The Changing Approaches to Conservation of Marine Living Resources in International Law

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Abstract

It is highly important to pursue proper conservation policies in order to prevent the depletion of marine living resources. However, it became apparent that the traditional approaches of the United Nations Convention, namely, the zonal management approach and the species specific approach, are inadequate to conserve living resources in the oceans. In response to the limitations of the traditional approaches, new approaches, such as the ecosystem and precautionary approaches and non-flag State measures, are increasingly enshrined in various international instruments on this subject. The question is, however, whether and to what extent these new approaches can contribute to overcome the weaknesses of the traditional approaches. Thus this article will seek to examine the limitations of the traditional approaches and explore the possibilities of new approaches in international law governing conservation of marine living resources.

I. Introduction

Considering that marine living resources are an important source of protein in a situation of food shortage at the global level,[1] sustainable use of these resources is crucial in the international community. Without proper conservation of marine living resources, the long-term sustainable use of these resources cannot be enjoyed effectively. Thus, conservation becomes a key aspect of sustainable use of marine living resources.[2] However, it is open to serious question whether these resources are properly managed. Indeed, the Food and Agriculture Organization (FAO) highlighted that fish

[1] At the Seventh Meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, many delegates stressed that as the global population grew and income levels increased, the role of fisheries in the world's food supply had been assuming an ever-increasing importance. United Nations General Assembly, Report on the Work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at Its Seventh Meeting, A/61/156, 17.7.2006, 14, para. 47.

[2] The concept of "conservation" includes rational use and does not directly mean a moratorium or prohibition of exploitation of marine living resources. In fact, Art. 2 of the 1958 Geneva Convention on Fishing and Conservation of the Living Resources of the High Seas defines conservation as: "the aggregate of the measures rendering possible the optimum sustainable yield from those resources so as to secure a maximum supply of food and other marine products". See also Art. II (2) of the 1980 Convention on the Conservation of Antarctic Marine Living Resources.

stocks are overfished in many parts of the world.[3] Thus in Resolution 58/240 the United Nations General Assembly reiterated "*its deep concern* at the situation of many of the world's fisheries caused principally by overcapacity, overfishing and illegal, unregulated and unreported fishing, as well as, in many areas, pollution".[4]

While the failure of conservation of marine living resources may be due to a lack of will on the part of States to take appropriate conservation measures, it is arguable that the existing rules of international law contain some limitations on this subject. Thus there is a need to re-examine the validity of the traditional approaches to conservation of marine living resources in the law. On the basis of the critical analysis on the traditional approaches, we must explore approaches which may enhance the efficacy of conservation of these resources. In this regard, it is notable that new approaches are developing at the substantive and compliance level. At the substantive level, the ecosystem and precautionary approaches merit particular attention. At the compliance level, non-flag State measures deserve serious consideration. The question is whether and to what extent those new approaches can contribute to settle the problems which cannot be easily resolved under the traditional approaches.

Against that background, this contribution will seek to examine the limitations of the traditional approaches and explore the possibilities of new approaches to conservation of marine living resources in international law. Parts II. and III. will address substantive rules on this subject. Part II. will examine limits of the zonal management approach and the species specific approach under the 1982 United Nations Convention on the Law of the Sea (hereafter the LOSC).[5] Part III. will analyze the ecosystem and precautionary approaches. Principal focus will be on the normativity of these approaches as a rule of conduct and a rule for adjudication. The distinction between a rule of conduct and a rule for adjudication was originally made

[3] The areas showing the highest proportions of fully-exploited stocks are the North-East Atlantic, the Western Indian Ocean and the North-West Pacific. FAO, The Status of World Fisheries and Aquaculture, 2008, 7.

[4] Emphasis original. UN General Assembly Resolution, Oceans and the Law of the Sea, A/RES/58/240, 23.12.2003, para. 12 of Preamble. According to a Report of the UN Secretary General, many scientists considered that if current levels of exploitation were maintained, not only would the commercial extinction of fish stocks soon become a reality, but the long-term biological sustainability of many fish stocks would also be threatened. United Nations, Report of the Secretary-General, Oceans and the Law of the Sea, A/59/62, 4.3.2004, 53, para. 206.

[5] 1833 UNTS, 3. Entered into force 16.11.1994.

by *Eugen Ehrlich*.[6] This distinction seems to be useful in examining the normativity of rules of international law, including the law of the sea. There is little doubt that the implementation of substantive rules cannot be ensured without effective compliance mechanisms. Thus, Part IV will address mechanisms for ensuring effective compliance with substantive rules concerning the conservation of marine living resources. This Part will focus mainly on the validity of non-flag State measures as a new means of ensuring compliance with relevant rules of international law.

