ‘the gridlock created by those who oppose such controls has been broken’.²⁴⁴ While confident that ‘the tide is now turning for shark conservation – with governments listening to the science and acting in the interest of species conservation and sustainability’,²⁴⁵ the manager of Pew’s global shark conservation campaign cautioned that this commitment to shark conservation needs will need to be fully implemented and enforced, and indicated that this should be done in conjunction with national and regional efforts to ‘ensure a sustainable future for these and other top oceanic predators, all of which are critical for the health of the wider marine ecosystem’.²⁴⁶

On a sobering note, Japan has since announced that it will be entering a reservation. The director of Sea Shepherd Hong Kong (a direct-action environmental organisation) commented that this reservation was entered because Japan takes the view that CITES should not be managing sea species, and that it (along with Singapore) had taken the view that management of fisheries should be left to RFMOs. Sea Shepherd also links the Japanese approach to its industrial-scale shark harvesting industry, which extracts Chondroitin Sulfate from shark cartilage for use in pharmaceuticals as a relief for joint pain.²⁴⁷

The Japanese approach contrasts with the Chinese response. China did not enter a reservation despite being opposed to the shark listings, and is reported to have announced that although it

²⁴² Annamiticus ‘CITES COP16 Round Up and Commentary’ 22 March 2013. Available online at <http://annamiticus.com/2013/03/22/cites-cop16-round-up-and-commentary/> (accessed 21 November 2013).

²⁴³ PEW Charitable Trusts (n236).

²⁴⁴ Ibid.

²⁴⁵ Ibid.

²⁴⁶ Ibid.

²⁴⁷ Sea Shepherd ‘The Japanese Industrialisation of Ocean Destruction’, commentary by Gary Stokes, Director, Sea Shepherd Hong Kong, 18 June 2013. Available online at: <http://www.seashepherd.org/commentary-and-editorials/2013/06/18/the-japanese-industrialization-of-ocean-destruction-609> (accessed 21 November 2013).

had reservations regarding implementation, it would apply CITES rules to these shark species ‘in the spirit of international cooperation under CITES, with full respect for the decisions adopted at COP16’.²⁴⁸

While CITES has played an important role in ensuring that international trade in listed shark species is sustainable and not detrimental to the survival of the species,²⁴⁹ its application is limited to sharks impacted upon by international trade. CITES’s potential to provide protection to sharks traded internationally is, however, hamstrung by political wrangling amongst powerful interest groups who have stakes in the high-value shark trade, and is undermined by the ability of individual nations to enter reservations against the listing of particular species. While the listing of additional shark species at COP16 was a significant step in shark conservation, the number of shark species listed by CITES remains few. Nevertheless, listing sharks under CITES can benefit the listed species through the trade controls that accrue to those species, and can complement fisheries management measures. However, those opposed to listing sharks under CITES maintain that the full responsibility for international shark management lies with the FAO and regional fisheries management organisations (RFMOs). Ironically, ‘[s]eldom, if ever, ... do the States opposing listing sharks under CITES champion concrete shark management measures at RFMOs’.²⁵⁰

2.2.2 Convention on Migratory Species

(a) General

The Convention on Migratory Species (CMS) was adopted in 1979,²⁵¹ and entered into force in 1983. It takes a similar approach to CITES in listing species to enhance conservation and management. Migratory species can be listed in Appendix I of the CMS if they are in danger of extinction throughout all or a significant portion of their range.²⁵² Once listed, ‘range states’ are prohibited from taking the species. ‘Range states’ 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.²⁵³ All range states, regardless of whether or not they are members of the CMS, are encouraged to enter into

²⁴⁸ Ibid.

²⁴⁹ Camhi *et al* (n2) at p37.

²⁵⁰ Ibid.

²⁵¹ Convention on Migratory Species, 1979 (in force 1983), convention text available online at: http://www.cms.int/documents/convtxt/cms_convtxt.htm (accessed 30 January 2012).

²⁵² CMS article I para 1(e); article II, para 2.

²⁵³ CMS, article I(1)(h)

agreements to conserve and manage Appendix II species that would benefit from international cooperation.²⁵⁴ A listing in Appendix I of the CMS has significant coverage, provided that states with vessels engaging in the activity are parties to the CMS and have not entered reservations to the listing.²⁵⁵

(b) CMS and sharks

Camhi *et al* are of the view that the CMS is an appropriate instrument to help address the conservation needs of pelagic sharks because they are all ‘highly migratory, and 75% of the 80 migratory species evaluated are listed as Threatened or Near Threatened on the IUCN Red List’.²⁵⁶ Great white and basking sharks are afforded Appendix I and II protection under the CMS.²⁵⁷ In addition, the spiny dogfish, porbeagle, short-fin mako, long-fin mako and whale sharks are afforded Appendix II protection under the CMS.²⁵⁸ As a consequence, range states are required to enter into agreements with each other for the benefit of the species listed in Appendix II.²⁵⁹

In 2005, parties to the CMS adopted a recommendation²⁶⁰ requesting all parties to strengthen measures to protect migratory shark species against threatening processes such as habitat destruction, IUU fishing and fisheries by-catch. The recommendation included a clause encouraging COFI to promote greater uptake of the IPOA-Sharks as a matter of urgency, and also called for range states of migratory sharks listed on Appendix I and II to develop a global migratory sharks conservation instrument (in accordance with Articles III and V of the CMS). Amongst other things, the recommendation suggested that states could consider developing subsidiary regional and/or species specific conservation management plans to the instrument, identify effective mechanisms to mitigate threats such as by-catch, entanglement in marine debris, and IUU fishing, and identify viable alternatives to consumptive uses of

²⁵⁴ Camhi *et al* (n2) at p36.

²⁵⁵ Techera & Klein (n22) at p74.

²⁵⁶ Camhi *et al* (n2) at p36.

²⁵⁷ CMS Appendices I and II. Available online at: http://www.cms.int/documents/appendix/appendices_e.pdf (accessed 3 January 2014).

²⁵⁸ Ibid. It is relevant to note that in terms of article IV(2) of the CMS, migratory species may be listed in both Appendix I and II.

²⁵⁹ Techera & Klein (n22) at p74. See also CMS text, articles IV(3) and V.

²⁶⁰ UNEP/CMS/Recommendation 8.16, available online at:

http://www.cms.int/bodies/COP/cop8/documents/proceedings/pdf/eng/CP8Rec_8_16_Migratory_Sharks_E.pdf (accessed 30 January 2012). This recommendation also acknowledges obligations of the global community to conserve, protect and manage migratory sharks, and notes awareness of the vital ecosystem role played by sharks, and the significant mortality of listed sharks through a range of impacts including habitat destruction, target fisheries, IUU fishing and as fisheries by-catch.

migratory sharks (while recognising the cultural and economic importance of these species for some communities).²⁶¹

According to Camhi *et al*, in 2007 the IUCN SSG prepared a database of all migratory sharks and made recommendations on improving international cooperation in shark management under the CMS. A background paper on the conservation status of migratory sharks was published,²⁶² and the Scientific Council of the CMS determined that a further 35 sharks and rays (in addition to the three listed at the time) met the requirements for listing under the CMS.²⁶³

The year 2007 also saw the commencement of the process to develop the global instrument for migratory sharks as recommended by the CMS. This culminated in the adoption in 2010 of a non-binding Memorandum of Understanding on the Conservation of Migratory Sharks (MOU-Migratory Sharks), which commenced on 1 March 2010.²⁶⁴ The MOU-Migratory Sharks seeks to achieve and maintain a favourable conservation status for migratory sharks based on the best available scientific information, while taking into account the socio-economic and other values of these species for the people of the signatories.²⁶⁵ Importantly, the fundamental principles of the MOU-Migratory Sharks indicate that, while sharks should be managed to allow for sustainable harvesting through conservation and management measures based on best available scientific information, both an ecosystem and precautionary approach should be applied in implementing Conservation Plan measures, and that lack of scientific certainty should not be used as a reason for postponing measures to enhance the conservation status of sharks.²⁶⁶ A Conservation Plan on migratory sharks was adopted at the First Meeting of the Signatories to the CMS in September 2012.²⁶⁷ This version of the

²⁶¹ Ibid.

²⁶² CMS 'Review of migratory Chondrichthyan fishes' (2007) IUCN Species Survival Commission's Shark Specialist Group, CMS Technical Series No. 15 at p68. Available online at: http://www.cms.int/publications/TechSeries/ts15_migratory_sharks.pdf (accessed 30 January 2012).

²⁶³ Camhi *et al* (n2) at p37.

²⁶⁴ South Africa signed on 12 May 2011. See <http://www.iucnssg.org/index.php/convention-on-migratory-species> (accessed 30 January 2012).

²⁶⁵ CMS 'Memorandum of understanding on the conservation of migratory sharks' paragraph 2. Available online at: http://www.cms.int/species/sharks/MoU/Migratory_Shark_MoU_Eng.pdf (accessed 30 January 2012).

²⁶⁶ Ibid, paragraph 3.

²⁶⁷ UNEP 'Countries Agree new Plan for Global Shark Conservation' (26 September 2012) press release. Available online at: http://www.cms.int/news/PRESS/nwPR2012/09_sep/sharks_mou_pr_270912_e.pdf (accessed 3 January 2013). For a detailed explanation of the process leading to the Bonn version of the

Conservation Plan includes overall principles, and is structured to follow the five objectives set out in paragraph 12 of the MOU-Migratory Sharks. Various actions are described under each objective, together with a provision for ranking the priority of the action, specifying time-frames for implementation and designating the responsible entity. These actions elaborate upon the objectives set out in the MOU-Migratory Sharks.

The MOU-Migratory Sharks provides that the signatories should strive to adopt, implement and enforce such legal, regulatory and administrative measures as appropriate to conserve and manage migratory sharks and their habitat. To achieve this, they should endeavour (in conjunction with RFMOs) to: improve understanding of migratory shark populations through research, monitoring and information exchange; ensure that shark fisheries are sustainable; protect critical habitats, migratory corridors and critical life stages of sharks; increase public awareness of threats to sharks and their habitats; and enhance public participation and national, regional and international cooperation in shark conservation activities.²⁶⁸

Techera and Klein are of the view that while the MOU-Migratory Sharks is non-binding and has limited species coverage, it does serve to illustrate some of the measures that need to be in place to improve shark conservation and management.²⁶⁹ As with CITES, the CMS can only provide protection to listed species, and even then its effectiveness is limited by its voluntary nature. Notwithstanding this, the CMS has been successful in having its MOU-Migratory Sharks and Conservation Plan adopted. As with other international regulatory instruments that deal with aspects of shark management and conservation, the CMS cannot and does not stand alone. It clearly recognises the role to be played by various stakeholders, including the FAO (for example the CMS adopted a recommendation²⁷⁰ requesting all parties to strengthen measures to protect migratory shark species and encouraging COFI to promote greater uptake of the IPOA-Sharks as a matter of urgency) and RFMOs, as well as the need

Conservation Plan, see: CMS 'Note Prepared by the Interim Secretariat: Draft Conservation Plan' 24 July 2012, available online at:

http://www.cms.int/species/sharks/MOS_Mtgs/MoS1/mtg_docs/MOS1_Doc_9_cover_Draft_Conservation_Plan_E.pdf (accessed 26 July 2012).

²⁶⁸ CMS (n263), paragraph 12.

²⁶⁹ Techera & Klein (n22) at p75.

²⁷⁰ UNEP/CMS/Recommendation 8.16. Available online at:

http://www.cms.int/bodies/COP/cop8/documents/proceedings/pdf/eng/CP8Rec_8_16_Migratory_Sharks_E.pdf (accessed 30 January 2012). This recommendation also acknowledges obligations of the global community to conserve, protect and manage migratory sharks, and notes awareness of the vital ecosystem role played by sharks, and the significant mortality of listed sharks through a range of impacts including habitat destruction, target fisheries, IUU fishing and as fisheries by-catch.

for national legislative measures to be introduced by states. Importantly, the CMS and MOU-Migratory Sharks embrace both ecosystems and precautionary approaches to shark conservation and management, while acknowledging the socio-economic value of sharks to various peoples. Both the CMS and CITES have been described as providing ‘important tools to improve shark protection at the international legal level in focusing conservation and management efforts for the limited shark species that are recognised as threatened with extinction or are endangered’.²⁷¹

2.2.3 Convention on Biological Diversity

The Convention on Biological Diversity, 1992 (CBD)²⁷² provides a framework for the adoption of a precautionary approach to the identification of serious threats to biodiversity and the measures required to counter these threats. The CBD has been described as having a critical role to play at the international level for habitat protection, as it takes a ‘holistic ecosystem-based approach, incorporating integrated and adaptive management techniques and rigorous scientific methodologies’.²⁷³ Article 22(2) of the CBD stipulates that contracting parties shall implement the convention with respect to the marine environment consistently with the rights and obligations of states under the law of the sea. The CBD has influenced fisheries management by obliging states to protect biological diversity and resources at a national level, and ‘has had a norm-setting influence beyond imposing somewhat amorphous obligations to preserve biological diversity’.²⁷⁴ While the CBD may be criticised for the soft language used in pertinent provisions and for not establishing concrete obligations,²⁷⁵ it does emphasize the importance of the precautionary and ecosystems approaches, and could be used to support measures taken in other regulatory regimes aimed at protecting shark biodiversity and habitat.

