

IT DON'T COME EEZ: THE FAILURE AND FUTURE OF COASTAL STATE FISHERIES MANAGEMENT

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I. INTRODUCTION

Early in the negotiations of the Third United Nations Conference on the Law of the Sea (UNCLOS III) there was widespread agreement that coastal states should exercise exclusive jurisdiction over fisheries in an extended economic zone (EEZ).¹ This consensus developed quickly into customary international law.² By 1977, more than forty nations had extended sovereign or

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1. See generally U.N. DIV. FOR OCEAN AFFAIRS AND THE LAW OF THE SEA, OFFICE OF LEGAL AFFAIRS, CONSERVATION AND UTILIZATION OF THE LIVING RESOURCES OF THE EXCLUSIVE ECONOMIC ZONE: LEGISLATIVE HISTORY OF ARTICLES 61 AND 62 OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA at 113-18, U.N. Sales No. E.95.V.21 (1995) [hereinafter EEZ UNCLOS]. UNCLOS III was convened in 1973. *Id.* at 71. By 1975, both the concept of exclusive coastal state jurisdiction over a 200-mile EEZ and most of the basic management and conservation obligations of coastal states were settled. *Id.* at 113-18.

2. Donna R. Christie, *The Conservation and Management of Stocks Located Solely within the Exclusive Economic Zone*, in DEVELOPMENTS IN INTERNATIONAL FISHERIES LAW 395 (Ellen Hey ed., 1999).

exclusive jurisdiction over fisheries to 200 miles,³ and by the conclusion of UNCLOS III negotiations in 1982, more than ninety nations had extended offshore jurisdiction over fisheries to 200 miles.⁴ This early consensus in the UNCLOS III negotiations and rapidly emerging state practice reflected the urgency that coastal states perceived concerning the escalation in distant water fishing, declining fish stocks, and the failure of international fisheries organizations to manage high seas fisheries effectively.⁵

A number of premises formed the basis for the Law of the Sea Convention's (LOS Convention)⁶ grant of exclusive fishery management authority to coastal states.⁷ The first was "that coastal state jurisdiction could provide a more functional fisheries management regime."⁸ Most fisheries are located within 200 miles of a coast,⁹ "making the 200-mile [EEZ] a rational area for management."¹⁰ Second, "by placing these areas under exclusive jurisdiction [of the coastal state], entry into fisheries would be controlled, thereby reducing both the potential for overfishing and for overcapitalization of fishing fleets."¹¹ In addition, coastal states would have authority "to enforce regulations against all vessels within the [EEZ]"¹² and not be dependent on the weak flag state enforcement that characterized regulation by international fisheries

3. See WILLIAM T. BURKE, *THE NEW INTERNATIONAL LAW OF FISHERIES* 22 n.76 (1994). Forty-four states extended some form of jurisdiction over fisheries to 200 miles offshore between 1975 and 1977. *Id.*

4. See ROBERT W. SMITH, *EXCLUSIVE ECONOMIC ZONE CLAIMS, AN ANALYSIS AND PRIMARY DOCUMENTS* 4 tbl. 1 (1986). In 1982, the International Court of Justice noted that "the concept of the exclusive economic zone . . . may be regarded as part of modern international law." *Continental Shelf (Tunis v. Libya)*, 1982 I.C.J. 18, 74 (Feb. 24).

5. See BURKE, *supra* note 3, at 23-24. Burke notes that the failure of international fisheries bodies "was not the result of an inherent incapacity for management by international agencies. . . . [but the lack of] political will [by coastal states and fishing states] to create international bodies with the necessary competence and assets to implement effective management." *Id.*

6. United Nations Convention on the Law of the Sea, *opened for signature* Dec. 10, 1982, 1833 U.N.T.S. 3, 21 I.L.M. 1261 (entered into force Nov. 16, 1994) [hereinafter LOS Convention].

7. *Id.* pt. V, arts. 55-75; see Christie, *supra* note 2, at 395-96.

8. Christie, *supra* note 2, at 396.

9. *Id.* It is estimated that ninety percent of fisheries' catch is within 200 miles of the coast. *Id.* at 397. See also Garry R. Russ & Dirk C. Zeller, *From Mare Liberum to Mare Reservarum*, 27 *MARINE POL'Y* 75, 76 (2003); ELLEN HEY, *THE REGIME FOR THE EXPLOITATION OF TRANSBOUNDARY MARINE FISHERIES RESOURCES* 1 (1989). Prior to the widespread adoption of 200-mile EEZs, the high seas provided even less of the worldwide catch. Foreign fishing fleets were largely forced outside 200 miles. See Carolyn Deere, *International Trade, Conservation, and Sustainable Development in the Fisheries Sector: Conflict or Compatibility?*, 15 *OCEAN Y.B.* 102, 126 (2001) (noting that in 1980 only five percent of the world's catch came from the high seas).

10. Christie, *supra* note 2, at 396.

11. *Id.*

12. *Id.*

organizations.¹³ Finally, “prevailing theories of fisheries management were presumed to be adequate to protect and maintain fisheries if jurisdictional control and effective enforcement authority were established. None of these premises turned out to be entirely valid.”¹⁴

The next two decades saw fisheries stocks continuing to decline in both EEZs and on the high seas.¹⁵ A great deal of international attention has focused on the effects on EEZ management of illegal fishing and intense high seas fishing for straddling stocks and highly migratory species,¹⁶ but coastal states cannot totally shift culpability to distant-water fishing fleets for the failure of fisheries management in the EEZ.¹⁷ Coastal states were given virtually complete discretion in interpreting and implementing their duties under the LOS Convention and must take primary responsibility for failure to meet their most fundamental obligation — the prevention of overexploitation of EEZ fish stocks.¹⁸

In Part II, this article discusses the continuing decline of the state of fisheries since the development in international law of coastal state management of fisheries within 200-mile EEZs. Part III focuses on the management framework created by the LOS Convention and its weaknesses in assuring sustainable fisheries regimes for EEZs. The future of EEZ management in the

13. See Warren G. Magnuson, *The Fishery Conservation and Management Act of 1976: First Step Toward Improved Management of Marine Fisheries*, 52 WASH. L. REV. 427, 444-45 (1977) (discussing the lack of enforcement with regard to state-owned fishing fleets); R. R. CHURCHILL & A.V. LOWE, *THE LAW OF THE SEA* 286-87 (3d ed. 1999) (discussing the problems of jurisdictional competency of international fisheries organizations and the disincentives for compliance). See generally Rebecca Bratspies, *Finessing King Neptune: Fisheries Management and the Limits of International Law*, 25 HARV. ENVTL. L. REV. 213, 223-26 (2001); Shigeru Oda, *Fisheries Under the United Nations Convention on the Law of the Sea*, 77 AM. J. INT'L L. 739, 740-41 (1983).

14. Christie, *supra* note 2, at 396.

15. *Id.*

16. See, e.g., Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, *approved* Nov. 24, 1993, S. TREATY DOC. NO.103-24, 33 I.L.M. 968 (1994); Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 Dec. 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, *opened for signature* Dec. 4, 1995, S. TREATY DOC. NO. 104-24, 34 I.L.M. 1542 (1995) (entered into force Dec. 11, 2001) [hereinafter U.N. Fish Stocks Agreement]; International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, Mar. 2, 2001, *available at* <http://www.fao.org> (last visited Mar. 12, 2004). See generally Ellen Hey, *Global Fisheries Regulations in the First Half of the 1990s*, 11 INT'L J. OF MARINE & COASTAL L. 459 (1996); Evelyne Meltzer, *Global Overview of Straddling and Highly Migratory Fish Stocks: The Nonsustainable Nature of High Seas Fisheries*, 25 OCEAN DEV. & INT'L. L. 255 (1994).

17. See generally Harry N. Scheiber, *Ocean Governance and the Marine Fisheries Crisis: Two Decades of Innovation – and Frustration*, 20 VA. ENVTL. L.J. 119, 127 (2001).

18. LOS Convention, *supra* note 6, art. 61(2).

international context is discussed in Part IV, which considers the role of the LOS Convention and other international treaties and obligations, as well as other developments, such as market-based approaches to improving fisheries management.

II. THE CONTINUING DECLINE OF EEZ FISH STOCKS

Since the extension of jurisdiction over EEZ fisheries by coastal states in the mid-1970s, worldwide marine catch has increased from about 60 million tons to a highpoint of about 94.8 million tons in 2000.¹⁹ The latest analysis of main stocks or species groups indicates that only about twenty-five percent of these stocks or species groups are underexploited or moderately exploited, forty-seven percent are fully exploited, eighteen percent are overexploited, and the remaining ten percent are either significantly depleted or recovering from depletion.²⁰

Fishing effort in the form of fishing capacity and more efficient technologies has, however, increased much more quickly than catch.²¹ In addition, as more valuable fish stocks have become depleted, juveniles and lower-value species represent a larger proportion of landings.²² Overfishing and the practice of fishing down the food web²³ can lead to long-term and potentially irreversible ecosystem level consequences through effects on “predatory relationships, genetic diversity of fish stocks, and the future recruitment and regenerative capacity of [fisheries].”²⁴ These indicators, along with recent periodic leveling-off or decline in total marine catch, suggest that fisheries cannot be sustained at current

19. U.N. FOOD & AGRIC. ORG., *THE STATE OF WORLD FISHERIES AND AQUACULTURE* 5, 8 (2002), available at <http://www.fao.org> (last visited Oct. 9, 2004).

20. *Id.* at 23.

21. Deere, *supra* note 9, at 115 (“[N]ew technology and fishing techniques . . . have increased the length and intensity of fishing trips, often turning fishing into an industrial activity.”); Christopher D. Stone, *Too Many Fishing Boats, Too Few Fish: Can Trade Laws Trim Subsidies and Restore the Balance in Global Fisheries?*, 24 *ECOLOGY L. Q.* 505, 507-08 (1997).

22. See Stone, *supra* note 21, at 508; see also Deere, *supra* note 9, at 117 (“Only the ability of the global fishing fleet to move on to lower-valued species . . . after having overfished the more highly valued species . . . has prevented sharp declines in the total catch over the past 2 decades.”).

23. See generally Daniel Pauly et al., *Fishing Down Marine Food Webs*, 279 *SCI.* 860 (1998), available at <http://www.seafriends.org> (last visited Oct. 9, 2004). Fishing down the food web refers to the practice of fishermen moving to species further down the food chain or web as larger fish are depleted. *Id.*

24. See Deere, *supra* note 9, at 117. Pauly et al., *supra* note 23, note that “[f]ishing down food webs . . . leads at first to increasing catches, then to a phase transition associated with stagnating or declining catches.” They also note that these practices are “unsustainable.” *Id.*

levels and that EEZ fisheries management, even by developed nations, has been unsuccessful.²⁵

Although a great deal of recent international attention has focused on the effects of intense high seas fishing for straddling stocks and highly migratory species on the management of EEZ, coastal states cannot totally shift responsibility for the failure of fisheries management in the EEZ to distant-water fishing fleets. Over ninety percent of the fish are located within 200 miles of the shore.²⁶ Currently, distant-water fishermen account for only about five percent of the total marine landings.²⁷ Despite this, commercial species located entirely within the EEZ or associated with the continental shelf largely continue to decline. These circumstances have led to serious questions concerning the adequacy of the principles embodied in articles 61 and 62 of the LOS Convention to manage the living resources of the EEZ sustainably.

