WE'RE GONNA NEED A BIGGER BOAT: THE IMPORTANCE OF INCREASED SHARK CONSERVATION ACROSS COUNTRIES, STATES, AND THE HIGH SEAS

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ABSTRACT

Sharks serve invaluable roles as apex predators in the world's ocean ecosystems. However, the rise of the shark fin trade and incidental bycatch have drastically eliminated shark populations so that several species are close to extinction. Without substantial upgrades to existing international frameworks including CITES, CMS, and IPOA-Sharks, and regulatory bodies such as RFMOs, shark populations may pass beyond recovery. However, strengthening those regulations, along with expanding the U.S.'s role as a leader in shark conservation carries significant potential in protecting shark populations. Lastly, governments and conservation entities must substantially increase research and public awareness regarding the issue to ensure that there is the data and political will to serve as the foundation for the new age of shark conservation.

I. INTRODUCTION

Despite their position at the top of the ocean food chain, sharks are more vulnerable than ever thanks to the humans that fear them.[1] While most humans still associate sharks with movies such as *Jaws* and *Sharknado*, sharks are more recently in the news for a far more ominous reason: extinction.[2] An estimated 100 million sharks are killed each year, comprising between six and eight percent of all species

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1. Alison Shapiro, *What are Some of the Biggest Threats Facing Sharks?*, OCEANA (July 10, 2015), https://usa.oceana.org/blog/what-are-some-biggest-threats-facing-sharks/.

2. John Anderer, *The 'Jaws' Effect:* Movies *are Hindering Efforts to Save Endangered Shark Species*, STUDYFINDS (July 16, 2021), https://studyfinds.org/the-jaws-effect-movies-sharks/.

annually.[3] This is especially egregious considering sharks produce few young over their lifetimes and take long periods to mature, meaning that degraded shark populations are very slow to recover.[4] Life data from dozens of shark species indicate that an annual mortality rate of anything over five percent will start depleting populations.[5] Unsurprisingly, over a third of the world's shark and ray species are currently considered "vulnerable," "endangered," or "critically endangered" by the International Union for the Conservation of Nature (IUCN) and its Red List of Threatened Species.[6]

What could possibly be threatening species that have survived on Earth for over 400 million years and endured five mass extinction events?[7] The answer, overfishing, is both very simple and yet contains complexities including bycatch and a host of issues associated with the shark finning industry.[8] This paper explains the challenges facing sharks, outlines the existing legal framework and provides recommendations for potential solutions.

A. Bycatch

Bycatch encompasses the marine life caught unintentionally during commercial fishing for other species.[9] Due to modern fishing technologies including long-line and trawl fishing, bycatch is now one of the leading causes of extinction in open-ocean shark species.[10] Though the IUCN lists bycatch as a substantial threat for sharks, it is a significantly under-researched issue.[11] Shark species have low priority for fisheries management and there are very few domestic or international regulations for reporting shark and ray catch and

3. *100 Million Sharks Killed Every Year, Study Shows on Eve of International Conference on Shark Protection*, NATIONAL GEOGRAPHIC (Mar. 1, 2013), *https*://www.nationalgeographic.com/culture/article/100-million-sharks-killed-every-year-study-shows-on-eve-of-international-conference-on-shark-protection.

4. *Id.*

5. *Id.*

6. Ben Panko, *More Than a Third of Shark Species Are Now Threatened With Extinction*, SMITHSONIAN MAGAZINE (Sept. 8, 2021), https://www.smithsonianmag.com/smart-news/more-one-third-shark-species-are-threatened-extinction-180978602/.

7. *Id.*

8. Shapiro, *supra* note 1.

9. Nathan Perisic, *Why Bycatch is One of the Greatest Risks to Sharks Facing Extinction*, SHARKOPHILE (Dec. 10, 2019), https://www.sharkophile.com/2019/12/10/why-bycatch-is-one-of-the-greatest-risks-to-sharks-facing-extinction/.

10. *Id.*

11. *Id.*

bycatch.[12] Instead, the majority of bycatch research and mitigation efforts have targeted similar issues for sea birds and sea turtle species.[13] Studies that have been conducted into shark bycatch indicate that twelve million sharks and rays fell victim to bycatch annually in the 1990s in international waters alone, with even higher numbers suspected in territorial waters used by the Atlantic and Hawaiian fisheries.[14] The 2017 Conference of the Parties for the Convention on Migratory Species additionally noted that bycatch was an especially lethal issue for migratory species such as sharks, which face synergistic obstacles such as habitat destruction, over-fishing, climate change, and more.[15]

B. Shark Finning

Though sharks, like many ocean inhabitants, face a plethora of issues in today's environment, the largest threat to shark populations is undoubtedly over-fishing.[16] The primary driver of shark fishing is the practice of shark finning employed to harvest the cartilaginous fins of the animals.[17] The severed and dried fins are used to produce shark fin soup, a dish seen as a delicacy typically associated with China and other Asian countries, but also consumed across the globe.[18] Typical shark species targeted for fin harvesting include sandbar, bull, hammerhead, blacktip, porbeagle, mako, thresher, and blue.[19] Fishermen will often take advantage of sharks caught in bycatch to make extra profits at the docks without taking up valuable cargo space.[20]

Fishermen harvest fins by catching whole sharks and severing their fins and tails before discarding the still living bodies back in to the

12. Nick Dulvy et al., *You Can Swim but You Can't Hide: The Global Status and Conservation of Oceanic Pelagic Sharks and Rays*, 18 AQUATIC CONSERVATION MARINE FRESHWATER ECOSYSTEMS 459, 465 (2008).

13. Perisic, *supra* note 9.

14. Shapiro, *supra* note 1.

15. *See* Environment Programme, Convention on Migratory Species COP Res. 12.22 (October 2017) ("[M]igratory aquatic species face multiple, cumulative and often synergistic threats with possible effects over vast areas, such as bycatch of species, over-fishing, pollution, habitat destruction or degradation, marine noise impacts, hunting as well as climate change.").

16. Jordan K. Snyder, *Shark-Nato: A Comparative Analysis of International Shark Conservation to Nationalized Shark Conservation*, 47 TEX. ENV'T. L.J. 217, 218 (2017).

17. Richard Mendoza, *Shark Finning: An Ecosystem in Crisis*, INSIDE FULLERTON (May 13, 2021), https://insidefullerton.fullcoll.edu/2021/05/shark-finning-and-its-issues/.

18. *Id.*

19. Jessica Spiegel, *Even Jaws Deserves to Keep His Fins: Outlawing Shark Finning Throughout Global Waters*, 24 B.C. INT'L & COMP. L. REV. 409, 413 (2001).

20. *Id.*

ocean where the sharks slowly drown, starve, or are eaten by other predators.[21] Many consider the practice to be inhumane and unnecessarily cruel,[22] but both industrial and local fisherman find the steep price tags for shark fins hard to turn down.[23] While the rest of the shark bodies won't fetch a high price on open markets, the fins may sell for as much as $500 a pound or $1,100 a kilogram.[24] As a result, the shark finning industry spans upwards of $400 million dollars globally and continues to grow,[25] while shark populations continue to shrink, by as much as 70% over the past fifty years.[26]

Another substantial issue connected with shark finning is the rampant illegal, unreported, and unregulated (IUU) shark fishing.[27] The patchwork state of international regulations concerning shark finning makes the species especially vulnerable to IUU fishing.[28] Hotspots of IUU shark fishing can be found off the coasts of Central/South America and in the Western and Central Pacific Ocean.[29] The typical forms of IUU fishing include fishing under an incorrect flag or no flag at all, fishing in protected areas, transferring fish to cargo vessels in international waters, and more.[30] These techniques allow fisherman to bypass existing shark regulation as well as fish far greater numbers of sharks and fins than are permitted.[31]

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21. Snyder, *supra* note 16, at 218.

22. Michael Sharp, *Shark Finning: The Cruelest Cuts*, THE HUMANE SOCIETY, https://www.humanesociety.org/resources/shark-finning-cruelest-cuts (last visited Nov. 28, 2022) ("It's like cutting off your limbs and leaving you to bleed to death.").

23. Mendoza, *supra* note 17.

24. Caty Fairclough, *Shark Finning: Sharks Turned Prey*, SMITHSONIAN (Aug. 2013), https://ocean.si.edu/ocean-life/sharks-rays/shark-finning-sharks-turned-prey.

25. *Hunting for Truth About the Global Shark Fin Trade*, MONTEREY BAY AQUARIUM (Oct. 27, 2020), https://www.montereybayaquarium.org/stories/hunting-for-truth-about-the-global-shark-fin-trade.

26. Oliver Milman, *Global Shark and Ray Population Crashed More Than 70% in Past 50 Years– Study*, THE GUARDIAN (Jan. 27, 2021, 11:00 AM) https://www.theguardian.com/environment/2021/jan/27/sharks-rays-global-population-crashed-study.

