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***251 INTERNATIONAL FISHERIES LAW, OVERFISHING AND MARINE BIODIVERSITY**

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I. INTRODUCTION

World attention is now focused on the problem of overfishing and the lethal bycatch of marine wildlife in certain fisheries. [\[FN1\]](#) The loss of biological diversity is also viewed by many as an impending crisis, [\[FN2\]](#) but discussions that link overfishing and the loss of biodiversity are infrequent. [\[FN3\]](#) Nevertheless, the crisis in world fisheries has a great deal to do with the issue of biological diversity. This is not, however, solely because some species are being fished to the point where they are threatened with extinction. [\[FN4\]](#) The four-fold increase in the worldwide marine catch in the last fifty years [\[FN5\]](#) means that fishing is now the major ecological impact in the marine environment. [\[FN6\]](#) This suggests that international fisheries legal norms now must take account of the wider, ecological impacts of fishing, beyond the traditional concern of achieving sustainable yields from exploited fish stocks.

While an international treaty on conserving biological diversity and sharing genetic resources is now in effect, [\[FN7\]](#) the principal source of legal norms respecting *252 living marine resources is the Law of the Sea Convention (LOS). [\[FN8\]](#) Its fisheries provisions recognize the potential ecological impacts of fishing, but do not contain the standards and institutional arrangements to control these impacts, nor the explicit provisions defining fully the duties of states with respect to biodiversity in the oceans. [\[FN9\]](#) The 1995 United Nations Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks [\[FN10\]](#) contains an authoritative interpretation of the high seas fisheries provisions of the LOS Convention and of related coastal state duties within the Exclusive Economic Zone (EEZ). [\[FN11\]](#) As one of the first international agreements since the Biodiversity Convention to require states to preserve biological diversity, the Fish Stocks Agreement supplements, in a critical fashion, the framework provisions of the Biodiversity Convention [\[FN12\]](#) and the soft law principles adopted at UNCED. [\[FN13\]](#) As the first international fishing agreement to recognize the connection between fishing and marine biodiversity, [\[FN14\]](#) it has the potential to transform fisheries management practices into comprehensive approaches to protecting marine ecosystems.

The purpose of this Article is to suggest how the High Seas Fish Stocks Agreement strengthens international law with respect to marine biological diversity, while at the same time improving the legal framework for managing the ecological impacts of fishing. It begins in Part II with an introduction to marine biodiversity and the ways in which fishing can affect and reduce it. Part III describes the limitations in international fisheries law that to date have kept it from preventing losses in diversity and, perhaps, have even contributed to some recent losses. Part IV concludes with a discussion of the specific provisions of the Fish Stocks Agreement that pertain to marine biodiversity, their relationship to the Biodiversity Convention, and some of the steps that should be taken to fulfill the marine biodiversity objectives of these agreements.

II. RELATIONSHIP OF WORLD FISHERIES CRISIS TO BIODIVERSITY

Many of the same anthropogenic sources that threaten terrestrial biological *253 diversity make up the list of proximate

threats to marine biodiversity: overexploitation, physical alteration of habitat, pollution, introduced species, and global climate change. [\[FN15\]](#) Fisheries are frequently carried out at unsustainable levels, and overexploitation, either alone or in combination with other factors, can eliminate species. [\[FN16\]](#) A less well-recognized impact of fishing is the physical alteration of habitat. Fishing can extirpate biological communities through damage not only to the balance among living components, but also by altering the physical structure of the marine environment, making it unsuitable for certain biological communities. [\[FN17\]](#) The tremendous growth in fishing effort and technology in the last two decades, coupled with the tendency of fisheries to move to new areas when targeted species or areas become depleted, [\[FN18\]](#) means that fisheries are growing rapidly in relative importance among the various threats to marine biodiversity.

A. OVERVIEW OF MARINE BIODIVERSITY

The Biodiversity Convention defines biological diversity as "the variability among living organisms from all sources, including ... marine ... ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems." [\[FN19\]](#) The Convention refers to the vast variety of plant and animal species in coastal and ocean areas, and to the many different biological communities in a wide range of marine environments, including estuaries, coastal wetlands, sand beaches, intertidal regions, mud flats, subtidal areas, coral reefs, and deep ocean communities. [\[FN20\]](#) Biodiversity is the product of millions of years of natural selection and environmental conditions.

As with terrestrial biodiversity, marine biodiversity is understood as having three levels of organization. Diversity at each level -- genetic, species, and ecosystem -- can be reduced by anthropogenic effects. [\[FN21\]](#) Our understanding of the effect of fisheries on marine biodiversity is limited, but growing. [\[FN22\]](#) With the development of new norms to control these impacts, there is a strong likelihood of additional knowledge being developed.

*254 B. FISHING AND MARINE BIODIVERSITY

It is now apparent that fishing does indeed affect marine biodiversity at the genetic, species, and ecosystem levels. [\[FN23\]](#) Fisheries can reduce genetic diversity by changing population characteristics such as the age distribution, stock structure, or reproduction of exploited fish stocks. By selectively targeting certain sizes of fish, for example, fisheries can remove intrinsically faster growing fish, causing genetic changes in the stock. [\[FN24\]](#) The result of a change at the genome level is the reduced ability of that species to respond to changes in the environment. [\[FN25\]](#) Extinction of some marine species is now conceivable, given the scale and efficiency of fisheries technology and the ability of some fisheries to effectively eliminate the natural refuges where overfished species could have hidden and avoided complete extirpation. Fishing, or more specifically overfishing, can also indirectly reduce genetic diversity if overexploited fish stocks are replenished by aquaculture-reared stocks. [\[FN26\]](#)

At the species level, biodiversity means variety in species composition and in the relative dominance of species in particular assemblages. [\[FN27\]](#) Fishing affects species diversity by selectively removing target species and certain nontarget species that are caught incidentally. This selection of certain species tends to favor fish species with particular life history characteristics such as reproductive patterns. [\[FN28\]](#) Years of selective fishing on the cod family of species (cod, haddock, hake, and flounders) on Georges Bank off New England have resulted in a change in dominance in favor of species like skates and spiny dogfish and small, short-lived pelagic species, like herring and mackerel. [\[FN29\]](#)

Fisheries can also be a significant change agent for marine ecosystems. Certain fishing gears, like otter trawling, physically alter complex habitats and disrupt communities of bottom-dwelling animals, causing potentially long-term changes in the productivity of these ecosystems. [\[FN30\]](#) Fisheries also alter the relative abundance of target and nontarget species, leading to changes in the flow of energy through and within a system. [\[FN31\]](#) Given the scope of fisheries worldwide, these changes in ecosystem function reduce the diversity of ecosystem types in the oceans. [\[FN32\]](#)

The management implications of the threats to marine biodiversity are many. These include the need to give urgent attention to preventing overexploitation of *255 fish stocks, to significantly reducing or eliminating bycatch of non-target species of fish and marine wildlife, and to preventing the use of destructive fishing gears or methods, especially in sensitive marine habitats like coral reefs or soft-bottom areas with diverse assemblages of marine life. Such measures should include controlling the number, gear type, and catch levels of fishing vessels and protecting refuges or "no-take" zones in marine areas. These zones can provide refuge for exploited species and prevent destruction of habitats essential to ecosystem diversity. [\[FN33\]](#)

In addition to the direct and indirect impacts of fishing on marine biodiversity, fisheries management should take account of the dependence of fisheries on diversity in the marine environment for the productivity of fisheries. Sustainable yields are possible from ecological systems that are themselves rich in biological and ecological diversity. [\[FN34\]](#) Thus, the other anthropogenic sources of impacts to marine biodiversity should concern fisheries managers.

Few if any specific legal standards require these actions to be taken, although a growing number of organizations and agencies call for these and other measures.

III. MARINE BIODIVERSITY AND INTERNATIONAL LAW

As a relatively new concern of the international community, marine biodiversity is, at best, the subject of few, if any, international treaty provisions or customary law principles. [\[FN35\]](#) Despite the short period of time that the concept has been recognized and identified, however, many recommendations for national and international action, if not entirely binding, have emerged, [\[FN36\]](#) reflecting both the importance of the problem and the rapid pace of development of international environmental law generally. [\[FN37\]](#)

The most specific international law is the Convention on Biological Diversity. [\[FN38\]](#) Also, because human activities on the oceans, particularly fishing, bear so *256 directly on the status of marine biodiversity, the LOS Convention, assumed by many to reflect general and customary international law, [\[FN39\]](#) is a key element of the international law respecting marine biodiversity. [\[FN40\]](#) If, however, the rights and duties of states under the LOS Convention are viewed as taking precedence over the more general obligations of the Biodiversity Convention, the combined effect of the two treaties may offer little assurance of legally binding norms to conserve marine biodiversity.

A. THE CONVENTION ON BIOLOGICAL DIVERSITY

International law embraced the goal of conserving biological diversity when the Convention on Biological Diversity was negotiated in 1992 and opened for signature at the Earth Summit in Rio de Janeiro. [\[FN41\]](#) The Convention seeks to ensure the conservation of biological diversity, the sustainable use of its components, and the equitable sharing of genetic resource benefits. With its reference to international law of the sea, the Convention suggests that international fisheries norms may yet evolve to contain protection of marine biodiversity.