III. EEZ MANAGEMENT AND THE LAW OF THE SEA CONVENTION

A. *The Framework for Management*

The primary obligations of coastal states for management of EEZ fishery resources are set out in articles 61 and 62 of the LOS Convention. Article 61 addresses conservation of living resources of the EEZ and sets out the following obligations:

1. Coastal states “shall determine the allowable catch” for EEZ fisheries;²⁸
2. Coastal states must take into account the best available scientific information;²⁹

25. See, e.g., Elisabeth M. Borgese & Krishan Saigal, *Managerial Implications of Development in the Ocean*, 12 OCEAN Y.B. 1, 9 (1996); BURKE, *supra* note 3, at 80-81; Douglas M. Johnston, *Is Coastal State Fishery Management Successful or Not?*, 22 OCEAN DEV. & INT'L L. 199, 204 (1991). See generally Carl Safina, *Where Have All the Fishes Gone?*, 10 ISSUES IN SCI. & TECH. 37, 39 (1994) (discussing the failure of U.S. management within the EEZ), available at <http://www.seaweb.org>.

26. Christie, *supra* note 2, at 397.

27. RICHARD GRAINGER, U.N. FOOD & AGRIC. ORG., RECENT TRENDS IN GLOBAL FISHERIES PRODUCTION FIG. 11 (2001), at <http://www.fao.org> (last visited Oct. 9, 2004). Distant-water fishery production has generally declined since 1973 as a percentage of annual fisheries production; since 1989, distant-water fisheries catch has also declined sharply. *Id.* FAO figures for distant-water fisheries include both foreign EEZ and high seas catch. See *id.*

28. LOS Convention, *supra* note 6, art. 61(1).

29. *Id.* art. 61(2).

3. Coastal states must adopt measures to prevent overexploitation;³⁰
4. Coastal states must maintain or restore stocks to produce maximum sustainable yield (MSY), “as qualified by relevant environmental and economic factors;”³¹ and
5. Measures must consider “effects on species associated with or dependent upon harvested species” to ensure such species do not become “seriously threatened.”³²

Article 62 concerns utilization of EEZ living resources and addresses the circumstances and conditions for access to a country’s EEZ fisheries by foreign fishermen.³³ The most important management principle incorporated in article 62 is the obligation for coastal states to “promote the objective of optimum utilization” of EEZ living resources.³⁴ The objective of optimum utilization is to be applied, however, “without prejudice to article 61,”³⁵ which authorizes coastal states to set conservative levels for exploitation of stocks if justified by conservation principles or economic factors.

B. The Inadequacy of the Management Principles of Articles 61 and 62

1. Allowable Catch

Article 61(1) sets the stage for uncertainty as to the legal obligations of states by the provision: “The coastal State shall determine the allowable catch of the living resources in its [EEZ].”³⁶ This language may simply be declaring that setting allowable catch is within the exclusive domain of the coastal state, or it may be creating a duty for coastal states to set an allowable catch. The

30. *Id.*

31. *Id.* art. 61(3).

32. *Id.* art. 61(4).

33. *Id.* art. 62(1)-(5).

34. LOS Convention, *supra* note 6, art. 62(1). The final text specifically rejects the objectives of maximum or full utilization which were considered in the negotiations at UNCLOS III. *See, e.g.*, EEZ UNCLOS, *supra* note 1. The maximum utilization principle for fisheries was suggested in proposals by the United Kingdom and the Republic of Korea while the full utilization of fisheries principle was proposed by the United States. *See generally* BURKE, *supra* note 3, at 59-62.

35. LOS Convention, *supra* note 6, art. 62(1).

36. *Id.* art. 61(1).

language is ambiguous both as to whether it creates any state responsibility to set allowable catch³⁷ and, if it does, as to the scope of the responsibility it creates. To the extent that “shall” is mandatory language requiring states to set allowable catch, the requirement should reasonably extend only to those stocks that are significantly exploited or are potentially exploited beyond a sustainable harvest level.³⁸ Unfortunately, the number of these stocks has increased significantly as fishermen move from one depleted fishery to another,³⁹ fishing down the food web.⁴⁰ States’ resources have been strained as more and more stocks require management, and resource planning has largely lacked perspective when responding to one management crisis following another. This situation has forced many states into a pattern of incremental management by quotas on a species-by-species basis with little opportunity to consider alternative approaches, not because of the requirements of article 61, but because of necessity.⁴¹

Incorporating the provision for coastal state determination of allowable catch in the first section of article 61 is not only consistent with the states’ sovereign rights over the resources of the EEZ,⁴² but also provides a basis for presuming that setting allowable catch — quotas — is a required or predominant management technique.

37. Preeminent law of the sea expert Professor William T. Burke stated in a 1984 article that “[t]he use of the mandatory ‘shall’ in article 61 indicates that the coastal State is obligated to decide upon an allowable catch.” William T. Burke, *The Law of the Sea Convention Provisions on Conditions of Access to Fisheries Subject to National Jurisdiction*, 63 ORE. L. REV. 73, 78 (1984). In his 1994 treatise, however, Professor Burke concluded that “[t]he purport of article 61(1) is that only the coastal state shall determine the allowable catch” and that “decision[s] about an allowable catch is exclusively that of the coastal state.” BURKE, *supra* note 3, at 46. See also LOS Convention, *supra* note 6, art. 297(3)(a) which refers to a state’s “discretionary powers for determining the allowable catch”

38. See BURKE, *supra* note 3, at 46 (“Common sense would suggest that article 61(1) does not require purely theoretical catch calculations for all living resources that might conceivably be exploited, but rather applies to stocks that are believed to be significantly affected by exploitation. . . .”); see also Oda, *supra* note 13, at 743 (“It can be argued that it is not appropriate for the coastal state . . . to determine the allowable catch of the living resources in the EEZ and that it is extremely difficult to perform this obligation properly.”).

39. R. J. R. Grainger & S. M. Garcia, CHRONICLES OF MARINE FISHERY LANDINGS 1950-1994: TREND ANALYSIS AND FISHERIES POTENTIAL, U.N. FOOD & AGRIC. ORG. FISHERIES TECHNICAL PAPER NO. 359 § 4.2 (1996), available at <http://www.fao.org> (last visited Oct. 9, 2004).

40. “Fishing down the food web” occurs when traditional stocks become depleted, and fishermen must turn to stocks not ordinarily targeted. In many cases, these previously unexploited stocks have become the dominant species in the ecosystem. Fishing down the food web provides some economic relief for struggling fishermen, but the practice further disrupts the ecosystem, making recovery of the ecosystem even more difficult to achieve. For a discussion of this practice, see PEW OCEANS COMM’N, AMERICA’S LIVING OCEANS: CHARTING A COURSE FOR SEA CHANGE 38-40 (May 2003), available at <http://www.pewoceans.org> (last visited Mar. 22, 2004).

41. See generally STUART M. KAYE, INTERNATIONAL FISHERIES MANAGEMENT 98 (2001).

42. *Id.* at 99.

Professor William Burke challenges this interpretation, however, because of the difficulties of administering fishery regulation by quotas.

[T]he central place of allowable catch in the convention scheme is curious, because regulating the allowable catch is but one means of managing fishery exploitation, and it both encounters and creates serious problems. The data requirements for catch quotas are difficult to meet, particularly for developing states, because the scientific basis for data collection and analysis is frequently inadequate. Therefore, regulation of fishing by this method is very difficult and often impossible. In developed communities, catch quota regulation is also costly and provokes serious economic problems. In both developed and developing states, allowable catch regulation may lead to distorted information because of wilful [sic] underreporting of catch stimulated by the regulation.⁴³

If article 61 requires coastal states to set allowable catch, the requirement may have had little relationship to its importance or utility as a management tool for EEZ living resources. The LOS Convention envisioned that other nations should have access to surplus stocks in the EEZ, and determination of allowable catch is a critical element in the article 62(2) formula⁴⁴ for determining the existence and amount of surplus stocks available to foreign fishermen.⁴⁵ The importance of allowable catch in this context is emphasized by the fact that the arbitrary refusal of a coastal state to set allowable catch is one of the very few coastal state obligations concerning fisheries management that is subject to any type of compulsory dispute resolution.⁴⁶

43. BURKE, *supra* note 3, at 45. Professor Burke concludes that even if the Convention requires states to set allowable catch, "it does not follow that . . . catch regulations [must be used] for management." *Id.* at 47.

44. LOS Convention, *supra* note 6, art. 62(2) provides in relevant part: "Where the coastal State does not have the capacity to harvest the entire allowable catch, it shall . . . give other States access to the surplus of the allowable catch. . . ."

45. *Id.* A determination of allowable catch and domestic harvesting capacity provides the basis for calculating surplus stocks available to foreign fishermen. *See id.*

46. LOS Convention, *supra* note 6, art. 297(3)(b)(ii) requires submission of a dispute to compulsory conciliation if "a coastal State has arbitrarily refused to determine, at the request of another State, the allowable catch and its capacity to harvest living resources. . . ." Although the procedure is mandatory, conciliation leads only to non-binding "recommendations" that may be rejected by the coastal nation. *Id.* Annex V, art. 7(2).

Even if the setting of allowable catch is a requirement for purposes of determining surplus, the requirement is today largely illusory. By the time the LOS Convention came into force in 1994, many states had already excluded foreign fishers either because domestic harvesting capacity exceeded allowable catch or because allowable catch was set at domestic harvesting capacity.⁴⁷ In addition, commentators agree that there is no obligation to set an allowable catch above zero or above domestic harvesting capacity.⁴⁸ The conclusion that allowable catch is an illusory principle is further reinforced by article 297(3)(a) of the LOS Convention which provides that coastal states are not:

obliged to accept the submission to [compulsory] settlement of any dispute relating to its sovereign rights with respect to the living resources in the [EEZ] or their exercise, including its *discretionary* powers for determining the allowable catch, its harvesting capacity, the allocation of surpluses to other States and the terms and conditions established in its conservation and management laws and regulations.⁴⁹

The ambiguity of the coastal state's obligation concerning the determination of allowable catch, the problems with allowable catch as a regulatory technique, and its ultimate unenforceability as a method to procure foreign access to EEZ fishery stocks are factors that contribute to the inevitable conclusion that allowable catch should not be presumed to represent a required or predominant method for EEZ fisheries management.⁵⁰ Further, these factors lead to the conclusion that a state's discretion in setting allowable catch at an unsustainably high level does not violate any enforceable provisions of article 61.

47. See S. Garcia et al., *The New Law of the Sea, and the Access to Surplus Fish Resources*, 10 MARINE POL'Y 192, 192-95 (1986).

48. See BURKE, *supra* note 3, at 63; Garcia et al., *supra* note 47, at 196-98; CHURCHILL & LOWE, *supra* note 13, at 286; Satya Nadan, *Implementing the Fisheries Provision of the Convention*, in CONSENSUS AND CONFRONTATION: THE UNITED STATES AND THE LAW OF THE SEA CONVENTION 390-91 (1985) (remarks of Ambassador Tommy Koh); Ellen Hey, *The Fisheries Provisions of the LOS Convention*, in DEVELOPMENTS IN INTERNATIONAL FISHERIES LAW 13, 21-22 (Ellen Hey ed., 1999).

49. LOS Convention, *supra* note 6, art. 297(3)(a) (emphasis added).

50. Professor Burke concludes that even if the LOS Convention requires states to set allowable catch, "it does not follow that . . . catch regulations [must be used] for management[,] . . . but management might proceed on any other basis the coastal state believes proper under the circumstances." BURKE, *supra* note 3, at 47.