Because of the space of the article and the complexity of the subject, detailed examination of each and every issue with regard to conservation of marine living resources is beyond the scope of this contribution.[7] Instead, this contribution will focus on fundamental approaches to conservation of these resources in a broad perspective.

II. Limits of the Traditional Approaches: A Critical Analysis on the United Nations Convention on the Law of the Sea

The LOSC, in its Preamble, explicitly recognizes its aim of promoting the conservation of marine living resources. It may be said that the Convention established a basic framework for conservation of marine living resources in international law. The framework is based on two approaches, namely, the zonal management approach and the species specific approach.

1. Limits of the Zonal Management Approach

In international law of the sea, the ocean is divided into multiple jurisdictional spaces, such as internal waters, territorial seas, contiguous zones, exclusive economic zones (EEZ), archipelagic waters, continental shelf, high seas and the Area. In principle, the law of the sea regulates human activities

[6] *E. Ehrlich* (translated by *W. L. Moll*), Fundamental Principles of the Sociology of Law, 1936, 41 and 122 et seq.

[7] Recently the present writer made a detailed examination with regard to conservation of marine living resources and biological diversity focusing on the interaction between the zonal and integrated management approaches. See *Y. Tanaka*, A Dual Approach to Ocean Governance: The Cases of Zonal and Integrated Management in International Law of the Sea, 2008. The argument of this contribution is based partly on this book with some modifications and updates.

in the ocean according to the legal category of marine spaces. This is sometimes referred to as the zonal management approach. Under this approach, different rules apply to conservation of marine living resources according to each jurisdictional zone. There is no doubt that the law of the sea is essentially dominated by the zonal management approach. With regard to conservation of marine living resources, however, this approach comprises at least three limits.

a) Difficulties of the Conservation of Migratory Species

An essential limitation associated with the zonal management approach involves the divergence of the law and nature. The spatial ambit of coastal State jurisdiction over marine spaces in law of the sea is, in essence, defined on the basis of distance from the coast, irrespective of the nature of the ocean and the natural resources within it.[8] By using the distance criterion, the ecological interactions between marine species as well as the ecological conditions of the physical surroundings are to be ignored. As a consequence, the spatial scope of man-made jurisdictional zones does not always correspond to "ecologically defined space" which comprises the area where marine ecosystems extend.[9] In this sense, the zonal management approach does not sufficiently consider the intricate relationship of marine ecosystems and the environment that supports them.

In particular, the divergence between the law and nature raises a considerable difficulty with regard to conservation of straddling and highly migratory fish species. Due to their nature, these species do not respect man-made boundaries. Hence, a clear-cut distinction between marine spaces under the coastal State's jurisdiction and marine spaces beyond such a jurisdiction is not always suitable for the conservation of those species.[10] It must be

[8] See Arts. 3, 33, 57, 76 (1) of the LOSC. However, internal waters and archipelagic waters constitute exceptions. The former are located on the landward side of the baseline of the territorial sea (Art. 8), and the latter consist of the waters enclosed in the archipelagic baselines drawn in accordance with Art. 47 (Art. 49).

[9] *L. Juda*, Considerations in Developing a Functional Approach to the Governance of Large Marine Ecosystems, ODILA 30 (1999), 93. See also *L. Juda*, Changing Perspectives on the Oceans: Implications for International Fisheries and Oceans Governance, in: D. D. Caron/H. N. Scheiber (eds.), Bringing New Law to Ocean Waters, 2004, 20.

[10] *T. Scovazzi*, The Evolution of International Law of the Sea: New Issues, New Challenges, RdC 286 (2000), 131. *D. Freestone*, The Conservation of Marine Ecosystems under International Law, in: C. Redgwell/M. J. Bowman (eds.), International Law and the Conservation of Biological Diversity, 1996, 94 and 102; *E. A. Kirk*, Maritime Zones and the Ecosystem Approach: A Mismatch?, RECIEL 8 (1999), 68 et seq.

recalled that the essential question respecting conservation of migratory species was already raised in the 1893 *Bering Sea Fur-Seals* case between Great Britain and the United States.[11] In this case, the United States extended its national jurisdiction beyond the ordinary three-mile limit in order to protect fur-seals frequenting the islands of the United Sates in Bering Sea, while Great Britain advocated the strict application of the freedom of the high seas. While the Arbitral Tribunal rejected the claim of the United States on this matter, the Tribunal determined regulations applicable to both Parties, including the prohibition of the hunting of fur-seals within a zone of sixty miles around the Pribilov Islands.[12] In so doing, the Arbitral Tribunal attempted to reconcile the interest of the distant-water fishing States and the need for conservation of marine species. The *Bering Sea Fur-Seals* dispute seemed to clearly demonstrate the difficulty of the conservation of marine species migrating between marine spaces under and beyond national jurisdiction.

