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**Protecting Sharks from Overexploitation:
The Role and Impact of Regional Fisheries Management Organisations**

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List of Abbreviations

| | |
|----------------|--|
| AO | Advisory Opinion |
| BBNJ Agreement | Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction |
| CBD | Convention on Biological Diversity |
| CCAMLR | Commission for the Conservation of Antarctic Marine Living Resources |
| CCRF | Code of Conduct for Responsible Fisheries |
| CCSBT | Commission for the Conservation of Southern Bluefin Tuna |
| CITES | Convention on International Trade in Endangered Species |
| CMMs | Conservation and Management Measures |
| CMS | Convention on Migratory Species |
| CMS | Conservation of Migratory Species of Wild Animals |
| EEZ | Exclusive Economic Zone |
| EIA | Environmental Impact Assessment |
| FAO | Food and Agriculture Organization |
| GFCM | General Fisheries Commission for the Mediterranean |
| IATTC | Inter-American Tropical Tuna Commission |
| ICCAT | International Commission for the Conservation of Atlantic Tunas |
| ICJ | International Court of Justice |
| IMO | International Maritime Organization |
| IOTC | Indian Ocean Tuna Commission |
| IPOA | International Plan of Action |
| ITLOS | International Tribunal for the Law of the Sea |
| IUCN | International Union for the Conservation of Nature |
| IUU | Illegal, Unreported and Unregulated |

| | |
|--------|---|
| LOSC | United Nations Convention on the Law of the Sea |
| MARPOL | International Convention for the Prevention of Pollution from Ships |
| MOU | Memorandum Of Understanding |
| MPA | Marine Protected Area |
| MSY | Maximum Sustainable Yield |
| NAFO | Northwest Atlantic Fisheries Organization |
| NEAFC | North East Atlantic Fisheries Commission |
| NPFC | North Pacific Fisheries Commission |
| NPOA | National Plan Of Action |
| PSMA | Port State Measures Agreement |
| Rec | Recommendation |
| Res | Resolution |
| RFMA | Regional Fisheries Management Arrangement |
| RFMO | Regional Fisheries Management Organisation |
| SBT | Southern Bluefin Tuna |
| SEAFO | South East Atlantic Fisheries Organisation |
| SIOFA | South Indian Ocean Fisheries Agreement |
| SPRFMO | South Pacific Regional Fisheries Management Organisation |
| SRFC | Sub-Regional Fisheries Commission |
| TAC | Total Allowable Catch |
| UNFSA | United Nations Fish Stocks Agreement |
| UNGA | United Nations General Assembly |
| VCLT | Vienna Convention on the Law of Treaties |
| WCPFC | Western and Central Pacific Fisheries Commission |

‘In the end, we will conserve only what we love. We will love only what we understand and we understand only what we are taught’ – Baba Dioum

1 Introduction

1.1 Sharks, the seas and international law

Sharks are some of our oceans' biggest predators.¹ As essential apex predators, they guarantee balance in the ecosystem. They ensure the survival of smaller harvested species, such as bay clams, by targeting intermediate species.² They also contribute to the healthy evolution of preyed and predator species by killing sick and weaker individuals, leaving the stronger ones to breed.³ However, their widespread habitat and slow reproductive rates make them particularly vulnerable to many risks.⁴ Sharks are impacted by a multitude of economic activities, directly or indirectly. Consumptive and non-consumptive exploitation are contributing to a huge loss of individuals. As of 2021, 32.6% of Chondrichthyes species – sharks, rays, and chimaeras – were threatened with extinction.⁵ This number might be even higher given that almost half of these species are considered 'data deficient'.⁶ The increasing mortality of sharks has posed risks to the subsistence of coastal fishing communities and a barrier to sustainable seafood production.⁷

Biologically, sharks are extremely diverse fish that live in all maritime zones, from internal waters to the high seas. Even though the precise number of species is unknown, it is estimated to be at least 500 and possibly as many as 1000.⁸ Therefore, sharks have been given a legal definition, which will be the one used in this thesis. Sharks are defined in the FAO International

¹ Edwards H, 'When Predators Become Prey: The Need For International Shark Conservation' (2007) 12 *Ocean & Coastal Law Journal* 305, 305.

² Myers R A et al., 'Cascading Effects of the Loss of Apex Predatory Sharks from a Coastal Ocean' (2007) 315 *Science* 1846, 184; when the impact of a predator affects not only its direct preys, but trickles down one more feeding level, this phenomenon is known as a 'trophic cascade' (see Silliman B R and Angelini C, 'Trophic Cascades Across Diverse Plant Ecosystems', (2012) 3(10) *Nature Education Knowledge* 44.).

³ Evans M D, 'Shark Conservation : The Need for Increased Efforts to Protect Shark Populations in the Twenty-First Century', (2001) 10 *Penn State Environmental Law Review* 13, 21.

⁴ IUCN, IUCN Shark Specialist Group Pelagic Shark Red List Workshop, The Conservation Status of Pelagic Sharks and Rays, *Report* (2007), available at https://www.iucnssg.org/uploads/5/4/1/2/54120303/2007_-_the_conservation_status_of_pelagic_sharks_and_rays.pdf; Edwards (n 1) 311 and 312.

⁵ Dulvy N K et al., 'Overfishing drives over one-third of all sharks and rays toward a global extinction crisis', (2021) 31 (21) *Current Biology* 4773, 4773.

⁶ *Idem*, 4774.

⁷ Gilman E et al., 'Global governance guard rails for sharks: Progress towards implementing the United Nations international plan of action', (2024) 25(1) *Fish and fisheries* 1, 2.

⁸ Kiszka J and Heithaus M, 'The state of knowledge on sharks for conservation and management' in Techera E J and Klein N (eds), *Sharks: Conservation, Governance and Management* (Routledge 2014), 70.

Plan of Action for Conservation and Management of Sharks (IPOA Sharks) (para. 11) as including ‘all species of sharks, skates, rays and chimaeras (Class Chondrichthyes)’. Legally, certain types of oceanic sharks are classified as highly migratory species under Annex I United Nations Convention on the Law of the Sea Convention (LOSC).⁹

Sharks have never been ‘romanticized’ in the public eye. Movies, books, art and mainstream media have consistently objectified the species by portraying all sharks to be human predators. Sharks are probably seen as the most villainous of all marine species. As a result, they have never been the main focus of the international community’s conservation efforts.¹⁰ Also, they are seen as having less economic importance than other fish, making shark management a non-priority.¹¹

These two factors have led sharks to fall within the loopholes of the law of the sea. Unlike polar bears and whales, which benefit from a positive social representation, sharks have no specific binding treaty to ensure their sustainable conservation and management. Sharks are direct victims of the piecemeal governance that exists beyond the territorial sea. The regulatory framework for sharks is known to be fragmented, both geographically and sectorally.¹² More recently, modern concepts of environmental law, which materialise *inter alia* with the implementation of holistic ecosystem-based measures, have permitted neglected species to be considered worthy of protection.

1.2 Sharks and their (over)exploitation

In the last decade, despite existing rules, shark mortality has risen.¹³ This is due to a variety of threats, the main one being overfishing,¹⁴ but all economic activities taking place in our oceans

⁹ Oceanic sharks live most or part of their lives beyond the limits of the continental/insular shelf, although some of these species come closer to the shelf and the shore to feed, breed, or partake in social interactions (see Compagno L J V, ‘Pelagic Elasmobranch Diversity’ in Camhi M D, Pikitch E K and Babcock E A (eds), *Sharks of the Open Ocean: Biology, Fisheries and Conservation* (Blackwell Publishing Ltd 2008), 14); United Nations Convention on the Law of the Sea, adopted 10 December 1982, entered into force 16 November 1994, 1833 UNTS 3.

¹⁰ Neves J et al., ‘Social representations of sharks, perceived communality, and attitudinal and behavioral tendencies towards their conservation: An exploratory sequential mixed approach’, (2021) 132 *Marine Policy*.

¹¹ Porcher I F and Darvell B W, ‘Shark Fishing vs. Conservation: Analysis and Synthesis’, (2022) 14 (15) *Sustainability* 9548, 9549.

¹² Techera E J and Klein N, ‘Fragmented governance: Reconciling legal strategies for shark conservation and management’, (2011) 35(1) *Marine Policy* 73, 75 and 76.

¹³ Worm B et al., ‘Global shark fishing mortality still rising despite widespread regulatory change’, (2024) 383 *Science* 225.

¹⁴ Dulvy et al. (n 5) 4773.

have an impact on shark populations. Pollution, shipping, climate change and loss of habitat are all indirect threats to sharks.¹⁵ Sharks are also victims of exploitation, whether it be for consumptive purposes or non-consumptive purposes. It is extremely difficult to estimate the number of sharks who fall victim to exploitation. Published estimates by the FAO only include sharks caught for their fins and their meat, the most traded shark products. Even then, these numbers might be significantly higher because of illegal trade, resulting in unreported catches.¹⁶

By far the most highlighted threat to sharks is shark finning. This practice has been taking place since the 1980s for human consumption purposes, mainly to supply the Asian market for shark fin soup. Finning consists of cutting off a shark's fins and discarding the rest of the carcass at sea.¹⁷ The definition of finning is narrow. For instance, when fins are cut off and the carcass brought to land, this is not considered finning.¹⁸ Finning exists *de facto* but is difficult to quantify statistically. It is impossible to estimate how many sharks are finned per year, as published numbers account for the amount of fins present on the market. They include fins of finned sharks *and* sharks whose carcass is landed either to be sold or thrown away. The value of shark fin exports and imports plummeted in 2011.¹⁹ Since then, numbers have declined mainly because of overfishing, reaching a global average value of imports between 2000 and 2016 of USD 294 million annually.²⁰ All types of sharks – not only pelagic sharks – are now used to supply the fin market.²¹ But the bulk of the market is made up of blue shark (17.3%), hammerhead, silky, shortfin mako, pelagic thresher, oceanic whitetip, sandbar and bull sharks.²² Sharks are also used for meat production. In the 1950s, the use of shark meat started to expand beyond coastal communities as a result of marketing campaigns by several

¹⁵ Marine Megafauna Foundation, *Human Threats to Sharks and Rays* (2024), available at <https://marinemegafauna.org/human-threats-sharks-rays>.

¹⁶ FAO, Dent F and Clarke S C, *State of the Global Market for Shark Products. FAO Fisheries; Technical Paper* (2015), available at <https://openknowledge.fao.org/server/api/core/bitstreams/5ecd9cdf-ad43-47ce-8647-67c6122d3da9/content>.

¹⁷ Shiffman D, *Why Sharks Matter: A Deep Dive with the World's Most Misunderstood Predator* (Johns Hopkins University Press 2022), 75.

¹⁸ *Idem*, 76.

¹⁹ See FAO, Dent and Clarke (n 16) (for precise numbers).

²⁰ TRAFFIC, Okes N and Sant G, *An Overview of Major Shark Traders, Catchers and Species* (2019), available at: www.traffic.org/publications/reports/an-overview-of-major-shark-and-ray-catchers-traders-and-species.

²¹ Pelagic sharks are highly mobile free-swimming species that live in the water column and are therefore not closely linked to the seabed (see Compagno (n 9) 14.); Porcher and Darvell (n 11) 9548 and 9549.

²² Lack M and Sant G, *Illegal, unreported and unregulated shark catch: A review of current knowledge and action* (TRAFFIC 2008).

governments to combat widespread malnutrition.²³ Unlike the shark fin trade, the trade in shark meat trade has grown by up to 40% in recent decades.²⁴ Shark meat production is a global phenomenon. Major producing countries are located on every continent. They include Spain, the USA, Mexico, Japan, Indonesia, Pakistan, Chile, and New Zealand. Asia is the largest producer, while Europe is the largest importer of shark meat.²⁵ Preferred species for their meat are thresher, shortfin mako and porbeagle sharks.²⁶ Additionally, sharks are used for their skin to make clothing and shoes and for their liver to produce oil used in pharmaceutical products.²⁷

To supply the shark fin, meat, skin and oil markets, sharks are caught either as a direct target or incidentally. In this thesis, targeted catch is referred to as ‘fishing’ and incidental catch as ‘bycatch’. Indeed, ‘bycatch’ is defined as the incidental catch of non-targeted species during the pursuit of other fish species.²⁸ Because of the growth of human populations, leading to the intensification of industrial fishing, and the rapid development of coastlines, overfishing has become the main threat to sharks.²⁹ Whether sharks are caught as direct targets or not, they are victims of the global scourge that is illegal, unregulated or unreported (IUU) fishing, a key factor and magnifier of overfishing (see subsection 2.1.1.4). Virtually all (99.6%) known shark species are threatened by overfishing mainly due to bycatch. Large-scale industrial fisheries are primarily responsible for the drastic decline in shark numbers.³⁰ According to Camhi, Fordham and Fowler, ‘the line between targeted and incidental catch of pelagic sharks is blurring’.³¹ It is indeed hard to distinguish ‘fishing’ from ‘bycatch’, as catch may be incidental in the first place, but fishermen often retain sharks on board to sell their fins and/or meat. This results in making sharks unofficial target species of many fisheries.³² Purse seine and pelagic longline – the primary fishing gear types used in tuna fisheries – are the primary mortality source of many

²³ Edwards (n 1) 313.

²⁴ FAO, Dent and Clarke (n 16).

²⁵ Edwards (n 1) 314.

²⁶ IUCN (n 4).

²⁷ Shiffman (n 17) 80.

²⁸ Techera E J and Klein N, *International law of sharks: Obstacles, Options and Opportunities* (Brill Nijhoff 2017), 3.

²⁹ Dulvy et al. (n 5) 4774.

³⁰ *Ibid.*

³¹ Camhi M D, Fordham S V and Fowler S L, ‘Domestic and International Management for Pelagic Sharks’ in Camhi M D, Babcock E A and Pikitch E K (eds), *Sharks of the Open Ocean* (Blackwell Publishing Ltd 2008), 420.

³² Edwards (n 1) 318.

pelagic sharks,³³ whereas deepwater sharks are incidentally caught in trawl, longline, and gill net fisheries that target grenadier and hake species. As a result, most threatened deepwater sharks are caught as bycatch, even though a third of species remain directly targeted.³⁴

Another way to exploit sharks is through shark-based tourism. Studies have shown that there are greater economic benefits from keeping a shark alive and exposing it to repeated tourism interactions than from killing it and selling its fins or meat to obtain a one-off financial gain.³⁵ Shark-based tourism is a kind of marine wildlife tourism and can take different forms. It is conducted in sharks' natural habitat, where tourists are brought either to swim or snorkel with species such as bull, basking or whale sharks, or to cage-dive, e.g. with great white sharks.³⁶ Shark-based tourism has the advantage and potential to raise awareness among tourists, enhance local economic benefits and provide a platform for scientific research.³⁷ Tourism also represents a real threat to sharks. Impacts can go from behavioural change, due to practices such as baiting and feeding³⁸, to injury and death due to touching the species and boat or cage collisions.³⁹

1.3 Purpose, research question and scope

The aim of the present work is to determine the extent to which regional fisheries management organisations (RFMOs) should protect sharks from overexploitation. This thesis therefore asks the following research question: *What should RFMOs do in order to protect sharks from overexploitation?*

In the light of the stated objective and research question, first, this thesis will study the obligations of States under international law in mitigating shark threats related to exploitation and highlight the weaknesses of the international legal framework in that regard. Second, it will

³³ Gilman E L, 'Bycatch governance and best practice mitigation technology in global tuna fisheries', (2011) 35(5) *Marine Policy* 590, 590.

³⁴ Finucci B et al., 'Fishing for oil and meat drives irreversible defaunation of deepwater sharks and rays', (2024) 383 (6687) *Science* 1135, 1137.

³⁵ Vianna G M S et al, *Wanted Dead or Alive? The Relative Value of Reef Sharks as a Fishery and an Ecotourism Assessment in Palau* (Australian Institute of Marine Science (aims) and the University of Western Australia 2010).

³⁶ Techera and Klein (n 28) 10.

³⁷ Dobson J, 'Shark! A New Frontier in Tourist Demand for Marine Wildlife' in Higham J and Lück M (eds), *Marine Wildlife and Tourism Management: Insights from the Natural and Social Sciences* (CAB International 2008), 55.

³⁸ 'Baiting' consists of using fish meat to attract sharks but withdrawing it before it is eaten.

³⁹ Dobson (n 37) 57 and 58.

look into the competences of RFMOs and give an overview of the conservation and management measures already in place. Third, it will evaluate the extent to which RFMOs have implemented their obligations arising from international law and whether this implementation is enough to protect sharks from overexploitation.