2. *Best Scientific Evidence Available*

Article 61(2) of the LOS Convention directs coastal states to “tak[e] into account the best scientific evidence available”⁵¹ in management of the living resources of the EEZ. This language is generally considered to be facilitative, authorizing states to manage fisheries even if scientific information is inadequate or unavailable.⁵² The term “available” also serves, however, to put little or no burden on the coastal state to acquire data for fisheries management.⁵³ The requirement that the best scientific evidence merely be “tak[en] into account” arguably further relegates scientific evidence to merely a consideration in development of management measures with little determinative weight.⁵⁴ Thus, states have great flexibility and virtually no international legal obligation to base management on objective scientific criteria.⁵⁵

Although the quality of scientific evidence is clearly relevant, the “best available” evidence may be woefully deficient to provide a basis for management.⁵⁶ Funding for fisheries research is not a high priority in most countries. Fisheries data must often be extrapolated from reporting by fishermen and landing data.⁵⁷ Because funding for enforcement of fisheries regulations, including reporting requirements, is also low⁵⁸ and fishermen have strong incentives to under-report (particularly when quota systems are used),⁵⁹ such data may be unreliable at best. Reliable information concerning unlanded species (e.g., discarded incidental catch) may be particularly difficult to collect.

3. *Measures to Prevent Overexploitation*

Perhaps the clearest obligation created for coastal states by article 61 is the duty to prevent overexploitation.⁶⁰ Left to their own

51. LOS Convention, *supra* note 6, art. 61(2).

52. See Burke, *supra* note 37, at 84; KAYE, *supra* note 41, at 103; see also M. DAHMANI, THE FISHERIES REGIME OF THE EXCLUSIVE ECONOMIC ZONE 44-45 (1987).

53. Most commentators, however, view the context of the provision in relation to the duty to take “proper conservation and measures” as creating some obligation to acquire the scientific data necessary to make meaningful management decisions. See Burke, *supra* note 37, at 84-85; KAYE, *supra* note 41, at 103-04; BURKE, *supra* note 3, at 57.

54. See BURKE, *supra* note 3, at 56; KAYE, *supra* note 41, at 103.

55. See KAYE, *supra* note 41, at 103.

56. See DAHMANI, *supra* note 52, at 44-45.

57. See *id.* at 45.

58. *Id.*

59. *Id.* at 43.

60. LOS Convention, *supra* note 6, art. 61(2). The precise language of article 61(2) is that the coastal state must “ensure” that “the maintenance of the living resources in the exclusive economic zone is not endangered by overexploitation.” *Id.* Professor Burke posits that this, like other provisions of art. 61, is vague and ambiguous. See William T. Burke, *U.S. Fishery*

discretion, however, coastal states have been quite unsuccessful at accomplishing this goal.⁶¹

Control of access to fisheries created the possibility for coastal states to address the “tragedy of the commons” within the EEZ.⁶² Displacement of foreign fisheries from EEZs was viewed by many nations, however, as the opportunity to develop their domestic fishing industries, and freedom of the high seas was replaced by virtually open access for national fishermen.⁶³ In addition, many countries subsidized the development of their fishing industries, further fueling overcapitalization as fishing efforts, in terms of time, resources and technology, increased to capture diminishing stocks.⁶⁴ Some of the nations that lacked the resources to either exploit or effectively manage the EEZ simply sold access rights to foreign fleets.⁶⁵ The result is that extension of national jurisdiction has not adequately addressed the issue of open access and, therefore, has not been able to control or prevent overexploitation.⁶⁶

4. *Qualified Maximum Sustainable Yield*

Maximum sustainable yield (MSY) is a pre-UNCLOS conservation concept that is generally defined as the largest annual catch or yield of a fishery that can be taken continuously from a stock, based on the renewability of the resource.⁶⁷ The concept is tied to the objective of maximizing or optimizing food production from the ocean. Even at the time of UNCLOS negotiations, MSY was subject to much criticism. Among the problems attributed to MSY management were the difficulties in defining MSY due to variations in environmental conditions, the complex inter-relationships of stock, the failure to take into account the economics of fisheries, and the role played by density of population.⁶⁸

Management and the New Law of the Sea, 76 AM. J. INT'L L. 24, 29 (1982).

61. See Scheiber, *supra* note 17. Professor Scheiber states that “in the nearly two decades since UNCLOS validated the 200-mile EEZs, every coastal state with major fishing interests has failed to sustain the level of stocks in its fisheries.” *Id.* at 127.

62. See generally Stone, *supra* note 21, at 510.

63. *Id.*

64. *Id.* at 515-16.

65. Deere, *supra* note 9, at 163.

66. See Stone, *supra* note 21, at 510-12; BURKE, *supra* note 3, at 348; Alison Rieser, *International Fisheries Law, Overfishing and Marine Biodiversity*, 9 GEO. INT'L ENVTL. L. REV. 251, 263-64 (1997).

67. U.N. STATISTICS DIV.: ENVIRONMENT GLOSSARY, available at <http://unstats.un.org> (last visited Oct. 9, 2004).

68. See generally Gary Knight, *International Fisheries Management - A Background Paper*, in *THE FUTURE OF INTERNATIONAL FISHERIES MANAGEMENT* 16-37 (Gary Knight ed., 1975). The failure of MSY to incorporate fisheries economics is said to lead to overfishing and overcapitalization. John J. Rooney, *Impact of the Magnuson Fisheries Conservation and Management Act on Fisheries in the U.S. Exclusive Economic Zone*, 12 OCEAN Y.B. 92, 98

Article 61(3) of the LOS Convention was viewed as addressing many of the deficiencies of management to produce MSY by providing that coastal states' management measures should be designed to "produce the maximum sustainable yield, *as qualified by* relevant environmental and economic factors."⁶⁹ This formulation grants states the discretion to take into account not only the scientific and economic shortcomings of MSY, but also to incorporate a wide range of social and political considerations.⁷⁰ Coastal states are specifically authorized to adjust MSY to "meet [their] interests as [they] determine[] them."⁷¹ Although the environmental and economic problems of MSY may be addressed by downward adjustment of annual harvest, the LOS Convention does not limit adjustments to lowering of MSY.⁷² In fact, the factors that may be taken into account in qualifying MSY under article 61(3) include "the economic needs of coastal fishing communities and the special requirements of developing States."⁷³ The inclusion of these factors leads to the conclusion that the LOS Convention drafters contemplated circumstances in which a coastal state might find it in its best interest to qualify MSY by adjusting the allowable catch of a fish stock upward.⁷⁴

In spite of the flexibility created by qualifying MSY by relevant economic and environmental factors, the methodology has received increased criticism as a threshold or target reference point for management.⁷⁵ The original problems concerning the inadequacy of information and models to predict MSY reliably in a changing

(1996). As available stock is depleted, fishing efforts will tend to increase to inefficient levels; the cost to harvest the last fish is much greater than the cost to harvest the first fish and may eventually exceed the value of the fish. *Id.*; DAVID J. ATTARD, THE EXCLUSIVE ECONOMIC ZONE IN INTERNATIONAL LAW 153 (1987).

69. LOS Convention, *supra* note 6, art. 61(3) (emphasis added).

70. BURKE, *supra* note 3, at 54.

71. *Id.* at 55.

72. In 1996, the U.S. Magnuson-Stevens Fishery Conservation and Management Act amended the provisions on establishment of optimum yield of a fishery to limit modifications of MSY for economic, social, and ecological factors to *lowering* the permissible catch. 16 U.S.C. § 1802(2) (1996).

73. LOS Convention, *supra* note 6, art. 61(3), at 1281.

74. The implication here should not be that all adjustments of harvest in excess of MSY of a particular stock will have negative impacts. Previous fishing or overfishing may have altered the balance of species in an area, and fishing patterns that maximize the catch of predators or food competitors may have the effect of restoring or enhancing levels of more valued species. *But see* Lewis M. Alexander, *Large Marine Ecosystems: A New Focus for Marine Resources Management*, 17 MARINE POL'Y 186, 198 (1993) (warning about such a mitigative strategy because of unanticipated effects on the ecosystem).

75. *See* G. L. Kesteven, *MSY Revisited: A Realistic Approach to Fisheries Management and Administration*, 21 MARINE POL'Y 73, 75 (1997). Dr. Kesteven supports the concept of MSY, but finds that "its determination [is] rarely, if ever, correct." *Id.* at 73.

environment and in relation to other species persist.⁷⁶ Critics continue to assert that the manner in which MSY has been applied has failed to take into account biological variables in sustainability based on short-term and long-term variations in abundance, composition, and environment.⁷⁷ In assessing how this relates to the effectiveness of coastal state fisheries management, Dr. Douglas Johnston stated:

Fishery management specialists today acknowledge that in the past . . . too much weight was given to fishing effort, and not enough to environmental and hydroclimatic factors. In short, the natural variability of stocks was underestimated. Today it is recognized more widely that fishery management cannot be conducted on the basis of informational certainty.⁷⁸

In addition, more fundamental objections to the use of MSY as an accepted target reference point for fisheries management have been raised due to the nature of managing highly-variable stocks and stocks that are fully-exploited or declining.⁷⁹ In the case of stocks with highly-variable recruitment, conventional methods to predict MSY modeled on historical data lead to serious overfishing in years of poor recruitment.⁸⁰ Thus, MSY is more appropriately used as a limit reference point, that is, a maximum level of harvest and the point at which effort reduction policies should be applied.⁸¹ More precautionary targets, corresponding to about two-thirds of the fishing effort to produce MSY, are recommended to produce harvests that are likely to be truly sustainable and “allow a very large fraction (about 80%) of the MSY to be harvested with a significantly reduced risk of stock collapse.”⁸² In the case of depleted

76. *See id.* at 73.

77. *See generally* John M. Macdonald, *Appreciating the Precautionary Principle as an Ethical Evolution in Ocean Management*, 26 OCEAN DEV. & INT'L L. 255, 271-76 (1995); Kesteven, *supra* note 75, at 74-76.

78. Johnston, *supra* note 25 at 204. Dr. Johnston adds that “political and social objectives add to the natural uncertainty inherent in [fishery management].” *Id.*

79. *See* J. F. CADDY & R. MAHON, REFERENCE POINTS FOR FISHERIES MANAGEMENT, U.N. FOOD & AGRIC. ORG., FISHERIES TECHNICAL PAPER NO. 347 § 2.4.1 (1995), available at <http://www.fao.org> (last visited Oct. 9, 2004).

80. *See id.* The authors state that “the use of the word ‘sustainable’ for an MSY obtained in the conventional way is inappropriate, since ‘in the presence of fluctuations in production, attempts to remove the MSY yield each year from a stock leads to a disaster.’” *Id.* (quoting W. G. DOUBLEDAY, INT'L COMM. FOR THE NORTHWEST ATLANTIC FISHERIES, ENVIRONMENTAL FLUCTUATIONS AND FISHERIES MANAGEMENT, Sel. Pap. 1 at 141-50 (1976)).

81. *Id.*

82. *Id.*

or declining stocks, targets generally need to be much lower than conventionally-determined MSY, depending on the level of overexploitation and the time period for rebuilding.⁸³ In other words, as fisheries management has changed orientation from maximization of catch to risk management, the role of MSY must be reassessed.