27. Mary Lack & Glenn Sant, *Illegal, Unreported and Unregulated Shark Catch: A Review of Current Knowledge and Action*, TRAFFIC 1, 3 (2008), https://www.traffic.org/site/assets/files/5455/traffic_species_fish30.pdf.

28. *Id.*

29. *Id*. at 6.

30. *International Affairs: IUU Fishing*, NOAA FISHERIES, https://www.fisheries.noaa.gov/topic/international-affairs/iuu-fishing (last accessed Nov. 28, 2022).

31. Christina Aust & Thomas Gahr, *Illegal, Unreported and Unregulated (IUU) Fishing*, Shark Project,
https://www.sharkproject.org/en/cooperation/iuu-exploitation/iuu/ (last accessed Nov. 28, 2022).

Another compounding issue is that the exported dried fins often do not indicate the species of shark that was fished or the location, preventing any potential accountability for unauthorized fishing practices.[32] IUU fishing takes advantage of weak points in international regulations at the expense of both shark populations and legally functioning fishing industries.[33]

C. Importance of Sharks in Ecosystems

Sharks serve critical roles as the apex predators of ocean food chains across the globe.[34] They promote biodiversity in ecosystems through a top-down approach of consuming the dominant prey in the area.[35] Sharks also offer less obvious benefits including nutrient cycling as a result of their highly migratory behavior, culling of the sick and injured organisms in populations, and ecosystem engineering.[36] These benefits are crucial in the face of the detrimental effects climate change has already imposed on ecosystems worldwide.

For example, studies have shown that sharks protect sea grass populations by hunting sea turtles, dugongs, and other sea animals that could potentially over-graze the grass beds.[37] These sea grasses in turn are vital in absorbing excess carbon emissions and preventing further warming caused by greenhouse gases in the atmosphere.[38] The North Atlantic shellfish populations present another instance of the benefits of sharks' top-down ecosystem regulation.[39] After several large shark species declined by more than fifty percent in recent decades, scientists noticed a sharp increase in rays and smaller shark populations.[40] These rays and smaller sharks then started prolifically consuming bay scallops, oysters, and clams, severely depleting their populations and

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32. *Shark Finning: A History of Shark Abuse*, OUR ENDANGERED WORLD, https://www.ourendangeredworld.com/eco/shark-finning/ (last updated Feb. 27, 2023).

33. Aust & Gahr, *supra* note 31.

34. Melissa Cristina Márquez, *Why Sharks Matter*, FORBES (Mar. 26, 2019, 8:31 PM), https://www.forbes.com/sites/melissacristinamarquez/2019/03/26/why-sharks-matter/?sh=21f13383535c.

35. *Id.*; Hugo Bornatowski et al., *Ecological Importance of Sharks and Rays in a Structural Foodweb Analysis in Southern Brazil*, 71 ICES J. OF MARINE SCI. 1586, 1591 (2014).

36. Márquez, *supra* note 34.

37. *Sharks: Meet the Seagrass Protectors*, NAT'L SCI. FOUND. (July 26, 2017), https://beta.nsf.gov/news/sharks-meet-seagrass-protectors.

38. *Id.*

39. Griffin E. Miller et al., *Predators as Prey: Why Healthy Oceans Need Sharks*, OCEANA 1, 5–6 (2008),
https://oceana.org/wp-content/uploads /sites/18/Predators_as_Prey_FINAL_FINAL1.pdf.

40. *Id.*

damaging local fishery stocks.[41] Beyond the economic detriment, the bivalve populations provided crucial filtration services for the North Atlantic ecosystems.[42] In addition, the recorded examples of the effects of declining shark populations are typically based on localized research, however there may be cascading impacts that expand beyond local ecosystems.[43] For example, the trophic cascades resulting from the loss of sharks could cause mesopredator release and subsequent declines in commercial fisheries with implications extending beyond any single ecosystem.[44]

II. INTERNATIONAL REGULATORY FRAMEWORKS

In recognition of the importance of shark species and their current unsustainable mortality rates, there has been an onset of new regulation in recent decades at state, national, and international levels. Due to the migratory nature of sharks and the global demand for shark fins, an international approach offers the best strategy for success in conservation.[45] However, with the benefits of an international scope of regulation come the negatives of enforcement issues, lack of coordination, and inconsistent regulations.[46] Nonetheless, the international community set up three main frameworks that cover shark conservation.[47] The three measures implemented include the Convention on International Trade in Endangered Species (CITES), the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks), and the Convention on the Conservation of Migratory Species of Wild Animals (CMS).[48]

A. Convention on International Trade in Endangered Species

In 1963, the IUCN called for an international framework to

41. *Id.*

42. *Id.*

43. *Sharks Are in Trouble. . . Without Them, Whole Ecosystems May Disappear*, MARINE CONSERVATION INST. (Apr. 1, 2021), https://marine-conservation.org/on-the-tide/sharks-are-in-trouble-part-one/.

44. Francesco Ferretti et al., *Patterns and Ecosystem Consequences of Shark Declines in the Ocean*, 13 ECOLOGY LETTERS 1055, 1067 (2010).

45. Jeremy Iloulian, *From Shark Finning to Shark Fishing: A Strategy for the U.S. & EU to Combat Shark Finning in China & Hong Kong*, 27 DUKE ENV'T. L. & POL'Y F. 345, 350 (2017).

46. Andrew Nowell Porter, *Unraveling the Ocean from the Apex Down: The Role of the United States in Overcoming Obstacles to an International Shark Finning Moratorium*, 35-SPG ENVIRONS ENV'T. L. & POL'Y J. 231, 247 (2012).

47. Holly Edwards, *When Predators Become Prey: The Need for International Shark Conservation*, 12 OCEAN & COASTAL L.J. 305, 307 (2007).

48. *Id.*

protect vulnerable species that are affected specifically by international trade.[49] After years of drafting and negotiations, the convening parties adopted CITES in 1973, and the original twenty-one drafters have since grown into 184 members.[50] This widespread support is an important strength of CITES as its member countries include key players in the international shark fishing trade such as the U.S., China, Japan, and Indonesia.[51] CITES not only covers a prolific geographic area but also contains a substantial number of species within its protections.[52] Over 38,700 species are protected by CITES, including 5,950 animal species and over 32,000 plant species.[53] However, of those animal species, fish make up the significant minority with less than 200 species protected and even far fewer sharks and rays.[54]

The species are listed under three Appendices within the CITES framework depending on the threats posed by trade to each species with corresponding levels of protection.[55] Species most direly affected by international trade are designated under Appendix I with the highest levels of protections.[56] Commercial trade involving these species is halted entirely except under exceptional circumstances for which permits are rarely granted.[57] Species must meet one of the following four criteria to be listed under Appendix I: "1) the wild population is small; 2) the population is constrained in its range; 3) a decline in the population is observed or inferred; or 4) the status of the species is 'likely to satisfy one or more' of the first three criteria within five years."[58]

Conversely, Appendix II deals with species that are not yet threatened with extinction but need imminent protections to prevent them from becoming threatened.[59] The requirements for obtaining an export permit under Appendix II are largely the same barring the need

49. Sonja Fordham & Coby Dolan, *A Case Study in International Shark Conservation: The Convention on International Trade in Endangered Species and the Spiny Dogfish*, 34 GOLDEN GATE U. L. REV. 531, 534 (2004).

50. *CITES List of Contracting Parties*, CITES, https://cites.org/eng/disc/parties/index.php (last visited Nov. 28, 2022).

51. *Id.*

52. *The CITES Species*, CITES, https://cites.org/eng/disc/species.php (last visited Nov. 28, 2022).

53. *Id.*

54. *Id.*

55. Fordham & Dolan, *supra* note 49, at 535.

56. *Id*.

57. I*d*.

58. *Id*.

59. *Id* .at 536.

for an import permit.[60] The slightly relaxed requirements prevent the designation from serving as a complete trade barrier but still track and regulate the species in question.[61] Appendix III is rarely used and functions mostly to highlight vulnerable species and facilitate international trade cooperation in preserving those species.[62]

While the CITES framework establishes a pathway to restrict international shark fin trade, a limited number of sharks and rays are protected under the convention.[63] For a shark species to be included in CITES protections it must receive affirmative votes from two-thirds of the member parties.[64] The high barriers to conservation action that CITES encompasses are compounded by the susceptibility of marine fish species to overexploitation from international trade.[65] Additionally, the CITES framework allows secret ballots when requested and subsequently supported by ten other parties.[66] Adding marine species to the Appendices is often considered controversial and typically prompts secret ballots, reducing accountability within the global community.[67]

Until November of 2022, there were only eleven sharks listed as protected under CITES, with the majority in the Appendix II category.[68] However, at the nineteenth Coalition of the Parties (CoP19), protections were extended to a groundbreaking number of shark species.[69] All species in the requiem shark family and all hammerhead species were added to Appendix II of CITES, encompassing an increase in protections for 58 new shark species.[70] Most notably, the requiem family of sharks includes blue sharks and bull sharks, two species targeted intensely by the shark fishing

60. *Id*.