The scope of this study is limited to threats to sharks coming from exploitation. Exploitation has no definition in the LOSC, but the term is used in the Convention in reference *inter alia* to the sovereign rights that the coastal State enjoys in its exclusive economic zone (EEZ) in relation to living resources (art. 56 (1) (a) LOSC). When relating to living resources, exploitation has consumptive and non-consumptive purposes. In the context of sharks, consumptive exploitation comprises of finning and fishing. Non-consumptive exploitation includes tourism. This study wishes to focus on all types of exploitation as it represents the most significant threat to shark survival and well-being.⁴⁰ This entails that, within the multitude of activities that are harmful to sharks, threats such as pollution, shipping, climate change and loss of habitat fall outside the scope of this study.⁴¹

Additionally, this thesis focuses on the role of RFMOs in shark conservation given that, since the entry into force of the LOSC and its implementation through the United Nations Fish Stocks Agreement (UNFSA)⁴², RFMOs have become States' preferred means to ensure cooperation over the conservation and management of living resources, as 'stewards of the world's high seas fisheries resources'.⁴³ Existing international regulations have their weaknesses, for example in controlling black market trade of shark products.⁴⁴ RFMOs seem to be a plausible

⁴⁰ Overfishing is the main threat to sharks, threatening 67.3% of species and affecting all 391 threatened species (see Dulvy et al. (n 5) 4773).

⁴¹ For instance, for now, pollution, which comprises of ghost fishing, is being dealt with by binding instruments adopted by the International Maritime Organization (IMO), such as the International Convention for the Prevention of Pollution from Ships (MARPOL) and the London Convention (Kemeny R, 'Progress in seafood industry toward tackling ghost gear', (2019) 17(4) *Frontiers in ecology and the environment* 196, 196). When it comes to climate change, the UNFCCC and the Paris Agreement are the relevant instruments (*Request for an Advisory Opinion submitted by the Commission of Small Island States on Climate Change and International Law (Request for Advisory Opinion submitted to the Tribunal)* (Advisory Opinion) [2024] ITLOS 2, [270](AO on Climate Change).

⁴² Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, adopted 4 August 1995, entered into force 11 December 2001, 2167 UNTS 3.

⁴³ Rayfuse R G, 'Regional Fisheries Management Organizations' in Rothwell D R et al. (eds), *The Oxford Handbook of the Law of the Sea* (Oxford University Press 2015), 439 and 460.

⁴⁴ Edwards (n 1) 309.

solution to ‘tighten enforcement through increasing supervision of fisheries [...] to help manage shark fishing’.⁴⁵ Today, RFMOs cover most of the world’s oceans.⁴⁶ In the future, RFMOs will most probably stay relevant to regulate fishing issues, even with the establishment of high seas marine protected areas (MPA) given that such area-based measures are insufficient to protect sharks if established in isolation.⁴⁷ Additionally, a study conducted in 2024 by Worm et al. has shown the importance of mortality-limiting regulations even when trade instruments, such as the Convention on International Trade in Endangered Species (CITES), exist.⁴⁸

1.4 Methodology and legal sources

This thesis will rely on a doctrinal analysis of the applicable law. Consistent with the doctrinal approach, which first seeks to describe the state of the law, the first part of this thesis aims to set out what the law requires.⁴⁹ It then evaluates the strength of international law obligations in dealing with shark protection. Therefore, the starting point of the analysis is the relevant sources of international law as listed exhaustively at art. 38 of the Statute of the International Court of Justice.⁵⁰

Among primary sources, international conventions provide the foundation of this thesis. The LOSC⁵¹ and one of its implementation agreements, known as the United Nations Fish Stocks Agreement (UNFSA), are the main points of focus for the first part of this study. Reference is also made to international custom, given that some major actors, notably the USA, are not

⁴⁵ Edwards (n 1) 310.

⁴⁶ The geographical scope of the five existing tuna RFMOs covers approximately 91% of the world’s oceans (IMCS Network, *Tuna Compliance Network (TCN)* (2024), available at <https://imcsnet.org/tuna-compliance-network-tn#:~:text=The%20five%20tuna%20RFMOs%20cover,percent%20of%20the%20world's%20ocean>).

⁴⁷ See Pinto D D P, ‘Regional Fisheries Management Organisations and the Implementation of EBFM’, (2013) 13 *Fisheries Management in Areas Beyond National Jurisdiction* 117; MacKeracher T, Diedrich A and Simpfendorfer C A, ‘Sharks, rays and marine protected areas: A critical evaluation of current perspectives’, (2018) 20(2) *Fish and fisheries* 255, 267; Birkmanis C A et al., ‘Shark conservation hindered by lack of habitat protection’, (2020) 21 *Global Ecology and Conservation*.

⁴⁸ See Worm et al. (n 13); Convention on International Trade in Endangered Species of Wild Fauna and Flora, adopted 3 March 1973, entered into force 1 July 1975, 993 UNTS 243.

⁴⁹ Virgo G, ‘Doctrinal legal research’ in Cane P and Conaghan J (eds), *The New Oxford Companion to Law* (Oxford University Press 2008).

⁵⁰ Sources of international law include international conventions, international custom, general principles of law and, as secondary sources, judicial decisions and legal doctrine; Statute of the International Court of Justice, adopted 26 June 1945, entered into force 24 October 1945, XV UNCIO 355.

⁵¹ United Nations Convention on the Law of the Sea, adopted 10 December 1982, entered into force 16 November 1994, 1833 UNTS 3.

parties to the LOSC. Regarding secondary sources, a broad range of legal doctrine and judicial decisions is reviewed.

The LOSC and the UNFSA will be interpreted following the method for treaty interpretation contained in the Convention on the Law of Treaties (VCLT).⁵² This method is considered part of customary international law.⁵³ The VCLT gives predominance to wording, context, and purpose over historical background.⁵⁴ According to art. 31 VCLT, interpretation should begin with determining the ordinary meaning (literal interpretation). The ordinary meaning is found within its context (systematic interpretation; art. 32 (2) VCLT) and in the light of the object and purpose of the provision (teleological interpretation). Historical background, as a supplementary means of interpretation to be used only when the meaning is left ambiguous or obscure or when the result is manifestly absurd or unreasonable (art. 32 VCLT), plays a limited role in this thesis.

According to art. 31 (3) VCLT, other international rules in force between the parties must be taken into account. Additionally, the LOSC is seen as a ‘dynamic’ treaty and its generic terms as capable of evolving.⁵⁵ Therefore, environmental treaties such as CITES, the Convention on the Conservation of Migratory Species of Wild Animals (CMS)⁵⁶, the Convention on the Protection of Biodiversity (CBD)⁵⁷ and the Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ Agreement)⁵⁸ are used to inform a systematic interpretation. Furthermore, non-binding law will also serve interpretation purposes, such as the Food and Agriculture Organization (FAO) recommendations contained mainly in its International Plan of Action for Conservation and Management of Sharks (IPOA Sharks), the CMS Memorandum of Understanding on the Conservation of Migratory Sharks (Sharks MOU), United Nations resolutions and

⁵² Vienna Convention on the Law of Treaties, adopted 23 May 1969, entered into force 27 January 1980, 1155 UNTS 331.

⁵³ See *Territorial Dispute (Libyan Arab Jamahiriya/Chad) (Judgement)* [1994] ICJ Rep 6, [41].

⁵⁴ *Idem*, [41] *in fine*.

⁵⁵ *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua) (Judgement)* [2009] ICJ Rep 109-10, [66].

⁵⁶ Convention on the Conservation of Migratory Species of Wild Animals, adopted 23 June 1979, entered into force 1 November 1983, 1651 UNTS.

⁵⁷ Convention on Biological Diversity, adopted 5 June 1992, entered into force 29 December 1993, 1760 UNTS 79.

⁵⁸ Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction, adopted 19 June 2023.

environmental law principles. These instruments provide a key basis for interpretation as potential ‘subsequent agreement[s] between the parties regarding the interpretation of the treaty or the application of its provisions’, but also for influencing the development and application of treaties or general international law especially ‘in the field of environmental protection’.⁵⁹ Non-binding instruments also have greater legal weight as ‘elements of a treaty-based regulatory regime’, which in the context of the LOSC are known as ‘rules of reference’.⁶⁰

Alongside legal sources, scientific work is used to assess what the weaknesses of existing legal framework are and how the implementation of new types of rules would better protect sharks from overexploitation from a practical standpoint.

The second part of the analysis focuses on the rules in force within RFMOs. First, it identifies which RFMOs have the competence to regulate shark exploitation issues by interpreting RFMOs’ founding instruments in a manner consistent with the VCLT (see above). Then, it highlights existing RFMO conservation and management measures (CMMs) relating to sharks within relevant RFMOs. This has been done through an in-depth examination of RFMO websites that publish CMMs currently in force. As most CMMs relevant to sharks are very recent, this compilation work had not yet been done in the existing literature. On this basis, and because the doctrinal approach includes a process of generalisation, trends within RFMOs in addressing specific threats to sharks are identified.⁶¹ This second part of the thesis, on the one hand, provides a complete picture of the state of the law, as RFMO CMMs are part of the law as international and regional standards. On the other hand, it shows how States have implemented the international legal framework relevant to shark protection.

Finally, having interpreted the law in a manner consistent with the doctrinal approach and having compared what RFMOs have undertaken in the realm of shark protection, this thesis draws conclusions on a) whether States are fulfilling their international law obligations, b) whether States have done enough given their international law obligations and/or c) whether RFMOs have pushed the envelope of international shark protection.

⁵⁹ *Gabčíkovo-Nagymaros Project (Hungary/Slovakia) (Judgment)* [1997] ICJ Rep 7, [140].

⁶⁰ Boyle A, ‘Soft law in international law-making’ in Evans M D (ed), *International Law* 5th edition (Oxford University Press 2018), 121; see for example art. 61 (3) LOSC and art. 119 (1) (a) LOSC where such ‘recommended standards’ must be taken into account.

⁶¹ *Virgo* (n 49).

1.5 Structure

This thesis is structured as follows: Chapter 2 outlines the obligations of States in relation to the three types of shark exploitation identified, as well as their overall duty to cooperate. In Chapter 3, the CMMs currently in force within RFMOs are reviewed. First, general provisions are analysed including RMFOs founding instruments and CMMs of broad application. Second, specific CMMs relating to the three types of shark exploitation are examined and current trends of shark protection emerging in the realm of such organisations are highlighted. Chapter 4 draws some general conclusions on the basis of what RFMOs must do and what they have done to protect sharks from overexploitation.

2 Obligations relating to sharks

2.1 Fishing

Sharks are fished in all maritime zones by coastal artisanal fisheries as well as by commercial fisheries.⁶² The LOSC takes a traditionally zonal approach to the management of the ocean, including fishing activities. It also contains more wide-ranging parts that apply irrespective of the marine area, such as Part XII on the protection and preservation of the marine environment, which also applies to fishing.⁶³

The first part of this section focuses on the ‘fishing provisions’ of the LOSC and their subsequent implementation via the UNFSA. This makes it possible to pinpoint what the obligations of coastal States and flag States are in relation to living resources both within areas of national jurisdiction and beyond, and whether these obligations have been sufficient to protect sharks from fishing. The second part highlights key environmental provisions and principles that might enhance obligations within the LOSC and the UNFSA. These provisions are contained in various binding international instruments, customary international law and soft-law instruments.

2.1.1 Regulation of shark fishing through international fisheries law

Coastal States play a crucial role in adopting measures for the protection of both littoral sharks that live mostly near the coast and other shark species, including oceanic sharks, that come near the coast for part of their life cycle.⁶⁴ Their jurisdictional authority collides with that of flag States pursuant to the concept of flag State jurisdiction (art. 92 (1) LOSC). Rules have been established by the LOSC to seek a balance between these two competing jurisdictions. Such balance varies depending on the maritime zone. Traditionally, as ‘the land dominates the sea’,

⁶² See Seidu I et al., ‘Fishing for survival: Importance of shark fisheries for the livelihoods of coastal communities in Western Ghana, (2022) 246 *Fisheries Research* 106157 (on artisanal fishing in the territorial sea); Lutz I et al., ‘Fishing profile and commercial landing of sharks and batoids in a global elasmobranchs, (2024) 96(2) *Anais da Academia Brasileira de Ciências* (on commercial vessel types, fishing gears and fishing techniques in the Amazon region).

⁶³ *Southern Bluefin Tuna Cases (New Zealand v. Japan; Australia v. Japan), Provisional Measures (Order)* [1999] ITLOS Rep 280, [70] (SBT Cases).

⁶⁴ Littoral sharks live over the continental/insular shelf from the intertidal zone down to 200m depth. Littoral sharks are targeted by fisheries for their fins, liver and skins. The basking shark is one of the most important species for the production of liver oil; see IUCN (n 4).

coastal States' regulatory powers diminish with distance from the coastline.⁶⁵ In the EEZ and the high seas, which are located beyond 12 nautical miles, the LOSC provides increased obligations *inter alia* for the management and conservation of living resources, leaving less space for the exercise of coastal State sovereignty. This subsection first maps out areas within national jurisdiction, particularly in the EEZ which extends to 200 nautical miles, and then focuses on areas beyond national jurisdiction, located beyond 200 nautical miles, referred to as the high seas. Then, it elaborates on matters common to both areas: the implementation of the LOSC through the UNFSA and enforcement. Lastly, it provides an evaluation of the international fisheries law regime and its capacity to protect sharks from overfishing.

2.1.1.1 Exclusive Economic Zone (EEZ)

According to art. 56 (1) (a) LOSC and customary international law,⁶⁶ the coastal State has 'sovereign rights to explore and exploit, conserve and manage natural resources, whether living or non-living' in its EEZ. These terms are defined nowhere in the Convention, but tribunals and authors have sought to give them a clearer meaning. 'Natural resources' include 'living resources'. The term 'living resources' is used consistently throughout provisions relevant to fisheries contained in Part V and VII of the Convention.⁶⁷ 'Living resources' include any marine species that is or has the potential to be commercially exploited and is not limited to the biological understanding of fish.⁶⁸ As commercially valuable species, subject to large-scale exploitation and global trade, sharks are considered 'living resources' (see section 1.2). Shark catch through fishing activities undoubtedly qualifies as 'exploitation' under the terms of this article in the light of the agreed interpretation of Part V LOSC.⁶⁹ This entails that the coastal State has 'sovereign rights' over shark fisheries conducted in its EEZ. 'Sovereign rights' are less far-reaching than sovereignty and are limited to matters defined by international law.⁷⁰ They encompass 'all rights necessary for and connected with the exploration, exploitation, conservation and management of the natural resources, including the right to take the necessary

⁶⁵ *North Sea Continental Shelf Cases (Federal Republic of Germany/Denmark; Federal Republic of Germany/Netherlands)* (Judgement) [1969] ICJ Rep 3, [96]; *Maritime Delimitation and Territorial Questions between Qatar and Bahrain (Qatar v. Bahrain)* (Judgment) [2001] ICJ Rep 40, [77].

⁶⁶ *Alleged Violations of Sovereign Rights and Maritime Spaces in the Caribbean Sea (Nicaragua v. Colombia)* (Judgement) [2022] ICJ Rep 266, [57].

⁶⁷ See e.g. art. 61, 62, 117, 118, 119 LOSC.

⁶⁸ Churchill R, Lowe V and Sander A, *The law of the sea* 4th edition (Manchester University Press 2022), 534.

⁶⁹ See e.g. *idem*, 265; defining the legal concepts of 'exploitation' and 'exploration' is the focus of section 2.3.

⁷⁰ Tanaka Y, *The International Law of the Sea* 4th edition (Cambridge University Press 2023), 163.

enforcement measures'.⁷¹ Shark fisheries occurring in the EEZ of any State must be conducted in conformity with coastal State regulations. If not, the coastal State holds the necessary enforcement powers, including over foreign-flagged vessels.

Article 56 and the terms 'conserve and manage' must be read in conjunction with articles 61 and 62 LOSC that expand on coastal States' conservation and management duties. These provisions are two faces of the same coin and apply generally to all living resources, if not specified elsewhere in the Convention. Article 61 recognises the danger of overfishing and, on that basis, calls upon coastal States to take a cooperative and precautionary approach when adopting conservation and management measures (art. 61 (2) LOSC). Conservation and management measures have been defined by the International Court of Justice (ICJ) as those whose 'purpose is to conserve and manage living resources and that, to this end, [...] satisf[y] various technical requirements', such as limiting catches, prescribing fishing seasons, setting limits on the size of catch and proscribing certain types of fishing gear.⁷² According to Worm et al., such measures can make a significant contribution to the preservation of shark stocks, especially if they are area-based and shark-specific.⁷³ Article 61 also showcases the importance of science and the sharing of data when adopting such regulations (art. 61 (2) and (5) LOSC). Article 62 obliges the coastal State to promote the 'optimum utilization of the living resources in the exclusive economic zone' (art. 62 (1) LOSC). To do so, it must determine the Total Allowable Catch (TAC) in order to impose catch limits and give access to other States if there is a surplus (art. 62 (2) and (3) LOSC and 61 LOSC). Articles 61 and 62 give coastal States a lot of freedom to assess the extent to which fishing can take place under their control since a variety of relevant – and sometimes contradictory – environmental, political, economic and social factors need to be taken into account. Unfortunately, there is no mention of environmental principles that might guide the balancing of interests and offset data deficiency by prescribing a precautionary approach for example (see subsection 2.1.2).