5. Consideration of Associated or Dependent Stocks

The LOS Convention article 61(4) is not clear what is included in terms of considering effects on associated or dependent stocks⁸⁴ in managing EEZ fisheries. The background of the reference in the LOS Convention is vague and does not have a common usage. It may have been formulated in reference to fisheries interactions with marine mammals; it may have been intended to include biological relationships between and among other stocks; and “associated” species may have had reference to all types of incidental catch.⁸⁵ This discussion assumes that all of these considerations were included in the language.⁸⁶

To this point, most fishery management regimes do not take adequate account of relations between and among stocks for at least three reasons: In the majority of situations, regulation has, of necessity and in response to sharp declines in particular stocks, developed on a species by species basis. In other cases, fishery managers lacked enough information about the biological relationships within food webs and ecosystems to take these relations into account. Finally, the EEZ may simply not “fit” the natural systems being regulated.⁸⁷

It is relatively clear that the LOS Convention’s drafters did not envision states’ obligations under this section to extend to ecosystem management.⁸⁸ Ecosystem-based management would require consideration of:

all interactions that a target fish stock has with predators, competitors, and prey species; the effects of weather and climate on fisheries biology and

83. See generally *id.* § 2.7.

84. LOS Convention, *supra* note 6, art. 61(4), at 1281. Note also that the threshold for consideration of effects on associated or dependent species seems to be the point “at which their reproduction may become seriously threatened.” *Id.*

85. BURKE, *supra* note 3, at 58.

86. Marine mammal/fisheries interactions will not be specifically discussed in this article.

87. WILLIAM T. BURKE, *UNCED and the Oceans*, 17 *MARINE POL’Y* 519, 520 (1993).

88. BURKE, *supra* note 3, at 59 (quoting *Report of the ACMRR Working Party on the Scientific Basis of Determining Management Measures*, U.N. Food and Agric. Org., at 20, U.N. Doc. FIRM/R22336, FAO Fisheries Technical Paper No. 236 (1980)).

ecology; the complex interactions between fish[] and their habitat; and the effects of fishing on fish stocks and their habitat.⁸⁹

Assessments of states' capabilities for ecosystem management at the time of negotiation of the LOS Convention were pessimistic. For example, a 1980 United Nations Food and Agriculture Organization (FAO) Technical Paper reported:

The management implication of the term "ecosystem management" presumes a reasonable understanding of the physical and chemical environment and biological species which describe an ecosystem, plus an understanding of the interactions among and between the species complex and their environment. Effective ecosystem management would also require an understanding of the flow of material energy and nutrients within the ecosystem. At the present the totality of interactions is not sufficiently understood in any ecosystem to allow for comprehensive ecosystem management.⁹⁰

More recently, a 1994 FAO report admitted that "[i]n practice, we do not yet know how to manage ecosystems."⁹¹

The inadequacy of scientific understanding of complex relationships among species means that states have had difficulty in developing management measures that consider associated and dependent species except in a limited number of fisheries. Information has also been lacking in most cases to evaluate the effects of fishing and fishing gear on habitat, a factor that is now considered an important part of today's understanding of ecosystem management,⁹² but which is not mentioned in article 61(4).

89. ECOSYSTEMS PRINCIPLES ADVISORY PANEL, ECOSYSTEM BASED FISHERIES MANAGEMENT: A REPORT TO CONGRESS 1 (1999) [hereinafter ECOSYSTEM-BASED MANAGEMENT REPORT].

90. See BURKE, *supra* note 3, at 59 (quoting *Report of the ACMRR Working Party on the Scientific Basis of Determining Management Measures*, U.N. Food and Agric. Org., at 20, U.N. Doc. FIRM/R22336, FAO Fisheries Technical Paper No. 236 (1980)).

91. U.N. FOOD & AGRIC. ORG., THE PRECAUTIONARY APPROACH TO FISHERIES WITH REFERENCE TO STRADDLING FISH STOCKS AND HIGHLY MIGRATORY FISH STOCKS 12, U.N. Doc. FIRM/C871(Tri), FAO Fisheries Cir. No. 871 (1994).

92. Certain types of mobile fishing gear, e.g., trawls, dredges, and demersal long-lines, can have obvious, immediate, and direct physical impacts on seafloor habitats. PAUL K. DAYTON ET AL., PEW OCEAN COMM'N, ECOLOGICAL EFFECTS OF FISHING IN MARINE ECOSYSTEMS OF THE UNITED STATES 26 (2002) [hereinafter EFFECTS OF FISHING], *available at* http://www.pewoceans.org/reports/POC_EcoEffects_Rep2.pdf (last visited Mar. 22, 2004). "The physical impact of the gear dragged over . . . or set upon . . . the seabed is influenced by gear

While generally scientific information may still be inadequate for comprehensive ecosystem management, recent scientific studies indicate that an “ecosystem-based approach” to management of individual or closely-related groups of species is not only possible,⁹³ but necessary to restore the balance of ecosystems and allow the recovery of overexploited stocks.⁹⁴

Much more obvious than the indirect effects of a fishery on other species and habitat are the direct effects of fisheries on non-targeted species taken as incidental catch or bycatch.⁹⁵ Bycatch can be almost anything, including seabirds, marine mammals, non-targeted and lesser-valued fish stocks, and juveniles of the targeted species.⁹⁶ The FAO estimates that fisheries now take about 20 million tons per year of bycatch.⁹⁷ This bycatch is discarded at sea because of lack of markets, regulations prohibiting possession of the bycatch (size, season or other limits), or to maximize the value of the harvest (highgrading).⁹⁸ Discarding often results in a total mortality rate of the bycatch.⁹⁹

mass, the point or points of contact with the seafloor, the speed with which gear is dragged, and the frequency with which these events are repeated.” *Id.* Less obvious is the effect of simply removing fish from the ecosystem (which is aggravated by overfishing and complicated bycatch issues). “Fishing not only alters the abundance of stocks, but it also affects the age of maturity, size structure, sex ratio, and genetic makeup of populations.” *Id.* at 11 (citations omitted). Fishing can have cumulative and synergistic effects throughout the food web that are diverse and unpredictable. *See generally id.* at 7-15.

93. *See* ECOSYSTEM-BASED MANAGEMENT REPORT, *supra* note 89. The Report emphasized that “[e]cosystem-based fisheries management does not require that we understand all things about all components of the ecosystem.” *Id.* at 10.

94. *See, e.g.*, Martin H. Belsky, *The Ecosystem Model Mandate for a Comprehensive United States Ocean Policy and Law of the Sea*, 26 SAN DIEGO L. REV. 417, 462 (1989). *See generally* W.M. von Zharen, *Ocean Ecosystem Stewardship*, 23 WM. & MARY ENVTL. L. & POLY REV. 1 (1998); Marion McPherson, *Integrating Ecosystem Management Approaches into Federal Fishery Management through the Magnuson-Stevens Fishery Conservation and Management Act*, 6 OCEAN & COASTAL L.J. 1 (2001); Cymie Payne, *Symposium: The Ecosystem Approach: New Departures for Land and Water: Fisheries Management*, 24 ECOLOGY L.Q. 619 (1997).

95. *Fisheries Bycatch and Discards*, U.N. Food and Agric. Org. Committee on Fisheries, 22d Sess., para. 1, U.N. Doc. COFI/97/Inf.7 (1996), available at <http://www.fao.org>.

96. *Id.* para. 4.

97. *Id.* para. 8. FAO had estimated bycatch during the 1980s and early 1990s as between 17.9 and 39.5 million tons per year, an average of about 27 million tons per year. The 1996 reduced estimate was considered to be a result of:

- a) decline in the levels of fishing, b) time/area closures, c) new or more selective harvest and utilization technologies, d) greater utilization for human consumption and feed for aquaculture and livestock, e) enforcement of prohibition on discarding by some countries[,] and f) a more progressive attitude of fishery managers, user groups and society to the need to resolve problems resulting from discarding.

Id.

98. *See generally* EFFECTS OF FISHING, *supra* note 92, at 17.

99. *Id.*

Although the FAO estimates that the total level of bycatch has begun to decrease significantly, the effect of bycatch and discards still requires study to determine the effects on the bycatch stocks, the effect on targeted species of the bycatch of juveniles, and the ramifications for the ecosystem of both the removal of bycatch species and the discard of dead bycatch.¹⁰⁰ As fishing efforts increase to catch diminishing levels of target species, the bycatch problem could be further exacerbated, making bycatch reduction an even more important issue.

Finally, although most exploited stocks are found within the EEZ, they may not be within the control of a single coastal state, and interrelated stocks that are affected may be beyond a coastal states' jurisdiction.¹⁰¹

6. Conclusions

In summary, the provisions of article 61 of the LOS Convention have failed to create a regime that provides for effective management of the living resources of the EEZ. Many of the assumptions underlying the establishment of the EEZ were not valid, and problems of overfishing, overcapitalization, single-species management, insufficient scientific data, and excessive bycatch persist within the EEZ. In addition, article 61 makes no mention of coastal state obligations to address other causes of the decline of fisheries, such as destruction or degradation of habitat.

IV. ADDRESSING EEZ FISHERIES MANAGEMENT ISSUES FOR THE FUTURE

A. Revisiting the LOS Convention Provisions

The imprecise principles of article 61 of the LOS Convention have not prevented continued depletion of EEZ fisheries resources. The principles to guide conservation and management of the EEZ, at best, are vague and ambiguous, and, at worst, are based on precepts that are unworkable to maintain the sustainability of the living resources of the EEZ in the current environment. Unlike articles 63 and 64 concerning straddling stocks and highly

100. Current studies are indicating that in many fisheries, bycatch can have serious impacts on the ecosystem. A large proportion of the bycatch is dead when returned to the sea. This discarded material causes behavioral changes in resident scavenger and predator species, leads to collateral mortality of species attracted by the bycatch and can cause "localized hypoxic or anoxic zones on the seafloor." *Id.* at 21-2. Species with low productive rates, such as seabirds, marine mammals, sharks and sea turtles can suffer "population-level consequences" from collateral mortality. *Id.* at 16.

101. See Christie, *supra* note 2, at 396-97.

migratory species, however, the terms of article 61 were not anticipated by the drafters to be elaborated and implemented primarily through separate international agreements.¹⁰² But article 61 does provide that, as appropriate, states should cooperate to develop scientific information and conservation measures that will ensure that EEZ resources are “not endangered by over-exploitation,”¹⁰³ and that measures to restore and maintain fisheries resources take into account “generally recommended international minimum standards.”¹⁰⁴ While not creating any enforceable coastal state obligations, these sections can provide a strong rationale for turning to more recent agreements, guidelines, and customary law to interpret and refine the vague principles of article 61.

Patricia Birnie also argues that “in the light of subsequent advances in knowledge . . . the aims specified by the LOS Convention for fisheries conservation [including the goals of the Preamble] can be interpreted as implying that [new concepts] should be applied (without prejudice to whether or not this is a legal requirement).”¹⁰⁵ She contends that terms of the LOS Convention, such as conservation and MSY, are “flexible” enough to be interpreted to introduce new principles.¹⁰⁶

To read article 61 as freezing the interpretation of management principles in 1970's terms ignores another precept of the same article — to take account of the best scientific information¹⁰⁷ — and frustrates the basic object and purpose of the LOS Convention concerning conservation of the living resources of the sea. The principle that a treaty should be interpreted “in light of its object and purpose” is codified in article 31 of the 1969 Vienna Convention on the Law of Treaties.¹⁰⁸ Article 31(3) also states that treaty interpretation shall take into account:

1. any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;

102. In fact, the LOS Convention was quite clear that jurisdiction of the coastal state over EEZ living resources was “exclusive” and subject to its virtually complete discretion. LOS Convention, *supra* note 6, art. 61(1), at 1281.