1. Basic Elements of the Biodiversity Convention

The Convention is a framework agreement. It defines these broad objectives and identifies, in general terms, the obligations of parties, which are to be developed in more detail through national actions or other international agreements. The general obligations include the responsibility to ensure that activities within their jurisdiction or under their control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction. [\[FN42\]](#) Parties must also develop national inventories of biological diversity, [\[FN43\]](#) programs for its conservation and the sustainable use of its components, [\[FN44\]](#) the regulation of destructive activities and processes, and the integration of biodiversity considerations into national decision making. [\[FN45\]](#)

At the international level, the Convention creates an international mechanism to assist national implementation of the Convention's goals and principles. This *257 regime consists of periodic meetings of the parties, [\[FN46\]](#) a scientific and technical advisory body to advise the parties, [\[FN47\]](#) a financial mechanism to assist developing country parties, [\[FN48\]](#) and a compulsory dispute settlement process. [\[FN49\]](#) At the periodic meetings, the parties may negotiate protocols on specific issues under the Convention or create or amend annexes on technical or scientific aspects. [\[FN50\]](#) Parties are required to report regularly on actions they have taken to implement the Convention and their effectiveness in meeting the Convention's objectives. [\[FN51\]](#)

The Convention also affirms the sovereign rights of parties to the genetic material contained within biological resources that are under their jurisdiction. [\[FN52\]](#) It creates an international regime for the transfer of genetic resources and the obligation of users of genetic resources to share the benefits derived from them with the providers of those resources. [\[FN53\]](#)

2. Relationship to the Law of the Sea Convention

By its terms, the Convention requires its parties to meet their obligations under the Convention in a manner consistent with their rights and obligations under existing international agreement and under the law of the sea. [\[FN54\]](#) The latter reference presumably is to both customary international law of the sea as well as the United Nations Law of the Sea Convention. [\[FN55\]](#) The consistency language in the Biodiversity Convention could conceivably raise some concerns that certain law of the sea rights and duties, particularly those reflected in the LOS Convention, such as the duty to ensure optimum utilization of fish stocks in the EEZ, [\[FN56\]](#) or the *258 right of states to allow their nationals to fish on the high seas [\[FN57\]](#) might somehow "trump" the general duty to protect biological diversity. [\[FN58\]](#) The better reading, however, is that the law of the sea duties of conservation and management within the EEZ and in high seas fisheries now include a responsibility to ensure that the rate and scale of fishing as well as the techniques used must not endanger biological diversity at either the genetic, species, or ecosystem level. [\[FN59\]](#)

3. Specific Actions to Address Marine Biodiversity

Recent actions by the parties to the Biodiversity Convention, in fact, signal their assumption that fishing regulation must now consider ecological and biodiversity impacts. At the second Conference of the Parties, held in November, 1995, the parties identified the major threats to marine and coastal biodiversity, and the policies and legal measures that were needed to counter them. [\[FN60\]](#) The outcome was a program of action, called the Jakarta Mandate on Marine and Coastal Biological Diversity, which was based in part on recommendations of the scientific and technical advisory body, which had been presented to the second Conference of the Parties. [\[FN61\]](#) The Mandate identifies action items such as instituting integrated coastal area management and the control of land-based activities affecting the marine environment, creation of marine protected areas for conservation and sustainable use, using fisheries and other marine living resources sustainably, ensuring the sustainability of mariculture, and preventing the introduction of and controlling or eradicating harmful alien species. [\[FN62\]](#)

*259 Under the sustainable fisheries actions item, the Jakarta Mandate states that national plans and programs should ensure, "as far as possible and as appropriate," that management decisions are based upon a precautionary approach and on the best available scientific knowledge, taking into account ecosystem impacts; that waste is reduced in living organisms trade; that local communities and users are involved in management; that national legislation conforms with the Biodiversity Convention, the U.N. LOS Convention, and Agenda 21; that the U.N. Food & Agriculture Organization (FAO) Code of Conduct for Responsible Fishing is followed; and that nations fully implement the 1995 Agreement on Straddling and Highly Migratory Fish Stocks and enforce international fishing agreements. [\[FN63\]](#)

By their more specific declarations in the Jakarta Mandate, the Biodiversity Convention parties have gone beyond the law of

the sea qualifier in the Convention. [\[FN64\]](#) They have now committed themselves to a program of action that includes fulfilling the additional obligations of the FAO Code and of the High Seas Fish Stocks Agreements, both of which demonstrate an awareness of the biodiversity and ecological impacts of fishing, and address these concerns well beyond the law of the sea principles in the LOS Convention and in customary international law. As the next section demonstrates, the international law of fisheries has gone through a remarkable degree of change in the last two decades, but the degree to which it imposed binding obligations for marine ecosystem protection was quite limited, until the 1995 Fish Stocks Agreement was concluded.

B. INTERNATIONAL FISHERIES LAW

The Biodiversity Convention refers to the law of the sea, not the LOS Convention, in the provision describing its relationship to other international conventions. [\[FN65\]](#) When the Biodiversity Convention was under negotiation, the prospects for wide adoption of the LOS Convention were still in doubt; thus, a broader reference to all international law of the sea was perhaps appropriate. [\[FN66\]](#) A full study of the extent to which existing international law of the sea recognizes a duty to protect marine biodiversity would entail a review of state practice in *260 numerous domestic and international settings. [\[FN67\]](#) For the purposes of this article, however, the discussion will consider only the extent to which the LOS Convention recognizes such a duty.

1. The Law of the Sea Convention's Fisheries Regimes

Of the five major threats to marine biodiversity, [\[FN68\]](#) the LOS Convention contains principles relating only to two: marine pollution and overexploitation of fish stocks. [\[FN69\]](#) The Convention does not mention marine biodiversity expressly, however. [\[FN70\]](#) The marine pollution provisions are essentially structural in nature. [\[FN71\]](#) Their effectiveness will depend on further elaboration upon the basic standards by regional and global bodies concerned with preventing marine pollution. [\[FN72\]](#) The fisheries provisions also are structural in nature, containing general statements of the rights, duties, and obligations of all states with respect to fisheries resources, both in terms of obligations to the community of nations and to each other. [\[FN73\]](#)

International law of fishing, and the law of the sea generally, changed dramatically in the second half of this century. This change was the culmination of numerous unilateral national claims of extended rights to control marine resources, a trend which began with the 1945 Truman Proclamations on the continental shelf and living resources of the high seas. [\[FN74\]](#) By the late 1970s, the legal principle of freedom of fishing, dominant since the 16th century, was virtually eliminated for the area within 200 miles of the coastline. [\[FN75\]](#) The legal transformation was completed when the Third U.N. Conference on the Law of the Sea accepted the concept of the 200-mile Exclusive Economic Zone (EEZ) in the late 1970s [\[FN76\]](#) and it was "codified" in the 1982 LOS Convention. [\[FN77\]](#)

The LOS Convention's fisheries provisions recognize the legitimacy of coastal state claims of sovereign rights for conservation and management purposes of all *261 resources in the 200 miles immediately adjacent to the coastline (extending from the baseline, or inner boundary, of the territorial sea). [\[FN78\]](#) Coastal states also have sovereignty over living resources of the continental shelf, which now may extend as far as 350 miles offshore, encompassing the entire continental margin. [\[FN79\]](#) Coastal states are given the responsibility to conserve and utilize the living resources of the EEZ as part of their sovereign rights. [\[FN80\]](#)

These conservation duties include the responsibility to determine the allowable catch, [\[FN81\]](#) to adopt conservation and management measures to insure against overexploitation, [\[FN82\]](#) to maintain or restore exploited fish species to levels that can produce "maximum sustainable yield," [\[FN83\]](#) to prevent fishing from threatening the reproduction of species that are associated with or dependent upon exploited fish species, [\[FN84\]](#) and to share scientific information important to

management. [\[FN85\]](#) The coastal state, therefore, has a duty to protect ecologically associated species in fisheries conservation and management measures, but the duty is worded in a manner that makes it less mandatory than the duties to conserve the targeted species. [\[FN86\]](#)

The "utilization" duties of the coastal state include the duty to promote "optimum utilization" of the living resources as long as this does not compromise the conservation duties described above. [\[FN87\]](#) This duty requires coastal states to give foreign states access to any surplus of the allowable catch that cannot be taken by the coastal state's fishing fleets, but to consider their own coastal economies in making surpluses available, [\[FN88\]](#) and to impose conservation and other restrictions on any foreign fishing that is allowed in its EEZ. [\[FN89\]](#) The duty to promote "optimum utilization" does not extend to marine mammal populations in the EEZ or on the high seas; the LOS Convention allows coastal states to prohibit exploitation of marine mammals in their EEZs. [\[FN90\]](#) The conservation and utilization duties of the coastal state with respect to its living resources in the EEZ *262 are not, however, subject to question by other states as they are exempt from the LOS Convention's provisions for compulsory dispute resolution. [\[FN91\]](#)

The LOS Convention recognizes that some fish stocks "straddle" the EEZ and the high seas, or migrate between the EEZs of two or more states. [\[FN92\]](#) In these instances, the Convention imposes a duty on states to try to agree on conservation measures, either directly or through regional fisheries bodies. [\[FN93\]](#) With respect to fishing on the high seas beyond the EEZs of coastal states, the LOS Convention reflects only a limited recognition of the need to preserve the ecological integrity of fisheries. Fishing is still identified as one of the freedoms of the high seas, [\[FN94\]](#) but it is subject to other relevant treaty obligations, which include conservation and management requirements, and the rights and duties, "as well as the interests," of coastal states. [\[FN95\]](#) All states have a duty to take measures to conserve living resources on the high seas, either alone or in cooperation with other states, and an obligation to negotiate with a view to creating regional or subregional fisheries organizations to establish the necessary conservation measures. [\[FN96\]](#)

*263 2. Deficiencies in the LOS Regimes

The EEZ regime thus emerged from the Third United Nations Conference on the Law of the Sea as the primary vehicle for the conservation of living marine resources. Despite the conservation and utilization duties that accompanied the EEZ regime in the LOS Convention, however, coastal states for the most part have not prevented the overexploitation of fish stocks within their zones. [\[FN97\]](#) Many states enacted legislation either ejecting foreign fishing fleets from their EEZs, [\[FN98\]](#) or allowing the sale of access to their zones for less than it would cost to effectively police and manage these areas. [\[FN99\]](#)

As more stocks became overfished, maintaining the same catch levels required expansion in fishing power and fleet size. Distant water fishing fleets expanded rather than contracted, often under subsidies from high seas fishing states. [\[FN100\]](#) Where coastal states excluded foreign fishing or had fully exploited EEZ stocks, these fleets began targeting high seas fish stocks, particularly those that straddled the EEZ and high seas regimes. [\[FN101\]](#) Distant water fishing fleets also developed new techniques like large-scale pelagic driftnetting to compensate for the reduced density of fish stocks on the high seas. [\[FN102\]](#) New factory trawlers were built and bottom trawling gear was modified and redesigned to allow vessels to fish in areas where boulders and other physical features had previously provided de facto refugia for hunted fish stocks. [\[FN103\]](#)

In sum, the move in international fisheries law to recognize sovereign rights in coastal states over coastal fish stocks [\[FN104\]](#) and to define general duties to cooperate for all others has proven inadequate to the task of ensuring the conservation and management of the world's fishery resources. [\[FN105\]](#) The new law's reliance on extended national jurisdiction without a more detailed requirement to keep *264 fishing power within sustainable limits has not prevented the overinvestment in fishing vessel power, the excess fishing capacity, and overfishing that has resulted, both with the EEZs and on the high seas. [\[FN106\]](#)

This failure of international law is significant for marine biodiversity in two ways. First, it did not prevent overexploitation of target and nontarget fish species caught as bycatch and the resultant changes to ecosystems from heavy and selective fishing pressures. Second, the new LOS norms did not prevent or constrain growth in the ability of fishing vessels to alter habitats directly. International fisheries law, and the law of the sea in general, probably inadvertently promoted the growth in fishing and the related threats to marine biodiversity not only through the failure to require attention to biodiversity, but also through the failure to constrain fishing effort and methods. [\[FN107\]](#)

IV. THE 1995 AGREEMENT ON HIGH SEAS FISH STOCKS AND THE DUTY TO PRESERVE MARINE BIODIVERSITY

The negotiators of the Biodiversity Convention were no doubt aware that achieving the Convention's objectives for terrestrial and marine species and ecosystems alike will require a high degree of coordination among national actors under both existing and future domestic and international institutions. [\[FN108\]](#) The Biodiversity Convention can indeed be strengthened and supplemented through other international obligations. [\[FN109\]](#) With reference to norms controlling fishing, however, as the above discussion suggests, the LOS Convention's fisheries provisions leave coastal states too much discretion in managing EEZ fish stocks and related ecosystems, and requires too little in the way of *265 international regulation of high seas fishing. More needs to be done to provide the kind of synergetic force that is necessary to supplement the framework provisions of the Convention.

