# COMMENTS

# Quota Allocation Methods in the Management of International Marine Fisheries: Future Implications

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## I. INTRODUCTION

The year 1998 was designated as the "International Year of the Ocean"[1] by the United Nations, and yet it is estimated that seventy percent of the commercial fish species in the world are being exploited, or overfished.[2] The management of international fisheries, specifically fisheries that are highly migratory or whose native waters

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1. *See* United Nations, *Oceans and Law of the Sea Home Page* (last updated Jan. 5, 1999) <http://www.un.org/Depts/los>.

2. *See* Michael Satchel, *The Feds Move in to Save the Fish*, U.S. NEWS & WORLD REP., Jan. 12, 1998, at 29, 29; *see also* Tim Zimmerman, *If World War III Comes, Blame Fish*, U.S. NEWS & WORLD REP., Oct. 21, 1996, at 59, 59-60.

cross jurisdictional boundaries between nations, pose unique problems in creating, implementing and enforcing management schemes. One of the many factors creating controversy is the question of how to control and allocate the quantity of fish harvested when no single nation has exclusive jurisdiction over the waters in which they swim.

This Article discusses the quota allocation methods most often used, and analyzes examples of successes and potential weaknesses encountered in their implementation. It also discusses alternatives to the "traditional approaches" currently used. It focuses specifically on their applicability to inter-jurisdictional management and on how these methods might be hybridized to ensure greater success, not only in utilization of the world's fisheries, but also in conservation of those fisheries at the international level.

## II. AN OVERVIEW OF INTERNATIONAL FISHERY MANAGEMENT

### *A. Today's Structure*

There is a complex network of mechanisms in place for the management of international fisheries, but the existing framework is insufficient. The United Nations Law of the Sea Convention grants jurisdiction to coastal states over the Exclusive Economic Zone (EEZ) which encompasses an area out to 200 miles from the jurisdictional baseline.[3] Within that zone, the coastal state has sovereign rights over all living natural resources, including fish.[4] The coastal state must determine the quantity of fish that can be harvested (allowable catch) from its EEZ.[5] If it does not have the fishing capacity to harvest the allowable catch, the coastal state is required to allow other states to have access to the surplus, after taking into account various economic and environmental factors in making that decision.[6] While the Law of the Sea Convention mandates that coastal states ensure that the resource is not endangered by over-fishing,[7] it nonetheless requires that the objective of the coastal state's management be optimum utilization of the fishery.[8]

In implementing exploitation and conservation schemes, the Law of the Sea Convention allows for cooperation among coastal states

3. *See* United Nations Law of the Sea Convention, Dec. 10, 1982, art. 57. The baseline is usually the coastal low-water line. *See id.* art. 5.
4. *See id.* art. 56.
5. *See id.* art. 61(1).
6. *See id.* art. 62(2)-(3).
7. *See id.* art. 61(2).
8. *See id.* art. 62(1).

and international organizations.[9] When specifically addressing the management of highly migratory species, in addition to the provisions already discussed, the Convention merely states that:

> The coastal State and other States whose nationals fish in the region . . . shall cooperate directly or through appropriate international organizations with a view to ensuring conservation and promoting the objective of optimum utilization of such species throughout the region, both within and beyond the exclusive economic zone. In regions for which no appropriate international organization exists, the coastal State and other States whose nationals harvest these species in the region shall cooperate to establish such an organization and participate in its work.[10]

The provisions dealing with fish stocks that cross from one EEZ into another, or from an EEZ into the high seas, contain similar language regarding cooperation either directly with other nations or through regional organizations.[11] Unfortunately, the areas not covered by the world's EEZs form a gap in jurisdiction that coincides with some of the world's most productive fishing grounds.[12] Despite the various "cooperative" provisions in the Law of the Sea Convention, there are still significant conflicts over the allocation of these fisheries.[13]

Under the Food and Agriculture Organization's (FAO) guidance, and in compliance with the Law of the Sea Convention previously outlined, many regional management organizations have been created to manage international fisheries.[14] There are also several regional bodies which are not affiliated with the FAO, but which perform a similar function.[15] Some of these regional bodies focus on