The traditional approach to fisheries management is species-specific and is reflected in the LOSC through the concept of Maximum Sustainable Yield (MSY), which focuses on

⁷¹ *MV 'Virginia G' (Panama v. Guinea-Bissau)* (Judgment) [2014] ITLOS Rep 4, [211].

⁷² *Fisheries Jurisdiction (Spain v. Canada)* (Judgment) [1998] ICJ Rep 432, [70]; FAO, *FAO Technical Guidelines for Responsible Fisheries No. 4. Fisheries Management* (1997), 31-6 and 41-3.

⁷³ See Worm et al. (n 13).

maintaining a particular fish stock at a sustainable level.⁷⁴ However, most fisheries – including sharks – are not well suited to this model because of external factors having a major influence on the viability of the stock.⁷⁵ Additionally, because it is extremely difficult to obtain reliable data on shark mortality, it is near impossible for the coastal State to set a TAC that respects the MSY.⁷⁶ Most States do not keep species-specific catch records and even then, catches are not reported – some States giving exception to significant artisanal fisheries for example.⁷⁷ Data is also more difficult to collect for poorly understood species such as benthic and deep-water species including gulper sharks, dogfishes and hardnose skates.⁷⁸ This results in shark stocks potentially being overfished within 200 nautical miles. This has led some authors to refer to LOSC as a ‘tool for overexploitation’.⁷⁹

An additional factor in the overharvesting of sharks is their transboundary nature. Transboundary stocks comprise of a) shared stocks, which are found in or migrate between the EEZ of two or more States, b) straddling stocks, which are found in or migrate between the EEZ of one or more States and the high seas and c) highly migratory species that are listed in Annex I LOSC. The LOSC takes into account the particular status of transboundary stocks in articles 63 and 64 LOSC. These two provisions add supplementary obligations, mostly for States to cooperate ‘either directly or through appropriate subregional or regional organisations’ in conserving and managing fish stocks and have been developed by the UNFSA. The UNFSA and its stipulations regarding cooperation will be the focus of section 2.4. Most shark species, including benthic, coastal and pelagic sharks, qualify as transboundary stocks since they migrate beyond legally settled boundaries. Only certain oceanic sharks are listed as highly migratory in Annex I LOSC. All Annex I sharks are widely targeted for their meat, fins, liver and skin.⁸⁰ This entails that not all shark species are considered highly migratory in the meaning of the LOSC. Arguably, most sharks, if not all, are transboundary. Undoubtedly, they are all

⁷⁴ See Hey E, ‘The Persistence of a Concept: Maximum Sustainable Yield’, (2013) 27(4) *The international journal of marine and coastal law* 763 (for an overview of how the concept of MSY has developed and should develop).

⁷⁵ Zacharias M and Ardron J, *Marine policy: An Introduction to Governance and International Law of the Oceans* 2nd edition (Routledge 2020), 187.

⁷⁶ Porcher and Darvell (n 11) 9553.

⁷⁷ *Ibid.*

⁷⁸ Zacharias and Ardron (n 75) 183; see Finucci et al. (n 34) 1137.

⁷⁹ Clancy E A, ‘The Tragedy of the Global Commons’, (1998) 5 (2) *Indiana Journal of Global Legal Studies* 601, 609.

⁸⁰ The listed species include the sixgill shark, the basking shark, thresher sharks, the whale shark, requiem sharks, hammerhead sharks and mackerel sharks.

living resources. Listing sharks under one or more categories makes it possible to determine how States must cooperate in their management. Subsection 3.1.1 will show that, in practice, States have cooperated in a similar way for the management all fish stocks, including shark species, regardless of their label under LOSC.

2.1.1.2 The high seas

Despite the difficulty of assessing the extent to which sharks interact with fishing fleets on the high seas, overfishing has been a particular threat for high seas sharks such as oceanic sharks. Indeed, oceanic shark populations have fallen by 71% since 1970.⁸¹ Numbers show that the current state of the law has not succeeded in protecting oceanic sharks from fishing and has failed to save them from ‘the tragedy of the commons’. Therefore, it is necessary to disentangle and pinpoint the different components that make up the ‘rather complex and fragmented’ high seas fisheries regime in order to understand how it seeks to protect species such as sharks.⁸²

The high seas are governed by two main principles: a) the freedom of the high seas (art. 87 (1) LOSC) and b) the exclusive jurisdiction of flag States (art. 92 (1) LOSC). Included in the freedom of the high seas is the freedom to fish (art. 87 (1) (e) LOSC). The exercise of the latter is subject to due regard (art. 87 (2) LOSC) and ‘the conditions laid down in section 2’, including art. 116 LOSC. First, according to the last-mentioned article, the freedom of States to fish is limited by their treaty obligations (art. 116 (a) LOSC). Treaty obligations in relation to sharks can be contained in treaties that the flag State has ratified, for instance the CITES or CMS, but also the founding instruments of RFMOs (see section 3.1). Second, the right to fish on the high seas is subject to the rights, duties and interests of coastal States provided for *inter alia* in art. 63 (2) and 64-67 LOSC (art. 116 (b) LOSC). These provisions relate to the management and conservation of transboundary stocks.⁸³ As mentioned previously, this includes respecting potential regulations adopted by the coastal State in relation to sharks, as most qualify as transboundary. Also, the term ‘*inter alia*’ might include provisions of Part XII on the protection and preservation of the marine environment.⁸⁴ This is likely, as ITLOS has considered that ‘the

⁸¹ Baun J K, ‘Fishing boats leave few safe havens for sharks’, (2019) 572 *Nature* 461, 462; Pacoureau N et al., ‘Half a century of global decline in oceanic sharks and rays’, (2021) 589 (7843) *Nature* 567.

⁸² Barnes R and Massarella C, ‘High seas fisheries’, in Morgera E and Kulovesi K (eds), *Research Handbook on International Law and Natural Resources* (Edward Elgar 2016), 370.

⁸³ Takei Y, *Filling Regulatory Gaps in High Seas Fisheries* (Brill 2013), 43.

⁸⁴ Nanadan S N and Rosenne S (eds), *United Nations Convention on the Law of the Sea, 1982: a commentary: Vol.3* (Martinus Nijhoff Publishers 1985/1993), 287-288.

conservation of the living resources of the sea is an element in the protection and preservation of the marine environment'.⁸⁵ Part XII is detailed in subsection 2.1.2. Third, the right to fish on the high seas is subject to 'provisions of this section' (art. 116 (3) LOSC). 'This section' imposes two distinct duties on States (art. 117 LOSC): a) the duty to take measures for the conservation of the living resources of the high seas (art. 119 LOSC) and b) the duty to cooperate with other States when doing so (art. 118 LOSC). Cooperation is the focus of section 2.4. Setting the TAC is one of the conservation measures that States can adopt in order to 'main or restore populations of harvested species at levels which can produce the maximum sustainable yield'. The TAC and other conservation measures have to be 'designed' on the best scientific evidence. This seems to leave less discretion to States than the EEZ regime, where such evidence must simply be 'taken into account' (see art. 61 (2) LOSC). Another difference is that scientific evidence must be 'available to them'. This means that States are not required to adopt an active behaviour to obtain such evidence. Also, this wording leaves space to consider States' varying capabilities. For the rest, the provision is identical to the ones applicable in the EEZ. Relevant environmental and economic factors, along with more ecosystem considerations, must be taken into consideration (art. 119 (1) LOSC). The resemblance to EEZ provisions is no surprise. Drafting history seems to show that States were mainly concerned with the exploitation of transboundary stocks on the high seas, surely because they are the most commercially valuable.⁸⁶ As in the EEZ, 'generally recommended international minimum standards' must be taken into account when adopting conservation measures. In the present context, such standards are contained in binding treaties such as the UNFSA, CITES and CMS, non-binding instruments such as the IPOA Sharks and Sharks MOU, environmental law principles, and arguably CMMs in force through a wide range of RFMOs (see Chapter 3).

2.1.1.3 Matters common to the EEZ and the high seas: the UNFSA

The UNFSA implements LOSC provisions on the conservation and management of straddling stocks and highly migratory fish stocks. As many, if not all, shark species qualify as straddling and/or highly migratory stocks, shark conservation and management measures must be in accordance with the UNFSA provisions. The UNFSA enhances and adds precision to general principles and provisions established by the LOSC. In addition to elaborating on obligations of

⁸⁵ SBT Cases (n 63) [70].

⁸⁶ Takei (n 83) 79.

cooperation (see Chapter 2.2), the UNFSA stipulates that States must adopt conservation and management measures (art. 5 UNFSA). In doing so, it reiterates the same relevant factors as those cited in the LOSC (art. 5 (b) UNFSA; see art. 61 (2), (3) and (4) and art. 119 (1) LOSC). But more importantly, the rest of article 5 UNFSA adds key new elements. States are explicitly required to apply the precautionary approach in accordance with article 6 *cum* Annex II UNFSA.⁸⁷ The following UNFSA obligations are most relevant to ensure protection of targeted species: the elimination of overfishing (art. 5 (h) UNFSA); due consideration of the interests of artisanal and subsistence fisheries (art. 5 (i) UNFSA); the collection and sharing of relevant data on all aspects of fishing activities (art. 5 (j) UNFSA); the promotion of marine scientific research (art. 5 (k) UNFSA); and the enforcement of fisheries conservation and management measures through effective monitoring, control and surveillance (art. 5 (l) UNFSA). Contrary to the high seas regime of the LOSC, it does not suffice for States to acknowledge and act upon the scientific evidence that is available to them. Here, State parties to the UNFSA must actively seek to conduct scientific research in the context of fisheries. Finally, measures adopted by flag and coastal States, within and outside areas of national jurisdiction, must be compatible in order to sustainably manage the stock in its entirety (art. 7 UNFSA).

As the UNFSA shows, principles of environmental law have increasingly become part of international law instruments. Sustainable development is at the core of fisheries management and is reflected *inter alia* through the concept of MSY. In the context of LOSC, the ITLOS considered that ‘sustainable management’ meant that ultimately the goal is ‘to conserve and develop [fish stocks] as a viable and sustainable resource’.⁸⁸ This interpretation is in line with the definition of sustainable development given by the ICJ in the *Gacikovo-Nagymaros* case.⁸⁹ According to the ICJ, States have to reconcile economic development with the protection of the environment when continuing, undertaking or authorising activities. In the present context, when adopting regulations on shark fishing, States have to balance out economic interests, including those of coastal communities that rely on shark catch for subsistence, with the environmental interests of conservation, which will also benefit future generations. Indeed,

⁸⁷ The precautionary approach is achieved through the improvement of data collection and techniques for dealing with risk and scientific uncertainty, including ‘precautionary reference points’; see Birnie P, Boyle A and Redgwell C, *International Law & the Environment* 3rd edition (Oxford University Press 2009), 737 (for more on the precautionary approach).

⁸⁸ AO on Climate Change (n 41) [190].

⁸⁹ *Gabčikovo-Nagymaros* (n 59) [140]; see Sands P and Peel J, *Principles of International Environmental Law* 4rd edition (Cambridge University Press 2018), 219 (for more on the concept of sustainable development).

according to the LOSC, States have a right to exploit fish stocks, but not beyond sustainable levels (see subsection 2.1.1.1). This entails that they are bound to avoid overexploitation of sharks.

As demonstrated by the overview of LOSC provisions in subsection 2.1.1, the sustainable management of directly targeted stocks is impossible without reliable catch data and accurate scientific evidence. Indeed, these elements are central to the adoption of effective conservation and management measures such as the TAC. Without such measures, sharks will continue to be harvested above sustainable levels. Therefore, another important principle of environmental law for targeted fisheries management is the precautionary approach. This key principle to offset scientific uncertainty will be developed in subsection 2.1.2. The UNFSA gives legislative force to the precautionary approach in its provisions as the ITLOS considered that article 5 UNFSA ‘establishes general principles for the conservation and management of such stocks, including the precautionary approach (in accordance with article 6)’.⁹⁰ Arguably, the wording used by the tribunal seems to suggest that the scope of the UNFSA goes beyond its State parties and informs the content of obligations contained in the LOSC even for non-parties to the UNFSA.⁹¹

2.1.1.4 Matters common to the EEZ and the high seas: enforcement

In the EEZ, although coastal States have the main role in adopting and then securing compliance with their laws, flag States also have a part to play in adopting and enforcing appropriate rules to conserve fish stocks with regard to their vessels. ITLOS concluded that articles 58 (3), 62 (4), 94 and 192 LOSC taken together require flag States ‘to take the necessary measures to ensure that their nationals and vessels flying their flag are not engaged in IUU fishing activities’ in the EEZs of other States.⁹² Even where States have adopted effective measures for the conservation of sharks, enforcement remains a challenge. TACs are set too high, but the generalised lack of compliance with conservation measures is also an issue.⁹³

On the high seas, exclusive flag State jurisdiction reigns. Enforcement and prescriptive jurisdiction are in the hands of the sole flag State (art. 92 (1) LOSC). According to their

⁹⁰ AO on Climate Change (n 41) [425].

⁹¹ See article 31 (3) VCLT; Birnie, Boyle A and Redgwell, (n 87) 734.

⁹² *Request for an Advisory Opinion submitted by the Sub-Regional Fisheries Commission (SRFC)* (Advisory Opinion) [2015] ITLOS Rep 4, [124] (SRFC AO).

⁹³ Churchill, Lowe and Sander (n 68) 558.

international obligations, flag States must exercise jurisdiction and control over their vessels effectively (art. 94 LOSC). In the context of fisheries, according to ITLOS, ‘the flag State is under the ‘due diligence obligation’ to take all necessary measures to ensure compliance and to prevent IUU fishing by fishing vessels flying its flag’.⁹⁴ Due diligence is an obligation of conduct and requires that States not only adopt the appropriate rules and measures, but also a certain level of vigilance in their enforcement and the exercise of administrative control.⁹⁵ As shark fishing is usually not a direct act of the State, but rather conducted by private actors, due diligence is considered a necessary condition to invoke a State’s international responsibility.⁹⁶

In practice, flag States have not been successful in rendering conservation measures effective. One of the remaining and major challenges on the high seas and the EEZ is IUU fishing. IUU fishing is defined in the IPOA IUU (para. 3) and covers a variety of illegal or undesirable fishing practices.⁹⁷ On the other hand, where fishing is legal, reported and/or regulated, it does not always equate to sound management and fishing practices. This is the case for sharks as ‘most of the shark fishing that is taking place is not illegal, but rather there are not adequate regulations in place protecting these shark populations effectively at this stage’.⁹⁸ Additionally, these measures are poorly enforced.⁹⁹ Potential solutions to IUU shark catch reside in increasing ratifications of the Port State Measures Agreement (PSMA)¹⁰⁰ which seeks to ‘prevent, deter and eliminate [IUU] fishing through the adoption and implementation of effective port State measures as a means of ensuring the long-term conservation and sustainable use of living marine resources’, and increasing the enforcement role of RMFOs. Indeed, the UNFSA and the FAO Compliance Agreement¹⁰¹ create a new enforcement and compliance regime for high seas fishing by a) detailing flag State regulatory and enforcement responsibility (art. 18 and 19

⁹⁴ SRFC AO (n 92) [129]

⁹⁵ *Pulp Mills on the River Uruguay (Argentina v. Uruguay)* (Judgment) [2010] ICJ Rep 14, [197].

⁹⁶ Koivurova T and Singh K, *Due diligence* (2022), available at <https://opil-ouplaw-com.mime.uit.no/display/10.1093/law:epil/9780199231690/law-9780199231690-e1034?rskey=Ou9gua&result=1&prd=MPIL>.

⁹⁷ Churchill, Lowe and Sander (n 68) 589.

⁹⁸ This statement might not be so relevant now that RFMOs have recently adopted more stringent rules for shark conservation (see chapter 3). One will need to wait for them to be effectively implemented in order to conclude whether they have a positive impact on shark populations or not; Lack and Sant (n 22) 4.

⁹⁹ Lack and Sant (n 22) 17.

¹⁰⁰ Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal Unreported and Unregulated Fishing, adopted 22 November 2009, entered into force 5 June 2016, 3161 UNTS.

¹⁰¹ Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, adopted 24 November 1993, entered into force 24 April 2003, 2221 UNTS 91.

LOSC and art. II-IV Compliance Agreement), b) reiterating the power for port States to take non-discriminatory measures (art. 23 UNFSA and art. V Compliance Agreement) and c) in high seas areas covered by RFMOs, empowering any UNFSA State party to board and inspect another UNFSA State party vessel where there are ‘clear grounds’ for believing that it is engaged in illegal fishing (art. 21 UNFSA).