However, new international fisheries norms, that go beyond the limited norms in the LOS Convention, are again emerging. This is partly in response to the failure of the LOS regimes to prevent overexploitation, habitat damage, and related adverse ecological effects. With the spectacular crashes in some coastal and high seas fish stocks, [\[FN110\]](#) several new agreements have been concluded in just the last three years. These include the Central Bering Sea Convention (the "Donut Hole" Agreement), [\[FN111\]](#) the 1995 United Nations Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks, [\[FN112\]](#) the FAO Code of Conduct for Responsible Fishing, [\[FN113\]](#) and the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas. [\[FN114\]](#) In addition, new agreements addressing specific fisheries with high rates of incidental mortality of marine wildlife have been adopted. [\[FN115\]](#) All these agreements strengthen considerably the normative landscape of international law of the sea and fisheries. They may in fact contain the best promise to date of addressing the significant threat to marine biodiversity from fishing. The 1995 Fish Stocks Agreement, in particular, with its specific duty to conserve marine biodiversity in the management of high seas fisheries, [\[FN116\]](#) and its requirement for compatible measures in the adjacent EEZ, [\[FN117\]](#) stands the best chance of providing the first enforceable standard for biodiversity protection in the marine realm since the Biodiversity Convention was opened for signing in 1992.

A. OVERVIEW OF THE HIGH SEAS FISH STOCKS AGREEMENT

1. Background

In the late 1980s, prominent EEZ states, including Canada, saw their major fish *266 stocks decline due to a variety of factors, but primarily overfishing by domestic fishing fleets. [\[FN118\]](#) Where these stocks straddled the boundary between their EEZ and the high seas, these states attributed the declines to the inability of existing regional fishery bodies like the Northwest Atlantic Fisheries Organization (NAFO) to enforce catch limits on high seas fleets. [\[FN119\]](#) They brought attention to the issue at the 1992 U.N. Conference on Environment and Development (UNCED), [\[FN120\]](#) or Earth Summit in Rio de Janeiro. UNCED adopted Agenda 21, a global action plan for issues raised by environment and development, which, inter alia, called for a new intergovernmental conference to address deficiencies in the legal regime for high seas fisheries in the LOS Convention. [\[FN121\]](#)

When the General Assembly endorsed the call for an intergovernmental conference, [\[FN122\]](#) the stage was set for a repeat of

the same deadlock over the definition of duties and rights among coastal EEZ states and high seas fishing states. The first substantive round of negotiations at the U.N. Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks appeared headed in that direction. [\[FN123\]](#) This Conference, however, was not to be a repeat of the LOS *267 negotiations, at which the high seas fisheries regime received very little consideration. Nor was it a repeat of the preparatory discussions preceding UNCED, where coastal states and high seas fishing states were unable to bridge their differences. A critical element at the Straddling Stocks negotiations was that they were closely watched and participated in by a number of conservation-minded nongovernmental organizations (NGOs), who by the end of UNCED, were committed to maintaining the momentum of UNCED and were armed with several soft law norms from the Rio Declaration that would play an important role in shaping the ultimate Agreement. [\[FN124\]](#) In particular, they were armed with Principle 15, the precautionary principle, which provides that "[w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." [\[FN125\]](#)

While the Straddling Stocks negotiations were occurring, Canada took unilateral steps to remedy NAFO's defects and lack of enforcement authority. [\[FN126\]](#) In both 1994 and 1995, Canada amended its Coastal Fisheries Protection Act to allow its fisheries patrols to arrest fishing vessels, on the high seas outside of its EEZ, flying either flags of convenience or flags of countries not committed to enforcing the NAFO quotas. [\[FN127\]](#) In March, 1995, Canadian patrols arrested a Spanish trawler on the high seas in the NAFO regulatory area for violating NAFO's regulations, despite the European Union having exercised its right under the objection provision of the NAFO Convention [\[FN128\]](#) to opt out of quotas. This willingness to engage in unilateral action undoubtedly convinced negotiators at the Straddling Stocks talks to consider seriously the need for a new treaty to strengthen high seas management. FAO also successfully convened negotiations *268 for the adoption of an International Code of Responsible Fishing [\[FN129\]](#) and an Agreement on Compliance with International Fisheries Agreements.

2. Key Elements of the Agreement

The High Seas Fish Stocks Agreement is the most important recent development in international fisheries law. It is the first fisheries treaty to be concerned with more than just allocating rights to exploit a fishery among competing national fishing fleets. It recognizes expressly that states have a duty to protect marine biological diversity. [\[FN130\]](#) This acknowledgement of a broader responsibility of nations toward marine ecosystems and living resources itself is the culmination of a number of individual developments, including the Wellington Convention [\[FN131\]](#) and the 1989 U.N. General Assembly moratorium on large-scale high seas drift nets, [\[FN132\]](#) the international moratorium on commercial whaling, [\[FN133\]](#) the efforts of the United States and other countries to exclude fish products from their markets if they were caught in a manner that jeopardizes marine wildlife, [\[FN134\]](#) and the adoption of the Biodiversity Convention and Agenda 21 at the 1992 Earth Summit in Rio. [\[FN135\]](#)

The Fish Stocks Agreement has five major elements. [\[FN136\]](#) The first defines *269 conservation and management for high seas fishing stocks and sets out the general principles that make up the duty to cooperate. [\[FN137\]](#) These principles include a duty to apply a precautionary approach to fisheries management, [\[FN138\]](#) a duty to assess and minimize adverse fishing impacts on target and ecologically related species, [\[FN139\]](#) and a duty to protect biodiversity in the marine environment. [\[FN140\]](#) These duties apply to the management of straddling and highly migratory fish stocks both on the high seas and within EEZs, and are discussed in more detail in the next section. [\[FN141\]](#)

The second important element of the Agreement includes principles for the establishment or reforming of regional or subregional fisheries organizations or arrangements. [\[FN142\]](#) Given that a large number of regional fisheries bodies already exist, the Agreement's requirements that high seas fishing states either join or observe the measures these bodies adopt, and

that coastal states adopt compatible measures in their adjacent EEZs, are the most critical for achieving the Agreement's objectives.

The third element specifies the duty of high seas fishing states either to join an existing regional or subregional fisheries management organization or arrangement for fisheries in which their vessels engage, or agree to apply the regulations such entities adopt. [\[FN143\]](#) States that do not do so are not entitled to have access to *270 the affected fisheries. [\[FN144\]](#) Compliance with internationally agreed upon management and conservation measures is now the quid pro quo of fishing for high seas fish stocks. [\[FN145\]](#)

If an organization or arrangement does not exist, states are obliged to establish one and participate in its work. [\[FN146\]](#) This work must include, inter alia, agreeing on measures that will ensure the long-term sustainability of the fish stocks; allocating participatory rights in the fishery; applying any international minimum standards for responsible fishing operations; obtaining and reviewing scientific advice on the stocks and the effects of fishing on other species; collecting and exchanging data; conducting scientific research; implementing monitoring, control, surveillance, and enforcement mechanisms; and accommodating new parties or participants. [\[FN147\]](#) The decision-making process of these regional or subregional bodies must be capable of adopting conservation and management measures in a timely and effective manner, and must be transparent or open to the participation of other intergovernmental and nongovernmental organizations (NGOs), at least as observers. [\[FN148\]](#) If existing regional bodies do not already meet these standards, states have a duty to reform them and "improve their effectiveness." [\[FN149\]](#)

The responsibilities of flag states make up the fourth major element. These duties are enumerated in much more detail than in the LOS Convention, [\[FN150\]](#) and given the enforcement and compliance provisions in the Agreement, are particularly noteworthy. States authorizing high seas fishing vessels to fly their flags must take steps to ensure that these vessels comply with applicable international fisheries regulations. [\[FN151\]](#) States are not to register fishing vessels under their flag if they are unable to exercise effective control over them. [\[FN152\]](#)

The final and very significant element of the Fish Stocks Agreement relates to compliance and enforcement, the "Achilles' heel" of international fisheries management. [\[FN153\]](#) The Agreement continues the tradition of relying upon the flag state to enforce conservation and management regulations, requiring enforcement irrespective of the location of the violation, and immediate investigation of alleged violations. It also requires vessels to submit to investigation, prompts *271 prosecution of violations, and ensures that violating vessels do not recommence high seas fishing until the sanction, which must be adequate to deter future violations, has been satisfied. [\[FN154\]](#) The flag state is required to cooperate with other states in ensuring compliance, including investigating suspected violations at the request of the coastal state concerned. [\[FN155\]](#) This cooperation can also include authorizing the coastal state's authorities to board and inspect the vessel on the high seas. [\[FN156\]](#)

The Agreement does not, however, rely entirely on flag state enforcement, as does the LOS Convention. In the longest provisions of the Agreement, states that are members of regional fisheries organizations may board and inspect on the high seas the vessels of another state that is a party to the Agreement, to ensure compliance with the organization's regulations. [\[FN157\]](#) All regional fisheries organizations are required to establish agreed-upon procedures for these inspections and boardings. [\[FN158\]](#) The flag state may authorize the inspecting state to investigate the alleged violation and then may either take appropriate enforcement action itself or allow the inspecting state to do so. [\[FN159\]](#) However, if the flag state does neither, the inspecting state, if it believes the violation to be serious, [\[FN160\]](#) may bring the vessel to the nearest port to complete the investigation. [\[FN161\]](#)

In summary, the Fish Stocks Agreement has strengthened the authority of states, acting alone or in concert, to ensure compliance with conservation and management measures adopted by regional fisheries bodies. The measures these organizations adopt, however, must be up to the task of preventing overfishing and of ensuring that fishing operations do not threaten marine biodiversity through habitat alteration. Thus, the most important aspects of the Agreement for preserving marine biodiversity will be the standards for conservation and management that apply to all regional and subregional organizations and arrangements. These standards must be strong enough to prevent regional bodies from ignoring a fishery's risk of impact on marine biodiversity or from accepting a high degree of risk because of uncertainties. If they do not, the Agreement's *272 advances in high seas enforcement will be meaningless. This brings us to an analysis of the specific provisions that afford protection to marine biodiversity.