103. *Id.* art. 61(2), at 1281.

104. *Id.* art. 61(3), at 1281.

105. Patricia Birnie, *Are Twentieth-Century Marine Conservation Conventions Adaptable to Twenty-First Century Goals and Principles?: Part I*, 12 INT'L J. OF MARINE & COASTAL L. 307, 314 (1997).

106. *Id.* at 338.

107. LOS Convention, *supra* note 6, art. 61(2), at 1281.

108. Vienna Convention on the Law of Treaties, May 23, 1969, art. 31, 1155 U.N.T.S. 331, 8 I.L.M. 679, 692 (1969) (entered into force on Jan. 27, 1980) [hereinafter Vienna Convention].

2. any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretations; and
3. any relevant rules of international law applicable in the relations between the parties.¹⁰⁹

Thus, the Vienna Convention recognizes that treaty interpretation can hinge on subsequent agreements, state practice, and development of international law.¹¹⁰ This precept is reflected in customary international law in the principle of contemporaneity. The nature of areas such as environmental law and human rights law, where knowledge and awareness are rapidly evolving and damage may be irreversible, requires that treaties should be interpreted in terms of the standards and norms that are in force at the time of the application of a treaty, not at the time of the conclusion of a treaty.¹¹¹

The International Court of Justice (ICJ) addressed this issue in the *Case Concerning the Gabčíkovo-Nagymaros Project* (Hung. v. Slov.).¹¹² The ICJ found that the development of new norms of environmental law did not preclude the performance of a long-term treaty that incorporated consideration of impacts on the environment.¹¹³ Rather, the Court held that the evolution of environmental knowledge and standards could be anticipated and that such a treaty had to be interpreted to recognize the evolving nature of environmental norms.¹¹⁴ The Court stated:

Throughout the ages, mankind has, for economic and other reasons, constantly interfered with nature. In the past, this was often done without consideration of the effects upon the environment. Owing to new scientific insights and to a growing awareness of the risks for mankind — for present and future generations — of pursuit of such interventions at an unconsidered and unabated pace, new norms and new standards have been developed, set forth in a great number of instruments during the last two

109. *Id.* art. 31(3), at 692.

110. For a detailed discussion of the interpretation of treaties in the context of emerging marine conservation principles, see Birnie, *supra* note 105, at 322-39.

111. See *Gabčíkovo-Nagymaros Project* (Hung. v. Slov.), 1997 I.C.J. 7, 113-14 (Sept. 25) (separate opinion of Vice-President Weeramantry).

112. 1997 I.C.J. 7 (Sept. 25).

113. *Id.* at 114 (separate opinion of Vice-President Weeramantry).

114. *Id.* at 113-14.

decades. *Such new norms have to be taken into consideration, and such new standards given proper weight, not only when States contemplate new activities but also when continuing with activities begun in the past.* This need to reconcile economic development with protection of the environment is aptly expressed in the concept of sustainable development.¹¹⁵

In his separate opinion in the case, Vice-President Weeramantry referred to this as the “inter-temporal aspect” of treaties dealing with activities that affect the environment.¹¹⁶ This inter-temporal aspect goes not only to the continuing validity of a treaty, but also to its application.¹¹⁷ He asserted that “[t]he ethical and human rights related aspects of environmental law bring it within the category of law so essential to human welfare that we cannot apply to today’s problems in this field the standards of yesterday.”¹¹⁸ In this respect, Vice-President Weeramantry explained that such treaties must be “living” instruments, responsive to continuing and current environmental concerns regardless of when the activity was originally undertaken or the treaty concluded.¹¹⁹

In the relatively short time since the LOS Convention was concluded, international environmental law has been developing rapidly. The marine environment and marine fisheries have been a central focus of many of these developments. Among the relevant developments that affect management of EEZ fisheries are the Rio Declaration,¹²⁰ Chapter 17 of Agenda 21,¹²¹ the FAO Code of Conduct for Responsible Fishing,¹²² the Convention on Biological Diversity,¹²³ and the Jakarta Mandate on Marine and Coastal Biological Diversity.¹²⁴ In addition, the 1995 United Nations Agreement on

115. *Id.* at 78 (emphasis added).

116. *Id.* at 113-14.

117. *Id.* at 114.

118. Gabčíkovo-Nagymaros Project, 1997 I.C.J. at 114 (separate opinion of Vice-President Weeramantry).

119. *Id.* at 115.

120. Rio Declaration on Environment and Development, *adopted* June 13, 1992, U.N. Doc. A/Conf151/5/Rev.1, 31 I.L.M. 874 (1992) [hereinafter Rio Declaration].

121. U.N. CONFERENCE ON ENV'T AND DEV., AGENDA 21, CHAPTER 17, U.N. Doc. A/CONF.151.26, U.N. Sales No. E.93.I.11 (1992) [hereinafter AGENDA 21], *reprinted in* 7 INT'L J. OF ESTUARINE AND COASTAL L. 296 (1992).

122. U.N. FOOD & AGRIC. ORG., CODE OF CONDUCT FOR RESPONSIBLE FISHERIES (1995) [hereinafter FAO CODE OF CONDUCT], *available at* <http://www.fao.org> (last visited May 6, 2004).

123. United Nations Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 818 (1992) (entered into force Dec. 29, 1993) [hereinafter Biological Diversity Convention].

124. The Jakarta Mandate consists of the following documents: (1) *Report of the Second*

Straddling Stocks and Highly Migratory Fish Stocks¹²⁵ (Fish Stocks Agreement or the Agreement) has implications for management of *all* fish stocks beyond and within the EEZ. All of these documents, with the exception of the Rio Declaration, make reference to the LOS Convention. Considered together, these actions are strong evidence that the international community perceives changes in international environmental norms and the need to supplement and further develop at the international level existing international *and* national fisheries regulations through the incorporation of new or rapidly emerging principles of international environmental law.¹²⁶ The linkage of these regimes within the framework of the LOS Convention can fundamentally change the current approach to, and the effectiveness of, coastal state fisheries management.

B. New Developments Affecting Management of EEZ Fisheries

1. The Rio Declaration

The Rio Declaration,¹²⁷ although not specifically a marine conservation document, must be mentioned as a starting point. Adopted at the United Nations Conference on Environment and Development (UNCED) in 1992,¹²⁸ the non-binding Rio Declaration

Meeting of the Conference of the Parties to the Convention on Biological Diversity, U.N. Environmental Program, Decision II/10, U.N. Doc. UNEP/CBD/COP/2/19 (1995); (2) *Report of the First Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice*, Conference of the Parties to the Convention on Biological Diversity, Subsidiary Body on Scientific, U.N. Environmental Program, Recommendation I/8, U.N. Doc. UNEP/CBD/COP/2/5 (1995) [hereinafter Jakarta Mandate]. See generally Maas M. Goote, *Convention on Biological Diversity: The Jakarta Mandate on Marine and Coastal Biodiversity*, 12 INT'L J. OF MARINE & COASTAL L. 377 (1997); *Introduction to Jakarta Mandate on Marine and Coastal Biodiversity*, U.N. Environmental Program, Agenda Item 4, para. 8(a), U.N. Doc. UNEP/CBD/JM/Expert/I/2 (1997).

125. U.N. Fish Stocks Agreement, *supra* note 16.

126. See Hey, *supra* note 16, at 459-62 (1996). Dr. Hey points out that the issue that will eventually need to be resolved is the extent to which minimum international standards should be set for activities, like EEZ fisheries management, which have traditionally been viewed as solely within the jurisdiction of the coastal state. *Id.* at 462. Dr. Hey asserts that international law currently accords third parties and common interests, such as marine biodiversity, little recognition and, therefore, creates little basis for such international standards. *Id.*

127. Rio Declaration *supra* note 120.

128. The United Nations Conference on Environment and Development (UNCED) convened in Rio de Janeiro, Brazil, June 3-14, 1992, and adopted the Rio Declaration, an action plan for carrying out the principles of the Declaration (Agenda 21). See generally AGENDA 21, *supra* note 121. Three other documents were opened for signature at the conference. These were the following: (1) A Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests, U. N. Doc. A/CONF.151/26 (1992); (2) the Convention on Biological Diversity, *opened for signature* June 5, 1992, 31 I.L.M. 818; and (3) the Framework Convention on Climate Change, *adopted* May 9, 1992, 31 I.L.M. 849.

provided the official introduction into international environmental law of two dominant resource management themes for the 1990s — the goal of sustainable development and the application of the precautionary principle or precautionary approach.¹²⁹ The theme of sustainable development extends throughout the Rio Declaration, but is summarized in Principle 3: “The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.”¹³⁰ The precautionary approach, as embodied in Principle 15, provides that “[w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”¹³¹

2. Agenda 21

Agenda 21 is the comprehensive action plan adopted by the UNCED Plenary (and later endorsed by the General Assembly) for implementing the principles of the Rio Declaration.¹³² Specifically, Chapter 17, entitled “Protection of the Oceans, all Kinds of Seas, including Enclosed and Semi-Enclosed Seas, and Coastal Areas and the Protection, Rational Use and Development of their Living Resources,” sets out a strategy for protection and sustainable development of the marine and coastal environment and its resources which requires “new approaches . . . that are integrated in content and are precautionary and anticipatory in ambit.”¹³³ Chapter 17 identifies seven program areas¹³⁴ and provides objectives, activities and means of implementation for each area.

In addressing the issues of marine areas within national jurisdiction, Agenda 21 charges nations to ensure conservation and management of EEZ living resources in accord with the LOS

129. Edith Brown Weiss, *United Nations Conference on Environment and Development: Introductory Note*, 31 I.L.M. 814, 814-16 (1992).

130. Rio Declaration, *supra* note 120, Principle 3. See also Gabčíkovo-Nagymaros Project (Hung. v. Slov.), 1997 I.C.J. 7, 78 (Sept. 25) (where the ICJ specifically adopted the principle of sustainable development as relevant to interpreting obligations in relation to evolving environmental norms).

131. Rio Declaration, *supra* note 120, Principle 15 at 879.

132. See AGENDA 21, *supra* note 121.

133. *Id.* ch. 17.1, at 296.

134. Chapter 17.1 program areas are: (a) Integrated management and sustainable development of coastal areas, including exclusive economic zones; (b) Marine environmental protection; (c) Sustainable use and conservation of marine living resources of the high seas; (d) Sustainable use and conservation of marine living resources under national jurisdiction; (e) Addressing critical uncertainties for the management of the marine environment and climate change; (f) Strengthening international, including regional, cooperation and coordination; and (g) Sustainable development of small islands. *Id.* at 296-97.

