Ocean and Coastal Law Journal

Volume 12 | Number 2 Article 5

2006

When Predators Become Prey: The Need For International Shark Conservation

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WHEN PREDATORS BECOME PREY: THE NEED FOR INTERNATIONAL SHARK CONSERVATION

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As apex predators, sharks play a valuable role in maintaining ecological balance in the world's oceans. Since the 1950s, international trade has increasingly exploited sharks for their meat and fins. Because of their slow reproductive rates, sharks have not been able to compensate for their growing mortality rates, and many species have experienced severe population depletions. The international community has responded by adopting shark conservation measures through the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks), the Convention on the International Trade in Endangered Species (CITES), and the Conservation of Migratory Species (CMS). However, these three agreements suffer from limited coverage of shark species, difficulties in obtaining national implementation of conservation measures, insufficient funding for research and training, and black market trade in shark products. These problems could be addressed by using Regional Fisheries Management Organizations (RFMOs) to manage shark fishing, imposing trade sanctions for nonimplementaton, tightening enforcement, applying to international funding organizations for financial assistance, and increasing public education and lobbying efforts.

I. INTRODUCTION

Humans have long had a fear of sharks. As one of the greatest marine predators, sharks easily receive a reputation as killing machines; in reality, however, sharks have far more to fear from humans than humans do from

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sharks.[1] In 2005, there were only sixty-one confirmed cases of unprovoked shark attacks on humans worldwide.[2] Meanwhile, humans kill roughly 100 million sharks for their fins each year.[3] The past three decades have witnessed a dramatic increase in the international shark trade,[4] resulting in an estimated eighty-nine percent decrease in some Atlantic shark species, such as the hammerhead.[5]

Given sharks' place as apex predators in the marine food chain,[6] their disappearance from the world's oceans poses a major ecological concern. They play a vital part in maintaining ecological balance by weeding out sick and unhealthy members of both predatory and prey species and leaving only healthy members of those species to breed.[7] As apex predators, sharks are not used to mortality threats and thus do not naturally need high rates of population growth to sustain their populations.[8]

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

2. International Shark Attack File (ISAF), ISAF 2005 Worldwide Shark Attack Summary, http://www.flmnh.ufl.edu/fish/sharks/statistics/2005attacksummary.htm (last visited Feb. 25, 2007).

3. *A Review of Developments in Ocean and Coastal Law 2001-02*, 7 OCEAN & COASTAL L.J. 367, 368 (2002); Peter Knights, *Sharks at Risk*, DEFENDERS, Winter 2002/03, at 13, 14, *available at* http://www.wildaid.org/PDF/reports/SharksatRisk.pdf; Spiegel, *supra* note 1, at 412; Todd Preston, *Who's the Real Killer?*, E MAGAZINE: THE ENVIRONMENTAL MAGAZINE, Nov.-Dec. 1995, at 18.

4. STEFANIA VANNUCCINI, SHARK UTILIZATION, MARKETING AND TRADE, (FAO Fisheries Technical Paper No. 389), § 5.1 (1999), *available at* http://www.fao.org/DOCREP/005/X3690E/X3690E00.HTM. Total world chondrichthyan exports increased from 19,908 MT in 1976 to 78,652 MT in 2000. CAMILLO CATARCI, WORLD MARKETS AND INDUSTRY OF SELECTED COMMERCIALLY-EXPLOITED AQUATIC SPECIES WITH AN INTERNATIONAL CONSERVATION PROFILE (FAO Circular No. 990) at *Sharks (Chondrichthyes): Exports of Shark Commodities* (2004), *available at* http://www.fao.org/docrep/006/Y5261E/y5261e08.htm#bm8. Sharks are the most commercially important fish of the class Chondrichthyes (the cartilaginous fish), to which this statistic refers. VANNUCCINI, *supra* § 1. *See* JOSE I. CASTRO ET AL., A PRELIMINARY EVALUATION OF THE STATUS OF SHARK SPECIES (FAO Fisheries Technical Paper No. 380) § 1.1 (1999) (discussing reasons for increase in shark trade), *available at* http://www.fao.org/DOCREP/003/X2352E/X2352E00.HTM.

5. Andrew C. Revkin, *Atlantic Sharks Found in Rapid Decline*, N.Y. TIMES, Jan. 17, 2003, at A18.

6. Ichthyology at the Florida Museum of Natural History, Shark Biology, http://www.flmnh.ufl.edu/fish/education/questions/Biology.html#apex (last visited Feb. 25, 2007).

7. Mark D. Evans, *Shark Conservation: The Need for Increased Efforts to Protect Shark Populations in the Twenty-First Century*, 10 PENN. ST. ENVTL. L. REV. 13, 21 (2001).

8. Preston, *supra* note 3, at 19.

Their slow growth and maturation, long reproductive cycles, low fecundity, and long life spans prevent sharks from adapting to rising mortality rates resulting from exploitation by global fisheries.[9] Shark populations, increasing at the low rate of one to two percent each year, cannot compete with the significantly larger rate of population decrease caused by overfishing.[10] In the case of the spiny dogfish, which increases naturally at an annual rate of 2.3%, the 75% decline in reproductive females since 1988 has led to a record low number of pups since 1997, as well as a decline in pup size and survival rate.[11] Taking into account the combination of low reproductive potential and current fishing mortality rates, the Regional Stock Assessment Review Committee (SARC) issued a projection in 2003 forecasting a collapse of spiny dogfish stock.[12] Thresher shark populations face a similar threat.[13] After the expansion of thresher fisheries in the early 1980s, thresher populations have steadily declined.[14] With females giving birth to only four to six pups annually, the species has not been able to keep up with the mortality rates from overfishing.[15]

In response to the disturbing trend of plummeting shark populations, several international organizations have developed guidelines and regulations to help conserve and manage shark populations throughout the world. The three international measures most relevant to shark conservation are IPOA-Sharks[16] developed by the Food and Agriculture Organization of the United Nations (FAO), CITES,[17] and CMS.[18] Each agreement operates independently from the others, with its own strengths

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9. CASTRO ET AL., *supra* note 4, § 3.

10. TRAFFIC, Shark Listing Proposals at the Eleventh Meeting of the Conference of Parties to CITES, http://www.traffic.org/cop11/newsroom/sharks.html (last visited Feb. 25, 2007) [hereinafter TRAFFIC Shark Listing Proposals].

11. 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, 552, 557–58 (2004).

12. *Id.* at 558.

13. CASTRO ET AL., *supra* note 4, § 4.2.20.

14. *Id.*

15. *Id.* Furthermore, recent landings have consisted of one to two year-old immature sharks.

16. U. N. Food & Agric. Org. [FAO], *International Plan of Action for the Conservation and Management of Sharks*, 11 (Nov. 1999) [hereinafter IPOA-Sharks], *available at* http://www.fao.org/docrep/006/x3170e/x3170e03.htm.

17. Convention on International Trade in Endangered Species of Wild Fauna and Flora, Mar. 3, 1973, 27 U.S.T. 1087, 993 U.N.T.S. 243 [hereinafter CITES], *available at* http://www.cites.org/eng/disc/text.shtml#II.

18. Convention on the Conservation of Migratory Species of Wild Animals, June 23, 1979, 19 I.L.M. 15 (1980) [hereinafter CMS], *available at* http://www.cms.int/pdf/convtxt/cms_convtxt_english.pdf.

and weaknesses. Although efficient implementation of each agreement would allow all three to act in concert to improve shark conservation, none of the agreements are currently operating efficiently to protect shark populations.[19] The governing bodies must begin to address the weaknesses in these agreements to increase their individual effectiveness and their overall ability to protect sharks from the threats of international trade.

IPOA-Sharks is a voluntary measure designed by the FAO to promote the conservation and management of shark populations worldwide, with its ultimate focus on sustainable use.[20] IPOA-Sharks applies to all shark species and provides a framework for shark conservation and management. It emphasizes the need for increased research on the biology and identification of sharks, as well as increased record-keeping and reporting of catch and trade data.[21] IPOA-Sharks calls on countries, in whose waters sharks are caught, to develop, implement, and monitor national plans of action (Shark Plans) consistent with the framework of IPOA-Sharks.[22] Although the language used in IPOA-Sharks urges states to implement its recommended measures, it provides neither rewards for those states that cooperate nor sanctions against those that do not.[23] As a result, few states have bothered to fully implement Shark Plans—by October 2004 only 5 out of 113 nations reporting shark landings to the FAO have developed either shark assessment reports (SARs) or Shark Plans.[24] Moreover, catch and trade data that countries actually reported to the FAO are estimated to be grossly inaccurate due to a combination of under-reporting of legal trade and unreported black market trade.[25] Analyses conducted by both internal

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19. *See* Fordham & Dolan, *supra* note 11, at 533 ("Listings on the CITES Appendices, *if adequately implemented* as a complement to regional fisheries management, hold great promise for stemming depletion of . . . sharks in international trade." (emphasis added)). *Id.*

20. IPOA-Sharks, *supra* note 16, at 13 ¶ 16.

21. *Id.* at 16, App. A Part II.

22. *Id.* at 13, ¶¶ 18-19.

23. IPOA-Sharks, *supra* note 16.

24. IUCN Species Survival Commission's Shark Specialist Group and TRAFFIC, *The Role of CITES in the Conservation and Management of Sharks*, ¶ 10, (June 2002) [hereinafter The Role of CITES], *available at* http://www.cites.org/common/notif/2002/ESF042A.pdf. Shark Plans provide a plan to implement shark conservation measures, whereas an SAR provides an assessment of shark stocks and the need for conservation measures. IPOA-Sharks, *supra* note 16, at 13 ¶¶ 18, 21. At the FAO Expert Consultation in December 2005, participants noted that while some progress has been made since 2004, implementation of IPOA-Sharks remained patchy and was not considered a priority by many nations. Shark Working Group of the CITES Animals Committee, July 7-13, 2006, *Trade-related Threats to Sharks*, ¶ 26, *available at* http://www.cites.org/eng/com/ac/22/E22-17-3.pdf.

25. Shelley Clarke, Trade in Asian Dried Seafood: Characterization, Estimation and Implications for Conservation (WCS Working Paper No. 22) 34, 45 (Dec. 2002), *available*

and independent researchers have concluded that the total estimated catch is likely twice that of the FAO recorded catch.[26] Finally, successful implementation of IPOA-Sharks suffers from insufficient biological research, training, and enforcement of national Shark Plans due to a shortage of funding.[27] CITES, which restricts international trade that threatens the survival of endangered species, faces some of the same factors hampering implementation of IPOA-Sharks—reliance on national regulations, insufficient funding and training, and black market trade.[28]

CITES' ability to protect sharks is further limited because it extends only to those species involved in international trade and listed on one of its three Appendices.[29] Currently, out of the 197 shark species identified as endangered by the World Conservation Union (IUCN) and the CITES Animals Committee, only three shark species are listed on Appendix II: the great white, basking, and whale sharks.[30] CMS, which was formed to protect migratory species from endangerment, faces a similar limitation.[31] Sharks are highly migratory species, and CMS thus has the potential to offer them protection. Yet CMS, like CITES, covers only those species included in one of the two CMS Appendices.[32] Unfortunately, the CMS Appendices currently include only three shark species: the great white shark and basking shark on Appendices I and II, and the whale shark on Appendix II.[33]

The general weaknesses of IPOA-Sharks, CITES, and CMS result from limited coverage of shark species, difficulties in obtaining national implementation of conservation measures, insufficient funding for research and training at a national level, and black market trade in shark products.

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at http://wcs.org/media/file/Workingpaper-entire.pdf.

26. VANNUCCINI, *supra* note 4, § 3.4. *See* CLARKE, *supra* note 25, at 45 (conclusion based on comparison with national customs databases that the FAO trade data underestimates true trade quantity).

27. *See infra* notes 144-45 and accompanying text.

28. Lawrence Watters & Wang Xi, *The Protection of Wildlife and Endangered Species in China*, 14 GEO. INT'L ENVTL. L. REV. 489, 508 (2002).

29. CITES, *supra* note 17, art. II ¶ 4.

30. CITES Animals Committee, Oct. 2-14, 2004, *Interpretation and Implementation of the Convention Species Trade and Conservation Issues: Conservation and Management of Sharks*, 25 [hereinafter CITES Animals Committee, *Management of Sharks*], *available at* http://www.cites.org/eng/cop/13/doc/E13-35.pdf; CITES, June 14, 2006, *Appendices I, II and III* [hereinafter CITES Appendices], *available at* http://www.cites.org/eng/app/appendices.shtml.

31. CMS, *supra* note 18, art. II ¶ 2.

32. *Id.* arts. III-IV.

33. CMS, Feb. 23, 2006, *Appendices I and II of the Convention on the Conservation of Migratory Species of Wild Animals* [hereinafter CMS Appendices], *available at* http://www.cms.int/documents/appendix/Appendices_E.pdf.

To address these shortcomings, the governing bodies of IPOA-Sharks, CITES, and CMS must find ways to both compel and encourage states to implement shark conservation measures and report shark trade data accurately to the FAO. The governing bodies can address issues of black market trade by tightening enforcement through increasing supervision of fisheries and by relying on RFMOs to help manage shark fishing. The governing bodies can mitigate funding problems by applying to the Global Environment Facility for assistance in financing, training, research, and enforcement programs. Finally, CITES and CMS can increase their coverage of shark species by acquiring more accurate data on shark biology, populations, and trade; mitigating the effect of reservations on conservation efforts; promoting public awareness; and increasing lobbying efforts targeting parties to CITES and CMS. By adopting these proposals, existing shark conservation measures provided by IPOA-Sharks, CITES, and CMS can more effectively afford sharks protection from overexploitation in international trade.

Part II of this Comment provides a biological explanation of why sharks are especially susceptible to overfishing. Part III examines the threat of international trade to shark populations—namely, directed catch for their meat and fins, and bycatch in tuna and swordfish longline fisheries. Part IV describes current international measures promoting conservation and management of sharks, focusing on IPOA-Sharks, CITES, and CMS. This section also discusses the shortcomings of these measures. Finally, Part V suggests several steps to more effectively implement existing shark conservation measures. Increasing the efficient implementation of existing international shark trade regulations will allow the international community to better protect threatened shark populations and retain a valuable marine resource for future generations to enjoy.

II. BIOLOGICAL FACTORS MAKING SHARKS SUSCEPTIBLE TO ENDANGERMENT

Shark populations have plummeted in recent years, with some species experiencing a decrease of more than half of their population in the North Atlantic and the Gulf of Mexico.[34] A recent study indicates that hammerhead populations have declined 89% between 1986 and 2000.[35] Other species have fared little better, with thresher populations decreasing

34. Revkin, *supra* note 5, at A18. SUSIE WATTS, WILD AID, SHARK FINNING: UNRECORDED WASTAGE ON A GLOBAL SCALE 2 (Sept. 2003), *available at* http://www.wildaid.org/PDF/reports/shark_finning_report.pdf.