²⁷¹ Techera & Klein (n22) at p75.

²⁷² Convention on Biological Diversity, 1992 (in force 1993), convention text available online at: <http://www.cbd.int/doc/legal/cbd-en.pdf> (accessed 28 January 2014).

²⁷³ Techera & Klein (n22) at p75.

²⁷⁴ Van Osch (n102) at p309.

²⁷⁵ Ibid.

3. REGULATION OF SHARKS IN SOUTH AFRICA

3.1 Introduction to shark conservation and management in South Africa

South Africa has one of the most diverse faunas of cartilaginous fishes in the world (of which 21.1% are endemic to Southern Africa). Most species are poorly understood and constitute stocks of relatively low biomass, with a number of species caught in ‘appreciable quantities’ in directed shark fisheries and as by-catch.²⁷⁶

Prior to 1991, shark fishing in South African waters was uncontrolled, with fishing mainly concentrated in areas to the south and west of the Cape Province.²⁷⁷ Longline fisheries have targeted sharks in South African waters since 1991, with in excess of 30 permits being issued for shark fishing in the 1990s (including pelagic and demersal species).²⁷⁸ By 2002, out of 21 vessels that had been awarded contracts, only 13 were actively fishing for sharks and catches peaked at 375 tons in 1998.²⁷⁹ A number of these permits were reportedly not used, with many having been obtained to exploit loopholes in the regulations to catch hake by longline (which had been banned in 1990).²⁸⁰

According to South Africa’s 2012 marine fisheries status report, approximately 4,000 tons per annum of sharks are caught (two thirds as by-catch).²⁸¹ Sharks are directly targeted in the demersal longline, pelagic longline, KwaZulu-Natal shark protection, commercial handline, gillnet and recreational fisheries. Sharks are also taken as by-catch in the inshore and offshore trawl, beach-seine, tuna and swordfish longline, midwater trawl, hake longline and prawn trawl fisheries.

²⁷⁶ DAFF ‘Draft South Africa’s national plan of action for the conservation and management of sharks: 2012’ at p9. Available online at: http://www.daff.gov.za/daoDev/topMenu/DRAFT_NPOA_SHARKS.pdf (last accessed 28 November 2013).

²⁷⁷ Cooper J & Ryan G ‘South African national plan of action for reducing the incidental catch of seabirds in longline fisheries’ (2002) compiled for Marine & Coastal Management, Department of Environmental Affairs & Tourism at p46. Available online at: http://www.unep-awa.org/meetings/en/mop/mop4_docs/national_reports/pdf/south_africa2008_appendix1_1.pdf (accessed 23 November 2011).

²⁷⁸ DAFF (n276) at p12, citing Crawford *et al* ‘Progress towards the development of an integrated management approach to fisheries for sharks and other condrichthyans in South African Waters’ (1993) Sea Fisheries Research Institute Task Group.

²⁷⁹ Cooper & Ryan (n277) at p46.

²⁸⁰ DAFF (n278) p12.

²⁸¹ DAFF ‘Status of the South African marine fishery resources’ at pp41-44. Available online at: http://www.nda.agric.za/daoDev/fisheries/indexpage_DOCS/STATUS%20REPORT%202012FINAL%20DRAFT.pdf (accessed 15 January 2014).

The status report indicates that species targeted by the demersal shark longline and commercial handline fisheries include smoothhound, soupfin, bronze whaler, dusky, hammerhead, cow and St Joseph sharks. Similar species are caught in the inshore and offshore trawl, with a greater quantity of demersal sharks caught as by-catch in the inshore trawl than in the demersal shark longline fishery. Soupfin and smoothhound shark trunks and fins are exported to Australia, mainly for use in the fillet trade (larger sharks have a high mercury content in their meat and are targeted for their fins only). The report indicates that the stock status of smoothhound sharks is 'optimal', while the soupfin shark is indicated as 'depleted'. Fishing pressure on both species is indicated as 'heavy'.²⁸²

Targeted pelagic sharks include the blue shark and mako shark.²⁸³ Reported catches of demersal sharks in 2010 amounted to 248 tons, with the fishery being restricted to a TAE of six vessels and prohibited from fishing north of East London.²⁸⁴ In 2011, the pelagic shark longline fishery was merged into the large pelagic longline fishery due to concerns regarding high pelagic shark catches in the developing tuna and swordfish fisheries. Pelagic shark fins are exported to Japan, mako shark meat is exported to Italy, and blue shark meat is exported to Uruguay. The report indicates that the stock status of blue sharks is 'optimal', while the mako shark is indicated as 'heavily depleted'. Fishing pressure on both species is indicated as 'heavy'.²⁸⁵

In addition to shark-directed fishing in South African waters, IUU fishing for sharks is also a cause for some concern. Ten IUU vessels have been seized in South African waters by the two inshore patrol vessels that have been operational since August 2013.²⁸⁶ In 2009, a Taiwanese-flagged fishing trawler (the *Chien Jiu 102*) was seized at Cape Town harbour after being found with 1.6 tonnes of dried shark fins on board (the captain had declared only 100kg of shark fins). In addition, only four tons of shark trunks were on board, instead of the expected 30 tons. The fins were confiscated, and the captain and crew members faced criminal charges for operating in South Africa's EEZ in violation of the terms of the fishing

²⁸² DAFF (n281) at p41.

²⁸³ Ibid.

²⁸⁴ DAFF (n276) at p12.

²⁸⁵ DAFF (n281) at p41.

²⁸⁶ defenceWeb 'Majority of DAFF fleet back at sea'. Available online at :

http://www.defenceweb.co.za/index.php?option=com_content&view=article&id=33304:majority-of-daff-fleet-back-at-sea&catid=51:Sea&Itemid=106 (accessed 24 January 2014).

permit.²⁸⁷

This section of the dissertation seeks to provide the context for the regulation of sharks in South Africa by providing a brief overview of the environmental legal framework, and is followed by a review and analysis of the various instruments and measures that directly or indirectly address shark conservation and management. As with the international regime, these instruments and measures are fragmented across both environmental conservation and fisheries management sectors.

3.2 Environmental Legal Framework

South Africa's legal system underwent a profound change after democratic elections in 1994. A new Constitution was enacted in 1996²⁸⁸ (the Constitution), which codified many aspects of the Common Law and operates as the supreme law in the country. The Constitution contains an environmental right.²⁸⁹ As Kidd points out, two kinds of environmental rights were introduced, namely the fundamental human right to 'an environment that is not harmful to a person's health or well-being'; and a so-called second generation right requiring the state to take positive steps to realise this right.²⁹⁰ The second generation right has relevance in the context of conservation and management of sharks, given that the state is obliged to protect the environment, for the benefit of present and future generations, by taking reasonable legislative and other measures to prevent pollution and ecological degradation, while also promoting conservation.²⁹¹ This could logically be extended to protect the habitats of sharks from pollution, protecting from ecological degradation the ecosystems that sharks form part of, while also requiring the state to take reasonable legislative and other measures to promote shark conservation. Critically, however, this right is qualified by the constitutional imperative to secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. This provides the context for sharks to be conserved and managed sustainably as a natural resource for the benefit of present and future generations.

²⁸⁷ Paul L 'International Trade in shark fins, & illegal, unreported, and unregulated shark fishing' (2009) Hawaii Audubon Society. Available online at: <http://www.pacfish.org/pub09/sharktrade.pdf> (accessed 23 November 2011).

²⁸⁸ Constitution of the Republic of South Africa, 1996.

²⁸⁹ Section 24.

²⁹⁰ Kidd M *Environmental Law* (2011, 2nd edition) at p22.

²⁹¹ The term 'conservation' is not defined in the South African Constitution, nor is it defined in NEMA or any of the other specific environmental management acts.

It is relevant to note that the Constitution makes provision for different levels of government (national, provincial and local) to have responsibility for various issues, with Schedule 4 to the Constitution setting out functional areas of concurrent national and provincial legislative competence, and Schedule 5 setting out functional areas of exclusive provincial legislative competence. Both schedules are divided into Parts A and B. Part A of Schedule 4 includes environmental issues which fall into concurrent national and provincial competence, but excludes marine resources (making marine resources an issue of national competence only), while Part B sets out local government matters (such as air pollution and local tourism). Part A of Schedule 5 includes environmental issues which fall into exclusive provincial competence (such as provincial planning), while Part B sets out local government matters.

In order to give effect to the environmental right contained in the Constitution, the National Environmental Management Act²⁹² (NEMA) was enacted, amongst other things, to ‘define overarching principles in terms of which sectoral-specific legislation is embedded’.²⁹³ NEMA includes a set of environmental management principles which apply throughout the Republic to the actions of all organs of state that may significantly affect the environment, and apply alongside all other appropriate and relevant considerations (including the state’s responsibility to respect, protect, promote and fulfill the social and economic rights contained in Chapter 2 of the Constitution and in particular the needs of previously disadvantaged persons).²⁹⁴ The principles serve as the general framework within which environmental management and implementation plans must be formulated.²⁹⁵ These principles also serve as guidelines which organs of state are obliged to have reference to when taking decisions concerning the protection of the environment,²⁹⁶ and guide the interpretation, administration and implementation of NEMA and any other law concerning the protection of the environment.²⁹⁷ The principles are anthropocentric in nature, requiring environmental managers to place people (as opposed to the environment or the components thereof) at the

²⁹² Act 107 of 1998 (as amended).

²⁹³ du Plessis W & Nel J ‘An evaluation of NEMA based on a generic framework for environmental framework legislation’ (2001) 8 *SALJEP* 1 at pp1-2.

²⁹⁴ Section 2(1)(a). These principles are similar to the environmental management principles finding expression in the United Nations Conference on Environment and Development’s (UNCED) 1992 Rio Declaration. Available online at <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm> (last accessed 8 February 2014).

²⁹⁵ Section 2(1)(b).

²⁹⁶ Section 2(1)(c).

²⁹⁷ Section 2(1)(e).

forefront of their concern, and state that environmental management must serve human physical, psychological, developmental, cultural and social interests equitably.²⁹⁸ Section 2 goes on to stipulate that development must be socially, environmentally and economically sustainable,²⁹⁹ and sets out a number of relevant factors that are required to be taken into account to achieve this. These factors include concepts that could help to conserve and manage sharks in South African waters (especially in light of the inherent uncertainties relating to shark population numbers, fecundity, breeding habits and migration patterns which makes sharks particularly vulnerable to overfishing), although they will need to be balanced against the constitutional qualification of ‘justifiable economic development’ in order to address past racial discrimination in the fishing industry. An example of such a trade-off can be found in the setting of a relatively high upper precautionary limit (UPCL) of 2,000 tons per annum for pelagic sharks in the tuna fishery industry, which can arguably be regarded as ‘understandable ... in the initial stage of the merge [with the shark-directed fishery] in order to allow new entrants the opportunity to improve their ability to target swordfish and tuna’.³⁰⁰

In summary, the Constitution and NEMA provide the framework within which, and mechanisms for, the management and implementation of sector-specific environmental legislation in all three spheres of government (national, provincial and local). While South African environmental laws are generally regarded as being ‘excellent laws’, the effectiveness of their enforcement has been and continues to be a concern.³⁰¹ This dissertation turns to sector-specific legislation that is relevant to the conservation and management of sharks. In doing so, an attempt is made to identify positive aspects contained in this legislative suite, while also seeking to identify shortcomings and gaps.

3.3 Marine Living Resources Act, 18 of 1998

The Marine Living Resources Act, 1998 (MLRA) was enacted to provide for the conservation of marine ecosystems, as well as to provide for long-term sustainable utilisation of marine living resources and orderly access to exploitation, utilisation and protection of certain marine living resources. It is relevant to note that since 1 April 2010 the Department

²⁹⁸ Section 2(2).

²⁹⁹ Section 2(3).

³⁰⁰ Jolly KA *et al* ‘Spatial and temporal patterns in Blue shark (*Prionace glauca*) catch in South African longline fisheries’ (2012) IOTC-2012-WPEB08-INF23 at p70. Available online at: <http://www.iotc.org/files/proceedings/2012/wpeb/IOTC-2012-WPEB08-INF23.pdf> (last accessed 8 February 2014).

³⁰¹ Kidd (n290) at p44.

of Agriculture, Forestry and Fisheries (DAFF) has been entrusted with the administration, powers and functions in respect of most of the sections contained in the MLRA.³⁰²

Glazewski points out that the MLRA and its regulations reflect the goals of, and incorporate various obligations imposed by, the FAO Code of Conduct.³⁰³ As such, the MLRA has a critically important role to play in the conservation and management of sharks in South Africa's territorial seas and EEZ. Notwithstanding this, it is relevant to note that the MLRA is designed primarily with sustainable utilisation of marine living resources (including sharks) as an object; and that it seeks to provide for the exercise of control over marine living resources in a fair and equitable manner to the benefit of all the citizens of South Africa.