B. MARINE BIODIVERSITY PROTECTIONS UNDER THE AGREEMENT

The Agreement's inclusion of very detailed standards for conservation and management improves significantly upon the LOS Convention's high seas fisheries provisions. With these stronger standards and greater specificity respecting the scope of states' duties to cooperate in high seas fisheries management, the Agreement lays a strong foundation for promoting the conservation of marine biodiversity through the research and regulatory functions of regional international fisheries bodies. These bodies can realize marine biodiversity and ecological goals that go beyond achieving maximum fishery yields if the Agreement's preambulatory language is taken seriously and if the principles for conservation and management, in particular, the duty to apply a precautionary approach, are followed.

1. Duties to Protect Marine Biodiversity and Its Components

The potential for protection of marine biodiversity under the Agreement begins in the preamble's declaration that the parties are "conscious of the need to avoid adverse impacts on the marine environment, preserve biodiversity, maintain the integrity of marine ecosystems and minimize the risk of long-term or irreversible effects of fishing operations." [FN162] This language supports an interpretation of all the other provisions of the Agreement in a manner that gives full consideration to the greater ecological and biological impacts of fishing.

Beyond the preamble, the Agreement provides protection of marine biodiversity and its components in the principles that define what states must do to meet their duty to cooperate under the LOS Convention. These principles recognize explicitly a duty to protect biodiversity in the marine environment. [FN163] Duties to avoid some of the major sources of impacts on biodiversity are reflected in the duties to assess and minimize the impacts of fishing on species belonging to the same ecosystem or associated with or dependent on the target stocks; [FN164] the duty to adopt measures for species of the same ecosystem to maintain or restore their populations above levels at which their reproduction may become seriously threatened; [FN165] and the duty to minimize pollution, waste, discards, ghost fishing *273 gear, and impacts on endangered species. [FN166] The Agreement describes the development and use of selective, environmentally safe, and cost-effective fishing gear and techniques as measures to achieve these duties. [FN167]

2. The Precautionary Approach and Marine Biodiversity

No doubt the most important normative innovation in the Fish Stocks Agreement, with implications for marine biodiversity protection, is the requirement to adopt a "precautionary approach" to the management of high seas fish stocks. [FN168] The Agreement's textual elaboration of the precautionary approach builds upon the "precautionary principle" recently emerging as "soft law" in international environmental law, including the Convention on Biological Diversity. [FN169] Under the Agreement, coastal states and high seas fishing states are required to apply the precautionary approach widely to conservation, management, and exploitation of high seas fish stocks, "in order to protect the living marine resources and preserve the marine environment." [FN170] The Agreement requires its parties to be "more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall not be used as a reason for

postponing or failing to take conservation and management measures." [\[FN171\]](#)

The Agreement goes furthest in defining the precautionary approach with respect to overexploitation of target fish stocks, and in this respect, the Agreement is weighted more toward the overexploitation threat to marine biodiversity than toward, for example, physical habitat alteration. [\[FN172\]](#) However, several provisions incorporate, within the concept of the precautionary approach, measures addressing other fisheries-related threats to marine biodiversity. [\[FN173\]](#) These include the duties mentioned above to determine the impact of fishing on nontarget and *274 associated or dependent species and their environment, [\[FN174\]](#) and to adopt "plans" for their conservation and for protection of "habitats of special concern." [\[FN175\]](#)

States and regional fisheries organizations are obligated to set fishing limits that err on the side of conservation rather than exploitation, to use caution in estimating biological surpluses, to adopt stock-specific reference points such as fishing mortality rates or minimum potential spawning biomass and prevent them from being exceeded, and to identify specific actions in advance that will be taken in the event that these limits are exceeded. [\[FN176\]](#)

The precautionary approach as detailed in Article 6 and Annex II of the Agreement obligates states to take action without delay to restore fish stocks to the levels defined in the precautionary reference points. [\[FN177\]](#) For new fisheries, states are required to adopt "cautious conservation and management measures," including at least catch limits as well as effort limits, and to keep these in effect until enough is known about the impact of a fishery on the stock's long-term sustainability to allow more conservation and management measures, with a general requirement to develop new fisheries gradually. [\[FN178\]](#) States are required to adopt emergency conservation and management measures where fishing activity, either alone or in combination with a natural phenomenon adversely affecting the stock, seriously threatens sustainability of straddling or highly migratory fish stocks. [\[FN179\]](#)

3. Extension of the Precautionary Approach Duties to EEZs

Fish stocks, other marine species, and ecosystems that are subject to the sovereign rights and EEZ jurisdiction of coastal states are likely also to benefit from the duties to protect marine biodiversity and to adopt a precautionary approach to fisheries management. Due to a key compromise achieved at the Conference between coastal states and high seas fishing states, [\[FN180\]](#) coastal states measures must be compatible with those adopted by regional fishing organizations. [\[FN181\]](#) This requirement is subject to review and is potentially enforceable under the binding dispute settlement provisions of the Agreement. [\[FN182\]](#)

Coastal states must apply the Agreement's principles within their EEZs in *275 exercising their sovereign rights to conserve and manage straddling and highly migratory fish stocks while in their zones. [\[FN183\]](#) It is likely that coastal states will develop a single approach to fisheries management, which will be based on these new duties, for both those fish stocks that are under their exclusive management authority, as well as those stocks they share with high seas fishing states. Thus, the Agreement can be read to apply duties to protect the biodiversity of the marine environment, not only in the conservation of high seas fish stocks, but also within areas under national jurisdiction. [\[FN184\]](#)

4. Prospects for Biodiversity Protection under the Agreement

If the duty to apply a precautionary approach to fisheries management is treated as a serious obligation under international law, and states cooperate through regional organizations to implement it, such an approach has the potential to reform both international and national conservation practices. This will happen if states use it to establish a more ecologically sound basis for management that affords equal weight to the needs of future, as well as present, generations. They must also use it to resist domestic pressures to allow the overcapacity of fishing fleets, which leads to demands for national and international

fishing quotas that are unsustainable. These pressures are almost impossible for fisheries administrators to resist, especially in coastal regions where other economic opportunities for workers are limited. However, the availability of international norms that clarify national duties of conservation and marine biodiversity protection should benefit these efforts.

For some of the potentially most devastating effects of fisheries on biodiversity, the evidence is circumstantial or lacking. [\[FN185\]](#) This gives the precautionary approach particular salience because it directs actions in the face of uncertainty. The supplementary provisions in Annex II on implementing the precautionary approach, however, do not address the manner in which the uncertainties about other effects are to be dealt. [\[FN186\]](#) The specific details of a precautionary approach to protecting marine biodiversity will have to be worked out in the regional fishing organizations, with the assistance and prodding of NGOs. This makes the process that regional organizations follow especially important, including how they define which states can become members, and the role of nonstate entities in the decision making. [\[FN187\]](#)

***276** A related legal development that supports the Fish Stocks Agreement is the adoption of the FAO's International Code of Conduct for Responsible Fishing, which the FAO Council adopted in November 1995. [\[FN188\]](#) Articles of this voluntary, nonbinding instrument include general principles, articles on fisheries management, fishing operations, aquaculture development, integration of fisheries into coastal management, post-catch practices and trade, and fisheries research. [\[FN189\]](#) An integral component of the Code is the Agreement to Promote Compliance with International Conservation and Management by Fish Vessels on the High Seas. [\[FN190\]](#) The Code's general principles are very similar to those in the Fish Stocks Agreement that are outlined above. [\[FN191\]](#) Thus, the biodiversity protections of the Fish Stocks Agreement are supported and supplemented by a voluntary agreement by members of the FAO to conform their fishing practices and regulations, aquaculture, coastal management, and other marine resource management activities to their duty to protect marine biodiversity. [\[FN192\]](#) This responsibility applies within all areas of national jurisdiction, including the territorial sea and EEZ. [\[FN193\]](#)

V. CONCLUSION

Conservation of marine biodiversity will depend on nations taking voluntary actions, outlined in a growing list of action items, to address numerous crises in the global environment. Actions to protect marine biodiversity will have to compete for attention with actions to combat global climate change, deforestation, and a host of other problems that threaten biodiversity. It is essential, therefore, that fisheries management becomes the chief vehicle for addressing marine biodiversity, both in reducing the impacts of fishing itself upon diversity, and also in requiring action to abate threats in other realms, like land-based pollution, climate change, ozone depletion, and others that threaten the marine life upon which fisheries depend.

All international bodies concerned with fishing must now consider the biodiversity and ecosystem impacts of fishing. Parties to international fisheries ***277** agreements and NGOs should work to ensure that this attention is given. The work cannot be accomplished entirely under the auspices of the Biodiversity Convention. There is a great deal more, however, that parties to that Convention can do to strengthen the responsibilities of fisheries management institutions to protect biodiversity. For example, the parties should ask the Convention's scientific and technical advisory body, or the experts from the roster referred to above, to identify the fisheries and fishing practices around the world that pose a threat to the marine biodiversity at one or more levels of organization. The findings of the body should then be transmitted to the national, regional or international organizations responsible for those fisheries, and a response requested. Joint meetings of the parties could also be considered. [\[FN194\]](#) These findings should also be presented to the review conference to be held four years after the Fish Stocks Agreement's entry into force. [\[FN195\]](#)

Implementation of the 1995 High Seas Fish Stocks Agreement should include the creation of a subcommittee at each of the regional fisheries organizations with a specific mandate to develop guidance for that region or fishery regarding biodiversity

protection. Such guidance could include detailed standards on what it takes to control catch levels and fishing techniques and gears in order to support achievement of the duties to conserve marine biodiversity. The committees should include persons, drawn from the NGO community, who have been active in both the Biodiversity Convention and in the development of the Fish Stocks Agreement, so that they know the implementation requirements of both. At the Fish Stocks Agreement's review conference, the progress in addressing fishing impacts on marine biodiversity should be a major item on the agenda.

These endeavors should also focus on the practices of coastal states with respect to their fisheries in the EEZs. Thus, the FAO's Code of Conduct for Responsible Fishing must include strong elements regarding marine biodiversity impacts of fishing and fisheries management. With the combined strength of the principles and institutions created under these recent advances in international law, it is conceivable that international fisheries law can play a major and positive role in preserving the Earth's biosphere.

APPENDIX

The FAO's Role in the Development of the Precautionary Approach Text of the 1995 High Seas Fish Stocks Agreement:

Negotiations of the detailed text on the application of the precautionary approach to fisheries management came about through a significant change in position by the chief source of technical advice to the Fish Stocks Conference, the U.N. Food and Agriculture Organization (FAO). In the months immediately *278 following UNCED, the FAO sponsored a technical consultation on high seas fisheries. It was clear that FAO members were willing to use the UNCED concept of sustainable development as a guide for high seas fisheries management. On the precautionary principle, however, the attitude was more skeptical. The report of the Consultation stated:

66. Taking note of the precautionary approach recommended at UNCED, the Consultation agreed that fisheries should be managed in a cautious manner. However, the Consultation noted that while overharvesting of renewable resources can have serious consequences on fisheries populations and ocean ecosystems, it is fundamentally different from damaging practices like toxic waste dumping and industrial poisoning, for which the precautionary principle was created. The Consultation stressed that precautionary management does not necessarily require a moratorium on fishing.

