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The Promise of Johannesburg: Fisheries and the World Summit on Sustainable Development

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ARTICLE

THE PROMISE OF JOHANNESBURG: FISHERIES AND THE WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT

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INTRODUCTION

As the ancient proverb says, "Give a man a fish and he will eat for a day. Teach a man to fish and he will eat for the rest of his life." But teaching a man to fish sustainably is another matter entirely.

The recent and dramatic decline of world fish stocks, and the international response to the world fish crisis, was one of the key issues addressed at the World Summit on Sustainable Development (hereinafter "WSSD" or "World Summit") held in Johannesburg, South Africa in September 2002.[1] Attended by

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[1] World Summit on Sustainable Development, 2002 (hereafter "WSSD"), *See generally, www.johannesburgsummit.org,* and *Report of the World Summit on Sustainable*

tens of thousands of participants from 191 countries, the WSSD was convened by the United Nations to promote the ambitious goals set forth ten years earlier at the United Nations Conference on Environment and Development (hereinafter "UNCED" or "Earth Summit") in Rio de Janeiro objectives of "poverty eradication, changing unsustainable patterns of production and consumption, and protecting and managing the natural resource base of economic and social development."[2]

This article briefly examines the world fish crisis and the factors that drive overuse of ocean resources. It identifies some of the major trends in ocean fishing that have led to overexploitation and briefly reviews the weaknesses of international fishery arrangements that led to WSSD. It describes and evaluates the outcomes of the WSSD and suggests some measures that can and must be taken to the address the crisis facing world ocean fish stocks.

In many ways, the WSSD lacked the dramatic outcomes of the 1992 Earth Summit in Rio.[3] No new international agreements or treaties were concluded, and there was considerable disappointment by the failure to meaningfully address poverty eradication, health, climate change, renewable energy and other critical issues. But ocean fisheries fared well in Johannesburg when compared to the lack of significant progress on many of these other issues. Important targets and timetables were established to restore depleted fish stocks, manage fishing capacity, prevent illegal and unregulated fishing, and create marine protected areas. In so doing, the WSSD reflects a global consensus that specific actions are urgently needed to sustain world fish stocks and ocean resources.

Development, available at http://ods-dds-ny.un.org/doc/UNDOC/GEN/N02/636/93/PDF/N0263693.pdf (last visited March 29, 2004).

[2] United Nations Conference on Environment and Development (1992) [hereinafter "UNCED"]. The quote is from the WSSD, Plan of Implementation, *Id.* at Paragraph 2.

[3] The Earth Summit brought together the largest collection of world leaders ever to focus on the state of the global environment and its sustainable use. Center for Marine Conservation, *No Place to Hide: Highly Migratory Fish in the Atlantic Oceana*, Ellen Peel (1995) at 116 [hereinafter "CMC"]. Three major agreements were adopted at UNCED: The Rio Declaration on Environment and Development (UN Doc. A/CONF.151/26 (Vol. I), reprinted in 31 I.L.M. 874 (1992), Agenda 21 (UN Doc. A/CONF.151/26 (Vol. I-III) (1992) and the Statement of Forest Principles. Two conventions were also opened for signature: the Convention on Biological Diversity (31 I.L.M. 818 (1992) and the Framework Convention on Climate Change (UN Doc. A/AC.237/18, reprinted in 31 I.L.M. 848 (1992)).

II. THE WORLD FISH CRISIS

A. THE WORLD'S LARGEST COMMONS

In *The Tragedy of the Commons,* Garrett Hardin relates the parable of the so-called "rational herder," who grazes more and more cattle and increases profits without regard to the effects on the common pasture.[4] Eventually the pasture is overgrazed and ruined. As Hardin notes:

> Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. *Freedom in a commons brings ruin to all.* . . . (emphasis added)[5]

It takes little imagination to see the oceans as the world's largest commons.[6] From Roman times, and before, up to the end of World War II, the dominant legal concept regarding the right to fish was the law of capture; i.e., whoever caught it, owned it.[7] Since the capacity of the oceans was believed to be inexhaustible, the number of fish taken was not considered to be a serious limitation.[8] Moreover, the costs of removing fish from the ocean are low compared to other extractive activities such as logging, mining, or oil and gas drilling. In the oceans' commons, the externalities or costs are paid by all while profits accrue to a few. Therefore, it is in each fisher's interest to catch as many fish as possible without regard to the oceans' finite resources. This scenario, like the common pasture, sows the seeds of overexploitation and ruin.

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[4] Garrett Hardin, *The Tragedy of the Commons,* 168 Science 1243 (1968).

[5] *Id.* at 1244.

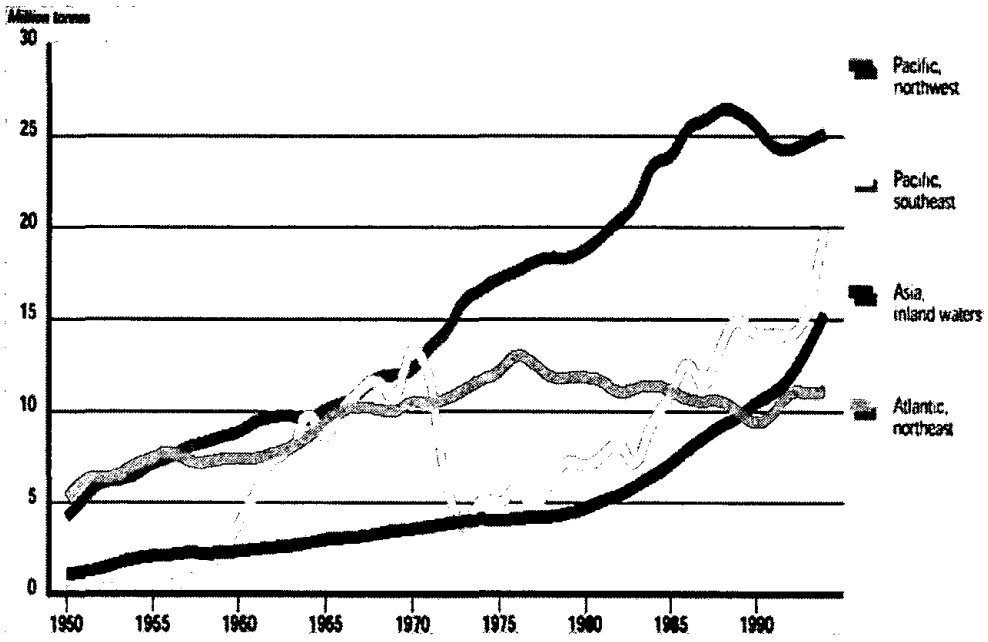
[6] A commons can be described as "resources held in common by a group of people, all of whom have access and who derive benefit with increasing access." Joanna Burger, *The Tragedy of the Commons,* Environment, December 1998.

[7] R.P. Anand, *Changing Concepts of Freedom of the Seas: A Historical Perspective,* in Van Dyke, *et al.*, Freedom for the Seas in the Twenty-First Century, 74-5.

[8] "I believe ... that probably all the great sea fisheries, are inexhaustible..." Thomas Huxley, Inaugural Address, Fisheries Exhibition (1883) vol. 4:1-22. The Fisheries Exhibition Literature, London. This sentiment has been echoed often over the years.

B. WHERE ARE ALL THE FISH?

Fish are the world's single largest source of animal protein exceeding beef, sheep, poultry, and eggs.[9] Fishing is also an important economic activity, contributing $28.6 billion dollars to the United States economy in 2001.[10] Thirty-five million people are directly engaged in fishing or fish farming worldwide, and the world fishing fleet exceeds 4 million vessels.[11] It is therefore not surprising that the amount of fish caught (production) rose dramatically over the last fifty years as indicated by the U.N. Food and Agriculture Organization (hereinafter "FAO") in the figure below.[12]



The chart above shows how, with the advent of industrial fishing practices, production increased over six-fold from 1950's

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[9] Global Marine Biological Diversity, Elliott Norse (ed), Island Press (1993) at 17.

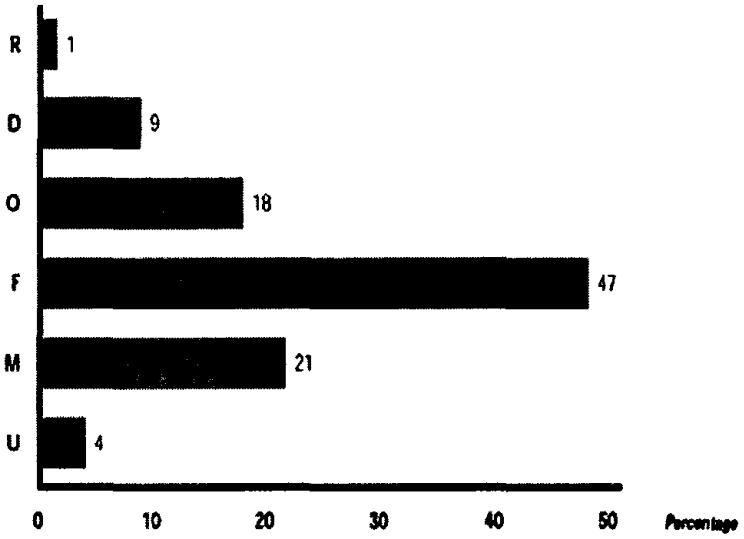
[10] *America's Living Oceans, Charting a Course for Sea Changes*, Report to the Nation, Recommendations for a New Ocean Policy, Pew Oceans Commission, May 2003, pg., 35 (hereinafter "Pew Oceans Commission"), *available at* www.pewoceans.org/oceans/oceans_report.asp (last visited March 29, 2004).

[11] *The State of World Fisheries and Aquaculture, 2002*, FAO, Fisheries Department, www.fao.org/docrep/005/y7300e/y7300e04.htm#P40_12993.

[12] *The State of World Fisheries and Aquaculture, 1996*, FAO, Fisheries Department, *available at* www.fao.org/DOCREP/003/W3265E/w3265e07.jpg (last visited March 29, 2004).

to the 1990's.[13] This dramatic increase in production has taken its toll and threatens the sustainability of world fish stocks. In the last decade fish production has leveled off and may actually be declining.[14] As shown in the chart below, seventy-five percent of fish stocks are now at levels at or above sustainable amounts; i.e. stocks that are depleted, overexploited, fully exploited, or recovering.[15]

FIGURE 37
The state of stocks in 1999



Note: R = recovering, D = depleted; O = overexploited; F = fully exploited; M = moderately exploited; U = underexploited

Source: FAO

[13] Predicting fish stocks based upon total landings is a precarious proposition. It is a little like estimating the population of a city based upon the murder rate, and ignores fish that are incidentally killed as "bycatch" (twenty-five percent of global landings), and illegal, unreported and unregulated fisheries. Thus total moralities from fishing are likely to be vastly under-reported.

[14] Reg Watson and Daniel Pauly, "Systematic Distortions in World Fisheries Catch Trends," *Nature*, Nov. 29, 2001, at 534-536. Using computer models to correct for inaccurate fish-catch reports, the authors show that the global fish catch, which averaged close to 100 million tons for the past decade, may have actually been declining by as much as 600,000 tons annually for the past five-ten years.

[15] *The State of World Fisheries and Aquaculture, 2000*, FAO, Fisheries Department, *available at* www.fao.org/DOCREP/003/X8002E/x8002e06.htm#P12 (last visited March 29, 2004). Stocks that are fully exploited are on the brink of being overfished and have no margin for error for inaccurate reporting of catch, waste and bycatch, ever more efficient gear, or over-capacity of fishing fleets. *Id.*

The urgency of the world fish crisis is underscored by a recent study showing that "the global ocean has lost more than ninety percent of its large predatory fishes," species such as tuna, billfish, sharks and swordfish.[16] The study shows that modern industrial fishing practices have become so efficient that it typically takes only fifteen years to catch eighty percent of particular species. The study is the first analysis to show general pronounced declines of entire communities of fish across widely varying ocean ecosystems, clearly dispelling the notion of the unlimited capacity of the sea. The potential ecosystem effects of removing ninety percent of large predators from the open ocean are extremely troublesome, chiefly because such declines are so widespread and difficult, if not impossible, to reverse.[17] Moreover, coastal ecosystem functions and structures that have lost large predatory fishes, mammals, and reptiles show marked and profound negative changes.[18]

Specific examples of depleted fish stocks abound. Bluefin tuna populations in the southern Pacific and Indian Oceans are estimated to be two percent of 1960 populations.[19] Cod stocks, once so abundant that early explorers marveled that they needed only to drop a bucket off the boat to catch them, crashed in 1978 and will need to remain closed for another ten to fifteen years for the stock to support the pre-1950 catch levels in Atlantic Canada.[20] Depleted cod and other groundfish stocks are costing New Englanders approximately 14,000 jobs and $350 million annually in gross income.[21] Pollock, used as a substitute for cod, is now also drastically depleted.[22] Atlantic halibut is all but commercially extinct, haddock was declared commer-

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[16] Ransom A. Myers and Boris Worm, *Rapid worldwide depletion of predatory fish communities*, Nature, Vol. 426, at 280-283, May 2003.

[17] *Id.* at 282.

[18] Jackson, J.B., et al., *Historical overfishing and the collapse of coastal ecosystems*, 293 Science, 629-638 (2001).

[19] *See* http://archive.greenpeace.org/comms/97/ocean/press/sept09.html (last visited March 29, 2004). *See also infra* note 145 and accompanying text.

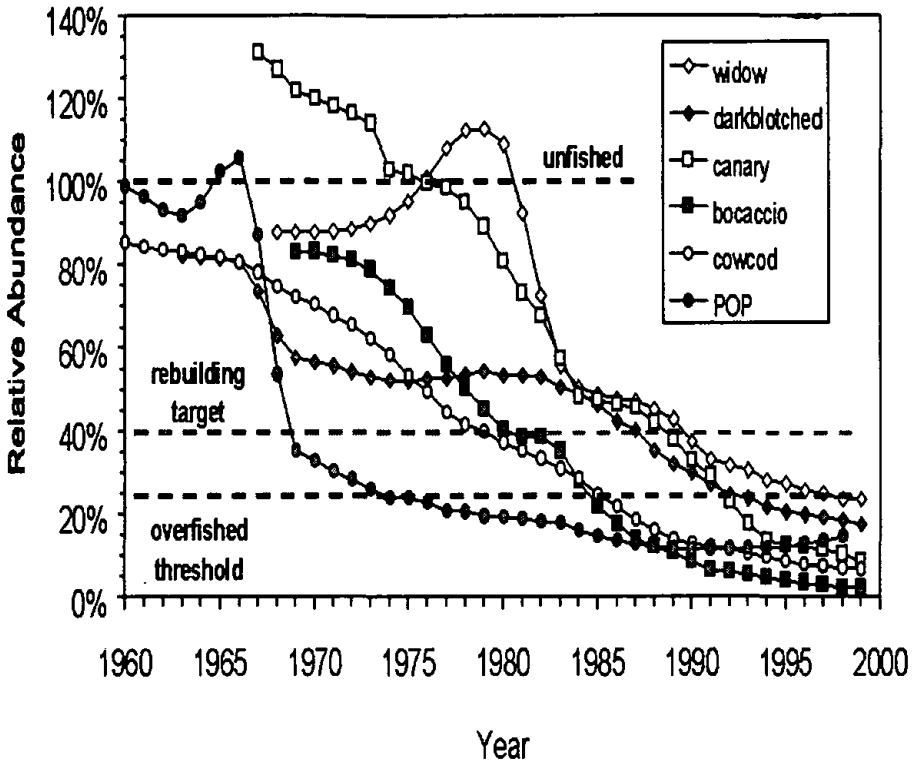
[20] Mark Kurlansky, *Cod, A Biography of the Fish That Changed the World*, Penguin Books 1997; *and see*, Craig S. Smith, *North Sea Cod Crisis Brings Call for Nations to Act*, N.Y. Times, November 7, 2002, at A-3.