Embedded within the MLRA objectives³⁰⁴ is recognition of a need to achieve optimum utilisation and ecologically sustainable development of marine living resources, and to utilise marine living resources to achieve economic growth, human resource development, capacity building, employment creation and a sound ecological balance consistent with the development objectives of the national government. These imperatives are balanced by conservation and management concepts that are similar to the environmental management principles embedded in section 2 of NEMA. For example, marine living resources are to be conserved for both present and future generations, while precautionary approaches are to be applied in the management and development of marine living resources. There is also recognition of the need to protect ecosystems as a whole (including species which are not targeted for exploitation) and to preserve marine biodiversity. These objectives and principles suggest that while the MLRA reflects prevailing international fishery principles (such as the need to achieve optimum utilisation and ecologically sustainable development of marine living resources), it also embraces the precautionary and ecosystems approaches.

The MLRA is generally applicable to shark fishing, as it applies to all persons (whether or not South Africans) and to all fishing vessels (including foreign fishing vessels) in South African waters. It also applies to fishing activities carried out by means of local fishing

³⁰² By Proc. 1 in GG 32945 of 10 February 2010, read with Proc 44 in GG 32367 of 1 July 2009. The most notable exception is the powers and functions relating to marine protected areas (s43), which powers and functions still reside with the Minister of Water and Environmental Affairs (DWAE) following their transfer from the Department of Environmental Affairs and Tourism pursuant to Proc.44.

³⁰³ Glazewski (n27) at p411.

³⁰⁴ Section 2.

vessels in waters outside South Africa's territorial sea and EEZ, including the high seas and waters under the jurisdiction of another state (extraterritorial application).³⁰⁵ No person is permitted to exercise any right granted under section 18 unless a permit has been granted by the Minister.³⁰⁶ Amongst other things, section 18 prohibits anyone from undertaking commercial fishing or operating a fish processing establishment without a right granted by the Minister.

Given that directed and by-catch commercial fisheries are responsible for most reported shark catches in South African water, the regulation of commercial fishing³⁰⁷ is an important component of the legal regime applicable to the conservation and management of sharks. The Minister is tasked with determining the TAC³⁰⁸ and TAE³⁰⁹ (or a combination of both), and is also tasked with determining the portions of the TAC or TAE to be allocated in any year to the subsistence, recreational, local commercial and foreign fishing sectors.³¹⁰ The Minister may determine the TAC or TAE applicable in a particular area or in respect of a particular species (or group of species) of fish (such as sharks), and may also determine requirements in respect of the use of particular gear, fishing methods or types of fishing vessels.³¹¹ Importantly, the Minister may determine that the TAC (or the portion allocated to a specific sector) is 'nil' - meaning that the Minister could, in appropriate circumstances, introduce an effective ban on shark fishing by setting a TAC of nil. Unfortunately, the MLRA is silent on how the Minister should determine the TAC or TAE. The MLRA does, however, empower the Minister to make regulations regarding any matter required or permitted to be prescribed in terms of the Act,³¹² and it is submitted that there is nothing to prevent the Minister from making regulations on the determination of the TAC or TAE, or to prevent the Minister from publishing the TAC or TAE in the *Gazette*. Unfortunately, no regulations have been promulgated that deal specifically with TAC or TAE in respect of shark catches, nor could

³⁰⁵ Section 3.

³⁰⁶ Section 13.

³⁰⁷ 'Commercial fishing' is defined as meaning fishing for any of the species determined by the Minister in terms of section 14 to be subject to the allowable commercial catch and/or total applied effort.

³⁰⁸ The TAC is defined as meaning 'the maximum quantity of fish of individual species or groups of species made available annually, or during such other period of time as may be prescribed, for combined recreational, subsistence, commercial and foreign fishing in terms of section 14'.

³⁰⁹ The TAE is defined as meaning 'the maximum number of fishing vessels, the type, size and engine power thereof or the fishing method applied thereby for which fishing vessel licences or permits to fish may be issued for individual species or groups of species, or the maximum number of persons on board a fishing vessel for which fishing licences or permits may be issued to fish individual species or groups of species'.

³¹⁰ Section 14(1) and (2)

³¹¹ Section 14(3).

³¹² Section 77.

any notices publishing the TAC or TAE be identified in the present research.

The Minister may also declare by notice in the *Gazette* any South African waters to be a fisheries management area for the management of species described in the notice.³¹³ This management tool could potentially be used to further protect vulnerable shark species by providing protection for, amongst other things, breeding grounds and nursery areas. The MLRA also includes management provisions empowering the Minister to suspend fishing, restrict the number of vessels fishing, or restrict the mass of fish that may be taken from a fishery where an emergency event occurs that endangers stocks of fish.³¹⁴

The MLRA prohibits, amongst other things, commercial or subsistence fishing unless a fishing right has been granted.³¹⁵ Applications must be made to the Minister, who is empowered to require that an environmental impact assessment report be submitted by an applicant for such a right. Save for determinations in respect of holders of existing rights, only South Africans may acquire or hold fishing rights. These rights may not exceed 15 years, and revert back to the state for reallocation upon termination.³¹⁶ The MLRA also includes provisions relating to subsistence fishing,³¹⁷ recreational fishing,³¹⁸ and commercial fishing.³¹⁹

Local and foreign fishing vessels must be licensed.³²⁰ Fishing on the high seas is prohibited unless a fishing vessel registered in the Republic has a high seas fishing license.³²¹ Section 42 deals with implementation of international conservation and management measures. Amongst other things, the section enables the Minister to provide and exchange information to international organisations of which it is a member (and to state parties to such organisations), and empowers the Director-General to provide information to the authorities of the flag state of any foreign fishing vessel reasonably suspected of contravening an international conservation or management measure.

³¹³ Section 15.

³¹⁴ Section 16.

³¹⁵ Section 18.

³¹⁶ Section 18(7).

³¹⁷ Section 19.

³¹⁸ Section 20. Fish caught through recreational fishing may not be sold, bartered or traded.

³¹⁹ Section 21.

³²⁰ Sections 23 and 39 respectively.

³²¹ Section 40.

The MLRA goes on to regulate marine protected areas (MPAs) for, amongst other things, the protection of a particular species and the physical features on which they depend, and to facilitate fishery management by protecting spawning stock, allowing stock recovery, enhancing stock abundance in adjacent areas, and providing pristine communities for research.³²² A number of marine protected areas (MPAs) have been declared in South African waters.³²³ Fishing for or disturbing of whale sharks without a permit is specifically prohibited in the St Lucia and Maputaland MPAs.³²⁴ The Aliwal Shoal MPA makes specific reference to sharks by including shark species in Annexure A (these species include the [great] white, Zambezi, spotted ragged-tooth, tiger and whale sharks), prohibits any person from catching, transporting or being in possession of these sharks, and prescribes a maximum penalty of R100,000 or imprisonment for up to two years should anyone contravene these provisions.³²⁵ A number of areas have also been set aside as marine reserves.³²⁶ MPAs and marine reserves potentially have a significant role to play in protecting shark breeding and pupping areas, as well as migratory routes.

Chapter 6 deals with law enforcement issues, including appointment of (and obligations in respect of) observers,³²⁷ powers of fishery control officers in³²⁸ and beyond South African waters,³²⁹ seizure³³⁰ and immobilization of vessels,³³¹ duties to co-operate with fishing

³²² Section 43.

³²³ Pondoland MPA (GN 694 of 4 June 2004: Notice declaring the Pondoland Marine Protected Area under section 43 of the Marine Living Resources Act, 18 of 1998), Table Mountain National Park MPA GN 695 of 4 June 2004: Notice declaring the Table Mountain National Park Marine Protected Area under section 43 of the Marine Living Resources Act, 18 of 1998), Bird Island Group MPA (GN 696 of 4 June 2004: Notice declaring the Bird Island Group Marine Protected Area under section 43 of the Marine Living Resources Act, 18 of 1998), Aliwal Shoal MPA (GN 697 of 4 June 2004: Notice declaring the Aliwal Shoal Marine Protected Area under section 43 of the Marine Living Resources Act, 18 of 1998), Stillbaai MPA (GNR.1108 of 17 October 2008: Regulations on the Stilbaai Marine Protected Area), Amathole MPA (GNR.730 of 16 September 2011: Declaration of Amathole Marine Protected Area in the Amathole Region read with GNR.731 of 16 September 2011: Regulations: Management of the Amathole Marine Protected Area)³²³ and Prince Edward Islands MPA (GN 252 of 5 April 2013: Regulations for the management of the Prince Edward Islands Marine Protected Area).³²³ Additional MPAs were declared in 2009 (GNR.1429 of 29 December 2000: Declaration of areas as marine protected areas), and include the Castle Rock MPA, Betty's Bay MPA, De Hoop MPA, Goukamma MPA, Robberg MPA, Sardinia Bay MPA, Dwea-Cwebe MPA, Hluleka MPA, Mkambati MPA, Trafalgar MPA, St Lucia MPA, Maputaland MPA, Langenbaan Lagoon MPA, Sixteen Mile Beach MPA, Malgas Island MPA, Jutten Island MPA, Marcus Island MPA, Helderberg MPA and Tsitsikamma MPA.

³²⁴ GNR.1429 of 29 December 2000: Declaration of areas as marine protected areas, r3(5).

³²⁵ GN 697 of 4 June 2004: Notice declaring the Aliwal Shoal Marine Protected Area under section 43 of the Marine Living Resources Act, 18 of 1998, r7(4) and 12.

³²⁶ GNR.1810 of 27 July 1990: Setting aside of areas as marine reserves.

³²⁷ Section 50.

³²⁸ Section 51.

³²⁹ Section 52.

³³⁰ Section 53.

³³¹ Section 55.

control officers,³³² and reporting duties.³³³ These provisions provide significant legal mechanisms to monitor and enforce regulations regarding shark catches in and beyond South African waters. However, wrangling over the awarding of tenders to operate and maintain South Africa's fleet of inshore and offshore fishery patrol vessels threatens to undermine these mechanisms.³³⁴

Chapter 7 deals with judicial matters, including offences and penalties, with fines of up to R5 million payable upon conviction for certain offences (e.g. a foreign fishing vessel operating without a license or in contravention thereof).³³⁵ The successful prosecution and imposition of the maximum prescribed fine on anyone convicted of an offence in relation to shark fishing would act as an important compliance incentive, but is dependent upon effective enforcement of the provisions contained in the MLRA.

(a) MLRA General Regulations

General regulations³³⁶ in terms of the MLRA (MLRA general regulations) have been published in the *Gazette*, and include provisions that are applicable to the conservation and management of sharks. It is relevant to note that, since 1 April 2010, DAFF has been entrusted with the administration, powers and functions contained in these regulations (and any amendments thereto).³³⁷ While regulations 30 and 31 deal specifically with sharks, regard must also be had to other provisions contained in the regulations in order to better

³³² Section 56.

³³³ Section 57.

³³⁴ DAFF is reported to have announced that only two out of six fishery patrol and research vessels were operational as at 23 August 2013 (both of these were inshore patrol vessels). The South African Navy had taken over management of the DAFF fleet for a year commencing 1 April 2012. Smit Amandla had been managing the fleet, but its contract with the Department of Agriculture, Forestry and Fisheries' (DAFF) had expired. On November 2011, the award of an R800 million tender to Sekunjalo Consortium was announced. In addition to being politically well-connected, a subsidiary of Sekunjalo (Premier Fishing) had fishing rights, resulting in a potential conflict of interest. The contract was subsequently cancelled due to tender irregularities. See defenceWeb 'Majority of DAFF patrol vessels not ready to patrol', available online at: http://www.defenceweb.co.za/index.php?option=com_content&view=article&id=31623:majority-of-daff-patrol-vessels-not-ready-to-patrol&catid=51:Sea&Itemid=106 (accessed 24 January 2014).

See also Public Protector 'Docked Vessels' Report No.21 of 2013/14, available online at: http://www.pprotect.org/library/investigation_report/Docked%20Vessels.pdf (accessed 9 December 2013). This report sets out the Public Protector's findings following an investigation into allegations of improper and irregular awarding of the tender to Sekunjalo by DAFF. The report made a number of findings of maladministration by DAFF, but also found that the cancellation of the Sekunjalo contract was proper. DAFF came under heavy criticism for cancelling the contract with Smit Amandla (the previous contract holder) without making provision for a suitable handover period.

³³⁵ Section 58.

³³⁶ GN R1111 of 2 September 1998: Regulations in terms of the Marine Living Resources Act, 1998 (as amended).