2.1.1.5 Evaluation

This section has shown that the ‘fisheries provisions’ of the LOSC alone are not sufficient to give sharks effective protection against overfishing.¹⁰² The problem is twofold. First, sharks need adequate conservation measures. The obligation for States to set a TAC in order to maintain fish stocks at a sustainable level is central to the ‘fisheries provisions’ of the LOSC. This obligation also applies to shark stocks. Sharks are different from other fish in that it is even more difficult to obtain accurate, precise data and information on their status. Taking a precautionary approach when setting the TAC is therefore essential in order to conserve sharks at a sustainable level. Thankfully, the UNFSA has helped reinforce the precautionary approach in the implementation of LOSC ‘fisheries provisions’. Additionally, it can be concluded that the high seas regime seems to be a better response to the overharvesting of sharks by giving less importance to the TAC. In the high seas, States have more freedom to adopt original conservation measures that might be more successful in protecting sharks, such as area-based measures. States also have to provide strong scientific evidence when adopting management measures, such as the TAC. Seemingly, this leaves less space for other considerations, such as economic ones. Second, adequate conservation measures must be enforced. Enforcement is a challenge in shark fisheries, as it is in others, and developing effective mechanisms to cooperate on enforcement issues is crucial. Combating IUU fishing successfully will also make it possible to obtain data on sharks and enrich our knowledge on the various species. One of the most promising solutions to both issues is the strengthening of RFMOs’ prescriptive and enforcement role.

2.1.2 Regulation of shark fishing through environmental law

As sharks have suffered significant decline despite the fisheries regulations in place, environmental law seems to offer an additional path towards shark protection by providing new obligations or prescribing new approaches to existing regulations. The landscape of

¹⁰²The term ‘fisheries provisions’ is between quotation marks because in reality their scope is broader and encompasses activities other than fishing (see section 2.3).

environmental provisions relevant to the protection of sharks is fragmented, with some instruments having a wider scope and others applying specifically to sharks.¹⁰³ Also relevant is the fact that the effect of some instruments is binding and that of others non-binding.

First, the LOSC itself contains environmental obligations. Part XII and its general obligation for States to protect and preserve the marine environment (art. 192 LOSC) apply in all maritime zones. Courts and tribunals have determined its scope as applying to ‘all States with respect to the marine environment’ and as encompassing ‘all maritime areas, both inside the national jurisdiction of States and beyond it’.¹⁰⁴ This environmental facet of States’ obligations will be detailed in subsection 2.1.2, since it plays an important role for tackling bycatch issues. Other relevant treaties comprise of binding environmental law instruments of general scope that apply at sea, including the CBD and the BBNJ Agreement. Both of these binding instruments focus on prescribing the implementation of area-based management tools, including marine protected areas, and the undertaking of Environmental Impact Assessments (EIA).¹⁰⁵ Taken together, they cover areas within and beyond national jurisdiction. The great weakness of the CBD is that obligations are phrased in extremely soft terms (‘in accordance with its particular conditions and capabilities’ and ‘as far as possible and as appropriate’).¹⁰⁶ This leaves States wide discretion in the implementation of their obligations. In contrast, the BBNJ Agreement uses stronger language by favouring the auxiliary verb ‘shall’ in the formulation of most of its provisions, but at the time of writing, the BBNJ Agreement is not yet in force, having been ratified by only eight of its signatory States. Consequently, it is hard to imagine these two instruments having any real impact on shark conservation in the near future, especially given the additional challenge of enforcement with regard to area-based management tools.

Second, certain environmental law conventions mention sharks explicitly in their provisions. This is the case for the CMS and CITES. They use a listing system that references a number of species worthy of special protection. Sharks are listed in both instruments.¹⁰⁷ The CMS calls

¹⁰³ Techera and Klein (n 28) 25.

¹⁰⁴ *South China Sea Arbitration (The Republic of Philippines v. The People’s Republic of China)* (Award) [2016] PCA 2013-19, [940]; AO on Climate Change (n 41) [400].

¹⁰⁵ They also contain provisions on the sharing of marine technology and of benefits arising from marine genetic resources. These provisions are less relevant to the topic of shark fishing.

¹⁰⁶ Techera and Klein (n 28) 52.

¹⁰⁷ Sharks are listed in both appendixes of the CMS. For example, the basking shark is listed in Appendix I, while the silky shark, one of the most prominent sharks on the fin market, is listed in Appendix II. The CITES uses

on its State parties to ‘promote, cooperate in and support research relating to migratory species’ and to endeavour to provide immediate protection or conclude agreements for the listed migratory species (art. II CMS), whereas the CITES aims to protect listed endangered species from international trade. They both highlight the sensitive conservation status of sharks and show that more has to be done to ensure their survival. There are some significant weaknesses in the CMS and CITES: they only cover certain shark species and omit to focus on a more holistic approach to conservation that would concentrate on habitat protection, the lack of which is at the root of most shark mortality. Also, although CITES’s legitimacy seems well established – it is lauded as ‘one of the most comprehensive and successful international environmental treaties in existence’¹⁰⁸ – it faces the obstacle of illegal wildlife trade, which is more than frequent in shark trade.¹⁰⁹

Non-binding recommendations have been made specifically towards shark conservation. Although their *modus operandi* differs, the IPOA Sharks and the Sharks MOU both contain key recommendations applicable to all shark species.¹¹⁰ These include the widespread application of the precautionary approach in the adoption of conservation and management measures, for instance by identifying vulnerable and threatened species and improving data collection assessment and reporting (para. 22 IPOA Sharks; para. 9 Sharks MOU). They also recognise the importance of adopting measures on the basis of the best available scientific evidence. The Sharks MOU explicitly requires States to combat finning by requiring that sharks are landed

appendixes representing three increasing levels of protection. Sawfishes are the only shark species that are listed in Appendix I, which imposes a ban on international trade. Other shark species, e.g. great white, basking and whale sharks, are listed in Appendix II.

¹⁰⁸ McOmber E M, ‘Problems in the Enforcement of the Convention on International Trade in Endangered Species’ (2002) 27 *Brooklyn Journal of International Law* 673, 674.

¹⁰⁹ See Birnie, Boyle and Redgwell (n 87) 681-692 (for more details on the CMS and the CITES).

¹¹⁰ The IPOA Sharks was adopted under the Code of Conduct for Responsible Fisheries (CCRF) which sets out international principles and standards of behaviour to ensure effective conservation, management, and development of both marine and freshwater living aquatic resources. The IPOA Sharks is a voluntary and non-binding instrument. It is supported by the International Plan of Action to Prevent, Deter and Eliminate IUU Fishing (IPOA IUU), also adopted under the same framework. These plans of action call upon States to develop National Plans of Action (NPOA) and provide measures by which flag and coastal States are to act. IPOA Sharks applies to target and non-target species (para. 12) and seeks to ‘ensure the conservation and management of sharks and their long-term sustainable use’ (para. 16). It applies within and beyond areas of national jurisdiction (para. 17); see Edwards (n 1) 322 (for more on the implementation of IPOA Sharks); the Sharks MOU was adopted under the auspices of the CMS. Its geographical scope is intended to be global, but it only applies to species listed in Appendices I and II of the CMS.

with each fin naturally attached (para. 13 (h)),¹¹¹ while the IPOA Sharks calls for the sustainable use of target species and full utilisation of dead sharks (para. 22). These two non-binding instruments, although non-binding in and of themselves, add to the general framework for fishing and marine protection established by the LOSC by providing specific guidance and procedures for the conservation of shark species, addressing particular threats such as overfishing and bycatch.

Outside of treaties and formal but non-binding instruments, some environmental principles exist as part of customary international law. By definition, these principles allow for flexibility and can be applied simultaneously with fisheries provisions. As seen in subsection 2.1.1.1, the precautionary approach is a key principle in fisheries management for setting a TAC capable of maintaining sharks at a sustainable level. The substance of the precautionary approach is reflected in Principle 15 of the Rio Declaration. It stipulates, in similar words, that the lack of full scientific certainty must not be used as a reason for postponing conservation measures. Multiple international instruments – e.g. UNFSA, founding instruments of RFMOs, IPOA Sharks and Sharks MOU – explicitly mention the importance of this principle in the context of fisheries, or more specifically shark management. Additionally, on numerous occasions, courts and tribunals have also hinted that precaution is essential when conserving and managing marine living resources, and more broadly when protecting and preserving the marine environment.¹¹² In the *Southern Bluefin Tuna* case, ITLOS required the Parties to ‘act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stock of southern bluefin tuna’.¹¹³ It was explicitly recognised as part of customary international law in the context of the Area.¹¹⁴ In the context of fisheries, according to the FAO, the precautionary approach makes it possible to prevent ‘unacceptable or undesirable situations, taking into account that changes in fisheries systems are only slowly reversible, difficult to control, not well understood, and subject to change in the environment and human values’.¹¹⁵ Shark fisheries fit these defining characteristics, even more so than other commercial fisheries

¹¹¹ This is in line with UNGA A/RES/78/68 and IUCN Recommendation 4.114.

¹¹² *The Mox Plant Case (Ireland v United Kingdom), Provisional Measures (Order)* [2001] ITLOS Rep 95, [84]; *Case Concerning Land Reclamation by Singapore in and around the Straits of Johor (Malaysia v Singapore), Provisional Measures (Order)* [2003] ITLOS Rep 10, [99]; AO on Climate Change (n 41) [213].

¹¹³ SBT Cases (n 63) [77].

¹¹⁴ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area (Advisory Opinion)* [2011] ITLOS Rep 10, [121-122, 125–127].

¹¹⁵ FAO, *Precautionary Approach to Fishery Management*, <https://www.fao.org/4/w3592e/w3592e07.htm>.

(see section 1.1). Management according to the precautionary approach includes the establishment of rules controlling access to fisheries, data reporting requirements, processes for planning and implementing more comprehensive fishery management, and interim measures until then. Long-term effects and undesirable/potentially unacceptable outcomes, such as overexploitation, have to be given due consideration. A precautionary approach must be taken at all stages, ‘from planning through implementation, enforcement and monitoring to re-evaluation’.¹¹⁶ The standard of proof when authorising fishing activities must be proportionate to the potential risk to the resource but must also take into account the expected benefits of such activities, as required by sustainable development considerations (see subsection 2.1.1.3). The precautionary approach may even require the cessation of fishing activities that have potentially serious adverse impacts.¹¹⁷

The inclusion of environmental principles relevant to shark fisheries – mainly the precautionary approach – in various environmental instruments has the potential to inform States’ fisheries obligations arising under the LOSC in the shark-specific context, through article 192 LOSC (see section 2.2). An evolutive interpretation is in line with the UNFSA’s implementation of the LOSC ‘fisheries provisions’. As seen above, to achieve their sustainability goal, fisheries management measures rely on accurate scientific knowledge and data, which unfortunately is lacking for shark species. Approaching the adoption of shark conservation and management measures with precaution is essential to the aim of maintaining stocks at sustainable levels. Additionally, unlike obligations arising from self-standing environmental conventions such as the CITES and CMS, environmental law principles can be applied simultaneously with fisheries provisions, which have now been applied by States consistently at least since the adoption of the LOSC. It is easier to build on well-established existing mechanisms than to superimpose brand-new, original measures on a preexisting framework.

2.2 Bycatch

In the LOSC and the UNFSA, bycatch species are protected under provisions reflecting ecosystem considerations. Even though the term ‘bycatch’ is found nowhere in the Convention, both ‘fisheries provisions’ in Part V and VII and provisions on the protection and preservation of the marine environment in Part XII can be interpreted as relating to bycatch.

¹¹⁶FAO (n 115).

¹¹⁷Bianchi G, ‘The Concept of the Ecosystem Approach to Fisheries in FAO’, in Bianchi G and Skyoldal H R (eds), *Ecosystem Approach to Fisheries* (CABI 2008), 25-26.

Firstly, in the EEZ, as seen in subsection 2.1.1.1, the coastal State is to determine the TAC of its living resources based on the MSY (art. 61 (1) and (3) LOSC). In its wording, article 61 (1) does not limit its scope to *harvestable* living resources. But in practice, States have taken a species-specific approach and set a TAC only for harvestable species, surely with the aim of securing a supply of food for human consumption.¹¹⁸ A number of factors must ‘qualify’ the MSY (art. 61 (3) LOSC). Despite focusing more on anthropogenic factors such as ‘economic factors, including the economic needs of coastal fishing communities and the special requirements of developing States’, article 61 (3) mentions ‘environmental [...] factors’.¹¹⁹ ‘Interdependence of stocks’ must be ‘taken into account’. This latter part must be interpreted simultaneously with paragraph 4 of the same provision, which provides that the coastal State ‘shall take into consideration the effects on species associated with or dependent upon harvested species with a view to maintaining or restoring populations [...] above levels at which their reproduction may become seriously threatened’ (art. 61 (4) LOSC).

Altogether, article 61 LOSC obliges coastal States to take into consideration interdependent stocks, as well as associated and dependent species, when adopting measures relating to the conservation of its living resources. In the case of sharks, fishing of other harvestable species, such as tuna, has serious effects on sharks, threatening their reproduction levels. As seen in Chapter 1.1, sharks play a vital role in the ecosystem as one of the most prominent predators of the oceans. Their survival and that of other fish are interdependent. Therefore, there is no doubt that they account for ‘associated with or dependent upon’ species, and more broadly as ‘interdependent species’ to such fisheries. This means that States, when adopting conservation and management measures in relation to targeted fish stocks, should also aim to maintain the balance of the wider ecosystem, including sharks. Article 61 (4) LOSC emphasizes the importance of an ecosystem-based approach to fisheries management for keeping species such as sharks above levels where their ability to reproduce is seriously threatened.

The LOSC provides a similar regime for the high seas, but contrary to the EEZ, rights and duties apply to all exploiting States (art. 117 LOSC). The focus is also on harvested species, and conservation measures must also take into consideration associated and dependent species, as well as the interdependence of stocks (art. 119 (1) (a) and (b) LOSC).

¹¹⁸ Zacharias and Ardron (n 75) 184; Borg S, *Conservation on the High Seas: Harmonizing International Regimes for the Sustainable Use of Living Resources* (Edward Elgar Publishing 2012), 178.

¹¹⁹ Techera E J, *Marine Environmental Governance : From International Law to Local Practice* (Routledge 2012), 68.

Without mentioning bycatch, the UNFSA relies mostly on the ecosystem approach to protect non-targeted species. As part of States' duty to adopt conservation measures, article 5 UNFSA mentions among other things the duty to 'assess the impacts of fishing on species belonging to the same ecosystem or associated with or dependent upon the target stocks' (art. 5 (d) UNFSA) and the duty to 'adopt, where necessary, conservation and management measures for species belonging to the same ecosystem or associated with or dependent upon target stocks, with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened' (art. 5 (e) UNFSA). In that regard, the UNFSA goes beyond LOSC, in which such species must only be 'taken into consideration' when taking conservation measures for harvested species, including setting the TAC.¹²⁰ Finally, stocks have to be considered in their entirety, within and outside areas of national jurisdiction. Article 7 UNFSA magnifies requirements under articles 63 and 64 LOSC by obliging States to cooperate to ensure compatibility between the measures adopted for high seas areas and those for areas under national jurisdiction.¹²¹

Even without a uniform definition,¹²² the ecosystem approach is widely recognised as necessary to overcome difficulties caused by conventional approaches to fisheries management, which focuses 'more or less exclusively on the target species and the objective of sustainable yields' and consequently 'has been inadequate for the conservation and sustainable use of ecosystems as a whole'.¹²³ One of the main aspects of the ecosystem approach to fisheries is maintaining ecosystem integrity. This entails that biodiversity must be maintained in all its aspects (habitat, species and genetic), and ecological processes that support biodiversity and productivity must be equally maintained.¹²⁴ Sharks must be maintained at sustainable levels. Additionally,

¹²⁰ See art. 61 (4) LOSC for the EEZ and art. 119 (1) (b) LOSC for the high seas.

¹²¹ Birnie, Boyle and Redgwell (n 87) 742.

¹²² The FAO Technical Guidelines for Responsible Fisheries adopted a working definition of the ecosystem approach: 'an ecosystem approach to fisheries (EAF) strives to balance diverse societal objectives, by taking account of the knowledge and uncertainties of biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries' (FAO, *FAO Technical Guidelines for Responsible Fisheries No. 2, Fisheries management: the ecosystem approach to fisheries* (2003), 14).

¹²³ FAO, Committee on Fisheries (COFI). Twenty-Seventh Session, *Implementing the ecosystem approach to fisheries, including deep-sea fisheries, biodiversity conservation, marine debris and lost or abandoned fishing gear* (2007), 8; while it is becoming increasingly part of global treaties and reiterated in various recommendations, the ecosystem approach is not yet considered part of customary international law, see Sands and Peel (n 89) 218).

¹²⁴ Bianchi (n 117) 25.

because sharks are part of the broader marine ecosystem, their conservation will prevent trophic cascades and maintain ecological processes.