[21] *New England Groundfish: From Glory to Grief*, Center for Marine Conservation (1996) at ix.

[22] Craig S. Smith, *North Sea Cod Crisis Brings Call for Nations to Act*, N.Y. Times, November 7, 2002, at A-3.

cially extinct in 1994,[23] and Atlantic salmon was listed as an endangered species in the Gulf of Maine.[24]

At one time U.S. fish stocks in the Pacific were touted as an example of exemplary fisheries management, but no more.[25] Of the sixteen species of Pacific groundfish for which there is data, nine are designated as overfished.[26] The population levels of some rockfish species, like bocaccio, decreased by ninety-eight percent (i.e. two percent of original biomass),[27] as noted in the graph below.[28]



[23] CMC, *supra* note 3, at 41.

[24] 65 Fed. Reg. 69469-69483 (Nov. 17, 2000).

[25] National Marine Fisheries Service, *Groundfish Bycatch Preliminary Programmatic Environmental Impact Statement,* November 2003 (hereinafter "Bycatch EIS"), *available at* www.nwr.noaa.gov/1sustfsh/groundfish/eis_efh/pseis/PrelimDEIS/Chapter3.pdf (last visited March 29, 2004).

[26] A species is overfished if the "rate or level of fishing mortality . . . jeopardizes the capacity of the fishery to produce the maximum sustainable yield on a continuing basis." 16 U.S.C. § 1802(29).

[27] 65 Fed. Reg. 221, 230 (Jan. 4, 2000).

[28] Bycatch EIS, *supra* note 25 at 3-14.

Other species, like cowcod, may take nearly a full century to rebuild.[29] Bocaccio and lingcod are so seriously overfished that they may be at risk of extinction.[30] As a result of this crisis, the National Marine Fisheries Service (hereinafter "NMFS") shut down the U.S. continental shelf from Canada to Mexico to bottom fishing for groundfish in 2002.[31]

There are also many examples of overfished foreign fish stocks. A three-year study by the World Fish Center indicates that fish stocks in the Philippines today are ten percent of what they were in the 1940's, and that an hour's effort of fishing in the Gulf of Thailand yields just under sixteen kg of fish compared to just over 140kg in 1966.[32] Orange roughy populations in New Zealand are decimated from overfishing, marbled rockcod are seriously depleted in the Southern Ocean,[33] and the International Union for the Conservation of Nature (hereinafter "IUCN") lists more than fifty species of sharks and rays on its Red List of Threatened Species.[34] According to the U.N. Atlas of the Oceans, the world's seventeen major fishing areas have "reached or exceeded their natural limits," and nine are in serious decline.[35]

Despite this evidence, the world fish crisis still has its skeptics. An association of seafood producers cited a list of U.S. fishery success stories in a letter to Congress in June 2003 to rebut the Pew Oceans Commission call for major reforms in

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[29] 66 Fed. Reg. 2338, 2351 (Jan. 11, 2001).

[30] The extinction of a marine fish species was once believed impossible. J.A. Musick, et al., *Marine, Estuarine, and Diadromous Fish Stocks at Risk of Extinction in North America,* American Fisheries Society, Vol. 25, No. 11, 6-30 (2000).

[31] National Marine Fisheries Service, Northwest Region, Coordinates for Rockfish Conservation Areas, Dec. 17, 2002, *available at* http://swr.nmfs.noaa.gov/news/RockfishConservationAreaCoordinates.pdf (last visited March 29, 2004). For a discussion of the impacts of this massive closure *see*: Tom Knudson, *State of Denial: Harvesting the Sea*, The Sacramento Bee, April 27, 2003, *available at* www.sacbee.com/static/live/news/projects/denial/ (last visited March 29, 2004); and Keith Easthouse, *Deep Trouble*, North Coast Journal, July 18, 2002.

[32] *See:* World Fish Center, *Sustainable Management of Coastal Fish Stocks in Asia*, Project Final Report (March 1998 - March 2001) available at www.worldfishcenter.org/trawl/activities/finalreport/finalreport.asp.

[33] Sustaining Marine Fisheries, Commission on Geosciences, Environment and Resources, Ocean Studies Board, National Research Council (1999).

[34] *See* www.redlist.org (last visited March 29, 2004).

[35] Food and Agriculture Organization, United Nations, *United Nations Atlas of the Oceans*, *available at* www.oceanatlas.org (last visited March 29, 2004).

U.S. fisheries management.[36] The letter claims that "robust fisheries conservation and utilization in the U.S., far from needing massive overhaul and reform, requires only minor adjustments to ensure that sustainable use remains the guiding principle for U.S. fisheries policy."[37] The vice president of marketing at the Red Lobster restaurant chain, one of the world's largest buyers of seafood, sees no "imminent crisis in the world's ability to supply seafood. I believe the free-market system is a fantastic regulator of natural resources like seafood."[38] Yet if the Outback Steakhouse restaurant chain had extended its 'Lobsterfeast' promotion from November to a full year, "it would have required the world's lobster harvest."[39]

As pressure to catch at historical levels grows, the pressure to capture fish that are too young to breed also grows.[40] Such conduct drastically reduces a stock's ability to reproduce, and the "ecological price we're paying for maintaining catch is getting higher and higher."[41] It also exacts significant economic costs; "[o]ne study indicates that 300,000 jobs and eight billion dollars in annual revenues have been lost because of overly aggressive fishing practices alone."[42]

C. FACTORS DRIVING THE WORLD FISH CRISIS

A number of factors drive the world fish crisis. Some are related to unsustainable fishing methods, and some are related

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[36] Letter from The Seafood Coalition to Members of Congress, June 2, 2003. The U.S. success stories include New England groundfish, scallops and Atlantic herring, stripped bass and summer flounder, shrimp, king and Spanish mackerel, Pacific sardines and swordfish, Alaskan crab, salmon, halibut and groundfish, and North Atlantic swordfish, *available at*, www.fishingnj.org/seafoodcoalitionletter.html(last visited March 29, 2004).

[37] *Id.* at 3.

[38] Andrew Dunn quoted in Nation's Restaurant News. Milford Prewitt, *Seafood Depletion Issue Pits Chefs' Boycotts vs. Opponents' Claims of 'Junk Science'*, Nation's Restaurant News, July 26, 1999.

[39] *Id.*

[40] Carl Safina, *Where Have All the Fishes Gone?* Issues in Science and Technology, Vol. X, No. 3 (1994) University of Texas at Dallas.

[41] Quote from Dr. Daniel Pauly. Janet Raloff, *How low will we go in fishing for dinner?(effect of fishing on food web)*, Science News, February 7, 1998 (hereinafter Raloff).

[42] Robert J. Wilder, et al., *Saving Marine Biodiversity*, Issues In Sci. & Tech. Online, Spring 1999, at 1, *available at* www.nap.edu/issues/15.3/wilder.htm (last visited March 29, 2004) (copy on file with the Law Review office).

to other human activities. We focus on overfishing, destructive fishing practices, and habitat destruction and pollution.

1. Overfishing

Overfishing occurs when fish are killed faster than they can reproduce, and the effects of overfishing on ocean ecosystems can be devastating.[43] According to nineteen prominent scientists, "ecological extinction caused by overfishing preceded all other human disturbance to coastal ecosystems, including pollution, degradation of water quality, and anthropogenic climate change."[44]

Overfishing since the middle of the last century has been the result of an explosion of fisheries technology, and a dramatic increase in the size and efficiency of the world's fishing fleet. During the 1950's-1960's, the fishing industry adapted various military technologies for hunting on the high seas; radar to navigate in total fog; sonar to detect schools of fish in deep ocean waters; electronic navigational aids such as Global Positioning Systems to return to sites where fish gather and breed; satellite weather maps to track water temperature fronts that indicate the likely location of fish; and tracker planes to spot fish.[45]

The number of fishing boats increased exponentially during the end of the Twentieth Century. Between 1970 and 1990, the world's industrial fishing fleet grew at twice the rate of the global catch, doubling the number and total tonnage of fishing vessels.[46] China's fishing fleet, for example, grew six-fold since 1979, controls thirty-eight percent of the world's 1,200,000 decked fishing boats, and catches three times that of the next biggest producer.[47]

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[43] The terms "overfishing" and "overfished" mean a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis. 16 USC § 1802(28).

[44] Jackson, J.B.C., et al., *Historical Overfishing and the Recent Collapse of Coastal Ecosystems*, 243 Science 629-638 (2001).

[45] Carl Safina, *The World's Imperiled Fish*, Scientific America, November 1995, at 4 (hereinafter "World's Imperiled Fish"), and International Maritime Satellite Organization (INMARSAT).

[46] World's Imperiled Fish, *supra* note 45, at 6.

[47] United States Information Service, February 3, 1999, EPF306.

The expansion and overcapacity of fishing fleets has been fueled by government subsidies. Fishing subsidies increased greatly after the extension of national exclusive economic zones (hereinafter "EEZ") to 200 miles.[48] The fishing industry incurred costs totaling $124 billion to catch seventy billion dollars worth of fish in 1994,[49] much of the deficit supported by massive government subsidies which have increased since then.[50] The Canadian government spent three dollars for every dollar earned by fisheries in the 1990's.[51] It is estimated that global fishing fleets are about 250 percent greater than needed to catch what can be sustainably harvested,[52] and that governments are subsidizing the fishing industry by fifteen to twenty billion per year, representing roughly twenty percent of the global catch.[53]

Subsidies take the form of low cost government loans, guarantees against default, tax breaks, and general services to assist the fishing industry.[54] Australia, for example, provides tax rebates to commercial fishing vessels for diesel fuel consumption, and Japan allows an additional depreciation of five years and sixteen percent for fishing boats, estimated to be worth about $4.2 billion annually to the fishing industry.[55] General services for fisheries research, management and enforcement activities, and infrastructure costs such as harbor improvements and dredging are often provided free or at a greatly reduced cost to the fishing industry.[56]

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[48] Dick Russell, *Vacuuming the Seas; Where Countries Collide*, E Magazine, July, 1996, at 28. One author states that the "200-mile limit was not seen in Canada, the United States, or anywhere else as a conservation measure, but rather as a protectionist measure for the national fisheries." Kurlansky, *supra* note 20, at 181.

[49] World's Imperiled Fish, *supra* note 46, at 6; Earth Action Network, January, 2000.

[50] World Wildlife Fund(WWF), *Government subsidies for fishing, available at* www.panda.org/about_wwf/what_we_do/marine/what_we_do/sustainable_fisheries/overfishing/subsidies.cfm (last visited Mar. 26, 2004); *see also* www.ieep.org.uk (last visited March 29, 2004).

[51] Kurlansky, *supra* note 20, at 178.

[52] *Id.* at 4.

[53] *Id.*, and Robert P. Steenblik and Paul F. Wallis, *Subsidies to Marine Capture Fisheries: The International Information Gap*, at 8, 15 (hereinafter Steenblik and Wallis).

[54] *Id.* at 8, 15.

[55] *Id.* at note 8.

[56] *Id.* at 16.

2. *Destructive Fishing Practices*

Advances in fishing gear technology, such as longlines and driftnets, have also greatly contributed to overfishing and destructive fishing practices. Each day, approximately five million baited hooks are set on 100,000 miles of longlines throughout the world's oceans making pelagic longline fishing "the world's most widespread hunting activity."[57] Up to fifty miles long and carrying thousands of hooks, longlines take significant numbers of non-target species compared with more selective fishing methods such as harpoons and rod and reel fishing. Longlines are a major reason that large predatory species like swordfish, bluefin and bigeye tuna have declined by as much as ninety percent during the past twenty years.[58] Non-target bycatch from longlines also take a wide variety of species classified as vulnerable and endangered by the IUCN including leatherback and loggerhead sea turtles, black footed albatross, and great white sharks.[59] It has been estimated that 65,000 albatross and other birds have drowned in the last twenty years due to the use of longlines,[60] and that longlines targeting swordfish are responsible for sixty to 100 percent of the bycatch of sea turtles, sea birds, and marine mammals in the U.S.[61]

Driftnets, two and one-half kilometers or more, drift with the currents and winds to entangle fish.[62] The largest driftnets can encircle a dozen 747 jumbo jets and catch 200 tons of fish per day. Large pelagic drift nets (exceeding 2.5 kilometers) are so deadly they were banned on the high seas by the United Nations in 1992 after it was determined that they killed forty-two million non-target species including sea birds and marine mammals.[63] Driftnets, however, are still allowed in many national EEZs.

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[57] Larry Crowder and Ransom Myers, *A Comprehensive Study of the Ecological Impacts of the Worldwide Pelagic Longline Industry,* 2002 at xi (on file with the authors) (hereinafter Crowder and Myers).

[58] Myers and Worm, *supra* note 16 at 280.

[59] Crowder and Myers, *supra* note 57 at 112.

[60] Green Peace, *Empty Seas, Empty Future*, *available at* archive.greenpeace.org/comms/97/ocean/report/bluefin.html (last visited Mar. 26, 2004).

[61] Crowder and Myers, *supra* note 57 at xiii.

[62] 16 U.S.C. § 1802(23).

[63] U.N. G.A., 46th Sess., U.N. Doc. A/RES/46/215 (79th plenary meeting, 20 Dec. 1991).

Bycatch is a major consequence of destructive fishing practices. Bycatch occurs when marine life are unintentionally captured and killed by commercial and recreational fisheries, because fishing gear and practices are not selective, and because target species exist in habitats occupied by a wide range of other species.[64] Bycatch includes non-target species caught in the course of fishing operations, species of the wrong size or quality, unobserved species killed by entanglement in lost or discarded fishing gear, and species like coral and sponges destroyed by nets dragged along the ocean floor during bottom trawling operations.

Approximately forty-four billion pounds of fish are discarded each year as bycatch in commercial fisheries, roughly twenty-five percent of the world's total landings.[65] This staggering figure does not even include unobserved bycatch, species incidentally captured but retained, or bycatch from recreational fisheries. Bycatch also does not technically include the hundreds of thousands of incidentally killed marine mammals, seabirds, and other non-fish species, such as the 400,000 dolphins killed annually by the eastern Pacific yellowfin tuna fishery during the 1970's and 1980's.[66] Nor does it include thirty percent of the global fish catch that is converted into fish meal to feed cattle, chickens, and farm-raised fish, or made into fertilizer and oil.[67] By whatever measure, the unnecessary waste of important natural resources from bycatch greatly contributes to the world fish crisis and destruction of ocean ecosystems.[68]

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[64] *The State of World Fisheries and Aquaculture, 1998*, FAO, Fisheries Department, *available at* www.fao.org/docrep/W9900E/w9900e03.htm#P8 (last visited March 29, 2004).

[65] FAO Fisheries, Fisheries Bycatch and Discards, Rome, Italy 17-20 March 1997, *available at* www.fao.org/docrep/meeting/W3862E.htm (last visited March 29, 2004). Alverson, Dayton L., *Discarding Practices and Unobserved Fishing Mortality in Marine Fisheries: An Update*, NMFS, April 29, 1998.

[66] The public outcry from dolphin deaths in the tuna fishery led to the so-called dolphin safe tuna labels and conservation measures which drastically reduced dolphin deaths during the past 10 years. Unfortunately, a byproduct of new fishing methods that avoid setting nets around dolphins was increased bycatch of other species such as billfish, sea turtles, and sharks. World's Imperiled Fish, *supra* note 45, at 8.