35. Revkin, *supra* note 5, at A18.

by 80%, great whites by 79%, oceanic whitetip by 70%, tiger sharks by 65%, and blue sharks by 60% during that same time period.[36] As a result of their declining populations, the IUCN Red List identifies seventy-nine shark species "ranging from critically endangered to 'lower risk near threatened.'"[37] These sudden and drastic population declines result from a dramatic increase in the international shark trade and sharks' unique biological susceptibility to overfishing.[38]

Given their place at the top of the marine food chain, shark populations are not naturally abundant.[39] Furthermore, their role as apex predators with few natural enemies means that sharks cannot adequately compensate for high mortality threats and the subsequent decimation of their populations resulting from increased fishing.[40] Compared with the bony fishes, the target of traditional large-scale commercial fisheries, sharks are particularly susceptible to the threats posed by intensive international trade.[41] The life cycle of cartilaginous fish, such as sharks, skates, and rays, is vastly different from that of bony fish.[42] Unlike bony fish, which tend to mature early and reproduce at high rates, sharks grow slowly, mature late, and produce only a few young following a long gestation period.[43]

Many shark species experience extremely slow growth rates; estimations of growth rates for some species range from fifteen to thirty years to reach maturity.[44] Sharks also have long life spans, and female sharks generally produce only a few broods in a lifetime.[45] The low number of broods per female result from the combination of long reproductive cycles and gestation periods, characteristics of most shark species.[46] Because sharks are large and fully developed when born or hatched, their gestation period must be long enough to provide sufficient time for development—usually one to two years.[47] Furthermore, the energy required

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36. *Id.* Chart.

37. CITES Animals Committee, Apr. 8-12, 2002, *Information Paper-Australia: Conservation of Sharks-Progress*, 1, (Apr. 2002) [hereinafter Information Paper-Australia], *available at* http://www.cites.org/common/com/ac/18/E18i-01.pdf.

38. Fordham & Dolan, *supra* note 11, at 532.

39. Evans, *supra* note 7, at 21.

40. Preston, *supra* note 3, at 19.

41. TRAFFIC Shark Listing Proposals, *supra* note 10.

42. *Id.*

43. *Id.* By contrast, most bony fish produce several hundred eggs at time. Sharks—Lords of the Sea, Shark Reproduction, http://elasmophiles.tripod.com/id18.html (last visited Feb. 25, 2007).

44. CASTRO ET AL., *supra* note 4, § 3.

45. *Id.*

46. *Id.*

47. *Id.*

for female sharks to produce and nurture their large pups results in a long reproductive cycle, which also lasts an average of one to two years.[48] In cases where the gestation period and reproductive cycle run consecutively, the result could be a period of two to four years between broods. For example, after giving birth, the black-tip shark enters a year-long resting stage to store energy before mating again and beginning a year-long gestation period.[49] The resulting broods are very small, usually containing only two to twelve pups.[50] This is the case for most of the commercially important species, including the spiny dogfish, which produces broods consisting of three to eleven pups following a gestation period of up to twenty-two months.[51] In addition, "young [sharks] suffer an infant mortality rate of up to 80[%]," further contributing to sharks' slow population growth.[52]

As a result, populations of shark species, such as great white sharks and basking sharks, increase at a rate of only one to two percent each year.[53] While this population growth rate is enough to sustain the population under natural mortality levels, females have shown no ability to adapt to the increased mortality rates resulting from expansion of the shark trade.[54]

III. THREATS

Although commercial fishermen have not traditionally targeted sharks on a large scale, fishers around the world have shown an increasing interest in sharks over the past thirty years. As a result, threats facing sharks have grown dramatically, with total shark catches increasing from 271,800 tons in 1950 to 913,115 tons in 2000.[55] Shark products are used for a variety of purposes, but international trade poses its greatest threat to sharks in the form of directed catch for meat, shark finning, and bycatch.[56]

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48. *Id.*

49. *Id.*

50. CASTRO ET AL., *supra* note 4, § 3. There are some exceptions where certain shark species produce dozens of pups per brood. Most commercially important species, however, produce less than a dozen pups at a time. *Id.*

51. *Id.* § 4.2.4.

52. Preston, *supra* note 3, at 19.

53. TRAFFIC Shark Listing Proposals, *supra* note 10.

54. Information Paper-Australia, *supra* note 37, at 1; CASTRO ET AL., *supra* note 4, § 3.

55. VANNUCCINI, *supra* note 4, § 3; CATARCI, *supra* note 4, at *Sharks (Chondrichthyes): An introduction to chondrychthyans*. Catarci's trade figures appear in Metric Tons (MT), and have been converted to tons for ease of comparison to those figures which appear in the Vannuccini report.

56. *See* VANNUCCINI, *supra* note 4, §§ 6.1–6.2 (discussing market for meat and fins); Spiegel, *supra* note 1, at 432–35 (discussing threats of bycatch and shark finning). Sharks

A. The Effect of Trade in Shark Meat on Shark Populations

1. History of Trade in Shark Meat

Other than in coastal areas, sharks traditionally have not been prized for their meat.[57] Until the late twentieth century, many parts of the world looked down upon consumption of shark meat, viewing it as "poor man's food."[58] Because of high levels of urea in the sharks' blood, the meat had a strong smell and taste that made it unpalatable to many consumers.[59] With proper preparation and handling, however, fishermen could remove the urea and prevent the offensive odor and taste.[60] The coastal communities that relied on shark meat as a food source dealt with the problem by drying, smoking, or salting the meat when they could not eat it fresh.[61] Improved preservation resulting from the advent of more sophisticated refrigeration and handling techniques in the 1950s made shark meat more acceptable to non-traditional communities.[62] In response to widespread malnutrition and a decrease in traditional protein sources, several governments developed marketing campaigns to promote shark meat consumption, pushing shark meat into the mainstream.[63]

Since the 1950s, the world's commercial fishing operations have targeted sharks for their meat at a steadily growing pace. Data collected since 1976 indicate that total world production of shark meat, including fresh, frozen, and cured meat and fillets, rose from 18,000 tons in 1976 to 69,300 tons in 1997.[64] Similarly, the FAO statistics indicate that exports of shark meat have increased from 17,600 tons in 1976 to 58,600 tons in

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are also targeted for trophy items such as teeth and jaws, leather products, and various medicinal uses. VANNUCCINI, *supra* note 4, §§ 4, 6.4.

57. VANNUCCINI, *supra* note 4, § 6.1.

58. *Id.*

59. *Id.* § 6.1.5. Press Release, TRAFFIC, Shark Fisheries and Trade in the Americas (Mar. 1998), *available at* http://www.traffic.org/factfile/us-shark_trade.html.

60. VANNUCCINI, *supra* note 4, § 6.1.5.

61. *Id.*

62. *Id*.

63. *Id.* § 6.1.3. For example, in Japan, Canada, the United States, and the former USSR, the shark meat industry received government assistance in product development and testing. *Id.*

64. *Id.* The FAO statistics, however, are suspected to grossly underestimate actual amounts of shark products in trade due to under-reporting by individual countries.

1997.[65] Finally, the FAO reports that imports have increased between 1976 and 1997 from 20,500 tons to 65,800 tons.[66]

Shark meat production is an international industry with major producing countries on nearly every continent—including Spain, the United States, Mexico, Japan, Indonesia, Pakistan, Chile, and New Zealand. Asia produces the most shark meat and fillets; in 1996, shark catches by Asian countries represented 55.4% of the world's total shark landings.[67] While Asia leads the world in shark meat production, Europe is by far the biggest regional exporter.[68] In 1997, shark product exports from Europe totaled 25,300 tons.[69] Europe is also the world's largest importer of shark meat, importing nearly 40,200 tons in 1997.[70]

2. Impact of the Shark Meat Trade on Shark Populations

Species of shark most sought after for their meat include the shortfin mako, thresher, porbeagle, spiny dogfish, smoothhound, blue, salmon, and requiem sharks.[71] International trade has severely affected these species. For example, the spiny dogfish catch has nearly doubled in the last fifty

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65. *Id.* Spain, a leading exporter, alone exported 12,400 tons. *Id.* Other leading exporters include Germany and the United Kingdom. TRAFFIC, SHARK FISHERIES AND TRADE IN EUROPE (Mar. 1997), *available at* http://www.traffic.org/factfile/sharks-tradeineurope.html.

66. VANNUCCINI, *supra* note 4, § 6.1.3. The higher number of total imports over exports can likely be attributed to the acknowledged inaccuracy of the FAO statistics resulting from under-reporting.

67. *Id.* § 6.1.3.3. According to the FAO statistics, Asian countries produced a total of 33,000 tons of shark meat and fillets in 1997. *Id.* Pakistan produced the most dried, salted, or in-brine shark in the world in 1997, totaling 19,000 tons; Spain produced the most frozen whole shark with 12,100 tons, and the United States led in the production of shark fillets, producing 4400 tons. *Id.* § 6.1.3. African countries also participate in the shark meat trade, although on a smaller scale. In 1997, the FAO reports that Africa's leading shark meat producer, South Africa, produced a total of 123 tons, followed by Madagascar with only 37 tons. *Id.* § 6.1.3.1.

68. *Id.* § 6.1.3 fig. 28.

69. VANNUCCINI, *supra* note 4, § 6.1.3.2. Spain exports the most shark meat of all shark meat-producing countries, exporting 12,400 tons in 1997. *Id.* § 6.1.3. Besides Spain, lead exporters include the United States, Japan, the United Kingdom, Canada, Taiwan, New Zealand, and Indonesia. *Id.*

70. *Id.* §§ 6.1.3 fig. 29, 6.1.3.2. Italy is the largest importing country, importing a total of 14,400 tons of shark meat. *Id.* § 6.1.3.2; TRAFFIC, SHARK FISHERIES AND TRADE IN EUROPE, *supra* note 65. France and Spain were the second and third largest importers, importing approximately 7500 tons each. VANNUCCINI, *supra* note 4, § 6.1.3.2. Other major importers include the United Kingdom, Germany, Netherlands, Republic of Korea, the United States, and Japan. *Id.* § 6.1.3.

71. VANNUCCINI, *supra* note 4, § 6.1.2.

years, increasing from 22,200 tons in 1950 to 44,100 tons in 1997.[72] Between 1988 and 1994, dogfish composed 55% of European imports of shark meat, which totaled 261,400 tons.[73] In response to SARC's projection of stock collapse for the spiny dogfish due to overfishing, international agencies are starting to manage this species.[74] Because IUCN listed the spiny dogfish as near-threatened/threatened, it is currently under consultation for inclusion on CITES Appendix II.[75] Porbeagle populations have also diminished, as worldwide catch peaked in 1964 at around 10,664 tons and equaled 3468 tons in 2000.[76] In response to its declining population size, IUCN has listed the porbeagle as near-threatened/ threatened.[77] While the porbeagle population currently receives almost no management, it is under consultation for inclusion on CITES Appendix II.[78] Mako populations also receive very little management and are declining.[79] IUCN states that, while it lacks sufficient data on the species, the mako's status is near threatened.[80] Of the other major targeted species, IUCN lists the thresher, salmon, smoothhound, and blue shark as either near-threatened or threatened, with declining populations, and either no or very little management.[81] None of these species are currently under consultation for inclusion on CITES Appendix II.[82]

B. The Effect of Shark Finning on Shark Populations

Shark finning is one of the greatest causes of shark mortality.[83] While sometimes the shark is already dead when the fins are removed, fishermen sometimes slice the shark's fins from its body while it is still alive,

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72. *Id.* § 3.1. Catch peaked in 1987 at 57,100 tons. *Id.*

73. TRAFFIC, SHARK FISHERIES AND TRADE IN EUROPE, *supra* note 65.

74. Fordham & Dolan, *supra* note 11, at 558.

75. CITES Animals Committee, *Management of Sharks*, *supra* note 30, at 25.

76. CATARCI, *supra* note 4, at *Sharks (Chondrichthyes): Main commercially-exploited shark species: Porbeagle (Lamna nasus)*.

77. United Nations Convention on the Law of the Sea, Dec. 10, 1982, S. Treaty Doc. No. 103-39, 1833 U.N.T.S. 397 [hereinafter UNCLOS], *available at* http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf.

78. CITES Animals Committee, *Management of Sharks*, *supra* note 30, at 26.

79. *Id.*

80. *Id.*

81. *Id.* at 25-27.

82. *Id.*

83. CLARKE, *supra* note 25, at 17. Shark finning refers to the removal of the fins and tail from a shark, after which the shark is discarded into the sea. Spiegel, *supra* note 1, at 410.

rendering it unable to swim and eliminating any chance of survival.[84] Because a shark must stay in motion in order provide its body with oxygen, the shark slowly suffocates to death when deprived of the ability to swim.[85] Due to the growing popularity of shark-fin soup, over 100 million sharks meet this fate each year.[86]

1. History of Trade in Shark Fins

The Chinese have valued shark fins as the key ingredient of shark-fin soup since the Han Dynasty more than 2200 years ago.[87] Only a small quantity of fin can be harvested from a shark, with the fins of one shark able to serve only eight people.[88] As a result, the Chinese viewed shark fins as rare and precious items fit for consumption by emperors, considering them one of the eight treasured foods from the sea.[89] With the liberalization of the People's Republic of China in the 1980s, the Chinese economy grew by leaps and bounds, resulting in a general trend of upward mobility for the Chinese.[90] As the income of the average Chinese citizen rose, the shark fin industry expanded to accommodate the growing demand for shark-fin soup.[91] Shark-fin soup remains a popular dish today and is often served at weddings in China and Hong Kong.[92] In 2002, 85% of surveyed Hong Kong residents had eaten the soup once in the past year; 46% had eaten it at least five times during that same period.[93]

The Chinese have historically obtained shark fins through international trade; records indicate that shark fins were part of the traditional economy of Borneo, one of China's historical trading partners.[94] Today, fins are almost exclusively exported through international trade to Chinese markets, with very little domestic consumption in producing countries.[95]

In 1976, the FAO reports that total world production of shark fins was only 1800 tons; twenty years later, the total had increased to 6030 tons.[96]

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84. Spiegel, *supra* note 1, at 410.

85. *Id.* Alternatively, the finned shark may be eaten by another predator. *Id.*

86. *A Review of Developments in Ocean and Coastal Law 2001-02, supra* note 3, at 368.

87. Spiegel, *supra* note 1, at 411.

88. *Shark Fin Culture*, SHANGHAI DAILY, July 27, 2004, *available at* http://www.sharktrust.org/news_view.asp?did=391&monthid=7&yearid=2004&toptab=4.

89. VANNUCCINI, *supra* note 4, § 6.2.

90. Spiegel, *supra* note 1, at 411.

91. *Id.*

92. Evans, *supra* note 7, at 20.

93. CLARKE, *supra* note 25, at 16.

94. *Id.*

95. VANNUCCINI, *supra* note 4, § 6.2.

96. *Id.* § 6.2.8. A later study published in 2002 notes that the FAO recorded total

Asia dominates the shark fin production industry.[97] Of the 6030 tons produced in 1997, nearly 5900 were produced in Asia.[98] The FAO also names Asia as both the world's largest regional exporter and importer of shark fins.[99] Asian countries exported 6150 tons out of the world total of 6300 tons in 1997,[100] accounting for 98.1% of the world's total shark fin exports.[101] Out of the 1997 total world import of 7025 tons, Asian countries accounted for 6930 tons—98.6% of the world's total imports.[102]

2. Impact of Shark Finning on Shark Populations

Shark species targeted for their fins include the giant guitarfish, blue, dusky, hammerhead, mako, oceanic whitetip, and sandbar sharks.[103] The expanding fin market caused these species to suffer great losses. The blue shark, for instance, is caught at a rate of about 6.5 million fish each year as undirected bycatch.[104] Each of these species is managed inadequately or not at all, has experienced declining stocks, and is listed on the IUCN Red List as either near-threatened or threatened.[105]

Shark finning is also exceedingly wasteful. Shark fins compose at most 5% of the shark's total weight.[106] Only the fin is retained; fishers discard

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production in 1999 as 3933 tons. CLARKE, *supra* note 25, at 44.