Secondly, in addition to ‘fisheries provisions’, general provisions on the protection and preservation of the marine environment contained in Part XII are relevant. This Part places duties on States also within their own internal and territorial waters.¹²⁵ Article 192 LOSC is the key provision of Part XII. Its content is informed by other provisions of Part XII and other applicable rules of international law.¹²⁶ Other applicable rules are contained in international agreements.¹²⁷ Article 192 imposes a positive obligation to protect the marine environment from future damage and a negative obligation to preserve its present condition.¹²⁸ In this case, the due diligence standard is ‘stringent’ (see subsection 2.1.1.4 for developments on due diligence).¹²⁹

One of the obligations that is included in article 192 is the specific obligation of article 194 (5) to take measures ‘necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life’. Protecting habitats and ecosystems is key to reducing bycatch numbers. The obligation imposed by article 194 (5) is twofold: measures must be necessary to protect ‘rare or fragile ecosystems’ and the ‘habitat of depleted, threatened or endangered species and other forms of marine life’. Neither the term ‘ecosystem’ nor ‘habitat’ are defined in the Convention, but courts and tribunals have found that definitions given by Article 2 of the CBD are ‘internationally accepted’.¹³⁰ An ‘ecosystem’ is defined as ‘a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit’.¹³¹ ITLOS also mentioned that identifying ‘rare or fragile ecosystems’ must be done on a case-by-case basis.¹³² Certain sharks live in rare or fragile ecosystems, such as reef sharks. Their habitat must be protected and preserved, including from detrimental fishing practices such as the use of driftnets and bottom trawling.¹³³ In that respect, article 192 (5) LOSC protects a wider range of shark

¹²⁵ South China Sea (n 104) [940].

¹²⁶ *Idem*, [941].

¹²⁷ *Idem*, [942].

¹²⁸ *Idem*, [941].

¹²⁹ AO on Climate Change (n 41) [400].

¹³⁰ South China Sea (n 104) [945]; AO on Climate Change (n 41) [404].

¹³¹ South China Sea (n 104) [945].

¹³² AO on Climate Change (n 41) [403].

¹³³ See UNGA A/RES/57/142.

species than CITES or CMS, which apply only to species that are threatened with extinction, are likely to become endangered or have an unfavourable conservation status.

On the other hand, a ‘habitat’ is ‘the place or type of site where an organism or population naturally occurs’. In order to fall under the obligation of 194 (5) LOSC, it is not necessary for such a habitat to be rare or fragile, but it must be home to ‘depleted, threatened or endangered species’.¹³⁴ Here CITES, as an instrument of near-universal adherence, provides guidance to determine which species qualify.¹³⁵ As mentioned in subsection 2.1.2, CITES lists a number of shark species as being endangered or threatened in its appendixes, including sawfishes and great white, basking and whale sharks. The habitat of these species must also be protected and preserved. Arguably, this provision can be a legislative basis for the adoption of gear restrictions from coastal to open waters inhabited by depleted, threatened or endangered species.

States have considerable discretion in adopting the necessary measures, where the Convention itself does not impose specific measures, such as conducting an EIA (art. 206). The term ‘necessary’ is to be interpreted broadly.¹³⁶ Examples of measures include gear restrictions, establishing marine protected areas, and setting catch and vessel limits. States must act in good faith and adopt reasonable measures on the basis of the best available science and for the benefit mankind as a whole.¹³⁷

For State parties to international agreements other than the LOSC, their obligation to protect and preserve the marine environment is informed by these other agreements.¹³⁸ The IPOA Sharks and Sharks MOU are the two only instruments that mention bycatch explicitly. IPOA Sharks cites the necessity of better managing ‘certain multispecies fisheries in which sharks constitute a significant bycatch’ and adds that, in some instances, the need for such management is urgent (para. 4). Also, its definition of ‘shark catch’ includes bycatch (para. 11). The Sharks MOU explicitly requires States to develop programmes to monitor shark bycatch, including vessel monitoring systems, inspections and on-board observer or monitoring programmes. It also calls upon States to develop and/or use selective gear, devices, and techniques, to the extent

¹³⁴ AO on Climate Change (n 41) [404].

¹³⁵ South China Sea (n 104) [956].

¹³⁶ AO on Climate Change (n 41) [402].

¹³⁷ AO on Climate Change (n 41) [405], here the Tribunal refers to the Seabed Disputes Chamber Advisory Opinion on the Area.

¹³⁸ South China Sea (n 104) [941].

possible, in order to reduce bycatch. States and different actors, such as fishing industries, RFMOs and NGOs, should also liaise and coordinate the implementation of incidental capture mitigation mechanisms. Finally, States should promote capacity building for the safe handling and release of sharks.

To summarise, shark bycatch has been explicitly mentioned in key legal instruments – IPOA Sharks and Sharks MOU – and creates direct obligations for States to take measures in that regard. Unfortunately, both instruments are non-binding (see subsection 2.1.2). No binding treaty mentions bycatch explicitly. The LOSC and UNFSA rely on the ecosystem approach to consider non-targeted species, such as sharks caught as bycatch. The weight of the prescribed obligations depends on their phrasing. Under the LOSC’s ‘fisheries provisions’, non-targeted species must only be taken into account when adopting conservation and management measures towards targeted fisheries. Under the UNFSA and Part XII LOSC, direct measures to maintain non-targeted stocks at a sustainable level must be adopted. States keep a wide discretion on what rules to adopt to achieve such goals. Guidance can be found in the non-binding instruments cited above.

2.3 Tourism

Despite increasing concerns for shark protection at an international level, shark-based tourism has not been the object of any international treaty. For now, the only existing rules have been adopted at a domestic level.¹³⁹ Regulation is achieved through licensing arrangements, similar to those that exist in relation to fishing, and through non-binding codes of conduct for tourism operators and visitor participants. At an international level, several NGOs have published best practice guidelines for shark-based tourism.¹⁴⁰ According to Techera and Klein, a ‘more coordinated international regime for shark-based eco-tourism is needed to ensure the conservation of these iconic species’.¹⁴¹ The LOSC with its 169 State parties might offer the solution. The current section will examine how.

In the EEZ, the coastal State has ‘sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living’ (art. 56 (1) (a) LOSC). This provision is twofold, as it gives exclusive rights to the coastal State in relation to

¹³⁹ Techera and Klein (n 28) 91.

¹⁴⁰ See WWF International, Project AWARE, *Responsible Shark and Ray Tourism: A guide to best practice* (2017), available at <https://sharks.panda.org/tools-publications/tourism-guide>.

¹⁴¹ Techera E J and Klein N, ‘The role of law in shark-based eco-tourism: Lessons from Australia’, (2013) 39 *Marine policy* 21, 27.

the mentioned activities, but also duties of conservation and management. The terms ‘sovereign rights’, ‘conserving and managing’, ‘natural resources’ have been defined in subsection 2.1.1.1. Here, the focus is to understand what is meant by ‘exploring and exploiting’ and whether it includes tourism activities. The terms in question are not defined anywhere in the Convention. The general rules of interpretation found in article 31 of the VCLT, as set out in the methodology section of this thesis, will therefore be used to clarify their meaning.

Starting with a literal interpretation that builds on the ordinary meaning of terms, ‘exploration’ in the context of living resources can be defined as the ‘action of travelling to or around an uncharted or unknown area for the purposes of discovery and gathering information’.¹⁴² Tourism does not qualify as a type of exploration as it is conducted for business reasons, mainly focusing on attracting tourists and providing entertainment, and not for purposes of discovery or information gathering.¹⁴³ On the other hand, ‘exploitation’ is ordinarily defined not only as ‘the action of deriving value from a natural resource by harvesting’, but also more broadly as ‘the action or fact of deriving benefit from something by making full or good use of it’.¹⁴⁴ The aim of the shark-based tourism business is to make profit by offering tourists the opportunity to snorkel/swim with sharks or to cage dive.¹⁴⁵ In this case, benefit is derived from using sharks as the main attraction. A literal interpretation would suggest that shark-based tourism falls under the scope of article 56 (1) (a) LOSC and that, consequently, coastal States have sovereign rights over shark-based tourism activities conducted in their EEZ.

The ordinary meaning is supplemented by the context in which the terms are found (art. 31 (1) VCLT). The LOSC details what conservation and management obligations entail in the context of living resources in articles 61 and 62 LOSC and articles 63 to 68 LOSC. The term *inter alia* contained in article 62 (4) LOSC suggests that the duty for States conserve and manage their living resources is not limited to listed measures and the kind of activity they relate to. But, according to ITLOS in the *Virginia G* case, despite the list being non-exhaustive, ‘all activities that may be regulated by a coastal State’ must have ‘a direct connection to fishing’.¹⁴⁶ By coming to such a conclusion, the tribunal failed to acknowledge that nowhere does the

¹⁴² Oxford English Dictionary, *Exploration*, sense 2 (2023), available at https://www.oed.com/dictionary/exploration_n.

¹⁴³ Oxford English Dictionary, *Tourism* (2023), available at https://www.oed.com/dictionary/tourism_n.

¹⁴⁴ Oxford English Dictionary, *Exploitation* (2023), available at https://www.oed.com/dictionary/exploitation_n.

¹⁴⁵ Techera and Klein (n 141) 22.

¹⁴⁶ *Virginia G* (n 71) [213 and 215].

Convention use the term ‘fishing’ when referring to sovereign rights. Also, whereas it is recognised that conservation and management duties apply to natural non-living resources, nowhere does the Convention detail what these duties should be.¹⁴⁷ Once again, this shows that conservation and management measures can go beyond those explicitly provided for in the Convention. Another argument to support this view is the adoption of the UNFSA (see art. 31 (2) VCLT). In fact, adopting an implementation agreement, whose aim is ‘to ensure the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks’, proves that the provisions of the LOSC are not sufficient on their own to conserve and manage fish stocks sustainably. This thesis considers that a better view is that conservation and management measures relating to living resources can go beyond those provided explicitly in the LOSC and therefore relate to activities other than fishing.

It is hard to imagine another way to exploit marine living resources than through fishing and tourism. Marine wildlife tourism was not a widespread practice at the time when the LOSC was negotiated. In fact, the first place in the world that offered the opportunity to swim with sharks was Ningaloo Marine Park, Western Australia, in 1989.¹⁴⁸ The issue is quite specific and recent. This might explain why the LOSC failed to consider tourism as worthy of coastal States’ conservation and management efforts in its provisions. Additionally, the LOSC seeks to be a ‘constitution for the oceans’. In fact, there is a presumption that all activities taking place at sea fall under its scope. It is also regularly referred to as a ‘living instrument’ because of its mechanism of ‘rules of reference’ that allows international rules and standards to be brought under its umbrella and because of the evolutive approach that its courts and tribunals have taken in interpreting its environmental provisions.¹⁴⁹ Environmental law and its ecosystem considerations are greatly influencing the development of Part XII of the Convention and subsequent agreements to the LOSC. The scope of the LOSC and its intrinsic flexibility are two arguments that support a broad interpretation of the term ‘exploitation’. Takei agrees, stating that ‘all in all, the traditional concept of conservation is being replaced by a new, elaborated and broadened concept’.¹⁵⁰ In consequence, according to a teleological interpretation, in the EEZ, coastal States’ sovereign rights should include shark-based tourism, in addition to fishing.

¹⁴⁷ See Churchill, Lowe and Sander (n 68) 263-264 (for discussion).

¹⁴⁸ Catlin J and Jones R, ‘Whale shark tourism at Ningaloo Marine Park: a longitudinal study of wildlife tourism’, (2010) 31 (3) *Tourism Management* 386, 386.

¹⁴⁹ See South China Sea (n 104); AO on Climate Change (n 41).

¹⁵⁰ Takei (n 83) 103.

Beyond national jurisdiction, the freedom of the high seas prevails (art. 87 LOSC). Although marine wildlife tourism is not mentioned explicitly, the list of freedoms contained in article 87 (1) LOSC is non-exhaustive. Therefore, there is freedom to conduct shark-tourism activities in the high seas. This freedom is subject to conditions contained in the LOSC and other rules of international law (art. 87 (1) LOSC). Firstly, according to article 117 LOSC, ‘all States have the duty to take, or to cooperate with other States in taking, such measures for their respective nationals as may be necessary for the conservation of the living resources of the high seas’. According to Takei, this obligation is not ‘limited to fishing or to other exploration and exploitation’.¹⁵¹ The high seas regime operates in a similar way to the EEZ regime, as art. 119 LOSC seems to detail the conservation obligation.¹⁵² Article 119 LOSC leaves the choice for States to adopt ‘other conservation measures’—unlike its twin provision under the EEZ, which obliges States to set a TAC. Article 119 LOSC does not impose *what* to do, but rather *how* to do it. The latter provision can consequently apply to conservation measures relating to shark-based tourism. Secondly, high seas freedoms are further limited by Part XII LOSC, which obliges all States to protect and preserve the marine environment. The scope of Part XII, including its provision on the conservation of marine ecosystems (art. 194 (5) LOSC) and other agreements informing its content, seems broad enough to include a duty to adopt conservation measures relating to shark-based tourism (see subsection 2.1.2). Since shark-based tourism undeniably benefits coastal communities and the advancement of scientific knowledge on the species, it is important to highlight that sustainable development considerations must at least be taken into account (see subsection 2.1.1.3 for developments on the concept of sustainable development).¹⁵³

Although some authors have proposed a comprehensive international treaty on sharks that would regulate shark-based tourism or a global wildlife tourism treaty, the preexisting framework that the LOSC establishes seems to be a more realistic alternative.¹⁵⁴ Interpreting ‘fisheries provisions’ as encompassing shark-based tourism creates the same obligations on

¹⁵¹ *Idem*, 42.

¹⁵² See art. 61 LOSC in the EEZ regime.

¹⁵³ Gabčíkovo-Nagymaros (n 59) [140]; South China Sea (n 104) [941].

¹⁵⁴ See Gronstal Anderson I M, ‘Jaws of Life: Developing International Shark Finning Regulations Through Lessons Learned from the International Whaling Commission’ (2011) 20 *Transnational Law and Contemporary Problems* 511 and Spiegel J, ‘Even Jaws Deserves to Keep His Fins: Outlawing Shark Finning Throughout Global Waters’ (2001) 24(2) *Boston College International and Comparative Law Review* 409 (both authors are in favour of a shark treaty); Techera and Klein (n 28) 110 (argue in favour of a wildlife tourism treaty).

States as those detailed in subsection 2.1.1 on the conservation and management of targeted living resources and those regarding cooperation, detailed in the following section.

2.4 Cooperation through RFMOs

Sharks have different migratory patterns depending on the species, but most, if not all, do not live within one maritime area (see subsection 2.1.1). From a legal perspective, as sharks inhabit areas which do not correspond to the maritime zones established by the LOSC, regulating shark fishing, bycatch and tourism activities is difficult. Thankfully, the zonal approach is not absolute under the Convention. Negotiators have sought to align the EEZ and the high seas regimes by including cooperation obligations in the text of the Convention. Cooperation is also used as a tool to manage the common area that is the high seas. State practice, through the inclusion of the obligation to cooperate in virtually all global treaties and international environmental agreements, indicates that it is on its way to acquiring customary status.

In the EEZ, States have a duty to cooperate with other States over the management of shared fish stocks (art. 63 (1) LOSC). State practice suggests that States have mostly cooperated directly through cooperative arrangements, including periodic arrangements negotiated under a pre-existing framework treaty and bilateral commissions, or on an ad hoc basis.¹⁵⁵ RFMOs seem to have played a limited role in the management of shared stocks. Additionally, sharks are usually seen as being a more international concern and, in practice, their management has been apprehended in a manner consistent with that of straddling and highly migratory stocks.

For straddling and highly migratory stocks, in the high seas and in the EEZ, coastal States and high seas fishing States are required to cooperate directly or through the appropriate existing international organisations to adopt conservation measures (art. 63 (2) and 64 LOSC). For highly migratory stocks, the aim of cooperation is explicitly mentioned to be one of conservation and optimum utilisation throughout the region. At least for managing highly migratory species, the LOSC seems to show a preference for indirect cooperation, since it provides that where no appropriate international organisation exists, coastal and fishing States must cooperate to establish one (art. 64 LOSC). On the high seas, the LOSC also calls upon *all* States to establish ‘as appropriate [...] subregional or regional fisheries organisations’ in order to cooperate indirectly ‘with a view to taking the measures necessary for the conservation of

¹⁵⁵ See Churchill, Lowe and Sander (n 68) 556 (for examples of such cooperative arrangements).

the living resources concerned’ (art. 117 and 118 LOSC).¹⁵⁶ Here ‘living resources concerned’ covers all living resources on the high seas including sharks. The LOSC does not give guidance on how ‘organisations’ are to operate apart from providing a platform for data and scientific information exchange (art. 119 (2) LOSC). As seen in subsection 2.1.1.1, data and scientific knowledge are key to sustainable management of fish stocks. Sharks’ migration routes traverse multiple coastal States’ EEZ and the high seas, where they are exploited by various actors, from artisanal and commercial fisheries to tourism operators. Cooperation between all actors on the development of data and scientific collection strategies will bring us one step closer to maintaining sharks at sustainable levels.