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9. *See id.* art. 61(2).
10. *Id.* art. 64(1).
11. *See id.*
12. *See* Zimmermann, *supra* note 2, at 59.
13. *See id.*
14. These commissions are: Asia-Pacific Fishery Commission, Fishery Committee for the Eastern Central Atlantic, Committee for Inland Fisheries of Africa, Commission for Inland Fisheries of Latin America, European Inland Fisheries Advisory Commission, General Fisheries Commission for the Mediterranean, Indian Ocean Fishery Commission, Indian Ocean Fishery Commission, Western Central Atlantic Fishery Commission. *See* Food and Agriculture Organization, *FAO Fisheries Department Regional and Other Bodies* (last updated Feb. 1999) <http://www.fao.org/WAICENT/FAOINFO/FISHERY/body/bodyf.htm>.
15. These organizations include: Commission for the Conservation of Antarctic Marine Living Resources, Commission for the Conservation of Southern Bluefin Tuna, Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée, Permanent Commission for the South Pacific, European Inland Fisheries Advisory Commission, General Fisheries Council for the Mediterranean, Great Lakes Fisheries Commission, Great Lakes Information Network, Inter-American Tropical Tuna Commission, International Baltic Sea Fishery Commission, International Commission for the Conservation of Atlantic Tuna, International Council for the Exploration of the Sea, Indian Ocean Fisheries Commission, International Pacific Halibut Commission, International Pacific Salmon Fisheries Commission, International Whaling

management of a single species, while others focus on a specific region.[16] Most of the FAO bodies were created before the Law of the Sea Convention was adopted, and many are still in the strictly advisory function they were first assigned, even though their mandates have been reviewed.[17] However, the FAO bodies have a distinct advantage because they obtain centralized support and coordination through the FAO.[18]

When these regional management bodies are successful they work well. For example, the South Pacific Forum Fisheries Agency led the way to a global moratorium on drift nets.[19] The International Pacific Halibut Commission helped that fishery turn from a near disaster into a thriving resource.[20] However, when they are not successful they often fail miserably. For example, the Pacific Salmon Commission has not succeeded in protecting the salmon stocks and the conflict over the fishery has actually gotten worse,[21] and the International Commission for the Conservation of Atlantic Tuna has been severely criticized because it has allowed virtually uncontrolled fishing.[22] In order to provide some guidance for these governing bodies in their approach to management, the FAO has issued a "Code of Conduct for Responsible Fisheries."[23] The Code is intended to promote conservation and management, while taking into account the needs of developing nations.[24] It is a voluntary instrument that is

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Commission, Northwest Atlantic Fisheries Organization, North Atlantic Salmon Conservation Organization, North-East Atlantic Fisheries Commission, North Pacific Anadromous Fish Commission, North Pacific Fur Seal Commission, Pacific Salmon Commission, North Pacific Marine Science Organization and Western Central Atlantic Fishery Commission. *See* Food and Agriculture Organization, *FAO Fisheries Department Regional and Other Bodies* (last updated Dec. 1998) <http://www.fao.org/WAICENT/FAOINFO/FISHERY/body.nonfao.htm>.

16. *See id.*; *see also FAO Fisheries Department, supra* note 14.

17. *See* Food and Agriculture Organization, *FAO Fisheries Department: Meeting of FAO and Non-FAO Regional Fishery Bodies or Arrangements—Major Issues Affecting the Performance of Regional Fishery Bodies* (last updated Dec. 1998) <http://www.fao.org/WAICENT/FAOINFO/FISHERY/meetings/rfb/rfb99-2.htm>.

18. *See id.*

19. *See* ANNE PLATT MCGINN, ROCKING THE BOAT: CONSERVING FISHERIES AND PROTECTING JOBS 54 (1998) (Worldwatch Paper 142).

20. *See id.*

21. *See id* at 54-55.

22. *See id.*

23. *See* Food and Agriculture Organization, *Fisheries Code of Conduct for Responsible Fisheries* (last updated Jan. 1999) <http://www.fao.org/WAICENT/FAOINFO/FISHERY/agreem/codecond/codeconf.htm#1>.

24. *See* Food and Agriculture Organization, *Fisheries Department Code of Conduct for Responsible Fisheries* (visited Feb. 26, 1998) <http://www.fao.org/WAICENT/FAINFO/FISHERY/agreem/codecond/ficondef.htm>.

comprehensive and global in scope and intended for use by all parties interested in the fishing industry.[25]

Despite the various regional organizations and the myriad treaties and conventions that attempt to provide a legal framework for the management of international fisheries, most fish in the sea belong to whomever gets there first.[26] For example, in Northwest Atlantic Fisheries Organization (NAFO), member states may reject the quotas allocated to them and set their own quotas without penalty.[27] Of course, when this happens the quotas they set for themselves are generally higher than those set by the NAFO.[28] With increased efficiency, the capacity of the world's fishing fleet is presently far greater than the amount of fish the seas will ever produce.[29]

### *B. A Paradigmatic Shift Underway*

The situation is changing, however, and a new approach to international fisheries management is on the table. In 1995, a United Nations Agreement addressing the management of migratory and straddling fish stocks was opened for signature.[30] It has yet to take effect,[31] and there are still some notable signatures lacking from the UN Agreement, such as Australia, Canada, China, Japan, Korea, Poland and Taiwan.[32] The question that remains is whether it will be sufficient once it does enter into force.