97. VANNUCCINI, *supra* note 4, § 6.2.8.

98. *Id.* § 6.2.8.2. In 1997, the leading producer was China (2400 tons), followed by India and Indonesia. *Id.* § 6.2.8.

99. *Id.* § 6.2.8 fig. 51 and 52. Asian countries represent both the largest importers and exporters of shark fins because countries will often import the fins for processing and then re-export the fins; Japan, for instance, re-exports the majority of its imported shark fin, with very little domestic consumption. *Id.* § 6.2.8.2. Re-exports refers to the practice of exporting goods which have themselves been imported into the exporting country.

100. VANNUCCINI, *supra* note 4, §§ 6.2.8, 6.2.8.2. This figure represents an increase from the 1976 figure of 2480 tons and is a combination of exports and re-exports. In 1997, re-exports amounted to 1950 tons out of the total Asian export of 6150 tons. *Id.* § 6.2.8.2. Once again China was the leading country, exporting 2400 tons, followed by Hong Kong (1955 tons), Indonesia (680 tons), Japan (370 tons), Taiwan (260 tons), and India (244 tons). *Id.* Until 1994, Singapore was also a leading exporter; after 1994, however, Singapore failed to report its trade data to the FAO. *Id.*

101. *Id.* § 6.2.8.

102. *Id.* China again led other Asian countries and the world in imports, importing 4400 tons in 1997. *Id.* The other major importing countries were Hong Kong (2200 tons), Malaysia (120 tons), Indonesia (98 tons), Thailand (60 tons), and Taiwan (36 tons). *Id.* The greater quantity of shark fin imports compared with exports can best be attributed to inaccurate reporting to the FAO. *See infra* notes 187-91 and accompanying text.

103. VANNUCCINI, *supra* note 4, § 6.2.4.

104. *Id.* § 3.1.

105. CITES Animals Committee, *Management of Sharks*, *supra* note 30, at 26-27.

106. *Shark Finning and Coral Reef Preservation*, *Hearing Before the Subcomm. on*

the meat, skin, organs, and other body parts.[107] This means that the 6030 tons of shark fins produced worldwide in 1997 represents approximately 120,600 tons of discarded shark.[108] Blue shark finning provides a particularly wasteful example because its fins are not even considered of the highest quality; fishermen keep them simply because the huge number of blue sharks taken as bycatch makes them an easy target.[109] In spite of the wastefulness of shark finning, current trends indicate that the steady increase in the shark trade observed between 1984 and 2000 is likely to continue growing, as demand for shark fins in mainland China is expected to continue increasing.[110]

C. The Effect of Bycatch on Shark Populations

Bycatch in tuna and swordfish longline fisheries, which occurs when sharks are accidentally caught in nets or on fishing lines set out for other fish stocks, also threatens sharks.[111] Before the shark-fin soup craze began, fishermen usually discarded sharks that were caught as bycatch.[112] As shark fins grew in value, however, fishermen no longer released sharks, even if still alive. Instead, fishermen now bring the sharks onboard, fin them, and discard the carcass.[113] In 1998, for example, 60% of sharks caught as bycatch were finned rather than released alive.[114] The impact on shark populations has been significant, with the case of the blue shark best illustrating the impact of bycatch on shark mortality.[115] Of that species

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Fisheries, Wildlife and Oceans of the H. Comm. on Resources, 106th Cong. (1999) (statement of Robert E. Hueter, Director, Center for Shark Research, Mote Marine Laboratory) [hereinafter Hueter].

107. *Id.*

108. *See id*.; VANNUCCINI, *supra* note 4, § 6.2.8 (stating 1997 world total fin production as 6030 tons, which is five percent of 120,600).

109. Hueter, *supra* note 106. Blue sharks caught as bycatch otherwise have a fair chance of survival. *Id.*

110. CLARKE, *supra* note 25, at 17, 26.

111. CASTRO ET AL., *supra* note 4, § 1.1. *See* Evans, *supra* note 7, at 16 (describing bycatch).

112. Evans, *supra* note 7, at 16.

113. Spiegel, *supra* note 1, at 432-33.

114. *Id.* at 432. Data from Hawaiian longline fisheries indicates that eighty-six percent of sharks caught as bycatch were alive when brought onboard; Brazilian longline fisheries similarly observed that eighty-eight percent of sharks caught as bycatch were alive when brought onboard. WATTS, *supra* note 34, at 14.

115. While most documented statistics on shark bycatch relate to the blue shark, other species are affected by the practice. Because of the difficulty of determining the species of shark from detached and dried fins alone, it is almost impossible to discern which species are hardest hit by the increased practice of finning sharks caught as bycatch. Spiegel, *supra*

alone, approximately 6.5 million sharks were killed each year as bycatch throughout the late 1980s and early 1990s.[116] While the overwhelming majority of blue sharks caught as bycatch are alive when brought onboard, fishermen no longer have any incentive to release the sharks unharmed.[117] Rather, these sharks, which would otherwise stand a fair chance of survival if released, are now killed for their fins.[118]

D. Implications of Continued International Trade for Shark Populations

The catch statistics and resulting decline in shark populations demonstrates the devastating impact of international trade and overfishing. The data further illustrates the unsuitability of targeting sharks for large scale international trade. The slow rate of population replenishment common to most shark species prevents them from successfully compensating for the huge growth in shark mortality.[119] Compared to traditional bony fish targeted for meat, sharks have smaller starting populations; they also reproduce at a much slower rate and on a much smaller scale.[120] If the international commercial fishing industry continues to catch sharks at the current rate, shark populations will continue to decline, and the oceans will lose a valuable apex predator.[121] To prevent the decimation of shark populations, international agencies must implement effective regulation of the catch and trade in sharks.

IV. INTERNATIONAL SHARK CONSERVATION MEASURES

As shark populations began to dwindle, the international community began to realize that sharks needed some form of protection from over-exploitation. The first major step toward international shark conservation came in 1994, when the Ninth Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES CoP9) adopted a resolution called "Status of International Trade in Shark Species,"[122] which instructed the CITES Animals Committee to

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note 1, at 435.

116. VANNUCCINI, *supra* note 4, § 3.1.

117. Hueter, *supra* note 106.

118. *Id.* Compared with other shark species, the blue shark has a relatively high survival rate on pelagic longlines. *Id.*

119. Information Paper-Australia, *supra* note 37, at 1; CASTRO ET AL., *supra* note 4, § 3.

120. Evans, *supra* note 7, at 21; TRAFFIC Shark Listing Proposals, *supra* note 10.

121. Evans, *supra* note 7, at 21.

122. CITES, Nov. 7-18, 1994, *Status of International Trade in Shark Species*, *available at* http://www.cites.org/eng/res/all/09/E09-17.pdf.

compile and review existing biological and trade data regarding shark species.[123] Additionally, CITES protects those shark species listed on one of its three Appendices, which impose varying degrees of trade regulations and restrictions.[124] The second step occurred in 1999 when the FAO developed IPOA-Sharks, which provides a framework for individual countries to develop and implement national plans of action for the conservation and management of sharks in their waters.[125] The third source of international protection available to sharks is CMS, which restricts takings of migratory species listed on one of its two Appendices.[126]

A. IPOA-Sharks

1. Structure and Scope of IPOA-Sharks

In 1999, the FAO developed IPOA-Sharks in response to the concern over increasing shark catches and the subsequent threat to various shark populations around the world.[127] IPOA-Sharks also addresses the conservation and management problems arising from the lack of available identification, biological, and trade data on sharks.[128] IPOA-Sharks sets out to promote the gathering and dissemination of data relating both to biological characteristics and trade of sharks in the hope that such information will better enable sustainable management of shark fisheries.[129] To that end, IPOA-Sharks provides a framework for individual nations to use in developing Shark Plans.[130]

IPOA-Sharks recommends that the Shark Plan include a description of the prevailing state of shark stocks and populations, fisheries associated with sharks, and a management framework for enforcement measures.[131] It also recommends that the Shark Plan state the objective of ensuring the conservation, management, and long-term sustainable use of sharks.[132] Specifically, IPOA-Sharks states that the Shark Plan should aim to:

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123. Fordham & Dolan, *supra* note 11, at 542.
124. CITES, *supra* note 17, art. II.
125. IPOA-Sharks, *supra* note 16, ¶¶ 18-19.
126. CMS, *supra* note 18, arts. III-IV.
127. IPOA-Sharks, *supra* note 16, ¶ 2.
128. *Id.* ¶ 3.
129. *Id.* ¶ 16.
130. *Id.* ¶¶ 10, 18-19.
131. *Id.* app. A Part II.A.
132. *Id.* app. A Part II.B., ¶ 16.

> Ensure that shark catches from directed and non-directed fisheries are sustainable;
>
> Assess threats to shark populations, determine and protect critical habitats and implement harvesting strategies consistent with the principles of biological sustainability and rational long-term economic use;
>
> Identify and provide special attention, in particular to vulnerable or threatened shark stocks;
>
> Improve and develop frameworks for establishing and co-ordinating effective consultation involving all stakeholders in research, management and educational initiatives within and between States;
>
> Minimize unutilized incidental catches of sharks;
>
> Contribute to the protection of biodiversity and ecosystem structure and function;
>
> Minimize waste and discards from shark catches in accordance with article 7.2.2.(g) of the Code of Conduct for Responsible Fisheries (for example, requiring the retention of sharks from which fins are removed);
>
> Encourage full use of dead sharks;
>
> Facilitate improved species-specific catch and landings data and monitoring of shark catches;
>
> Facilitate the identification and reporting of species-specific biological and trade data.[133]

IPOA-Sharks further recommends that the Shark Plan contain strategies for achieving the objectives, such as ascertaining control of access to shark fishing vessels; decreasing effort where the current catch is unsustainable; and improving the utilization of the catch, the training for shark species identification, and data collection and monitoring.[134] Finally, IPOA-Sharks recommends that each Shark Plan contain an SAR that provides a periodic assessment of the status of shark stocks.[135] IPOA-Sharks recommends that SARs contain past and present trends for effort in both directed and non-directed fisheries; physical and economic yield; the status of shark stocks; existing management measures (namely control of access of fishing grounds, technical measures, and monitoring); the effectiveness of those management measures; and possible modifications of those measures to increase their effectiveness.[136]

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133. IPOA-Sharks, *supra* note 16, ¶ 22.
134. *Id.* app. A Part II.C.
135. *Id.* ¶ 21.
136. *Id.* app. B.

IPOA-Sharks encourages all states in whose waters sharks are caught or whose vessels catch sharks on the high seas to develop Shark Plans.[137] It covers all species of sharks, skates, rays and chimaeras, and defines "shark catch" to include directed catch, bycatch, commercial and recreational fisheries, and other forms of taking sharks, whether targeted or non-targeted.[138]

2. Problems with the Current Implementation of IPOA-Sharks

Given its broad scope, IPOA-Sharks has the potential to effectively protect all sharks from overfishing, assuming that all shark-fishing nations fully develop and implement the recommended Shark Plan. As a voluntary measure, however, IPOA-Sharks acts only as a recommendation with no binding effect.[139]

a. Lack of Development and Implementation of Shark Plans or SARs

While IPOA-Sharks' broad scope gives it the potential to provide effective protection to sharks if shark-fishing nations fully implement its conservation and management measures, such implementation has not yet been achieved. As of October 2004, only 5 of 113 states have actually

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137. *Id.* ¶¶ 17–18.

138. *Id.* ¶¶ 11–12. Sharks, rays, and chimaeras all belong to the class *Chondrichthyes*, with sharks and rays in the subclass *Elasmobranchii* and chimaeras in the subclass *Holocephali*. ReefQuest Centre for Shark Research, Chimaeras—the Neglected Chondrichthians, http://www.elasmo-research.org/education/shark_profiles/chimaera.htm (last visited Feb. 25, 2007).

139. IPOA-Sharks states that it was "elaborated within the framework of the Code of Conduct for Responsible Fisheries as envisaged by Article 2 (d)." IPOA-Sharks, *supra* note 16, ¶ 10. The Code of Conduct for Responsible Fisheries (CCRF) itself received a modicum of binding effect from two bodies of international law: UNCLOS and the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas. FAO, Oct. 31, 1995, *Code of Conduct for Responsible Fisheries* art. 1.1 [hereinafter the Code] (discussing member states' obligation to conserve living resources and highly migratory species), *available at* http://www.fao.org/DOCREP/005/v9878e/v9878e00.htm. *See* UNCLOS, *supra* note 77, arts. 61, 64; FAO, *Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas*, Art. III (Nov. 24, 1993) [hereinafter Compliance Agreement], *available at* ftp://ftp.fao.org/docrep/fao/Meeting/006/x3130m/X3130m00.pdf (discussing flag states' obligation to comply with conservation and management efforts). While neither UNCLOS nor the Compliance Agreement speaks specifically to the actions recommended in IPOA-Sharks, member states are still bound by the underlying principles of conservation and management expounded in both of them.

drafted either a Shark Plan or an SAR.[140] Thirty-two states, including three major shark-fishing states, meanwhile, have reportedly taken no action at all toward developing either shark conservation measure.[141] Thus, although forty-seven states, including eight major shark-fishing states, are currently working towards implementation of IPOA-Sharks—twice as many as reported progress in 2002—very little improvement in shark fisheries management has occurred.[142]

In their 2004 appraisal of the effectiveness of implementation of IPOA-Sharks, IUCN and TRAFFIC identified several causes for the lack of implementation.[143] First, they identified a lack of capacity and resources, noting that all developing countries identified this factor as a major constraint on implementation.[144] The FAO acknowledges that it lacks the ability to provide the needed financial assistance to individual states for the development and implementation of Shark Plans.[145] For the FAO to provide greater financial assistance to states, the FAO would in turn require greater contributions from those member states with the capacity to help.[146]

Another factor contributing to the lack of implementation is the voluntary nature of IPOA-Sharks and the resulting lack of incentive for compliance.[147] In its April 2002 report on implementation of IPOA-Sharks,

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140. CITES Animals Committee, *Management of Sharks*, *supra* note 30, at 8. *See* Fordham & Dolan, *supra* note 11, at 549 (stating that as of 2002, only 5 of 113 countries had SARs or Shark Plans available for review).

141. CITES Animals Committee, *Management of Sharks*, *supra* note 30, at 6. The three major shark-fishing states not yet implementing IPOA-Sharks are Nigeria, Sri Lanka, and China (Taiwan Province)—each of which lands more than 10,000 tons each year. *Id.* at 7.

142. *Id.* at 2, 7.

143. *Id.* at 9. TRAFFIC is a wildlife trade monitoring network designed jointly by IUCN and the World Wildlife Foundation (WWF) to assist with the CITES implementation. TRAFFIC, About TRAFFIC, http://www.traffic.org/about/abt.htm (last visited Feb. 25, 2007).