61. *Id.* at 537.

62. *Id*

63. *Checklist of CITES Species*, CITES, https://checklist.cites.org/#/en (last visited Nov. 28, 2022).

64. Fordham & Dolan, *supra* note 49, at 535.

65. *Id* at 540.

66. *Id.* at 535.

67. *Id.*

68. *History of CITES Listing of Sharks (Elasmobranchii)*, CITES, https://cites.org/eng/prog/shark/history.php (last visited Nov. 28, 2022).

69. *Over 100 Species of Sharks Protected at CITES*, SHARK STEWARDS (Nov. 17, 2022), https://sharkstewards.org/over-50-species-of-sharks-protected-at-cites/.

70. Emma Desrochers, *Conclusion of CITES Leads to New Protection of Sharks and Guitarfishes*, SEAFOOD SOURCE (Dec. 1, 2022), https://www.seafoodsource.com/news/environment-sustainability/conclusion-of-cites-leads-to-new-protection-of-sharks-and-guitarfishes.

industry.[71] The amendment including blue sharks and the other requiem species passed despite objections raised by industrial fishing countries including Japan, Spain, Indonesia, and Peru.[72] These added species are a monumental step forward in shark conservation, however the changes will take an estimated twelve months to go into effect in global trade.[73]

CITES also contains a formative loophole under Article XXIII where parties may enter reservations to specific amendments to the Appendices.[74] Entering a reservation ensures that the party is treated as a non-party to the Convention regarding that species, effectively removing the country from any responsibilities to the species in question.[75] To date, reservations have been entered by parties including industrial fishing countries such as Japan, Yemen, and Indonesia against the eleven shark species listed in the Appendices prior to November 2022.[76] While the reservations have not yet been updated after the most recent CoP, it highly likely that those same countries will enter reservations against the newly protected shark species.

Generally, the benefits of CITES having widespread membership and a potentially binding framework are counteracted by it not being applied to its fullest potential with regards to sharks as well as the typical international lack of enforcement.[77] While CITES primarily applies to international trade, it remains a self-regulating system relying on the enforcement of countries to police any illicit activities occurring within their own boundaries.[78] This system is more effective in countries such as the U.S. with strong public accountability, anti-corruption measures, and environmental enforcement mechanisms.[79] It becomes less effective in countries more vulnerable to corruption with less established environmental protection frameworks.[80]

However, while the U.S. may not be able to interfere through CITES specifically to curb another country's noncompliance, CITES

71. Shark Stewards, *supra* note 69.

72. *Id.*

73. Desrochers, *supra* note 70.

74. Edwards, *supra* note 47, at 331.

75. *Id*.

76. *Reservations Entered by Parties*, CITES, https://cites.org/eng/app/reserve.php (last visited Nov. 28, 2022).

77. Iloulian, *supra* note 45, at 351.

78. *Id*, at 352.

79. *Id*.

80. *Id*.

does empower enforcement through domestic frameworks.[81] As discussed below, countries may use national laws such as the Lacey Act or the Pelly Amendment in the U.S. to establish sanctions or fines against another country that fails to comply with the provisions of CITES.[82]

Nonetheless, without the power of regulatory enforcement from all member states, especially the countries heavily involved in shark finning, CITES cannot be relied upon to protect shark species worldwide.[83]

B. Regional Fishery Management Organizations (RFMOs)

One of the primary reasons countries have refrained from committing to protecting marine species via CITES is the preference to regulate fisheries with Regional Fishery Management Organizations (RFMOs) instead.[84] RFMOs are international entities established by the 1995 UN Fish Stocks Agreement that are focused on sustainable management of fisheries in specific regions around the globe.[85] The groups are typically centered around commercially valuable fish species and have the authority to assign catch quotas to individual member countries.[86] Prominent RFMOs span the Atlantic, Pacific, Indian, and Southern Oceans[87] including key member countries such as the U.S., Japan, Russia, and the EU.[88] The United Nations General Assembly encouraged the use of RFMOs to restrict shark finning in a 2006 resolution.[89] The resolution called for a prioritization of shark conservation led by an increase in:

> [T]he collection of scientific data regarding shark catches and the adoption of conservation and management measures, particularly where shark catches from directed and non-directed fisheries have a

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81. Christine Crawford, *Conflicts Between the Convention on International Trade in Endangered Species and the Gatt in Light of Actions to Halt the Rhinoceros and Tiger Trade*, 7 GEO. INT'L ENV'T. L. REV. 555, 566 (1995).

82. *Id.*; Kaitlin M. Wojnar, *Shark Laws With Teeth: How Deep Can U.S. Conservation Laws Cut Into Global Trade Regulations?*, 19 ANIMAL L. 185, 192–198.

83. Iloulian, *supra* note 45, at 352.

84. *Id.*

85. Wojnar, *supra* note 82, at 196.

86. Iloulian, *supra* note 45, at 353.

87. *International and Regional Fisheries Management Organizations*, NOAA FISHERIES, https://www.fisheries.noaa.gov/international-affairs/international-and-regional-fisheries-management-organizations (last updated Nov. 14, 2022).

88. *About NAFO*, NORTHWEST ATLANTIC FISHERIES ORG., https://www.nafo.int/About-us#CPs (last accessed Nov. 28, 2022).

89. G.A. Res. 61/105, U.N. Doc. A/61/105, at 6 (Nov. 9, 2006).

> significant impact on vulnerable or threatened shark stocks, in order to ensure the conservation and management of sharks and their long-term sustainable use, including by banning directed shark fisheries conducted solely for the purpose of harvesting shark fins and by taking measures for other fisheries to minimize waste and discards from shark catches, and to encourage the full use of dead sharks[.][90]

As a result, the RFMOs reacted with responses ranging from banning finning outright, to allowing a "fin-to-carcass" ratio, to requiring that sharks are landed with their fins naturally attached.[91] The "fin-to-carcass" ratio involves allowing fisherman to unload shark fins as long as the weight of the fins does not exceed five percent of the weight of the unloaded shark carcasses.[92] The limited ratio is intended to prevent the harvest of shark fins before disposing of the shark carcass.[93] However, the measure has since been recognized as an effective loophole to any outright shark finning bans.[94] In light of the criticisms, several member countries of RFMOs have proposed switching to the "fins-attached" framework to ensure the least amount of waste of shark carcasses possible.[95] Nonetheless, many such measures have stalled with prominent RFMOs such as the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Inter-American Tropical Tuna Commission (IATTC), and the Northwest Atlantic Fisheries Organization (NAFO), among others.[96] While it continues to be in the interest of RFMOs to conserve sharks to protect fish stocks, the economic interests of the fishing industries remain an obstacle for increased protections.[97]

The failure to institute more complete protections for sharks in RFMO policies is emblematic of a greater issue of lack of enforcement capabilities and wide loopholes for noncompliance.[98] The decision-making process that RFMOs employ often allows member countries to object to new restrictions, similar to the reservation process outlined

90. *Id.*

91. *Regional Fisheries Management Organizations (RFMOs)*, IUCN SHARK SPECIALIST GROUP, https://www.iucnssg.org/rfmos.html (last visited Nov. 28, 2022).

92. Wojnar, *supra* note 82, at 196.

93. *Id*.

94. IUCN Shark Specialist Group, *supra* note 91.

95. *Id*.

96. *Id*.

97. Ilja Pavone, *Race to Extinction: Shark Conservation Under International and European Law and its Limits*, 23 OCEAN & COASTAL L.J. 45, 64 (2018).

98. Wojnar, *supra* note 82, at 196.

above for CITES.[99] One country objecting to a new rule can undermine the entire conservation strategy as high-seas fishing often operates as a tragedy of the commons,[100] where every party races to catch the most fish before stocks collapse entirely.[101] Additionally, even if all member countries were to agree and comply with new conservation agreements put forth by the RFMOs, there is also rampant illegal, unreported, and unregulated (IUU) fishing occurring throughout the oceans.[102] Practices such as flying improper flags and transshipments in international waters can inhibit transparency and prevent RFMO enforcement of shark finning regulations.[103]

C. IPOA-Sharks

One essential strategy of RFMO shark conservation has been to develop and implement shark plans for each organization.[104] This strategy can be seen replicated on a national scale through the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks).[105] A 1994 CITES resolution called for the Food and Agriculture Organization of the United Nations (FAO) to set up a structure to promote the development of national plans of action for sharks for each member country covering both targeted fishing and bycatch.[106] The IPOA-Sharks framework begins with a shark assessment report containing information on the country's shark catches, management of species, policies, and status of stocks.[107] The FAO then subjects the committee members participating to a biennial questionnaire to facilitate the assessment and development of their

99. Emma Desrochers, *RFMOs– What Are They and Are They Enough to Protect High-seas Fish Stocks?*, SEAFOODSOURCE (June 17, 2022), https://www.seafoodsource.com/news/environment-sustainability/rfmos-what-are-they-and-are-they-enough-to-protect-high-seas-fish-stocks.