67. Caution in dealing with this issue was recommended, stressing the need to identify appropriate methods to handle uncertainties in assessments so as to safeguard peoples' livelihoods and to maintain biodiversity. The practical implications of precautionary management would have to be carefully examined to avoid unnecessarily restrictive measures. In addition, the relevant precautionary measures and practices currently applied in relation to living marine resources should be identified and, if valid, be reflected as appropriate in the code of conduct.

68. It was stressed that management decisions should be based on the best scientific information available as provided for in UNCLOS, and it was underlined that nondiscriminatory measures with a clear scientific basis were seen as more legitimate by fishermen and, as such, had more chances to be respected by them.

69. The Consultation stressed that precautionary management measures taken in the absence of sufficient scientific data, should be revised or revoked as appropriate. [\[FN196\]](#)

Distant water fishing states used the language in the FAO Report of the Technical Consultation to support their argument that the Precautionary Principle, as a pollution control concept, could lead to unnecessarily restrictive measures in the fisheries context. Coastal states and NGOs, however, countered this argument, pointing out that precaution was already in practice in fisheries, and that reservations had been made to the language in the FAO report. At the end of the July, 1993 session, the Conference requested the FAO to prepare a report on the precautionary principle for the 1994 session and a report on biological reference points in fisheries management. The FAO report reflected a very different perspective on the concept of precautionary approach. [\[FN197\]](#)

*279 The Conference created two technical working groups at the March, 1994 session that developed the findings of the

FAO reports into what eventually became Article 6 (Application of the Precautionary Approach) and Annex II of the Fish Stocks Agreement. By the August, 1994 session, almost all the parties had accepted the idea of making the precautionary approach applicable to fisheries management for high seas fish stocks. [\[FN198\]](#)

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[\[FN1\]](#). See, e.g., Michael D. Lemonick, Too Few Fish in the Sea: After Reaping the Oceans' Bounty with Careless Abandon, the World Struggles to Save an Irreplaceable Food Source, *TIME*, Apr. 4, 1994, at 70; Carl Safina, The World's Imperiled Fish, *SCI. AM.*, Nov., 1995; William K. Stevens, Long-Line Fishing Seen as Damaging to Some Fish and to the Albatross, *N.Y. TIMES*, Nov. 5, 1996, at C1, C8.

[\[FN2\]](#). See, e.g., Gary Lee, Heeding the Seas' Vanishing Species, *WASH. POST*, Apr. 1, 1996, at A3; see generally BOYCE THORNE-MILLER & JOHN CATENA, *THE LIVING OCEAN: UNDERSTANDING AND PROTECTING MARINE BIODIVERSITY* (1991); ELLIOTT A. NORSE, ed., *GLOBAL MARINE BIOLOGICAL DIVERSITY: A STRATEGY FOR BUILDING CONSERVATION INTO DECISION MAKING* (1993).

[\[FN3\]](#). But see George W. Boehlert, Biodiversity and the Sustainability of Marine Fisheries, 9 *OCEANOGRAPHY* 28 (1996); T.R. Parsons, Editorial, Impact of Fish Harvesting on Ocean Ecology, 22 *MAR. POLL. BULL.* 217 (1991); NORSE, *supra* note 2, at 110-12.

[\[FN4\]](#). See Boehlert, *supra* note 3, at 30 (noting 39 marine finfish species whose population status may merit listing as endangered or threatened species under U.S. law, citing G.R. Huntsman, Endangered Marine Finfish: Neglected Resources or Beasts of Fiction?, 19 *FISHERIES* 8 (1994)).

[\[FN5\]](#). See *id.* at 28 (citing Food and Agriculture Organization, Review of the Status of World Marine Fishery Resources, FAO Tech. Pap. 335 (1993)).

[\[FN6\]](#). See Boehlert, *supra* note 3 (citing NATIONAL RESEARCH COUNCIL, *UNDERSTANDING MARINE BIODIVERSITY: A RESEARCH AGENDA FOR THE NATION* (1995)).

[\[FN7\]](#). See Convention on Biological Diversity, concluded at Rio de Janeiro, June 5, 1992 (entered into force December 29, 1993) reprinted in [31 I.L.M. 818](#) (1992) [hereinafter Biodiversity Convention].

[\[FN8\]](#). United Nations Convention on the Law of the Sea, U.N. Doc. A/ CONF.62/122 (entered into force Nov. 16, 1994) reprinted in [21 I.L.M. 1261](#) (1982) [hereinafter LOS Convention]; see generally WILLIAM T. BURKE, *THE NEW INTERNATIONAL LAW OF FISHERIES: UNCLOS 1982 AND BEYOND* (1994).

[\[FN9\]](#). See discussion *infra* at Part III.B.

[\[FN10\]](#). Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, Aug. 4, 1995, UN Doc. A/[CONF.164/37 \(1995\)](#), Sept. 8, 1995, opened for signature Dec. 4, 1995, reprinted in [34 I.L.M. 1542](#) (1995) [hereinafter Fish Stocks Agreement].

[FN11]. See generally David A. Balton, Strengthening the Law of the Sea: The New Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks, 27 OCEAN DEV'T & INT'L L. (1996).

[FN12]. Biodiversity Convention, *supra* note 7.

[FN13]. See generally Report of the United Nations Conference on Environment and Development, Rio de Janeiro (June 3-14, 1992), UN Doc.A/[CONF.151/26](#), Agenda 21, Aug. 12, 1992; Rio Declaration on Environment and Development, reprinted in [31 I.L.M. 874](#) (1992) [hereinafter UNCED].

[FN14]. See discussion *infra* at Part IV.B.

[FN15]. See NORSE, *supra* note 2, at 88.

[FN16]. See *id.* at 90. No commercial fishery has yet to cause the extinction of a marine fish or invertebrate species in the modern era, but biodiversity is nevertheless reduced when fishing depresses significantly population levels and alters the biological communities in which the species reside. See *id.*

[FN17]. See *id.* at 110-112.

[FN18]. See Boehlert, *supra* note 3, at 28.

[FN19]. Biodiversity Convention, *supra* note 7, art. 2.

[FN20]. See generally THORNE-MILLER & CATENA, *supra* note 2. The oceans provide habitat for all but one of the phyla of animals on the Earth, and approximately half of these phyla are found only in the marine environment. See also NORSE, *supra* note 2, at 14.

[FN21]. See NORSE, *supra* note 2, at 9-13.

[FN22]. See *id.* at 89-98; Boehlert, *supra* note 3.

[FN23]. See Boehlert, *supra* note 3, at 28-32.

[FN24]. See *id.* at 28-30.

[FN25]. See *id.* at 29.

[FN26]. See *id.*

[FN27]. See *id.* at 30-31.

[FN28]. See *id.*

[FN29]. See *id.* at 31.

[FN30]. See NORSE, *supra* note 2, at 110-112; Boehlert, *supra* note 3, at 32.

[FN31]. See Boehlert, *supra* note 3, at 32.

[FN32]. See id.

[FN33]. See id. at 33. Application of management regulations should be treated as an experiment in which data are collected on the ecological responses to fishing which in turn can be used to improve the understanding of the effect of fishing on biodiversity. See id.

[FN34]. See, e.g., Elizabeth Culotta, Exploring Biodiversity's Benefits; Effect of Biodiversity on Ecosystem Productivity and Stability, 273 *SCIENCE* 1045 (Aug. 23, 1996).

[FN35]. But see, e.g., Jonathon A. Gurish, Pressures to Reduce Bycatch on the High Seas: An Emerging International Norm, 5 *TUL. ENVTL. L.J.* 473 (1992) (discussing an emerging international law norm which prohibits excessive bycatch in marine fisheries); Grant J. Hewison, The Legally Binding Nature of the Moratorium on Large-Scale High Seas Driftnet Fishing, 25 *J. MARITIME L. & COMM.* 557 (1994) (explaining the global moratorium on high seas driftnet fishing based on the U.N. General Assembly resolutions is binding as customary international law).

[FN36]. See infra notes 60-64 and accompanying text.

[FN37]. See, e.g., Edith Brown Wiess, [International Environmental Law: Contemporary Issues and the Emergence of a New World Order](#), 81 *GEO. L.J.* 675 (1993).

[FN38]. Biodiversity Convention, supra note 7. For a discussion of other international conventions that pertain to marine biodiversity, see Suzanne Iudicello & Margaret Lytle, [Marine Biodiversity and International Law: Instruments and Institutions That Can Be Used to Conserve Marine Biological Diversity Internationally](#), 8 *TUL. ENVTL. L.J.* 123 (1994).

[FN39]. See supra note 8 and accompanying text.

[FN40]. See generally, Lee A. Kimball, [The Biodiversity Convention: How to Make It Work](#), 28 *VAND. J. TRANSNAT'L L.* 763 (1995).

[FN41]. Biodiversity Convention, supra note 7.

[FN42]. See id. art. 3.

[FN43]. See id. art. 7 and Annex I. Parties are required to identify categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects. See id. art. 7(c).

[FN44]. See id. arts. 8, 9. The responsibilities for in-situ conservation include establishing protected areas to conserve biological diversity, promoting the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings, and regulate or manage categories of activities that have been determined to have a significant adverse effect on biodiversity. See id. art. 8(a), (d)(1).

[FN45]. See id. art. 1.

[FN46]. See id. art. 23.

[FN47]. See id. art. 25. This body is called the Subsidiary Body on Scientific, Technical and Technological Advice, and it is

intended to provide timely, multidisciplinary advice on implementation of the Convention.

[FN48]. See id. art. 21.

[FN49]. See id. art. 27.

[FN50]. See id. arts. 28, 30.

[FN51]. See id. art. 26.

[FN52]. See id. art. 15(1).

[FN53]. See id. art. 15.

[FN54]. See id. art. 22(2). Article 22 provides:

1. The provisions of this Convention shall not affect the rights and obligations of any Contracting Party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity.

2. Contracting Parties shall implement this Convention with respect to the marine environment consistently with the rights and obligations of States under the law of the sea.

[FN55]. LOS Convention, supra note 8. The LOS Convention Part XII, Protection and Preservation of the Marine Environment, includes similar consistency language: specific obligations assumed by States under special conventions, with respect to the protection and preservation of the marine environment, should be carried out in a manner consistent with the general principles and objectives of this Convention. Id. art. 237(2). In the Final Provisions, the Convention further states "[t]his Convention shall not alter the rights and obligations of States Parties which arise from other agreements compatible with this Convention and which do not affect the enjoyment by other States Parties of their rights or performance of their obligations under this Convention." Id. art. 311.