The UN Agreement is unique because it is the first of its kind to take a "precautionary approach."[33] Article 6 requires states to use caution in the face of uncertain, unreliable, or inadequate information,

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25. *See id.* art. 1.1-1.3. Such parties include FAO members and non-members, governmental and nongovernmental organizations, fishing organizations, as well as individuals such as fishermen, processors and marketers. *See id.* art. 1.2.

26. *See* Chris Wood et al., *Who Owns the Sea?*, MACLEAN'S, Mar. 27, 1995, at 14, 14-16.

27. *See id.*

28. *See id.*

29. *See id.*

30. *See* United Nations, *United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks: Agreement for the Implementation of the Provisions of the United Nations Convention of the Law of the Sea of 10 December 1982, Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*, 34 I.L.M. 1542 (1995) [hereinafter *UN Agreement*].

31. *See* United Nations, *Oceans and the Law of the Sea* (last updated Jan. 5, 1999) <http://www.un.org/Depts/los/los164st.htm>. The Agreement requires 30 ratification's or accessions before it will enter into force; there have only been nineteen. *See id.* They are: Bahamas, Fiji, Iceland, Iran, Maldives, Mauritius, Micronesia, Namibia, Nauru, Norway, Russian Federation, Saint Lucia, Samoa, Senegal, Seychelles, Solomon Islands, Sri Lanka, Tonga, and the United States. *See id.*

32. *See id.*

33. *See UN Agreement*, *supra* note 30, arts. 5(c), 6(1), 34 I.L.M at 1550-551; *see also* MCGINN, *supra* note 19, at 57.

rather than rushing headlong into harvesting with inadequate information concerning appropriate levels for such harvest.[34] While the mandate of the Law of the Sea Convention would still be to maximize ocean resources, the UN Agreement would modify this requirement by making it necessary to use caution in order to ensure conservation.[35] Hopefully this provision will not become merely aspirational in its application. The UN Agreement requires states to improve the decision-making process for fishery conservation and management through data sharing and improved techniques for approaching risk and uncertainty.[36] It provides for peaceful settlement of disputes, including a requirement for cooperation in preventing disputes, and a variety of methods for resolution should a dispute arise.[37]

The UN Agreement calls for conservation and management by regional organizations such as those that have already been established under the FAO.[38] It will require states to agree on and comply with a management program to ensure sustainability, agree on catch levels, adopt minimum standards of responsible fishery management, participate in monitoring and compliance, and agree on decision-making procedures.[39] It also calls for an open decision-making process, and a strengthening of the role of existing management organizations which could result in a stronger role for regional management bodies.[40]

The UN Agreement will provide a strong framework that would, ideally, force nations to take action to conserve, protect and utilize fishery resources, rather than exploit and destroy them.[41] It would, if nothing else, provide a source of political pressure both for signatories in noncompliance, as well as for nations that did not sign the Agreement.

The UN Agreement is also unique because it provides mechanisms to force compliance with regional conservation standards even by nations that are not members of the regional organization

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34. *See UN Agreement*, *supra* note 30, art. 6(2), 34 I.L.M. at 1542.
35. *See id*.
36. *See id.* art. 6(3), 34 I.L.M. at 1542.
37. *See id.* arts. 27-29, 34 I.L.M. at 1569. States may resort to "negotiation, inquiry, mediation, conciliation, arbitration, judicial settlement, resort to regional agencies or arrangements or other peaceful means of their own choice." *Id.*
38. *See id.* art. 8, 34 I.L.M. at 1554.
39. *See id.* art. 10, 34 I.L.M. at 1555-56.
40. *See id*. art. 13, 34 I.L.M. at 1557.
41. *See* MCGINN, *supra* note 19, at 57.

promulgating the standards.[42] For the first time on a global level, states are agreeing to be bound by conservation measures they will have no part in creating.[43] States are not relieved of their duty to cooperate with conservation and management efforts by virtue of their nonparticipation in the regional management process.[44] Nonparticipating states may not authorize their vessels to harvest fish stocks which are subject to conservation measures established by a regional or subregional management organization or arrangement.[45] A state's ability to participate in the fishery will depend on their compliance with conservation and management efforts, and member states may take action to deter fishing that contravenes these efforts.[46] In short, when the UN Agreement takes effect, the responsible fishing nations will finally have some international authorization to take action against nations that disregard the need for conservation and management. This is of key importance since the ability to enforce any management scheme is critical to its success.