100. Deena Robinson, *What is the 'Tragedy of the Commons'?*, EARTH.ORG (Sept. 5, 2021), https://earth.org/what-is-tragedy-of-the-commons/.

101. Desrochers, *supra* note 99.

102. *I*d.

103. *Id*.

104. Merry D. Camhi et al., *The Conservation Status of Pelagic Sharks and Rays*, IUCN SHARK SPECIALIST GROUP 1, 13 (2007), https://www.iucnssg.org/uploads/5/4/1/2/54120303/ssg_pelagic_report_final.pdf.

105. *International Plan of Action for Conservation and Management of Sharks*, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITES NATIONS, https://www.fao.org/ipoa-sharks/background/about-ipoa-sharks/en/ (last visited Nov. 28, 2022).

106. Mary Lack & Glenn Sant, *The Future of Sharks: A Review of Action and Inaction*, THE PEW ENVIRONMENT GROUP 1, 8 (2011), https://www.pewtrusts.org/-/media/legacy/uploadedfiles/peg/publications/report/the20future20of20sharkspdf.pdf.

107. Lack & Sant, *supra* note 106, at 8.

shark assessment reports.[108] However, this entire process and framework remains voluntary, meaning that participation and responses are not reliable indicators of shark conservation occurring at the national level.[109]

IPOA-Sharks' recommendations largely focus on improved research and record-keeping regarding shark catch and trade data.[110] However, the framework does not require specific actions or schedules for action, nor does it even suggest a complete ban on shark finning in general.[111] In fact, the only times IPOA-Sharks mentions shark finning is in its recommendations where it encourages the full use of sharks caught and minimizing shark carcass waste.[112] The central issue with the effectiveness of IPOA-Sharks is the voluntary nature of the guidelines.[113] Not only do many countries not strictly adhere to their proposed national plans of action (NPOAs), but the vast majority have elected not to participate at all.[114] As of early 2016, only thirty-one countries have submitted NPOAs.[115] Studies at the time noted that only nine percent of the global catch comes from those countries which had submitted comprehensive NPOAs,[116] although trends indicate that more of the top 'shark catchers' have submitted or proposed plans in recent years.[117]

Furthermore, even the data that are submitted through the IPOA-Sharks framework is unreliable due to rampant underreporting by member countries as well as substantial amounts of illegal unreported catches.[118] The total estimated shark catch is likely double the numbers reported to FAO.[119] In addition, even if countries sought to accurately report their catch and trade numbers, many simply do not have the funding to drive sufficient research, training, and enforcement to

108. Lack & Sant, *supra* note 106, at 9.

109. *Id*.

110. Edwards, *supra* note 47, at 308.

111. *Id*, at 262.

112. *Id*.

113. Porter, *supra* note 46, at 262.

114. Edwards, *supra* note 47, at 308.

115. *International Plans of Action for Conservation and Management of Sharks (IPOA-Sharks)*, IUCN SHARK SPECIALIST GROUP, https://www.iucnssg.org/ipoa.html (last accessed Nov. 28, 2022).

116. *Id.*

117. Sarah Fowler et al., *Conservation, Fisheries, Trade and Management Status of CITES-Listed Sharks*, BUNDESAMT FÜR NATURSCHUTZ 1, 40 (2021), https://bfn.bsz-bw.de/frontdoor/deliver/index/docId/7/file/Skript607.pdf.

118. Edwards, *supra* note 47, at 308.

119. *Id*, at 309.

produce the data.[120] Ultimately, many CITES parties have come to the conclusion that the voluntary nature of IPOA-Sharks and any other similar voluntary catch and trade data measures have failed and will continue to fail due to their nonbinding nature.[121]

D. The Convention on the Conservation of Migratory Species of Wild Animals

The CMS is an international agreement formed within the United Nations Environment Programme (UNEP) dedicated to protecting migratory animal species and their associated habitats.[122] The CMS essentially serves as a framework for countries to form independent international and regional conservation agreements.[123] As of 2022, there are 133 parties to the CMS, with the U.S., China, Japan, and Indonesia notably absent from the list.[124] However, while those key shark fishing countries are not official parties to the convention, they are parties to one or more agreements stemming from the convention.[125]

Similar to CITES, the CMS contains two Appendices to classify different migratory species based on their threatened status and their geographical ranges.[126] Appendix I offers the strongest protections, prohibiting any takings of species within the classification by any countries considered 'range states' by the convention.[127] The CMS also states that range states must conserve and when appropriate restore the habitats of threatened Appendix I species.[128] A species must be endangered throughout all or a significant portion of its geographical range to be categorized in Appendix I.[129] Conversely, species that have an unfavorable conservation status that does not amount to a "danger of extinction", but that would still benefit from international conservation agreements due to their migratory status fall within

120. Edwards, *supra* note 47, at 309.

121. Lack & Sant, *supra* note 106, at 15.

122. Wojnar, *supra* note 82, at 195.

123. *Id*.

124. *Parties and Range States*, CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS, https://www.cms.int/en/parties-range-states (last updated Mar. 1, 2022).

125. *Id.*

126. Snyder, *supra* note 16, at 220.

127. *Appendix I & II of CMS*, CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS, https://www.cms.int/en/species/appendix-i-ii-cms (last visited Nov. 28, 2022).

128. *Id.*

129. *Id.*

Appendix II.[130] Appendix I includes the basking shark, great white, oceanic white tip, whale shark, and angel sharks.[131] Appendix II adds a dozen more species including makos, hammerheads, threshers, the porbeagle shark, blue shark, and spiny dogfish.[132]

In 2010, parties to the convention adopted a non-legally binding Memorandum of Understanding (MOU).[133] The MOU outlined the importance of strengthening RFMOs and science-based conservation strategies.[134] The MOU also recommends prohibiting shark finning in its conservation plan, including a fins naturally attached strategy where appropriate.[135] However, while the crux of the MOU contains progressive goals, it remains entirely voluntary.[136] The only action items included are suggestions for each signatory to report back to the UN Secretariat with progress updates and contribute to group finances when possible.[137] As a result, in the years following the Convention's declaration to work towards shark conservation, there has been a substantial lack of metrics of success.[138] RFMOs have resisted any catch limits or landing caps on species vulnerable to bycatch such as the shortfin mako.[139] In addition, most of the Signatories have neglected to provide national reports.[140] In general, while the CMS has great potential for shark conservation due to the highly migratory nature of the species[141], the lack of incentives or deterrents in the framework effectively renders it nothing more than a current suggestion.[142]

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130. *Id.*

131. *Appendices I & II of Convention on the Conservation of Migratory Species of Wild Animals (CMS)*, CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS 1, 5 (2020), https://www.cms.int/sites/default/files/basic_page_documents/appendices_cop13_e_0.pdf.

132. *Id.* at 13.

133. Erika J. Techera, *Good Environmental Governance: Overcoming Fragmentation in International Law for Shark Conservation and Management*, 105 AM. SOC'Y INT'L L. PROC. 103, 104 (2011).

134. *Memorandum of Understanding on the Conservation of Migratory Sharks*, CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS 1, 5–6 (2018). https://www.cms.int/sharks/sites/default/files/instrument/Sharks_MOU_Text_annexes_2018_e.pdf.

135. *Id. at* 7.

136. Snyder, *supra* note 16, at 220.

137. 137. *Appendices I & II of Convention on the Conservation of Migratory Species of Wild Animals (CMS)*, *supra* note 131, at 8.

138. *Conserving Migratory Sharks & Rays: Priorities for Action*, SHARK ADVOCATES INT'L (Feb. 2016), https://sharkadvocates.org/pdf/conserving_migratory_sharks_2-16.pdf.

139. *Id.*

140. *Id.*

141. Edwards, *supra* note 47, at 309.

142. Wojnar, *supra* note 82, at 195.

As outlined above, the current international frameworks regarding shark conservation contain substantial weaknesses and leave gaps in governance.[143] While CITES and the CMS have widespread country membership, they are narrow in scope and lack significant enforcement capabilities.[144] IPOA-Sharks has had low participation and RFMOs are slow to adopt any substantial protections that might infringe on their commercial fishing potential.[145] Finally, all of the current international frameworks are critically threatened by a lack of reliable, comprehensive research and catch statistics, as well as minimal enforcement capabilities.[146]

III. U.S. REGULATORY FRAMEWORKS

Due to its political and economic impact, the U.S. has been a key leader in shark conservation despite not being a Signatory of the CMS.[147] Shark fishery activities were originally governed by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) established in 1976.[148] The act delegated authority to the National Marine Fisheries Service to implement the Fishery Management Plan (FMP) for sharks specifically in the Atlantic Ocean in 1993.[149] The FMP framework included measures such as quotas, mandatory reporting, and a ban on removing shark fins and discarding the carcasses.[150] The U.S. then extended this federal shark finning ban to all U.S. waters with the Shark Finning Prohibition Act (SFPA) in 2000.[151] However, the SFPA did not ban shark finning outright, it operated instead as a "fin-to-carcass" ratio allowing the weight of fins landed to equal up to five percent of the total weight of the carcasses.[152] The SFPA contained an additional loophole in that its restrictions only applied to "fishing vessels."[153] This loophole was finally eliminated with the Shark Conservation Act (SCA) of 2010, which established a fins naturally attached policy instead for all sharks

143. Techera, *supra* note 133, at 105.

144. *Id*.