It appears that the situation was not improved very much in the LOSC. The Convention contains two provisions – Arts 63 and 64 – with regard to conservation of straddling and highly migratory fish species. In this regard, an essential question is how it is possible to ensure consistency of conservation measures between States. Nonetheless, Art. 63 provides no substantive guidance with regard to compatibility of measures between the EEZs of the neighboring States or between the EEZ and the high seas.[13] The same applies to Art. 64 concerning highly migratory fish stocks. Furthermore, another question raised is how it is possible to allocate straddling and highly migratory fish stocks between vessels fishing for such stocks in the EEZ and vessels fishing for those stocks on the high seas.[14] However, Arts 63 and 64 contain no substantive guidance on this matter. Overall, it may be concluded that Arts 63 and 64 are too general to be very useful.

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[11] For the documents relating to the *Bering Fur-Seal* Arbitration, see *Fur-Seal* Arbitration, Proceedings of the Tribunal of Arbitration convened at Paris under the Treaty between the United States of America and Great Britain, concluded at Washington, 29.2.1882, for the Determination of Questions between the Two Governments Concerning the Jurisdictional Rights of the United States in the Waters of the Bering Sea, 16 Vols, 1895. The Award, together with summary of facts and arguments in some detail, is reproduced in *J. B. Moore*, History and Digest of the International Arbitrations to Which the United States Has Been a Party, Vol. I, 1898, 755 et seq.; *C. A. R. Robb* (ed.), International Environmental Law Reports, Vol. 1, 1999, 43 et seq.

[12] *J. B. Moore* (note 11), 949.

[13] *P. G. G. Davies/C. Redgwell*, The International Legal Regulation of Straddling Fish Stocks, BYIL 67 (1996), 239.

[14] *R. Churchill/V. Lowe*, Law of the Sea, 3rd ed., 1999, 305.

Later, the obligation to co-operate in the conservation of straddling and highly migratory species was reinforced by the 1995 United Nations Fish Stocks Agreement (hereafter the 1995 Fish Stocks Agreement).[15] Art. 8 (3) of the Agreement provides that where a regional fisheries management organization or arrangement has competence to establish conservation and management measures for particular straddling fish stocks or highly migratory fish stocks, States fishing for the stocks on the high seas and relevant coastal States shall give effect to their duty to cooperate by becoming a member of such organization or a participant in such arrangement, or by agreeing to apply such conservation and management measures. Art. 8 (4) further provides that: "Only those States which are members of such an organization or participants in such an arrangement, or which agree to apply the conservation and management measures established by such organization or arrangement shall have access to the fishery resources to which those measures apply." This scheme is innovative in the sense that it can contribute to institutionalize fishing activities on the high seas, while the scheme is applicable only to the Contracting Parties to the Agreement.

b) Weak Obligations Concerning Conservation of Living Resources in the EEZ

It is estimated that approximately 90 % of all commercially exploitable fish stocks are caught within 200 miles of the coast.[16] Accordingly, conservation of living resources in the EEZ is particularly important. In this regard, Art. 61 (2) of the LOSC places an explicit obligation upon the coastal State to ensure through proper conservation and management measures that the maintenance of the living resources in the EEZ is not endangered by overexploitation, taking into account the best scientific evidence available. As explained elsewhere,[17] the mechanism of the conservation of marine living resources in the EEZ is based on two key concepts, namely, the concept of allowable catch and that of maximum sustainable yield (MSY).

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[15] The full title of the Agreement is Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. Entered into force 11.12.2001. For the text of the Agreement, 2167 UNTS, 3. As of November 2010, 78 States are Parties to the 1995 Fish Stocks Agreement.

[16] *R. Churchill/V. Lowe* (note 14), 162; *P. G. G. Davies/C. Redgwell* (note 13), 200; *P. Malanczuk*, Akehurst's Modern Introduction to International Law, 7th revised ed., 1997, 183.