144. CITES Animals Committee, *Management of Sharks*, *supra* note 30, at 9. In the words of one responding state, "[a]ssistance will be needed with training, capacity building and research before it will be possible to implement the IPOA-Sharks." *Id.* Additionally, it noted that resistance from industry and lack of political will played a part in the lack of implementation. *Id.*

145. Letter from R. Shotton, Fisheries Department Focal Point for FAO's IPOA-Sharks, Marine Resources Service, to Dr. Marinus S. Hoogmoed, Chairman, CITES Animals Committee 1 (Apr. 4, 2002), *available at* http://www.cites.org/common/com/ac/18/E18i-07.pdf. The FAO is equipped only to address general issues at a global level, providing technical assistance through the provision of "information, manuals, [and] species identification guides . . . ." *Id*. Actual plan formulation and implementation depends on the means and resources available to individual nations. *Id.*

146. *Id.*

147. IUCN Species Survival Commission's Shark Specialist Group & TRAFFIC, Apr. 8-12, 2002, *Report on the Implementation of the International Plan of Action for Sharks,* 3

IUCN and TRAFFIC noted that, given the voluntary nature of IPOA-Sharks, states do not feel obliged to implement its recommendations, and few consider it a priority.[148] Based on this observation, they concluded that the FAO currently lacks the ability to ensure the sustainable management of shark fisheries and stocks.[149] This conclusion was reiterated in the IUCN/TRAFFIC June 2002 report, which found IPOA-Sharks' voluntary nature responsible for the negligible progress made by shark fishing states and RFMOs in implementing IPOA-Sharks.[150]

In spite of their discouraging findings, IUCN and TRAFFIC concluded that if shark-fishing countries widely and effectively implemented IPOA-Sharks, it would result in significant improvements in shark conservation and management.[151] A caveat accompanied this optimistic conclusion, however. Because of its voluntary nature, shark-fishing nations have not widely and effectively implemented IPOA-Sharks, and thus countries have not improved their capacity to manage and conserve sharks.[152] Rather, as the Secretary-General of the CITES Secretariat noted, the lack of progress in implementing IPOA-Sharks has contributed to one member listing two shark species in the CITES Appendices.[153]

b. Insufficient Action under Implemented Shark Plans or SARs

Even where countries have developed Shark Plans, they have generally proven inadequate.[154] As of 2002, all of the Shark Plans reviewed by IUCN and TRAFFIC failed to meet the standards recommended by the FAO.[155] For instance, in their analysis of Japan's Shark Plan, IUCN and TRAFFIC found that the plan was very brief and fell far short of a comprehensive Shark Plan.[156] It provided only a brief discussion of sustainable fisheries, minimization of incidental catch, minimization of waste, encouragement of

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[hereinafter Report on IPOA-Sharks], *available at* http://www.cites.org/eng/com/AC/18/E18-19-2.pdf.

148. *Id*.

149. *Id*.

150. The Role of CITES, *supra* note 24, ¶ 9.

151. *Id.* ¶ 17.

152. *Id.*

153. Letter from the Secretary-General of the CITES Secretariat to the Assistant Director-General of the Fisheries Department of FAO 1 (Apr. 14, 2003) in the CITES, Aug. 18-21, 2003, *Implementation of Resolution Conf. 12.6 and Decision 12.47*, *available at* http://www.cites.org/eng/com/AC/19/E19-18-2.pdf.

154. The Role of CITES, *supra* note 24, ¶ 10.

155. *Id.*

156. Report on IPOA-Sharks, *supra* note 147, Table 2b.

full use, and species-specific biological and trade data.[157] Japan did not address at all the requirements of threat assessment, stock protection, biodiversity protection, and improvement of data collection.[158] Although the United States provided a more detailed plan, IUCN and TRAFFIC still concluded that it failed to commit to a particular course of action.[159] Specifically, while the United States mentioned in its plan sustainable fisheries, threat assessment, consultation initiatives, and biodiversity protection, it failed to provide details on how it would achieve each requirement.[160]

The findings of IUCN, TRAFFIC, and the FAO indicate that the problems resulting from the voluntary nature of IPOA-Sharks extend beyond the widespread lack of implementation; even where some form of a Shark Plan is implemented, it is rarely thorough or effective.[161] Without some degree of uniformity in implementation and enforcement of IPOA-Sharks, those shark-fishing countries without sufficient laws in place can undermine the success of those who have developed and efficiently enforced laws protecting endangered species in their jurisdictions. For instance, a shark that may be protected from finning in waters under the jurisdiction of a country that enforces a ban on finning might still fall prey to the practice when it swims into the waters under the jurisdiction of a country with no such ban.

c. Inaccurate Reporting of Catch and Trade Data by Shark-Fishing States to the FAO

The effectiveness of IPOA-Sharks is further weakened by the incomplete and inaccurate data reported to the FAO by shark-fishing states. Under IPOA-Sharks, the FAO requests that states make their commercial and species-identification data available to relevant subregional and regional fisheries organizations and the FAO.[162] However, many shark-fishing states either under-report their shark catch or fail to report it altogether.[163] The number of total reported imports in 1997 represents the

157. *Id.*
158. *Id.*
159. *Id.*
160. *Id.*
161. Report on IPOA-Sharks, *supra* note 147, at 13; FAO, Feb. 26-Mar. 2, 2001, *Progress in the Implementation of the Code of Conduct for Responsible Fisheries and Related International Plans of Action,* ¶¶ 17, 19 (Mar. 2001), *available at* http://www.fao.org/docrep/meeting/003/x9187e.htm.
162. IPOA-Sharks, *supra* note 16, ¶ 21.
163. VANNUCCINI, *supra* note 4, § 3.4. For instance, in 1995, 1996, and 1997, Singapore failed to report both its shark fin import and export data to the FAO. *Id.* §§ 6.2, 8.2.

deaths of approximately 87.5 million sharks.[164] Yet evidence suggests that these figures grossly underestimate the actual total tonnage imported.[165] A recent independent study (Clarke study) concluded that the FAO data set regarding shark fin imports severely underestimates world trade in shark fins as a result of deflated trade estimates for the People's Republic of China, Hong Kong, and other countries.[166] Similar inaccuracies in the FAO's data exist regarding catch from the North Atlantic.[167]

The Clarke study compared the FAO data based on country reports to the FAO, with those countries' national customs databases, exposing huge discrepancies between the two data sets.[168] For instance, the FAO data recorded Hong Kong's 1999 fin imports as only 0.2% of the fin imports recorded in Hong Kong's customs database.[169] A comparison between the FAO data for Brunei, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, Taiwan, and Thailand with data compiled by the Southeast Asian Fishery Development Center (SEAFDEC) for the same countries produced similar results.[170] The comparison reemphasized the conclusion that the FAO's data significantly underestimates the true numbers involved in the shark fin trade.[171]

The Clarke study noted that the discrepancies between the FAO and customs databases for 1997 was likely due to the FAO's exclusion of dried

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According to Singapore's national customs database, Singapore imported 291 tons of unprocessed shark fins in 1996 and 210 tons in 1997. CLARKE, *supra* note 25, at 46. Evidence also indicates that China—one of the world's greatest shark fin importers—severely under-reports its imports. *Id.* at 7. Furthermore, many countries fail to report the number of sharks taken as bycatch. VANNUCCINI, *supra* note 4, § 3.4.

164. *See Review of Developments in Ocean and Coastal Law 2001-02*, *supra* note 3, at 368 (stating that 8000 tons of shark fins equates to roughly 100 million sharks). Applying a ratio of 7025 tons to 8000 tons, the corresponding number of sharks is roughly 87.5 million.

165. VANNUCCINI, *supra* note 4, § 3.4.

166. CLARKE, *supra* note 25, at 45.

167. Fordham & Dolan, *supra* note 11, at 554.

168. CLARKE, *supra* note 25, at 45.

169. *See id.* at 44. The Clarke study noted that the FAO reported Hong Kong's fin imports at 13 tons in 1998 and 14 tons in 1999. Hong Kong's customs database, however, reports that for those same years, Hong Kong's fin imports were actually 5195 tons and 5824 tons, respectively. *Id.* at 46. Similarly, in 1997, the FAO reported Hong Kong's re-export total as 1794 tons and import total as 2211 tons, while Hong Kong's customs database reported a re-export total of 5331 and an import total of 6526. *Id.* at 45.

170. *Id.* at 49-50. SEAFDEC's data reflected shark imports and exports almost identical to those found in Hong Kong's customs database, while the FAO's numbers were once again significantly lower. For instance, SEAFDEC recorded Hong Kong's total imports in 1996 at 9212 tons; the FAO reported 2417 tons in 1996. *Id.*

171. *Id.* at 50.

shark fin quantities, for which the customs data accounted.[172] The Clarke study provided another more sinister and problematic explanation of the low numbers reported to the FAO: smuggling. Comparing Hong Kong and Mainland China trade data, the Clarke study noted that Hong Kong's recorded exports exceeded China's corresponding recorded imports by 139 times.[173] The Clarke study postulated that this difference resulted from a lack of customs reporting on nondutiable goods in Mainland China.[174] The numbers—even those recorded in the customs database—are also likely to underestimate the true quantities of shark fin trade due to smuggling.[175] An analysis of United States Customs data shows discrepancies that provide further evidence of illicit trade in shark fins.[176]

While the Clarke study only compared data on imports, it implies that the FAO data underestimates production and export data as well.[177] It is therefore likely that the shark fin trade is even more expansive than the FAO statistics reflect, especially considering Hong Kong's status as one of the most important markets for fins in the world.[178] The repercussions of incomplete reporting of catch and trade data go beyond merely indicating a lack of compliance with IPOA-Sharks; the inaccuracies also reduce the data's utility for fisheries assessment and management.[179]

As a result of the FAO's reliance on the incomplete reports, the FAO and other organizations that depend on the FAO statistics to gauge the impact of international trade on shark populations are currently shaping conservation policies and trade regulations based on inaccurate and deflated data.[180] For example, in 1995, the FAO's data for both shark fin imports and exports showed a sharp decrease due to China's failure to submit its

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172. *Id.* at 45.

173. *Id.* at 38.

174. *Id.*

175. *Id.* at 34; Spiegel, *supra* note 1, at 412.

176. CITES, Aug. 18-21, 2003, *Progress Made by the United States of America in Developing and Implementing the IPOA-Sharks*, 11 [hereinafter U.S. Progress Report], *available at* http://cites.org/eng/com/AC/19/E19-18-1.pdf. Data compiled by the U.S. Customs Service and the Bureau of Census indicate that U.S. exports of shark fins increased from 95,206 kilos in 2001 to 296,159 kilos in 2002. *Id.* at 11. This increase occurred in spite of the implementation of a prohibition on finning in February 2002. *Id.* at 10. Although the magnitude of the problem is unknown, seizures conducted by the United States government indicate that U.S. vessels have engaged in smuggling shark fins into the United States for subsequent legal export. For instance, the most recent seizure at the time of the report confiscated 120,000 pounds of shark fins. *Id.* at 12.

177. CLARKE, *supra* note 25, at 45.

178. Spiegel, *supra* note 1, at 411; VANNUCCINI, *supra* note 4, § 6.2.8.2.

179. The Role of CITES, *supra* note 24, ¶ 13.

180. VANNUCCINI, *supra* note 4, § 3.4.

trade reports, although this apparent decline in trade does not mean that the actual quantity of trade decreased.[181] The end result of inaccurate reporting under IPOA-Sharks is that the FAO, as well as other organizations relying on FAO statistics, currently operate under false assumptions of the true quantity of trade in shark products, as the total estimated shark catch is likely twice that of the FAO recorded catch.[182] Even to the extent that shark-fishing states do report their shark trade accurately to the FAO, the overall accuracy of the FAO statistics is limited in scope by its exclusion of domestic consumption of shark products, thus skewing the picture of true shark mortality.[183] Finally, the lack of species-specific reporting makes it difficult for the FAO or other conservation groups to identify species that are particularly threatened by trade.[184]

B. CITES

1. Structure, Scope, and Current Application of CITES to Shark Conservation

Beginning in the 1960s, the concept of using trade regulations for conservation purposes began to gain acceptance, and the international community started to realize that protecting certain species from overexploitation would require international cooperation.[185] In response to these growing concerns, CITES was developed and entered into force on July 1, 1975.[186] It currently has 169 member countries (parties).[187] CITES serves a threefold purpose: to protect endangered species from overexploitation in international trade in wildlife; to attempt to strike a balance between preservation and economic and recreational demands; and to foster cooperation between nations, as well as efforts of individual peoples and nations.[188] CITES regulates international trade in endangered

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181. *Id.* § 6.2.8.

182. *Id.* § 3.4.

183. The Role of CITES, *supra* note 24, ¶ 13. *See also* VANNUCCINI, *supra* note 4, § 3.4 (discussing how the FAO catch data only covers commercial, industrial, recreational, subsistence, and artisanal fisheries, the last three of which are traditionally under-reported to the FAO).

184. *See* VANNUCCINI, *supra* note 4, §§ 3.1, 3.4.

185. CITES, What Is CITES?, http://www.cites.org/eng/disc/what.shtml (last visited Feb. 25, 2007).

186. Watters & Xi, *supra* note 28, at 504.

187. CITES, Member Countries, http://www.cites.org/eng/disc/parties/index.shtml (last visited Feb. 25, 2007).

188. Jay E. Carey, *Improving the Efficacy of CITES by Providing the Proper Incentives to Protect Endangered Species*, 77 WASH. U.L.Q. 1291, 1294–95 (1999).

species listed on one of its three Appendices using import and export permits issued by the management authorities of trading parties.[189] The placement of a species on one of the CITES Appendices depends on both the species' population status and the degree of trade-related threat facing it.[190]

CITES reserves placement on Appendix I for species threatened with extinction that are or may be affected by international trade. In order to protect them from further threats, CITES strictly regulates trade in those species, prohibiting international trade for primarily commercial purposes absent exceptional circumstances.[191] The export of Appendix I species requires the prior grant and presentation of an export permit which can only be granted under certain conditions.[192] First, the exporting state must obtain advice from its scientific authority that such export will not prove detrimental to the survival of the species.[193] Second, the exporting state's management authority must be satisfied that the specimen was not obtained illegally under the laws of that state.[194] Finally, the exporting state's management authority must be satisfied that the importing state has obtained a valid import permit.[195] Similarly, the import of an Appendix I species requires an import permit, subject to the conditions that the importing state's scientific authority has advised that such import is not for purposes detrimental to the species' survival, and that the importing state's management authority is satisfied that the import is not for primarily commercial purposes.[196]

CITES also restricts international trade in Appendix II species,[197] but these trade regulations are much less restrictive, functioning more to track and facilitate legal trade in its species.[198] Species listed under Appendix II include all species that, even if not currently threatened with extinction,

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189. Fordham & Dolan, *supra* note 11, at 535. The CITES trade restrictions for listed species applies to trade between member states. Furthermore, Article X includes a provision for trade between parties and non-parties requiring that the party obtain from the non-party documentation which substantially conforms with the Convention's requirements for permits and certificates. CITES, *supra* note 17, art. X.

190. Fordham & Dolan, *supra* note 11, at 535.

191. CITES, *supra* note 17, art. II ¶ 1.

192. *Id.* art. III ¶ 2.

193. *Id*.

194. *Id*.

195. *Id*.

196. *Id.* art. III ¶ 3. Regarding the import of live specimens, the importing state's managing authority must also be satisfied that the recipient has the capacity to care for it.