145. *Id*, at 106.

146. *Id*, at 107.

147. Snyder, *supra* note 16, at 226.

148. John Chung-En Liu et al., *Shark Fin Regulations in the United States: Animal Welfare, Cultural, and Policy Considerations*, CASE STUDIES IN THE ENV'T 1, 2 (2019).

149. *Id.*

150. *Id.*

151. *Id.*

152. *Id.*

153. *Id.*

fished in U.S. waters and prohibited the transferring of shark fins between vessels at sea.[154] The SCA does contain an exception for smooth dogfish as they are less likely to be finned and discarded due to the value of their meat.[155] In addition, the smooth dogfish populations in the Atlantic are not currently threatened.[156]

Several states passed complete bans on the sale and possession of shark fins but did not themselves prohibit international fins from passing through their ports to other states where shark fins remain legal.[157] Without a federal ban on possession, sale, and transport, states such as Florida and Texas maintained flourishing shark fin trades, benefitting from the bans in other states.[158] However, after several bills proposed in both the House and the Senate beginning in 2017 and the years following, Congress finally passed a complete ban in December, 2022 included in the National Defense Authorization Act.[159] President Biden signed the bill into law at the very end of 2022[160] with overwhelming support from voters and states alike.[161] However, several scientists remain skeptical of the ban, raising concerns that it will simply shut down the well-regulated, legal trade of fins in the U.S., while allowing the black market trade to flourish.[162] Regardless, to maximize reduction in shark fishing worldwide the U.S. can and must go beyond a federal ban and seek to monitor other countries as well.

A. Lacey Act

The Lacey Act was passed in 1900 to augment the powers of the Department of Agriculture regarding primarily bird and agriculture

154. *Id.*

155. *How Our Shark Finning Ban Helps Us Sustainably Manage Shark Fisheries*, NOAA FISHERIES (Feb. 11, 2020), https://www.fisheries.noaa.gov/feature-story/how-our-shark-finning-ban-helps-us-sustainably-manage-shark-fisheries.

156. *Id.*

157. Liu, *supra* note 148, at 2.

158. *Id*.

159. *Senate Passes Historic Legislation Banning the U.S. Shark Fin Trade*, OCEANA (Dec. 15, 2022), https://usa.oceana.org/press-releases/senate-passes-historic-legislation-banning-the-u-s-shark-fin-trade/.

160. Maegan Vazquez, *Biden Signs Vital $858 Billion Defense Bill into Law, Nixing Military's Covid-19 Mandate*, CNN (Dec. 23, 2022, 11:49 AM), https://www.cnn.com/2022/12/23/politics/biden-signs-ndaa/index.html.

161. OCEANA, *supra* note 159.

162. Associated Press, *US Poised to Ban Shark Fin Trade, Pleasing Conservationists*, U.S. NEWS (Dec. 16, 2022, 2:23 PM), https://www.usnews.com/news/us/articles/2022-12-16/historic-ban-on-shark-fin-trade-poised-to-become-u-s-law.

protections.[163] Through amendments and consolidations the Lacey Act has evolved to cover a wide variety of wildlife violations at all levels of government.[164] As it exists today, the Lacey Act prohibits two general behaviors. First, it provides civil penalties for the failure to mark wildlife shipments and criminalizes the falsification of related documents.[165] Second, it outlaws any trade in wildlife, fish, or plants that have been taken, possessed, transported, or sold illegally.[166] The latter of those categories includes the most commonly used provisions outlining the trafficking offenses.[167] The trafficking framework requires proof that an accused party has violated some state, federal, foreign, or tribal law or regulation through one of the actions prohibited in the Lacey Act.[168] Those actions include import, export, transport, sale, reception, acquisition, or purchase of wildlife, fish, or plants that have been taken, possessed, transported, or sold illegally as mentioned above.[169]

The penalties and punishments are imposed by the Secretary of Commerce and can amount to $10,000 if civil or up to $20,000 through criminal prosecution.[170] The Lacey Act also authorizes federal permit sanctions related to import/export, fishing, and hunting along with potential forfeiture of any illegally transported wildlife or vessel/vehicle used to transfer said wildlife.[171] While the Lacey Act is a domestic policy, it has great potential not only in shoring up protections against IUU shark fishing in U.S. waters but also in international or foreign jurisdictions as well.[172] The key to using the Lacey Act against other countries lies in the requirement that they violate some law or regulation.[173] As mentioned previously, this is one way that the CITES framework can be extremely useful in limiting shark fishing.[174]

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163. Robert S. Anderson, *The Lacey Act: America's Premier Weapon in the Fight Against Unlawful Wildlife Trafficking*, 16 PUB. LAND. L. REV. 27, 37 (1995).

164. *See generally id.* at 36–53 (describing the development of the Lacey Act from its genesis to modern day).

165. *Id.* at 53.

166. *Id.*

167. *Id.* at 57.

168. *Id.* at 58.

169. *Id.*

170. *Id*.

171. *Id*.

172. *I*d

173. *Id*.

174. *Id., at 192*

Recently, in October of 2020 the District Court of Hawaii prosecuted a Japanese-flagged fishing vessel under the Lacey Act for aiding and abetting the export of over 950 shark fins out of Hawaii.[175] Some of the shark fins seized were determined to be from oceanic whitetip sharks, a protected species under Appendix II of CITES.[176] The state of Hawaii also has a complete ban on the shark fin trade including possession, sale, trade, and distribution.[177] The company involved was fined $126,000 along with $119,000 worth of forfeiture stemming from the value of the vessel and fins.[178] The company was also forced to relinquish its fishing license and was placed on a probationary period of three years.[179] This sentence was the largest monetary penalty ever imposed in the U.S. for a federal shark finning case and the judge on the case noted that he hoped it would deter other fishermen from engaging in shark finning as well.[180]

However, despite successes like the Hawaii case above, the U.S. is limited to the penalties outlined in the Lacey Act.[181] These options include civil monetary penalties, criminal fines, permit sanctions, and federal imprisonment in rare cases.[182] The U.S. is not authorized to take international actions beyond the ones above, and must target entities as opposed to countries.[183]

B. Pelly Amendment

The Pelly Amendment refers to Section 8 of the United States' Fishermen's Protective Act of 1967.[184] The amendment authorizes the U.S. to implement trade sanctions regarding wildlife products against

175. Press Release, U.S. Attorney's Office, District of Hawaii, Owner of Japanese Fishing Vessel Pleads Guilty to Unlawful Trafficking of Shark Fins and is Sentenced to Largest Criminal Monetary Penalty Ever Imposed in Shark Finning Case in the United States (Oct. 8, 2020), https://www.justice.gov/usao-hi/pr/owner-japanese-fishing-vessel-pleads-guilty-unlawful-trafficking-shark-fins-and-sentenced.

176. *Id.*

177. *US Shark Fin Trade Ban*, SHARK STEWARDS, https://sharkstewards.org/shark-science-education/us-shark-fin-trade-ban/ (last accessed Nov. 28, 2022).

178. Press Release, *supra* note 175.

179. *Id*.

180. *Id*.

181. Wojnar, *supra* note 82, at 191.

182. *Id*.

183. *Id*.