Part XII also includes provisions on cooperation.¹⁵⁷ States are to cooperate ‘directly or through competent international organisations’, on a global or regional basis, for the protection and preservation of the marine environment (art. 197). The ITLOS in its *Advisory Opinion on Climate Change* considered this obligation as an obligation of conduct, referring to its previous *Fisheries Advisory Opinion* and its reasoning in relation to articles 63 (1) and 64 (1) LOSC.¹⁵⁸ In the context of climate change, the ITLOS deemed that ‘competent international organisations’ refers to ‘all international organisations with competence to address, directly or indirectly, the protection and preservation of the marine environments from anthropogenic GHG emissions’.¹⁵⁹ In the present context, in practice, States have established regional fisheries management organisations or arrangements in order to cooperate on the conservation of living resources. RFMOs are therefore the ‘competent international organisations’ in that regard. Article 197 LOSC and the ITLOS’s recent interpretation suggests that the mandate of RFMOs should go beyond managing fisheries and include all activities impacting on the conservation of living resources, such as tourism. This would also be consistent with current ecological developments ‘including the objective of sustainable fisheries, ecosystem approaches, the

¹⁵⁶ Article 117 LOSC can be interpreted broadly as requiring cooperation for all activities that impact the conservation of living resources, including tourism (see section 2.3). It has been argued that article 117 reflects customary international law: see e. g. Burke W T, *The New International Law of Fisheries* (Oxford University Press 1994), 100; Fleischer C A, *The New Regime of Maritime Fisheries* (Martinus Nijhoff Publishers 1989), 140. For a contrary view, see Kindt J W and Wintheiser C J, ‘The Conservation and Protection of Marine Mammals’, (1985) 7 *University of Hawaii Law Review* 301, 356-357.

¹⁵⁷ Part XII applies since ‘the conservation of the living resources of the sea is an element in the protection and preservation of the marine environment’, SBT Cases (n 63) [70].

¹⁵⁸ AO on Climate Change (n 41) [308 and 309].

¹⁵⁹ *Idem*, [304].

protection of marine biodiversity and the precautionary approach'.¹⁶⁰ Part XII adds some elements on how cooperation is to be conducted in articles 200 and 201 LOSC. According to the ITLOS, 'Article 201 of the Convention serves to link article 197 with article 200. Cooperation between States in the formulation and elaboration of rules, standards and recommended practices and procedures must be based on appropriate scientific criteria, developed through coordinated studies, research programmes and exchange of information and data'.¹⁶¹ In that regard, the ITLOS signals the particular importance of the participation of States in relevant international organisations.¹⁶² The Tribunal's interpretation of articles 197 LOSC *cum* 200 and 201 LOSC is in line with article 119 (2) LOSC on cooperation requirements for the conservation of living resources on the high seas and the importance of reliable information as the basis of policy making.

As mentioned above, the LOSC provides few details on how cooperation is to operate. The Convention seems to give precedence to indirect cooperation and highlights the importance of scientific information and accurate data. The UNFSA was adopted to develop the provisions applying to straddling and highly migratory species, including those on cooperation presented above.¹⁶³ Article 8 (1) UNFSA recalls the duty of coastal and high seas fishing States to cooperate in order to 'ensure effective conservation of such stocks'. They can cooperate directly or indirectly through RFMOs.¹⁶⁴ Where no organisation exists, States have the due diligence obligation to create one (art. 8 (2) UNFSA) (see subsection 2.1.1.4 for developments on due diligence).¹⁶⁵ Where an RFMO has been established, States fishing for the stocks in the high seas area and relevant coastal States 'shall give effect to their duty to cooperate by becoming members' or 'by agreeing to apply' the conservation and management measures by the RFMO (art. 8 (3) UNFSA). Arguably, the non-respect of art. 8 (3) UNFSA will entail a loss of the right to engage in fishing activities in the area (art. 8 (4) UNFSA) and a violation of the duty to cooperate under the LOSC, and potentially under customary international law.¹⁶⁶ Additionally,

¹⁶⁰Takei (n 83) 103.

¹⁶¹AO on Climate Change (n 41) [316].

¹⁶²*Idem*, [320].

¹⁶³The relevant provisions are art. 61, 62, 63, 64, 117, 118, 119, 197, 200 and 201 LOSC.

¹⁶⁴'A less institutionalised mechanism for the conservation of marine living resources is called a "regional fisheries management arrangement" (RFMA). The distinction between RFMOs and RFMAs is a matter of interpretation.' (Tanaka (n 70) 336); 'the loose definition of "arrangement" could be interpreted to make it no different from direct cooperation' (Takei (n 83) 103).

¹⁶⁵See SRFC AO (n 92) [210].

¹⁶⁶Takei (n 83) 67.

art. 8 (3) UNFSA provides that States having a ‘real interest in the fisheries concerned’ have a right to become members and shall not be discriminated against.

The UNFSA lays down the functions of the RFMOs in articles 8 to 12. *Inter alia*, State members to RFMOs must a) agree on and comply with conservation and management measures to ensure the long-term sustainability of straddling fish stocks and highly migratory fish stocks, b) adopt and apply any *generally recommended international minimum standards* for the responsible conduct of fishing operations, c) obtain and evaluate scientific advice, review the status of the stocks and assess the impact of fishing on non-target and associated or dependent species, d) agree on standards for collection, reporting, verification and exchange of data on fisheries for the stocks and e) establish appropriate cooperative mechanisms for effective monitoring, control, surveillance and enforcement (art. 10 UNFSA). Arguably, the terms ‘generally recommended international minimum standards’ seem to render non-binding instruments such as IPOA Sharks or UNGA resolutions on driftnets, bottom trawling and sustainable fisheries legally binding to RFMO member States.¹⁶⁷ If necessary, this could also provide a basis for stricter environmental measures recommended by the FAO or the CBD, including MPAs where fishing is banned or severely restricted.¹⁶⁸ This thesis suggests that CMMs that have been adopted consistently throughout RFMOs can also inform international minimum standards.

To summarize, the LOSC and, subsequently, the UNFSA have detailed States’ obligation to cooperate on the conservation and management of living resources. This obligation is superimposed over other obligations that States have, including the obligations to ensure that living resources are not endangered by overexploitation, to maintain or restore harvested species at the maximum sustainable yield, to determine the TAC, to maintain or restore dependent or associated species above a level at which their reproduction may become seriously threatened, to promote the objective of optimum utilization and to protect and preserve the marine environment (see sections 2.1, 2.2 and 2.3). Because the obligation to conserve living resources must be interpreted broadly (see section 2.3), States must cooperate on regulating not only fishing activities, but also bycatch issues and wildlife tourism. RFMOs, as States’ preferred means of cooperation, must take over all three issues in order to fulfil the entirety of States’ obligations under international law. As shark stocks fall victims to all three types of

¹⁶⁷ Birnie, Boyle and Redwell (n 87) 739.

¹⁶⁸ *Ibid.*

exploitation, RFMOs whose mandate extends to shark species must adopt CMMs in relation to shark fishing, shark bycatch and shark-based tourism.

2.5 Conclusion

This chapter has answered the *should* aspect of the research question by laying out not only States' existing international law obligations regarding shark protection, but also where the current weaknesses of the existing framework reside. The next chapter will build on that and answer the second aspect of the research question, which focuses on the role that RFMOs play in protecting sharks from overexploitation. This will enable an assessment of how States have implemented their obligations within RFMOs, and how RFMOs have potentially developed standards on shark protection.

3 RFMOs and existing CMMs

The aim of the present chapter is to analyse the implementation and legislative role of RFMOs regarding shark protection. First, this chapter focuses on key provisions of RFMOs founding instruments that give them competence and subsequently oblige them to adopt conservation and management measures (CMMs) in relation to sharks. Second, it highlights current trends in shark conservation within RFMOs by outlining CMMs in force within specific RFMOs. These relate to the three types of shark exploitation identified in this thesis. This will provide a basis for answering the research question in the final chapter of this thesis. At the end of the current chapter, the role that RFMOs have played in protecting sharks from overexploitation will be clearly outlined.

3.1 General provisions

3.1.1 Scopes of competence

To understand which RFMOs can take measures in relation to fishing, bycatch and tourism, the scope of RFMOs' competence must be defined.¹⁶⁹ The answer is found in each RFMO's founding instrument.¹⁷⁰ These instruments define the geographical area over which the RFMO has competence and the species of fish that fall within its mandate. 'Fishing' is defined in this thesis as activities aimed towards the targeted catch of sharks, i.e. directed shark fisheries. 'Bycatch' is defined as the incidental catch of non-targeted species during the pursuit of other fish species (see Chapter 1.2).

General RFMOs use reverse listing.¹⁷¹ This means that organisations have a mandate over all fisheries within the designated area that have not been excluded from their scope. No general RFMO excludes sharks from its scope of competence.¹⁷² This entails that CCAMLR, GFCM,

¹⁶⁹ For an in-depth analysis of the competence of RFMOs over shark-based tourism, see section 3.4.

¹⁷⁰ Depending on the RFMO, they are titled 'Agreement' or 'Convention'.

¹⁷¹ General RFMOs include a) the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), b) the General Fisheries Commission for the Mediterranean (GFCM), c) the North East Atlantic Fisheries Commission (NEAFC), d) the North Pacific Fisheries Commission (NPFC), e) the Northwest Atlantic Fisheries Organization (NAFO), f) the South East Atlantic Fisheries Organisation (SEAFO), g) the South Indian Ocean Fisheries Agreement (SIOFA) and the South Pacific Regional Fisheries Management Organisation (SPRFMO); Ásmundsson S, *Regional Fisheries Management Organisations (RFMOs): Who are they, what is their geographic coverage on the high seas and which ones should be considered as General RFMOs, Tuna RFMOs and Specialised RFMOs?* (FAO 2016), 3, 5 and 7.

¹⁷² RFMOs use a definition of 'sharks' similar to the one used in this thesis, which matches the definition laid down by the FAO in its IPOA Sharks; see e.g. para. 1 (1) WCPFC CMM 2022-04 and SIOFA CMM 12(2023).

NEAFC, NPFC, NAFO, SIOFA and SPRFMO's mandate includes directed shark fisheries, as well as fisheries that catch sharks as bycatch.

In contrast, while they can adopt measures to protect bycatch species, most tuna RFMOs cannot regulate directed shark fisheries.¹⁷³ This is because tuna RFMOs only have competence over species explicitly included in their scope.¹⁷⁴ Except for the WCPFC and the CCSBT, whose scope of competence is limited to southern bluefin tuna fisheries, tuna RFMOs can adopt measures relating to fisheries targeting 'tuna and tuna-like' species. 'Tuna-like' species include oceanic tunas, billfishes and neritic tunas. Sharks do not qualify as a 'tuna-like' species.¹⁷⁵ Despite tuna RFMOs not having competence over fisheries targeting sharks, some have shown concern over the development of such activities in their area of competence.¹⁷⁶ The WCPFC has a broader mandate than other tuna RFMOs. Its competence extends to all highly migratory fish stocks listed in Annex 1 of the LOSC and 'such other species of fish as the Commission may determine'.¹⁷⁷ As seen in section 1.1., Annex I LOSC lists certain species of oceanic sharks. Consequently, all tuna RFMOs can regulate shark bycatch, but directed shark fisheries fall outside of their mandate, except for the WCFC which can regulate fisheries targeting Annex I LOSC sharks.¹⁷⁸

¹⁷³ See e.g. art. V (1) Agreement for the Establishment of the Indian Ocean Tuna Commission: 'The Commission shall promote cooperation among its Members with a view to ensuring [...] the conservation and optimum utilization of stocks covered by this Agreement and *encouraging sustainable development of fisheries based on such stocks.*' (emphasis added); Tuna RFMOs include a) the Commission for the Conservation of Southern Bluefin Tuna (CCSBT), b) the Indian Ocean Tuna Commission (IOTC), c) the International Commission for the Conservation of Atlantic Tunas (ICCAT), d) the Inter-American Tropical Tuna Commission (IATTC) and e) the Western and Central Pacific Fisheries Commission (WCPFC).

¹⁷⁴ Ásmundsson (n 171) 7.

¹⁷⁵ See FAO, Majokowski J, *Tuna and tuna-like species*, available at <https://www.fao.org/4/y5852e/y5852e08.htm#ref3.1>.

¹⁷⁶ See e.g. Preamble to ICCAT Res 03-10 that recognises that directed shark fisheries might be conducted in the Convention area.

¹⁷⁷ Preamble and art. 1 (f) Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean.

¹⁷⁸ Tuna RFMOs play a role in regulating by-catch of 'tuna or tuna-like fisheries'; see section 3.3.

3.1.2 Existing conservation and management measures

CMMs are binding on member States and are sometimes referred to as ‘recommendations’ or ‘resolutions’.¹⁷⁹ The term ‘CMMs’ will be used in the following sections to encompass all binding measures. In general, RFMOs have adopted CMMs relating to three main categories: data collection, management of fishing activities, and enforcement and compliance.¹⁸⁰ They must be distinguished from non-binding measures, such as guidelines, best practices, or voluntary codes of conduct. Non-binding measures will not be covered in this chapter. The RFMOs of focus include general RFMOs and tuna RFMOs. Specialised RFMOs that deal with specific types of fisheries or species are not covered.¹⁸¹ Since, for now, specialised RFMOs have mostly regulated anadromous fish and pollock.¹⁸² These fisheries have little impact on sharks.¹⁸³ This may explain why such organisations have not taken the initiative to adopt specific measures on sharks.

The adoption of CMMs is often preceded by data collection.¹⁸⁴ Accurate data, and more precisely, accurate species-specific data, enables informed decision-making by helping identify and understand the problem. It proves to States that an issue is worthy of regulation, and subsequently, of effective implementation. This holds particularly true for sharks as, until recently, regulating their exploitation at an international level was only of limited importance to States. Counterbalancing sharks’ bad reputation with accurate and precise data has been essential in the law-making process for their conservation. Having species-specific data on landings and discards is key to enabling States to exercise their enforcement powers effectively. This is particularly true for sharks, as certain RFMO CMMs (see sections 3.2 and 3.3) and

¹⁷⁹ Arguably, CMMs can also have a binding effect on all States conducting fishing activities in the area (and species) of competence of the relevant RFMO. Most RFMO CMMs provide that provisions are binding on ‘members and cooperating non-members’; see e.g. art. 1 SIOFA CMM 12(2023), art. 5 WCPFC CMM 2022-04.

¹⁸⁰ Rayfuse (n 43) 441.

¹⁸¹ See Ásmundsson (n 171) 6 (for an overview of all RFMOs).

¹⁸² ‘Anadromous fish’ migrate from freshwaters where they hatch to the ocean where they spend most of their live; see art. 66 LOSC.

¹⁸³ The only shark species that seem qualify as anadromous stocks are bull sharks. The only predator of salmon seems to be the salmon shark. Pollock stocks are fished using midwater trawls which are successful in targeting the wanted stock and limiting by-catch; see Nagasawa K, ‘Predation by Salmon Sharks (*Lamna ditropis*) on Pacific Salmon (*Oncorhynchus* spp.) in the North Pacific Ocean’, (1998) 1 *Aquatic Sciences and Fisheries Abstracts (ASFA)* 15 and FAO, *Fishing gear type* (2024), available at https://www.fao.org/fishery/en/geartype/search?page=1&f=code%3D03*#search.

¹⁸⁴ Van Osch S, ‘Save Our Sharks: Using International Fisheries Law within Regional Fisheries Management Organizations to Improve Shark Conservation’, (2012) 33(2) *Michigan Journal of International Law* 383, 412.

international treaties, such as CITES and CMS (see subsection 2.1.2), protect sharks on a species basis. To conclude that a vessel is fishing in violation of these international obligations, it is necessary to identify the type of catch.

RFMOs have made major progress in implementing data collection on the species-specific level specifically for sharks.¹⁸⁵ Most RFMOs have now explicitly recognised the need to collect precise data for effective shark conservation and management.¹⁸⁶ Data must not only relate to catch, but also effort, discards, and trade, as well as information on the biological parameters of many species.¹⁸⁷ The NAFO requires ‘all catches of sharks, including available historical data’ to be reported.¹⁸⁸ Recently, the WCPFC developed provisions on species identification before the release of sharks caught as bycatch.¹⁸⁹ Also, in CMMs applying more generally to all fisheries, data collection for sharks has also been rendered mandatory. Effective from 1 January 2024 is the obligation for member States of the WCPFC to record daily catch information on listed and key shark species.¹⁹⁰ The SPRFMO also calls for States to prioritise the reporting of catches and biological sampling procedures for all sharks in its data standards.¹⁹¹ Until States partake in this widespread call to collect shark data, which will in turn help develop scientific knowledge, a precautionary approach when adopting measures relating to sharks is essential. The importance of the precautionary approach to managing shark fisheries is highlighted by RFMOs such as the NPFC and the CCAMLR.¹⁹²

In contrast, no enforcement and compliance measures have been adopted specifically to answer shark conservation preoccupations. Although sharks would benefit from improved fisheries

¹⁸⁵ Species-specific data collection requires more precise reporting than using generic species-codes such as ‘shark’ or ‘other’ to report discarded or landed sharks.

¹⁸⁶ E.g. Preamble to WCPFC CMM 2022-04; Preamble to SIOFA CMM 12(2023) and CMM 02(2023); Preamble to CCAMLR Conservation Measure 32-18 (2006); Preamble to IOTC Res 17/05; Part IV Rec GFCM/42/2018/2.