³³⁷ By Proc. 1 in GG 32945 of 10 February 2010.

understand the regime applicable to shark fishing in South Africa. Given that these requirements are scattered through the MLRA general regulations, an attempt is made below to extrapolate and document the provisions that are applicable to sharks, while also highlighting some of the errors and contradictions which can be found in the regulations.

Regulation 30 prohibits finning by stipulating that no person may (except on the authority of a permit) land, transport, transship, sell or dispose of any shark (or any part thereof) other than in a whole state (although a shark that has been caught may be headed or gutted).³³⁸ This is an important provision that outlaws the destructive practice of finning sharks and disposing of their carcasses at sea, although removing the heads of sharks can complicate species identification.³³⁹

Shark fishing by means of any kind of net is prohibited (unless on the authority of a permit) within a specified geographical area.³⁴⁰ In terms of sub-regulation 22(6), a recreational fishing permit holder may engage in fishing for any fish of the superclass *Pisces* listed in the permitted species list of Annexure 7, which includes several species of sharks and sets bag limits.³⁴¹ Sub-regulation 30(3)(c) prohibits the sale of any shark on the recreational list set out in Annexure 4 (except on the authority of a permit), while sub-regulation 30(3)(d) stipulates that no person may (except on the authority of a permit) fish or keep more than 10 sharks in total of the species listed on the recreational list set out in Annexure 4 (and no more than 5 of each individual species).³⁴² The reference to Annexure 4 in both sub-regulations appears to be an error, as Annexure 4 deals with traditional commercial line fish while the recreational list is set out in Annexure 7. Assuming that the correct reference is to Annexure 7, these sub-regulations provide some measure of protection to the sharks listed on the permitted species list.³⁴³ Interestingly, Annexure 7 indicates a bag limit of one for each of these species, which is at odds with the indicated total catch limit of 10 and species catch limit of 5 each.

³³⁸ r30(3)(b).

³³⁹ Da Silva C & Bürgener M 'South Africa's Demersal Shark Meat Harvest' (2007) *TRAFFIC Bulletin Vol.21 No.2*, p58. Available online at <http://www.traffic.org/bulletin-download> (last accessed 27 January 2014).

³⁴⁰ r30(3)(a). Namely within 12 nautical miles measured seaward from the high-water mark in the area bounded by a straight line (180° true bearing) drawn from the lighthouse at Cape Hangklip and a similar straight line (180° true bearing) drawn from the lighthouse at Cape St Blaize.

³⁴¹ r22(6). Sharks fall within the superclass *Pisces*, and the Permitted Species list includes leopard cat sharks (bag limit of 1), ragged tooth sharks (bag limit of 1), spotted gully sharks (bag limit of 1), striped cat shark (bag limit of 1) and swordfish (bag limit of 5).

³⁴² r30(3)(d).

³⁴³ The Annexure 7 Permitted Species list includes leopard cat sharks (bag limit of 1), ragged tooth sharks (bag limit of 1), spotted gully sharks (bag limit of 1) and striped cat shark (bag limit of 1).

Regulation 31 deals further with bag limits for recreational and subsistence fishers. Holders of recreational and subsistence permits are prohibited from fishing for or being in possession of more than 10 sharks in total of the species on the exploitable list set out in Annexure 8.³⁴⁴ However, Annexure 8 deals with cast-net fishing and makes no reference to sharks. Unless the intention of this regulation is to allow recreational subsistence fishers using cast nets to also keep sharks, the reference to this Annexure also appears to be an error. It would seem more logical that the ‘exploitable list’ referred to is the ‘permitted species list’ set out in Annexure 7 dealing with recreational fishing. If so, it would also be in conflict with the bag limit of one each indicated for the four shark species on the permitted species list. At the very least the regulations need to be amended to remove this confusion and resolve the apparent conflicts.

As mentioned in paragraph 3.1 above, sharks are directly targeted in various fisheries in South African waters. Holders of commercial traditional linefishing³⁴⁵ permits may engage in fishing for, and sell, any species of the superclass *Pisces* except fish listed on the prohibited species list set out in Annexure 4 to the MLRA general regulations.³⁴⁶ Given that sharks fall under the superclass *Pisces*, it would appear that no shark catch bag limits are applicable to holders of commercial traditional linefishing, save in respect of the shark species listed in the Annexure 4 prohibited species list. Da Silva and Bürgener comment that there are ‘no commercial catch restrictions in place with regards to any demersal shark species caught in South African waters’.³⁴⁷ Since the merging of the pelagic shark longline fishery into the tuna and swordfish fisheries in 2011, a by-catch limit (or UPCL) of 2,000 tons dressed weight has been set.³⁴⁸ This UPCL appears to form part of permit conditions within the commercial large pelagic longline fishery.³⁴⁹

³⁴⁴ r31(1) and r31(2).

³⁴⁵ The term ‘traditional linefish’ is defined in the regulations as meaning ‘linefishing for the fish species set out in Annexure 4’.

³⁴⁶ r21(11). Prohibited species include the basking shark, great white shark, leopard cat shark, ragged tooth shark, sawfish, spotted gully shark, striped cat shark, swordfish and whale shark.

³⁴⁷ Da Silva & Bürgener (n339) at p57.

³⁴⁸ DAFF (n281) at p41.

³⁴⁹ For historical and background information on the pelagic shark longline fishery, see GN 526 of 24 March 2004: Invitation to apply for commercial rights to undertake commercial fishing of large pelagics (tuna and swordfish) using a longline in terms of section 18 of the Marine Living Resources Act, 1998 and GN 103 of 30 January 2009: Invitation to apply for rights to undertake commercial fishing of large pelagic (tuna and swordfish longline). A policy statement included in the 2009 invitation indicates under the heading ‘management measures’ that the regulation of the commercial large pelagic longline fishery will be in terms of permit conditions designed to ensure the fulfilment of the purpose and objectives of this policy and South

The MLRA general regulations also deal generally with administrative issues,³⁵⁰ and elaborate upon rights of access, permits and licenses.³⁵¹ Fishing returns furnishing information as required in fishing permits must be submitted monthly. The regulations also deal with closed seasons and areas,³⁵² address fishing gear prohibitions and restrictions,³⁵³ and deal with line fishing (including general provisions relating to issuing of permits as well as restrictions relating to linefishing under a permit).³⁵⁴ No person may sell, deliver or acquire fish (or fish parts or products) unless the seller issues an invoice,³⁵⁵ and all fish landed (except for cartilaginous fish) must be in the whole state and have the head and tail intact (although they may be gutted).³⁵⁶ Sharks are included in the definition of cartilaginous fish and thus do not have to be landed in the whole state.³⁵⁷

The MLRA general regulations prohibit the dumping or discarding at sea of any fish for which a TAC, TAE or precautionary maximum catch limit has been set,³⁵⁸ and on the face of it would apply to pelagic sharks caught as by-catch in the tuna and swordfish fisheries (in

Africa's obligations in terms of the various management measures of the applicable RFMOs, including but not limited to the management of pelagic sharks as by-catch. Permit conditions are to be issued annually. The management measures include exclusion limits, such as a 12 nautical mile exclusion limit from 20° E to the southern KwaZulu-Natal (KZN) / Eastern Cape provincial border, and a 20 nautical mile exclusion limit with an addition 4 nautical mile seaward buffer area for the entire KZN province. The policy indicates that the term 'large pelagic' also refers to pelagic sharks and all fish stocks within the management jurisdiction of ICCAT, IOTC and the Commission for the Conservation of Southern Bluefin Tuna (CCSBT). In addition to setting out considerations applicable to the allocation of rights in respect of any TAE remaining after the 2005 allocation process, the policy provides for the consolidation of the tuna, swordfish and pelagic longline fisheries, and points out that, prior to 2003, the large pelagic longline fishery was conducted by Japanese and Taiwanese fleets in South African waters under bilateral licensing agreements, and that this agreement was terminated in January 2003. The policy explains further that, following an experimental longline tuna fishery, the Department of Environmental Affairs allocated long term (10 year) rights in the large pelagic (tuna and swordfish) longline fishery, but that the intended consolidation of the tuna, swordfish and longline fisheries was not achieved in the 2005 allocation process as, while the pelagic shark longline fishery was terminated on 31 December 2005, nine exemptions were granted for this fishery under the MLRA. Of these, two were not renewed and fell away. Of the seven remaining pelagic shark longline fishery exemption holders, two were awarded rights in the large pelagic longline fishery, leaving five not accommodated. In terms of the policy, these five exemption holders would be allocated rights in the new process if they applied and were not rejected on the exclusionary criteria. The policy indicates that the targeting of pelagic sharks would be terminated when rights were allocated in terms of this policy, but that pelagic shark catches would continue to be permitted within a prescribed UPCL as by-catch.

³⁵⁰ Chapter 1.

³⁵¹ Chapter 2.

³⁵² Chapter 3.

³⁵³ Chapter 4.

³⁵⁴ Part 5 of Chapter 4.

³⁵⁵ r21(4).

³⁵⁶ r21(9).

³⁵⁷ r1 defines cartilaginous fish as meaning a fish of any species of shark, ray, skate or chimaeras of the class *Chondrichthyes*.

³⁵⁸ r26.

respect of which a UPCL of 2,000 tons dressed weight of sharks has been set). A number of activities are prohibited except on the authority of a permit, including (amongst other things) selling of any fish on the recreational list set out in Annexure 4, the transshipment or transfer of fish at sea, and the export of any fish or any part or product thereof.³⁵⁹ This means that sharks caught recreationally may not be sold, and that shark fins may not be exported without a permit.

Chapter 7 of the MLRA general regulations elaborates upon requirements relating to landing, transportation, delivery, receipt, processing and marketing of fish and fish products. Commercial fishing permit holders can only land fish at designated landing points, and may only deliver fish (or fish parts or products) to persons authorised to process these fish. Chapter 8 deals with compliance control, and prohibits various fishing and related activities from a fishing vessel or vessel in a MPA.³⁶⁰ Foreign vessels granted a section 39 fishing license are required to be equipped at all times with a vessel monitoring system (VMS), while South African vessels granted fishing licenses are required, if requested by the Department, to install a VMS that is configured to report to the Sea Fisheries monitoring centre.³⁶¹ Each fishing vessels must be marked with the registration letters and numbers assigned to it,³⁶² while vessels of over 25 metres in length must also display their radio call sign.³⁶³ Masters of fishing vessels that have been granted commercial fishing permits or licenses are required to keep a bound fishing logbook and landing logbook in the prescribed format.³⁶⁴ Regulation 80 requires permitted fishing vessels of over 10 metres in length to keep various prescribed documents, including documents issued by a competent authority of the flag state of the fishing vessel and the original license or permit issued in respect of the fishing vessel. Additional requirements are prescribed for stowage of fishing gear,³⁶⁵ observers,³⁶⁶ fishery control officers,³⁶⁷ inspection procedures,³⁶⁸ and offloading and transshipment procedures.³⁶⁹ Part 1 of Chapter 9 sets out provisions relating to leaving objects and dispensing of materials

³⁵⁹ r27

³⁶⁰ r75.

³⁶¹ r76.

³⁶² r77.

³⁶³ r78.

³⁶⁴ r79.

³⁶⁵ r81.

³⁶⁶ r82.

³⁶⁷ r83.

³⁶⁸ r84.

³⁶⁹ r85.

in the sea, and includes specific requirements relating to fishing gear³⁷⁰ and waste.³⁷¹ Part 2 deals with fishing harbour regulations.³⁷² Part 3 provides that any person who contravenes or fails to comply with any provision of these regulations is guilty of an offence, and liable upon conviction to a fine not exceeding R800,000 or to imprisonment not exceeding two years.

The MLRA general regulations include a number of provisions that are directly and indirectly relevant to shark fisheries management and could, if effectively implemented, complement efforts to conserve and manage sharks. On a positive note, the regulations do include an effective prohibition against shark finning, while an UPCL has been set as a permit condition for pelagic sharks regulated as by-catch in the tuna and swordfish fisheries. However, the provisions that deal specifically with sharks contain a number of errors, contradictions and inconsistencies, and no catch limits appear to have been set for the demersal shark longline fishery. Taken as a whole, the MLRA general regulations are not very coherent or holistic in their approach to the regulation of shark fishing. As a minimum, the regulations need to be amended to remove confusion and to resolve apparent conflicts, while the process for setting TACs and TAEs should be publically transparent (this could be achieved by publishing TACs or TAEs by notice in the *Gazette* following a public participation process). A preferable alternative would be to promulgate a single shark-specific regulation that integrates and deals holistically with all aspects of shark conservation and management (including the provisions found in other sector-specific instruments and measures discussed below). It is submitted that such an approach would be desirable given the specific vulnerability of many sharks to overfishing, and should be designed to ensure that regulatory measures are based on appropriate scientific information, the precautionary approach and EAF.

(b) *Other shark-related regulations*

A notice³⁷³ was published in 2008 to regulate white shark cage diving (WSCD) in light of the white shark's vulnerability because of its slow growth rate, late age at maturity, and low reproductive capacity. The policy points out that:

[b]eing a rare top predator, the White Shark has been mythically portrayed and sensationalised in the media as a vicious man-eating killer. Its numbers have dwindled as it was targeted by zealous

³⁷⁰ r86.