[17] *Y. Tanaka* (note 7), 52 et seq.

With regard to allowable catch, Art. 61 (1) provides that: "The coastal State shall determine the allowable catch of the living resources in its exclusive economic zone." Under Art. 62 (2), the coastal State is obliged to determine its capacity to harvest the living resources of the EEZ; 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. It may be said that other consequential decisions concerning access to the fish in the EEZ depend on the amount of the allowable catch determined by the coastal States.[18]

The concept of MSY aims at taking the greatest quantity of fish from a self-generating stock year after year without affecting significantly its renewability.[19] In this regard, Art. 61 (3) requires that conservation measures in the EEZ shall be "designed to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global". However, it appears that the mechanism on the basis of the allowable catch and MSY presents considerable difficulties.

The first obstacle involves the determination of the allowable catch. The LOSC seems to presuppose that the marine living resources considered are only affected by the coastal State's harvest. In reality, however, a population of fish may occur both in the waters of the coastal State and in other areas, and, consequently, harvesting can also take place in those other areas. In this case, it appears necessary that the coastal State's determination of the allowable catch within its zone must take due account of the harvesting that takes place beyond the limits of its jurisdiction, be it within the zones of another State or on the high seas.[20] Nonetheless, the LOSC contains no mechanism to do so. Furthermore, reliable scientific data is a prerequisite in order to determine the allowable catch. Yet the collection and analysis of relevant

[18] *W. T. Burke*, The New International Law of Fisheries: UNCLOS 1982 and Beyond, 1994, 44.

[19] *P. Birnie/A. Boyle/C. Redgwell*, International Law and the Environment, 2009, 591; *D. R. Rothwell/T. Stephens*, The International Law of the Sea, 2010, 295; *R. Churchill/V. Lowe* (note 14), 282. Concerning the concept of MSY in some detail, see *G. L. Kesteven*, MSY Revisited: A Realistic Approach to Fisheries Management and Administration, Mar. Pol'y 21 (1997), 73 et seq.

[20] *C. A. Fleischer*, Fisheries and Biological Resources, in: R.-J. Dupuy/D. Vignes (eds.), A Handbook on the New Law of the Sea, Vol. 2, 1991, 1073.

data are frequently inadequate, and costly, particularly for developing States.[21] Thus, it appears difficult for the coastal State, in particular, developing coastal States, to fulfill this obligation properly.

The second obstacle relates to a broad discretion of the coastal State in setting the allowable catch. Apart from the single qualification not to endanger living resources by overexploitation, the coastal State may in fact set the allowable catch as it wishes.[22] Thus, there is a concern that the coastal State emerges with a zero surplus and thereby evades its duty to allocate surpluses in its EEZ by manipulating the allowable catch.[23] The coastal State's capacity to harvest living resources would seem not to depend only on the capital and technology of its own national economy. If this is the case, theoretically at least, the coastal State may always have the capacity to harvest the entire allowable catch, by introducing foreign capital and technology.[24]

Third, some scientists have challenged the validity of the concept of MSY because it fails to take into account not only economic objectives but also the ecological relationships of species, the quality status of that habitat, the limits of the given area's biomass, and factors disturbing the environment, etc.[25] In light of the inter-relationship of marine species, it is debatable whether ascertaining the MSY for a particular stock in isolation can serve for the conservation of marine living resources.[26] A concern is also voiced that its determination is rarely, if ever, correct and the administrative measures taken with a view to its adoption have been and generally still are inadequate and inappropriate.[27]

Fourth, under Art. 297 (3) (a), any disputes relating to a State's 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 are exempted from the compulsory settlement procedure em-

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21 *R. Churchill/V. Lowe* (note 14), 283; *W. T. Burke* (note 18), 45.

22 *W. T. Burke* (note 18), 47 et seq.

23 Yet such manipulations would be contrary to the obligation of optimum utilization as well as the obligation not to abuse rights by virtue of Art. 300 of the LOSC. *L. Caflisch*, Fisheries in the Exclusive Economic Zone: An Overview, in: U. Leanza (ed.), The International Legal Regime of the Mediterranean Sea, 1987, 161.

24 *S. Oda*, Fisheries under the United Nations Convention on the Law of the Sea, AJIL 77 (1983), 744.

25 *P. Birnie/A. Boyle/C. Redgwell* (note 19), 591; *R. Rothwell/T. Stephens* (note 19), 295 et seq.; *R. Churchill/V. Lowe* (note 14), 282.