The open question is whether this mechanism will be fully utilized. As previously discussed, the regional governing bodies have had mixed success in their conservation efforts, and there is no guarantee that this will change under the UN Agreement. There will be greater authority and obligations for the states in their enforcement roles, including authorization to board and inspect the vessels of any state which is a party to the UN Agreement, even if they are not also a party to the management organization or arrangement.[47] Flag states and port states will also have substantial duties under the Agreement. Flag states' duties will include licensing or permitting of vessels, responsibility for prohibiting fishing by vessels without such authorization, and various monitoring and inspection duties.[48] Port states will have the duty to "[p]romote the effectiveness of . . . conservation and management measures."[49] Perhaps most significantly, port states are authorized by the UN Agreement to prohibit landing and transshipment of any catch taken in such a way as to undermine conservation and management measures on the high

42. *See UN Agreement*, *supra* note 30, art. 17, 34 I.L.M. at 1559.

43. *See* Moritaka Hayashi, *Enforcement by Non-flag States on the High Seas Under the 1995 Agreement on Straddling and Highly Migratory Fish Stocks*, 9 GEO. INT'L ENV. L. REV. 1, 27 (1997). This is the first global agreement which has included provisions of this type. *See id.*

44. *See UN Agreement*, *supra* note 30, art. 17, 34 I.L.M. at 1559.

45. *See id.*

46. *See id.*

47. *See id.* art. 21, para. 1, 34 I.L.M. at 1563.

48. *See id.* art. 20, 34 I.L.M. at 1562.

49. *Id.* art. 23, para. 1, 34 I.L.M. at 1567.

seas which should be a strong incentive for all nations to comply with management efforts.[50] The UN Agreement, along with the existing international legal regime, will provide the backdrop against which an allocation system or alternative management scheme will play out at the international level, where trans-boundary fish stocks must be managed if there are to be successfully conserved.

## III. THE QUOTA SYSTEMS COMMONLY USED TODAY

### *A. Individual Transferable Quotas*

One of the more highly publicized methods of quota allocation is the use of a "rights-based approach".[51] This approach utilizes a system of Individual Transferable Quotas (ITQs).[52] An ITQ is a personal property right in a fixed percentage of the fishery resource which is freely alienable and heritable.[53] The government either holds a lottery, auctions off, or allocates to fishermen a percentage of the Total Allowable Catch (TAC).[54] These fishermen then own that percentage which they can sell or lease to others or use themselves.[55] Once one-hundred percent is allocated, new entrants must buy or lease their right to fish from existing fishermen.[56] The key to this system is that the TAC does not remain constant, and should typically be determined by a "neutral" body of experts.[57] If the TAC is forced to zero because of overfishing, then the fishermen's percentages will decrease to an amount the equivalent of no fish.[58] Similarly, if the TAC increases because of successful conservation measures, then each fisherman will be allowed to catch more fish.[59]

The proponents of TAC see it as the salvation of the world's fisheries, believing that the absence of property rights in fishing resources causes overfishing.[60] Some go so far as to claim that the nature of the fishery, the characteristics of fishers, and the location of

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50. *See id.* art. 23, para. 3, 34 I.L.M. at 1567. It should be noted that this may create a conflict with the provisions of the General Agreement on Tariffs and Trade (GATT), but that is an analysis too broad for the scope of this Article.

51. *See* MCGINN, *supra* note 19, at 63.

52. *See id.*

53. *See id.*

54. *See* Birgir Runolfsson, *Fencing the Oceans: A Rights-Based Approach to Privatizing Fisheries* (visited Feb. 1, 1999) <http://www.cato.org/pubs/regulation/reg20n3f.html>.

55. *See id.*

56. *See id.*

57. *See id.*

58. *See id.*

59. *See id.*

60. *See id.*

the fish are not relevant.[61] In the few individual countries where this approach has been implemented, it seems to have been a successful tool in the conservation of fisheries.[62] The TAC system gives fishermen the incentive to manage and conserve fish populations, while allowing the value of their percentage share to remain static or increase in value over time.[63] Under a system where a quota expires after a short period of time, there is no incentive to refrain from cheating or to forego part of the quota. If it turns out that the TAC has been set too high, there is no guarantee that fishermen will receive any long-term benefit in terms of their future share as a result of any self-imposed conservation measures that they might elect to implement.[64] The TAC system also helps reduce overcapitalization of the fishery by giving an economic incentive to opt out of fishing by selling ITQs.[65]