¹⁸⁷ Biological parameters include the species, length or diameter (for skates and rays), weight, sex, maturity stage.; see e.g. SIOFA CMM 02(2023).

¹⁸⁸ Art. 12 (1) (a) NAFO/COM Doc. 24-01

¹⁸⁹ Art. 19 WCPFC CMM 2022-04.

¹⁹⁰ Listed species include blue shark, silky shark, oceanic whitetip shark, mako sharks, thresher sharks, porbeagle shark, hammerhead sharks and whale shark and other key shark species according to FAO species codes (para. 2 (i and ii) WCPFC CMM 2022-06)

¹⁹¹ Annex 7 (K) (d) SPRFMO CMM 02-2022.

¹⁹² Preamble to NPFC 2023-14; Preamble to CCAMLR Conservation Measure 32-18 (2006): ‘pending the collection of information on the status of shark stocks, it would be appropriate to restrict and, if possible, to reduce removals from these stocks’.

enforcement to counter IUU fishing, they are not unique from other fish in that regard (see section 2.1.1.4).¹⁹³ This aspect of RFMOs' legislative work will not be detailed here. In the following sections, management of fishing activities will be developed in relation to the three identified exploitation threats: fishing, bycatch and tourism.

3.2 Fishing

Because they have competence over directed shark fisheries, CMMs adopted by CCAMLR, GFCM, NEAFC, NPFC, NAFO, SIOFA and SPRFMO are the focus of this section. The relevant CMMs to highlight for directed shark fisheries relate to quotas, species protection and finning. The year 2024 has seen many obligations enter into force to protect sharks from direct exploitation; previously it had not been a priority for RFMOs.¹⁹⁴

3.2.1 Quotas

Before 2024, no formal quotas had been established by RFMOs to limit targeted shark catch. But starting from 1 January 2024, the SIOFA has subjected one of its subareas to a catch limit for 'Portuguese dogfish', which is the deepest-living shark.¹⁹⁵ This is a first in shark management and to date the SIOFA remains the only RFMO to have adopted this type of CMM in the shark context.¹⁹⁶

3.2.2 Species protection

On the other hand, species protection measures have been adopted by multiple RFMOs and are quite wide ranging. Species protection measures, unlike quotas/catch limits, are not aimed at the sustainable management of sharks, but rather at full protection of a particular species by prohibiting all directed fishing. Species protection measures are adopted exclusively for conservation purposes. CCAMLR has the most drastic CMM of all RFMOs when it comes to protecting sharks from targeted fisheries: it prohibits 'directed fishing on shark species in the Convention Area for purposes other than scientific research'.¹⁹⁷ This moratorium applies to all shark species. Other RFMOs prohibit directed fishing of specific species. This is the case for

¹⁹³ Van Osch (n 184) 417.

¹⁹⁴ See e.g. para. 3-6 SIOFA CMM 02(2023); NEAFC Rec 07,08,09,10,11 2024; NPFC CMM 2023-14 (entered into force 26 July 2023).

¹⁹⁵ See Carrier J C, Heithaus M and Musick J A, *Biology of Sharks and Their Relatives* (CRC Press 2022), 616 (on the Portuguese dogfish as a deep-water shark).

¹⁹⁶ Para. 3-6 SIOFA CMM 02(2023).

¹⁹⁷ Para. 1 CCAMLR Conservation Measure 32-18 (2006).

the NEAFC, NAFO and SIOFA.¹⁹⁸ The GFCM and WCPFC do not directly prohibit the catch but rather the ‘retaining on board, transshipping, storing on a fishing vessel or landing’ of certain shark species.¹⁹⁹ This phrasing makes it possible to cover both targeted and incidental catch. In practice, both formulations would have the same effect on directed shark fisheries. The NPFC and SPRFMO are the most lenient in the matter. The NPFC recognises that there are no directed shark fisheries currently managed by its Commission.²⁰⁰ Therefore, shark fishing must follow general principles applicable to other fisheries of the RFMO area, specifically the duty to conduct a prior assessment and to prevent harm to the long-term sustainability of fisheries resources and to vulnerable marine ecosystems (art. 3 (h) NPFC Convention). SPRFMO CMMs do not contain any provisions on directed shark fisheries.

3.2.3 Finning

Regulating finning has also been a main aspect of RFMOs’ management efforts. Real progress has been made following several international incentives such as the IPOA Sharks, which encourages the minimisation of waste and discards, and the Sharks MOU, the UNGA Resolution 78/68 and the IUCN Recommendation 4.114, which urge all sharks to be landed with their fins naturally attached. CMMs in relation to finning have been adopted by general RFMOs and by tuna RFMOs, since finning is an issue both in directed and non-directed shark fisheries (see Chapter 1.2). The CMMs adopted by CCAMLR, GFCM, NEAFC, NPFC, NAFO, SIOFA and WCPFC will be covered here since they apply equally to targeted and bycaught sharks. Tuna RFMOs’ CMMs in relation to finning will be covered in the next chapter because they only apply in case of shark bycatch (subsection 3.3.6).

The GFCM, NEAFC and NAFO have all adopted strict finning bans that prohibit the removal of shark fins on board vessels and the retention on board, transshipment and landing of fully detached shark fins.²⁰¹ The NPFC and WCPFC prohibit finning with certain exceptions that are subject to strict requirements. These requirements guarantee the identification of individual

¹⁹⁸ The NEAFC prohibits the directed fishing of deep-sea sharks, basking shark, deep-sea chimaeras, deep-sea rays and porbeagle (Rec 07,08,09,10,11 2024). The NAFO prohibits directed fisheries for Greenland sharks (art. 12 (1) (d) NAFO/COM Doc. 24-01). The SIOFA prohibits the targeting of certain deep-sea sharks (Para. (2) CMM 12(2023)).

¹⁹⁹ The WCPFC prohibits the ‘retaining on board, transshipping, storing on a fishing vessel or landing’ of oceanic whitetip, silky and whale sharks (Para. 22 (1) and 23 (2) WCPFC CMM 2022-04). The GFCM does so for shark species listed in Annex II of the SPA/BD Protocol. This protocol includes endangered or threatened species (Para. 7 Rec GFCM/42/2018/2).

²⁰⁰ Para. 4 NPFC CMM 2023-14.

²⁰¹ Para. 4 (a) Rec GFCM/42/2018/2; para. 3 NEAFC Rec 10:2015; art. 12 (1) (b and c) NAFO/COM Doc. 24-01.

sharks and their corresponding fins.²⁰² Two RFMOs – the SIOFA and SPRFMO – do not currently have finning measures in force. Nearly all RFMOs have significantly departed and progressed from the fin-to-carcass ratio that used to be the norm in tackling finning issues within RFMOs.²⁰³ According to Camhi, Fordham and Fowler, in addition to being the ‘most effective and enforceable means of banning finning’, the now predominant fins-naturally-attached approach ‘dramatically enhances the ability to collect much needed species-specific catch data’.²⁰⁴

3.2.4 Evaluation of the implementation process

Generally, RFMOs have made major progress towards regulating directed shark fisheries. Major changes and developments entered into force in 2024, although the CCAMLR’s prohibition of all directed shark fisheries has been in place since 2006. To date, CCAMLR seems to be the RFMO that gives the greatest importance to shark conservation from directed fisheries, giving little weight to other sustainable development considerations. The SIOFA has taken a different approach by using quotas for a specific shark species as a sustainable management tool. Other general RFMOs have adopted similar measures, favouring the protection of certain species. Regarding the particular practice of finning within directed shark fisheries, the fins-naturally-attached approach now seems to be the norm within RFMOs. The SPRFMO remains a ‘free rider’ amongst general RFMOs in not having adopted any measures on directed shark fisheries.

3.3 Bycatch

Bycatch is dealt with both by general RFMOs and tuna RFMOs (see section 3.1.1). The CCSBT has decided to align to other tuna RFMOs’ bycatch measures as its area of competence overlaps with the IOTC, WCPFC and ICAT.²⁰⁵ Therefore, while ‘determined to mitigate incidental harm to ecologically related species caused by fishing for Southern Bluefin Tuna’, the CCSBT has not adopted bycatch CMMs of its own but has made those of other RFMOs applicable to its member States.²⁰⁶

²⁰² Para. 9 WCPFC CMM 2022-04; para. 8 NPFC CMM 2023-14 (the NPFC exceptions only apply to ‘incidentally caught, taken, or harvested’ sharks).

²⁰³ The fin-to-carcass ratio approach is used to enable fishing vessels to land fins separately from the carcass by respecting a 5% ratio between the weight of the carcass and fins.

²⁰⁴ Camhi, Fordham and Fowler (n 31) 420.

²⁰⁵ Resolution to Align CCSBT’s Ecologically Related Species measures with those of other tuna RFMOs.

²⁰⁶ Preamble to the Resolution to Align CCBT’s Ecologically Related Species measures with those of other tuna RFMOs.

In 1995, ICCAT was the first RFMO to note the problem of shark bycatch formally.²⁰⁷ Since then, nearly all RFMOs have addressed the issue explicitly in their CMMs and have recognised the vulnerable position of sharks in relation to fisheries targeting other species.²⁰⁸ From 1 January 2024, State parties to multiple RFMOs are bound by new obligations in relation to shark bycatch.²⁰⁹ The measures relate to research, bycatch quotas, gear restrictions, area protection, release of catch, full utilisation of catches and finning and will be examined hereafter.

3.3.1 Research

Contracting parties to the NEAFC, NAFO, SIOFA, WCPFC and IOTC must, where possible or as appropriate, conduct research to identify ways to make fishing gear more selective in order to avoid bycatch of sharks. Research must also focus on key biological and ecological parameters, life history and behavioural traits, migration patterns and identification of potential mating, pupping and nursery grounds, stock assessment methods, and handling practices to maximise post-release survival.²¹⁰ Research priorities have been listed for WCPFC member States in the RFMOs Shark Research Plan.²¹¹ The SIOFA and IOTC stipulate that research must be conducted specifically in relation to certain shark species.²¹²

3.3.2 Bycatch quotas

The NAFO and IATTC are the two only RFMOs that have set quotas for the retention of bycatch in certain fisheries.²¹³ Bycatch must not exceed either an absolute limit set in

²⁰⁷ ICCAT Res 95-02.

²⁰⁸ See e.g. Preamble to CCAMLR Conservation Measure 32-18 (2006) and NPFC CMM 2023-14; the only RFMO that does not address shark bycatch explicitly is the SPRFMO.

²⁰⁹ See e.g. para. 20 WCPFC CMM 2022-04; NEAFC Rec 07,08,09,10,11 2024; NPFC CMM 2023-14 (entered into force 26 July 2023); IATTC Res C-23-07 (entered into force 1 July 2024).

²¹⁰ Para. 6 and 7 NEAFC Rec 10:2015; art. 12 (5) NAFO/COM Doc. 24-01; para. 10 SIOFA CMM 12(2023); para. 11 IOTC Res 17/05; para. 18 IATTC Res C-23-07.

²¹¹ Para. 26 WCPFC CMM 2022-04; para. 15 IATTC Res C-23-07 (in 2025, the IATTC will assess the status of impacted shark species with a view to informing a research plan); para. 1 IATTC Res C-16-05 (the IATTC has developed a work plan in order to complete full stock assessments for the silky shark and hammerhead sharks).

²¹² See para. 9 SIOFA CMM 12(2023) (where such research must be conducted in relation to deep sea shark bycatch specifically) and para. 5-7 IOTC Res 18/02; para. 6 IOTC Res 13/06; para. 6 IOTC Res 12/09 (*idem* for blue sharks, oceanic whitetip sharks and thresher sharks).

²¹³ Art. 6 NAFO/COM Doc. 24-01 (such fisheries include cod, redfish, American plaice, yellowtail, witch, white hake, capelin, skates, Greenland halibut, squid, shrimp and alfonso); para. 3-7 IATTC Res C-23-08 (quotas set by the IATTC apply only to silky sharks caught by longline vessels).

kilograms, or a relative limit set as a percentage of the weight of the total catch contained on board.²¹⁴

3.3.3 Gear restrictions

Gear restrictions have been adopted by RFMOs specifically to reduce shark bycatch. For instance, the GFCM calls for the reduction of trawl fishing in coastal areas – within 3 nautical miles of the coast – to enhance the protection of coastal sharks.²¹⁵ The WCPFC establishes precise requirements to prevent all shark bycatch, including prohibiting longline fisheries targeting tuna or billfish from using or carrying wire trace as branch lines or leaders and from using shark lines.²¹⁶ Similarly, the IATTC prohibits vessels targeting tuna or swordfish from using shark lines.²¹⁷ To avoid whale shark bycatch, the WCPFC and IOTC prohibit the set of a purse seine on a school of tuna if a whale shark is sighted in the area prior to the commencement of the set.²¹⁸ The same obligation applies in the IOTC for mobulid rays.²¹⁹

Additionally, RFMO CMMs provide for gear restrictions that aim to reduce bycatch in general.²²⁰ Such restrictions have the effect of protecting sharks without mentioning them explicitly. This is the case for the prohibition on the use of large-scale pelagic driftnets in the SIOFA and high seas IOTC areas, and deepwater gillnets in the SIOFA area.²²¹ This prohibition limits the catch of both pelagic and deep-water sharks.²²²

²¹⁴ Art. 13 (3) (a) NAFO/COM Doc. 24-01; for example, if the catch of cod is 20 000 kg, then the weight of bycatch cannot equal more than 5%, which is equivalent to 1 000 kg, and can never exceed 1 250 kg.

²¹⁵ Para. 5 Rec GFCM/42/2018/2.

²¹⁶ Shark lines are also referred to as ‘branch lines running directly off the longline floats or drop lines’ or as buoy lines (para. 14-16 WCPFC CMM 2022-04).

²¹⁷ Para. 10 IATTC Res C-23-07; para. 4 IATTC Res C-16-05.

²¹⁸ Para. 23 (1) WCPFC CMM 2022-04; para. 2 IOTC Res 13/05.

²¹⁹ Para. 2 IOTC Res 19/03 (this obligation is stricter for mobulid rays as it applies not only to purse seine but for the set of any gear type).

²²⁰ See e.g. art. 13 NAFO/COM Doc. 24-01.

²²¹ Para. 1 SIOFA CMM 05(2016); para. 2 IOTC Res 17/07.

²²² See Kyne P M and Simpfendorfer C A, ‘Deepwater Chondrichthyans’ in Carrier J C, Musick J A and Heithaus M R, *Sharks and Their Relatives II: Biodiversity, Adaptive Physiology, and Conservation* (Taylor & Francis Group 2013), 61 (for how longline and benthic gillnet fisheries have made Azores kitefin shark populations decline).

In the IOTC area, States must subject all vessels using purse seine, longline, gillnet, pole and line, handline and trolling gear to a data recording system which must *inter alia* contain information on bycaught species including sharks.²²³

3.3.4 Area protection

In line with the UNGA Resolution 78/68, the NPFC protects vulnerable marine ecosystems, including seamounts, from bottom fisheries. Although these measures have not been adopted to protect sharks directly, these habitats are crucial for all sharks because they provide precious pupping and nursery grounds and are home to deep-sea species of sharks.²²⁴ Bycatch reports from bottom fisheries are used to determine whether a maritime area qualifies as a vulnerable marine ecosystem that deserves increased protection.²²⁵ The NAFO, NEAFC, CCAMLR, SIOFA, and SEAFO have also designated areas as vulnerable marine ecosystems to be protected from bottom fishing activities.²²⁶

3.3.5 Release of catch

Where RFMOs impose shark catch to be released, all RFMOs require that it must be done in a manner that keeps sharks alive and causes them minimal harm, as far as possible.²²⁷

Certain RFMOs require the release of *all* shark species caught as bycatch, such as CCAMLR, NEAFC, NAFO and WCPFC.²²⁸ State parties to the NEAFC and NAFO have the obligation to encourage the release of live sharks to the extent possible, if they are caught incidentally and are not used for food and/or subsistence.²²⁹ This obligation has been rendered stricter for incidental catches of certain specified sharks. In the NEAFC area, basking sharks and porbeagle must be promptly released unharmed to the extent possible without exception. In the NAFO area, States are to exercise all reasonable efforts to minimize incidental catch and mortality of Greenland sharks and release them alive and without harm where their catch cannot be avoided.²³⁰ The WCPFC Commission has adopted guidelines to maximise the survival and live

²²³ IOTC Res 15/01.

²²⁴ Van Osch (n 184) 415.

²²⁵ NPFC CMM 2023-05 and 2023-06.

²²⁶ Art. 17 NAFO/COM Doc. 24-01; NEAFC Rec 19:2014; CCAMLR Conservation Measure 22-06 (2019); SIOFA CMM 01(2023); SEAFO CM 30-15.

²²⁷ See e.g. para. 2 CCAMLR Conservation Measure 32-18 (2006); para. 4 IOTC Res 13/06; para. 11 IATTC Res C-23-07.

²²⁸ See e.g. para. 2 CCAMLR Conservation Measure 32-18 (2006).