184. *Using Every Tool to Protect the World's Wildlife: How the U.S. Pelly Amendment can Help Stop Poaching*, ENV'T INVESTIGATION AGENCY (Apr. 2016), https://content.eia-global.org/posts/documents/000/000/522/original/EIA_Pelly_Amendment_041116.pdf?1539699786.

countries that have undermined an international species conservation program to which the U.S. is a party.[185] The statute relies on a determination by the Secretary of Interior or Commerce that a foreign country has engaged in trade or taking which, "diminishes the effectiveness of any international program for endangered or threatened species."[186] The framework of the amendment authorizes the Departments of Commerce and Interior to monitor and investigate the activities of foreign nationals as it pertains to the conservation programs outlined above.[187] The Pelly Amendment further institutes penalties for any parties, foreign or domestic, that violate the provisions in the statute.[188] The fines amount to $10,000 for the first violation and up to $25,000 for each subsequent violation, along with any potential forfeitures associated with the challenged action.[189]

While the review process and decision to impose sanctions ultimately relies on the executive branch of the U.S. government,[190] any person or entity is allowed to submit a petition to the Secretaries of Interior or Commerce to request a review pursuant to the Pelly Amendment.[191] The President also has significant leeway when determining the duration and extent of any potential ban on imports and exports from the offending country.[192] Additionally, through a series of Amendments the Pelly Amendment was expanded from just Atlantic Salmon to all threatened species and any product exported from an offending nation.[193]

Several American Non-Governmental Organizations (NGOs) utilized the Pelly Amendment to incite dramatic change in the illegal rhino trade in the late 1990s.[194] The U.S. Secretary of Interior certified Taiwan under the Pelly Amendment in 1993 and President Clinton applied wildlife trade sanctions the following year.[195] In response, Taiwan took immediate steps to actually enforce its domestic ban on trade in rhino products and the rhino horn trade decreased

185. Fishermen's Protective Act of 1967, § 8 (as amended in 1971), (codified as amended at 22 U.S.C. § 1978 (1994)).

186. *Id.*

187. *Id.*

188. *Id.*

189. *Id.*

190. Crawford, *supra* note 81, at 565–566.

191. ENV'T INVESTIGATION AGENCY, *supra* note 184.

192. 22 U.S.C § 1978.

193. Crawford, *supra* note 81, at 566.

194. ENV'T INVESTIGATION AGENCY, *supra* note 184.

195. *Id*.

dramatically.[196] After rhino populations started to substantially recover, the U.S. ended the sanctions in 1995 and removed the certification in 1997.[197]

This first major use of the Pelly Amendment produced immediate behavioral change, but its level of success may be due in part to the nature of the country targeted.[198] As a smaller, and politically weaker country, Taiwan was much more vulnerable to the might of U.S. sanctions, especially in the face of heavy pressure from the CITES Standing Committee.[199] Future applications of the Pelly Amendment against major shark fishing countries such as China, Indonesia, India, or Spain may produce less immediate results depending on the severity of the sanctions and the stability of the offending countries trade economy. The Pelly Amendment is also limited by the current legal frameworks established regarding shark finning.[200] The statute requires that the activity in question be undermining an existing international conservation program, meaning shark species not currently protected under CITES or similar frameworks cannot be protected via this amendment.[201]

In sum, the United States plays a key role not only in implementing its own legislation to protect sharks but also in serving as an active participant in international frameworks.[202] However, the effects of the newly implemented federal ban remain to be seen, and success will hinge substantially on the ability to enforce it in ports and ships under U.S. jurisdiction.[203] Furthermore, the U.S. is still not an active signatory or party to several important international treaties such as CMS and the UN Convention on the Law of the Sea(UNCLOS).[204] Due to the highly migratory nature of most

196. *Id.*

197. *Id.*

198. *See* Crawford, *supra* note 81, at 570 (questioning whether Taiwan was sanctioned and not China because Taiwan was a smaller and weaker country).

199. *See Id.*, at 565, 570 (questioning whether Taiwan was sanctioned and not China because Taiwan was a smaller and weaker country).

200. *See* 22 U.S.C. § 1978 (2016) (declaring that the statute may be enforced when a country is determined to have diminished the "effectiveness of any [existing] international program for endangered or threatened species.").

201. *Id.*

202. Snyder, *supra* note 16, at 226.

203. *See* U.S. News, *supra* note 162 (maintaining that a federal shark fin ban may simply encourage more unregulated and illegal shark finning practices in the U.S.).

204. Aditya Singh Verma, *A Case for the United States' Ratification of UNCLOS*, DIPLOMATIST (May 2, 2020, 12:00 PM) https://diplomatist.com/2020/05/02/a-case-for-the-united-states-ratification-of-unclos/;*Parties and Range State*, *supra* note 124.

threatened shark species, conservation efforts in the U.S. alone will not be enough.[205] Comprehensive regulation and enforcement across states, countries, and oceans is necessary to realistically protect shark species and the ecological services they provide.

IV. RECOMMENDATIONS FOR SOLUTIONS

A. Stricter and More Expansive Regulatory Frameworks

While there is general consensus that shark finning is one of the most substantial threats facing shark species to date, there is a split among experts on the best avenue for developing stricter regulation.[206] Different stakeholders split over the range of potential solutions including a ban on shark fishing altogether, a ban on shark finning as a practice, and then various version of regulated fisheries for finning or fishing.[207] Due to the seriousness of decline in shark populations governments should select the harsher regulatory path and implement an outright ban on shark finning as a practice. However, in acknowledgment of the legal shark practices that exist sustainably today, governments should allow sustainable shark fishing for select species, provided it is highly regulated and that sharks are landed with their fins naturally attached.

An outright total fin ban is necessary to curtail the sheer volume of shark fins being harvested each year and minimize waste created from cutting off fins and disposing the remaining shark carcass. Choosing a complete ban over a quota not only protects more sharks but is also more easily enforceable than other types of fin restrictions.[208] With a total shark finning ban in place, any shark fin traded or possessed is illegal, meaning officials do not need to trace the origin of the fin or determine which species the fin belongs to.[209] However, fin bans target the end result of shark finning and not the practice itself.[210] These bans need to be implemented alongside fishing regulations that will prevent fishing practices that intentionally and unintentionally produce shark mortalities at sea.

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205. Porter, supra note 46, at 246.

206. Liu, *supra* note 148, at 4.

207. Liu, *supra* note 148, at 4.

208. David S. Shiffman & Neil Hammerschlag, *Shark Conservation and Management Policy: A Review and Primer for Non-Specialists*, 19 ANIMAL CONSERVATION 401, 406 (2016).

209. *Id.*

210. *Id.*

1. Shark Fin Bans in the United States

While the U.S. has already passed a federal ban on shark fin trade and possession, there are still other ways the U.S. can increase federal protections for sharks. One primary route is to add key shark species affected by the industry to the list of endangered species under the Endangered Species Act (ESA). Currently only ten shark species are listed as endangered or threatened under the ESA, including five angel shark species which are not typically targeted for their fins.[211] Adding highly targeted species such as makos, threshers, bull and blue sharks would allow the U.S. to implement restrictions on commercial fishing industries through permitting frameworks. It would also allow the U.S. to designate key ocean and coastal areas as "critical habitats" that ensure the federal government will use agency action, permitting, and funding to protect these crucial shark habitats.[212] For example, after the Smalltooth Sawfish was listed as protected under the ESA a ban was enacted to prohibit the use of gill nets in their critically designated habitat areas.[213]

Thus, while the federal ban passed applies to all entities in the U.S. and more directly protects species from the shark fishing industry, using the ESA can also address other threats to sharks such as bycatch and destruction of habitat.

2. Shark Fin Bans Internationally

On a global scale, there is less potential for an outright ban due to the authority and enforcement issues outlined already. However, there are several different options to help institute enforcement mechanisms into the existing international frameworks and mandate compliance. First, implementing more incentives and deterrents into the CITES and CMS frameworks would promote compliance with otherwise voluntary agreements. Many countries are unlikely to enter into legally binding agreements regarding their fisheries, however several targeted trade contingencies instituted by the U.S., the EU, and other influential wealthy countries can function as unofficial enforcement

211. *ESA Threatened & Endangered Species Directory*, NOAA FISHERIES, https://www.fisheries.noaa.gov/species-directory/threatened-endangered?oq=%22shark%22&field_species_categories_vocab=All&field_species_details_status=All&field_region_vocab=All&items_per_page=25 (last visited Nov. 28, 2022).

212. *Critical Habitat*, U.S. FISH & WILDLIFE SERVICE, https://www.fws.gov/project/critical-habitat (last accessed Nov. 28, 2022).

213. Shiffman & Hammerschlag, *supra* note 208, at 405.

mechanisms.[214] An example of this type of enforcement can be seen with the Pelly Amendment above; however, these enforcement actions should be used much more frequently and involve more influential countries than just the U.S.. The U.S. has used the Pelly Amendment sparingly and against countries with less wealth and clout.[215] By bringing in the EU, Canada, or other wealthy countries, the international community may be less hesitant to sanction countries who play a substantial role in the shark fin trade such as China and Japan.

Additionally, modifying the CITES framework by limiting the scope of reservations that countries can enter for a listed species would remove the loophole that current member countries use to ignore established protections.[216] Some parties have argued that removing the reservation mechanism will deter member countries from approving further shark species to be protected.[217] Nonetheless, the countries who have entered reservations on key shark species are the same countries heavily involved in the fin trade and therefore need to be confronted on the issue.[218] Removing their loophole would at least force those countries to publicly reject the protections of those shark species and could be a beneficial way to subject them to the power of public approval.