³⁷¹ r87.

³⁷² r88-r95.

³⁷³ GN 723 of 4 July 2008: Policy on White Shark Cage Diving.

hunters. WSCD has contributed to a better understanding of the importance of this predator in our marine ecosystem.³⁷⁴

White shark cage diving was seen as requiring management to ensure that the cage diving operations did not interfere with the normal functioning of the species. Regulations³⁷⁵ to manage WSCD were also published. They include general prohibitions against (amongst other things) fishing, attempting to kill, disturbing and chumming for white sharks (except on the authority of a permit). Any white sharks caught or killed unintentionally must be kept in a whole state and handed over to a fishery control officer as soon as possible. White shark cage diving operations (including chumming) may be authorised under a permit issued in terms of regulation 5. Permitted areas of operation for permit holders are set out in Annexure 1. A person convicted of contravening various specified sections can be fined up to R300,000 or imprisoned for up to two years.

In 2013, emergency regulations³⁷⁶ were published prohibiting the catching of shark species in the Breede Estuary (with the exception of sharks caught under a permit for scientific research). Any incidental catches of shark must be released to the water alive. Any person convicted of failing to comply with these regulations is liable upon conviction to a fine not exceeding R500,000 or imprisonment for up to two years.

3.4 National Plan of Action - Sharks

In August 2012, DAFF published by notice in the *Gazette* an invitation³⁷⁷ for the public to comment on South Africa's draft National Plan of Action for the Conservation and Management of Sharks (draft NPOA-Sharks). Given that the IPOA-Sharks encouraged states to have an NPOA-Sharks by 2001,³⁷⁸ at the time of the invitation to comment this draft NPOA-Sharks³⁷⁹ was already some eleven years overdue. At the time of completing this dissertation, South Africa's NPOA-Sharks had still not been published in a final form.

³⁷⁴ Section 4.

³⁷⁵ GNR.724 of 4 July 2008: Regulations for the management of white shark cage diving.

³⁷⁶ GNR.105 of 15 February 2013: Regulations for fishing for Elasmobranchs (Sharks) in the estuary of the Breede River.

³⁷⁷ GN682 of 2012: Invitation to Comment on the Draft South Africa's National Plan of Action for the Conservation and Management of Sharks: 2012.

³⁷⁸ FAO (n3), section 20.

³⁷⁹ DAFF (n276).

The introduction to the draft NPOA-Sharks highlights the international concern over the global increase of shark catches, reiterates the particular vulnerability of sharks to overexploitation, and states that fishing is regarded as the single largest threat to shark populations.³⁸⁰ The draft refers to the IPOA-Sharks and its aims, and goes on to state that South Africa has a responsibility to develop a SAR and a NPOA-Sharks as ‘good practice and consistent with its role as a signatory to the FAO Code of Conduct on Responsible Fisheries’.³⁸¹ The draft plan seeks to provide information on the status of chondrichthyans in South Africa, as well as on ‘structure, mechanisms and regulatory framework related to research, management, monitoring and enforcement associated with shark fishing and trade of shark product in the South African context’.³⁸² The draft plan indicates that this information provides the ‘baseline for South Africa as required by the IPOA-Sharks in terms of a Shark Assessment Report’. This information is in turn used to ‘identify, group and prioritize issues particular to the South African chondrichthyan resources that require intervention in the form of specific actions with associated responsibilities and time frames in order to achieve these goals’.³⁸³

The vision expressed in the draft NPOA-Sharks is as follows:

[t]he effective conservation and management of sharks that occur in the South African EEZ to ensure their optimal, long-term, sustainable use for the benefit of all South Africans, including both present and future generations.

It is not clear why no reference is made to the conservation and management of sharks in South Africa’s territorial sea or on the high seas, as the IPOA-Sharks states that it applies to states where sharks are caught in the territorial water or EEZs by their own or foreign fishing vessels, as well as to states whose vessels catch sharks on the high seas (see paragraph 2.1.5(a) above). ‘Conservation’ is defined in the draft NPOA-Sharks as meaning ‘the protection, improvement, and use of natural resources according to principles that will assure their highest economic or social benefits for man and his environment now and into the future’, while ‘management’ is defined as ‘the art of taking measures affecting a resource and its exploitation with a view to achieving certain objectives, such as the maximization of the

³⁸⁰ Ibid, p8.

³⁸¹ Ibid, p8. The draft also makes reference to South Africa being a Member Party of ICCAT and the CCAMLR, and a Co-operating Non-Contracting Party of the IOTC and CCSBT.

³⁸² Ibid, p9.

³⁸³ Ibid.

production of that resource. Management includes, for example, fishery regulations such as catch quotas or closed seasons'. This vision (read with the applicable definitions) seems to place too much emphasis on the optimum utilisation of shark stocks as a fishery resource for human consumptive benefit, and could be improved by also making reference to the value of sharks as an integral part of aquatic habitats and ecosystems.

The draft NPOA-Sharks states that it recognises the need to determine and implement harvesting strategies consistent with the principles of biological sustainability, attained through scientifically-based management, and consistent with a 'precautionary approach'. The draft NPOA-Sharks defines the 'precautionary approach' as follows:

[t]he precautionary principle is that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible harm.

Despite using the term 'precautionary principle' (which implies a stronger obligation than the use of the term 'precautionary approach'), this definition appears to be unnecessarily narrow, as it suggests that the precautionary approach would only find application (as a justification for not postponing a measure to prevent environmental degradation) where there is a lack of full scientific certainty and in circumstances where there are threats of serious or irreversible harm. This truncated or 'finned' version of the precautionary approach fails to recognise that it should be applied widely to protect the environment. Principle 15 of the 1992 Rio Declaration on Environment and Development, for example, provides that, in order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities, and that where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.³⁸⁴ The definition provided in the draft NPOA-Sharks is also at odds with section 2(4)(a)(vii) of NEMA, which stipulates that sustainable development requires the consideration of all relevant factors including that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions. As discussed in paragraph 3.2 above, these principles apply broadly to the actions of all organs of state that may significantly affect the environment, and serve as guidelines which organs of state are obliged to have reference to

³⁸⁴ Rio Declaration on Environment and Development, principle 15. Available online at: <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=78&articleid=1163> (accessed 26 January 2014).

when taking decisions concerning the protection of the environment. The precautionary approach should therefore guide the actions of the state in relation to the conservation and management of sharks. Given the paucity of scientific information (including catch data and stock assessments) available in respect of many shark species, it would seem unreasonable to limit the application of the precautionary approach to situations where threats of serious or irreversible harm have been established (such threats cannot be rationally determined without such information). It would be preferable to follow the approach adopted by the CCAMLR, and either prohibit or limit shark fishing pending scientific investigation and reporting on the potential ecological impacts of shark fishing (where such impacts or the status of shark stocks are not known). This approach would be more consistent with the FAO Code of Conduct for Responsible Fisheries (from which the NPOA-Sharks partly derives), which provides that states should:

... apply the precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment. The absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures.

This definition is more compatible with the ‘risk-averse and cautious approach’ set out in NEMA, as the precautionary approach is to be applied widely to the conservation, management and exploitation of living aquatic resources (such as sharks). This approach is then reinforced by the statement that the absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures. In other words, ‘a precautionary approach to conservation and management is embraced when the status of a resource is uncertain, such as when fishery data are insufficient or unreliable’.³⁸⁵

The draft NPOA-Sharks goes on to provide basic ‘baseline information’ dealing briefly with species information, management agencies and legislation, and current management tools.³⁸⁶ It provides more detailed information on the harvesting of sharks in the various fisheries that take sharks as target species or as by-catch,³⁸⁷ and also addresses market-related issues (such as processing and exportation of shark meat and fins).³⁸⁸ This is followed by an ‘issues to

³⁸⁵ FAO (n12) at p1v.

³⁸⁶ DAFF (n276) at p10.

³⁸⁷ Ibid, pp11-18.

³⁸⁸ Ibid, p19.

action' section that also provides a tabulated list of issues³⁸⁹ that need to be addressed with general, non-specific action items, broad allocation of responsibilities and timeframes (given that the draft had not been finalized at the time of completing this dissertation, many of these time-frames have already expired). This table includes planned actions for, amongst other things: optimum utilisation of sharks caught; improving data collection; carrying out stock delineations; increasing knowledge on life histories and spatio-temporal behavior; and conducting investigations into ecosystem changes induced by shark fishing. It is unclear how optimum utilisation of sharks can be achieved in circumstances where there is still a deficiency of data on shark catch data, stocks, behavior and on the ecosystem impacts of shark fishing. While the action plan also identifies sustainable management as an issue, it describes the problem as a lack of a formal management protocol for target and joint product species, and a lack of coordination of shark fishery management. This does not clearly address the issue of investigating whether current and planned future shark fishing is ecologically sustainable. This could be particularly important where shark species targeted in South African waters are also targeted world-wide for meat and fins. Importantly, the draft NPOA-Sharks also reveals that there is a 'limited budget dedicated to the implementation of this plan',³⁹⁰ and that the action items would need to be achieved within existing budget allocations. While reference is made to the need to facilitate an application for additional funding from international agencies, the reality that no shark-specific funding has been allocated suggests a possible lack of commitment by DAFF to the effective implementation of the draft NPOA-Sharks.

The IPOA-Sharks provides that states should carry out regular shark stock status assessments, which should be reported as part of any shark plan.³⁹¹ No shark stock assessment has been reported as part of the draft NPOA-Sharks (this stands in contrast to Australia, where a comprehensive SAR³⁹² was carried out for the Australian NPOA-Sharks). While the draft NPOA-Sharks is supplemented with an Appendix I entitled 'Sharks in South Africa', the information contained in this appendix appears to be generic in nature, and is limited to quantitative data provided under the sub-headings: classification of taxa; distribution patterns;

³⁸⁹ Ibid, Table 2, pp20-29.

³⁹⁰ Ibid, p20.

³⁹¹ FAO (n3), section 21.

³⁹² Rose C *et al* 'Australian shark assessment report for the Australian national plan of action for the conservation and management of sharks', report prepared for the Commonwealth Department of Agriculture, Fisheries and Forestry – Australia. Available online at: http://www.daff.gov.au/data/assets/pdf_file/0019/681013/shark-assess-report.pdf (last accessed 24 January 2014).

habitat patterns; knowledge of the fauna; and abundance of the fauna. No specific information appears to have been provided on which shark fisheries are or may be unsustainable. This is a concern given that the draft shark plan emphasizes that:

[i]t is important to note that despite a high level of species diversity in the South African chondrichthyofauna, stock sizes remain relatively small. This low abundance is a function of the limited but diverse habitats that effectively compress the ranges of many species. Concomitant with the low abundance is a limited potential to sustain fishing pressure, and thus, these resources are vulnerable to over exploitation.³⁹³

The information fails to provide species-specific information on shark stocks, populations, range, habitat and threats (amongst other things). As a consequence the draft plan fails to provide sufficient information on shark stocks and populations that would serve as a basis for an effective management plan. The draft NPOA-Sharks could also benefit from further information on (alternatively provision for investigation into) the sustainability of shark fisheries in South Africa, with particular reference to the vulnerability of exploited shark species nationally and internationally.

Despite indicating in its introduction that the draft shark plan provides information on the structure, mechanisms and regulatory framework relating to *inter alia* enforcement associated with shark fishing and trade in South Africa, the draft shark plan provides little information on this critical issue. The draft plan does, however, include as an action item the development of a monitoring and enforcement strategy in relation to finning of pelagic sharks, identification of shark species and recreational sale of valuable sharks.³⁹⁴ It also includes as an action item the review and development of regulatory tools to address the issue of fisheries-specific permit conditions relating to sharks not being informed by overarching regulatory frameworks,³⁹⁵ but fails to take the opportunity to propose shark-specific regulations that are integrated and holistic in their approach, and based on appropriate scientific information, the precautionary approach and EAF. While the draft NPOA-Sharks provides information on regulated access by fishing vessels to shark stocks, no information is provided on the issue of illegal, unreported and unregulated (IUU) fishing within South African territorial waters or the EEZ. An assessment of the extent and potential significance of this issue would also be in order.

³⁹³ DAFF (n276) at p40.

³⁹⁴ Ibid, p28.

³⁹⁵ Ibid, p29.