197. CITES, *supra* note 17, art. IV ¶ 1.

198. Fordham & Dolan, *supra* note 11, at 537.

may become so without strict trade regulation.[199] For export of Appendix II species, exporting states must have an export permit, subject to conditions similar to those under Appendix I.[200] Exporting states must obtain both the advice of their scientific authority that such export will not prove detrimental to the survival of the species and the satisfaction of their management authority that the specimen was not obtained illegally under the laws of the state.[201] Furthermore, the scientific authority of each state must monitor both the export permits granted and the actual export of Appendix II species by that state.[202] The scientific authority is also required to inform the state's management authority of recommended measures to limit exports in Appendix II species in cases where maintaining that species at a sustainable level requires a reduction in the number of exports.[203] The importation of Appendix II species also requires the prior presentation of either an export permit or a re-export certificate.[204]

Unlike Appendix I and II listings that regulate trade, Appendix III listings are imposed by individual parties and do not need approval by the other parties.[205] Appendix III listings draw attention to a species in need of trade controls, with the hope of gaining international cooperation in the conservation of that particular species.[206] While the export of Appendix III species also requires an export permit, the requirements for obtaining one are less strict than for either Appendix I or II.[207] The efficacy of the permit requirements relies on individual parties for implementation.[208] While Articles III through V require a state's scientific and management authorities to make the appropriate permit findings before that state may

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199. CITES, *supra* note 17, art. II ¶ 2.

200. *Id.* art. IV ¶ 2.

201. *Id.* In cases where the exported specimen is alive, the exporting state's management authority must also be satisfied that it is shipped in a manner that will minimize the risk of injury, damage, or cruelty to the specimen. *Id.*

202. *Id*. art. IV ¶ 3.

203. *Id*.

204. *Id.* art. IV ¶ 4.

205. Fordham & Dolan, *supra* note 11, at 537.

206. *Id*.

207. To obtain an export permit, the Convention requires only that the exporting state's management authority be satisfied that the specimen was not obtained illegally under the state's laws. This permit requirement, moreover, applies only to states that have included the species on Appendix III. CITES, *supra* note 17, art. V ¶ 2. To import an Appendix III species, the importing state must only obtain a certificate of origin and, if the specimen was imported from a state that listed the species on Appendix III, a valid export permit from that state. *Id.* art. V ¶ 3.

208. *See* CITES, *supra* note 17, art. III-V (requiring approval of state's scientific and management authorities for issuance of permits).

export or import specimens of a species listed on the Appendices, nowhere does CITES hold these authorities separately accountable to the governing body of CITES. Rather, the issuance of permits through which CITES regulates trade is left to the discretion of each party's internally-appointed authorities.[209] Parties to CITES are bound to follow its provisions, and CITES provides general guidelines for implementing those provisions.[210] Nevertheless, CITES still depends on its parties for actual implementation by enacting national legislation regulating trade in listed species and enforcing those regulations.[211]

CITES generally binds its parties to comply with its provisions; however, Article XXIII provides an exception by permitting parties to enter reservations against specific amendments to the Appendices.[212] Under the reservation allowance, CITES treats parties who enter reservations regarding a specific species listed on one of the Appendices as a non-party to the Convention regarding that species until the party withdraws its reservation.[213] Regarding Appendix I or II species, however, parties are subject to certain restrictions regarding when they may enter a reservation.[214] In such cases, a state may only enter a reservation against a species either at the time they become a party or at the time when the amendment is made adding the species to Appendix I or II.[215] Reservations have been entered against all shark species listed on the Appendices.[216]

In a case where a party enters a reservation against an Appendix I species, CITES Fourth Conference of the Parties (CoP4) adopted the recommendation that states entering such a reservation should treat that species as belonging to Appendix II and maintain trade records in annual reports so CITES can continue to monitor international trade in that species.[217] As a recommendation, however, it has no binding effect. No such recommendation exists regarding Appendix II species, which includes all three shark species protected by CITES.[218]

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209. *Id.* art. IX ¶ 1.
210. Watters & Xi, *supra* note 28, at 507.
211. *Id.*
212. CITES, *supra* note 17, art. XXIII ¶ 1.
213. *Id.* art. XXIII ¶ 3.
214. *Id.* art. XXIII.
215. *Id.*
216. *See* CITES, June 7, 2005, *Specific Reservations Entered by Parties* [hereinafter CITES Reservations], *available at* http://www.cites.org/eng/notif/2005/E050607b.pdf.
217. CITES, Apr. 19-30, 1983, *Effects of Reservations, Conf., 4.25* [hereinafter *CITES Conf. 4.25*], *available at* http://www.cites.org/eng/res/all/04/E04-25.pdf.
218. *See id.*

In addition to offering protection to those shark species listed on its Appendices, CITES has promoted shark conservation efforts through its review of IPOA-Sharks implementation.[219] At CITES CoP11, the parties issued Decision 11.94 directing the Animals Committee to cooperate with the Secretary of the Committee on Fisheries of the FAO in monitoring the implementation of IPOA-Sharks.[220]

Similarly, in Decision 11.151, the parties directed the CITES Secretariat to liaise with the World Customs Organization to promote the development of a tariff classification system to differentiate between shark products in trade.[221] At CITES CoP12, the parties issued two additional decisions directed at the CITES Secretariat; Decision 12.48 directed the Secretariat to urge the FAO to offer greater encouragement to states and RFMOs to implement IPOA-Sharks, and Decision 12.49 directed the Secretariat to encourage the authorities of CITES parties to obtain information on the implementation of IPOA-Sharks from their national fisheries departments and report back to the Animals Committee.[222]

The reports compiled in response to these decisions have provided valuable information on implementation of IPOA-Sharks, identifying which countries have developed either a Shark Plan or an SAR and further assessing their adequacy.[223] Furthermore, the reports provide an analysis of the current status of sharks, including over 190 species that are not listed on the CITES Appendices.[224] Based on their findings, the Animals Committee has issued recommendations to the parties to continue identifying endangered shark species for inclusion on the CITES Appendices.[225]

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219. See CITES, Sharks, http://www.cites.org/eng/dec/valid13/13-42&43.shtml (last visited Feb. 25, 2007), for a list and brief description of all current CITES decisions regarding reviews of IPOA-Sharks implementation by the CITES Animals Committee and Secretariat.

220. Report on IPOA-Sharks, *supra* note 147, ¶ 1. Decision 11.94 was repealed at CITES CoP12 and replaced with Decision 12.47, which is substantively identical to Decision 11.94. CITES, Aug. 18-21, 2003, *Implementation of Resolution Conf. 12.6 and Decision 12.47*, ¶ 9 (Aug. 2003) [hereinafter *Implementation of Resolution*], *available at* http://www.cites.org/eng/com/ac/19/E19-18-2.pdf.

221. CITES, *Implementation of Resolution*, *supra* note 220, ¶ 3. The proposed classification system would facilitate the accurate assessment of international trade in shark products by differentiating between shark meat, fins, leather, cartilage, and other products. *Id.*

222. *Id.*

223. CITES Animals Committee, *Management of Sharks*, *supra* note 30, at 15-20.

224. *Id.* at 25-27. This report provided an evaluation of the status and current management of approximately 197 species of sharks, skates, and rays. *Id.*

225. CITES *Implementation of Resolution*, *supra* note 220, at 5-6. Additionally, the Animals Committee has issued species-specific recommendations for the Spiny Dogfish, Porbeagle Shark, White Shark, Freshwater Stingrays, Sawfishes, Gulper Sharks, Soupfin Shark, Requiem Sharks, Guitarfishes, Shovelnose Rays, and Devil Rays. CITES Animals

2. Problems with the Current Implementation of CITES Shark Conservation Measures

a. Limited Inclusion of Shark Species on CITES Appendices

The terms of the Convention demonstrate the potential to offer wide protection to sharks should CITES include them on its Appendices. Currently, however, CITES includes only three shark species.[226] Because CITES does not cover the other 194 endangered shark species recognized by IUCN and the CITES Animals Committee, it fails to adequately address the threat to sharks posed by international trade.[227] Responsibility for this limited coverage of shark species rightfully belongs to the parties. Inclusion on the CITES Appendices requires a party-generated nomination ratified by at least two-thirds of the parties present and voting.[228] While the Animals Committee can provide data on the status of shark species and make recommendations for inclusion on the Appendices, it falls to the parties to actually propose and ratify the inclusion.

Even those shark species currently listed on the CITES Appendices do not receive sufficient protection because a total of six parties including Japan and Indonesia—both major exporters of shark products—have entered reservations on all three species.[229] Moreover, all three species are listed on Appendix II, so the recommended measures for Appendix I reservations adopted at CITES CoP4 do not even apply.[230] Rather, CITES

Committee, *Management of Sharks*, *supra* note 30, at 21-24.

226. CITES Appendices, *supra* note 30. CITES currently covers only the basking, whale, and great white sharks on Appendix II. *Id.*

227. *See* CITES Animals Committee, *Management of Sharks*, *supra* note 30, at 25-27. Of the species reviewed in the report, all are involved in international trade except for twenty-two species whose involvement in international trade is unknown. *Id.*

228. CITES, *supra* note 17, art. XV ¶ 1. If a party proposes the inclusion of a species on either Appendix I or II between conferences, the proposal goes into effect ninety days later unless an objection is submitted within thirty days of the proposed amendment. *Id.* art. XV ¶ 2. If an objection is submitted, then the amendment is put to a vote by mail, and the species is only included after the proposal has been ratified by two-thirds of the voting parties, assuming that votes are received from at least one half of the parties. *Id.*

229. *See* CITES Reservations, *supra* note 216. The parties entering reservations on listed shark species are Iceland (basking and whale sharks), Indonesia (basking and whale sharks), Japan (great white, basking, and whale sharks), Norway (great white, basking, and whale sharks), Palau (great white and whale sharks), and the Republic of Korea (basking and whale sharks). *Id.* at 5. For statistics on Japanese and Indonesian shark meat and fin exports, see *supra* notes 75, 105-06 and accompanying text.

230. *See supra* note 2, at 17-18 and accompanying text (discussing the CITES CoP4 recommendation).

simply treats the parties entering the reservations as non-parties and cannot directly regulate their trade in those species.[231]

b. Lack of Sufficient Centralized Participation in Enforcement

CITES relies on individual parties and their internally-appointed management and scientific authorities to enforce international trade restrictions within their borders.[232] Under the current Convention text, the CITES Secretariat is largely uninvolved in enforcement matters.[233] Furthermore, the Secretariat has shown opposition to initiatives to establish a permanent centralized enforcement working group.[234] Several times since the mid-1980s parties demonstrated an interest in establishing some form of enforcement committee that would aid parties by providing advice, technical assistance, and recommendations on enforcement methods; each time, the Secretariat opposed the proposal.[235] The Secretariat has sought to ensure proper enforcement of Appendix II regulations through the

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231. CITES, *supra* note 17, art. XXIII ¶ 3.

232. *Id*. art. VIII–IX; see Carey, *supra* note 188, at 1298-99, for a discussion of enforcement problems with CITES.

233. Watters & Xi, *supra* note 28, at 509. While the CITES Secretariat does not directly participate in enforcement matters, it does provide general assistance to parties. Its efforts include: investigating infractions and other issues undermining the CITES implementation; providing advice on implementation and enforcement; analyzing and providing parties with information on infractions, illegal trade, and wildlife crime through the CITES Alerts; conducting needs assessment missions to determine enforcement requirements; and conducting training seminars on enforcement. ROSALIND REEVE, POLICING INTERNATIONAL TRADE IN ENDANGERED SPECIES 222 (2002). The CITES has not developed any enforcement assistance measures specific to sharks, but it has developed other species-specific missions relating to rhinos and tigers. *Id.* For instance, the Secretariat's Legislation and Compliance Unit has coordinated a Tiger Enforcement Task Force (TETF) that provides technical advice and intelligence support to tiger range states and consumer states. *Id.* at 223. The TETF's specific goals include: intelligence gathering, analysis, and dissemination; guidance for specialized wildlife law enforcement units; and training. *Id.* The TETF is significant because it provides a model for international and regional cooperation on enforcement within the CITES framework. *See* CITES, July 9, 2001, *CITES Tiger Enforcement Task Force: Notification to the Parties* [hereinafter CITES TETF], *available at* http://www.cites.org/eng/notif/2001/047.shtml.

234. REEVE, *supra* note 233, at 225.

235. *Id.* at 225-27. Parties proposed the formation of an enforcement committee in 1987, 1989, 1990, 1993, and 1994. The Secretariat opposed each of these proposals. While the underlying reasons for the Secretariat's reluctance to form such a committee are unclear, its proffered explanations include the likely complexity, unwieldiness, and expense involved. *Id.* at 226. The creation of programs such as TETF since 1994, however, point to the possibility that the Secretariat has become more amenable to the idea of a centralized committee to assist parties with enforcement issues.

significant trade process; however, insufficient funding has prevented parties from successfully complying with its requirements.[236]

The lack of a centralized enforcement mechanism places a heavy burden on developing countries to develop and implement a legislative plan to enforce trade restrictions for species listed on the CITES Appendices without the necessary expertise and guidance.[237] CITES has sought to mitigate the difficulty of legislation development by publishing guidelines for legislation implementing CITES.[238] In 1992, when it became apparent that many parties still lacked sufficient national legislation, CITES adopted the National Legislation Project (NLP) at CITES CoP8.[239] The NLP directs the Secretariat to identify those parties whose national legislation fails to satisfy the basic requirements of Articles VIII and IX of the Convention and report them to the CITES Standing Committee.[240] Those parties are then directed to submit a CITES Legislation Plan within a specified period of time.[241] If, at the end of that period, a party still lacks adequate legislation, the NLP directs the Standing Committee to consider appropriate measures, including trade sanctions against the offending party.[242] While the threat of

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236. ENDANGERED SPECIES THREATENED CONVENTION: THE PAST, PRESENT AND FUTURE OF CITES 53–54 (Jon Hutton & Barnabas Dickson eds., 2000). Essentially, the significant trade process allows the Secretariat and Animals Committee to collaborate with the management authorities of individual parties to identify and rectify abuses of the export permit requirements for Appendix II. *Id.* at 52. For an in depth discussion of the history, workings, and results of the significant trade process, see REEVE, *supra* note 233, at 159-88.

237. Watters & Xi, *supra* note 28, at 508.

238. *See, e.g.*, CYRILLE DE KLEMM, GUIDELINES FOR LEGISLATION TO IMPLEMENT CITES 89-107 (1993), *available at* http://www.ciesin.org/docs/002-610.html (providing general guidelines and examples of national legislation implementing the CITES).

239. REEVE, *supra* note 233, at 134. For a detailed discussion of the history and application of the NLP, see *id.* at 134-47.

240. *Id.* The NLP and Art. VIII–IX required that national legislation enable the party to designate at least one management and scientific authority, prohibit trade in specimens in violation of the CITES, penalize prohibited trade, and confiscate illegally traded or possessed specimens. *Id.* Parties reviewed under the NLP are divided into three categories: category one includes parties whose legislation generally meets the requirements; category two includes parties whose legislation generally meets some but not all the requirements; and category three includes parties whose legislation generally does not meet the requirements. CITES, June 9-20, 1997, *National Laws for the Implementation of the Convention*, 581, *available at* http://www.cites.org/eng/cop/10/doc/E10-31.pdf.

241. CITES, *National Laws for Implementation of the Convention*, ¶ 12.80(a), *available at* http://www.cites.org/eng/dec/valid12/11-20n12-80more.shtml (last visited Feb. 25, 2007). The Legislation Plan should include the legal form of the enactment, the precise scope and content of the proposed legislation, the schedule for transmittal of the draft legislation to the Secretariat for comments, the legislative and administrative steps needed to adopt the legislation, and the time frame for enactment of the legislation. *Id.* at ¶ 12.80(b).