Detractors of this method point to what they consider to be several critical flaws. One common criticism is that it encourages high-grading, whereby the fishermen only pick the biggest, best, highest quality fish, to maximize the dollar value of their share, thereby weakening the overall strength of the stock.[66] Another common concern is the lack of a mechanism for controlling "by-catch."[67] When a "by-catch" control mechanism is not implemented, fish that are not the target species are caught and then discarded overboard, usually already dead.[68] This severely impacts the conservation of these nontarget species if left unchecked.[69] Another criticism, sometimes viewed as a strength, is the privatization of the world's fisheries, which encourages consolidation of fishing power into the hands of a few.[70] Those few would undoubtedly be factory trawlers which have a tremendous capacity for taking incidental by-

61. *See id.*
62. *See id.*
63. *See* MCGINN, *supra* note 19, at 63.
64. *See* Kirsten M. Batkin, *New Zealand's Quota Management System: A Solution to the United States Federal Fisheries Management Crisis*, 36 NAT. RESOURCES 855, 877 (1996).
65. *See id.* at 878.
66. *See* MCGINN, *supra* note 19, at 54.
67. *See* Batkin, *supra* note 64, at 869-70.
68. *See id.* at 870.
69. *See id.*
70. *See Choppy Waters,* THE ECONOMIST, Apr. 13, 1991, at 55, 55. For example, Scottish fisherman fear that ITQs would result in the English fishing fleet buying them out, thus destroying the Scottish fishing industry. *See id.*; *see also* Runolfsson, *supra* note 54.

catch.[71] Consequently, this has the potential for eliminating small-scale commercial fishermen who make their living from the sea.

ITQ programs are currently being utilized in several countries, most extensively in New Zealand and Iceland.[72] In New Zealand, for example, the Minister of Fisheries determines the annual TAC for each Quota Management Area (QMA).[73] QMA's are essentially a fishing ground.[74] That TAC is then divided into ITQs which are allocated initially to those who hold commercial fishing permits for that species.[75] An ITQ is owned in perpetuity, and can be sold, leased or gifted away.[76] New Zealand has imposed aggregation limits, designed to prevent a monopoly, which restrict how much of the quota percentage any person or company may own.[77] For the major commercial species, these range anywhere from 10% to 45% of the TAC, but are typically 20% of the fish stock.[78] Iceland's system is largely similar, but in addition, every vessel must hold a fishing permit as well as quota shares which have been assigned or purchased.[79]

There are several potential shortcomings to an ITQ system. First, it only applies to fish within national waters, which ignores the basic fact that fish do not respect national boundaries;[80] second, there seems to be no recognition of the fishing interest of recreational and subsistence fishermen;[81] and third, even with the aggregate limits imposed by Iceland, the entire fish stock could functionally be held in the hands of as few as three people or companies.[82] There is again potential for eliminating smaller, traditional fishermen in favor of large conglomerates as critics have feared.[83]

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71. *See* Greenpeace, *Sinking Fast: How Factory Trawlers Are Destroying U.S. Fisheries* (visited Feb. 1, 1999) <http://www.greenpeace.org/~usa/reports/biodiversity/sinking_fast/itqside.html>.

72. Other countries include Australia, Canada, Iceland, Italy, the Netherlands, South Africa, United Kingdom, and the United States. *See* Runolfsson, *supra* note 54.

73. *See* New Zealand Seafood Industry, *Introduction to the Quota Management System (QMS)* (visited Feb. 2, 1999) <http://www.seafood.co.nz/qmsintro.html> [hereinafter *Introduction to the QMS*].

74. *See id.*

75. *See id.*

76. *See id.*

77. *See id.*

78. *See id.*

79. *See* Directorate of Fisheries, *The Icelandic ITQ System* (visited Feb. 2, 1999) <http://www.hafro.is/fiskistofa/dirfish/fishman/itq.html>.

80. *See id.*

81. Only commercial fishermen receive allocations. *See* Runolfsson, *supra* note 54, and accompanying text.

82. For a fishery with an aggregate limit of 45%. *See Introduction to the QMS*, *supra* note 73.

83. *See infra* notes 66-71 and accompanying text.

The United Kingdom's ITQ program has resulted in fishermen becoming richer, and over-capacity being reduced.[84] Quotas are selling for millions of dollars for rarer species, and all quotas are rising in value.[85] The British system provides an illustration of how ITQ systems might integrate into a larger governmental structure, namely the European Union (EU). Quotas are initially allocated in Brussels under the European Union's Common Fisheries Policy on a nation by nation basis.[86] In European countries besides Britain and the Netherlands, a fisherman's quota goes back into the pot and is reallocated when the quota holder is no longer able to use his quota.[87] In Britain, however, the quotas are easily bought, sold or leased.[88] Catches exceeding the quota limit are quickly disappearing because fishermen can buy adequate quota allotments to cover any excess catch, which reduces the temptation to take fish over the legal limit.[89]