[67] Inter Press Service - Global Information Network, March 16, 1994; More than 35 million tons of fish are used for animal feed. NRC Report, *supra* note 33 at 19-35

[68] Larry B. Crowder and Seven A Murawski, *"Fisheries Bycatch: Implications for Management,"* 23.6 Fisheries Management 8-17 (1998).

Overfishing, whether from overcapacity or unsustainable fishing practices, results in the serial depletion of valuable fish species, called "fishing down the food chain."[69] Targeting underutilized species may be "less valuable" to humans, but they may be essential to the health of ocean ecosystems.[70] As noted by a prominent marine scientist, "by overfishing the top predators, we've eliminated the marine equivalent of lions and wolves and are moving towards the taking of rats, cockroaches, and dandelions."[71] But even the removal of a single species can have ripple effects throughout the marine ecosystem that we are just beginning to understand.[72]

3. *Habitat Destruction and Pollution*

Coral reefs provide shelter for nearly one-quarter of all known marine species and are home to over 4,000 species of fish and thousands of other forms of plant and animal life. Scientists estimate that more than one million species of plants and animals are associated with coral reef ecosystems,[73] and that coral reefs are second only to rainforests in the amount of biodiversity they contain. Yet only thirty percent of the world's coral reefs are in good condition. Human activities have already destroyed ten percent of the world's reefs. Thirty percent of the reefs that have not been destroyed are in critical condi-

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[69] Daniel Pauly, et al., *Fishing down the marine food webs,* 279 Science 860-863 (1998).

[70] Murwaski, S.A., *Definition of overfishing from an ecosystem perspective,* 57 ICES Journal of Marine Sciences 649-658 (2000).

[71] Raloff, *supra* note 41, quoting Elliot A. Norse of the Marine Conservation Biology Institute.

[72] For example, overfishing Atlantic cod in the Gulf of Maine during the 1920s caused a population explosion of sea urchins. Because urchins eat kelp, kelp forests in the Gulf of Marine were destroyed which in turn increased coastal erosion. Jackson, *supra* note 46. Similar declines among important kelp beds along the U.S. Pacific coast also occurred because of the removal of sea otters and other species that prey on sea urchins. Paul K. Dayton, et al., 2002, *Ecological Effects of Fishing in Marine Ecosystems of the United States,* Pew Oceans Commission, *available at* www.pewoceans.org/oceans/oceans_report.asp (last visited March 29, 2004), (hereinafter Dayton).

[73] International Coral Reef Network, Coral Reef Information: Why should I care?, *available at* www.coralreef.org/coralreefinfo/care.html (last visited Mar. 26, 2004).

tion, and sixty percent of the reefs may die in the next twenty to forty years if current mortality rates remain the same.[74]

The destruction and decline of coral reef ecosystems is a well known and documented phenomenon caused by a number of factors some directly related to destructive fishing practices, such as bottom trawling and fishing with dynamite and cyanide, while others are unrelated to fishing, such as climate change, coral bleaching, pollution, sedimentation, and dredging.[75]

What is less understood is that extremely fragile and ecologically important colonies of sea corals and sponges that exist deep in ocean waters are also in jeopardy.[76] Thousands of species of fish and invertebrates depend upon coral and sponge habitat, some thousands of years old, for feeding, breeding, and protection. New scientific studies show that these habitats are crucial for fisheries, fish species, and healthy ecosystems, and that the disruption and destruction of these communities could devastate ocean ecosystems. Due to their longevity and slow growth, deep sea coral and sponge habitats are especially vulnerable.

Deep-sea trawlers now operate bottom-tending mobile fishing gear (bottom trawling) to depths exceeding 6,000 feet.[77] Bottom trawling makes vulnerable deep-sea habitats, which were once out of harms way,[78] and damages and destroys these sensitive biological systems before they can be discovered.[79]

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[74] Amy Michelle Resetar, About Coral Reefs: Reef Destruction Rates, at www.personal.psu.edu/users/a/m/amr221/coral_destruction.htm (last visited March 29, 2004).

[75] See for example; *Protecting Coral Reefs: The Principal National And International Legal Instruments* , 26 Harv. Envtl. L. Rev. 499, 505-507 (2002); *available at* www.coralreef.org (last visited Mar. 26, 2004); and National Marine Fisheries Service, NOAA, Coral Reefs: Critical Biodiversity and Fisheries Resources, *available at* www.nmfs.noaa.gov/prot_res/PR/coral home.html (last visited Mar. 26, 2004).

[76] Oceana, *Deep Sea Corals: Out of Sight, But No Longer Out of Mind*, 2002 (hereinafter "Oceana"), *available at* www.oceana.org/uploads/ACF9B.pdf (last visited Mar. 26, 2004).

[77] "Bottom tending mobile fishing gear" includes dredges, beam and otter trawls, and other mobile fishing gear that is dragged along the ocean floor. *See Effects of trawling and dredging on seafloor habitat*, National Research Council (2002).

[78] *Id.*, and Oceana, *supra* note 76, at 10.

[79] Freiwald, A. *Reef-forming cold-water corals,* In Wefer, G., D. Billet, D. Hebbein, B.B. Jorgensen, M. Schluter, and T. Van Weering, *Ocean Margin Systems*, 365-385, Springer-Verlag Berlin Heidelberg, (eds) 2002.

Failure to protect these ancient and slow-growing communities is contributing to the world fish crisis and decline of biodiversity.[80]

This kind of physical habitat destruction is also exacerbated by non-fishing related activities, such as pollution and global warming. More than ninety percent of the sewage of developing countries is dumped untreated into surface waters.[81] Even treated sewage contains nutrients that encourage algal growth that smother and destroy coral and kill fish. It is predicted that the use of synthetic fertilizers and nitrogen will more than double by 2050, and the massive influx of nutrients into the marine environment is the likely reason that dead zones and poisonous algae blooms have tripled since 1984, causing fish kills, beach closures, and the destruction of coral reefs.[82]

A recent study also warns that carbon dioxide emissions are increasing the acidity of the oceans,[83] and harming marine organisms.[84] Global warming may also be affecting ocean fish stocks according to the Environmental Protection Agency:

Global warming could have many impacts on fish and other aquatic species. Some bodies of water may become too warm for the fish that currently inhabit those areas; but warmer temperatures may also enable fish in cold ocean waters to grow more rapidly. Global warming may also change the chemical composition of the water that fish inhabit: the amount of oxygen in the water may decline, while pollution and salinity levels may increase. Loss of wetlands could diminish habitat and alter the availability of food for some fish species.[85]

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[80] *See* Simon F. Thrush and Paul K. Dayton, *Disturbance to Marine Benthic Habitats by Trawling and Dredging: Implications for Marine Biodiversity*, 33 *Annual Review of Ecology and Systematics* 449-73 (2002).

[81] *A Guide to Oceans, Coasts and Islands at the WSSD: Integrated Management form Hilltops to Oceans*, Biliana Cicin-Sain et al, Center for the Study of Marine Policy, August 16, 2002, at 2 [hereafter "Guide"]

[82] FAO Atlas of the Oceans, *supra* note 35.

[83] Ken Caldeira and Michael Wickett, *Oceanography: Anthropogenic carbon and ocean pH*, 425 Nature 365 (Sept. 2003).

[84] An important benefit of healthy oceans is the ability to filter carbon dioxide from the atmosphere. Office of Water, U.S. EPA, *available at* www.epa.gov/owow/oceans/> airdep/air2.html; and www.epa.gov/owow/oceans/airdep/air1.html.

[85] U.S. EPA, *available at* yosemite.epa.gov/oar/globalwarming.nsf/content/ImpactsFisheries.html (last visited Mar. 26, 2004). It was recently estimated that the earth could lose more than one-third its species by the year 2050 as a result of climate

III. INADEQUACY OF INTERNATIONAL MECHANISMS

International agreements have called for conservation and management measures to address many of these causes of the world fish crisis. However, weaknesses inherent in these agreements are failing to stem the continuing loss of marine biodiversity and world fish stocks. For this reason, the WSSD was tasked with developing specific goals, targets, and timetables to reinvigorate and strengthen international and regional agreements, and inspire new international and regional approaches to address the world fish crisis. We examine the strengths and weaknesses of some of these international mechanisms below.

A. UNITED NATIONS CONVENTION ON THE LAW OF THE SEA[86]

As noted earlier, from Roman times to the end of World War II the dominant legal concept regarding the right to fish was the law of capture; i.e., whoever caught it, owned it.[87] Prior to the United Nations Convention on the Law of the Sea (hereinafter "UNCLOS"), nations asserted jurisdiction over varying amounts of their adjacent ocean waters. But with the conclusion of UNCLOS in 1982 and its entry into force in 1994, a comprehensive legal framework was established governing ocean jurisdictions, uses, and the obligations of nations.

UNCLOS resolved conflicting State claims to offshore jurisdictions by establishing national twelve-mile "territorial seas," twenty-four-mile "contiguous zones," and 200-mile "exclusive economic zones." The area beyond national 200-mile EEZs, constituting sixty percent of the world's oceans, are regarded as "high seas" under UNCLOS.[88] The United States initially did not initially sign UNCLOS and has not yet ratified

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change. Chris Thomas, et al., *Extinction risk form climate change*, 427 Nature 145 (January 2004).

[86] U.S. Doc. A/CONF.62/122, *opened for signature*, Dec. 10, 1982, *reprinted in* 21 I.L.M. 1261 (hereinafter "UNCLOS"). The Convention and related documents are *available at* www.un.org/Depts/los/convention_agreements/convention_agreements.htm (last visited March 29, 2004).

[87] R.P. Anand, *supra* note 7.

[88] UNCLOS, *supra* note 86, at Articles 2, 3 and 57.

it.[89] But President Ronald Reagan proclaimed a 200-mile U.S. EEZ in 1983,[90] and a twelve-mile territorial sea in 1988 for international purposes, which asserts that the United States regards most of the provisions of UNCLOS as customary international law. [91] President Clinton declared a twenty-four-mile U.S. contiguous zone in 1999.[92]

UNCLOS confers within national EEZs "sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living."[93] This is significant because "[n]inety percent of the global fish catch is taken within zones of national jurisdiction, owing primarily to the higher productivity and proximity of the coastal and shelf areas."[94]

The sovereign right to the living resources of the EEZ includes the exclusive right of coastal nations to manage fisheries and a preferential right to harvest fish. National discretion to manage and exploit the fishery resources within the EEZ is great, but UNCLOS also imposes duties upon coastal States to ensure that living marine resources are not over-exploited, harvested species are maintained at maximum sustainable yield (hereinafter "MSY"), and coastal States consider effects on species associated with or dependent upon harvested spe-

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[89] In 1994, President Clinton transmitted to the Senate the 1982 Convention and the 1994 Agreement relating to the Article XI deep seabed provisions, and the package was submitted to the Senate Committee on Foreign Relations (Treaty Doc. 103-39). But the Senate never gave its advice and consent, and UNCLOS entered into force without U.S. accession on November 16, 1994 with the 60th ratification. As of December, 2003, 145 nations have ratified the Convention. CRS Issue Brief for Congress, IB95010: The Law of the Sea Convention and U.S. Policy, Marjorie Ann Browne, Foreign Affairs, Defense, and Trade Division, February 14, 2001, *available at* http://www.ncseonline.org/NLE/CRSreports/03Jun/IB95010.pdf (last visited March 29, 2004).

[90] Proclamation No. 5030, 3 CFR 22 (1984).

[91] Proclamation No. 5928, 54 Fed. Reg. 777 (1989). The Proclamation declaring a 12-mile U.S. territorial sea took pains to state that it did not "extend or otherwise alter existing Federal or State law" to limit its affect on the application of such U.S. laws as the Clean Water Act, the Coastal Zone Management Act and the Submerged Lands Act which recognize a 3-mile territorial sea. It did not, however, limit the debate on the effect of the Proclamation. *See for example* 1 Territorial Sea Journal 1 (1990).

[92] Proclamation No. 7219, 64 Fed. Reg. 48701 (1999).

[93] UNCLOS, *supra* note 86, at Article 56(1).

[94] *The State of World Fisheries and Aquaculture, 1998*, FAO, Fisheries Department *available at* www.fao.org/docrep/W9900E/w9900e03.htm#P4 (last visited March 29, 2004).

cies.[95] UNCLOS, however, also requires coastal States to promote the "optimum utilization" of living resources and allows foreign fishing for any "surplus" fish within conservation limits.[96] The problem is, as noted by one observer, that UNCLOS, "as a practical matter . . . gives to coastal States nearly complete authority to determine unilaterally how to interpret and apply these provisions."[97]

It was thought that extending national EEZ jurisdictions to 200 miles would improve the conservation of living marine resources.[98] This has not, however, proven to be the case, at least by the U.S. experience. When the Magnuson Fishery Conservation and Management Act was enacted in 1976, the U.S. created a 200-mile fishery conservation zone and turned over fisheries management to industry dominated management councils that merely replaced foreign overfishing with domestic overfishing.[99] The act of creating national 200-mile jurisdictions for exclusive fisheries management therefore turned out to be no guarantee that overfishing, destructive fishing practices and habitat destruction will be prevented.

One problem is that fish transverse EEZ's (so called "straddling stocks"), mindless of the jurisdictional difficulties they create. UNCLOS recognized these inherent difficulties in managing fish stocks by calling upon states to "seek ... to agree

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[95] UNCLOS, *supra* note 86, at Article 61. For a discussion of MSY, *see infra* notes 106 and 19-198, and accompanying text.

[96] *Id.* at Article 62.

[97] Harry Scheiber, *Ocean Governance and the Marine Fisheries Crisis: Two Decades of Innovation – and Frustration*, 20 Va. Envtl. L.J. 119, 126 (2001).

[98] "In the 1980s, it was widely anticipated that fisheries governance would improve substantially in parallel with the establishment of extended national jurisdiction under [UNCLOS]. This was the case for countries that were able and had the will to strengthen their governance. Very often they were already engaged in (EEZ) fisheries or had readily available capacity (e.g. trained fishers, investment capital and infrastructure) within the sector to do so. Subsequent experience has shown that, even under the most favourable circumstances, achieving good governance is a protracted process." *The State of World Fisheries and Aquaculture, 1998*, FAO, Fisheries Department, *available at* www.fao.org/docrep/W9900E/w9900e03.htm#P4 (last visited March 29, 2004).

[99] Pew Oceans Commission, *supra* note 12, at 44-45. One-third of assessed U.S. fished stocks are officially classified as overfished, and most are still being fished unsustainably. Paul Dayton, et al., *Ecological Effects of Fishing in Marine Ecosystems of the United States*, Pew Oceans Commission, 2002. The status of two-thirds of U.S. fish stocks is unknown. National Marine Fisheries Service, *Toward Rebuilding American's Marine Fisheries*, Annual Report to Congress on the Status of U.S. Fisheries, 2001. U.S. Dept. of Commerce, 2002.

upon measures necessary to co-ordinate and ensure the conservation and development of such stocks."[100] A similar duty to cooperate "with a view to ensuring conservation and promoting the objective of optimum utilization" is imposed upon states whose nationals harvest highly migratory fish species that cross between the nation's EEZ and the high seas.[101]

UNCLOS reaffirms the right to navigate and fish on the high seas.[102] It also imposes duties upon all States to take "such measures for their respective nationals as may be necessary for the conservation of the living resources of the high seas,"[103] and to cooperate "in the conservation and management of living resources" of the high seas.[104] In determining the allowable catch and establishing other conservation measures on the high seas, UNCLOS asks States to take measures "to maintain or restore populations of harvested species at levels which can produce maximum sustainable yield."[105]

Although UNCLOS imposes duties upon States to conserve fish stocks within and beyond their EEZs, several factors limit its effectiveness. First, few if any remedies are available for overfishing and destructive fishing practices within EEZs or the high seas. States may agree to take measures outside UNCLOS' dispute resolution procedures,[106] but coastal States may reject the submission of disputes to the international tribunal established under UNLOS regarding the living resources within their EEZs including the determination of allowable catch and harvesting capacity.[107] These provisions provoked the observation by the World Bank "that UNCLOS falls signifi-

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[100] UNCLOS, *supra* note 86, at Article 63.