[FN56]. Id. art. 62. But see id. art. 61(4) (coastal state's duty to consider the effect on species associated or dependent upon exploited fish stocks in setting conservation measures).

[FN57]. LOS Convention, supra note 8, at arts. 87(1)(e), 116.

[FN58]. This reading may also be suggested by the contrast between paragraphs 1 and 2 of Article 22. See supra note 54. Paragraph 1 excludes the exercise of those rights and obligations under existing international agreements that would seriously damage or threaten biological diversity. Paragraph 2, however, requires implementation to be consistent with the rights and obligations under the law of the sea without the adverse impact or threat qualification in paragraph 1. Id.

[FN59]. This reading is more consistent with the general rules of treaty interpretation of the Vienna Convention on the Law of Treaties, concluded at Vienna, May 23, 1969, entered into force Jan. 27, 1988, 1155 U.N.T.S. 331, art. 31 (requiring interpretations in good faith and in light of the object and purposes of the treaty and the subsequent practice of the parties "which establishes the agreement of the parties regarding its interpretation"). Id. art. 31(3)(b).

[FN60]. At the First Conference of the Parties (COP-I) of the Convention, in 1994, the Parties adopted a work program for 1995-97 that included an item on conservation and sustainable use of coastal and marine biodiversity. The Parties directed their Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) to address the issue and make

recommendations to the Second Conference, in Jakarta, Indonesia, in 1995. See Salvatore Arico, Report on International Efforts in Research, Monitoring, and Capacity Building in the Field of Marine and Coastal Biological Diversity, 29 OCEAN & COASTAL MGT. 329, 330 (1996).

[FN61]. See *id.* The Conference of the Parties accepted the recommendations of this body at the Jakarta meeting, despite the concerns of a minority of parties who believed the threat of fisheries had been overemphasized in comparison with the threat posed by marine pollution. See A. C. DE FONTAUBERT ET AL., BIODIVERSITY IN THE SEAS: IMPLEMENTING THE CONVENTION ON BIOLOGICAL DIVERSITY IN MARINE AND COASTAL HABITATS 70 (1996).

[FN62]. See DE FONTAUBERT ET AL., *supra* note 61, at 70-73.

[FN63]. See *id.* at 71-72.

[FN64]. See *supra* notes 54-59 and accompanying text.

[FN65]. Biodiversity Convention, *supra* note 7, art. 22. See *supra* Part III.A.

[FN66]. Dissatisfaction with the regime of deep seabed mining contained in Part XI of the LOS Convention, delayed for over a decade acceptance of the Convention by a number of industrialized and major maritime states, including the United States. See E.D. BROWN, I THE INTERNATIONAL LAW OF THE SEA, Introductory Manual 10 (1994). Concerns regarding the mining regime were resolved, however, with the adoption of the 1994 United Nations Agreement on Part XI. Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, July 28, 1994, reprinted in [33 I.L.M. 1309](#) (1994).

[FN67]. See, e.g., BROWN, *supra* note 66, at 3.

[FN68]. The threats are overexploitation, climate change, habitat alteration, toxic pollution, and introduction of exotic species. See NORSE, *supra* note 2, at 88.

[FN69]. See Christopher C. Joyner, [Biodiversity in the Marine Environment: Resource Implications for the Law of the Sea](#), 28 VAND. J. TRANSNAT'L L. 635, 651-54, 656-63 (1995).

[FN70]. For a history of the use of the terms "biological diversity" and "biodiversity," see Elliott A. Norse, A River That Flows to the Sea: The Marine Biological Diversity Movement, 9 OCEANOGRAPHY 5, 6-7 (1996).

[FN71]. See LOS Convention, *supra* note 8, Part XII. See generally, Daniel Bodansky, [Protecting the Marine Environment from Vessel-Source Pollution: UNCLOS III and Beyond](#), 18 ECOL. L.Q. 719 (1991).

[FN72]. See BROWN, *supra* note 66, at 336.

[FN73]. See Moritaka Hayashi, The 1995 Agreement on the Conservation and Management of Straddling and Highly Migratory Fish Stocks: Significance for the Law of the Sea Convention, 29 OCEAN & COASTAL MGT. 51 (1996) [hereinafter Hayashi I]; see also UNITED NATIONS, DIVISION FOR OCEAN AFFAIRS AND THE LAW OF THE SEA, OFFICE OF LEGAL AFFAIRS, THE LAW OF THE SEA: THE REGIME FOR HIGH-SEAS FISHERIES, STATUS AND PROSPECTS (1992) [hereinafter STATUS AND PROSPECTS].

[FN74]. See BURKE, *supra* note 8, at 1-2.

[\[FN75\]](#). See id.

[\[FN76\]](#). See id.

[\[FN77\]](#). LOS Convention, *supra* note 8, pt. V.

[\[FN78\]](#). See id. art. 57-58.

[\[FN79\]](#). See id. art. 77(4).

[\[FN80\]](#). See id. art. 56(1)(a), 61, 62.

[\[FN81\]](#). See id. art. 61(1).

[\[FN82\]](#). See id. art. 61(2).

[\[FN83\]](#). Id. art. 61(3). This obligation is qualified by the allowance of several considerations. See id.

[\[FN84\]](#). See id. art. 61(4).

[\[FN85\]](#). See id. art. 61(5).

[\[FN86\]](#). See id. art. 61(4). The coastal state is to take into consideration the effects on ecologically associated species "with a view to maintaining or restoring them above levels at which their reproduction may become seriously threatened." Id. The referenced population levels are presumably lower than the levels for targeted species which are to be at a level which can produce the maximum sustainable yield. See id. at art. 61(3).

[\[FN87\]](#). Id. art. 62(1).

[\[FN88\]](#). See id. art. 62(2), (3).

[\[FN89\]](#). See id. art. 62(4).

[\[FN90\]](#). See id. art. 65. The high seas provisions of the Convention allows a greater degree of protection for marine mammals than that provided for in Articles 61 and 62. See id. art. 120.

[\[FN91\]](#). Coastal states need not subject themselves to compulsory, binding dispute settlement if the dispute relates to the exercise of a coastal state's sovereign rights over the living resources of the EEZ. See id. art. 297(3).

[\[FN92\]](#). See id. art. 63(2).

[\[FN93\]](#). See id. Article 63 has two paragraphs, the first dealing with stocks that migrate between the EEZs of two or more states, and the second with stocks that migrate from the EEZ of one state to the high seas. The language of both paragraphs is essentially the same, except the duty to seek agreement with respect to transboundary stocks refers to measures to ensure conservation and development, but without prejudice to other provisions of Part V. Id. art. 63(1). Paragraph (2) imposes a duty on the coastal state and fishing states to seek agreement on measures necessary for conservation in the adjacent area. Missing from the text is any indication of the rights or responsibilities of states in the event there is no agreement on conservation measures. At the Third U.N. Conference on the Law of the Sea (UNCLOS III), a group of coastal states led by

Argentina and Canada made an effort to amend the language of the proposed convention. See Bruce N. Shibles, [Implications of an International Legal Standard for Transboundary Management of Gulf of Maine-Georges Bank Fisheries Resources](#), 1 OCEAN & COASTAL L.J. 1, 21-23 (1994). Their proposed amendments would have authorized the coastal state to regulate the straddling stock on the high seas in the event of no agreement. A compromise proposal was offered at the final negotiating session of UNCLOS III, in April, 1982, that would have authorized the Law of the Sea Tribunal to determine the necessary conservation measures in the event of a failure to agree. The proponents of the compromise did not insist on a vote on the amendment, however, at the urging of the Conference President who sought to keep a number of sensitive issues and other compromises from unraveling in the final hours of the negotiations. CLYDE SANGER, ORDERING THE OCEANS: THE MAKING OF THE LAW OF THE SEA 151-52 (1986); see also Edward L. Miles & William T. Burke, Pressures on the United Nations Convention on the Law of the Sea of 1982 Arising From New Fisheries Conflicts: The Problem of Straddling Stocks, 20 OCEAN DEV'T & INT'L L. 343, 344 (1989).

[FN94]. See LOS Convention, *supra* note 8, art. 87(1)(e).

[FN95]. See *id.* art. 116. The interests of coastal states are those defined in Article 63(2) for straddling stocks and in Article 64 for highly migratory fish stocks.

[FN96]. See *id.* art. 118. The conservation duties of high seas fishing states are similar to those in the EEZ, i.e., to set allowable catch levels, adopt management measures to ensure stocks stay at levels that can produce MSY and to protect ecologically-related species from depletion, and to share scientific information. See *id.* art. 119; In taking conservation measures, states are required to take into consideration the effects on ecologically associated species. Status and Prospects, *supra* note 73, at 9. The high seas fisheries provisions thus rely in part on the effectiveness of regional bodies to conserve and manage high seas fish stocks. It was, however, the inability of regional fisheries organizations to enforce management measures that led to the development of the EEZ regime of coastal state control. See BURKE, *supra* note 8, at 19-20. At the negotiations, proposals were made to manage high seas fisheries internationally, including the suggestion that they be managed through the International Seabed Authority that would be established to oversee deep seabed mining. See STATUS AND PROSPECTS, *supra* note 73, at 7. Disputes concerning high seas fisheries including straddling stocks, however, are not excluded from the compulsory dispute settlement provisions of the LOS Convention. See *id.* at 12.

[FN97]. See generally, Peter Weber, Net Loss: Fish, Jobs, and the Marine Environment 13-15 (1994) (World-watch Paper No. 120).

[FN98]. See BROWN, *supra* note 66, at 225.

[FN99]. See DE FONTAUBERT ET AL., *supra* note 61, at 23.

[FN100]. See, e.g., Claudia J. Carr, The Legacy and Challenge of International Aid in Marine Resource Development, in FREEDOM FOR THE SEAS IN THE 21ST CENTURY: OCEAN GOVERNANCE AND ENVIRONMENTAL HARMONY 340, 345-47 (Jon M. Van Dyke et al., eds., 1993).

[FN101]. See generally, Evelyne Meltzer, Global Overview of Straddling and Highly Migratory Fish Stocks: The Nonsustainable Nature of High Seas Fisheries, 25 OCEAN DEV'T & INT'L L. 255 (1994).

[FN102]. See Report of the Secretary-General to the United Nations General Assembly, Large-Scale Pelagic Driftnet Fishing and Its Impact on the Living Marine Resources of the World's Oceans and Seas, U.N. Doc. A/45/663 (1990).

[FN103]. See NORSE, *supra* note 2, at 110-11.