26 *R. Churchill/V. Lowe* (note 14), 282.

27 *G. L. Kesteven* (note 19), 73.

bodied in Part XV of the LOSC. A dispute concerning a coastal State's obligation to ensure conservation of living resources in the EEZ is to be submitted to conciliation under Annex V. However, in no case shall the conciliation commission substitute its discretion for that of the coastal State under Art. 297 (3) (c). In any case, the report of the conciliation commission is not binding. In summary, there is no review process by a third party capable of examining the validity of the conservation measures of the coastal State in its EEZ.[28]

c) Weak Obligations Concerning Conservation of Living Resources on the High Seas

It is beyond serious argument that the obligation to co-operate is a prerequisite in the conservation of living resources on the high sea. Thus, Section 2, Part VII, of the LOSC provides obligations in international co-operation in order to conserve living resources on the high seas in some detail. Art. 117 requires "all States" to take, or to co-operate with other States in taking such measures for their respective nationals as may be necessary for the conservation of the living resources of the high seas. Art. 118 imposes upon States to co-operate with each other in the "conservation and management" of living resources in the areas of the high seas. Art. 118 further requires States to co-operate as appropriate to establish subregional or regional fisheries organizations to this end. Arguably participation in regional fisheries bodies is one method of fulfilling the obligation to co-operate in conservation of the living resources on the high seas.[29]

On the other hand, these provisions contain no specific guidance describing how the co-operation shall be performed, and how it is possible to judge whether or not such an obligation was breached. In fact, Art. 118 does not explicitly require States to pursue negotiations until an agreement is reached, nor does it specify the consequence of a failure in these negotiations.[30] Even if some States reach agreement with respect to the conservation of living resources on the high seas, there is a concern that the accord

[28] *R. Barnes*, The Convention on the Law of the Sea: An Effective Framework for Domestic Fisheries Conservation?, in: D. Freestone/R. Barnes/D. Ong (eds.), The Law of the Sea: Progress and Prospects, 2006, 245 et seq.

[29] United Nations Division for Ocean Affairs and the Law of the Sea (UNDOALOS), The Law of the Sea: the Regime for High-Seas Fisheries, Status and Prospects, 1992, 26, para. 78.

[30] UNDOALOS (note 29), 26, para. 77. See also *P. G. G. Davies/C. Redgwell* (note 13), 229.

may be at the mercy of new entrants. In this respect, a study of the United Nations argued that: "Even though outsiders are not parties to the specific instrument or to the subregional or regional commission that established the moratorium, nevertheless their obligations of cooperation and conservation under the 1982 Convention would compel them to comply unless they could establish that the moratorium was a measure that could not be justified under article 119 of the LOSC."[31] However, it may be debatable whether the LOSC imposes such a strong obligation upon a newcomer State. Overall it may be concluded that the obligation to co-operate in Arts. 117 and 118 remains weak.[32]

2. Limits of the Species Specific Approach

Another basic approach to conservation of marine living resources involves the species specific approach. Under this approach, conservation measures are to be determined according to specific categories of marine species. Following the species specific approach, the LOSC provides different rules applicable to conservation of each species, such as shared fish stocks (Art. 63 (1)), straddling fish stocks (Art. 63 (2)), highly migratory species (Art. 64), marine mammals (Arts. 65 and 120), anadromous stocks (Art. 66), catadromous species (Art. 67) and sedentary species (Art. 68). For the purpose of this study, it will be unnecessary to examine these provisions in some detail. Instead, consideration must be given to essential limitations of the species specific approach. Two points merit highlighting in particular.

First, rules of the LOSC do not cover all species that need particular conservation measures. For instance, deep-sea species are highly vulnerable to fishing activities due to their exceptional longevity, slow growth, delayed maturity and low productivity.[33] Hence, arguably these species will need particular conservation measures. However, the LOSC contains no specific provision on this matter.[34]

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31 UNDOALOS (note 29), 29.

32 *S. Oda*, International Control of Sea Resources, 1989, xxii.

33 *J. A. Koslow/G. W. Boehlert/J. D. M. Gordon/R. L. Haedrich/P. Lorance/N. Parin*, Continental Slope and Deep-Sea Fisheries: Implications for a Fragile Ecosystem, ICES Journal of Marine Science 57 (2000), 550; *L. A. Kimball*, Deep-Sea Fisheries on the High Seas: The Management Impasse, IJMCL 19 (2004), 261 et seq.