242. *Id.* at ¶ 12.81. Specifically, the proposed trade sanctions include "restrictions on the

sanctions may motivate parties to develop national legislation implementing CITES, the financial burden of enforcement, training, and personnel remains on the individual parties.[243] The NLP directs the Secretariat to provide legal guidance, training, and "any specific support relevant to the fulfillment of the legislative requirements for the implementation of CITES," but with the caveat that such assistance is available only to the extent of the resources available to the Secretariat.[244] With available funds including external funding equal to only $10 million annually, the Secretariat has only meager resources with which to assist parties.[245] At the thirteenth CITES Conference of the Parties (CITES CoP13), the Secretariat sought to increase its contributions from the parties to $15,639,279 for 2006–2008, representing an increase of 10.3%.[246] However, the conference of the parties resolved to increase the parties' contributions by only three percent.[247] Thus, while the NLP has provided an effective "stick" through its use of trade sanctions, its success has been hampered by its limited ability to offer the corresponding "carrot" in the form of financial assistance. As of April 2002, fifty-one percent of parties reviewed under the NLP still failed to meet all the requirements under the Convention, indicating that the NLP has not been able to fully address the problems of uniform legislation and enforcement.[248] Even to the extent that sharks are included on the CITES Appendices, the continuing lack of uniform enforcement dampens the true impact of CITES protection.

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commercial trade in specimens of CITES-listed species to or from such parties." *Id.*

243. Watters & Xi, *supra* note 28, at 508. This burden is quite significant: "When one considers the difficulty encountered by the United States in maintaining adequate funding, personnel, and training to conduct inspections of international shipments, it is no wonder that lesser-developed nations experience infinitely greater difficulties in enforcing the Convention." Carey, *supra* note 188, at 1299.

244. CITES, *National Laws for Implementation of the Convention*, *supra* note 241, ¶ 12.83(c).

245. REEVE, *supra* note 233, at 272. In comparison, other international environmental agreements such as the Montreal Protocol on Substances that Deplete the Ozone Layer received initial contributions of $240 million and four successive replenishments totaling over $1.5 billion. *Id.* at 273.

246. CITES Secretariat, Oct. 2-14, 2004, *Financing and Budgeting of the Secretariat and of Meetings of the Conference of the Parties: Budget for 2006–2008*, ¶ 10, *available at* http://www.cites.org/eng/cop/13/doc/E13-08-3.pdf.

247. CITES, Oct. 2-14, 2004, *Financing and Budgeting of the Secretariat and of Meetings of the Conference of the Parties*, *available at* http://www.cites.org/eng/res/13/13-01.shtml. Furthermore, of the Secretariat's estimated budget of $15,368,079 for program requirements from the CITES Trust Fund for 2006–2008, the Conference of the Parties recognized only $14,606,429. *Id.* at Annex 1. Of this, $1,584,152 is designated for legislation, enforcement, and compliance. *Id.*

248. REEVE, *supra* note 233, at 147.

c. Insufficient Enforcement of Trade Restrictions—The Black Market

Although not a problem with CITES itself, black market trade, which usually arises when parties enforce trade restrictions and bans that prevent legal trade in a commodity, hampers the CITES Secretariat's ability to monitor trade in listed species.[249] The cases of the elephant, the rhino, the tiger, and the parrot—all protected by CITES—demonstrate the manner in which black market trade and poaching undermine the effectiveness of CITES, as their populations have continued to decline because of black market trade.[250] Illicit trade also affects those shark species currently listed on the CITES Appendices; analysis of shark fin trade data indicates the existence of fin smuggling in Hong Kong that circumvents regulations of legal trade in fins.[251] As a result of the illegal trade in fins, which is subject to neither monitoring nor regulation, CITES has a distorted picture of both the true magnitude of the impact of trade on shark species covered by CITES and the efficacy of CITES regulation of trade in those species.[252]

C. CMS

1. Structure, Scope, and Current Application of CMS to Shark Conservation

CMS was formed to protect all migratory species from endangerment, making no distinction about the source of the threat facing the species.[253] It entered into force on June 23, 1979, and currently has 101 member countries.[254] CMS applies to migratory species that are either currently endangered or that have an unfavorable conservation status indicating that endangerment is likely.[255] However, the parties must first vote to list the

249. Carey, *supra* note 188, at 1308.

250. *Id*. at 1300-04. In the case of the rhino, populations have suffered a ninety-five percent decline from 1970 to 1993 in spite of having the status of an Appendix I species since 1977. *Id.* at 1301-02.

251. CLARKE, *supra* note 25, at 34.

252. *See id.* at 7-8 (discussing implications of underestimating quantity of trade in fins).

253. *See* CMS, *supra* note 18, art. I ¶ 1(c)–(e). In addition to protecting currently endangered migratory species, CMS also protects migratory species with an unfavorable conservation status. While an unfavorable conservation status refers to a much lower threat level than endangerment, the protection offered by the CMS seeks to prevent species with an unfavorable conservation status from advancing to endangerment. *Id*. art. II ¶¶ 1-2.

254. *Id*. art. XX; CMS, Parties to the Convention on the Conservation of Migratory Species of Wild Animals (Jan. 1, 2007), *available at* http://www.cms.int/about/part_lst/htm.

255. CMS, *supra* note 18, art. III–IV.

species on one of the CMS Appendices. Like CITES, CMS offers varying degrees of protection to endangered species through its two Appendices.[256]

Appendix I covers endangered migratory species.[257] Species qualify for inclusion on Appendix I if, based on reliable scientific evidence, the Conference of the Parties determines that the species is in danger of extinction throughout all or a significant portion of its range.[258] CMS requires parties that are range states to prohibit the taking of species listed on Appendix I.[259] Once listed on Appendix I, the Conference of the Parties can only remove a species when it determines, based on reliable scientific evidence, that removal will not likely endanger the species.[260]

Appendix II is less stringent in its protection requirements. Appendix II includes migratory species with an unfavorable conservation status,[261] which require international agreements for their conservation and management, as well as species with a conservation status that would significantly benefit from an international agreement.[262] CMS only requires range states of Appendix II species to engage in agreements with each other for the benefit of the species.[263]

Even though these agreements do not offer the same level of protection as the prohibition of takings under Appendix I, they still have great potential to help shark species. First, Article V of the Convention stipulates that the agreements should cover the entire range of the species, including those range states that are non-parties to CMS.[264] If applied to sharks, this provision could increase the possible shark conservation effort beyond the immediate scope of CMS. Among the range states, the agreements help to

256. *Id.*

257. *Id.* art. III ¶ 1.

258. *Id.* art. I ¶ 1(e), art. III ¶ 2. The CMS defines range as "all the areas of land or water that a migratory species inhabits, stays in temporarily, crosses or overflies at any time on its normal migration route." *Id.* art. I ¶ 1(f).

259. CMS, *supra* note 18, art. III ¶ 5. The CMS defines range state as "any State . . . that exercises jurisdiction over any part of the range of [a] migratory species, or a State, flag vessels of which are engaged outside national jurisdictional limits in taking migratory species." *Id.* art. I ¶ 1(h).

260. *Id.* art. III ¶ 3.

261. *Id.* art. IV ¶ 1. The CMS defines an unfavorable conservation status when any of the following conditions are not met: the migratory species is maintaining its populations on a long-term basis, the range of the migratory species is not reduced or likely to be reduced on a long-term basis, there is a sufficient habitat to maintain the species' population on a long-term basis, and the distribution and abundance of the species is consistent with historical levels and in keeping with wise wildlife management. *Id.* art. I ¶ 1(c)–(d).

262. *Id.* art. IV ¶ 1.

263. CMS, *supra* note 18, art. IV ¶ 3, art. V.

264. *Id.* art. V ¶ 2.

develop cooperated conservation and management plans.[265] Such cooperation is essential to protect migratory species like sharks because without it, range states with insufficient measures can undermine the success of those range states with otherwise effective measures in place. Second, the agreements call for the research and exchange of information regarding the ecology and population dynamics of the species.[266] Given the noted lack of biological and population data currently available for many shark species, a coordinated effort to obtain such information would greatly benefit the shark conservation effort under CMS and other international agreements.[267] Similarly, urging that agreements provide for periodic reviews of a species' conservation status and the identification and exchange of information on the threats facing that species could greatly aid international shark conservation efforts.[268] The provisions included in the guidelines for Appendix II agreements with the greatest potential to protect sharks are those that direct range states to coordinate in enforcing sustainable levels of takings, suppressing illegal takings, and adopting emergency procedures to address severe threats to the species.[269] These provisions could both support and extend beyond the conservation measures offered by CITES, covering takings resulting in both international trade and domestic consumption.[270] Unfortunately, no agreements have yet been drafted regarding either shark species listed on CMS Appendix II.[271]

2. Problems with the Current Implementation of CMS Shark Conservation Measures—Limited Inclusion of Shark Species

Because sharks are generally migratory species, CMS could offer wide protection to the 197 shark species that IUCN and TRAFFIC have recognized as endangered or threatened.[272] Currently, however, CMS lists only three shark species: the great white shark and basking shark on Appendices I and II, and the whale shark on Appendix II.[273] Furthermore, although the Convention requires parties that are range states to Appendix II species to form agreements to benefit the species, no agreements or memoranda of agreement have been adopted for either the great white

265. *Id.* art. V ¶ 5(b).
266. CMS, *supra* note 18, art. V ¶ 5(c)–(d).
267. *See* CASTRO ET AL., *supra* note 4, § 2 (discussing the shortage of shark data).
268. CMS, *supra* note 18, art. V ¶ 5(a), (l).
269. *Id.* art. V ¶ 5(j), (k), (m).
270. *See id.* art. I ¶ 1(c)-(e).
271. *See* CMS, *Agreement Summary Sheets* (July 1, 2006) [hereinafter CMS Agreements], *available at* http://www.cms.int/pdf/en/summary_sheets/AmgtSumSheet_engl.pdf.
272. CITES Animals Committee, *Management of Sharks*, *supra* note 30, at 25–27.
273. *See* CMS Appendices, *supra* note 33.

shark, the basking shark, or the whale shark.[274] Thus, the protection that CMS could provide sharks has been largely wasted.

V. PROPOSALS

International trade poses its greatest threat to sharks in the form of directed catch for meat and fins and as bycatch. IPOA-Sharks, CITES, and CMS provide mechanisms for shark conservation and management, but their ineffective implementation prevents them from fully protecting sharks from overexploitation. Many of the same problems arise in the implementation of all three measures. Both CITES and CMS suffer from insufficient coverage of shark species.[275] CITES and IPOA-Sharks both lack sufficient resources.[276] None of the agreements sufficiently enforce shark conservation measures—IPOA-Sharks because it lacks the authority, CITES because it lacks a centralized enforcement working group to support the efforts of member countries, and CMS because its parties have failed to create agreements under Appendix II.[277] Additionally, black market trade undermines the effectiveness of both IPOA-Sharks and CITES trade regulations.[278] Addressing these problems will allow IPOA-Sharks, CITES, and CMS to become more efficient, and thus more effective at protecting sharks from the threat of international trade.

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274. CMS Agreements, *supra* note 271. Currently, agreements exist for the conservation of seals in the Wadden Sea, populations of European bats, small cetaceans of the Baltic and North Seas, African-Eurasian migratory waterbirds, cetaceans of the Black Sea, Mediterranean Sea, and contiguous Atlantic area, and albatrosses and petrels. *Id.* Memoranda of agreement exist for the conservation of Siberian crane, slender-billed curlew, marine turtles of the Atlantic coast of Africa, Middle-European population of the great bustard, marine turtles of the Indian Ocean and South-East Asia, bukhara deer, and the aquatic warbler. *Id.* Although no agreements currently exist for those sharks covered by the CMS, in November 2005, the Conference of the Parties adopted a recommendation requesting all parties to the CMS to strengthen their conservation measures regarding migratory shark species and to develop a global migratory shark conservation instrument. CMS, Nov. 20-25, 2005, *Migratory Sharks*, *available at* http://www.cms.int/bodies/COP/cop8/documents/proceedings/pdf/eng/CP8Rec_8_16_Migratory_Sharks_E.pdf.

275. *See* CITES Appendices, *supra* note 30; CMS Appendices, *supra* note 33.

276. *See* CITES Animals Committee, *Management of Sharks*, *supra* note 30, at 9; Watters & Xi, *supra* note 28, at 508.

277. *See* IPOA-Sharks, *supra* note 16, ¶ 16; CITES, *supra* note 17, art. VIII–IX; CMS Agreements, *supra* note 271.

278. *See supra* notes 173-76, 249-52 and accompanying text (discussing impact of black market trade on shark conservation measures under IPOA-Sharks and CITES).

A. Using RFMOs to Manage Shark Fishing

Collaborating with RFMOs could address the enforcement issues of CITES, CMS, and IPOA-Sharks.[279] RFMOs operate to bind parties on a regional basis to manage and conserve designated fish stocks. Through their direct oversight of fisheries, RFMOs have a unique ability to enforce regulations on both direct and indirect catch of sharks.[280] RFMOs such as the Northwest Atlantic Fisheries Organization (NAFO) and the fisheries working group of the Asia-Pacific Economic Cooperation (APEC) provide examples of RFMOs involved in the management of directed shark fisheries.[281] The Inter-American Tropical Tunas Commission (IATTC) and the International Commission for the Conservation of Atlantic Tunas (ICCAT) provide examples of RFMOs with the potential to manage shark bycatch in directed tuna fisheries.[282] Finally, the Southeast Asian Fisheries Development Center (SEAFDEC) provides an example of an RFMO that, while lacking management authority, still has the ability to provide valuable scientific and trade information regarding various shark species.[283]

To a certain extent, RFMOs already contribute to international shark conservation efforts. For example, the fisheries working group of APEC has published a guide on shark fisheries management techniques.[284] APEC has also participated in a regional effort to implement IPOA-Sharks and has encouraged the development of a shark management protocol to be administered by CMS.[285]

Similarly, while IATTC and ICCAT cover tuna fisheries in the Pacific and Atlantic Oceans, respectively, and do not have authority to regulate directed shark fisheries, both have adopted measures to combat shark bycatch.[286] For instance, IATTC has promoted a project researching bycatch reduction and evaluating the efficacy of current management measures at minimizing shark bycatch.[287] IATTC has also encouraged its members to participate in a pilot program that encourages fishermen to

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279. U.S. Progress Report, *supra* note 176, at 12.

280. *Id*. at 12.

281. *Id*. at 12-13, 17.

282. *Id*. at 13-15, 17.

283. CLARKE, *supra* note 25, at 49.

284. Asia-Pacific Economic Cooperation [APEC], *Elasmobranch Fisheries Management Techniques* (2004), *available at* http://www.apec.org/content/apec/publications/all_publications/fisheries_working.html.

285. U.S. Progress Report, *supra* note 176, at 17.

286. *Id.* at 13-15. Considering the toll which bycatch has taken on the blue shark alone, efforts by tuna RFMOs can play a vital role in protecting shark species from overexploitation.