[FN104]. See *supra* Part III.B.

[FN105]. See generally BURKE, *supra* note 8.

[FN106]. See *id.*

[FN107]. The LOS Convention is also ill-equipped to deal with marine biodiversity in sea floor areas beyond the continental margin. Some observers have suggested recently that the deep seabed's greatest value may lie in the genetic resources in the species found there. The specter of unconstrained prospecting for biomedical or biotechnological products there has now replaced the fear of a gold rush to take the mineral deposits there. The Convention has no mechanism for the international development of the biological resources of the deep seabed. Part XI on the deep seabed mining regime includes environmental standards for mining, but does not apply to "mining" biological resources for their genetic materials. See Patricia Kraniotis & Roger B. Griffis, *International Law: Implications for Exploitation of Deep-Sea Benthic Biodiversity*, 9 OCEANOGRAPHY 100, 101 (1996); Lyle Glowka, *The Deepest of Ironies: Genetic Resources, Marine Scientific Research, and the Area*, 1996 Ocean Y.B. 154.

[FN108]. The Convention requires parties to cooperate on conservation and sustainable use of biodiversity outside national jurisdiction, working through competent international organizations as appropriate. Biodiversity Convention, *supra* note 7, art. 5. At the second Conference of the Parties, the Convention Secretariat was directed to work with experts listed on a Roster of Experts on Marine and Coastal Biodiversity to "[r]eview the mandates and activities under international agreements that affect marine and coastal biological diversity, and develop analyses that can be offered by the Conference of the Parties to the relevant institutions as to the implications of the Convention on Biological Diversity for these activities." DE FONTAUBERT ET AL., *supra* note 61, at 58 (quoting COP2II.10, Annex II.1.c.). The parties also made available the scientific and technical advisory body to the FAO to help develop guidelines under the Code of Conduct for Responsible Fishing. See *id.* at 60.

[FN109]. See Kimball, *supra* note 40, at 763.

[FN110]. See Weber, *supra* note 97, at 13-15.

[FN111]. *Convention on Conservation and Management of Pollock Resources in the Central Bering Sea*, June 16, 1994, reprinted in [34 I.L.M. 67](#) (1985). See Walter V. Dunlap, *Bering Sea -- the Donut Hole Agreement*, 10 INT'L J. MARINE & COASTAL L. 114 (1995).

[FN112]. *Fish Stocks Agreement*, *supra* note 10.

[FN113]. United Nations, Food and Agriculture Organization, *Code of Conduct for Responsible Fishing* (1995). National Oceanic and Atmospheric Administration, [Draft Implementation Plan for the International Code of Conduct for Responsible Fisheries](#), 61 FED. REG. 38703, 38704 (1996).

[FN114]. United Nations, Food and Agriculture Organization, *Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas*, Nov. 24, 1993, Treaty Doc. 103-24, reprinted in [33 I.L.M. 968](#) (1994).

[FN115]. See, e.g., *Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific*, Nov. 24, 1989, Treaty

Doc. 102-7, reprinted in [29 I.L.M. 1449](#) (1990); Inter-American Tropical Tuna Convention, Agreement for the Reduction of Dolphin Mortality in the Eastern Tropical Pacific Ocean, June, 1992 (La Jolla Agreement), reprinted in [33 I.L.M. 936](#) (1994).

[\[FN116\]](#). Fish Stocks Agreement, *supra* note 10, art. 5. See discussion *infra* at Part IV.B.

[\[FN117\]](#). See *id.*, *supra* note 10, art. 7.

[\[FN118\]](#). See Douglas Day, Tending the Achilles' Heel of NAFO: Canada Acts to Protect the Nose and Tail of the Grand Banks, 19 *MARINE POL.* 257, 258 (1995). For general background on the Conference, see Donald M. Grzybowski et al., [A Historical Perspective Leading Up to and Including the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks](#), 13 *PACE ENVTL. L.REV.* 49 (1995); Mark Christopherson, Toward a Rational Harvest: The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species, 5 *MINN. J. GLOBAL TRADE* 357 (1996); Julie R. Mack, Comment, [International Fisheries Management: How the U.N. Conference on Straddling and Highly Migratory Fish Stocks Changes the Law of Fishing on the High Seas](#), 26 *CAL. WEST. INT'L L.J.* 313 (1996).

[\[FN119\]](#). See Day, *supra* note 118. NAFO manages fish stocks of the Northwest Atlantic Ocean outside the areas of national jurisdiction. This brings within its purview, stocks that straddle the high seas and Canada's Exclusive Economic Zone. The contracting parties to NAFO are Bulgaria, Canada, Cuba, Denmark (on behalf of the Faroe Islands and Greenland), Estonia, the European Union, Iceland, Japan, Latvia, Lithuania, Norway, Poland, Romania, Russia, and the United States. The United States became a party in 1995, with the enactment of the Northwest Atlantic Fisheries Convention Act of [1995, P.L. 104-43, Title II, 109 Stat. 397](#) (Nov. 3, 1995), codified at [16 U.S.C. 5601](#) et seq.

[\[FN120\]](#). UNCED was preceded and followed by several international fisheries conferences, including the Conference on Conservation and Management of the Living Resources of the High Seas, St. John's, Newfoundland, Canada, Sept. 5-7, 1990; the Meeting of the Group of Technical Experts on High-Seas Fisheries, held at the United Nations Headquarters in July, 1991; and the International Conference on Responsible Fishing, held at Cancun, Mexico in May, 1991. See WILLIAM T. BURKE, *INTERNATIONAL LAW OF THE SEA: DOCUMENTS AND NOTES* 3-98 (1995) (Conclusions of the St. John's, Newfoundland Conference on the Conservation and Management of the Living Resources of the High Seas); *STATUS AND PROSPECTS*, *supra* note 73.

[\[FN121\]](#). UNCED's Agenda 21 called for a conference that would promote "effective implementation of the provisions of the United Nations Convention on the Law of the Sea on straddling fish stocks and highly migratory fish stocks The work and results of the conference should be fully consistent with the provisions of the United Nations Convention on Law of the Sea, in particular the rights and obligations of coastal States and States fishing on the high seas." UNCED, *supra* note 13, at para. 17.49.

[\[FN122\]](#). See G.A. Res. 47/192, U.N. GAOR, 47th Sess., at annex.

[\[FN123\]](#). See Alison Rieser, American Society of International Law Observer Comments on UN Conference on Straddling and Migratory Fish Stocks, *ASIL NEWSLETTER*, Nov., 1993; see also, Moritaka Hayashi, United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks: An Analysis of the 1993 Sessions, 1994 *Ocean Y.B.* 20 [hereinafter Hayashi II]; David A. Balton, Strengthening the Law of the Sea: The New Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks, 27 *OCEAN DEV'T & INT'L L.* 125, 133-34 (1996).

[\[FN124\]](#). See, e.g., A.C. de Fontaubert, The Politics of Negotiation at the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks, 29 *OCEAN & COASTAL MGT.* 79 (1996); Chad Carpenter, et al., A Summary

Report on the Fifth Substantive Session of the Straddling Fish Stocks and Highly Migratory Fish Stocks Conference, 7 EARTH NEGOTIATIONS BULLETIN, No. 54 (Aug. 7, 1995). The negotiations were often quite tense, as the positions of the coastal states group and high seas fishing states group were very far apart for most of the sessions. See Balton, *supra* note 11, at 133-35.

[FN125]. Principle 15, The Rio Declaration on Environment and Development, June 13, 1992, A/[CONF.151/5/REV.1](#). Chapter 17 of Agenda 21, in subchapter C, on the sustainable use and conservation of marine living resources of the high seas, calls for national and international action to address the inadequacy of high seas fisheries management and improve cooperation through a number of specific objectives. Curiously, the subchapter does not appear to refer to the precautionary approach or principle as a basis for management nor does it mention marine biodiversity specifically. It does, however, call for protection of endangered species, the preservation of habitats and ecologically sensitive areas, the minimization of incidental catch, the prohibition of destructive fishing practices, and the reduction of waste and discards. UNCED, *supra* note 13, at Chapter 17C. See discussion *infra* at Part IV B.

[FN126]. See Day, *supra* note 118.

[FN127]. See *id.*

[FN128]. NAFO Convention, *supra* note 119, art. XII.

[FN129]. FAO Code of Conduct, *supra* note 113.

[FN130]. An earlier draft of Article 6 provided that to give effect to their duty to cooperate, coastal states and high seas fishing states were required to "take into account the need for protecting biodiversity." Draft Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, Article 5, 23 August 1994 (on file with the author). The next draft of the Agreement changed the language to "shall ... protect biodiversity in the marine environment." Draft Agreement Prepared by the Chairman of the Conference, A/ [CONF.164/22/Rev.1](#), Apr. 11, 1995.

[FN131]. Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific, *supra* note 115.

[FN132]. GA Res. 46/215, U.N. GAOR, 46th Sess., Supp. No. 49, at 147, UN Doc. a/46/49 (1991), recommending termination of all large-scale pelagic driftnet fishing on the high seas, reprinted in [31 I.L.M. 241](#) (1992).

[FN133]. International Convention for the Regulation of Whaling, Dec. 2, 1946, 62 Stat. 1716, 161 U.N.T.S. 73 (entered into force Nov. 10, 1948). Parties to the Convention adopted a moratorium on commercial whaling in 1982, to take effect in 1986. International Whaling Commission, Thirty-Third Report of the International Whaling Commission 20-21 (1983) (paragraph 10(e) of the Schedule to the Convention), reprinted in Marian N. Leich, [Contemporary Practice of the United States Relating to International Law: Environmental Affairs](#), 79 AM. J. INT'L L. 431, 435 n.4 (1985).

[FN134]. See, e.g., Packwood-Magnuson Amendment to the Magnuson Fishery Conservation and Management Act, [16 U.S.C. 1821](#) (1994); Pelly Amendment to the Fisherman's Protection Act of 1967, [22 U.S.C. 1978](#) (1994), Marine Mammal Protection Act of 1972, [16 U.S.C. 1371\(a\)\(2\)](#) (1994), High Seas Driftnet Enforcement Act of 1990, [16 U.S.C. 1826a](#) (1994); see generally Richard J. McLaughlin, [UNCLOS and the Demise of the United States' Trade Sanctions to Protect Dolphins, Sea Turtles, Whales, and Other International Marine Living Resources](#), 22 ECOLOGY L.Q. 1 (1994).

[\[FN135\]](#). See supra Part III.A.