Convention.¹³⁵ The management-related activities called for in this programmatic document address many of the problems identified in the previous section of this article, including assuring more and better monitoring and assessment; developing more effective predictive tools; strengthening legal, regulatory and enforcement authorities; and taking measures to reduce bycatch and wastage.¹³⁶ Although coastal states are directed to “[i]mplement strategies for the sustainable use of marine living resources,”¹³⁷ the objective for management continues to be maintenance or restoration of stocks “at levels that can produce the maximum sustainable yield as qualified by relevant environmental and economic factors, taking into consideration relationships among species.”¹³⁸

A major contribution of Agenda 21 is the incorporation of protection of habitat as an issue in marine fisheries management.¹³⁹ In order to attain sustainable use and conservation of EEZ resources, Chapter 17 sets out an objective of preservation of rare or fragile ecosystems by identifying ecosystems with high productivity and biodiversity, such as coral reefs, estuary wetlands, and seagrass beds, and also by providing special protections such as the designation of protected areas.¹⁴⁰ But Chapter 17 also goes further in recognizing linkages in ecosystems by encouraging integrated management of coastal and marine areas and resources.¹⁴¹

Ten years after adoption of Agenda 21, the 2002 World Summit on Sustainable Development at Johannesburg, South Africa, confronted the issue that progress on meeting the goals of Agenda 21 has been disappointing.¹⁴² The Summit adopted a new Plan of Implementation¹⁴³ for Agenda 21, and the Commission on Sustainable Development subsequently created a systematic approach to achieving progress on the plan through a series of implementation cycles, each focusing on a thematic cluster of

135. *Id.* ch. 17.78, at 315.

136. *Id.* ch. 17.79.

137. *Id.* ch. 17.79(b), at 315.

138. *Id.* ch. 17.75(c), at 314.

139. Part XII of the LOS Convention creates a general obligation to protect and preserve the marine environment, including taking necessary measures “to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.” LOS Convention, *supra* note 6, art. 194(5), at 1308. This obligation is created, however, in the context of pollution control, not management of living marine resources.

140. AGENDA 21, *supra* note 121, chs. 17.75(f), 17.86.

141. *Id.* chs. 17.1, 17.5.

142. See WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT, PLAN OF IMPLEMENTATION (2002), available at <http://www.johannesburgsummit.org> (last visited Apr. 14, 2004).

143. *Id.*

uses.¹⁴⁴ Unfortunately, marine resources are not scheduled to be addressed until the 2014/2015 implementation cycle.¹⁴⁵

3. *The U.N. Fish Stocks Agreement*

One of the most important recommendations of Agenda 21 was to convene a United Nations conference to implement the LOS Convention provisions on straddling and highly migratory fish stocks.¹⁴⁶ The U.N. General Assembly subsequently adopted a resolution calling for such a conference,¹⁴⁷ which, after three years of negotiations, resulted in the adoption of the 1995 U.N. Fish Stocks Agreement.¹⁴⁸ The Agreement does not specifically address fish stocks found only in the EEZ, but management of straddling and migratory fish stocks according to the principles of the agreement is required even while the stocks are present within the EEZ.¹⁴⁹ Because the Agreement eschews single-species management, coastal state management of most EEZ stocks will, however, certainly be affected by straddling stock management measures as the treaty is implemented.

With regard to management of straddling stocks within national jurisdiction, the Agreement heightens the degree of obligation on the coastal state imposed by article 61 of the LOS Convention. Terms used in article 61, such as “take into account” and “consider,” are generally replaced in the Agreement with “shall” adopt, ensure and protect.¹⁵⁰ The Agreement also expands upon conservation and management concepts of the LOS Convention by specifically including more contemporary concepts recommended by UNCED and the FAO.¹⁵¹ Several of the general principles of the Agreement reflect UNCED’s recommendations on sustainability, ecosystem

144. U.N. DEP’T OF ECON. & SOC. AFFAIRS, DIV. FOR SUSTAINABLE DEV., MULTI-YEAR PROGRAMME OF WORK FOR CSD: 2004/2005 TO 2016/2017, available at <http://www.un.org> (last visited Apr. 11, 2004).

145. *Id.*

146. AGENDA 21, *supra* note 121, ch. 17.50.

147. G.A. Res. 192, U.N. GAOR, 47th Sess., U.N. Doc. A/Res/47/192 (1992).

148. U.N. Fish Stocks Agreement, *supra* note 16.

149. *Id.* art. 3.

150. *See id.* art. 5. For example, the LOS Convention, *supra* note 6, art. 61, requires the coastal state only to take into account the best scientific evidence; the U.N. Fish Stocks Agreement provides that states shall ensure that measures are based on the best scientific evidence and further obligates states to “promote and conduct scientific research.” U.N. Fish Stocks Agreement, *supra* note 16, art. 5(k).

151. These principles are incorporated in article 5 of the Agreement. Article 3(2) of the Fish Stocks Agreement provides: “In the exercise of its sovereign rights for the purposes of exploring and exploiting, conserving and managing straddling fish stocks and highly migratory fish stocks within areas under national jurisdiction the coastal State shall apply *mutatis mutandis* the general principles enumerated in article 5.” U.N. Fish Stocks Agreement, *supra* note 16, art. 3(2).

management, and integrated management, including requirements to: 1) adopt measures to assure long-term sustainability of straddling and migratory fish stocks;¹⁵² 2) adopt measures to protect species within the same ecosystem;¹⁵³ 3) take measures to prevent or eliminate overfishing and excess capacity to ensure a fishing effort that will allow sustainable use of fishery resources;¹⁵⁴ 4) minimize pollution, waste, discards, and impact on associated or dependent species;¹⁵⁵ 5) protect biodiversity of the marine environment;¹⁵⁶ and 6) assess the impact of fishing, other human activities and environmental factors on target stocks, associate and dependent species, and other species in the ecosystem.¹⁵⁷ Clearly, successful implementation of these ecosystem-based obligations within the EEZ for straddling stocks requires broad considerations that will have positive implications for other stocks within the management area.

The U.N. Fish Stocks Agreement continues to require that measures “maintain or restore stocks at levels capable of producing maximum sustainable yield.”¹⁵⁸ But the Agreement also requires application of the precautionary approach.¹⁵⁹ When these provisions are considered together with the requirement to ensure long-term sustainability of stocks,¹⁶⁰ MSY assumes a different role. Annex II of the Agreement, which provides guidelines for application of precautionary reference points, distinguishes target reference points and limit reference points.¹⁶¹ MSY should be applied as a limit reference point to create boundaries to restrain harvest, rather than a target reference point to meet management objectives.¹⁶² Again, this modification of the use of MSY is unlikely to be applied only to straddling stocks or highly migratory species and should affect the use of MSY for other fisheries within the EEZ.

Effective coastal state management is further encouraged by the incentive created by the “compatibility” provisions. Article 7(2)(a) of the U.N. Fish Stocks Agreement requires compatible

152. *Id.* art. 5(a).

153. *Id.* art. 5(e).

154. *Id.* art. 5(h).

155. *Id.* art. 5(f).

156. *Id.* art. 5(g).

157. U.N. Fish Stocks Agreement, *supra* note 16, art. 5(d).

158. *Id.* art. 5(b).

159. *Id.* arts. 5(c), 6.

160. *Id.* art. 5(h).

161. *Id.* Annex II, para. 2.

162. *Id.* See also André Tahindro, *Conservation and Management of Transboundary Fish Stocks: Comments in Light of the Adoption of the 1995 Agreement for the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*, 28 OCEAN DEV. & INT'L L. 1, 5-6 (1997).

management of straddling stocks within and beyond national jurisdiction taking into account “the conservation and management measures *adopted and applied* . . . by [the] coastal States within areas under national jurisdiction and ensur[ing] that measures established in respect of such stocks for the high seas do not undermine the effectiveness of such measures.”¹⁶³ Thus by taking effective conservation and management measures based on article 61 within the EEZ, coastal states can assure that regional fishery organizations are obligated to adopt measures for exploitation of high seas fisheries that will allow states to manage fisheries effectively within their EEZs. Coastal states that have blamed high seas fishing for undermining the effectiveness of their EEZ management must, however, take a leadership role in establishing effective management regimes to take advantage of this provision.

In addition to the “carrot” provided for coastal states by the compatibility provisions of article 7(2)(a), the U.N. Fish Stocks Agreement may provide a somewhat limited “stick” to enforce coastal states’ obligations under the Agreement.¹⁶⁴ Article 7(2) provides that “measures established for the high seas and those adopted for areas under national jurisdiction shall be compatible in order to ensure conservation and management of the straddling fish stocks and highly migratory fish stocks in their entirety.”¹⁶⁵ States have a duty to cooperate to achieve these compatible measures,¹⁶⁶ but if states are unable to achieve agreement in a reasonable time, a state party may invoke the binding dispute settlement mechanisms of Part VIII of the Agreement.¹⁶⁷ Article 32 of the Agreement, however, limits the applicability of the dispute resolution procedure by adopting the provisions of article 297, paragraph 3, of the LOS Convention.¹⁶⁸ By exempting disputes concerning the sovereign rights of countries over their EEZ living resources, the Fish Stocks Agreement restricts the ability to require a coastal state to adopt specific measures compatible with an adjacent high seas regime.¹⁶⁹

163. U.N. Fish Stocks Agreement, *supra* note 16, art. 7(2)(a) (emphasis added).

164. *See* Rieser, *supra* note 66, at 274.

165. U.N. Fish Stocks Agreement, *supra* note 16, art. 7(2).

166. *Id.*

167. *Id.* pt. VIII, arts. 27-32.

168. *Id.* art. 32. *See also supra* note 48.

169. *See* Rosemary Rayfuse, *The Interrelationship Between the Global Instruments of International Fisheries Law*, in DEVELOPMENTS IN INTERNATIONAL FISHERIES LAW 107, 134-35 (Ellen Hey ed., 1999).

4. *FAO Code of Conduct for Responsible Fisheries*

The FAO Committee on Fisheries (COFI) in 1991,¹⁷⁰ the 1992 Cancun Declaration which emerged from the Cancun Conference on Responsible Fisheries,¹⁷¹ and UNCED's Agenda 21¹⁷² all called for elaboration of new policies and practices for the conservation and management of fisheries in both the high seas and in areas within coastal state jurisdiction. The extension of coastal state fishery jurisdiction to 200 miles was recognized as "a necessary *but insufficient* step toward the efficient management and sustainable development of fisheries."¹⁷³ While the U.N. Fish Stocks Agreement was being negotiated, the FAO carried out concurrent negotiations from 1992 through 1995 to develop a Code of Conduct for Responsible Fisheries which would be global in scope and application.¹⁷⁴ The Code of Conduct was adopted by consensus by the Twenty-eighth Conference of the FAO on October 31, 1995.¹⁷⁵

The Code of Conduct was a major development in that it comprehensively addressed all aspects of fisheries. In addition to considering subjects traditionally within the scope of fisheries documents, such as conservation, management and development,¹⁷⁶ the Code focused on the roles of excess fishing capacity and overcapitalization,¹⁷⁷ aquaculture,¹⁷⁸ trade,¹⁷⁹ research,¹⁸⁰ and integration of fisheries into coastal area management.¹⁸¹ The Code's drafters incorporated the knowledge and experience gained in ten years of implementation of the LOS Convention with new understandings of marine ecosystems and the effects of fishing and new developments in international law.¹⁸² The Code has been referred to as "the 'perfect' agenda for attaining sustainable fishing practices."¹⁸³

170. See FAO CODE OF CONDUCT, *supra* note 122, Annex 1, para. 2.

171. *Id.* para. 3.

172. See AGENDA 21, *supra* note 121.

173. FAO CODE OF CONDUCT, *supra* note 122, Preface (emphasis added).

174. *Id.* arts. 1.2-1.3.

175. *Id.* at Annex 2.