287. *Id*. at 13.

develop techniques and equipment to facilitate rapid and safe bycatch release.[288] For its part, ICCAT has also adopted a recommendation concerning shark conservation. Specifically, the recommendation requires both contracting parties and cooperating non-contracting parties to release live shark bycatch to the greatest extent possible.[289] Still more significant, the recommendation sets a strict ratio of shark fins to total weight of sharks onboard cooperating non-contracting parties' vessels, prohibiting such vessels from carrying fins in excess of five percent of the total weight of sharks onboard.[290] This particular provision has the potential to effectively combat the practice of finning shark bycatch, which has had an especially devastating impact on shark populations.[291]

SEAFDEC currently consists of eleven member countries and aims to promote fisheries development in Southeast Asia primarily through training, research, and information services.[292] Recognizing the need to implement shark conservation in Southeast Asia, SEAFDEC has lent support to its member countries in conducting an ad hoc study investigating shark catches, biology, use, trade, and management in the SEAFDEC region.[293] Additionally, the SEAFDEC Secretariat has coordinated with its member countries and the member countries of the Association of Southeast Asian Nations (ASEAN) to develop methods for species identification using either severed fins or DNA in order to more reliably and accurately identify shark species used in the shark fin trade.[294] Finally, SEAFDEC and ASEAN have urged their member countries to develop Shark Plans, and currently all ASEAN member countries have at least begun work developing such plans.[295] Although SEAFDEC lacks authority to actually manage shark

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288. *Id.*

289. International Commission for the Conservation of Atlantic Tunas [ICCAT], *Recommendation by ICCAT Concerning the Conservation of Sharks Caught in Association with Fisheries Managed by ICCAT*, ¶ 6 (Oct. 2004), *available at* http://www.iccat.es/Documents/Recs/compendiopdf-e/2004-10-e.pdf.

290. *Id.* ¶¶ 3, 5.

291. For a discussion of the relationship between shark bycatch and finning and the detrimental impact on shark populations, see *supra* Part III.C.

292. SEAFDEC, About Us, http://www.seafdec.net/aboutus.htm (last visited Feb. 25, 2007). SEAFDEC's Member Countries include Brunei Darussalam, Cambodia, Indonesia, Japan, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. *Id.* Of these, Japan, Indonesia, and Singapore are heavily involved in the international shark trade. VANNUCCINI, *supra* note 4, §§ 6.1.3.3, 6.2.8.2.

293. SEAFDEC, SEAFDEC study on shark production, utilization, trade and management in the ASEAN region, http://www.seafdec.net/news/specialrep1.htm (last visited Feb. 25, 2007).

294. *Id.*

295. *Id.*

fisheries, it has made a valuable contribution to existing shark conservation efforts through its work to increase both the quality and quantity of available shark data.

NAFO covers most of the fisheries resources of the Northwest Atlantic Ocean and has a binding effect on the fisheries of its contracting parties in that region.[296] Consequently, NAFO has great potential to assist with shark fisheries management, enforcing the conservation policies of IPOA-Sharks, CITES, and CMS. As part of its general enforcement measures, NAFO has authority to monitor fisheries, require contracting parties' vessels to record catch by species on a daily basis and conduct both on-board and in-port inspections.[297] Additionally, NAFO has the authority to impose quotas on both directed catch and bycatch of covered species.[298] Also, NAFO has undertaken several shark-specific measures, conducting analyses of distribution and abundance of elasmobranchs in the Convention Area, endeavoring to harmonize NAFO and the FAO catch data, including an extended list of elasmobranchs for NAFO reporting, and encouraging training in elasmobranch identification and reporting.[299] The NAFO fishery currently targets the dogfish, and although NAFO does not manage that species at this time, given the dogfish's particular susceptibility to overfishing, NAFO has the potential to greatly assist shark conservation efforts should it choose to manage the dogfish in the future.[300] Even though

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296. Northwest Atlantic Fisheries Organization, About NAFO, http://www.nafo.int/about/frames/about.html (last visited Feb. 25, 2007). Contracting parties to NAFO as of February 2007 include Canada, Cuba, Denmark, the EU, France, Iceland, Japan, Korea, Norway, Russian Federation, Ukraine, and the United States. NAFO, NAFO Members, http://www.nafo.int/about/frames/about.html (last visited Feb. 25, 2007) (follow "convention" hyperlink; then follow "Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries" hyperlink; then follow "list of contracting parties" hyperlink).

297. NAFO, *NAFO Conservation and Enforcement Measures*, Ch. III–V (Sept. 2006) [hereinafter *NAFO Conservation and Enforcement Measures*], *available at* http://www.nafo.int/about/frames/activities.htm.

298. *Id.* at ch. I, art. 3, 9. As of March 2005, neither catch quotas nor bycatch requirements have been imposed on any of the shark species covered by NAFO. *Id.* at annex I.A.

299. U.S. Progress Report, *supra* note 176, at 12.

300. As of February 2007, although the NAFO fishery targets the dogfish, NAFO does not actively manage that species. *See* NAFO, NAFO Fisheries, http://www.nafo.int/fisheries/frames/fishery.html (last visited Feb. 25, 2007) (follow "25 commercial species" hyperlink for a list of target species; follow "11 species are managed by NAFO" hyperlink for a list of managed species). In 2006, however, NAFO did tentatively assess both the black and spiny dogfish. *See* NAFO, June 1-15, 2006, *Report of Scientific Council Meeting*, 21-28, *available at* http://archive.nafo.int/open/sc/2006/scs06-022-complete.pdf.

only one shark species is directly regulated by NAFO at this time, NAFO does currently subject its contracting parties to the same shark catch limitations as ITTAC, requiring that CP vessels release all live shark bycatch to the extent possible, limiting the permissible ratio of shark fins to total shark weight onboard a contracting parties' vessel to five percent and requiring such vessels to report all shark-catch data.[301] Given that NAFO has covered up to ten shark species in the past, should it choose to reinstate its expanded coverage of shark species, its authority to establish and enforce fishing quotas for covered species means that it would have the ability to offer substantial assistance in implementing shark conservation.[302] While RFMOs have great potential to aid in shark conservation, as things currently stand, several gaps still exist in the protection afforded to sharks. As a result, additional methods should also be employed to increase the efficacy of existing shark conservation measures.

B. Increasing Compulsion and Incentives

Because IPOA-Sharks is a voluntary measure, it lacks the authority to directly compel shark-fishing nations to develop and implement shark conservation measures or submit catch and trade data to the FAO.[303] Shark-fishing nations have no incentive to comply, which means that few nations have prioritized the development of either a Shark Plan or an SAR.[304] Therefore, to increase implementation of shark conservation measures at a national level under IPOA-Sharks will require compulsion and incentives at both the supranational and intranational level.

Sanctions imposed through regional or bilateral agreements provide a viable option at the supranational level. Using such agreements would allow nations to use their market relationship to apply direct pressure on one another to comply with IPOA-Sharks.[305] For instance, NAFO has the potential to impose sanctions for noncompliance with shark conservation measures.[306] Article XVII of NAFO's Convention provides for the imposition of adequate sanctions for violations of either the Convention or

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301. *NAFO Conservation and Enforcement Measures*, *supra* note 297, at ch.1 art. 13.

302. For examples of NAFO's existing quotas for currently covered species, see *id.* annex 1.A.

303. Report on IPOA-Sharks, *supra* note 147, at 3.

304. *See* notes 149-70 and accompanying text (discussing lack and insufficiency of implementation of IPOA-Sharks).

305. *Cf.* Watters & Xi, *supra* note 28, at 514.

306. U.S. Progress Report, *supra* note 176, at 12. For a list of all parties to NAFO as of November 2006, see NAFO Members, *supra* note 296.

other binding measures adopted by the NAFO Fisheries Commission.[307] NAFO currently has adopted only shark bycatch proposals. Even though directed shark fisheries are not covered, given the large role bycatch plays in the depletion of shark populations, NAFO could still serve as a useful tool in enforcing shark management. Similarly, the U.S. initiated a project in July 2000, through which APEC will facilitate regional implementation of IPOA-Sharks.[308] Using bilateral and regional agreements in this capacity has the added advantage of facilitating shark research, monitoring, and management, as well as the distribution of funding for these endeavors at the regional level.[309]

Once a shark-fishing state has developed and implemented a Shark Plan, it can increase compliance on an intranational level by enacting legislation imposing criminal or civil sanctions on offending fishers.[310] However, for sanctions to be effective, they would require strict enforcement. The hypothetical legislation would require all directed shark fisheries to register their fishing vessels with the agency responsible for enforcing the legislation and impose quotas on both permissible levels of directed and bycatch of sharks. Additionally, the legislation would require all fishing vessels to report all shark catch, whether directed or bycatch, to ensure compliance with the quotas. Ideally, the quotas and reporting requirements would be accompanied by agency monitoring of fishing vessels, with an agency official onboard to monitor compliance. Recognizing that 100% onboard monitoring may be prohibitively expensive, the legislation could alternatively provide for dockside monitoring, with agency

307. The Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries Art. XVII (Dec. 31, 1978) [hereinafter NAFO], *available at* http://www.nafo.int/about/frames/about.html. Each proposal adopted by the Commission is binding on all parties to NAFO. *Id.* art. XI ¶ 7.

308. U.S. Progress Report, *supra* note 176, at 17. Participants in the APEC fisheries working group include Australia, Brunei, Canada, Chile, China, Hong Kong, Indonesia, Japan, Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, the Philippines, Russia, Singapore, Taipei, Thailand, the United States, and Vietnam. *See* APEC, 2004 Fisheries Working Group, http://www.apecsec.org.sg/apec/documents_reports/fisheries_working_group/2004.html (select "Participant List" hyperlink). Other useful regional agreements include the Inter-American Tropical Tunas Commission (IATTC) and the International Commission for the Conservation of Atlantic Tunas (ICCAT); although neither agreement covers shark fisheries, both can help the shark conservation movement by taking steps to curtail shark bycatch in tuna longlines. U.S. Progress Report, *supra* note 176, at 12–18.

309. U.S. Progress Report, *supra* note 176, at 12; Watters & Xi, *supra* note 28, at 514.

310. Watters & Xi, *supra* note 28, at 512.

officials inspecting vessels for compliance once the vessels return to their ports.[311]

C. Tightening Enforcement

Insufficient enforcement poses another problem shared by IPOA-Sharks, CITES, and CMS. For IPOA-Sharks, the enforcement problem arises because the voluntary nature of IPOA-Sharks prevents the FAO from enforcing its implementation.[312] To address this problem, IPOA-Sharks could use CITES and CMS to monitor and enforce shark trade regulations in proxy. On numerous occasions, CITES has offered to monitor shark trade and support the implementation of IPOA-Sharks.[313] Specifically, CITES could enforce IPOA-Sharks by providing: (1) mechanisms to support the implementation of existing management measures at the national, bilateral, and multilateral fisheries level; (2) a tool to combat illegal, unreported, and unregulated fishing; and (3) a standardized global monitoring system for application to trade-related measures.[314] Additionally, CITES could help promote the implementation of IPOA-Sharks by requiring its member countries involved in international shark trade to develop and implement SARs.[315] For instance, under the requirement that an export permit shall only be granted where the exporting party's scientific authority determines that such export will not be detrimental to the survival of the species, CITES could require its parties seeking an export permit for shark products to submit an SAR as part of the permitting process.[316] Through the use of such a requirement, CITES could assist with the information-gathering and assessment aspects of IPOA-Sharks, at least regarding those specific species listed on the CITES Appendices.[317] Because CITES regulates only the trade rather than the harvest of endangered species, however, CITES would be unable to enforce the actual

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311. Even this alternative could present serious funding difficulties to developing states. For a discussion of the financial burden facing states in developing and enforcing shark conservation legislation, see *supra* notes 249–54 and accompanying text.

312. IPOA-Sharks, *supra* note 16, ¶ 10.

313. Report on IPOA-Sharks, *supra* note 147, at 4. *See Implementation of Resolution*, *supra* note 220, at 5-6 (encouraging parties to implement IPOA-Sharks).

314. The Role of CITES, *supra* note 24, ¶ 18. The CITES' efforts would only target species listed on the CITES Appendices. *Id.*

315. Currently the CITES Secretariat only encourages and monitors its member countries' implementation of IPOA-Sharks. CITES Animals Committee, *Management of Sharks*, *supra* note 30, at 5.

316. *See* CITES, *supra* note 17, art. IV ¶ 2(a); IPOA-Sharks, *supra* note 16, app. B (describing suggested contents of an SAR).

317. The Role of CITES, *supra* note 24, ¶ 18.

management and conservation measures called for under IPOA-Sharks. The FAO could use CMS to enforce these aspects of IPOA-Sharks. For instance, APEC member countries have proposed a Pacific-wide shark conservation and management regime that would function under the protocol of CMS.[318] Using CMS to enforce IPOA-Sharks provides the added benefit of allowing non-party states within the migratory species' range to participate in species-specific protocols.[319]

Regarding the enforcement of their own provisions, both CMS and CITES could increase the effectiveness of their shark conservation measures by limiting the scope of reservations that member countries can enter for listed species. Allowing parties to enter reservations can serve the beneficial purpose of encouraging a party to approve the inclusion of species on the Appendices when, absent reservations, the party's economic interests might otherwise lead the party to block the species' inclusion altogether.[320] As a result, the outright elimination of reservations may actually have a detrimental effect on shark conservation by deterring some parties from ratifying future shark inclusion on the Appendices. At the same time, however, reservations create a loophole that can undermine the catch and trade restrictions associated with the Appendices.[321] CITES has adopted the recommendation that parties entering a reservation against a CITES Appendix I species still treat that species as though it were listed on Appendix II, thus allowing CITES to continue to monitor international trade in that species.[322] Implementing a recommendation for CITES Appendix II and the CMS Appendices similar to the one currently in place for CITES Appendix I could increase the protection for sharks under both agreements. An effective recommendation might urge reserving parties to abide by sustainable catch models even though they are exempt from full regulation under the Appendices. This could serve to strike a balance between the benefits and detriments of the current reservation provisions. If the FAO obtains more accurate and complete biological and catch data on sharks, it will be able to develop a usable quota for levels of catch that would not threaten sharks listed on either the CITES or CMS Appendices.[323] This

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318. U.S. Progress Report, *supra* note 176, at 17.

319. *Id.*

320. *See* Carey, *supra* note 188, at 1297–98 (stating the purpose of the reservation provision is to protect nations whose industries rely heavily on trade in species nominated for inclusion on the Appendices).

321. *Id.* at 1298.

322. *See CITES Conf. 4.25*, *supra* note 217 and accompanying text (discussing the CITES CoP4 recommendation for Appendix I reservations).

323. *See* CASTRO ET AL., *supra* note 4, § 2 (attributing the lack of sustainable models to the lack of knowledge of shark populations, stocks, and biological characteristics).

compromise would still hold all parties to a certain limit on shark trade while also giving those parties with an economic reliance on shark trade a certain degree of leeway beyond the restrictions imposed by the Appendices. Furthermore, it could better protect sharks by increasing parties' willingness to list sharks, thus maximizing their chance of inclusion on the CITES or CMS Appendices and simultaneously increasing the level of protection offered to listed shark species.

The effectiveness of the CITES Appendices could further improve if the Secretariat took a more active role in training the scientific and management authorities responsible for issuing trade permits, and thus, for enforcing the CITES permit-issuance standards. Parties appoint their own authorities to regulate the issuance of trade permits, with very little oversight by the Secretariat.[324] Unless the Secretariat can rely on the authorities appointed by each party to apply the guidelines for permit issuance in good faith, the strength of the CITES trade restrictions will suffer.[325] Without uniform training of the authorities, parties wishing to subvert the trade restrictions for a given species could face the temptation to appoint lax authorities who will issue trade permits liberally without properly consulting the CITES permit-issuance standards. In response, TRAFFIC and IUCN have suggested that the Secretariat should expand its dialogue with the authorities, national fisheries, and other fisheries management agencies to improve the training of CITES authorities and, ultimately, shark management and trade.[326] Should the Secretariat decide to take a more active role in training the authorities, it could better ensure that the authorities properly enforce the permit-issuance standards and uphold the CITES trade restrictions on sharks.