There have, however, been some problems with integrating Britain's ITQ system into a larger governing structure. Within Britain, for example, there has been hostility toward foreign fishermen who have bought quotas from British fishermen who are viewed as infringing on British fishing rights.[90] Aside from problems within Britain, the European Union's entire fishery policy has come under attack.[91] The European Union is governed by the "Common Fisheries Policy" which is viewed as problematic because the quotas are allocated by state, not directly to fishermen.[92] When new measures are proposed, ministers of individual member states' fisheries fight for the interest of their constituents, and they face internal political pressure to get as much as they can for their country.[93] There has been an attempt to balance this tendency with a requirement that any disadvantages to a nation must be offset by another measure so that the country's total catch remains relatively stable.[94] While this concept is admirable in its purpose, in practice conservation measures have struck a proverbial brick wall, even when

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84. *See Fishing: Financial Trawling*, THE ECONOMIST, Nov. 21, 1998, at 59, 59.
85. *See id.*
86. *See id.*
87. *See id.*
88. *See id.*
89. *See id.*
90. *See* Simon Fairlie, *Who is Weeping Crocodile Tears? Britains's Fishing Industry and the European Union Common Fisheries Policy*, 25 THE ECOLOGIST 105, 105-14 (1995).
91. *See id.*
92. *See id.*
93. *See id.*
94. *See id.*

favored by the fishermen themselves.[95] These problems are indicative of the types of problems that would be faced by any attempt to implement a true international ITQ system. When nations disagree, conservation efforts could break down completely, leaving the fisheries no better off than under a global free-for-all approach.

### *B. Nontransferable Quotas*

A second approach to allocating quotas is the system utilized by most European nations whereby the quota runs with the individual, and terminates with his inability to use it, or after a fixed period of time has elapsed.[96] The advantage of this system is that the state maintains closer control over who fishes in its waters. This could be utilized to abate conflicts over foreign fishermen acquiring fishing rights by buying up quotas. But, critics do not believe that this system is nearly as successful a conservation technique as the ITQ system because the incentive for fishermen is to maximize their use of the quota while they can. The theory holds that if the fishermen do not have a guaranteed interest in future harvests, then they have no motive to conserve the resource and allow it to grow stronger.

### *C. Aggregate Catch/Time Limit Approach*

A third method is to set an overall catch or time limit for harvesting the fishery, allowing open access until the catch limit is reached or the time limit has expired, at which point the fishery closes.[97] The obvious advantages to this method include the short season and relative ease of monitoring because when the season is over there is a complete ban on fishing.[98] The problems, however, are significant and take their toll in both poor conservation and human life. The race for fish causes a powerful motive for fishermen to exceed the catch capacity of their boats, in any weather.[99] For example, when Alaska utilized this approach,[100] fishing seasons lasted a matter of days.[101] There was no time to stay home simply because

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95. *See id.*

96. *See A Sustainable Stock of Fishermen: The Best way of Solving the Politics of the North Sea is First to Solve the Economics,* THE ECONOMIST, Jan. 19, 1991, at 17, 17-18.

97. *See* Bill Saporito, *The Most Dangerous Job in America (Crab Fishing in Alaska)*, FORTUNE, May 31, 1993, at 130, 136.

98. *See id*. at 131.

99. *See id.*

100. Alaska began to switch over to a privatized system in 1995. *See* Lisa Busch, *Hook, Line and Quotas: A New System Rocks an Alaskan Village*, U.S. NEWS & WORLD REP., Nov. 4, 1996, at 56, 56-57.

101. *See* Saporito, *supra* note 97, at 136.

the weather was bad.[102] Thus, there was huge loss of life as a result of people falling overboard into arctic waters because of rough seas, and boats sinking because they were overloaded with fish.[103] Furthermore, it was not a successful management strategy at all.[104]

### *D. The No-Approach Approach*

In many developing countries there is no management strategy because much of the fishing is for noncommercial purposes and developing nations often do not have the economic resources to enforce conservation measures.[105] These fisheries make up more than half of the global fish harvest, and they are being governed by an open-access system.[106] Under an open-access system, everyone has the right to fish, and the incentive is to harvest the maximum number of fish as quickly as possible.[107] Chile is one of many countries that uses an open-access system which has destroyed the livelihood of small fishermen and decimated the resource.[108] Subsistence fishermen make up an important part of the fishing industry, and much of their catch is never counted because they are not commercial fishermen, and do not "land their catch."[109] Whether their catch is officially counted or not, they still have an important impact on the fishery and an important need that must be fulfilled.[110]

So, who should decide how quotas are allocated? Often an argument is made that all fisheries should be managed with the input of the fishermen through a community-based management program.[111] However, this can go too far if the system is set up so that the governing body has a vested interest in acquiring a share of the

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102. *See id.*

103. *See id.*

104. *See id.* at 132-33. Similarly, in 1995 Massachusetts used an aggregate ceiling approach to manage striper stocks with an equal lack of conservation success. *See* Gary S. Becker, *How to Settle Over Fishery? Tax the Catch*, BUSINESS WEEK, Sept. 18, 1995, at 30, 30.