[101] *Id.* at Article 64.

[102] *Id.* at Article 87.

[103] *Id.* at Article 117.

[104] *Id.* at Article 118.

[105] *Id.* at Article 119. Articles 119 and 61 of UNCLOS qualify the term maximum sustainable yield ("MSY") "by relevant environmental and economic factors, including the special requirements of developing states, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards . . ." Some argue that these qualifications render meaningless the MSY provisions of UNCLOS, the WSSD, and other treaties and laws. See *infra* text accompanying notes 195-201.

[106] *Id.* at Article 282.

[107] *Id.* at Article 297(3)(a).

cantly short of establishing a truly comprehensive regime of compulsory jurisdiction entailing binding decisions."[108]

Second, terms like optimum yield (hereinafter "OY") and MSY used in the Convention concerning the harvest of fish stocks are subject to abuse.[109] OY and MSY failed to prevent U.S. and Canadian overfishing of cod off New England and the Northwest Atlantic, and the depletion of groundfish in the Pacific. Reliance upon such terms to address drastic overfishing by international fleets is a recipe for disaster.

Third, to the extent that States have developed more stringent limits on fishing practices than those in UNCLOS, the application of such measures on foreign vessels could be challenged before the international tribunal established under UNCLOS to resolve disputes or raised as a defense to a prosecution for violating more stringent State measures. While the latter scenario might be regarded as far-fetched by some, it was precisely the defense raised by Royal Caribbean Cruises when it was prosecuted by the United States for presenting fabricated oil record books to the United States Coast Guard.[110] Royal Caribbean argued, albeit unsuccessfully, that the right to regulate pollution from ships belonged to the flag state (Liberia) under UNCLOS, and not the jurisdiction where the discharge occurred. Although the United States District Court disagreed and held that Royal Caribbean could be prosecuted under U.S. law, *Royal Caribbean* illustrates how UNCLOS, even before ratification, can be used to attempt to avoid prosecution. If and when the U.S. ratifies UNCLOS, such defenses could be raised again.[111]

Therefore, UNCLOS generally provides a framework for addressing the world fish crisis; but it can not by itself prevent national overfishing, destructive fishing practices or habitat destruction.

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[108] August 4, 2000, Award on Jurisdiction and Admissibility with respect to Southern Bluefin Tuna, World Bank, *available at* www.worldbank.org/icsid/bluefintuna/award080400.pdf (last visited March 29, 2004).

[109] *See infra* text accompanying notes 195-201.

[110] *U.S. v. Royal Caribbean Cruises, LTD.*, 24 F. Supp.2d 155 (D.P.R., 1997) and 11 F. Supp.2d 1358 (S.D. Florida, 1998).

[111] Statement of Roger Rufe, The Ocean Conservancy, Before the Senate Committee on Foreign Relations, October 21, 2003.

B. THE UNITED NATIONS STRADDLING FISH STOCKS TREATY

In 1995, the United Nations adopted the *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* (hereinafter the "Fish Stocks Treaty" or "Treaty").[112]

As noted earlier, UNCLOS called for future agreements to deal with the complex issue of highly migratory species and straddling fish stocks in 1982.[113] The issue was raised again at the 1992 Earth Summit, but was so controversial that agreement could not be reached and a separate United Nations conference was called for;

> States should convene, as soon as possible, an intergovernmental conference under United Nations auspices, taking into account relevant activities at the subregional, regional and global levels, with a view to promoting effective implementation of the provisions of the Untied Nations Convention on the Law of the Sea on straddling fish stocks and highly migratory fish stocks. The conference drawing, inter alia, on scientific and technical studies by FAO, should identify and assess existing problems related to the conservation and management of such fish stocks, and consider means of improving cooperation on fisheries among States, and formulate appropriate recommendations.[114]

A Conference on Straddling Fish Stocks and Highly Migratory Species was convened in 1993, and the United Nations Fish Stocks Treaty was adopted on August 4, 1995. The Treaty calls upon participating States to, "adopt measures to ensure long-term sustainability of straddling fish stocks and highly migratory fish stocks and promote the objective of their optimum utilization."[115] Signatory States pledged to minimize

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[112] U.N. Doc. A/CONF.164/37 (1995), *done* Sept. 8, 1995, *reprinted in* 34 I.L.M. 1542 (1995) 9hereafter "Fish Stocks Treaty"], *available at* www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm (last visited March 29, 2004).

[113] *See supra* text accompanying notes 100-102, and UNCLOS, supra note 86, at Articles 63 and 64.

[114] UNCED, *supra* note 3, at Agenda 21, Chapter 17.49(e).

[115] Fish Stocks Treaty, *supra* note 112, at Article 5(a).

waste, discards, and the catch of non-target species,[116] take measures to prevent or eliminate overfishing and excess fishing capacity, ensure the sustainable use of fishery resources,[117] and "protect biodiversity in the marine environment."[118]

The Treaty compels States to ensure that conservation measures are based on the "best scientific evidence," and contains one of the most comprehensive and progressive expressions of the "precautionary approach" to address the burden of proof that guides the setting of total allowable catch (hereinafter "TAC").[119] The precautionary approach provides that States "shall 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."[120]

The Treaty places regional fishery organizations "in a pivotal and central position in terms of its implementation; they provide the primary mechanism through which participating states should cooperate to achieve enhanced resources conservation and management."[121] To address many of the problems with UNCLOS compliance and enforcement, the Treaty limits access to fishery resources only to States that comply with the Treaty's conservation and management measures, or members of regional fisheries management organizations.[122] It authorizes member States to board and inspect ships suspected of violations, bring an offending ship into port for serious violations,[123] and provide evidence to the flag state for prosecution.[124] The Treaty defers to and incorporates the dispute resolution procedures of UNCLOS.[125]

The Treaty was passed by consensus, no mean feat in international negotiations, and entered into force upon the Thir-

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[116] *Id.* at Article 5(f).

[117] *Id.* at Article 5(h).

[118] *Id.* at Article 5(g).

[119] *Id.* at Article 5(b) and (c) (j).

[120] *Id.* at Article 6(2).

[121] *The State of World Fisheries and Aquaculture, 2002*, FAO, Fisheries Department, *available at* www.fao.org/DOCREP/005/Y7300E/y7300e05.htm#P157_39938 (last visited March 29, 2004).

[122] Fish Stocks Treaty, *supra* note 112, at Articles 8(4) and 17.

[123] *Id.* at Article 21(8).

[124] *Id.* at Articles 20 and 21(4).

[125] *Id.* at Articles 20(6), and 30.

tieth ratification in 2001. The United States, Russia, and Canada ratified the Treaty, but some of the world's largest fishing nations have not, including the European Union, China, and Japan.[126] The absence of these nations impedes the goals of the Treaty to provide for the sustainable management and conservation of highly migratory fish stocks.

The Fish Stocks Treaty has been touted as "the critical breakthrough for a reversal of the trends that are devastating the world's fishery resources on the high seas."[127] But despite its many innovations, the Fish Stocks Treaty has some significant limitations.[128] As noted earlier, there is the problem posed by the absence of major fishing nations. Language in the Treaty also calls for the use of selective fishing gear to avoid bycatch, but only "to the extent practicable."[129] The Treaty also shifts the responsibility to the flag states to investigate alleged violations, institute and conduct the judicial proceedings, and impose penalties on offending ships if it finds that a violation occurred.[130] This dependence upon flag states for primary authority over the investigation and sanctioning process means that "there will always be a risk that investigations will not be thorough or that penalties will not be strong enough."[131] The Treaty's effectiveness therefore suffers limitations similar to many other international fishery agreements:

> [I]ts effectiveness will depend on the level of international cooperation developed, on the capacity and willingness of flag states to exercise control over their flag vessels and on the extent to which subregional and regional organizations and arrangements are adapted or established to carry out the required conservation and management functions. *Ultimately, the success of the Agreement will depend on the willingness of flag states to contribute equitably to the required reduction in*

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[126] Kyodo News, January 8, 2002.

[127] Scheiber, *supra* note 97, at 131.

[128] Jack Archer, J.H., M.P. Eppling, C.A. Biegel, "*Sustainable Development: Legal Issues and Incentives,* (forthcoming, article on file with authors).

[129] Fish Stocks Treaty, *supra* note 112, at Article 5(f).

[130] *Id.* at Articles 18(1), 19(1) and (2).

[131] Julie Mack, *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. W. Int'l L.J. 313, 331 (1996).

excessive fishing effort which characterizes many high seas fisheries. (emphasis added)[132]

C. REGIONAL FISHERY AGREEMENTS

Numerous international and regional fishery agreements (hereinafter "RFA") have been adopted to address the world fish crisis.[133] The effectiveness of these agreements, however, has been hampered by three major deficiencies: ineffective treaty provisions, opt-out and veto provisions, and reliance on flag-state enforcement. The ultimate success of the WSSD will depend upon whether these deficiencies can be overcome.

1. Ineffective Treaty Provisions

Weak and ineffective treaty provisions in many regional fishery agreements have hindered conservation efforts. For example, UNCLOS' reliance upon OY and MSY for the conservation of fish stocks is fraught with risk.[134] Similar problems have hindered the ability of the International Commission for the Conservation of Atlantic Tunas (hereinafter "ICCAT") to address the dramatic decline of bluefin and other tuna species in the Atlantic Ocean.[135]

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[132] *The State of World Fisheries and Aquaculture, 1996*, FAO, *available at* www.fao.org/docrep/003/w3265e/w3265e02.htm#world%20review%20of%20fisheries%20and%20aquaculture (last visited March 29, 2004).

[133] A partial list of regional agreements includes: General Fisheries Council for the Mediterranean, Fishery Committee for the Eastern Central Atlantic, Indian Ocean Fishery Commission, International Convention for the High Seas Fisheries of the North Pacific Ocean, International Commission for the Conservation of Atlantic Tunas, Convention for the Conservation of Southern Bluefin Tuna, Northwest Atlantic Fisheries Organization, Convention on the Conservation of Antarctic Marine Living Resources, North Pacific and Bering Sea Fisheries Advisory Body, North Pacific Anadromous Fish Commission, and North Atlantic Salmon Conservation Organization. A discussion of these and other agreements is beyond the scope of this article. General guides to regional fisheries agreements are *available at* www.fao.org/fi/body/rfb/chooseman_type.htm and www.oceanlaw.net/texts/fisheries (last visited March 29, 2004).

[134] See *supra* note 111, and *infra* text accompanying notes 195-201.

[135] International Convention for the Conservation of Atlantic Tunas, TIAS 6767, 20 UST 2887, 673 UNTS 63, May 14, 1966 [hereinafter "ICCAT"], *available at* www.iccat.es (last visited March 29, 2004). ICCAT members include Algeria, Angola, Barbados, Brazil, Canada, China, Croatia, European Community, France Gabon Ghana, Guinea, Honduras, Iceland, Ivory Coast, Japan, Korea, Rep. of, Libya, Morocco, Mexico, Namibia, Panama, Russia, São Tomé and Principe, South Africa, Trinidad &

ICCAT Commissioners appointed by member States review scientific information on the status of tuna and billfish stocks and adopt quotas, size limits, and other management measures "to maintain the populations of tuna and tuna like fishes that may be taken in the Convention area at levels that will maintain maximum sustainable catch."[136] If a majority of member states object to the allocation recommendations they do not become effective, and Commission allocations do not apply within a country's own EEZ.[137]

ICCAT has few effective enforcement mechanisms, nor the ability to control the fishing activities of non-contracting parities.[138] It can encourage member and non-member States to cooperate, and recommend that members impose "non-discriminatory" economic sanctions "consistent with their international obligations" if it finds that non-members "diminish the effectiveness" of the goals of ICCAT.[139] World Trade Organization (hereinafter "WTO") free-trade provisions, however, can impede the actual imposition of trade sanctions under ICCAT and other international conventions and domestic laws.[140]

These factors and the inability to agree on meaningful TACs hinder the recovery of severely depleted bluefin tuna

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Tobago, Tunisia, United Kingdom (Bermuda), United States, Uruguay, Vanuatu, and Venezuela.

[136] *Id.* at Article VIII.

[137] *Id.* at Article IX. The United States has enacted a law that prevents its own fishery managers from changing ICCAT quotas or allocations, effectively turning over management of these species to ICCAT. The Atlantic Tuna Convention Act, 16 U.C.S. §§971, et seq.

[138] David Hunter, et al, *International Environmental Law and Policy*, University Casebook Series Second Edition 2002, at 699.

[139] ICCAT Resolution 94-3 (for tuna) and 95-13 (for swordfish).

[140] Sanctions under ICCAT were authorized against Belize and Honduras and Equatorial Guinea for diminishing the effectiveness of ICCAT conservation recommendations on Atlantic swordfish and bluefin tuna. ICCAT Resolutions 95-13 and 94-3. But the imposition of trade sanctions may run afoul of the WTO. For example, a WTO Dispute Settlement Body ruled that U.S. import restrictions on shrimp from nations that did not have programs requiring the use of turtle excluder devices (TEDs) on shrimp vessels violated the WTO because the restrictions were applied in an arbitrary and discriminatory manner. WTO, Report of the Appellate Body on U.S. – Import Prohibition of Certain Shrimp and Shrimp Products, (AB – 1998 -4)(Oct. 12, 1998), 38 I.L.M. 188 (1999). *See also,* problems involved with efforts to impose trade sanctions under the Convention for the Conservation of Southern Bluefin Tuna ("CCSBT"). CCSBT, Decision Regarding Cambodia, Honduras, and Equatorial Guinea Pursuant to the 2000 Action Plan *available at* www.ccsbt.org/docs/pdf/about_the_commission/resolutions_on_the_action_plan.pdf (last visited March 29, 2004).

stocks, which remain at ten percent of original biomass.[141] Other stocks have not fared much better.[142] In fact, ICCAT has been so ineffective at rebuilding depleted tuna stocks, it is has been referred to as the "International Convention to Catch All the Tuna."[143]

2. *Opt-Out and Veto Provisions*

Some regional fishery agreements allow member nations to "opt-out" of or veto critical conservation decisions. For example, under the Northwest Atlantic Fisheries Organization (hereinafter "NAFO"),[144] the NAFO Fisheries Commission sets TACs for member States.[145] But members may unilaterally opt-out of any allocation by simply giving notice that they will not be bound. If one member opts out, none of the other members are bound by the allocation schedule.[146] This, of course, gives each member State veto power over the entire management regime. Unlike the Fish Stocks Treaty's enforcement provisions, NAFO authorizes only the collection of information on

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[141] West Atlantic bluefin tuna spawning biomass declined from approximately 50,000 metric tons in 1970 to approximately 3,000 metric tons in 2001. *See* Figure BFT-3, ICCAT Report 2002-2003, www.iccat.es/.

[142] ICCAT reports that North Atlantic swordfish have recovered to ninety-four percent of levels considered healthy over the last three years, but annual yields of swordfish are still below MSY. *See*, www.iccat.es (last visited March 29, 2004). As noted in one report, "Swordfish have been so overexploited that large fish are rare and most fish that are caught are much younger that the five years at which swordfish mature and begin to reproduce themselves. On the high seas, the exploitation of sharks is unchecked ... ." CMC, *supra* note 3, at xi.