Once there is a mechanism in place to ensure compliance with CITES, the framework has vast potential to expand current international conservation efforts due to its broad membership and the numerous shark species already included in its appendices.[219] Establishing a working group and/or enforcement committee that would provide advice, technical assistance, and recommendations regarding enforcement would be incredibly useful in assisting countries without established enforcement infrastructure.[220] However, the Secretariat has shown opposition to such a group in the past.[221] Parties voted against forming an enforcement committee several times since the late 1980's, likely due to complexity and expense issues associated

214. Leesteffy Jenkins, *Trade Sanctions: An Effective Enforcement Tool*, 2 REV. EUR. COMP. & INT'L ENV'T. L. 362, 365 (1993).

215. Crawford, *supra* note 81, at 570.

216. Edwards, *supra* note 47, at 347.

217. Edwards, *supra* note 47, at 347.

218. CITES, *supra* note 76.

219. Edwards, *supra* note 47, at 347.

220. Edwards, *supra* note 47, at 334.

221. Edwards, *supra* note 47, at 334.

with such a venture.[222] As such, increased outspoken support and funds from key members such as the US and EU countries will be crucial to increasing enforcement potential.

Another way to increase enforcement of shark conservation policies through CITES is to incorporate IPOA-Sharks into the CITES framework. CITES should incorporate a requirement for member countries of CITES to develop and implement SARs as part of the import/export permitting process. IPOA-Sharks is a more comprehensive framework than CITES and CMS and therefore theoretically applies to all shark species.[223] As a result, if there are too many political obstacles to adding more shark species to the appendices of CITES and CMS, IPOA-Sharks could address that gap provided there is sufficient country participation.[224]

Finally, many have advocated for the establishment of an International Commission for Shark Conservation and Management that would establish a forum for shark conservation negotiations.[225]Establishing a new commission would also allow for a majority voting system instead of unanimity to afford more flexibility in updating regulations over time.[226] However, as with most international treaties, this type of agreement would likely take years to formulate and it would be incredibly difficult to achieve widespread ratification. Accordingly, the modifications to the existing frameworks listed above may be easier to implement politically. Nonetheless, these international frameworks typically rely on the shark species being designated as threatened or endangered and thus function more retroactively.[227] Therefore it is crucial to also implement regulations to establish sustainable fisheries with reduced bycatch to prevent many of these species from becoming threatened or endangered in the first place.

3. Sustainable Fishery Management

Fishery management, and RFMOs specifically, has incredible potential for shark conservation measures for two primary reasons. First, as outlined above, RFMOs include influential member countries

222. Edwards, *supra* note 47, at 334 n. 235.

223. Erika J. Techera & Natalie Klein, *Fragmented Governance: Reconciling Legal Strategies for Shark Conservation and Management*, 35 MARINE POL'Y 73, 77 (2011).

224. *Id.*

225. Techera, *supra* note 133, at 106.

226. Porter, *supra* note 46, at 265.

227. Pavone, *supra* note 97, at 71.

and their scope covers critical ocean areas.[228] Second, alongside shark finning, fishing bycatch is a significant and intertwined cause of shark mortality that can be addressed through shifts in technologies and practices employed by commercial fisheries.[229] First and foremost, the global RFMOs should draft and implement Plans of Action pursuant to the IPOA-Sharks framework centered on science-based management.[230] The plans should require the RFMOs to evaluate which shark species are affected by their actions and to outline how they will address these issues.

RFMOs should implement a variety of measures to reduce shark mortality, beginning with officially adopting fins naturally attached policies to effectively curtail any intentional shark finning. They should also alter fishing methods and practices to reduce any incidental shark bycatch. Different potential bycatch solutions include switching from wire to monofilament leaders,[231] adjusting fishing seasons to avoid high migratory traffic times,[232] and even employing magnets to deter sharks from fishing traps.[233] These methods are specific and tailored enough that they can be deployed to decrease bycatch in distinct shark species and research to develop improvements is constantly being conducted.[234] These methods can be employed without substantially reducing commercial fishing yield, even when shortening fishing seasons.[235] While much of the technology for these gear modifications exists already today, they are largely voluntarily implemented.[236] Incorporating them into mandatory RFMO agreements and potentially including subsidies for participating fleets would incentivize participation and eliminate any "race to the bottom" motivation as all fleets would be subject to the same modifications.

While the first step is certainly to incorporate these shark finning and shark bycatch policies into RFMO agreements, the enforcement

228. NOAA Fisheries, *supra* note 87.

229. *Modifying Fishing Gear Reduces Shark Bycatch in the Pacific*, NOAA FISHERIES (Aug, 16, 2022), https://www.fisheries.noaa.gov/feature-story/modifying-fishing-gear-reduces-shark-bycatch-pacific [hereinafter NOAA Fisheries II].

230. Dulvy et al., *supra* note 12, at 473.

231. NOAA Fisheries II, *supra* note 229.

232. Jordan T. Watson et al., *Trade-Offs in the Design of Fishery Closures: Management of Silky Shark Bycatch in the Eastern Pacific Ocean Tuna Fishery*, 23 CONSERVATION BIOLOGY 626, 632 (2008).

233. R.J. Richards et al., *Permanent Magnets Reduce Bycatch of Benthic Sharks in an Ocean Trap Fishery*, 208 FISHERIES RSCH. 16, 20 (2018).

234. Shiffman & Hammerschlag, *supra* note 208, at 404.

235. Watson et al., *supra* note 232, at 632.

236. Shiffman & Hammerschlag, *supra* note 208, at 404.

and compliance issues still exist within those frameworks.[237] These issues feed into the larger problem of rampant IUU fishing regarding shark finning and bycatch. RFMOs can address these problems through the obligations they impose on flag states.[238] These types of obligations are outlined in the National Fish Stocks Agreement (NFSA) including mandatory registration of vessels bearing the flag of the member state, accountability attached for any illegal actions taken by those vessels, and monitoring responsibilities for all territorial seas' areas.[239] Increasing the use of vessel patrols at sea, mandatory onboard observers, inspections in ports, and electronic vessel monitor systems can all decrease IUU fishing activities.[240] These methods should be implemented by national governments as well, but for countries that do not have the internal political will to impose these restrictions, external pressure from RFMOs may help effect these policies that would otherwise fail. As IUU fishing harms fish stocks and undermines existing fishing activities, RFMOs should have a vested interest in increasing enforcement.[241] Additionally, if they still do not have the consensus to implement these measures, incorporating RFMOs into a new potential "areas beyond national jurisdiction" (ANBJ) agreement may help encourage cooperation.[242] Finally, increased research into surveillance technologies and source tracking of illegal shark fishing is also incredibly important, and part of a larger overwhelming need for more data and research in shark conservation.[243]

4. More Funding and Research

The need for further research and studies is a consistent theme across the different aspects of shark conservation.[244] There are two primary categories of research needed to improve conservation policies. First, governments and organizations need to increase

237. Wojnar, *supra* note 82, at 196.

238. Michael W. Lodge et al., *Recommended Best Practices for Regional Fisheries Management Organizations*, CHATHAM HOUSE 1, 44 (2007), https://repository.oceanbestpractices.org/bitstream/handle/11329/1456/39374297.pdf?sequence=1.

239. *Id.* at 48.

240. Shiffman & Hammerschlag, *supra* note 208, at 408.

241. *Illegal Fishing Prevention*, INTERNATIONAL SEAFOOD SUSTAINABILITY FOUNDATION (last accessed Nov. 28, 2022) https://www.iss-foundation.org/fishery-goals-and-resources/our-priorities/illegal-fishing-prevention/.

242. Guilermo Ortuño Crespo et al., *High-seas Fish Biodiversity is Slipping Through the Governance Net*, 3 NATURE ECOLOGY & EVOLUTION 1273, 1275–1276 (2019).

243. Shiffman & Hammerschlag, *supra* note 208, at 408.

244. Lack & Sant, *supra* note 27, at 18.

research related to the actual conservation policies. This includes studies to produce more accurate numbers for catch and trade data as well as migratory patterns for different species.[245] More studies should similarly be conducted surrounding the breeding and hatchery locations for pelagic sharks as these locations will be key habitats to protect to ensure healthy growth rates of shark populations.[246] As mentioned, when it comes to designing fishery policies, research regarding bycatch technologies and shark behavioral ecology will be crucial.[247] Additionally, the future of shark conservation policy should be flexible and adapt to changing population levels of each shark species. As a result, international and national governing bodies should arrange annual studies on the life history, population status, and habitat usage of target species to ensure that the regulatory guidelines are as accurate as possible.[248]

The second major category of data and research needed for effective shark conservation regulations is research related to enforcement. Countries vary greatly on enforcement infrastructure and many of the countries that participate substantially in the shark trade have very limited capacity to monitor shark catch.[249] Data on shark catch landings is often not collected and it's often hard to trace which species and which locations the fins are sourced from.[250] However, a recent study demonstrated that DNA analysis may be used to identify which shark species are being traded and subsequently which regions of the world are being targeted.[251] The process is still relatively novel but more funding and widespread use could help crack down on IUU shark finning being passed off as legal fishing. Governments should implement DNA testing at ports to verify if fins being traded are covered by CITES and therefore subject to harsher international response. Correspondingly, countries should train inspectors to conduct these tests or in the absence of that technology at least attempt to identify the species from the fin shape.[252]

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245. Edwards, *supra* note 47, at 308.