[\[FN136\]](#). The Agreement actually contains thirteen parts and two annexes. Fish Stocks Agreement, supra note 10. Parts not discussed directly in the text include Part VII, Requirements of Developing States, which is in effect an additional minimum standard for the regional or subregional fishing organizations. Articles 24-26 now define the duty to cooperate in conservation and management of high seas fish stocks to include an obligation to take account of the special requirements of developing states. *Id.* This includes devising management strategies that do not shift the burden of conservation onto developing states, avoiding adverse effects on and ensuring access to fisheries by small-scale fishworker and indigenous peoples, and taking account of the special vulnerability of developing states to the adverse consequences of overexploitation of fish stocks, especially those important to the nutritional needs of their populations. *Id.* art. 24. The other major and important section is Part VIII on the peaceful settlement of disputes. Article 29 allows states to refer technical issues to an ad hoc panel of experts for resolution, or to use the mechanisms for dispute settlement in Part XV of the LOS Convention, to settle conflicting interpretations of regional fisheries agreements, even if the disputants are not themselves parties to the Convention. *Id.* art. 30(2). If a dispute is referred to an international court or tribunal, that body is required to decide the issue applying the LOS Convention, the Fish Stocks Agreement, the relevant regional fisheries agreement, as well as "generally accepted standards for the conservation and management of living marine resources and other rules of international law not incompatible with the LOS Convention ..." *Id.* art. 30(5). The dispute settlement provisions provide a mechanism to force nations reluctant to accept regulatory measures at regional organizations to cooperate in establishing and adhering to conservation measures rather than use opting out clauses like Article XII in the NAFO Convention. See Lisa Speer & Sarah Chasis, *The Agreement on the Conservation and Management of Straddling and Highly Migratory Fish Stocks: An NGO Perspective*, 29 OCEAN & COASTAL MGT. 71,74 (1996). The United States has chosen the special arbitral tribunal under Annex VIII of the LOS Convention. See President William J. Clinton, *Message to the Senate Transmitting the Convention on the Law of the Sea Fisheries Agreement*, 32 Weekly Comp. Pres. Doc. 344 (Feb. 20, 1996).

[\[FN137\]](#). See Fish Stocks Agreement, supra note 10, at pt. II, art. 5-7.

[\[FN138\]](#). See *id.* art. 5(c) & 6.

[\[FN139\]](#). See *id.* art. 5(d) & (e).

[\[FN140\]](#). See *id.* art. 5(g).

[\[FN141\]](#). See *id.* art. 3(1) & (2). See *infra* Part IV.B.

[\[FN142\]](#). Fish Stocks Agreement, supra note 10, pt. III, art. 8-16.

[\[FN143\]](#). See *id.* pt. IV, art. 17. States that do not join regional fisheries organizations or arrangements, and which do not agree to apply the applicable international regulations, are still obligated to cooperate under the LOS Convention and the Agreement. In this case, the duty requires states to not authorize fishing vessels flying their flags to operate in fisheries subject to international management. See *id.* art. 17(2). If they fail to do so, member states of regional fishing bodies or arrangements are authorized to take measures, consistent with the Agreement and international law, "to deter activities of such vessels which undermine the effectiveness of subregional or regional conservation and management measures." *Id.* art. 17(4).

[\[FN144\]](#). See *id.* art. 8(4).

[FN145]. Compare LOS Convention, *supra* note 8, art. 116-19. See also Hayashi I, *supra* note 73, at 58-59.

[FN146]. See Fish Stocks Agreement, *supra* note 10, art. 8(5).

[FN147]. See *id.* art. 10.

[FN148]. See *id.* art. 10(j) & 12.

[FN149]. *Id.* art. 13.

[FN150]. See *id.* art. 18.

[FN151]. See *id.* art. 18(1).

[FN152]. See *id.* art. 18(2). These controls must include licensing, regulation, a national registry of licensed fishing vessels, gear marking, collection of data on fishing effort, catch and bycatch, observers and inspections, surveillance and monitoring of vessels, regulation of transshipment, and conservation and management regulations. See *id.* art. 18(3).

[FN153]. See Day, *supra* note 118.

[FN154]. See Fish Stocks Agreement, *supra* note 10, art. 19.

[FN155]. See *id.* art. 20(6).

[FN156]. See *id.* art. 20(7). This authority is "without prejudice to" Article 111 of the LOS Convention, which authorizes coastal states to engage in hot pursuit of vessels suspected of violating national regulations, where the pursuit begins in either the internal waters, the territorial sea, or contiguous zone of the coastal state. LOS Convention, *supra* note 8, art. 111.

[FN157]. Fish Stocks Agreement, *supra* note 10, art. 21(1) & (2).

[FN158]. See *id.* art. 21(3). If they do not, state members are still entitled to act as inspecting states as long as they follow the basic procedures outlined in Article 22 of the Agreement.

[FN159]. See *id.* art. 21(7).

[FN160]. A serious violation would include fishing without a license or a quota, using prohibited fishing gear, directing fishing on a stock subject to a fishing moratorium, fishing during a closed season or in a closed area, failing to keep required records, or committing multiple violations constituting a disregard of the conservation and management measures. See *id.* art. 21(11).

[FN161]. See *id.* art. 21(8).

[FN162]. *Id.* pmbl. The Preamble also indicates a commitment to responsible fisheries. *Id.*

[FN163]. See Fish Stocks Agreement, *supra* note 10, art. 5(g). Also relevant is the duty to promote and conduct scientific research and development of technology in support of fisheries conservation and management. Now that conservation includes protection of marine biodiversity, this duty would extend to increasing the understanding of the impacts of fishing on biodiversity and making technological and other changes to reduce those impacts.

[\[FN164\]](#). See id. art. 5(d).

[\[FN165\]](#). See id. art. 5(e).

[\[FN166\]](#). See id. art. 5(f).

[\[FN167\]](#). Id. (emphasis added). The duty to use these measures is limited "to the extent practicable." See Speer & Chasis, *supra* note 136, at 73.

[\[FN168\]](#). Fish Stocks Agreement, *supra* note 10, art. 5(c), 6 & annex II.

[\[FN169\]](#). For a comparison of the precautionary principle's role in marine pollution control doctrine and fisheries management, see John M. MacDonald, *Appreciating the Precautionary Principle as an Ethical Evolution in Ocean Management*, 26 OCEAN DEV'T & INT'L L. 255 (1995).

[\[FN170\]](#). Fish Stocks Agreement, *supra* note 10, art. 6(1). See Grant J. Hewison, *The Precautionary Approach to Fisheries Management: An Environmental Perspective*, 11 INT'L J. MARINE & COASTAL L. 301 (1996); see also *supra* note 163.

[\[FN171\]](#). Fish Stocks Agreement, *supra* note 10, art. 6(2).

[\[FN172\]](#). The Agreement's definition of the precautionary approach to preventing overexploitation is not without its critics, suggesting that NGO observers at regional fisheries organizations will have to be vigilant to ensure the objectives of the Agreement are met in individual regional or fisheries contexts. See Hewison, *supra* note 170, at 308-311.

[\[FN173\]](#). See Fish Stocks Agreement, *supra* note 10, art. 6(3)(c), (d) & (5). The final language of the Fish Stocks Agreement, however, is arguably weaker than in the draft agreement. In Article 6(3)(c), the language "ecologically related species" was replaced by "associated and dependent species," presumably to track more closely the language in the LOS Convention, and the phrase "States shall consider the impacts of fishing on associated ecosystems" was removed altogether. See Hewison, *supra* note 170, at 311 n.38.

[\[FN174\]](#). See Fish Stocks Agreement, *supra* note 10, art. 6(3)(d).

[\[FN175\]](#). Id.

[\[FN176\]](#). See id. art. 6 & annex II.

[\[FN177\]](#). Id. art. 6(4).

[\[FN178\]](#). Id. art. 6(6).

[\[FN179\]](#). See id. art. 6(7).

[\[FN180\]](#). See Balton, *supra* note 11, at 134.

[\[FN181\]](#). See Fish Stocks Agreement, *supra* note 10, art. 7.

[\[FN182\]](#). See id. pt. VIII, art. 27-32. Article 32 incorporates the exclusion from compulsory dispute settlement of issues pertaining to the sovereign rights of coastal states with respect to living resources in the EEZ or their exercise as excluded

under the LOS Convention's dispute settlement provisions. LOS Convention, *supra* note 8, art. 297(3).

[FN183]. In the exercise of its sovereign rights for the purpose of exploring and exploiting, conserving, and managing straddling fish stocks and highly migratory fish stocks within areas of national jurisdiction, the coastal state shall apply *mutatis mutandis* the general principles enumerated in Article 5. See Fish Stocks Agreement, *supra* note 10, art. 3(2). Article 5 requires states to apply the precautionary approach in accordance with Article 6.

[FN184]. *Id.* art. 3(1).

[FN185]. See generally Boehlert, *supra* note 3.

[FN186]. Fish Stocks Agreement, *supra* note 10, annex II.

[FN187]. See *id.* art. 8(3), 11 & 12.

[FN188]. FAO International Code of Conduct for Responsible Fishing, *supra* note 113.

[FN189]. *Id.*

[FN190]. United Nations, Food and Agriculture Organization, *supra* note 114, at 968.

[FN191]. The FAO Code and the Straddling Stocks Agreement were negotiated over the same time period, from April 1993 through August 1995; thus the wording on the same or similar issues is virtually the same or identical. See the language on the precautionary approach; the impact of fishing on ecologically related species; the minimization of pollution, waste, discards, catch by lost or abandoned fishing gear, and the catch of non-target species; and the prevention or elimination of overfishing and excess fishing capacity.

[FN192]. The National Oceanic and Atmospheric Administration's National Marine Fisheries Service has prepared an implementation plan for the Code and requested public comments. See NOAA, Notice of Availability; Request for Comment on [Draft Implementation Plan for the International Code of Conduct](#), 61 Fed. Reg. 38,703 (July 25, 1996).

[FN193]. See, for example, the United States law implementing the FAO Compliance Agreement for U.S. citizens and vessels. High Seas Fisheries Compliance Act, [Pub.L. No. 104-43](#), 109 Stat. 397 (1995) (codified at [16 U.S.C. 5601](#) et seq.).

[FN194]. See DE FONTAUBERT ET AL., *supra* note 61, at 60.

[FN195]. Fish Stocks Agreement, *supra* note 10, art. 35.

[FN196]. See United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks, FAO Report of the Technical Consultation on High Seas Fishing, A/[CONF.164/INF/2 \(May 14, 1993\)](#), at 14-15.

[FN197]. See The Precautionary Approach to Fisheries With Reference to Straddling Fish Stocks and Highly Migratory Fish Stocks, U.N. Doc. A/[CONF.164/INF/8 \(1994\)](#); Reference Points for Fisheries Management: Their Potential Application to Straddling and Highly Migratory Resources, U.N. Doc. A/[CONF.164/INF/9 \(1994\)](#).

[FN198]. See Hayashi I, *supra* note 73, at 56; Hayashi II, *supra* note 123, at 37-38; Hewison, *supra* note 170, at 308-11.

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