[143] The term has been used Carl Safina who, in his book *Song for the Blue Ocean*, describes the difficulties encountered in getting ICCAT members to reduce quotas for bluefin tuna in 1992 in the face of strong opposition from Japan and Canada despite 15 consecutive years of declining stocks and a 90% drop in population estimates. Carl Safina, *Song for the Blue Ocean*, Henry Holt and Co. (1997), at 92-99.

[144] NAFO was created in 1978 under the Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries to manage groundfish stocks from Greenland to North Carolina. NAFO consists of Bulgaria, Canada, Cuba, Denmark, Estonia, European Union, France, Iceland, Japan, Korea, Latvia, Lithuania, Norway, Poland, Russian Federation, Ukraine, and United States of America. Romania withdrew at the end of 2002. *See* generally, North Atlantic Fisheries Organization, *available at* www.nafo.ca (last visited March 29, 2004). The United States signed the original convention in 1978, but legislation implementing the Convention was not enacted until the 1995 Fisheries Act. 16 U.S.C. §§5601, et.seq.

[145] *Id.* at Article XI, § 4.

[146] *Id.* at Article XII, §3. For example, in 1986 NAFO set a TAC for American Plaice (flounder) of 700 tons. The EU formally objected and set itself a quota of 21,161 tons. Hunter, et al., *supra* note 138, at 691.

fishing activities of non-member states in the Convention area.[147]

The Convention for the Conservation of Southern Bluefin Tuna (hereinafter "CCSBT")[148] also allows members to veto the Convention's conservation measures. The CCSBT requires all "[d]ecisions of the Commission to be taken by unanimous vote ... ." giving each member veto power.[149]

3. *Reliance on Flag State Enforcement*

Conservation measures, regardless of their strength, are useless unless they are effectively enforced. RFAs, however, rely primarily upon flag states to enforce treaty violations by non-members. Reliance on flag state enforcement is a major weakness of international agreements in general and regional fishery agreement in particular.[150] The reliance of the Fish Stocks Treaty on flag state enforcement was discussed earlier.[151] Other Conventions, both regional and worldwide, suffer similar weaknesses.

For example, NAFO members have reflagged fishing vessels to non-member states to circumvent conservation measures.[152] Flag state non-enforcement is also hindering the implementation of the 1982 Convention on the Conservation of Antarctic Marine Living Resources (hereinafter "CCAMLR").[153]

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[147] Rules of Standing Committee on non-Contracting Parties in the Regulatory Area.

[148] The Convention for the Conservation of Southern Bluefin Tuna ("CCSBT") *available at* www.ccsbt.org/docs/pdf/about_the_commission/convention.pdf (last visited Mar. 26, 2002). CCSBT consists of Australia, Japan, New Zealand, Korea, and Taiwan.

[149] *Id.* at Article 7.

[150] Lack of flag State response to environmental violations of MARPOL was highlighted by the General Accounting Office, *Progress Made to Reduce Marine Pollution by Cruise Ships, but Important Issues Remain*, GAO/RCED-00-48, Feb. 28, 2000, at 19-21. "Ensuring compliance with environmental agreements is a widely recognized problem." GAO, *Literature on effectiveness of International Environmental Agreements*, GAO/RCED-99-148, May 1, 1999. *See also*, *Strengthening the Implementation of Environmental Agreements*, GAO RCED-92-188, August 1992.

[151] *See supra* text accompanying notes 132-133.

[152] Office of Marine Conservation, U.S. Department of State, *Implementation of the Key Provisions of the U.N. Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks by Regional Fisheries Management Organizations and Arrangements*, July 1996 at 7 (on file with the authors).

[153] Convention on the Conservation of Antarctic Marine Living Resources ("CCAMLR"), 33 UST 3476, TIAS 10240, May 20, 1980, *available at* www.ccamlr.org (last visited March 29, 2004). Parties to CCAMLR are Argentina, Australia, Belgium,

CCAMLR was developed to protect populations of living organisms inhabiting Antarctic waters. The Convention establishes a commission to compile and analyze data on the living marine resources of the Antarctic, implement conservation measures to ensure that species harvested in the Antarctic do not exceed MSY, and consider likely effects of harvest levels on non-target species and the marine ecosystem.[154]

Violations of CCAMLR must be referred to the offending flag state, which is responsible for imposing sanctions "sufficiently severe as to effectively ensure compliance with CCAMLR conservation measures."[155] The flag state is supposed to "ensure that any of its vessels which have been found to have contravened a CCAMLR conservation measure do not carry out fishing operations within the Convention Area until they have complied with the sanctions imposed."[156]

Flag state failure to observe CCAMLR TACs is jeopardizing efforts to conserve rapidly dwindling stocks of severely overfished Patagonian toothfish ("Chilean sea bass"). Attempts to trace fish in the marketplace through the distribution process have been ineffective in stemming illegal, unreported, and unregulated fishing.[157] Under its terms, CCAMLR members are only required to comply "within its competence,"[158] relying upon

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Brazil, Bulgaria, Canada, Chile, European Community, Finland, France, Germany, Greece, India, Italy, Japan, Namibia, Netherlands, New Zealand, Norway, Peru, Poland, Republic Of Korea, Russia, South Africa, Spain, Sweden, Ukraine, Uruguay, United Kingdom, United States of America, and Vanuatu.

[154] *Id.* at Article II(3), *available at* www.ccamlr.org/pu/e/pubs/bd/pt1.pdf (last visited March 29, 2004).

[155] CCAMLR System of Inspection, §XIII, *available at* www.ccamlr.org/pu/e/pubs/bd/pt92k.pdf (last visited March 29, 2004).

[156] *Id.* at §XIV.

[157] R.A. Herr, *The International Regulation of Patagonian Toothfish*: CCAMLR and High Seas Fisheries. Lysaker, Fridtjof Nansen Institute, 1997, at 11; *The State of World Fisheries and Aquaculture, 2000*, FAO, Fisheries Department, *available at* www.fao.docrep/003/x8002e06.htm#p12 (last visited March 29, 2004), Box 13.

[158] CCAMLR, *supra* note 155, at Article XXI, paragraph 1. "Each contracting party shall take appropriate measures within its competence to ensure compliance with the provisions with this Convention and with conservation measures adopted by the Commission to which the party is bound in accordance to Article XI of this Convention." The term "within its competence" is not defined, explained, or even mentioned again in the CCAMLR Convention.

public pressure on offending nations to effectively enforce the Convention.[159]

Regional fishery agreements take important steps to track fish stocks, gather information on stock size, establish TACs, monitor fishing activities, and apply innovative conservation principles like the precautionary and ecosystem approaches to fisheries management. TACs, however, are often too low to rebuild severely depleted fish stocks and are ignored by member and non-member states. Weak enforcement and opt-out provisions thwart enforcement of TACs, and efforts to prevent illegal, unreported and unregulated fishing are not well-monitored.[160] Regional agreements therefore lack many of the prerequisites (noted by FAO below) to prevent the kind of overfishing and destructive fishing practices necessary to address the world fish crisis:

The prerequisites for good governance in the fisheries sector are generally well recognized: the need for a strategy explicitly aimed at ecological, economic and social sustainability; effective fisheries agencies and research institutions (producing, *inter alia*, reliable and up-to-date information on the sector); a cooperative, organized and informed fisheries sector; adequate laws and legal institutions, including deterrent monitoring, control and surveillance (MCS); and linkages with the appropriate regional and international bodies.[161]

These are precisely the kinds of prerequisites that the WSSD needed to encourage to address the world fish crisis.

IV. THE WSSD FISHERY PROVISIONS

A. FROM RIO TO JOHANNESBURG

The World Summit on Sustainable Development met in Johannesburg, South Africa from August 26 to September 4,

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[159] The inability of CCAMLR to stop the IUU fishing for Patagonian Toothfish fostered an NGO website by "Isofish" that contains information on boats operating in the fishery. *See* www.isofish.org.au/boats/index.htm.

[160] The U.S. General Accounting Office has found that parties report incomplete and late information, and Secretariats do not have adequate authority or resources. GAO, "International agreements are not well monitored," GAO/RCED-92.93, Jan. 1992.

[161] *The State of World Fisheries and Aquaculture, 1998,* FAO, Fisheries Department, *available at* www.fao.org/docrep/W9900E/w9900e03.htm#P4 (last visited March 29, 2004).

2002, "to reinvigorate the global commitment to sustainable development" made at the 1992 Earth Summit.[162] The roadmap for dealing with the world fish crisis in Johannesburg was well laid out in Rio de Janeiro:

> Management of high seas fisheries, including the adoption, monitoring and enforcement of effective conservation measures, is inadequate in many areas and some resources are overutilized. There are problems of unregulated fishing, overcapitalization, excessive fleet size, vessel reflagging to escape controls, insufficiently selective gear, unreliable databases and lack of sufficient cooperation between states. Action by States whose nationals and vessels fish on the high seas, as well as cooperation at the bilateral, subregional, regional and global levels, is essential particularly for highly migratory species and straddling stocks. Such action should address inadequacies in fishing practices, as well as in biological knowledge, fisheries statistics and improvement of systems for handling data. Emphasis should also be on multi-species management and other approaches which take into account the relationships among species, especially in addressing depleted species, but also in identifying the potential of underutilized or unutilized populations.[163]

UNCED Agenda 21 also set forth a series of objectives for the sustainable use and conservation of fisheries and living marine resources which was to provide the basis for the WSSD Plan of Implementation:

- Maintaining or restoring populations at levels that can produce MSY;
- Promoting the use of selective fishing gear and practices to minimize waste and bycatch;
- Ensuring effective monitoring and enforcement;
- Protecting and restoring endangered marine species;
- Preserving habitats and other ecologically sensitive areas; and
- Promoting scientific research.[164]

Some progress has been made since these actions were proposed in 1992. New regional fishery agreements have been

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[162] U.N. G.A., 55th Session, Agenda item 95(a), U.N. Doc. A/RES/55/199 (2001).

[163] UNCED, *supra* note 3, at Agenda 21, Chapter 17.45.

[164] *Id.* at Agenda 21, Chapter 17.46 and 17.74

concluded, coastal and marine programs have been developed, and scientific information has been gathered.[165] But the "on-the-ground condition of marine resources and of coastal communities shows alarming declining trends,"[166] and nowhere is this decline more apparent than in the condition of world fish stocks. This crisis lent a sense of urgency to the gathering in Johannesburg in August, 2002.

The WSSD was a huge international event attended by more than 21,000 participants from 191 governments, including eighty-two heads of state, thirty vice presidents and deputy prime ministers, and seventy-four ministers, royalty and other high level officials.[167] Many thousands more from all over the world converged upon Johannesburg to participate in many of the parallel events conducted at locations throughout the city simultaneously with the negotiations.[168] The negotiations produced two "Type 1 Agreements": The Plan of Implementation, and the Johannesburg Declaration on Sustainable Development.[169] The Plan of Implementation is a framework for action to implement UNCED commitments, and the Declaration outlines the path taken from UNCED to the WSSD, highlights present challenges and the commitment to sustainable development and multilateralism, and emphasizes the need for implementation.[170]

Also presented at the Summit were so-called "Type 2 Outcomes." These were various partnerships and commitments offered by participating governments, cooperating organizations, and businesses to strengthen the implementation of

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[165] Examples include the 1995 Fish Stocks Treaty, the 1994 Jakarta Mandate of the Convention on Biological Diversity, and the 1995 FAO Code of Conduct for Responsible Fishing.

[166] Guide, *supra* note 81, at 4.

[167] Memorandum to Members of the WSSD Informal Committee on Oceans, Coasts, and Islands from Biliana Cicin-Sain, Center for the Study of Marine Policy, September 14, 2002 [hereinafter "Cicin-Sain Memo,"] (on file with the author).

[168] Many of these events were held miles from the Stanton Convention Center where delegates were debating the merits of the Plan of Implementation and Political Declaration leaving some to wonder whether it was a plan to scatter some of the considerable opposition assembled at the Summit bent on demonstrating against globalization. The Ubuntu Village, Water Dome and Nasrec were made available to NGOs, intergovernmental organizations and civil society that were excluded from the negotiating venue at the Standton Convention Center for "networking," exhibits and events.

[169] WSSD, *supra* note 1.

[170] Earth Negotiations Bulletin, Vol. 22, No 51, Sept. 6, 2002.

Agenda 21 (the action plan that emanated from the Earth Summit).[171] A number of these partnership initiatives involved oceans, coasts, and islands. For example, the "White Water to Blue Water" partnership, led by the United States Department of State, was presented to promote integrated coastal and ocean ecosystem management programs in 25% of coatal nations by 2015.[172] The "Hilltops-2-Oceans" partnership was presented by the United Nations Environmental Program (hereinafter "UNEP"), Global Programme of Action, and other regional intergovernmental organizations to mitigate pollution and resource degradation.[173] Some expressed the belief that that the Type 2 Outcomes produced some of the most significant gains at the World Summit.[174] Others characterized as "pure fiction" the notion that voluntary actions by global corporations could protect the world's natural resources.[175]

B. THE NEGOTIATION

Four meetings were held prior to Johannesburg in preparation for the Summit. These "PrepComs" were held in New York in April, 2001 (PrepCom I), January, 2002 (PrepCom II), and March, 2003 (PrepCom III), and in Bali, Indonesia in May, 2002 (PrepCom IV).

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[171] UNCED, *supra* note 3.

[172] Environmental News Service, *Ocean Protection Begins Far Inland*, September 12, 2002, *available at* www.ens-news.com/ens/sep2002/2002-09-03-06.asp (last visited March 29, 2004).

[173] *See* Center for the Study of Marine Policy at the University of Delaware (renamed to the Gerard J. Mangone Center for Marine Policy), Partnership Initiatives at the WSSD, *available at* www.udel.edu/CMS/csmp/globaloceans/pdf/Approved Partnerships.pdf (last visited Mar. 26, 2004).

[174] The Type-2 outcomes were touted in a statement by UN Secretary-General Kofi Annan at the conclusion of the Summit. United Nations Release, Johannesburg Summit 2002, *Sustainable Development Summit Concludes in Johannesburg: UN Secretary-General Kofi Annan Says It's Just the Beginning,* September 4, 2002. U.S. Secretary of State Collin Powell also invited nations to join in the 15 Partnerships that the U.S. brought to the table. *As Delivered Remarks by Secretary of State Colin L. Powell at the WSSD,* September 4, 2002.

[175] Carl Pope, Sierra Club, quoted in Robert Collier, *Strong Bay presence at Earth Summit: Challenge to U.S. contingent even greater than 10 years ago,* San Francisco Chronicle, August 24, 2002, at A6. A joint statement by civil society organizations in Asia, Latin American and Africa expressed concern that "misplaced emphasis on these so-called Type-2 outcomes may serve to mask the failure of governments to make binding commitments within a global framework, the so-called Type-1 outcomes." Eco-Equity, Issue 7, September 3, 2002.

Incredibly, the initial negotiating text of the Plan of Implementation did not contain a section on the oceans despite the fact that oceans comprise more than seventy percent of the earth's surface and make life possible on this planet, and that seventy-five percent of the world's fish stocks require urgent action to ensure that fish can continue to be harvested sustainably.[176] Instead, the agenda focused on a host of other critically important and controversial issues including sanitation, renewable energy, agriculture, chemicals and health, natural resource degradation, biodiversity loss, Rio Principles 7 (common but differentiated responsibilities) and 15 (the precautionary approach), governance, trade, finance, globalization, the Kyoto Protocol and climate change, health, and human rights.[177]

Oceans, coasts, and island issues were forced onto paragraphs twenty-nine through thirty-four and fifty-two through fifty-five of the negotiating text during the PrepComs through the determined efforts of nongovernmental organizations like Oceana, the Wildlife Conservation Society, and the Center for the Study of Marine Policy, interested governments including the U.S., Chile, and Australia, and intergovernmental organizations including UNEP and UNESCO.[178]

Even so, the text delivered to Johannesburg was littered with bracketed language where agreements could not be reached on critical goals, targets, and timetables with respect to ocean issues.[179] There also was a decided lack of consensus on other key elements of the Plan, particularly with respect to energy, trade, finance, and globalization.[180] In fact, delegates arrived in Johannesburg with more than 400 points of disagreement in the Plan of Implementation and had not even begun to discuss the Political Declaration.[181] Notwithstanding these difficulties, by the end of the Summit ocean issues were

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[176] FAO, The State of World Fisheries and Aquaculture 2000 (2001).