246. Mark D. Evans, *Shark Conservation: The Need for Increased Efforts to Protect Shark Populations in the Twenty-First Century*, 10 PENN. ST. ENV'T. L. REV. 13, 31 (2001).

247. *Id.* at 29.

248. Shiffman & Hammerschlag, *supra* note 208, at 408.

249. Lack & Sant, *supra* note 27, at 18.

250. Lack & Sant, *supra* note 27, at 18.

251. Elizabeth Claire Alberts, *DNA Detective Work Reveals Where in the Ocean Shark Fins Came From*, MONGABAY (May 7, 2020), https://news.mongabay.com/2020/05/dna-detective-work-reveals-where-in-the-ocean-shark-fins-came-from/.

252. *Id.*

Typically, the most substantial barriers to new research and studies are lack of funding or political will.[253] As such, wealthy countries who have participated in the shark fin trade substantially like the U.S. should bear the brunt of these costs.[254] This can either be through federally incentivized studies or by dues to international frameworks such as CITES. For the U.S. specifically, the recent passage of the Inflation Reduction Act designated $3.3 billion for the National Oceanic and Atmospheric Association, of which over $100 million could theoretically be used for research initiatives and facilities to further shark research.[255] Additionally, if CITES incorporates the IPOA-Sharks framework as recommended above, CITES funding can be direct towards comprehensive studies and model NPOAs to be utilized by countries worldwide.[256] Lastly, while political will is a hard resource to generate from a vacuum, public awareness plays a huge factor and should not be overlooked when organizing future steps for conservation progress.

5. Importance of Public Awareness and Ecotourism

In light of the often more indirect benefits sharks provide for ecosystems and their negative portrayal in the media, shark conservation has not always been on the forefront of the public's minds.[257] However, there has been a definitive shift in recent years towards a desire to protect sharks and reduce demand for shark products.[258] This shift is crucial, and governments and conservation organizations should absolutely capitalize on it. Public opinion can drive political will for shark conservation in a couple of key ways. More public support can mean politicians will prioritize shark conservation as an issue to gain voters and it can also mean more donations to NGOs

253. Monica Barone & Kim Friedman, *Better Data Collection in Shark Fisheries– Learning From Practice*, FOOD AND AGRIC. ORG. U. N. 1, 6 (2021), https://www.researchgate.net/profile/Monica-Barone-2/publication/353287478_Better_data_collection_in_shark_fisheries_-_Learning_from_practice/links/612606fd1e95fe241af60264/Better-data-collection-in-shark-fisheries-Learning-from-practice.pdf.

254. Spiegel, *supra* note 19, at 437.

255. Andrew Shipley, *NOAA Receiving $3.3 Billion From Inflation Reduction Act; Will Acquire New Hurricane Hunter*, FOX4NOW (Aug. 18, 2022, 4:25 AM), https://www.fox4now.com/news/local-news/noaa-receiving-3-3-billion-from-the-inflation-reduction-act-will-acquire-new-hurricane-hunter.

256. Snyder, *supra* note 16, at 229.

257. Edwards, *supra* note 47, at 351.

258. Snyder, *supra* note 16, at 230.

conducting research and lobbying for better regulations.[259]

Additionally, widespread awareness of shark finning can help countries that are leading the fight for shark conservation such as the U.S., influence countries that have as of yet simply been complicit in the trade.[260] While the U.S. may not have the same ability to strongarm China with trade sanctions as they did with Taiwan,[261] the Chinese government is still vulnerable to public opinion.[262] China demonstrated proof of this strategy's success in 2012, with its ban of shark fin soup at all official banquets.[263] Conservation groups applauded the move and maintained that it would inspire similar actions in the corporate sector.[264] Governments and conservation entities should replicate the campaigns used such as the one led by former NBA star Yao Ming and environmental group WildAid to spread awareness to the middle class people of China who have become the dominant consumers of shark fin soup.[265] Additionally, it's crucial to shift the narrative from sharks being valuable for their parts as opposed to their living presence in the oceans.[266] For example, in French Polynesia, sharks have an ecotourism value of around $1,200 (USD) per kg as opposed to a landed meat value to fishers of around $1.5 (USD) per kg.[267] More and more shark sanctuaries are being established each year in recognition of the economic benefits that shark ecotourism can provide to a country.[268]

6. Equity and Justice Concerns

The value of shark diving and ecotourism is especially important when it comes to the question of how to address shark fishers who will lose their livelihoods in response to added bans and enforcement. Shark ecotourism is a promising alternative to shark finning that provides a source of income and jobs to local fishermen and coastal

259. Edwards, *supra* note 47, at 351.

260. Iloulian, *supra* note 45, at 359.

261. Crawford, *supra* note 81, at 570.

262. Iloulian, *supra* note 45, at 359.

263. Bettina Wassener, *China Says No More Shark Fin Soup at State Banquets*, N.Y. TIMES (July 3, 2021), https://www.nytimes.com/2012/07/04/world/asia/china-says-no-more-shark-fin-soup-at-state-banquets.html.

264. Russell McClendon, *China Bans Shark-Fin Soup at State Banquets*, HUFFPOST (Jan. 25, 2014), https://www.huffpost.com/entry/china-shark-fin-soup_n_4452897.

265. *Id.*

266. Snyder, *supra* note 16, at 229.

267. Andrés M. Cisneros-Montemayor et al., *Global Economic Value of Shark Ecotourism: Implications for Conservation*, 47 FAUNA & FLORA INT'L 381, 381 (2013).

268. *Id.* at 386.

communities.[269] Studies have shown that shark ecotourism will reach hundreds of millions of dollars in gross profits in the next couple decades and will continue to grow.[270] Governments and conservation groups should dedicate time and resources to educating local shark fishers on the value and potential of ecotourism. While some programs seek to convert shark fishers to shark dive guides directly,[271] others promote programs such as side payments.[272] Side payments are a form of benefit sharing that involves tour operators paying shark and other industry fishers a fee to abstain from fishing at specific reefs to promote ecological abundance in those hot spot areas.[273] This is another reason why increased enforcement is so crucial, when the likelihood of penalties is high due to effective enforcement, legal businesses such as ecotourism should become much more attractive options. While there are challenges to both strategies, with the right education, resources, and efforts, there is vast potential in ecotourism for both the shark fishers and local communities.[274]

Another question to consider when discussing outright shark finning bans is the cultural narrative that is being communicated by the regulations proposed. In the U.S. specifically there have been accusations that shark fin bans unfairly discriminate against Chinese Americans.[275] The claims are largely based on the fact that only shark finning has been banned while shark fishing is still permissible.[276] However, as outlined above, the elimination of shark finning specifically as opposed to all shark products is a strategic move to eliminate the practice of finning sharks alive and discarding the rest of their bodies. Shark products should be regulated, much as any other animal product would be, with regulations based on species data and sustainable practices. The public awareness campaigns are equally important here to convey that these regulations stem not from a moral disapproval of the dish but from the dire need to conserve threatened shark populations.

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269. Andrea Dell'Apa et al., *The Influence of Culture on the International Management of Shark Finning*, 54 ENV'T MGMT. 151, 158 (2014).

270. *Id.*

271. *Contracts for Captains*, PROJECT HIU, https://www.projecthiu.com/blog/contracts (last visited Oct. 8, 2022).

272. Cisneros-Montemayor et al., *supra* note 267, at 386.

273. Cisneros-Montemayor et al., *supra* note 267, at 386.

274. Cisneros-Montemayor et al., *supra* note 267, at 386.

275. Liu, *supra* note 148, at 3.

276. Liu, *supra* note 148, at 3.

V. CONCLUSION

The numbers are clear. Shark finning and bycatch amongst other threats are killing sharks at inordinately high rates. Without drastic action across all sectors and all government levels, shark species will start going extinct and leave our ecosystems without key top-down ecological services. To stem such drastic dwindling in shark populations, shark finning must be banned outright at the international, national, and state levels. Governments and regulatory bodies should allow sustainable shark fishing, provided it is strictly regulated based on accurate data and includes fins naturally attached mandates. Governments and conservation entities should also work to substantially increase research and studies currently being conducted into shark conservation and enforcement mechanisms. These new technologies should be implemented and subsidized as soon as feasible. Lastly, public awareness should be prioritized and used as a tool to garner the cooperation of countries heavily involved in the shark fin trade as well as increase the political will for all of the above measures. Shark populations are not beyond saving, but it will take comprehensive action from all parties to ensure their protection.