34 In 2008, International Guidelines for the Management of Deep-Sea Fisheries in the High Seas were adopted at the request of the Committee on Fisheries of the FAO. The Guidelines seek to provide tools to facilitate the efforts of States and regional fisheries management organizations towards sustainable use of marine living resources exploited by deep-

Second, a more fundamental limitation of the species specific approach involves a lack of ecological consideration. This approach focuses essentially on each individual species, and, thus, ignores the intricate relationship of marine species and marine ecosystems. Given that most marine species are inter-related through the food web or habitats, however, it makes little sense to conserve each stock in isolation. Attention must also be paid to adverse effects of fishing on marine ecosystems. Indeed, overfishing can contribute to overall degradation of marine ecosystems in a certain region. For instance, overfishing of top predators can destabilize the food web, and result in restructuring of marine ecosystems.[35] Thus, further consideration must be given to the inter-linkage between conservation of marine living resources and that of marine ecosystems.

3. Conclusions

The above considerations lead to the following conclusions:

(i) Under the zonal management and species specific approaches, little consideration was given to the marine ecosystems and the ecological conditions that support them.

(ii) The obligations to conserve living resources in the EEZ remain weak due to large discretion of the coastal State and the lack of review process by a third party.

(iii) The LOSC merely provides obligations to co-operate in conservation on the high seas. However, these obligations are so general that a more institutional mechanism is needed with a view to ensuring co-operation between States.

(iv) Overall, the traditional approaches are inadequate to effectively conserve marine living resources, and a more conservation-oriented approach must be explored.

sea fisheries, the prevention of significant adverse impacts on deep-sea vulnerable marine ecosystems and the protection of marine biodiversity that these ecosystems contain, para. 6. The document is available at: http://www.southpacificrfmo.org/assets/6th-Meeting-October-2008-Canberra/DW-Subgroup-VI/SPRFMO6-SWG-INF01-FAO-Deepwater-Guidelines-Final-Sep20.pdf

35 *S. Parsons*, Ecosystem Considerations in Fisheries Management: Theory and Practice, IJMCL 20 (2005), 383 et seq.

III. New Approaches to Conservation of Marine Living Resources

In response to the limits of the traditional approaches, more conservation-oriented approaches are being developed in post-LOSC treaties concerning conservation of marine living resources. In particular, the ecosystem and precautionary approaches merit serious consideration. In this regard, it must be stressed that the purpose of these new approaches is *not* to replace the zonal management and species specific approaches, but to resolve the problems that cannot be resolved under the traditional approaches. In other words, the new approaches should be considered as an element so as to supplement the traditional approaches. Thus, the question is whether and to what extent the new approaches can contribute to enhance the effectiveness of conservation of these resources in international law.

1. The Ecosystem Approach and Its Limits

a) General Considerations[36]

The ecosystem approach differs from the traditional species specific approach in the sense that the ecosystem approach focuses on biological interactions between all marine species in the same as well as in neighboring zones and the ecological conditions of the physical surroundings.[37] While there is no universally agreed definition of an ecosystem approach, for instance, the FAO Expert Consultation on Ecosystem-Based Fisheries Management defined this approach as follows:

> "An ecosystem approach to fisheries strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic,

[36] Concerning the ecosystem approach in general, see in particular, *E. J. Molenaar*, Ecosystem-Based Fisheries management, Commercial Fisheries, Marine Mammals and the 2001 Reykjavik Declaration in the Context of International Law, IJMCL 17 (2002), 561 et seq.; *H. Wang*, Ecosystem Management and Its Application to Large Marine Ecosystems: Science, Law and Politics, ODILA 25 (2004), 41 et seq.; *S. Parsons* (note 35), 381 et seq.; *S. A. Murawski*, Ten Myths Concerning Ecosystem Approaches to Marine Resource Management, Mar. Pol'y 31 (2007), 681 et seq.