[177] Earth Negotiations Bulletin, *supra* note 170.

[178] Telephone conversation with WSSD participant Jorge Varela, Oceana, Santiago, Chile (January 19, 2004).

[179] The bracketed language has been preserved by the Center for the Study of Marine Policy. Guide, *supra* note 81, at 10-14.

[180] Earth Negotiations Bulletin, *supra* note 170.

[181] Independent News, *They came. They talked. And weasled. And left.*, September 8, 2002.

considered to be one of the most significant outcomes of the WSSD.[182]

One of the biggest challenges at the WSSD was to execute with specific targets and timetables the broad policy goals outlined in Agenda 21 at the 1992 Earth Summit. This effort was made considerably more difficult by the U.S. negotiating posture to consistently oppose specific targets, dates, timetables, and emerging principles of international environmental law, regardless of the issue. The U.S position purportedly was based upon ideological grounds and lack of sufficient science.[183] For example, during the negotiations in Johannesburg the United States opposed:

1. A target date of 2015 for reversing the current trend in resource degradation;

2. A target date of 2015 for maintaining or restoring depleted fish stocks to levels producing MSY (Par. 30(a)). The target was qualified in the final text by the phrase "where possible";

3. A target date of 2010 for increasing the global use of renewable energy by 15% (Par. 19(e)). The target date was replaced in the final text by the phrase "with a sense of urgency, substantially increase the global share of renewable energy sources";

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[182] Cicin-Sain Memo, *supra* note 167. The oceans agenda was pushed by an informal WSSD Coordinating Group on Oceans, Coasts and Islands formed prior to the Summit consisting of 44 individuals from nongovernmental organizations, governments, and intergovernmental and international organizations ("The Group"). The Group, led by the Center for the Study of Marine Policy, produced a *"Guide to Oceans, Coasts, and Islands at the WSSD," supra* note 81, distributed 3,000 copies at the Summit, held four coordination/discussion meetings during the Summit, convened a meeting on "Bringing Synergy Among Type II Initiatives on Oceans, Coasts and Islands" on August 30, conducted a high-level event on "People, Oceans, and Stewardship" on September 2 highlighting achievements on oceans and announcing new Type II partnerships, and held two press conference commenting on WSSD outcomes. The Group held a global conference on Oceans, Coasts and Islands to review WSSD implementation and related issues at the UNESCO in Paris in November 2003.

[183] The United States' positions were reported in the Earth Negotiations Bulletin, *supra* note 170, and by participants in the negotiation.

4. A target date of 2015 for reducing by half the number of people lacking access to safe drinking water and adequate sanitation (Par. 7). The U.S. dropped its opposition after the targets for renewable energy were removed;

5. Inviting states to ratify and "fully" implement UNCLOS (Par. 29(a)). The word "fully" was deleted in the final text;

6. Language urging all countries to ratify the Kyoto Protocol to the United Nations Framework Convention on Climate Change (Par. 36). The final text was modified to provide that "States that have ratified the Kyoto Protocol strongly urge States that have not already done so to ratify ... in a timely manner";

7. Use of the term "precautionary principle," and applying precaution to health issues rather than environmental decision-making. The final text uses the less prescriptive term "precautionary approach" used in Rio Principle 15; and,

8. Use of the concept "common but differentiated responsibilities" in Rio Principle 7 with respect to differing national contributions to global environmental degradation. Modifications in the final text were made to address U.S. concerns.[184]

There was considerable consternation on these and other U.S. positions. U.S. support for a proposal giving the World Trade Organization the power to override international environmental agreements was especially resented, even after it was defeated.[185] The U.S. alliance with OPEC nations, Japan

[184] The official U.S. explanation for its position on "common but differentiated responsibilities" was that "The U.S. does not accept any interpretation of principle 7 that would imply a recognition or acceptance by the U.S. of any international obligations or liabilities, or any diminution of the responsibilities of developing countries under international law." Explanation of Position by the United States of America Submitted for the Record for Inclusion in the Report of the Conference of the WSSD, September 4, 2002.

[185] Independent News, *supra* note 181. Governments finally agreed to remove the language on WTO consistency from paragraph 17 after a long and hard battle, and an impassioned plea by Tewolde Egziabher, the delegate from Ethiopia. *Id.* The final text was revised to provide that nations will "continue to enhance the mutual supportiveness of trade, environment and development," omitting a clause which would have

and Canada in opposing firm timetables for reducing oil and gas consumption was called "an axis of oil."[186] There was also disappointment that President Bush did not attend the WSSD, especially since his father's visit to Rio in 1992 contributed to the success of the Earth Summit and, at the time, elevated America's prestige in the international community.

Instead, the U.S. sent to Johannesburg one of the most popular and sympathetic members of the Bush Administration to address the Summit during the final plenary session, Secretary of State Colin Powell. By then, however, the damage was done to many of the proposed targets and timetables in the Plan.

Secretary Powell had an uphill battle to repair the damage caused by the U.S. negotiating position. The Secretary's speech was poorly received after he plugged U.S. genetically modified corn, which several African governments had rejected, and touted U.S. "action to meet environmental challenges, including global climate change, not just rhetoric," in spite of U.S. efforts to weaken the language on ratification of the Kyoto Protocols.[187] Secretary Powell's speech was interrupted with boos and jeers, as frustrated delegates and activists were physically removed from the building and their credentials withdrawn.

As the Summit concluded, the United States issued a formal statement rejecting international aid targets based upon percentages of gross national product and noting that, while the WSSD Plan of Implementation and Declaration was important, it "did not create legally binding obligations on States under international law."[188] The failure to agree on specific targets and timetables on many key issues led to one press report that in Johannesburg, "They came. They talked. And Weasled. And left."[189]

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added, "while ensuring WTP consistency." BBC News, *Summit Conclusions at a Glance*, September 4, 2002.

[186] James Dao, *Protesters Interrupt Powell Speech as U.N. Talks End,* N.Y. Times, September 5, 2002 at A10.

[187] Remarks by Secretary Powell, *supra* note 174.

[188] Explanation of Position by the U.S., *supra* note 184.

[189] Independent News, *supra* note 181.

C. KEY FISHERY PROVISIONS OF THE WSSD PLAN OF IMPLEMENTATION

Despite these and other disappointments, the United Nations proclaimed that the WSSD made "significant commitments to improve the lives of people living in poverty and to reverse the continuing degradation of the global environment," highlighting more than 200 Type 2 Partnerships, representing $235 million in resources, to complement governmental commitments.[190] Secretary Powell announced that the Bush Administration would request an increase of $5 billion per year for three years in federal development assistance and build 90,000 houses in South Africa.[191]

Reports on the Summit reserved special praise for the provisions on oceans and fisheries.[192] These provisions and their effect on the world fish crisis are examined below:

1. Produce Maximum Sustainable Yield by 2015

> • Paragraph 30(a): Maintain or restore fish stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals on an urgent basis and where possible not later than 2015.

Creating a target for maintaining or restoring world fish stocks to maximum sustainable yield by 2015 was a hard fought battle, and touted as one of the major accomplishments of the Summit (notwithstanding the last minute insertion of the term "where possible" at the insistence of the U.S.). The concept of MSY recognizes that fisheries must be managed so that fish stocks can be sustainably caught year after year without causing the population of fish stocks to decline.[193] Achieving MSY "on an urgent basis" establishes an important goal to restore depleted fish populations, although it is difficult to recon-

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[190] UN Release, *supra* note 174.

[191] Remarks of Secretary Powell, *supra* note 174.

[192] One observer noting the relatively strong provisions on fisheries said the Summit was "good news if you don't have a toilet or if you're a fish. Otherwise, it's nothing." Danna Harmon, *Amid protests, summit ends*, The Christian Science Monitor, September 5, 2002.

[193] 50 CFR 602.11(d)(1).

cile the urgency expressed in the text with a target date that extends for more than a decade.

MSY is an imperfect tool that has been used under the Magnuson-Stevens Act[194] to justify delaying action to close fisheries or reduce TACs for short-term economic impacts on the fishing industry.[195] Consequently, MSY as a management goal is being reevaluated by scientists.

> Fishing rates that would give the theoretical MSY were once considered a good target, but there has been a stampede away from this objective – fishing *mortality* should not exceed the theoretical point at which MSY would be achieved and *stock biomass* (population levels) should not drop below the MSY level. (emphasis added)[196]

Scientists assume that population levels at 40% of unfished abundance (or biomass) are close to MSY, and that populations are overfished when levels fall below half the MSY level, roughly twenty percent of unfished abundance. The lesson of U.S. fisheries management, where forty percent of the fish populations assessed are at less than twenty percent of abundance levels, is that MSY does not signify healthy fish populations, especially for slow growing species like sharks, Pacific rockfish and groupers. Fish populations at twenty-one percent of abundance are far from healthy and can not safely be considered to be "not overfished."[197]

MSY is also considered on a fishery specific basis, making difficult application of the ecosystem approach to fisheries management. (The ecosystem approach is discussed in more detail below.)

MSY as fishery management tool should therefore be viewed as a minimum target,[198] and used in conjunction with precautionary and ecosystem approaches to restore depleted fish stocks and protect robust stocks. Setting precautionary targets means taking into account the reproductive capacity

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[194] 16 U.S.C. §§1801, *et seq*.

[195] New England Groundfish, *supra* note 21.

[196] Simon Jennings, et al., *Marine Fisheries Ecology,* (Blackwell Science Inc. 2001).

[197] Michael F. Hirshfield, *Looking Below the Surface: How Healthy are America's Ocean Fisheries?,* Oceana (2003).

[198] Fish Stocks Treaty, *supra* note 112, at Annex II, par. 7.

and the resilience of each stock, the characteristics of fisheries exploiting the stock, other sources of mortality, uncertainty, minimizing the impact of fishing activities on non-target species, and protecting biodiversity and habitats of special concern.[199] This is especially true of fish stocks below MSY abundance levels. There is also a real danger that MSY can be used to reduce healthy fish stocks. That said, there is also a benefit for creating a target date to bring depleted stocks up to MSY levels, and to promote the use of other management tools in conjunction with MSY to protect healthy stocks, such as the precautionary and ecosystem approach, marine protected areas, and measures to control destructive fishing practices.

2. *Apply the Ecosystem Approach by 2010*

- Paragraph 29(d): Encourage the application by 2010 of the ecosystem approach;

- Paragraph 31(c): Develop and facilitate the use of diverse approaches and tools, including the ecosystem approach . . .

Paragraphs 29(d) establishes a target date of 2010 for applying the ecosystem approach, echoing similar language adopted at the 2001 Reykjavik Declaration on Responsible Fisheries and decision 5/6 the Convention on Biological Diversity (hereinafter "CBD").[200] Article 2 of the CBD defines "ecosystem" as "a dynamic complex of plant, animal and micro-organism communities, and their non-living environment interacting as a functional unit."[201] The ecosystem approach is "a strategy for the integrated management of land, water, and

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[199] *Id.* at Annex II.3, Articles 5(f), 5(g), 6.3.

[200] Conference on Responsible Fisheries in the Marine Ecosystem, Reykjavik, Iceland, 1-4 October 2001, The Reykjavik Declaration on Responsible Fisheries, *available at* http://eelink.net/~asilwildlife/RespFish.html (last visited March 29, 2004).; The Convention on Biological Diversity [hereafter "CBD"], *available at* www.biodiv.org/convention/articles.asp (last visited March 29, 2004).. The CBD was signed by nearly every country except the United States at UNCED, and entered into force just eighteen months later in 1993. Although President Clinton signed the Convention shortly after taking office in 1993, the Senate has not yet provided its advice and consent.

[201] CBD, *Id.* at Article 2.

living resources that promotes conservation and sustainability in an equitable way."[202]

As applied to fisheries management, the ecosystem approach avoids the pitfalls of single species management utilized by many international conventions and regional fishery agreements.[203] The ecosystem approach reinforces the use of precaution and the protection of biodiversity, because it requires attention to the full range of the effects of fishing on the entire ocean ecosystem, rather than just the fishery managed. It requires consideration of the effects of removing species on the entire ocean ecosystem, be it predator - prey relationships, changes in trophic levels of species,[204] effects on habitats from fishing gear, and/or the ecosystem effects of bycatch. This in turn requires better monitoring, research, and ecosystem modeling, exactly the kind of scientific commitment needed to address the world fish crisis.

Despite the importance of the ecosystem approach to sustainable fisheries, the text of paragraph 29(d) merely "encourages" the application of the ecosystem approach by 2010, and paragraph 31(c) contains neither a target nor a prescription for implementing the ecosystem approach. More definitive language for applying this important concept in managing fisheries was unable to be agreed upon in the text.

3. *Eliminate Destructive Fishing Practices*

> • Paragraph 31(c): Develop and facilitate the use of diverse approaches and tools, including ... the elimination of destructive fishing practices ...

The world fish crisis can not be addressed meaningfully unless destructive fishing practices are eliminated for all the

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[202] Decision 5/6, Conference of the Parties, CBD, *available at* www.biodiv.org/decisions/ (last visited Mar. 26, 2004).

[203] Dayton, *supra* note 72.

[204] An example of how overfishing can affect tropic levels is "fishing down the food web" whereby overfishing of top-trophic species, like tuna and swordfish, salmon and sharks, leads to the development of fisheries for lower-trophic species in the food web, removing the natural benefits of biodiversity and leading to unpredictable changes such as increased disease outbreaks, the proliferation of pests, and increase in lower trophic species which may hinder the recovery of depleted populations. Pauly, et al., *supra* note 69.

reasons described earlier in this article.[205] It is therefore commendable that paragraph 31(c) calls for the "elimination of destructive fishing practices." But without targets and timetable to end these devastating and wasteful activities, the policy does little but repeat similar entreaties in other international agreements.

4. Establish Marine Protected Areas by 2012

> • Paragraph 31(c): Develop and facilitate the use of diverse approaches and tools, including . . . the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012 and time/area closures for the protection of nursery grounds . . .

Marine protected areas (hereinafter "MPAs") are an important tool for protecting marine ecosystems and the fish upon which they depend. But MPA is a generic term that can refer to any area of managed marine habitat, including marine reserves, marine sanctuaries, refuges, or parks. Some MPAs may have little or nothing to do with fisheries. For example, the U.S. national marine sanctuaries program provides authority for the "comprehensive and coordinated conservation and management" of areas of the marine environment "of special national significance."[206] It facilitates "all public and private uses" compatible with resources protection.[207] Although sanctuaries were not originally established to protect fisheries, in the past several years there has been a growing movement to set aside small portions of these special areas as no-take fish reserves.[208]

Areas in which no extractive uses are allowed are generally referred to as "fully protected marine reserves." Only a small fraction of one percent of the world's oceans is fully pro-

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[205] See *supra* text accompanying notes 58-74.

[206] 16 USC §1433(a)(3).

[207] 16 USC §1433(b)(5).