Creating a centralized enforcement working group would also enable the Secretariat to increase its participation in enforcement.[327] In the past, parties have proposed the formation of such a committee, the main purpose of which would be threefold: (1) to produce viable methods of combating smuggling; (2) to provide or coordinate enforcement training programs; and (3) to assist in the coordination of recording illegal wildlife activities.[328] Actual enforcement would still be left in the hands of individual parties, but the parties would have access to a centralized support system that could assist them with developing and coordinating enforcement measures. In

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324. Watters & Xi, *supra* note 28, at 509. *See* CITES, *supra* note 17, arts. III-V (requiring approval of state's scientific and management authorities for issuance of permits).

325. *See* CITES, *supra* note 17, arts. VIII–IX (describing the Secretariat's reliance on the parties for enforcement and appointment of scientific and management authorities).

326. The Role of CITES, *supra* note 24, ¶ 19.

327. *See* REEVE, *supra* note 233, at 225-27.

328. *Id.* at 225.

addition to a general enforcement committee, sharks could benefit from the creation of a species-specific enforcement task force modeled after the Tiger Enforcement Task Force (TETF).[329] Like the TETF, a hypothetical shark-specific enforcement task force (SETF) would consist of law enforcement officials and customs authorities from shark range states and consumer states. The primary actions of the SETF would include intelligence gathering, analysis, and dissemination; guidance for specialized wildlife law enforcement units; and training in anti-poaching operations, intelligence use, targeting offenders, wildlife crime investigation, evidence collection, and collaboration with other agencies.[330] The SETF would also enable shark range states and consumer states to develop enforcement techniques geared toward the specific issues involved in enforcing shark trade regulations, such as improving species identification and implementing a unified classification system.[331]

Tightening enforcement of IPOA-Sharks, CITES, and CMS would greatly increase the agreements' ability to protect sharks from international trade. First, tightened enforcement would increase the quantity and accuracy of biological and trade data, which could in turn lead to greater coverage of shark species by highlighting the severity of the threats facing their populations.[332] Furthermore, tightened enforcement would result in a decrease in black market trade, as countries increase their capacity to identify, catch, and prosecute violators.[333]

D. Increasing Funding for Research, Training, and Enforcement

One of the main reasons cited by shark-fishing nations for non-implementation of IPOA-Sharks is the lack of sufficient funding for

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329. *See id.* at 223 (describing the TETF on which the hypothetical SETF should be modeled).

330. *See* CITES TETF, *supra* note 233, ¶¶ 2, 6 (describing the primary actions of the TETF).

331. CASTRO ET AL., *supra* note 4, § 5; CITES Animals Committee, *Management of Sharks*, *supra* note 30, at 2. Using a uniform classification system would minimize the amount of discrepancies in reported trade in shark products and result in more accurate trade statistics. *See* VANNUCCINI, *supra* note 4, § 3. One of the proposed explanations for the inaccuracies in the FAO statistics is the use of different classification systems between the FAO and national customs databases. For instance, while Hong Kong includes dried shark fin quantities in its data, the FAO excludes dried shark fin. CLARKE, *supra* note 25, at 45.

332. IPOA-Sharks, *supra* note 16, ¶ 3; The Role of CITES, *supra* note 24, ¶ 14; CASTRO ET AL., *supra* note 4, § 5.

333. *See* REEVE, *supra* note 233, at 223 (discussing success of increased enforcement of tiger trade regulations at combating violators).

research, capacity-building, and training.[334] Parties to CITES have faced similar difficulties with funding for research, training, and enforcement of conservation measures.[335] Obtaining funding from the Global Environment Facility (GEF) offers the greatest potential for addressing this problem.[336] Established in 1991, the GEF helps developing countries fund environmental protection projects and programs focused on biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants.[337] Since 1991, the GEF has provided $4.5 billion in grants and helped generate $14.5 billion in co-financing for such projects.[338] Nearly half of all the GEF projects focus on biodiversity, including those that address issues affecting coastal, marine, and freshwater resources.[339] Any group may submit a project for consideration, provided it meets two criteria.[340] First, the project must reflect either national or regional priorities and have the support of the countries involved.[341] Second, it must improve the global environment or advance the prospect of reducing risks to it.[342]

Both CITES and IPOA-Sharks address issues affecting marine resources, namely, promoting the conservation of various shark species. Both agreements are eligible for the GEF funding because both seek to prevent the population depletion of apex predators that play a vital role in maintaining the ecological balance of the world's oceans.[343] Although neither agreement has yet obtained funds from the GEF, at CoP13 in October 2004, the CITES Conference of the Parties directed the Secretariat

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334. CITES Animals Committee, *Management of Sharks*, *supra* note 30, at 9.

335. Carey, *supra* note 188, at 1299.

336. REEVE, *supra* note 233, at 276.

337. Global Environment Facility, What is the GEF?, http://www.gefweb.org/What_is_the_GEF/what_is_the_gef.html (last visited Feb. 25, 2007).

338. *Id.*

339. ASIAN DEVELOPMENT BANK, CAPACITY BUILDING FOR ENVIRONMENTAL LAW IN THE ASIAN AND PACIFIC REGION: APPROACHES AND RESOURCES 895 (2001).

340. GEF, Eligibility Criteria & Project Cycle, http://www.gefweb.org/Operational_Policies/Eligibility_Criteria/eligibility_criteria.html (last visited Feb. 25, 2007).

341. *Id*.

342. *Id*.

343. Evans, *supra* note 7, at 21. GEF offers grants directly to developing countries or countries with economies in transition rather than to organizations. Global Environment Facility, *supra* note 337. However, GEF allows any eligible country or group to propose a project, as long as two conditions are satisfied: "[The project] must reflect national or regional priorities and have the support of the country or countries involved, and it must improve the global environment or advance the prospect of reducing risks to it." GEF, Eligibility Criteria & Project Cycle, *supra* note 340. Although neither the CITES or the FAO would be able to directly receive funding from GEF, both agreements can still propose projects on behalf of their member countries who are eligible to receive GEF grants. *Id.*

to submit a project proposal to the GEF, as well as to other funding institutions, seeking financial support.[344] Furthermore, the Conference of the Parties directed the Secretariat to continue developing a Work Plan for Implementation of Joint Activities between the CITES Secretariat and the Convention on Biological Diversity (CBD), of which the GEF is the financial mechanism.[345] Should these endeavors prove successful, CITES would have a greater capacity to assist parties in their implementation and enforcement efforts.

E. Increasing Public Education and Lobbying Efforts

Increasing public education and lobbying efforts could encourage governments that are parties to CITES or CMS to propose the listing of more shark species on the Appendices, thus leading to broader coverage and protection of shark species.[346] The specific aims of an education campaign geared towards the general public should both educate the public about the important ecological role that sharks play and promote citizen participation in the conservation planning process.[347] An education campaign should also help to develop a conservation ethic among the general public.[348] Finally, the education campaign should aim to dispel the negative image of sharks prevalent among the general public, increasing the public's willingness to help conserve shark populations.[349] Combined with an increased awareness of the detrimental impact of overexploitation in international trade, public empathy for sharks will hopefully help to diminish the demand for shark products.[350] This combination of public awareness and empathy could also lead to heightened citizen-based lobbying efforts. Such a campaign could

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344. CITES, *National Wildlife Trade Policy Reviews*, ¶ d, *available at* http://www.cites.org/eng/dec/valid13/13-74&75.shtml (last visited Feb. 25, 2007).

345. CITES, *Synergy between CITES and CBD*, *available at* http://www.cites.org/eng/dec/valid13/13-02_05.shtml (last visited Feb. 25, 2007). *See* GEF, Operational Strategy of the Global Environment Facility, http://www.thegef.org/Operational_Policies/Operational_Strategy/operational_strategy.html (last visited Feb. 25, 2007) (stating that GEF is the financial mechanism of CMD and the U.N. Framework Convention on Climate Change). *See also* REEVE, *supra* note 233, at 272-76 (discussing the importance of collaboration with CBD in obtaining GEF funding).

346. Species are only included on the CITES and the CMS Appendices upon party-initiated proposal and ratification. CITES, *supra* note 17, art. XV ¶¶ 1–2; CMS, *supra* note 18, art. XI ¶¶ 2, 4.

347. Watters & Xi, *supra* note 28, at 512; *Shark Fisheries and Trade in Europe*, *supra* note 65.

348. CASTRO ET AL., *supra* note 4, § 5.

349. *Shark Fisheries and Trade in Europe*, *supra* note 65.

350. Watters & Xi, *supra* note 28, at 514.

put pressure on governments to propose broader inclusion of shark species on the CITES and CMS Appendices, as well as to implement stricter national conservation legislation.

Several organizations have the capacity to undertake a public education campaign promoting shark conservation, including the Wildlife Conservation Society (WCS), the National Environment Trust (NET), TRAFFIC, and the Species Survival Network (SSN).[351] WCS uses education as one of its many tools to promote global wildlife conservation.[352] It aims to foster a positive attitude toward sustainable interaction between humans and wildlife on both a local and a global scale.[353] To that end, the Education Division of WCS has developed several programs to educate both youths and adults about the need to conserve the world's wildlife resources.[354] These programs seek to instill an awareness of ecological principles and an understanding of conservation issues.[355]

Like WCS, NET is a non-profit organization established to inform United States citizens about environmental problems involving issues such as clean air, global warming, energy, forests, marine resources, and environmental health.[356] NET acts to make citizens aware of the local impact of national environmental problems, as well as to highlight opportunities for citizens to engage in the policymaking process.[357] In the area of marine issues, NET has identified overfishing as a serious problem needing the attention of the general public.[358] As part of its campaign to

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351. Wildflife Conservation Society, Saving Wildlife, http://www.wcs.org/ (last visited Feb. 25, 2007); National Environment Trust, About Us, http://www.net.org/about/ (last visited Feb. 25, 2007); TRAFFIC, About TRAFFIC, http://www.traffic.org/about/abt.htm (last visited Feb. 25, 2007); SSN, The Species Survival Network, http://www.ssn.org/aboutus_EN.htm (last visited Feb. 25, 2007).

352. WCS, Saving Wildlife, *supra* note 351.

353. *Id.*

354. WCS, Education, http://www.wcs.org/sw-education (last visited Feb. 25, 2006). WCS' work with teenagers seeks to instill a conservation ethic in young people. For instance, its 2002 Project IMAGINE provided training in conservation biology and technology to its teenage participants. In addition, WCS has provided training workshops and curriculum materials to 1200 teachers throughout North America. The teachers involved in this program were from New York, Connecticut, South Dakota, Kansas, Ohio, Texas, Pennsylvania, Florida, Iowa, Nebraska, Ottawa (Canada), and Puerto Rico. Educational and teacher-training programs are also under development in Zambia. WCS also conducts educational programs for students and teachers around the world in regions where WCS field agents work, as well as formal environmental education programs in China and Papua New Guinea. *Id.*

355. *Id.*

356. National Environmental Trust, About Us, *supra* note 351.

357. *Id.*

358. National Environmental Trust, Oceans in Crisis, http://www.net.org/marine/ (last

involve citizens in policymaking, NET provides visitors to its website with information regarding the national overfishing standard and the opportunity to sign a petition urging lawmakers to protect the standard from recent attempts to weaken it.[359] Given the severe threat to shark populations posed by overfishing, NET's efforts could prove relevant to their protection. Although NET only operates within the United States, it provides a model for organizations in other countries to follow.

TRAFFIC operates on an international level to accomplish similar aims to those of WCS and NET. TRAFFIC seeks to ensure that trade does not threaten either the survival of wild animals or their role in natural ecosystems.[360] To accomplish its goal, TRAFFIC has identified five goals in its work on trade and threatened species: (1) increasing knowledge and awareness among governments, industry, consumers, and local communities about trade in threatened species, current regulation of such trade, and the impact of trade on wildlife populations and biodiversity conservation; (2) encouraging governments, industry, consumers, and local communities to take action to reduce threats to priority species posed by trade; (3) promoting the development and implementation of systems to monitor the harvest and trade of threatened and potentially threatened species; (4) contributing to the development and implementation of trade management plans for priority species; and (5) evaluating local and national trade controls for priority species and seeking to strengthen them.[361] TRAFFIC includes sharks among those species that it has identified as priority species.[362] In its efforts to promote shark conservation, TRAFFIC has co-authored several reports on the implementation of shark conservation measures for review by the CITES Animals Committee.[363] These reports have helped outline the magnitude of the threat facing many shark species posed by trade, thus increasing parties' awareness of the need for further trade regulations.[364]

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visited Feb. 25, 2007).

359. National Environmental Trust, Protect Our Oceans from Industrial Overfishing, http://actionnetwork.org/campaign/overfishing_standard (last visited Feb. 25, 2007). The national overfishing standard is one of ten standards enacted in 1996 to protect the nation's fish populations and promote healthy ocean ecosystems in the face of declining fish populations. *Id.* The petition offered on the NET website opposes attempts by the Bush Administration to undercut the overfishing standard. *Id.*

360. TRAFFIC, About TRAFFIC, *supra* note 351.

361. *Id.*

362. *Id.* Other priority species are elephants, tigers, tibetan antelope, marine turtles, rhinos, sturgeon, freshwater turtles, mahogany, and agarwood. *Id.*

363. *See, e.g.*, Report on IPOA-Sharks, *supra* note 147; The Role of CITES, *supra* note 24.

364. Report on IPOA-Sharks, *supra* note 147; The Role of CITES, *supra* note 24.

The SSN gears its efforts specifically toward CITES implementation.[365] The SSN's educational and outreach programs provide organizations from around the world with information necessary to participate in the CITES process.[366] For instance, the SSN publishes a newsletter that it circulates to all CITES parties, providing summaries of recent developments regarding CITES and trade in wildlife.[367] Furthermore, the SSN conducts and distributes scientific research and analysis to CITES parties and the general public, allowing them to better understand the implications of various proposals and resolutions considered for adoption by CITES.[368] At CITES CoP13 in October 2004, the SSN distributed its newsletter, urging parties to support the proposal to include the great white shark on Appendix II.[369] The combined efforts of WCS, NET, TRAFFIC, the SSN, and other such organizations can have an effect on the success of shark conservation, applying pressure on parties to increase coverage of sharks on the CITES and CMS Appendices.

VI. CONCLUSION

Sharks are currently facing a crisis of population depletion resulting from exploitation in international trade, with demand for shark fins alone resulting in the death of over 100 million sharks annually.[370] Although IPOA-Sharks, CITES, and CMS all address the problem and provide international shark conservation measures to combat it, their present implementation has failed to sufficiently protect sharks. The efficacy of all three agreements can improve, however, by using RFMOs to manage shark fishing; increasing compulsion and incentives to implement current measures; tightening enforcement of all three measures; improving the funding for training, research, and enforcement; and increasing public education and lobbying efforts. Sharks play a vital role in maintaining ecological balance in the world's oceans, and their preservation requires the international community to take action now to protect this valuable resource.

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365. SSN, The Species Survival Network, *supra* note 351.

366. *Id.*

367. *Id.*

368. *Id.*

369. *Species Proposals*, SSN DIGEST, Oct. 2004, at 10. This proposal was ratified at CITES CoP13 in October 2004. CITES Appendices, *supra* note 30.

370. *A Review of Developments in Ocean and Coastal Law 2001-02*, *supra* note 3, at 368; Knights, *supra* note 3, at 14; Spiegel, *supra* note 1, at 412; Preston, *supra* note 3, at 18.