In summary, while it is encouraging that DAFF has finally published a draft NPOA-Sharks, it is a concern that the plan had not been finalised and is now approximately 13 years overdue. The draft plan also seems to place too much emphasis on maximizing the economic benefits of sharks as a resource, to the detriment of environmental considerations such as species protection and preventing ecosystem impacts. Curiously, the draft plan includes a truncated version of the precautionary approach, and fails to recognise that the precautionary approach should be applied widely to protect the environment. While action items are included in the draft plan, these items are relatively vague and a number of the target dates have expired. No SAR has been undertaken by DAFF, and as a consequence has not been reported in the draft-NPOA-Sharks as required by the IPOA-Sharks. What information is provided reinforces the view that there is inadequate data on shark catches and stocks, and suggests that South African shark stocks are small in size and vulnerable to overfishing. Given that the status of shark stocks is uncertain, the draft plan should be calling for a moratorium (or at the very least a limitation) on shark fishing until a full SAR has been completed and the potential ecological impacts of shark fishing have been determined. It is also a concern that the draft plan does not adequately address enforcement of fisheries regulations or IUU fishing in South African waters, nor does it seem to identify the need to rationalise and simplify the regulatory regime applicable to shark fishing. If the above concerns are addressed and an achievable plan finalised, the NPOA-Sharks could play a pivotal role in the conservation and management of sharks in South Africa, and despite being a soft law instrument could prove to be a catalyst in the development of an improved regulatory regime for the conservation and management of sharks.

3.5 National Environmental Management: Biodiversity Act

The National Environmental Management: Biodiversity Act³⁹⁶ (Biodiversity Act) was established to provide for (amongst other things) the management and conservation of South Africa's biodiversity³⁹⁷ (within the framework of NEMA) and for the protection of species and ecosystems that warrant national protection. As such, the Biodiversity Act could reasonably be expected to play an important role in managing and conserving shark species in

³⁹⁶ Act 10 of 2004 (as amended).

³⁹⁷ The term 'biodiversity' is defined in s1 of the Biodiversity Act as meaning 'the variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and also includes diversity within species, between species, and of ecosystems'.

South Africa, as well as the ecosystems that they form part of (including non-target species). As with other new era legislation, a central objective is the sustainable use of indigenous biological resources.³⁹⁸ The Biodiversity Act seeks to give effect in South Africa to the Convention on Biological Diversity, while also making provision for co-operative governance in biodiversity management and conservation, and for the establishment of the South African National Biodiversity Institute (SANBI).

In order to fulfill the rights contained in section 24 of the Constitution, the state (through its organs that implement legislation applicable to biodiversity) is obliged to manage, conserve and sustain South Africa's biodiversity and its components and genetic resources, and to implement the Biodiversity Act to achieve the progressive realization of those rights.³⁹⁹ Importantly, the Biodiversity Act applies in the Republic, including its territorial waters, EEZ and continental shelf (as described in the Maritime Zones Act⁴⁰⁰), as well as to the Prince Edward Islands.⁴⁰¹ The Biodiversity Act also applies to human activity affecting South Africa's biological diversity and its components.⁴⁰²

Chapter 4 of the Biodiversity Act addresses threatened or protected ecosystems and species, and seeks to provide for the protection of these ecosystems and species by, amongst other things, giving effect to South Africa's international obligations under international agreements regulating international trade in endangered species. As such, the Biodiversity Act seeks to give effect to CITES, although CITES is not mentioned by name. As with CITES, protection of ecosystems and species is through a listing mechanism, whereby the Minister lists ecosystems and species that are threatened in the following categories: critically endangered,⁴⁰³ endangered,⁴⁰⁴ vulnerable⁴⁰⁵ and protected.⁴⁰⁶ Various restrictions apply to

³⁹⁸ The term 'indigenous biological resource' is defined in the Biodiversity Act as follows:

'(a) when used in relation to bioprospecting, means any indigenous biological resource as defined in section 80(2); or

(b) when used in relation to any other matter, means any resource consisting of:

(i) any living or dead animal, plant or other organism of an indigenous species;

(ii) any derivative of such animal, plant or other organism; or

(iii) any genetic material of such animal, plant or other organism'.

³⁹⁹ Section 3.

⁴⁰⁰ Act 15 of 1994.

⁴⁰¹ Section 4(a)(i).

⁴⁰² Section 4(b).

⁴⁰³ Section 52(2)(a) and s56(1)(a) respectively.

⁴⁰⁴ Section 52(2)(b) and s56(1)(b) respectively.

⁴⁰⁵ Section 52(2)(c) and s56(1)(c) respectively.

⁴⁰⁶ Section 52(2)(d) and s56(1)(d) respectively.

activities involving threatened or protected species, as well as to species to which an international agreement regulating international trade applies (such as CITES).⁴⁰⁷ Amongst other things, permits are required to carry out restricted activities involving a specimen of a listed threatened or protected species, while permits are also required to import, export, re-export or introduce from the sea, a specimen of a species listed in terms of CITES. The Minister is also empowered to identify any process or activity in a listed ecosystem as a threatening process.⁴⁰⁸ Threatening processes will in turn require environmental authorisation under section 24 of NEMA.⁴⁰⁹

In 2007, the then Minister of Environmental Affairs and Tourism published a list of critically endangered, endangered, vulnerable and protected species.⁴¹⁰ Listed in the Schedule to this Notice under the category of protected species (indigenous species of high conservation value or national importance that require national protection) was one shark species, namely the great white shark. Threatened or Protected Species Regulations⁴¹¹ were published simultaneously, and came into effect on 1 June 2007.⁴¹² Amongst other things, these regulations provided further detail on the permit system relating to restricted activities involving specimens of listed threatened or protected species.⁴¹³

In 2009, the Minister published regulations dealing with norms and standards for biodiversity management plans for species.⁴¹⁴ These regulations provide that the Minister may, by notice in the *Gazette*, issue norms and standards for the achievement of any of the objectives of this Act, including for the management and conservation of South Africa's biological diversity and its components; restriction of activities which impact on biodiversity and its components; and setting of indicators to measure compliance with those norms and standards. While no biodiversity management plans have been developed for shark species, it is conceivable that such plans may in the future be developed with the aim of ensuring the long-term survival in nature of shark species (such plans can be compiled for any indigenous or migratory species

⁴⁰⁷ Section 57.

⁴⁰⁸ Section 53(1).

⁴⁰⁹ Section 53(2).

⁴¹⁰ GNR.151 of 23 February 2007: Publication of lists of critically endangered, endangered, vulnerable and protected species.

⁴¹¹ GNR.152 of 23 February 2007: Threatened or Protected Species Regulations.

⁴¹² GNR.150 of 23 February 2007: Commencement of Threatened or Protected Species Regulations, 2007.

⁴¹³ r2.

⁴¹⁴ GNR.214 of 2 March 2009: Norms and Standards for Biodiversity Management Plans for Species.

to South Africa).⁴¹⁵ Given that a draft NPOA-sharks has already been published in South Africa, it is unclear whether biodiversity management plans will in the future be developed for threatened or vulnerable shark species.

In 2009, a National Biodiversity Framework (NBF) was published by notice in the *Gazette*.⁴¹⁶ The stated purpose of the NBF is to provide a framework to co-ordinate and align the efforts of the many organisations and individuals involved in conserving and managing South Africa's biodiversity, in support of sustainable development. One of the major pressures identified in the NBF is the over-harvesting of marine species. The NBF goes on to point out current stock assessments for many important commercial marine species are lacking.⁴¹⁷ However, no specific reference is made to sharks in the NBF.

In 2010, Convention on International Trade in Endangered Species (CITES) Regulations (CITES Regulations) were promulgated.⁴¹⁸ These regulations give internal effect to South Africa's commitments under CITES, and prohibit the export, re-export, import, introduction from the sea, transit and transshipment of specimens of species listed in the appendices to these regulations (unless done so in accordance with the provisions of CITES and these regulations).⁴¹⁹ The regulations apply (amongst other things) to all animal species listed on Appendices I, II and III thereof,⁴²⁰ which include all the species listed in Appendices I, II and III of CITES respectively.⁴²¹ These Appendices are automatically amended when amendments to the CITES Appendices enter into force, and are binding within the Republic.⁴²²

The national Minister responsible for environmental affairs is the national management authority for CITES-related activities.⁴²³ As such, the Minister is responsible for (amongst other things) granting permits and certificates in accordance with the provisions of CITES, maintaining records of international trade in specimens, coordinating national implementation and enforcement of CITES and the CITES Regulations, and co-operating with other relevant

⁴¹⁵ r3.

⁴¹⁶ GN 813 of 3 August 2009: National Biodiversity Framework.

⁴¹⁷ Section 3.4.

⁴¹⁸ GNR.173 of 5 March 2010: Convention on International Trade in Endangered Species (CITES) Regulations.

⁴¹⁹ r1(2).

⁴²⁰ r2(1).

⁴²¹ r2(2).

⁴²² r2(3).

⁴²³ r3(1).

authorities.⁴²⁴ The Minister is also the authority responsible for the issuing of permits or certificates relating to import, export and re-export of any species listed in Appendices I, II and III that are marine species,⁴²⁵ and will therefore be responsible for the shark species listed in terms of CITES before and after COP16.

The regulations provide further that the scientific authority⁴²⁶ is responsible for advising the Minister on a number of issues relating to obligations under CITES⁴²⁷ and the Biodiversity Act.⁴²⁸ The ports listed in Appendix VI are the only ports of exit and entry through which CITES listed species can be imported, exported or re-exported (the only designated harbours are Cape Town, Durban and Port Elizabeth, although airports and land ports are also designated).⁴²⁹

The export of species included in Appendices I and II require the prior grant and presentation of export permits,⁴³⁰ while the export of any specimen of species included in Appendix III requires the prior grant and presentation of export permits or certificates of origin. An export permit may only be granted if the management authority is satisfied that the specimen concerned has been legally acquired, and if (in the case of a specimen of a species listed in Appendix I or II) the scientific authority has made a non-detriment finding⁴³¹ and advised the management authority accordingly. In the case of specimens of species listed in Appendix I, the management authority may only issue an export permit if an import permit has been granted by the competent authority of the country of destination.⁴³² Requirements are also prescribed for import permits⁴³³ and re-export permits.⁴³⁴

⁴²⁴ r3(2).

⁴²⁵ r3(3)(b).

⁴²⁶ The term 'scientific authority' is defined in r1 as meaning the national scientific authority established in terms of r59 of the Threatened or Protected Species Regulations (GN R. 152 of 23 February 2007, as amended). The Minister of Environmental Affairs appoints the members, who are made up of two members to represent the [environmental] department, one member to represent each provincial department, one member to represent South African National Parks, one member to represent SANBI, one member to represent the natural history museums, and one member to represent the National Zoological Gardens.

⁴²⁷ r4(1)(a)-(g).

⁴²⁸ 4(2)(a)-(e).

⁴²⁹ r5(2).

⁴³⁰ r6(1).

⁴³¹ The term non-detriment finding is defined in r1 as meaning 'a finding by the Scientific Authority advising that a proposed export or introduction from the sea of Appendix I or II specimens will not be detrimental to the survival of the species and that a proposed import of an Appendix I specimen is not for purposes that would be detrimental to the survival of the species.'

⁴³² r6(3)(d).

⁴³³ r7.

⁴³⁴ r8.

The introduction from the sea (i.e. from the high seas)⁴³⁵ of a specimen of a species included in Appendices I and II requires the prior grant and presentation of a permit or a certificate of introduction from the sea. Such a permit or a certificate may only be granted when the scientific authority advises that the introduction of any specimen will not be detrimental to the survival of the species, and where the national management authority is satisfied that any specimen of a species listed in Appendix I is not to be used for primarily commercial purposes (conditions are also prescribed relating to live specimens).⁴³⁶

Regulation 10 deals with permits and licenses. Separate permits or certificates are required for each consignment of specimens (i.e. each permit or certificate is only valid for one consignment).⁴³⁷ Enforcement officers are required to cancel and retain used export and re-export permits or certificates issued by authorities of foreign states, as well as any corresponding import permits at the point of entry into the country.⁴³⁸ If a permit is issued in terms of these Regulations for a threatened or protected species, this permit must also include the requirements of the Threatened or Protected Species Regulations so that it forms a single integrated permit.⁴³⁹

Persons wishing to trade internationally specimens of any species listed in Appendix I must be registered with the management authority,⁴⁴⁰ and specimens must be marked or tagged in accordance with the relevant Resolutions adopted by the COP.⁴⁴¹

Various offences are outlined relating to non-compliance with these regulations, and anyone convicted of such an offence is liable to a fine of up to R5 million or imprisonment for a period not exceeding five years (or both); and, in the case of a second or subsequent conviction, to a fine not exceeding R10 million or imprisonment for a period not exceeding

⁴³⁵ The term introduction from the sea is defined in r1 as meaning 'transportation into the Republic of specimens of any species which were taken from the marine environment not under the jurisdiction of any State, including the air space above the sea and the sea-bed and subsoil beneath the sea'. This would include CITES listed sharks taken on the high seas.

⁴³⁶ r9.

⁴³⁷ r10(4).

⁴³⁸ r10(5).

⁴³⁹ r10(18).

⁴⁴⁰ r11(1).

⁴⁴¹ r11(8).