[37] *N. Matz*, The Interaction between the Convention on Biological Diversity and the UN Convention on the Law of the Sea, in: P. Ehlers/E. M. Borgese/R. Wolfrum/C. Hoss (eds.), Marine Issues: From a Scientific, Political and Legal Perspective, 2002, 207 et seq.

abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries."[38]

It can be observed that the ecosystem approach is being enshrined in post-LOSC instruments respecting conservation of marine species. At the treaty level, the case in point is the 1995 Fish Stocks Agreement. This Agreement clearly notes "the need to avoid adverse impacts on the marine environment, preserve biodiversity, maintain the integrity of marine ecosystems and minimize the risk of long-term or irreversible effects of fishing operations". Art. 5 (d) thus obliges coastal States and States fishing on the high seas to "assess the impacts of fishing, other human activities and environmental factors on target stocks and species belonging to the same ecosystem or dependent upon or associated with the target stocks". Art. 5 (g) places an obligation upon coastal States and States fishing on the high seas to protect biodiversity in the marine environment. Similarly, Art. 4 (a) of the 2006 Southern Indian Ocean Fisheries Agreement provides that "measures shall be adopted on the basis of the best scientific evidence available to ensure the long-term conservation of fishery resources, taking into account the sustainable use of such resources and implementing an ecosystem approach to their management".[39]

Concerning non-binding documents, the ecosystem approach is highlighted by the 1995 FAO Code of Conduct for Responsible Fisheries,[40] the 1999 Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries,[41] and the 2001 Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem.[42] It is also notable that the United Nations General Assembly resolutions repeatedly refer to the application of the ecosystem approach to conservation of marine living resources. For example, Resolution 62/177 recognized "the need to further integrate ecosystem approaches into fisheries conservation and management and, more generally, the importance of applying ecosystem approaches to the management of human activities in the ocean".[43] Overall, the State practice appears to

[38] FAO, Fisheries Report No. 690, Report of the Expert Consultation on Ecosystem-Based Fisheries Management, Reykjavik, Iceland, 2 (16.-19.9.2002), available at: ftp://ftp.fao.org/docrep/fao/005/y4491t/y4491t00.pdf.

[39] For the text of the Agreement, Official Journal of European Union, L 196/17, 18.7.2006. Entered into force in 2010.

[40] Article 6.2.

[41] Para. 6 of the Rome Declaration.

[42] Paras. 16 and 17 of the Preamble.

[43] United Nations General Assembly, Sustainable Fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of

show that there is general agreement on the need to apply ecosystem approach to conservation of marine species. On the other hand, as we shall discuss below, the ecosystem approach contains some limitations concerning its normativity and practical application.

b) The Normativity of the Ecosystem Approach as a Rule of Conduct

The first issue that needs to be addressed involves the normativity of the ecosystem approach as a rule of conduct. As there is no universally agreed definition of an ecosystem approach, it is to be interpreted differently in different contexts.[44] In this regard, the Report on the Work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea stated that an ecosystem approach should consider, *inter alia*, the following elements: (a) conservation of ecosystem structures and their functioning and key processes in order to maintain ecosystem goods and services; (b) application within geographically specific areas based on ecological criteria; (c) the interactions between human activities and the ecosystem and among the components of the ecosystem and among ecosystems; (d) factors originating outside the boundaries of the defined management area that may influence marine ecosystems in the management areas; (e) balance of diverse societal objectives; (f) stakeholder and local communities' participation; (g) best available knowledge; (h) risk assessment and the precautionary approach; (i) integrated decision-making processes; (j) restoring degraded marine ecosystems; (k) assessment of the cumulative impacts of multiple human activities on marine ecosystems; (l) ecological, social, cultural, economic, legal and technical perspectives, (m) the appropriate balance between conservation and sustainable use of marine biological diversity; and (n) minimization of adverse impacts of human activities on marine ecosystems and biodiversity.[45] However, the catalogue of elements which should be taken into account is itself not law. The interrelationship between elements also remains obscure.[46] It may be forced to accept that specific im-

Straddling Fish Stocks and Highly Migratory Fish Stocks, and Related Instruments, A/RES/62/177, 18.12.2007, 4.

[44] United Nations, Report (note 1), 2, para. 6.

[45] United Nations, Report (note 1), 2 et seq., para. 6. See also *A. Fabra/V. Gascón*, The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) and the Ecosystem Approach, IJMCL 23 (2008), 569.

[46] The same criticisms will apply to the concept of Large Marine Ecosystems (LME). The LMEs are large areas defined on the basis of ecological criteria, approximately 200,000 square kilometers or larger and are adjacent to the continents in coastal waters. It is suggested that 64

plications of the ecosystem approach remain unclear. Thus, if the ecosystem approach is enshrined in treaties, it appears debatable whether and to what extent this approach can legally direct the conduct of States.