176. *Id.* arts. 7-8.

177. *Id.* arts. 6.3, 7.1.8, 7.4.3, 7.6.3 .

178. *Id.* art. 9.

179. FAO CODE OF CONDUCT, *supra* note 122, art. 11.

180. *Id.* art. 12.

181. *Id.* art. 10.

182. See Hey, *supra* note 16, at 483.

183. *Id.* Another commentator refers to the Code of Conduct as "the best, most complete and innovative statement of principles of responsible fisheries and fisheries management." Gerard Moore, *The Code of Conduct for Responsible Fisheries*, in DEVELOPMENTS IN INTERNATIONAL FISHERIES LAW 85, 96 (Ellen Hey ed., 1999).

The Code of Conduct is a voluntary agreement, but because it incorporates principles already reflected in the LOS Convention and other treaties, some of the provisions already, or may in the future, have binding effect through those instruments.¹⁸⁴ The Code is to be “interpreted and applied in conformity with relevant rules of international law, as reflected in the United Nations Convention on the Law of the Sea.”¹⁸⁵ Because the provisions of the Code of Conduct provide a much more detailed elaboration of fishery management principles and practices, the more relevant issue is, however, whether LOS article 61 will be interpreted and applied in conformity with the Code. For example, the Code of Conduct recognizes sustainable use as “the overriding objective” of fisheries management¹⁸⁶ and adopts the precautionary approach for dealing with lack of information and uncertainties concerning the state of stocks or impacts of fisheries activities.¹⁸⁷ The Code also provides a detailed list of the “relevant environmental and economic factors” that should be considered to qualify MSY,¹⁸⁸ and technical guidelines for the Code explain that MSY should be used in terms of a limit reference point rather than a target reference point in fisheries management.¹⁸⁹ While these provisions can clearly be interpreted as compatible¹⁹⁰ with the LOS Convention, such interpretations are not compelled by article 61.

Although the Code is voluntary, it makes provision for implementation and monitoring and calls upon everyone involved in fisheries management, utilization or trade to collaborate in

184. FAO CODE OF CONDUCT, *supra* note 122, art. 1.1.

185. *Id.* art. 3.1. The Code is also to be interpreted consistently with the U.N. Fish Stocks Agreement, the Cancun Declaration, the Rio Declaration, and Agenda 21. *See id.* art. 3.2.

186. *Id.* art. 7.2.1 (emphasis added).

187. *Id.* art. 7.5.

188. *Id.* art. 7.2.2. Measures to achieve MSY while taking into account “relevant environmental and economic factors” include: avoiding excess fishing capacity; assuring the economic conditions of the fishing industry promote responsible fisheries; taking account of the interests of fishers, including those in subsistence, small-scale and artisanal fisheries; conserving biodiversity and ecosystems; allowing recovery or restoration of depleted stocks; assessing and correcting negative environmental impacts of human activity; and minimizing bycatch. *Id.*

189. *See* U.N. FOOD & AGRIC. ORG., FAO TECHNICAL GUIDELINES FOR RESPONSIBLE FISHERIES NO. 2, PRECAUTIONARY APPROACH TO CAPTURE FISHERIES AND SPECIES INTRODUCTIONS 10-11, paras. 29-34 (1996), available at <ftp://ftp.fao.org/docrep/fao/003/W3592e/W3592e00.pdf> (last visited Apr. 9, 2004); *see also* Moore, *supra* note 183, at 97.

190. The precautionary approach is not mentioned in the LOS Convention, and commentators disagree as to whether the approach is implicitly incorporated into the provisions. Even if the precautionary approach was not contemplated in the drafting of article 61, the qualification of MSY by relevant environmental factors seems to provide a sufficient basis for incorporation of the precautionary approach. *See generally* Grant J. Hewison, *The Precautionary Approach to Fisheries Management: An Environmental Perspective*, 11 INT’L J. OF MARINE & COASTAL L. 301, 316-17 (1996).

fulfilling the objectives of the Code.¹⁹¹ One must assume that the monitoring of the implementation of the Code is not only for gauging its success or need for modification, but also to identify “bad actors” who may be subject to international pressure to conform.

In 1999, the FAO Ministerial Meeting on Fisheries adopted the Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries,¹⁹² which called upon the FAO to give high priority to continued implementation of the Code and upon users of fisheries resources to apply the Code.¹⁹³ Nine years after its adoption, the Code of Conduct continues to form the overarching framework for the world-wide achievement of sustainable fisheries. The FAO has elaborated the principles of the Code in nine technical guideline documents;¹⁹⁴ developed international plans of action (IPOAs) on management of fishing capacity,¹⁹⁵ reduction of seabird incidental catch,¹⁹⁶ shark management and conservation,¹⁹⁷ and deterrence of illegal, unregulated, and unreported fishing;¹⁹⁸ negotiated the Compliance Agreement for Fishing Vessels on the High Seas;¹⁹⁹ and developed a strategy for improving information

191. FAO CODE OF CONDUCT, *supra* note 122, art. 4.

192. The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries, *adopted* Mar. 10-11, 1999, *available at* <http://www.fao.org> (last visited Mar. 17, 2004).

193. *See id.* para. 12.

194. U.N. FOOD & AGRIC. ORG, FAO TECHNICAL GUIDELINES FOR RESPONSIBLE FISHERIES NO. 1, FISHING OPERATIONS (1996); U.N. FOOD & AGRIC. ORG, FAO TECHNICAL GUIDELINES FOR RESPONSIBLE FISHERIES NO. 2, PRECAUTIONARY APPROACH TO CAPTURE FISHERIES AND SPECIES INTRODUCTIONS (1996); FOOD & AGRIC. ORG, FAO TECHNICAL GUIDELINES FOR RESPONSIBLE FISHERIES NO. 3, INTEGRATION OF FISHERIES INTO COASTAL AREA MANAGEMENT (1996); U.N. FOOD & AGRIC. ORG, FAO TECHNICAL GUIDELINES FOR RESPONSIBLE FISHERIES NO. 4, FISHERIES MANAGEMENT (1997); U.N. FOOD & AGRIC. ORG, FAO TECHNICAL GUIDELINES FOR RESPONSIBLE FISHERIES NO. 5, AQUACULTURE DEVELOPMENT (1997); U.N. FOOD & AGRIC. ORG, FAO TECHNICAL GUIDELINES FOR RESPONSIBLE FISHERIES NO. 6, INLAND FISHERIES (1997); U.N. FOOD & AGRIC. ORG, FAO TECHNICAL GUIDELINES FOR RESPONSIBLE FISHERIES NO. 7, RESPONSIBLE FISH UTILIZATION (1998); U.N. FOOD & AGRIC. ORG, FAO TECHNICAL GUIDELINES FOR RESPONSIBLE FISHERIES NO. 8, INDICATORS FOR SUSTAINABLE DEVELOPMENT FOR MARINE CAPTURE FISHERIES (1999); U.N. FOOD & AGRIC. ORG, FAO TECHNICAL GUIDELINES FOR RESPONSIBLE FISHERIES NO. 9, IMPLEMENTATION OF THE INTERNATIONAL PLAN OF ACTION TO DETER, PREVENT AND ELIMINATE ILLEGAL, UNREPORTED AND UNREGULATED FISHING (2002). All of these technical reports can be viewed at the following website: <http://www.fao.org> (last visited Apr. 8, 2004).

195. *Report of the Twenty-third Session of the Committee on Fisheries*, U.N. Food and Agric. Org. Comm. on Fisheries, 23d Sess., Appendix E.3, FAO Fisheries Report. No. 595 (1999), *available at* <http://www.fao.org> (last visited Apr. 9, 2004).

196. *Id.* Appendix E.1.

197. *Id.* Appendix E.2.

198. U.N. FOOD & AGRIC. ORG., INTERNATIONAL PLAN OF ACTION TO PREVENT, DETER AND ELIMINATE ILLEGAL, UNREPORTED AND UNREGULATED FISHING (2001), *available at* <http://www.fao.org> (last visited Apr. 16, 2004).

199. Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, Nov. 23, 1993, S. TREATY DOC. 103-24, 33 I.L.M. 968 (1994).

and the status and trends of capture fisheries.²⁰⁰ The FAO has also provided technical and financial assistance to developing countries through efforts to strengthen regional fisheries organizations.²⁰¹ In general, however, the implementation of the Code must be achieved through international and regional agreements and organizations and through national legislation.

One commentator has noted that “[a] fundamental concept underlying the implementation of the Code is the assumption that governments want better managed fisheries, and that they are prepared to take difficult decisions, in the short-term, as a means of attaining longer-term sustainability gains.”²⁰² This is often not the case. In the case of some developed countries, however, particularly Australia,²⁰³ Canada,²⁰⁴ and the United States,²⁰⁵ the continued decline in major fisheries resources has led to the conclusion that the countries’ self-interest is better served by promoting policies reflected in the Code aimed at long-term sustainability. Many other countries are focusing on selected areas of the Code, and although some notable improvements in fisheries management and utilization are noted, rapid change through implementation of the Code is “unlikely to result, nor indeed should . . . be expected.”²⁰⁶

While many developing countries are making progress on implementation of the Code, a report by COFI,²⁰⁷ based on a self-reporting questionnaire,²⁰⁸ identified numerous fundamental barriers to implementation, including:

inadequate institutional and technical capacity,
inadequate funding, lack of information and
inadequate access to information, including public

200. U.N. FOOD & AGRIC. ORG., STRATEGY FOR IMPROVING INFORMATION ON STATUS AND TRENDS OF CAPTURE FISHERIES (2003), available at <http://www.fao.org> (last visited Apr. 11, 2004).

201. See generally Moore, *supra* note 183, at 102-03.

202. DAVID J. DOULMAN, CODE OF CONDUCT FOR RESPONSIBLE FISHERIES: DEVELOPMENT AND IMPLEMENTATION CONSIDERATIONS (2000), available at <http://www.fao.org> (last visited Apr. 7, 2004).

203. See AUSTRALIAN SEAFOOD INDUS. COUNCIL, A CODE OF CONDUCT FOR A RESPONSIBLE SEAFOOD INDUSTRY, available at <http://www.seafoodsite.com.au> (last visited Apr. 14, 2004).

204. See FISHERIES MANAGEMENT REPORTS & PUBLICATIONS, CANADIAN CODE OF CONDUCT FOR RESPONSIBLE FISHING OPERATIONS (1998), available at <http://www.dfo-mpo.gc.ca> (last visited May 15, 2004).

205. See U.S. NAT’L MARINE FISHERIES SERV., IMPLEMENTATION PLAN FOR THE CODE OF CONDUCT FOR RESPONSIBLE FISHERIES (1997), available at <http://www.nmfs.noaa.gov> (last visited Apr. 14, 2004).

206. DOULMAN, *supra* note 202.

207. *Progress in the Implementation of the Code of Conduct for Responsible Fisheries and Related International Plans of Action*, U.N. Food and Agric. Org., Committee on Fisheries, 24th Sess., U.N. Doc. COFI/2001/3 (2001), available at <http://www.fao.org>.

208. *Id.* paras. 1-2.

education programmes, under-utilization of the media, as well as inadequate participation of all stakeholders, inappropriate legislative framework, the socio-economic implications of reducing fishing effort and the difficulties of implementing such concepts as the precautionary approach in the context of reduced human and financial resources in developing countries, as major preoccupations and the principal constraints in most developing countries.²⁰⁹

The FAO's continued efforts at training, technical assistance, educational outreach, and capacity building are, however, leading to incremental, but steady, progress toward wider adoption of the Code of Conduct's principles.