10 years (or both).⁴⁴² Repeat offenders can also be banned from ever applying for a permit to trade in CITES listed species again.⁴⁴³ The national management authority is required to coordinate the enforcement of these regulations, which are to be enforced by an enforcement officer.⁴⁴⁴

Thus while the Biodiversity Act has only listed great white sharks in its list of critically endangered, endangered, vulnerable and protected species, the CITES Regulations give domestic effect to the trade restrictions applicable to other shark species listed in Appendix I and II of CITES. The CITES Regulations are comprehensive, and provide a suitable framework for the implementation of trade restrictions relating to CITES listed species provided that they are effectively implemented and enforced. While the Biodiversity Act has the potential to be further utilised for the purposes of conserving and managing sharks (for example by developing biodiversity management plans for threatened or vulnerable shark species), its usefulness is currently limited to the great white shark and to the shark species listed in CITES Appendices I and II. Notwithstanding this, the CITES Regulations provide a comprehensive suite of regulations that can complement shark management and conservation efforts in South Africa.

3.6 KwaZulu-Natal Sharks Board Act

The KwaZulu-Natal Sharks Board Act, 5 of 2008 was enacted to provide for the establishment of the KwaZulu-Natal Sharks Board (Sharks Board). This Act repeals the Natal Sharks Board Ordinance.⁴⁴⁵ The provisions of the Act apply to the control of shark safety devices in or on the sea, sea-shore and sea-bed in KwaZulu-Natal.⁴⁴⁶ The powers, duties and functions of the Sharks Board include research into safety devices or measures necessary to safeguard bathers.⁴⁴⁷ The Sharks Board is also required to consider existing or proposed shark safety schemes to determine whether they are reasonably effective to protect bathers from shark attacks. In doing so, the Sharks Board is required to endeavor to introduce schemes that will reduce negative impact on all biodiversity and which will enhance the

⁴⁴² r16(2)(a) and (b).

⁴⁴³ r16(2)(c).

⁴⁴⁴ r18.

⁴⁴⁵ No. 10 of 1964. See s35 of the Act.

⁴⁴⁶ s2.

⁴⁴⁷ s2(a).

survival of caught sharks and other marine animals.⁴⁴⁸ The Sharks Board is mandated to undertake research on the feasibility of new and known shark safety measures, and to determine the environmental impact of shark protection schemes. In exercising its duties, the Sharks Board is required to promote biodiversity and ecological integrity by striving to avoid, mitigate and reduce any negative environmental impact, to promote the sustainability of marine life, and to endeavor to use all sharks (and other marine animals) caught and killed in the shark protection schemes for scientific research.⁴⁴⁹ Where possible, the Sharks Board is required to release all live sharks (and other marine animals),⁴⁵⁰ and to keep accurate records of all sharks and other animals caught in its shark protection schemes.⁴⁵¹

Shark protection measures (enclosures) were introduced into KwaZulu-Natal by the Durban City Council in 1907, and were largely unsuccessful due to the structures being demolished by heavy surf. Large-meshed gill nets anchored seaward of the breaker zone were introduced in Durban in 1943 following a number of shark attacks; and seven gill nets, each 130m long, were introduced in 1952. According to the Sharks Board, 552 sharks were caught in these nets during their first year of operation and ‘the desired effect was achieved, as no serious shark-inflicted injuries have occurred since at Durban’s beaches’.⁴⁵² Following a number of shark attacks south of Durban between December 1957 and Easter 1958 (and several unsuccessful shark prevention measure attempts, including depth-charging by a navy frigate), shark nets were introduced at beaches in popular holiday resort areas to the north and south of Durban in 1962. During that same year, the Natal Anti-Shark Measures Board (the precursor to the Sharks Board) was established.

The Sharks Board reports that 40 years of shark attack records confirm that shark attacks are rare, with an average of 1.2 fatalities a year along the coast from Table Bay to the Mozambique boarder. The use of shark nets is credited with significantly reducing the number of attacks that used to take place in warm, shallow waters off KwaZulu-Natal’s beaches.⁴⁵³ In recent times, shark attacks have increased along the Eastern and Western Cape

⁴⁴⁸ s2(b).

⁴⁴⁹ s2(g).

⁴⁵⁰ s2(h).

⁴⁵¹ s2(i).

⁴⁵² KwaZulu-Natal Sharks Board ‘History of protection’, available online at: <http://www.shark.co.za/HistoryOfProtection> (accessed 28 November 2013).

⁴⁵³ KwaZulu-Natal Sharks Board ‘Shark attack in South Africa today’, available online at: <http://www.shark.co.za/SASharkAttacksMore> (accessed 28 November 2013).

coastlines, and in particular at Port St. Johns and in Cape Town's False Bay, and a shark spotter programme has been introduced in the Cape in an attempt to forewarn bathers and surfers of the presence of sharks. The Sharks Board points out that, despite negative publicity, '[m]ost sharks pose little or no danger to humans who enter the sea'.⁴⁵⁴

Currently, the Sharks Board uses shark nets that are 214m long and 6m deep with a stretched mesh of 51cm. These nets are typically deployed in two parallel rows approximately 400m offshore, and in water depths of between 10m and 14m. Shark nets are supplemented by the use of drum-lines, being an anchored float from which one baited hook is suspended. The Sharks Board explains that most beaches are protected by either two nets, or one net and four drum-lines, although this varies (with Durban having seventeen 305m long nets). The Sharks Board points out that shark nets do not form a complete barrier as sharks can swim over, under and around the nets. Both nets and drum-lines 'function by reducing shark numbers in the vicinity of protected beaches, thereby lowering the probability of encounters between sharks and people at those beaches ... [and] about one third of the catch is caught on the shoreward side of the nets'.⁴⁵⁵

Statistics provided by the Sharks Board show that between 2005-2009, an average of 591 sharks were caught per annum (of which 13.3% were released alive), while 201 rays (50,8% released alive), 60 turtles (54,3% released alive) and 43 dolphins were also caught.⁴⁵⁶ Efforts to reduce mortality have been implemented by the Sharks Board in some areas. Shark nets have been removed from some less popular beaches (such as Tinley Manor, La Mercy, Ifafa and Mtwalume), while the number of nets have been reduced at individual beaches (fewer nets catch fewer sharks and other animals). Drum-lines were also introduced in an effort to reduce mortality of non-shark species, and are used in conjunction with nets. With regard to dolphins, the Sharks Board explains that the catch of six Indo-Pacific humpback dolphins per annum is of most concern due to their relatively small population size.⁴⁵⁷ In an effort to reduce the number of dolphins caught in shark nets, the Sharks Board has conducted research into the use of 'dolphin pingers' to alert these species to the presence of the nets. Research is

⁴⁵⁴ Ibid.

⁴⁵⁵ KwaZulu-Natal Sharks Board 'Shark nets, drumlines and safe swimming', available online at: <http://www.shark.co.za/SharkNetsMore> (accessed 28 November 2013).

⁴⁵⁶ KwaZulu-Natal Sharks Board 'Reducing mortalities', available online at: <http://www.shark.co.za/ReducingMortalities> (accessed 28 November 2013).

⁴⁵⁷ Ibid.

also being conducted into using an electric field waveform shark repellent cable to surround bathing areas with an electrical field. Shark nets are removed from beaches south of Durban during the annual Sardine Run as a measure aimed at preventing heavy mortalities of sharks and dolphins that feed on the sardines.

While shark nets are likely to have a significant effect on local shark populations, an annual average of 591 sharks are caught per year in KwaZulu-Natal's shark nets (compared with approximately 4,000 tons per annum of sharks caught legally in South African waters through targeted fisheries and as by-catch).⁴⁵⁸

It is interesting to note that research conducted by the Sharks Board includes research aimed at determining shark age and growth, which it views as important information that is required to understand the impact of its netting program on shark populations.⁴⁵⁹ The Sharks Board devotes a page of its website to shark conservation, and states that it shares global concerns about the conservation of sharks.⁴⁶⁰

⁴⁵⁸ DAFF (n281).

⁴⁵⁹ KwaZulu-Natal Sharks Board 'Ageing of sharks', available online at: <http://www.shark.co.za/AgeingOfSharks> (accessed 28 November 2013).

⁴⁶⁰ KwaZulu-Natal Sharks Board 'Conservation', available online at: <http://www.shark.co.za/Conservation> (accessed 28 November 2013).

4. CONCLUSION AND RECOMMENDATIONS

While sharks have been on the human menu for centuries, recent increased demand for shark products (and in particular fins and meat) combined with modern fishing techniques have resulted in unprecedented shark mortality at an international level. Given the vulnerability of many shark species to the pressure of overfishing (due in part to their slow growth and rates of reproduction) and a general lack of reliable data on shark catches and stocks, a number of shark species are at risk of being fished to the point of extinction. Because sharks perform an important role as apex predators, this in turn threatens broader ecological impacts in marine ecosystems.

Many shark species are highly migratory and comprise straddling stocks, and as a consequence international law has a critical role to play in the conservation and management of sharks. The international response has, however, been slow and piecemeal, and is characterized by vertical and horizontal fragmentation. Notwithstanding this, the evolution of a multifaceted international law regime around the concepts of sustainability, the precautionary approach and the ecosystems approach to fisheries management provides some hope for the future. International law instruments also provide the framework for the implementation of shark conservation and management measures at a national level. The international and South African regulatory regimes (both comprising of hard and soft law instruments) applicable to the conservation and management of sharks can be divided into two broad (and sometimes competing) categories, namely international fisheries management and conservation of wildlife and biodiversity.

UNCLOS is the principal framework convention for the management of the world's oceans and its resources,⁴⁶¹ and provides the international basis for the protection and sustainable development of the marine and coastal environment and its resources.⁴⁶² UNCLOS provides a highly complex and developed regime for fisheries management (including the management of shark fisheries). While UNCLOS extended coastal state jurisdiction over living marine resources into a 200 nautical mile EEZ, this had the unintended effect of transferring fishing effort into the high seas, intensified competition for stocks⁴⁶³ and resulted

⁴⁶¹ Fischer *et al* (n41) at p3.

⁴⁶² Paragraph 17.1 of Agenda 21 of the United Nations Conference on Environment and Development, 1992, available online at: <http://sustainabledevelopment.un.org/content/documents/Agenda21.pdf> (accessed 25 January 2014).

⁴⁶³ Birnie *et al* (n19) at p732.

in excessive fishing that threatens the sustainability of high seas fisheries.⁴⁶⁴ UNCLOS makes provision for the determination of TACs in order to maintain or restore fish stocks at levels that can produce MSY, a fisheries concept that continues to find favour in international hard and soft law instruments despite it being flawed as a consequence of difficulties in accurately assessing stocks, as well as its failure to take into account interactions between different species. Setting MSY for sharks is particularly difficult given the lack of information regarding shark catches and stocks, the vulnerability of many shark species to overfishing, and the important role that sharks as apex predators perform in marine ecosystems. The continued over-exploitation of fish stocks (including sharks) suggests that UNCLOS has been unsuccessful in achieving sustainable fishing.

The UNFSA was adopted to reinforce UNCLOS relating to highly migratory and straddling fish stocks, and regulates high seas fishing vessels while also requiring states with high seas fisheries to cooperate through RFMOs to ensure effective conservation and management of such species. Where shark conservation and management measures have been agreed within an RFMO, the UNFSA provides a developed regime for data collection, reporting, monitoring, inspections and enforcement that has the potential to be effective if implemented successfully by coastal and flag states (the capacity and commitment of many coastal and flag states to implement and enforce these provisions is, however, doubtful). While embracing the concept of MSY, the UNFSA also requires states to apply the precautionary approach in fisheries management by specifying that the absence of adequate scientific information should not be used as a reason for failing to take conservation and management measures. The precautionary approach is of particular importance to the conservation and management of sharks given their specific vulnerability, although the continued deterioration in number of many shark species suggests that the approach has not been widely embraced.

The FAO also plays an important role in international fisheries management, and its reports have highlighted problems with MSY and the saturation of maximum catch limits. The FAO Compliance Agreement elaborates on state flag responsibility for their vessels fishing in the high seas, while the FAO Code of Conduct provides an overarching framework for sustainable fisheries management. Although voluntary in nature, the FAO Code of Conduct has emphasised that the long-term sustainable use of fisheries resources is the overriding

⁴⁶⁴ CMS (n40) at p5.

objective of management and conservation, and encourages states and RFMOs to adopt appropriate measures (based on best scientific evidence available) to maintain or restore fish stocks at levels that are capable of sustaining MSY. The FAO Code of conduct also seeks to ensure that fishing is conducted responsibly, and that biodiversity and ecosystems are conserved and endangered species protected.