105. *See Don't Eat the Seahorses: Conservation*, THE ECONOMIST, Sept. 30, 1995, at 98, 98.

106. *See* A.A. Rosenberg et al., *Achieving Sustainable Use of Renewable Resources*, 262 SCIENCE 828, 828 (1993).

107. *See* Robert Constanza, *Principles for Sustainable Governance of the Oceans*, 281 SCIENCE 198, 198 (1998).

108. *See* Joseph Collins & John Lear, *Free Market Miracle or Myth? Chile's Neo-liberal Experiment*, 26 THE ECOLOGIST 156, 156-66 (1996).

109. *See* Constanza, *supra* note 107, at 198.

110. *See id.*

111. *See* PETER WEBER, NET LOSS: FISH, JOBS, AND THE MARINE ENVIRONMENT 52-53 (Worldwatch Paper 129, 1994).

fishery.[112] The United States has encountered this problem with its Regional Fishery Management Councils, which are authorized under the Magnuson Act.[113] Regional Councils' members often have direct financial interests in their decision, resulting in inefficiency and over-fishing.[114] Conflicts in this type of consensus decision-making often prove difficult to resolve, and voting tends to be heavily weighted towards commercial interests.[115] There does need to be input from the fishermen who are being governed, but giving them the final decision for allocating quotas can be disastrous.

### *E. Alternatives to the Traditional Management Approaches*

There are some alternatives to the traditional quota allocations which are useful in considering how best to manage international marine fisheries, and which can be used to supplement a quota system and counteract any problems that may arise.[116]

In Norway, the focus is placed on the size and number of the fishing vessels, not on the quantity of the catch.[117] The theory is that by limiting the size of the boats, catch size is automatically limited to the capacity of those vessels.[118] The theory has been relatively successful in practice.[119] There is close cooperation between the Norwegian fishermen and the governing authorities, including a union that negotiates on behalf of the fishermen.[120] All of the boats are owned by fishermen who have been active in the industry for a minimum number of years, and who maintain their connection to the industry.[121] This has resulted in agreements being kept and minimal cheating by the fishermen.[122]

This would certainly be an ideal solution, but it has proven politically difficult to achieve on the international level. However, in a recent development, the international community has recognized that there is a need to reduce the capacity of the world's fishing fleets. In February 1999 the Food and Agriculture Organization's Committee

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112. *See* Catherine E. Decker, *Issues in the Reauthorization of the Magnuson Fishery Conservation and Management Act,* 1 OCEAN & COASTAL L.J. 323 (1995).

113. *See id.*

114. *See id* at 332-34, 341-43.

115. *See* M. Estelle Smith, *Chaos, Consensus and Common Sense*, 25 THE ECOLOGIST 80, 80-85 (1995).

116. *See Norway's Lessons: Europe's Fish*, THE ECONOMIST, Oct. 19, 1996, at 58, 58.

117. *See id.*

118. *See id.*

119. *See id.*

120. *See id.*

121. *See id.*

122. *See id.*

on Fisheries adopted the International Plan of Action for the Management of Fishing Capacity.[123] This Plan of Action is a voluntary agreement among nations to limit, and ultimately reduce the capacity of fishing fleets.[124] It calls immediate action to be taken concerning fisheries that cross international boundaries and reiterates the need for global cooperation when addressing the problems of these types of fisheries.[125] This is the first major international step towards managing the capacity of fishing fleets, and there are still political barriers to effective implementation.[126] Although the agreement is non-binding, it is significant to note that virtually every fishing nation agreed to the plan.[127] This agreement is considered a major step towards the preservation of fish stocks, and is certainly a significant step in the international approach to fisheries management which has, until now, focused on placing limits on catch and restrictions on gear without addressing the problem of overcapacity.[128]

Another alternative, that could be implemented easily in conjunction with any international system of management, is a system that creates areas where no fishing can occur.[129] These types of complete bans are currently in effect for less than one percent of the world's fisheries.[130] This approach is very effective in allowing a fishery that has collapsed to recover, and it could also be used to protect critical habitat such as spawning grounds.[131] The obvious advantage to "no-fish" zones is that they are relatively easy to enforce.[132] However, used alone, they would do little to curb overfishing because fishing may still take place outside of the zones' boundaries.