5. *The Convention on Biological Diversity and the Jakarta Mandate on Marine and Coastal Biological Diversity*

The Convention on Biological Diversity (CBD)²¹⁰ was rapidly embraced by the international community, coming into force a mere eighteen months after it was signed.²¹¹ The basic objectives of the convention are “conservation of biological diversity[,] the sustainable use of its components [and the fair and] equitable sharing of [the] benefits . . . of genetic resources.”²¹² The CBD is primarily a framework agreement to be implemented through its organs — the Conference of Parties, the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA), and the Secretariat²¹³ — and subsequent agreements. Although the Convention makes no specific reference to the marine environment, the first meeting of the Conference of Parties in 1994 led to an agenda that gave conservation and sustainable use of marine and coastal biodiversity a priority status.²¹⁴ Subsequently, the SBSTTA began a series of meetings which resulted in development of the Jakarta Mandate on Marine and Coastal Biological Diversity.²¹⁵

209. *Id.* para. 47.

210. Biological Diversity Convention, *supra* note 123.

211. The Convention on Biological Diversity entered into force on December 29, 1993. *See id.* As of March 2004, there were 188 parties to the Convention. SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, U.N. ENVTL. PROGRAM, PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY / CARTAGENA PROTOCOL ON BIOSAFETY, at <http://www.biodiv.org> (last updated October 12, 2004).

212. Biological Diversity Convention, *supra* note 123, art. 1.

213. *Id.* arts. 23-25.

214. Goote, *supra* note 124, at 378.

215. *See id.* at 377-87.

The Jakarta Mandate is based upon the recommendations of the SBSTTA²¹⁶ as adopted by the Second Meeting of the Conference of Parties in five thematic areas, including integrated marine and coastal management, marine and coastal protected areas, and sustainable use of coastal and marine living resources.²¹⁷ The recommendations reiterate the necessity for application of the precautionary approach and ecosystem management principles,²¹⁸ as well as the need for integrated coastal and marine area management.²¹⁹

The Jakarta Mandate also focuses on the role of marine protected areas (MPAs) in conservation of marine biodiversity and encourages the use of MPAs within the context of integrated coastal and marine area planning.²²⁰ The establishment of MPAs is consistent with the obligation under the CBD to conserve biological resources in-situ and to “[e]stablish a system of protected areas or areas where special measures need to be taken to conserve biological diversity.”²²¹ The establishment of MPAs also reflects concerns about the ecosystem-level effects of overfishing and some fishing techniques and the CBD obligation to “[p]romote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings.”²²² MPAs are regarded as a matter of high priority and urgency in recent recommendations of the SBSTTA, which call for establishment and maintenance of MPAs “that are effectively managed, ecologically based and contribute to a permanent representative global network of [MPAs] . . . to maintain the structure and functioning of the full range of marine and coastal ecosystems, in order to provide benefits to both present and future generations.”²²³

216. *Report of the First Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice*, Conference of the Parties to the Convention on Biological Diversity, Subsidiary Body on Scientific, Technical and Technological Advice, U.N. Env'tl. Program, Recommendation I/8, U.N. Doc. UNEP/CBD/COP/2/5 (1995) [hereinafter SBSTTA], available at <http://www.biodiv.org> (last visited Apr. 14, 2004).

217. *Introduction to Jakarta Mandate on Marine and Coastal Biodiversity*, U.N. Env'tl. Program, Agenda Item 4, para. 8(a)(1)-(3), U.N. Doc. UNEP/CBD/JM/Expert/I/2 (1997), available at <http://www.biodiv.org> (last visited Apr. 14, 2004). The other areas are mariculture and alien species. *Id.* para. 8(a)(iv)-(v).

218. *See, e.g.*, SBSTTA, *supra* note 216, paras. 10(b)(ii), 12(a), 15(e), Annex para. 6.

219. *Id.* para. 10.

220. *Id.* para. 11.

221. Biological Diversity Convention, *supra* note 123, art. 8(a).

222. *Id.* art. 8(d).

223. *Report of the Eighth Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice*, Conference of the Parties to the Convention on Biological Diversity, Subsidiary Body on Scientific, Technical and Technological Advice, U.N. Env'tl. Program, Recommendation VIII/3, Annex B, at 71, para. 8, U.N. Doc. UNEP/CBD/COP/7/3 (2003); *see also Thematic Programmes of Work: Review, Further Elaboration and Refinement*, Conference of the Parties to the Convention on Biological Diversity, U.N. Environmental Program, at 7,

Recommendations for the protection of biodiversity also conform with the LOS Convention, Agenda 21, and the FAO Code of Conduct.²²⁴ The CBD's relation to other treaties and agreements is set out specifically in article 22, which provides:

1. The provisions of this Convention shall not affect the rights and obligations of any Contracting Party deriving from any existing international agreement, except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity.
2. Contracting Parties shall implement this Convention with respect to the marine environment consistently with the rights and obligations of States under the law of the sea.²²⁵

Section 1 of article 22 reflects the rule of treaty interpretation that in the case of a conflict, the obligations under a later treaty will prevail.²²⁶ The language of article 22, section 2 raises concerns that if elements of implementation of the CBD conflict with rights or duties of states under the LOS Convention, the LOS Convention will prevail.²²⁷ A study of the parallel provisions of the LOS Convention and the CBD related to conservation, sustainable use, and research concludes that provisions are complementary and can be implemented "together in ways that are consistent, mutually supportive and productive."²²⁸ In addition, the reference to "the law of the sea" encompasses not only the LOS Convention, but other conventions, such as the U.N. Fish Stocks Agreement and the Compliance Agreement, as well as development of customary international law. The law of the sea for coastal states in regard to fisheries management now goes well beyond the relatively limited

U.N. Doc. UNEP/CBD/COP/ 7/12/Add.2 (2003).

224. SBSTTA, *supra* note 216, para. 12(e).

225. Biological Diversity Convention, *supra* note 123, art. 22. The LOS Convention is not specifically referenced in section 2 and was not yet in force when these provisions were adopted, but the CBD does not refer in this section to the "existing" law of the sea, as it did in section 1. *Id.* The term "law of the sea" is generally considered to apply both to customary law of the sea as well as the LOS Convention, which has been so widely adopted now that it may be considered as embodying the law of the sea. See R.R. CHURCHILL & A.V. LOWE, *THE LAW OF THE SEA* 18 (1983).

226. Vienna Convention, *supra* note 108, art. 30.

227. Biological Diversity Convention, *supra* note 123, art. 22(2).

228. A. Charlotte De Fontaubert et al., *Biodiversity in the Seas: Implementing the Convention on Biological Diversity in Marine and Coastal Habitats*, 10 *GEO. INT'L ENVTL. L. REV.* 753, 849-53 (1998).

obligations of the LOS Convention. This evolution contributes to the conclusion that actions to promote biodiversity and ecosystem integrity under the CBD will be consistent with states' rights and duties under the law of the sea.²²⁹

V. CONCLUSION

The premise that coastal state jurisdiction over marine living resources to 200 miles offshore would prevent the overexploitation of marine fisheries has proved to be flawed. Scientific information and management methodologies continue to be inadequate; entry into domestic fisheries has largely not been controlled; enforcement and reporting remain questionable; and the EEZ as a management area has not been an adequate zone for ecosystem management, either from the perspective of straddling stocks and highly migratory species or from the perspective of integrating coastal and marine management. Simply changing jurisdictional zones did not substantially benefit the resources.

The LOS Convention standards for coastal state conservation and utilization of EEZ fisheries are largely ambiguous, incredibly flexible, and virtually unenforceable. States have been particularly unsuccessful at meeting the clearest mandate of article 61 — the requirement to prevent overexploitation. While the ambiguity and flexibility of concepts such as MSY “as qualified by relevant environmental and economic factors”²³⁰ and consideration of “associated” species²³¹ create no enforceable management standards, they do, however, provide ample bases for incorporating in the context of article 61 new principles of international environmental law, including application of the precautionary approach and integrated coastal and marine ecosystem management. Moreover, in the *Case Concerning the Gabčíkovo-Nagymaros Project*,²³² the ICJ indicated that new environmental norms *must* be taken into account and given proper weight in applying a treaty that governs activities, like fishing, that affect the environment.²³³

During the 1990s, international environmental law was developing rapidly. In the area of fisheries management, not only did broad concepts like the precautionary principle and sustainable use of resources become relevant, but new regimes were also developing to respond to the problems identified by better reporting and monitoring of fisheries catch, by better understanding of the

229. See generally Rieser, *supra* note 66, at 257-59.

230. LOS Convention, *supra* note 6, art. 61(3).

231. *Id.* art. 61(4).

232. See *Gabčíkovo-Nagymaros Project* (Hung. v. Slov.), 1997 I.C.J. 7 (Sept. 25).

233. See *supra* text accompanying notes 111-19.

impacts of fishing,²³⁴ and by the acknowledgment of the incompleteness of the LOS Convention regime for fisheries management.

The LOS Convention does not appear to be an impediment to coastal state adoption of more recent approaches to fisheries management such as: applying a precautionary approach when data are inadequate; using MSY as a limiting reference point, rather than a target point; taking an ecosystem-based approach to management; designating MPAs where appropriate for ecosystem or species protection; and limiting access and overcapitalization in the fishing industry. Nevertheless, the Convention is not particularly useful for requiring implementation of these new norms and understandings. The degree of coastal state autonomy authorized by the LOS Convention and coastal state self-interest continue to support a "tragedy of the commons" situation. If trends in fisheries continue to indicate that not only are the primary commercial fish stocks not recovering, but also that they are unlikely to recover if current fishing practices are not revised, the self-interest of coastal states may become more enlightened and shift to more conservation-oriented and long-term management policies.

More widespread adoption of principles elaborated in Agenda 21, the FAO Code of Conduct, and the Jakarta Mandate may result in substantial changes in patterns of EEZ fisheries management in the future. None of these documents are binding, however, and at this point cannot be characterized as customary international law creating international minimum standards for EEZ management.²³⁵ This does not mean that these developments are of no consequence. Agenda 21, the FAO Code of Conduct, and the Jakarta Mandate have provided important regime linkages that are contributing to the operation and effectiveness of the LOS Convention and defining basic principles which form the foundation for new regimes, such as the U.N. Fish Stocks Agreement.²³⁶

Ironically, the U.N. Fish Stocks Agreement, a treaty primarily directed to management of high seas fisheries, seems to provide the incentives necessary for the most immediate changes in EEZ management. To require compatible management of fisheries in adjacent high seas areas, coastal states will have to adopt and apply strategies for straddling stocks within the EEZ that incorporate the

234. Not only on targeted species, but also on other species and on ecosystems.

235. See Hey, *supra* note 16.

236. See generally Olav Schram Stokke, *Governance of the High Seas Fisheries: The Role of Regime Linkages*, in ORDER FOR THE OCEANS AT THE TURN OF THE CENTURY 157, 159 (Davor Vidas & Willy Ostreng eds., 1999).

precautionary approach, protection of biodiversity, principles of sustainability, and ecosystem management. Not only is it unlikely that coastal states would adopt different management regimes for other fish stocks within the EEZ, it is virtually impossible to conceive how such an integrated management approach could not incorporate and positively affect management of all fisheries within the EEZ.