Arising out of international concern about increasing shark catches and negative impacts of these on shark stocks, the IPOA-Sharks was elaborated upon within the overall framework of the FAO Code of Conduct. Although a soft law instrument, the IPOA-Sharks serves as a regulatory framework at a regional and national level, and draws together a number of existing biodiversity conservation and sustainable fisheries management mechanisms (including the identification of vulnerable and threatened species, improved data collection, shark stock assessments, and sustainable, full utilisation of sharks).⁴⁶⁵ The IPOA-Sharks encourages states to develop NPOA-Sharks while drawing on the fisheries management experience of RFMOs. Implementation of NPOA-Sharks was initially slow, and a 2011 implementation review was unable to support a contention that NPOA-Sharks had delivered effective shark management.⁴⁶⁶ By 2012, the FAO reported a marked improvement in shark stock assessments in terms of the IPOA-Sharks, and indicated that two-thirds of the top 26 shark fishing nations had adopted NPOA-Sharks. The voluntary nature of the IPOA-Sharks has been viewed as one of its core weaknesses, and it has also been criticised for contributing to the problem of fragmented governance of sharks.⁴⁶⁷

Another important international development was the adoption in 2003 of the EAF Guidelines. While also a voluntary instrument, the EAF Guidelines have focused attention on the need to maintain or improve ecosystem health and productivity to maintain or increase fisheries on a sustainable basis, and recognises that responsible fisheries management must take into account the broader ecosystem impacts of fishing. Given that shark overfishing is likely to have broad and significant ecosystem impacts, the successful implementation of the EAF guidelines at an international, regional and national level will be a necessary component of effective shark conservation and management.

⁴⁶⁵ Techera & Klein (n22) at p75.

⁴⁶⁶ Lack & Sant (n159) at p16.

⁴⁶⁷ Techera & Klein (n22) at p75.

At a regional level, RFMOs have an important role to play in fisheries management and in ensuring effective conservation and management of migratory and straddling fish stocks (which include a number of shark species). RFMOs have made some progress in implementing measures aimed at shark conservation and management, but significant concerns remain regarding the effective implementation and enforcement of these measures by CPCs. Data on shark fisheries catch and effort remains poor, no catch limits having been set for targeted and by-catch shark species, while finning ‘bans’ require sharks to be landed with their fins naturally attached (resulting in difficulties in species and product identification). No specific RFMOs have been developed to address shark-species, and their role continues to be limited as a their provisions only apply to a small number of shark species, do not create binding obligations (measures often take the form of recommendations),⁴⁶⁸ are not always clear on finning practices or on prohibiting targeted fishing of sharks, and do not limit shark by-catch.⁴⁶⁹ RFMOs also add to the problem of fragmentation due to ‘gaps and inconsistencies across the different organisations in the steps they are each taking in relation to shark management’.⁴⁷⁰

Independently of the development of an international legal regime for fisheries management, various other regulatory regimes evolved over time relating to conservation of wildlife and biodiversity.

CITES adopted a resolution in 1994 calling upon parties, the FAO and other fisheries management organisations to submit trade and biological data on sharks. This resolution was a catalyst for the development of the IPOA-Sharks, and also laid the basis for the listing of some shark species under CITES. By 2013, six shark species (plus an additional two look-alike species) had been successfully listed on Appendices I and II. While these listings are a significant step in the evolution of the international law regime regulating sharks, the role of CITES in shark conservation and management is limited to sharks upon which international trade has negative impacts, and is undermined by individual nations entering reservations in

⁴⁶⁸ For example, ICCAT has recommended that CPCs shall prohibit retaining onboard, transshipping, landing, storing, selling or offering for sale any part or whole carcass of oceanic whitetip sharks in any fishery. See ICCAT Recommendation 10-7 (2010) available online at: <http://www.iccat.int/Documents/Recs/compendiopdf-e/2010-07-e.pdf> (accessed 28 January 2014). A similar recommendation was made in respect of hammerhead sharks. See ICCAT Recommendation 10-8 (2010) available online at: <http://www.iccat.int/Documents/Recs/compendiopdf-e/2010-08-e.pdf> (accessed 28 January 2014).

⁴⁶⁹ Techera & Klein (n22) at p75.

⁴⁷⁰ Ibid.

respect of particular listed species. While the number of shark species listed by CITES remains few, listing sharks under CITES does ensure that trade controls are imposed to protect the listed species, and in doing so CITES complements fisheries management measures.

The CMS takes a similar approach to CITES in listing threatened or endangered migratory species to enhance conservation and management, and thus migratory shark species that are threatened (or near-threatened) with extinction are good candidates for protection under the CMS. Seven shark species have been afforded protection through listings on Appendix I and II. In 2010 a non-binding MOU-Migratory Sharks was adopted, which was significant as it recognised that while sharks should be managed to allow for sustainable harvesting through conservation and management measures based on best available scientific information, both an ecosystem and precautionary approach should be applied.⁴⁷¹ As with CITES, the CMS can only provide protection to listed species (in this case highly migratory species), and even then its effectiveness is limited by its voluntary nature. Notwithstanding their limited species coverage and voluntary nature, both CITES and the CMS have helped to improve shark protection at the international legal level by focusing conservation and management efforts on shark species that are threatened with extinction or are endangered.⁴⁷²

While the international law regime relating to shark conservation and management is fragmented (resulting in, amongst other things, duplication of effort, regulatory gaps and an uncoordinated approach), there is potential for the fisheries management and conservation of wildlife sectors to be harmonised. Techera and Klein suggest that the factors favouring harmonisation include the common underlying goal of sustainability, the same state parties being involved in the governance frameworks, and the reality that the 'legal tools utilised in each regulatory environment and at every level of governance are common'.⁴⁷³ The authors express the view that while none of these tools are novel, the most effective mix of regulatory options needs to be identified. The authors also stress that the tension between conservation and fisheries regimes needs to be resolved, and point out that a number of commentators have called for the establishment of an international commission for the conservation and management of sharks. Notwithstanding the importance of harmonising the international

⁴⁷¹ CMS (n265) at paragraph 3.

⁴⁷² Techera & Klein (n22) at p75.

⁴⁷³ Ibid, p76.

approach to shark conservation and management, it is submitted that no single instrument is a panacea. Despite inherent weaknesses, a multifaceted approach to shark conservation and management is required.

In South Africa, shark fishing was largely unregulated prior to 1991. Shark fishing is currently regulated in existing fisheries, with perhaps the most significant being the pelagic shark fishery which in 2011 was merged with the tuna and swordfish fisheries (pelagic sharks are managed as by-catch, with an annual UPCL of 2,000 tons). Approximately another 2,000 tons per annum is taken in other directed fisheries and as by-catch, including in the directed demersal shark longline fishery. While South African waters enjoy a high shark biodiversity and endemism, most species are poorly understood and constitute stocks of relatively low biomass⁴⁷⁴ (making them particularly susceptible to overfishing). The ecological impacts of shark directed and by-catch fisheries are largely unknown, as is the impact of IUU fishing in South African waters.

Reflecting international trends, South Africa's legal regime relating to the conservation and management of sharks is also fragmented, with applicable regulatory and other measures found in both the fisheries management and environmental conservation sectors. In seeking to give effect to the environmental right contained in the South African Constitution, NEMA operates as South Africa's framework environmental legislation, and includes a number of environmental principles which guide the interpretation, administration and implementation of any laws concerning the protection of the environment.⁴⁷⁵ These principles serve as guidelines which organs of state are obliged to have reference to when taking decisions concerning the protection of the environment, and are aimed at achieving ecological sustainable development. These principles provide a sound basis upon which an effective national regime for the conservation and management of sharks can be developed.

The MLRA is administered and implemented by the DAFF, and serves as the main regulatory instrument for the conservation of marine ecosystems, while also providing for the long-term sustainable utilisation of marine living resources and orderly access to exploitation, utilisation and protection of certain marine living resources. A number of MPA's have been established under the MLRA, while fishing (including shark fishing) is regulated through a permitting

⁴⁷⁴ DAFF (n276) at p9.

⁴⁷⁵ Section 2(1)(e).

system. It has been pointed out in this dissertation that the MLRA general regulations include an effective prohibition against shark finning, while an UPCL has been set as a permit condition for pelagic sharks regulated as by-catch in the tuna and swordfish fisheries. However, it has also been shown that the provisions dealing specifically with sharks contain a number of errors, contradictions and inconsistencies, and that no catch limits appear to have been set for the demersal shark longline fishery. Given that the MLRA general regulations are not very coherent or holistic in their approach to the regulation of shark fishing, as a minimum these regulations should be amended to remove confusion and to resolve apparent conflicts, while the process for setting TACs and TAEs should be transparent and should facilitate public participation. A preferable alternative would be to promulgate a single shark-specific regulation that integrates and deals holistically with all aspects of shark conservation and management. Such an instrument should be designed to ensure that any regulatory measures are based on appropriate scientific information, the precautionary approach and EAF. An integrated regulatory instrument would help to rationalise and simplify the applicable legal regime (for example, the regulation could incorporate other shark-specific regulations such as those promulgated to regulate great white shark cage diving and to prohibit the targeting of shark species in the Breede Estuary).

While it is encouraging that DAFF finally published a draft NPOA-Sharks in 2012, it is a concern that the plan has not yet been finalised and is now approximately 13 years overdue. The draft plan seems to place too much emphasis on maximizing the economic benefits of sharks as a resource, to the detriment of environmental considerations such as species protection and preventing ecosystem impacts. No SAR has been conducted for inclusion in the shark plan, while the draft indicates a lack of resources and funds dedicated to the conservation and management of sharks (casting doubt on DAFF's commitment to the sustainable conservation and management of sharks). Curiously, the draft plan includes a truncated or 'finned' version of the precautionary approach. What information is included in the draft NPOA-Sharks reinforces the view that there is inadequate data on shark catches and stocks. Given that the status of South African shark stocks is uncertain, it is submitted that the draft plan should be calling for a moratorium (or at the very least a limitation) on shark fishing until a full SAR has been completed and the potential ecological impacts of shark fishing have been determined. It is also a concern that the draft plan does not identify the need to rationalise and simplify the regulatory regime applicable to shark fishing, does not

adequately address enforcement issues, and does not deal at all with IUU fishing in South African waters. These issues will need to be addressed and an achievable plan finalised if the NPOA-Sharks is to play an important role in coordinating and overseeing the evolution of shark conservation and management measures in South Africa. Once finalised, consideration could be given to incorporating the NPOA-Sharks into the shark-specific regulation proposed above (thereby giving legislative effect to this soft-law instrument).

The Biodiversity Act is administered and implemented by the Department of Environmental Affairs, and provides protection to listed species of endangered and vulnerable wildlife (including one shark species). In 2010, CITES Regulations were promulgated under the Biodiversity Act, which give internal effect to South Africa's commitments under CITES and bind South Africa in respect of the species listed in CITES. This means that the six shark species (and two look-alike species) listed in CITES are protected through the trade restrictions and measures contained in the CITES Regulations.

Sharks are also taken in shark protection schemes that have been implemented along the KwaZulu-Natal coast. These measures include shark nets and drum-lines (the latter being aimed at reducing non-shark mortality), and take on average 591 sharks per annum. While shark protection measures can impact negatively on local shark populations, their impact on shark mortality is low when compared with the impact from commercial fishing.

In conclusion, no single international or national instrument exists that can adequately provide for the conservation and management of sharks, and those that do exist are fragmented and uncoordinated. While a fragmented and uncoordinated approach risks duplication of effort and regulatory gaps, the existing mix of hard and soft law instruments does provide a suite of regulatory options, guiding principles and frameworks which, if effectively coordinated, refined, implemented and enforced, could go a long way towards protecting sharks from overexploitation internationally and within South African waters. This will, however, require a 'systematic approach to harmonization and coordination in order to provide for greater coherence and, accordingly, enhanced efficiency'.⁴⁷⁶ South Africa needs to ensure the effective coordination of efforts between DAFF and the Department of

⁴⁷⁶ Wolfrum R & Matz N ' *Conflicts in International Environmental Law* (Springer, 2003) pp2-3, cited in Kotzé L 'Fragmentation of international law' in Couzens E & Honkonen T (eds), *International Environmental Law-making and Diplomacy 2008* (University of Joensuu/UNEP, 2009), p13.

Environmental Affairs, as each exercises powers and functions that need to be successfully implemented and enforced in order to maximise the potential benefit to shark conservation and management in South African waters. South Africa also needs to make a serious commitment to improving shark conservation and management measures by making sufficient human and financial resources available to achieve its shark conservation and management objectives, while the fragmented national legal regime could be enhanced and rationalised by promulgating a single shark-specific regulation that deals specifically with the conservation and management of sharks. Given that available data suggests that a number of shark species are threatened worldwide through overfishing, the precautionary and ecosystems approaches need to be applied at a national and international level to ensure that sharks are managed in an ecologically sustainable manner. Where appropriate, a moratorium (or at least a significant limitation) on the killing of sharks (through both directed and by-catch fisheries) should be imposed until such time as sufficient scientific data is available to demonstrate that shark fishing does not pose a significant risk of serious or irreversible harm. While the imposition of such a moratorium may be unrealistic given the economic imperatives associated with the use of sharks as a natural resource, it is at least encouraging that the conservation and management of sharks has found its way onto the international and national regulatory menu.

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