[208] Two no-take reserves were established in 1997 and 2001 in the Florida Keys National Marine Sanctuary totaling 212 square miles, and a 132 square mile area within state waters was set aside in the Channel Islands National Marine Sanctuary in 2003. Other areas within the federal portion of the Channel Islands Sanctuary area also under consideration. Stephen R. Palumbi, *Marine Reserves: A Tool for Ecosystem Management and Conservation*, Prepared for the Pew Oceans Commission, 2002, at 2-5.

tected marine reserves.[209] The U.S. has only about 24 fully protected marine reserves, consisting of .03% of its ocean territory.[210] By comparison, there are tens of thousands of terrestrial parks throughout the country and the world, protecting about four percent of the earth's land resources.[211]

Marine reserves protect remaining biodiversity and allow depleted marine species and habitats to recover within their boundaries.[212] There is growing scientific evidence that marine reserves also enhance fish populations. As fish grow larger, they generate more larvae and more juvenile fish spillover outside the reserves and replenish the broader ecosystem.[213] Reserves enhance marine ecosystems, increase the size and numbers of heavily exploited species, increase fish densities within reserves as much as sixty to 150 percent, and increase populations of other commercially valuable benthic organisms.[214]

Thus, the target established in paragraph 31(c) for developing and facilitating MPAs, including representative networks by 2012, is significant, even in the absence of a specific call for marine reserves which are likely to be more effective in restoring depleted fish stocks.

5. *Reduce the Loss of Biological Diversity by 2010*

- Paragraph 42: [T]he achievement by 2010 of a significant reduction in the current rate of loss of biological diversity . . .

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[209] National Research Council, Marine Protected Areas: *Tools for Sustaining Ocean Ecosystems*, National Academy Press, 2001; Center for Marine Conservation, *Health of the Oceans*, (2002), at 58.

[210] Palumbi, *supra* note 208, at 2-5.

[211] Rod Fujita of Environmental Defense attributes this to "a double standard . . . in environmental policy. Fishery managers had no problem allowing large scale fishing to start and continue right on through the collapse of the West Coast groundfishery, on the basis of very limited scientific understanding of the life history and productivity of the fish populations they were exploiting. But the same fishery managers demand a very high degree of scientific certainty for the common-sense idea of setting some fish aside in case of mistakes. Rod Fujita, *Heal the Ocean*, New Society Publishers (2003), at 35.

[212] *Id.* at 37.

[213] *Id.* at 36. *See also* The Science of Marine Reserves, Partnership for Interdisciplinary Studies of Coastal Oceans, 2002 citing examples in Florida (Merritt Island), and New England (Georges Bank) at 10-11.

[214] For example, scallops flourished within the areas closed to protect Atlantic cod populations in New England. Palumbi, *supra* note 208, at 22-25.

The alarming loss of biological diversity throughout the world is having significant adverse impacts on the world's natural resources, including fish stocks.[215] Paragraph 42 reiterates the target set at the Ministerial Declaration at the 6th Conference of Parties to the Convention on Biological Diversity at the Hague in April 2002, which called "upon the WSSD to ... reconfirm the commitment *to have instruments in place* to stop and reverse the current alarming biodiversity loss at the global, regional, subregional, and national levels by the year 2010" (emphasis added).[216]

According to an observer at the Summit, "the WSSD considered but ultimately failed to reaffirm the commitment" to have *instruments in place* to stop and reverse biodiversity loss by 2010.[217] Instead, the text generally calls upon States to "promote" or "encourage" measures to curb biodiversity loss. The language of paragraph 42, although a retreat, should not be viewed as negating the validity of the Hague commitment.[218]

6. *Eliminate Fishing Subsidies*

> • Paragraph 30(f): Eliminate subsidies that contribute to illegal, unreported and unregulated fishing and over-capacity, while completing efforts undertaken at WTO to clarify and improve its disciplines on fisheries subsidies, taking into account the importance of this sector to developing countries.

Even without a target date, this provision strengthens the broad agreement among nations at the WTO Ministerial meeting in Doha, Qatar, November, 2001 to address the important

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[215] According to E.O Wilson, 27,000 species go extinct each year, seventy-four per day, three per hour, and twenty per cent of all species could become extinct by the year 2020. E.O. Wilson, *The Diversity of Life*, (W.W. Norton and Company 1992), at 280. *See also, Global Marine Biological Diversity, supra* note 11, at 90, "[M]aintaining biological diversity goes beyond preventing extinctions to maintaining the abundance of species and the functioning of ecosystems, including the production of exploitable populations."

[216] Paragraph 15, 6th Conference of the Parties, United Nations Convention on Biological Diversity, April 2002.

[217] Comments of Mathew Gianni, Greenpeace International, October 2, 2002, *available at* www.udel.edu/CMS/csmp/globaloceans/pdf/Gianni.pdf (last visited March 29, 2004).

[218] *Id.*

issue of fishing subsides.[219] Fishing subsidies contribute to the world fish crisis by creating excess fishing capacity and distorting international markets, leading to overfishing, destructive fishing practices, and illegal, unreported and unregulated fishing.[220]

But not all fishing subsidies are harmful. Subsidies can be used to help acquire sustainable fishing gear, enhance community-based small-scale fishing operations, provide vessel monitoring systems to track fishing activities, help phase out destructive fishing practices, and improve monitoring and reporting of catch. These kinds of subsidies benefit world fish stocks and should be preserved. On the other hand, subsidies to distant water factory trawlers that exploit vulnerable high seas fisheries, joint ventures that export fishing capacity (such as currently exists between the European Union and Argentina), and subsidies that expand or maintain oversized fleets harm world fish stocks and need to end.

The WTO is the key to eliminating harmful subsides and has agreed to develop rules to address fishing subsidies at its January, 2005 meeting. Nongovernmental organizations like Oceana, Center for International Environmental Law, and the World Wildlife Fund, working with the "friends of fish" nations (United States, Australia, New Zealand, Chile, Peru, Ecuador and the Philippines), ensured the survival of the subsidy issue through the otherwise disastrous WTO Ministerial in Cancun, Mexico in August, 2003.[221] The WSSD provisions will help keep the pressure on the WTO to resolve this important issue.

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[219] Doha WTO Ministerial 2001: Ministerial Declaration, WT/MIN(01)/DEC/1, Par. 28 (WTO, November 2001)

[220] World Wildlife Fund, *Turning the Tide on Fishing Subsidies: Can the World Trade Organization Play a Positive Role*? 2002, at 4. *available at* www.panda.org/downloads/policy/turning_tide_on_fishing_subsidies.pdf (last visited March 29, 2004). Subsidies played a significant role in the collapse of the hake fishery in Argentina in 1997, and brought cod to the verge of extinction in the North Atlantic. *See also*, NRC, *supra* note 35. The target date to develop and implement an international plan of action to prevent illegal, unreported and unregulated fishing by 2004 under paragraph 30(d) will also help to eliminate fishing subsidies since there is such a close relationship between subsidies, increased fishing capacity and illegal fishing.

[221] Telephone conversation with WSSD participant Jorge Varela, Oceana, Santiago, Chile, Jan. 19, 2004.

7. *Implementing Plans to Manage Fishing Capacity by 2005 and Eliminate IUU Fishing by 2004*

> • Paragraph 30(d): Urgently develop and implement national and, where appropriate, regional plans of action, to put into effect the FAO international plans of action, in particular the international plan for the management of fishing capacity by 2005 and the international plan of action to prevent, deter and eliminate illegal, unreported and unregulated fishing by 2004.

Excess fishing capacity, fostered by subsidies and poor fisheries management, deplete available resources and create the tragedy of the commons where too many boats chase too few fish. A growing number of fishing vessels also circumvent national laws and regional fishing agreements by targeting high value fish stocks, and fail to report their catch properly. IUU fishing is also believed to be responsible for the fact that only forty percent of the catch of the severely overfished Patagonian toothfish is reported.[222]

IUU fishing vessels are also more likely to use unsustainable fishing practices and thereby exacerbate waste and bycatch. IUU fishing killed 50,000 to 89,000 seabirds in the CCAMLR region in 1998, compared to 1,562 birds killed by legally conducted fishing activities.[223]

For these reasons IUU fishing is "one of the most severe problems currently affecting world fisheries."[224] To address IUU fishing meaningfully, States must effectively control vessels flying their flags, port States must undertake vigorous investigations, and the trade in species captured from IUU fishing must be halted.

Creating target dates to "urgently develop and implement" action plans to manage fishing capacity by 2005, and prevent, deter and eliminate IUU fishing by 2004 establishes an important international commitment, even if the dates may be unre-

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[222] Herr, *supra* note 157, at 11.

[223] Report of the Secretary-General on Oceans and the Law of the Sea, UN Doc. A/54/429 and Corr. 1, par. 252.

[224] Oceans and Law of the Seas: Report of the Secretary-General, U.N. GA, 55th Session at 26, U.N. Doc A/55/61 (2000); *See also* FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, *available at* www.fao.org/fi/ipa/ipae.asp (last visited Mar. 26, 2004).

alistic. The WSSD calls upon the parties to UNCLOS, the Fish Stocks Treaty, and other agreements to aggressively implement and enforce the mandates of those treaties, the FAO Code of Conduct for Responsible Fisheries, and the FAO International Plan of Action on excess capacity and IUU fishing. Vigilance of the parties, regional organizations, nongovernmental organizations and concerned citizens will be necessary to ensure that these agreements and action plans are vigorously implemented and enforced.

8. Implement International Treaties and Agreements

- Paragraph 29(a): Invite States to ratify or accede to and implement [UNCLOS];

- Paragraph 30(b): Ratify or accede to and effectively implement the relevant UN and, where appropriate, associated regional fisheries agreements or arrangements, noting in particular the [UN Fish Stocks Treaty];

- Paragraph 30(c): Implement the 1995 Code of Conduct for Responsible Fisheries;

While these provisions lack targets and timetables, they encourage nations to use the tools provided in UNCLOS, the Fish Stocks Treaty and the FAO Code of Conduct to reduce destructive fishing practices and help rebuild depleted fish stocks. Some of the tools and general principles provided in these agreements that are especially helpful include duties to conserve living marine resources on the high seas, EEZs and straddling stocks, utilizing precautionary and ecosystem approaches, and adopting measures to prevent overfishing and excess fishing capacity.[225]

The FAO Code of Conduct for Responsible Fisheries is a non-binding instrument adopted in 1995 to support ecologically responsible fishing.[226] It provides guidelines for fisheries operations, gear, methods and management systems, and calls on governments to use the precautionary approach, reduce de-

[225] See *supra* text accompanying notes 114-134.

[226] FAO Code of Conduct for Responsible Fisheries [hereafter "FAO Code of Conduct"], *available at* www.fao.org/DOCREP/005/v9878e/v9878e00.htm#9 (last visited Mar. 26, 2004).

structive fishing technologies, and end extremely destructive activities such as the use of poison and explosives.[227] To the extent that nations fulfill their WSSD commitments, these provisions will reinforce non-binding instruments like the FAO Code of Conduct, and extend the conservation obligations in UNCLOS and the Fish Stocks Treaty to nations that have not ratified these agreements.

9. *Supporting Sustainable Aquaculture*

- Paragraph 30(h): Support the sustainable development of aquaculture, including small-scale aquaculture, given its growing importance for food security and economic development.

Marine finfish aquaculture operations can impact fish stocks and ocean ecosystems in a number of ways.[228] Diseases like infectious salmon anemia and sea lice can be transmitted from farmed to wild fish stocks.[229] Fish wastes and the use chemicals, pesticides and antibiotics to combat disease can impair marine water quality.[230] Farmed non-native fish species can escape and compete with and genetically alter wild fish stocks.[231] The use of fish meal to feed farmed species can affect

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[227] *Id.* at Article 6.

[228] *See* National Research Council, *Marine Aquaculture: Opportunities for Growth* (1992) at 92-110; Biliana Cicin-Sain, et al., *Development of a Policy Framework for Offshore Marine Aquaculture in the 3-200 Mile U.S. Ocean Zone*, Center for the Study of Marine Policy July 2001, *available at* http://darc.cms.udel.edu/sgeez/sgeez1.html (last visited March 29, 2004); and Pew Oceans Commission, *Marine Aquaculture in the United States* (2002).

[229] More than one million farmed salmon were destroyed in Maine in 2002 to prevent the spread of infectious salmon anemia. Max Huber, *Maine orders slaughter of farm-raised salmon*, Outdoor-Links.Com, January 9, 2002. *See also,* Journal of the American Veterinary Medical Association, *Infectious salmon anemia emergency declared by USDA*, February 15, 2002.

[230] United States Environmental Protection Agency, *Aquaculture Waste Disposal Wells*, Sept., 1999, pg. 12, www.epa.gov/safewater/uic/classv/pdfs/volume11.pdf. Approximately 400,000 pounds of antibiotics are used annually in the production of seafood sold in the U.S. Institute for Agriculture and Trade Policy, *Widespread Antibiotic Drug Use in the U.S. Aquaculture, New Report Finds*, (Press Release Mar. 21, 2002) *available at* www.iatp.org (last visited March 29, 2004).

[231] ICES, *Code of Practice on the Introductions and Transfers of Marine Organisms*, 2003, *available at* www.ices.dk/reports/general/2003/Codemarine introductions2003.pdf (last visited March 29, 2004). Rosamond Naylor, et al, *Aquaculture-A Gateway for Exotic Species,* 294 Science,1655-1656 (November 23, 2001). The introduction of genetically altered fish have been banned in California and Washington

marine ecosystems,[232] and chemicals in farmed fish are a growing health concern.[233]

Binding agreements, with targets and timetables, are needed to apply stringent environmental standards to new and existing aquaculture operations. Simply "supporting" sustainable aquaculture, as provided in paragraph 30(h), does not go far enough to address the threats to ocean ecosystems and wild fish stocks throughout the world. Nor does this provision recognize the potential impacts of existing marine aquaculture operations which are growing rapidly and already provide one-third of the world's seafood. [234]

Paragraph 31(c) of the text does call for implementing the 1995 Code of Conduct for Responsible Fisheries.[235] The Code of Conduct calls on States to evaluate the effects of aquaculture development on genetic diversity and ecosystem integrity,[236] and consult with neighboring States before introducing non-indigenous species into transboundary aquatic ecosystems.[237] The Code also requires States to ensure that "that the disposal of wastes such as offal, sludge, dead or diseased fish, excess veterinary drugs and other hazardous chemical inputs does not constitute a hazard to human health and the environment."[238]

These provisions in the FAO Code of Conduct are helpful, but do not go far enough.[239] The Pew Oceans Commission re-

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[232] Aquaculture currently uses thirty-five percent of the world fishmeal supply, and by the year 2010 this is expected to increase to fifty-six percent. George Chamberlain and Stuart Barlow, *A Balanced Assessment of Aquaculture*, The Advocate, August 2000. *See also*, Naylor, Rosamond L., et al, *Effect of aquaculture on world fish supplies*, 405 Nature 1017-1024 (June, 2000).

[233] *See* Ronald A. Hites, et al, *Global Assessment of Organic Contaminants in Farmed* Salmon, 303 Science 226-229 (January 9, 2004); PCBs in Farmed Salmon, Environmental Working Group, *available at* www.ewg.org/reports/farmedPCBs/printversion.php (last visited March 29, 2004).; Food Safety Authority of Ireland, 2002a. Summary of investigation of dioxins, furans, and PCBs in farmed salmon, wild salmon, farmed trout and fish oil capsules, *available at* http://193.120.54.7/surveillance/food/surveillance_food_summarydioxins.asp (last visited March 29, 2004).

[234] Pew Oceans Commission, *supra* note 10, at 73.

[235] FAO Code of Conduct, *supra* note 226, at Article 9. Article 9 addresses responsible development of aquaculture under national jurisdiction, within transboundary aquatic ecosystems, use of aquatic genetic resources, and production.