²²⁹ Para. 5 NEAFC Rec 10:2015; art. 12 (4) NAFO/COM Doc. 24-01.

²³⁰ Para. 2 NEAFC Rec 07 and 11:2024; art. 12 (1) (d bis and e) NAFO/COM Doc. 24-01.

release of caught sharks. Release must be exercised using techniques that result in minimal harm – e.g. by leaving the shark in the water, where possible, and cutting the line as close to the hook as possible – and must take into account the crew’s safety.²³¹ The release of whale sharks must be reported to the relevant authority of the flag State.²³² Additionally, States have an obligation to release all oceanic whitetip and silky shark bycatch as soon as possible. The only exception to this prohibition of retention is biological sampling as part of a research project.²³³

Some RFMOs limit the obligation of release to listed shark species. In the GFCM area, species listed as endangered or threatened must be released.²³⁴ Tope shark species caught with bottom-set gillnets, longlines and tuna traps must be promptly released.²³⁵ In the IOTC, it is for its Commission to determine which shark species should be subject to reinforced protection through CMMs. Such a decision must take into account *inter alia* full stock assessments on sharks, stock assessment and Ecological Risk Assessments (ERAs) by fishing gear, using best available scientific data/information, priority in shark species with high risk and feasibility of implementation.²³⁶ Awaiting the IOTC Commission’s decision, there is a prohibition to retain onboard, transship, land or store any part or whole carcass of oceanic whitetip sharks, except for biological sampling and for artisanal fisheries operating exclusively in the EEZ.²³⁷ Mobulid rays, whale sharks and thresher sharks must always be promptly released to the extent practicable, independently of the Commission’s decision.²³⁸ The IATTC prohibits the retention of oceanic whitetip.²³⁹ Whale sharks and silky sharks caught by purse seine cannot be retained

²³¹ Para. 18 and 20 WCPFC CMM 2022-04.

²³² Para. 23 (5) (b) WCPFC CMM 2022-04; para. 3 IOTC Res 13/05 (the same obligation to report applies in the IOTC).

²³³ Para. 22 (4) WCPFC CMM 2022-04.

²³⁴ Para. 6 Rec GFCM/42/2018/2.

²³⁵ Para. 8 Rec GFCM/42/2018/2.

²³⁶ Para. 1 and 2 IOTC Res 13/06.

²³⁷ Para. 3 and 7 IOTC Res 13/06.

²³⁸ Para. 5 IOTC Res 19/03; para. 3 IOTC Res 13/05. Para. 3 IOTC Res 12/09.

²³⁹ Para. 1 IATTC Res C-11-10.

either.²⁴⁰ For purse seine and longline vessels, the IATTC provides precise procedures on how to handle bycatch in order to cause minimal harm to released sharks.²⁴¹

3.3.6 Finning

For general RFMOs, the provisions relating to finning have been set out in subsection 3.2.3 and apply equally to shark bycatch. Likewise, tuna RFMOs have adopted finning CMMs. These only apply to tuna or tuna-like fisheries when sharks are caught as bycatch. These have not been developed previously and will be presented in this chapter.

The IOTC is the most lenient tuna RFMO in regard to finning as it still partially applies the weight-to-carcass ratio approach. This means that for sharks landed fresh, member States should prohibit removal of shark fins on board. In other words, they are to apply the fins-naturally-attached approach. But for sharks landed frozen, member States can still land shark catch if fins contained on board do not exceed 5% of the total weight of sharks on board. Nevertheless, States are encouraged to consider progressively implementing the fins-naturally-attached approach to all shark landings.²⁴² The IATTC, on the other hand, has followed other RFMOs by fully prohibiting finning and requiring States to land all sharks with all fins naturally attached to the body.²⁴³

3.3.7 Evaluation of the implementation process

Some CMMs implement an ecosystem approach and therefore benefit bycatch species, including sharks, without mentioning them explicitly. This is the case for certain gear restrictions and area protection measures. These have been adopted widely throughout RFMOs. Other CMMs refer to shark bycatch explicitly. As a preliminary step to the adoption of management measures *stricto sensu*, general and tuna RFMOs stipulate that States must undertake scientific research to avoid shark bycatch. Measures adopted on that basis include gear restrictions, but also requirements on the safe and live release of bycaught sharks. CMMs of this kind have been adopted extensively by RFMOs. In contrast, bycatch quotas are not currently common practice, as they are in force in only two RFMOs, the NAFO and the IATTC.

²⁴⁰ Para. 2 IATTC Res C-19-06; para. 2 IATTC Res C-23-08 (silky sharks may only be retained on strict conditions, including if governmental authorities are present at the point of landing or if donated for domestic human consumption).

²⁴¹ Para. 11 IATTC Res C-23-07; para. 3 IATTC Res C-16-05.

²⁴² Para. 3 IOTC Res 17/05.

²⁴³ Para. 5 and 6 IATTC Res C-23-07.

Finally, the IOTC is the only RFMO that continues to apply the weight-to-carcass ratio in order to combat finning of bycaught sharks, despite international recommendations.²⁴⁴

3.4 Tourism

As seen in section 1.2, shark-based tourism, as one of the ways to exploit sharks, impacts the marine environment beyond shark populations. By disturbing sharks, which sometimes results in the killing of individuals, shark-based tourism is one of the factors that has led to the decline of shark populations. To avoid widespread consequences to the ecosystem including trophic cascades (see section 1.1), effective management of such activities in accordance with obligations set out by the international legal framework is essential.

This section focuses on RFMOs' founding instruments and the extent to which they enable, or even oblige, such organisations to adopt measures relating to shark-based tourism. Here, CMMs do not play a great role as none applies specifically to shark-based tourism. Therefore, unlike the two previous sections, this section does not elaborate on CMMs. Additionally, this section does not cover tuna-RFMOs – except the WCPFC – as their mandate does not enable them to take measures for activities aimed at exploiting sharks directly (see subsection 3.1.1).

3.4.1 Scopes of competence

The objective of general RFMOs extends to the conservation and sustainable management of fisheries/marine living resources.²⁴⁵ According to the relevant definitions of 'fisheries resources' and 'marine living resources', all RFMOs consider sharks as living resources.²⁴⁶ Additionally, the undertaking of fishing activities for such resources is not considered as a condition to qualify as 'fisheries resources' according to the relevant definitions. This means that even if sharks were used exclusively for tourism purposes, they would still qualify as a resource falling within the mandate of all general RFMOs. To give effect to the cited objectives, all RFMOs provide that State parties and the Commission must apply certain principles.

Where those principles use the terms 'fishing activities' or 'fishing', they are defined broadly as 'including any activity which can reasonably be expected to result in attracting, locating,

²⁴⁴ See the Sharks MOU, UNGA A/RES/78/68 and IUCN Recommendation 4.114.

²⁴⁵ See e.g. art. 1 (2) NEAFC Convention, art. 1 (h) NPFC Convention (the objectives are always formulated in different terms but always reflect this double objective); the WCPFC has a more limited mandate that extends only to highly migratory fish stocks (art. 2 WCPFC Convention; see subsection 3.1.1 on the fact that some shark species can be managed by the WCPFC).

²⁴⁶ See e.g. art. I (f) NAFO Convention, art. 1 (f) SIOFA Agreement (for definitions of fisheries resources); art. I (2) CCAMLR Convention (for definition of marine living resources).

catching, taking or harvesting’ living marine resources/fishery resources.²⁴⁷ Shark-based tourism uses methods such as baiting and feeding to attract sharks near tourists. It also allows shark stocks to be located, as tourist vessels go out to sea daily enabling tour guides to get acquainted with the stock’s habits and migratory patterns. Consequently, shark-based tourism can reasonably be interpreted as an activity resulting in the attracting and locating of fishery resources/marine living resources. Shark-based tourism could therefore consist of a ‘fishing activity’ and ‘fishing’. Consistent with this interpretation, measures that must be taken in relation to fishing activities/fishing, as well as measures aimed at managing a wider range of activities, all apply equally to shark-based tourism.²⁴⁸ Accordingly, shark-based tourism would then be one of the areas where States have an obligation to adopt adequate CMMs to ensure the conservation and sustainable management of sharks pursuant to their international obligations detailed in Chapter 2.

Obligations arising from RFMOs’ founding instruments are further supported by general obligations contained in international instruments such as the LOSC and UNFSA, and also by principles mentioned explicitly in RFMOs’ founding instruments as needing to be at least taken into account when adopting CMMs, such as the general obligation to protect and preserve the marine environment, the protection of marine ecosystems, the ecosystem and precautionary approach, and the protection of biodiversity (see sections 2.1 and 2.2).²⁴⁹

Additionally, obligations to conduct scientific research to improve knowledge of fisheries resources/marine living resources and to develop rules on data is a further argument that favours the taking of measures on shark-based tourism by RFMOs.²⁵⁰ Indeed, recently, RFMOs have put great emphasis on States’ obligation to report their shark catches including bycatch and to

²⁴⁷ See e.g. art. 1 (g) (ii) SIOFA Agreement; art. 1 (g) (ii) NAFO Convention; art. 1 (f) GFCM Agreement.

²⁴⁸ See e.g. art. 3 (b) NPFC Convention; art. 5 (a) GFCM Agreement.; art. 8 (b) (ii) GFCM Agreement (where measures must apply only to fishing activities).

²⁴⁹ The general obligation to protect and preserve the marine environment (art. 3 (1) (a) (ii) SPRFMO Convention; art. 4 (e) SIOFA Agreement), the protection of marine ecosystems (art. 3 (1) (a) (vii) SPRFMO Convention; art. III (d) NAFO Convention; art. 8 (b) (ii) GFCM Agreement and art. IX (2) (i) CCAMLR), the ecosystem and precautionary approach (art. 3 (1) (b) and (2) SPRFMO Convention; art. 4 (a) and (c) SIOFA Agreement; art. III (c) NAFO Convention; art. 5 (c) and 8 (iii) (ii) GFCM Agreement; art. 3 (b) SEAFO Convention; art. 5 (d) WCPFC Convention) and the protection of biodiversity (art. 4 (f) SIOFA Agreement; art. III (e) NAFO Convention; art. 3 (f) SEAFO Convention and art. 5 (f) WCPFC Convention).

²⁵⁰ Art. 3 (1) (a) (iv) and 8 (d) SPRFMO Convention; art. III (g) NAFO Convention; art. 3 (g) NPFC Convention; art. 8 (g) GFCM Agreement; art. IX (1) (a) and (b) CCAMLR; art. 6 (3) (f) and (l) SEAFO Convention; art. 5 (i) and 10 (f) WCPFC Convention.

share such information (see subsection 3.1.2).²⁵¹ The incentive for developing such reporting obligations stems from the increasing implementation of ecosystem-based fisheries management in all RFMOs.²⁵² An accurate scientific basis and accurate scientific data are essential to sustainable management of fish stocks – including sharks (see subsection 2.1.1.1). Involving other stakeholders, such as shark tourism operators, in data and research sharing schemes would provide benefits beyond the issue of tourism by eliciting different and supplementary information on sharks, including their location, number and habits. Tour operators interact in a particular way with sharks and other associated species on a regular basis. Their contribution to common pools of information would have an impact on shark fisheries, and potentially associated stocks, and would constitute an additional step towards their sustainable management.

3.4.2 Evaluation of the implementation process

Although RFMOs do not specifically regulate shark-based tourism and seem more preoccupied with regulating fishing activities, their founding instruments can be interpreted as having implications for wildlife tourism, including shark-based tourism, by providing for the maintenance of healthy marine ecosystems and the conducting of scientific research.²⁵³ The basis for such an interpretation is found in the literal and teleological meaning of the provisions examined. Consequently, because States' obligations of conservation and cooperation under the law of the sea extend to shark-based tourism (see section 2.3), and because RFMOs have the competence to adopt such rules under their founding instruments, States arguably have an obligation to seek to agree on CMMs within RFMOs in order to establish sustainable practices for shark-based tourism.

3.5 Conclusion

This chapter has analysed what RFMOs' role has been and could be in protecting sharks from overexploitation through an interpretation of their founding instruments and an evaluation of their CMMs. Such an analysis will enable this thesis to conclude on the extent to which RFMOs have implemented their international law obligations, as well as whether RFMOs' work has played a role in the development of international law in the realm of shark protection.

²⁵¹ See e.g. art. 12 (1) (a) cum art. 28 NAFO/COM Doc. 24-01; SPRFMO CMM 02-2022.

²⁵² Al Arif A, 'Exploring the legal status and key features of ecosystem-based fisheries management in international fisheries law', (2018) 27 RECIEL 320, 321.

²⁵³ For example, CMMs aim to ensure that fish stocks are kept at sustainable levels and that critical habitats, such as deep-sea and coastal sea areas, are protected; see e.g. NPFC CMM 2023-05 and 2023-06.

4 Final conclusion

This thesis has set out the international legal framework for shark conservation and management, evaluated the strength of these international norms, and considered their implementation through and by RFMOs in order to answer to the research question: *What should RFMOs do in order to protect sharks from overexploitation?* The answer differs considerably depending on the type of shark exploitation.

Regarding shark fishing, States have largely fulfilled their international obligations through their participation in RFMOs. Shark fishing is increasingly being regulated by RFMOs in keeping with States' fisheries and environmental obligations, which are interwoven with obligations of institutionalised cooperation for straddling and highly migratory stocks (art. 63 (2) and 64 LOSC). For instance, the adoption of stringent rules such as prohibiting the catch of certain shark species follows a clear precautionary approach. Most RFMOs have given more weight to environmental considerations than to economic ones because of the sensitive conservation status of key shark species living in their area of competence. This explains why the establishment of quotas for shark catch is currently not widespread practice within RFMOs.

Shark bycatch is another area where RFMOs have implemented States' international law obligations consistently. They have complied with current developments regarding the area-based protection of marine ecosystems, which once firmly established will undoubtedly allow shark bycatch to be limited.

Unlike fishing and bycatch, shark-based tourism has not been the object of serious legal undertakings, even though the international law framework can be interpreted as obliging States to adopt effective measures in that regard. This thesis demonstrates that States have not done enough given their international obligations and that RFMOs should consider adopting measures on shark-based tourism. The lack of binding measures is all the more regrettable because a number of RFMOs, such as the CCAMLR, GFCM, NEAFC, NPFC, NAFO, SIOFA, SPRFMO and WCPFC, arguably have the competence to regulate shark-based tourism activities.

Nevertheless, RFMOs have gone beyond what is required by the international legal framework in various areas, ensuring better protection of sharks from overexploitation in the light of scientific recommendations. Notably, RFMOs' regulations on shark fishing and shark bycatch go beyond CITES and CMS obligations, which are common to all species falling in their scope of protection, apply only to listed shark species, and do not tackle habitat protection. First,

CMMs such as species protection, gear restrictions, quotas, release of catch and prohibition of finning have been adopted to apply specifically and exclusively to sharks. Second, RFMOs are emphasizing the importance of a holistic approach to fisheries management, therefore adopting area-based measures and gear restrictions. Third, RFMOs are progressively including more shark species in their protection schemes, such as CCAMLR with its full prohibition of shark fishing, the WCPFC and IATTC with their gear restrictions to avoid all shark bycatch, and all RFMOs finning regulations that apply irrespective of the species caught. These are just some examples of the important developments in shark protection to which RFMOs have contributed. This year (2024) has seen a considerable number of regulations on sharks enter into force within RFMOs. Only time will tell if they are able to effectively protect sharks from overexploitation. Hopefully, the more RFMOs decide to adopt progressive regulations – perhaps inspired by what some frontrunners among them are doing – the more likely they are to set new international standards, gaining full legislative weight under internationally binding instruments such as the LOSC or the UNFSA. As an example, the IOTC, SIOFA and SPRFMO should implement the fins-naturally-attached approach as all other RFMOs have done so far, arguably setting a new international standard.

The greatest common obstacle to the sustainable undertaking of all three exploitation activities is the lack of scientific knowledge on shark species. Gaining such knowledge would allow a better understanding of shark stocks and would provide a stable basis for legislating. States could distance themselves from stringent precautionary measures that place great importance on environmental considerations, to give more weight to economic and social interests, those of coastal communities in particular, in a spirit of sustainable development. Undeniably, gaining such knowledge relies on the availability of accurate data. Even if RFMOs have started to take a species-specific approach and begun to establish specific reporting systems for sharks, improving data collection is essential for effective conservation and management measures. An additional step would be to oblige all exploiting actors, including fishermen from artisanal fisheries and tourism operators, to report their catches. Unfortunately, political interests and illegal fishing will surely continue to obstruct taking constructive steps in that direction.²⁵⁴ In the meantime, adopting a precautionary approach in the management of sharks remains necessary to ensure their survival.²⁵⁵ Indeed, it is not because we lack scientific certainty with

²⁵⁴ Zacharias and Ardron (n 75) 188.

²⁵⁵ *Ibid.*

regard to sharks that action to avoid potentially serious or irreversible harm to their protection must be postponed.²⁵⁶

²⁵⁶See Principle 15 Rio Declaration on Environment and Development, 12 August 1992.

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