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123. *See* Food and Agriculture Organization, *FAO Fisheries Department International Plans of Action* (visited Apr. 12, 1999) <http://www.fao.org/fi/IPA/ipaee.htm>.

124. *See* Food and Agriculture Organization, *FAO Fisheries Department, The International Plan of Action for the Management of Fishing Capacity* (visited Apr. 12, 1999) <http://www.fao.org/fi/IPA/capace.htm>.

125. *See id.*

126. *See* John R. Cushman, Jr., *Fishing Nations, Worried About Supply, Will Trim Fleets*, N.Y. TIMES, Mar. 9, 1999, at A6.

127. *See id.*

128. *See id.*

129. *See* Nigel Williams, *Overfishing Disrupts Entire Ecosystems*, 279 SCIENCE 809, 809 (1998).

130. *See id.*

131. *See* Karen F. Schmidt, *'No-Take' Zones Spark Fisheries Debate*, 277 SCIENCE 489, 489-90 (1997).

132. *See id.*; *see also* Williams, *supra* note 129, at 809.

## IV. ALLOCATION METHODS AND THEIR UTILITY IN THE FUTURE

As is the case with everything international in scope, problems that arise when a single nation attempts something are only magnified when multiple countries try the same approach acting in concert. Ideally, we would live in a world where conservation of natural resources was the primary focus, not maximum exploitation. Adopting the UN Agreement would be a major step towards shifting that focus. Until the focus has, in fact, shifted completely away from maximum exploitation, a modified version of the ITQ approach, administered by regional management bodies and coordinated by the FAO, is the most promising way to reduce production and limit exploitation of fisheries to a truly sustainable level on an international scale. A system like the one utilized by the European Union would also suffice if all of the individual nations utilized an ITQ system. An ITQ system is the most likely to accomplish the maximization of global fishery production with the least harm to fish populations. But the system utilized must take into account all of the different pressures on the fishery, and not just the commercial pressure.

The interests of subsistence fishermen would be best served by having a quota allocated to them that they can then use or sell. However, locating the fishermen for purposes of assigning such an allocation might be difficult, if not impossible in many regions. Alternatively, the regional or national management bodies could set aside a certain percentage of the TAC as being ear-marked for the subsistence fishermen. This would not give the fishermen any transferable right, but it would take into account their presence in the fishery.

In order to protect the interests of smaller, traditional fishermen, the nations receiving the quotas or the regional management body, should make the necessary allocations to smaller fishermen in order to give them a chance at survival against the larger factory fleets.[133] After recognizing the interests and demands of recreational and subsistence fishermen by allocating quotas to them in one form or another, the remainder should be auctioned off. Other fishing fleets could buy them, or conservation groups could buy them and simply not use them. To accomplish this goal, it is imperative that once the quotas are set, they do not hinge on continued use. National governments, or the regional management bodies could also purchase them as an alternative to reducing the TAC.'

133. *See* Runolfsson, *supra* note 54.

Many of the criticisms of the ITQ system are really concerns regarding privatization of the world's fisheries.[134] Permanent privatization may not be the best approach, especially in light of the shifting structure of international law in this area. Instead, long-term privatization similar to a long-term lease, or an indefinite, but revocable, allocation would create similar benefits without the risk of becoming locked into this approach should a better solution present itself in the future.

In addition, the international community should take a lesson from Norway and, along with continuing efforts to reduce the world's fishing capacity (perhaps by moving toward a binding agreement modeled after the Plan of Action recently adopted), limit the types of vessels that can hold quotas. One method of accomplishing this would be to cap the total quota allocation one individual or company may hold at a level below that of the large factory trawlers. In addition, there is a need for no-fishing zones, at the very minimum in areas of particularly sensitive habitat. These zones could be implemented by international agreement or by the regional management bodies under the UN Agreement for critical habitat wherever it exists, and enforced either by the nation that has jurisdiction over the area or by the international community as a whole.

## V. CONCLUSION

The issue of how to allocate international stocks of fish is really a question of how to allocate an extremely scarce resource. The issue is magnified in the international setting because of the political weight of nations and disagreements among them. The method used to allocate quotas is only one piece in a much bigger puzzle, but it is an issue that must be resolved if our marine ecosystems, and the resources in them, are to survive. It does not have to be an all or nothing approach. In fact, a hybridization of the different approaches may prove to be a better solution than any one method utilized by itself. As with most things in international law, a great deal can and must be accomplished through compromise.

The international community as a whole must come to grips with the issue of international fish allocation and find a way to settle it peacefully, with an eye on conserving the resource, not just exploiting it to its maximum potential. Furthermore, we must not be afraid to implement unpopular measures such as bans and TAC reductions.

134. *See id.*

While political pressure is very strong and very real, it is counterproductive in responsible fisheries management.