[236] *Id.* at subsection 9.1.2.

[237] *Id.* at subsection 9.2.3.

[238] *Id.* at subsection 9.4.6.

[239] *Id.* As guidelines, the provisions of the FAO Code of Conduct are voluntary. Subsection 9.1.2, for example, provides that "States should promote responsible development and management of aquaculture, including an advance evaluation of the effects

cently called for stringent measures to minimize the adverse effects of marine aquaculture in U.S. waters by requiring aquaculture operations to be subject to national discharge permits and effluent limitations under the Clean Water Act. [240] The Commission also recommends banning the use of non-native species, and establishing a moratorium on new facilities until national standards are established.[241] A similar approach is needed to address this growing problem internationally.

V. RECOMMENDATIONS

Ultimately, the WSSD Plan of Implementation will accomplish little unless nations adopt measures to implement the goals, targets and timetables set forth in the Plan, and/or enter into enforceable international and regional agreements to implement the WSSD. Accordingly, we offer the following recommendations:

A. MSY MUST BE USED IN CONJUNCTION WITH THE PRECAUTIONARY AND ECOSYSTEM APPROACH, AND INTERPRETED TO RAISE MINIMUM POPULATION THRESHOLDS, NOT REDUCE ROBUST FISH STOCKS

The absence of a specific reference to the precautionary approach in the oceans text of the Plan of Implementation should not be a pretext for continuing the use of failed concepts that have proven unsuccessful in sustaining world fish stocks. To restore fish stocks "on an urgent basis and where possible not later than 2015",[242] it will be necessary to move beyond MSY as a standard for fisheries conservation and management. The precautionary approach has been enshrined in numerous international agreements including the Fish Stocks Treaty, Principle 15 of the Rio Declaration, Chapter 17 of Agenda 21, and

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of aquaculture development on genetic diversity and ecosystem integrity, based on the best available scientific information." Subsection 9.2.3 provides that "States should consult with their neighbouring States, as appropriate, before introducing non-indigenous species into transboundary aquatic ecosystems." (emphasis added) The 'consultation' may enable the 'neighboring State' to protest and apply political pressure to stop the introduction non-indigenous species, but is merely a request to consult, and begs the question of whether non-indigenous species should be introduced.

[240] 33 USC §1311(a).

[241] Pew Oceans Commission, *supra* note 10, at 126-127.

[242] WSSD, *supra* note 1, at 30(a).

the FAO Code of Conduct for Responsible Fisheries, and is firmly imbedded in the ecosystem approach adopted in the Convention on Biological Diversity.[243] According to at least one prominent international legal scholar, "the precautionary principle has evolved from being a 'soft law' 'aspirational' goal to its present status as an authoritative norm recognized by governments and international organizations as a firm guide to activities affecting the environment."[244] This concept is recognized in the United States.[245] To meet the target of restoring fish stocks by 2015, allowable takes must be set well below MSY for each fish population of concern based upon levels of scientific uncertainty and the natural variability of fish populations.

B. OVERSIGHT FOR IMPLEMENTING WSSD COMMITMENTS IS URGENTLY NEEDED TO ENSURE THAT THE TARGETS AND TIMETABLES ARE INCORPORATED INTO NATIONAL FISHERY MANAGEMENT REGULATIONS AND THE CONDUCT OF VESSELS ON THE HIGH SEAS

A specific blueprint should be developed to enable and encourage nations to carry out and track the commitments made in Johannesburg under the auspices of an international body such as the Commission on Sustainable Development or the FAO. The vast majority (eighty to ninety percent) of fish stocks are captured within national 200-mile EEZs, and twenty percent of world fish stocks are captured within the U.S. EEZ.[246] It is therefore incumbent upon all nations, especially the United States, to heed the commitments of the WSSD to manage their fisheries responsibly, and join international, regional, and subregional agreements in adopting the targets and timetables proposed in the WSSD Plan of implementation. An excellent

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[243] Gianni, *supra* note 217.

[244] Jon M. Van Dyke, *"The Evolution and International Acceptance of the Precautionary Principle"* Bringing New Law to Ocean Waters, Boalt Hall School of Law, April 5-6, 2002.

[245] [M]anage stocks of uncertain status in a precautionary manner in response to the level of uncertainty." NOAA Fisheries Strategic Plan, May 1997 at 11. *See also* 50 C.F.R. 600.350(d)(ii), "The Councils should adhere to the precautionary approach ... when faced with uncertainty concerning any of the factors" regarding bycatch and bycatch mortality.

[246] World's Imperiled Fish, *supra* note 47; Christopher J. Carr and Harry N. Scheiber, *Dealing With A Resource Crisis: Regulatory Regimes For Managing The World's Marine Fisheries*, 21 Stan. Envtl. L.J. 45, 51 (2002).

start for the United States would be to ratify UNCLOS and the Convention on Biological Diversity.[247] Other international and regional agreements also should be examined to determine how they can be strengthened and/or developed to end destructive fishing practices such as bottom trawling on coral and sponge habitat and seamounts, to count, cap and control bycatch, and to increase the use of fishery observers to improve monitoring, reporting and compliance.

C. ESTABLISH INTERNATIONAL STANDARDS FOR MPAS TO PROTECT CRITICAL OCEAN RESOURCES

Increasing the size and number of MPAs including no-take marine reserves will help preserve pristine ocean ecosystems, and restore and replenish degraded ecosystems and fish stocks. There is a growing body of evidence that marine reserves enable some fish stocks to grow and regenerate outside protected areas. MPAs and reserves are especially critical in hotspots of species diversity such as seamounts and areas where tropical and temperate species overlap.[248] Therefore, international standards for developing MPAs and marine reserves should be established to ensure that essential fish habitat, spawning areas, migratory routes, sea mounts, and other areas important to fish and the marine ecosystem are preserved and protected.

D. ELIMINATE HARMFUL FISHING SUBSIDIES AT THE NATIONAL AND INTERNATIONAL LEVEL

The WSSD Plan of Implementation calls for the elimination of subsidies that contribute to IUU fishing and overcapacity. To achieve this goal the WTO must act by its 2005 meeting to effectively prohibit the most harmful types of fishing subsidies, such as those that contribute to excess fishing capacity, overfishing, and destructive fishing practices. At the same time, the WTO must protect environmentally beneficial subsidies, such as those that provide sustainable fishing gear

[247] U.S. ratification should be accompanied by a formal clarification by the Senate that UNCLOS will not be interpreted to weaken or undermine more stringent domestic law. *See* supra text accompanying notes 112-113.

[248] O'Dor, Ronald K., *The Unknown Ocean: The Baseline Report of the Census of Marine Life Research Program,* Consortium for Oceanographic Research and Education: Washington, DC, 11 (2003).

and vessel monitoring systems. It must also establish procedures for effective monitoring and reporting of subsidies, and ensure that all government financial contributions are administered with the appropriate participation and oversight of intergovernmental bodies and experts competent in fisheries management and the protection of the marine environment.

E. ASSESS THE ENVIRONMENTAL IMPACTS OF ACTIVITIES THAT AFFECT FISHERIES AND THE MARINE ENVIRONMENT

As a signatory to the WSSD Plan of Implementation the United States must (to the extent that it honors its international commitments) "promote the use of environmental impact assessments and environmental evaluation and reporting techniques for projects or activities that are potentially harmful to coastal and marine environments and their living and non-living resources."[249]

The Magna Carta of U.S. environmental laws, the National Environmental Policy Act (hereinafter "NEPA") requires the federal government to review the environmental impacts of all its activities and prepare an environmental impact statement for any activity that significantly affects the quality of the human environment.[250] Previous Administrations have applied NEPA to federal activities worldwide, including activities in the EEZ and the high seas.[251] The Bush Administration, however, is reevaluating the application of NEPA and has argued in federal court that the federal government is under no obligation to assess potential harm to marine life under NEPA if an activity occurs in the EEZ.[252]

This logic would exclude from environmental review under NEPA ocean industrial uses of the ocean for impacts on fish and marine life outside the territorial sea. Even as the Ad-

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[249] WSSD, *supra* note 1, at 33(c).

[250] 42 USC §4322(C).

[251] *Environmental Defense Fund v. Massey*, 986 F.2d 528, 536 (D.C. Cir. 1994), held that environmental assessments under NEPA applied to the construction of a waste disposal facility in Antarctica.

[252] The activities involved testing active sonar systems in the Pacific that deliver 218-decibel blasts, similar to tests that resulted in several multi-marine mammal strandings, including 17 rare beaked whales in the Bahamas in March 2000. *Natural Resources Defense Council Inc. v. U.S. Dept. of Navy*, (C.D. CA, CV-01-07781, September 17, 2002), F. Supp. 2d. 2002 WL 32095131.

ministration's position was struck down in federal court,[253] a White House Task Force was examining ways to "streamline" NEPA by encouraging federal agencies to develop "categorical exclusions" to exclude certain federal activities from environmental review.[254] Each agency will determine which activities will be exempt from environmental review.

Sonar testing, offshore energy, mining, dumping and other ocean activities must be reviewed for potential impacts on fish stocks and other marine resources under NEPA. The U.S. should fulfill the promise it made in Johannesburg and in other international agreements, and abandon its position that certain federal ocean activities are exempt from environmental review under NEPA.

F. ESTABLISH INTERNATIONAL STANDARDS FOR THE SITING, DESIGN AND OPERATION OF AQUACULTURE ACTIVITIES TO PROTECT THE MARINE ECOSYSTEM

Marine finfish aquaculture is a growing industry fraught with risks to wild fish stocks, fisheries, and marine ecosystems. Paragraph 30(h) of the WSSD Plan of Implementation calls for "the sustainable development of aquaculture." But it does not set specific targets and timetables for binding international standards for siting, designing, and operating marine aquaculture facilities to prevent escapes and avoid conflicts with other ocean uses, prevent the use of non-native and transgenic species, minimize or prohibit the use of chemical pesticides and antibiotics, limit the use of fishmeal, and regulate the effluent discharged from marine aquaculture operations. There is an urgent need for binding international standards such as those recommended under the FOA Code of Conduct for Responsible Fisheries.[255]

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[253] The court held that, "because the U.S. exercises substantial legislative control of the EEZ in the area of the environment stemming from its "sovereign rights" for the purpose of conserving and managing natural resources, the Court finds that NEPA applies to federal actions which may affect the environment in the EEZ." *Id.* at 21.

[254] Modernizing NEPA Implementation, *The NEPA Task Force Report to the Council on Environmental Quality*, September 2003, at xiii.

[255] FAO Code of Conduct, *supra* note 226, at Article 9.

VI. CONCLUSION

The drastic decline in world fish stocks and marine biodiversity calls for an immediate and significant reduction in overfishing, destructive fishing practices, and habitat destruction and pollution. This will not occur merely because of the commitments made at the WSSD. As the U.S. noted in Johannesburg, the Plan of Implementation does "not create legally binding obligations on States under international law,"[256] and the targets and timetables established at the WSSD are not self-implementing. But they do provide a roadmap to address these threats in a variety of ways.

In stark contrast with other issues addressed at the Summit, important and explicit targets and timetables were established on key fishery issues such as maintaining and restoring fish stocks to MSY by 2015;[257] encouraging the application of the ecosystem approach by 2010;[258] implementing plans of action to address fishing capacity by 2005 and IUU fishing by 2004;[259] significantly reducing the loss of biodiversity by 2010;[260] establishing a regular process for global reporting and assessment of the state of the marine environment by 2004 under the United Nations;[261] and developing representative networks of MPAs by 2012.[262]

Even where there was no agreement on specific targets and timetables, the Plan of Implementation promotes sustainable fishing by calling for the elimination of fishing subsidies,[263] and the ratification and implementation of important international agreements and instruments to address overfishing and destructive fishing practices such as UNCLOS,[264] the Fish Stocks Treaty,[265] the FAO Code of Conduct for Responsible

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[256] Explanation of position by the U.S., *supra* note 184.
[257] WSSD POI, *supra* note 1, at 30(a).
[258] *Id.* at 29(d).
[259] *Id.* at 30(d).
[260] *Id.* at 42.
[261] *Id.* at 34(b).
[262] *Id.* at 31(c).
[263] *Id.* at 30(f).
[264] *Id.* at 20(a).
[265] *Id.* at 30(b).

Fisheries,[266] and portions of the Convention on Biological Diversity.[267]

On the other hand, the WSSD failed to tackle problems with the concept of MSY, failed to commit to fully stop and reverse the loss of biodiversity, and adopted a weak statement on marine aquaculture.[268] The Political Declaration issued by the Heads of State at the conclusion of the Summit failed to make a strong statement on the importance of the oceans or fisheries despite persistent lobbying by a diverse alliance of organizations and advocates.[269] The Plan of Implementation also failed to adequately address invasive alien species in ballast water which threaten native fish stocks and are the second leading cause of biodiversity loss.[270]

The Plan also fails to single out actions to specifically address bycatch, responsible for wasting 25% of the world's fish catch. However, the problem of bycatch is at least implicitly addressed in numerous provisions that call for the use of the ecosystem approach, the elimination of destructive fishing practices, overcapacity and IUU fishing, implementation of the FAO Code of Conduct for Responsible Fisheries, ratification of the Fish Stocks Treaty, and restoration of fisheries to MSY.

The WSSD has been criticized for failing to specifically call for the use of the precautionary approach with respect to ocean

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[266] *Id.* at 30(c).

[267] *Id.* at 31(b).

[268] *Id.* at 30(h).

[269] A coalition of ocean groups issued a release stating that "the complete lack of any ocean language in the Draft Declaration is indicative of a lack of commitment by the Summit to take the problem (the degradation of the oceans) seriously." *WDDS Misses the Boat: Draft Political Declaration Fails to Mention Oceans*, Statement of Oceana, Wildlife Conservation Society, GEOTA, Natural Resources Defense Council, EcoLogic Development Fund, Center for the Study of Marine Policy, International Ocean and Coastal Organization, SOF Institute for Ocean Policy, NAUSICAA National Sea Center, Korea Maritime Institute, Global Coral Reef Alliance, WSSD Civil Society Global Forum on Oceans, September 3, 2002 (on file with the authors).

[270] Despite the urgent need to stop the spread of invasive alien species in ballast water, the Plan simply calls for "accelerating" measures to address invasive alien species in ballast water and "urges" the IMO to finalize the Convention to control and manage ship's ballast water and sediments. It contains no targets and timetables. WSSD, *supra* note 3, at 33(b). Twelve billion tons of ballast water containing 10,000 marine species at any one time are shipped around the globe each year spreading alien and invasive species, and 40,000 gallons of foreign ballast water are discharged every minute into U.S. waters. Oceana, *Hot Issues, World Summit on Sustainable Development*, *available at* www.oceana.org (last visited Mar. 26, 2004).

fisheries.[271] While such a reference would have been welcome, the precautionary approach is embedded in many other portions of the text, and is part and parcel of many of the instruments endorsed by the WSSD including the Fish Stocks Treaty, FAO Code of Conduct, and the Convention on Biological Diversity, among others. Thus, its absence in the oceans text should not be viewed as a retreat from an international commitment to use the precautionary approach in managing world fish stocks.

All things considered, the oceans and sustainable fish stocks fared relatively well compared to the lack of significant progress made on many other critical issues at the World Summit (*e.g.*; renewable energy, corporate accountability, climate change, etc.). Given declining fish stocks and the precarious state of the oceans, however, the progress at the World Summit did not fulfill the expectations of Rio; nor can it fully address the crises facing our oceans. Nevertheless, the explicit targets and timetables to address the world fish crisis was an important outcome of the WSSD. But the ultimate success of the World Summit will depend upon how nations fulfill the commitments they made in Johannesburg.

[271] Gianni, *supra* note 217.