c) The Normativity of the Ecosystem Approach as a Rule for Adjudication

The second issue pertains to the normativity of the ecosystem approach as a rule for adjudication. In practice, the implementation of the ecosystem approach is to be determined taking various scientific, economic and social factors into account. Indeed, as quoted earlier, the FAO Expert Consultation stated that the ecosystem approach must strive to balance "diverse societal objectives". This is in essence a matter of national policy, and it appears difficult to *a priori* determine specific measures under the ecosystem approach. If this is the case, it will be difficult, if not impossible, for international courts and tribunals to judge the violation of the obligation to apply the ecosystem approach when the application of this approach has been disputed between States. Hence, it may be questionable whether the ecosystem approach can be an independent rule for adjudication.

d) Scientific and Technological Difficulties

Third, ecosystem processes and functions are complex and variable in space and time.[47] Accordingly, the whole mechanism of an ecosystem is difficult to understand. A concern is also voiced that effective management of marine species has been deterred in some areas by the lack of accurate data.[48] Thus, the ecosystem approach may encounter scientific uncertainties

distinct LMEs were identified in the Atlantic, Pacific and Indian Oceans. Arguably, LMEs can be considered as the sophistication of the ecosystem approach. LME sustainability is assessed through five linked modules: (i) productivity and oceanography, (ii) fish and fisheries, (iii) pollution and ecosystem health, (iv) socioeconomics, and (v) governance. *R. Rothwell/T. Stephens* (note 19), 463 et seq.; *L. Juda/T. Hennessey*, Governance Profiles and the Management of the Uses of Large Marine Ecosystems, ODILA 32 (2001), 43 et seq. Yet it appears that in essence, the catalogue of those modules is a matter of policy, not law.

47 *R. Haeuber*, Setting the Environmental Policy Agenda: the Case of Ecosystem Management, N. Res. J. 36 (1996), 6. See also *L. Juda* Considerations … (note 9), 92.

48 UN General Assembly Resolution, Sustainable Fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and Related Instruments,

as to its effective implementation.[49] In relation to this, it must also be noted that the implementation of the ecosystem approach may still be a difficult task even for the developed States with substantial resources for ocean management.[50] It may be debatable whether developing States can implement the ecosystem approach in light of their limited capabilities of marine scientific research.

e) Consistency of Conservation Measures

Where marine ecosystems straddle man-made limits or delimitation lines in the oceans, the ecosystem approach encounters a considerable difficulty with regard to its practical implementation. Specifically a question arises how it is possible to ensure consistency of conservation measures for species which straddle the EEZ and the high seas or EEZs of two or more coastal States. This question is particularly at issue in relation to conservation of straddling and highly migratory species. In this regard, Art. 7 (2) of the 1995 Fish Stocks Agreement stipulates that:

> "Conservation and management 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. To this end, coastal States and States fishing on the high seas have a duty to cooperate for the purpose of achieving compatible measures in respect of such stocks."[51]

States are thus obliged to make every effort to agree on compatible conservation and management measures within a reasonable period of time pursuant to Art. 7 (3).

A/RES/64/72, 4.12.2009, 2. In this regard, on 23.2.2003, the FAO Committee on Fisheries adopted the FAO Strategy for Improving Information on Status and Trends of Capture Fisheries. Concerning the FAO Strategy, see *Y. Tanaka* (note 7), 229 et seq.

49 *H. Wang* (note 36), 56.

50 *W. T. Burke*, Evolution in the Fisheries Provisions of UNCLOS, in: N. Ando/E. McWhinney/R. Wolfrum/B. B. Roben (eds.), Liber Amicorum Judge Oda, 2002, 1361 et seq.

51 The provision maintaining the compatibility of conservation and management measures is also contained in other conventions, such as: The Convention on the Conservation and Management of Fishery Resources in the South-East Atlantic Ocean (Art. 19), the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (Art. 10), the Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries (Art. 11 (3)), and Convention on the Conservation and Management of High Seas Fishery Resources in the South Pacific Ocean (Art. 4).

In relation to this, Art. 7 (2) enumerates factors to be taken into account in determining compatible conservation and management measures in some detail. On the other hand, it remains unclear how it is possible to balance these elements. In this regard, some argue that Art. 7 (2) (a) will lead to a result in favor of coastal States.[52] However, such an interpretation will considerably limit the scope of the negotiation on this subject because the validity of conservation measures in marine spaces under national jurisdiction is already presumed and the issue remaining is whether or not fishing States on the high seas accept these measures. If this is the case, the negotiation would seem to become pointless.[53] Accordingly, there may be room for the view that Art. 7 (2) should be construed in such a way that conservation and management measures established for the high seas and those adopted for areas under national jurisdiction must be mutually compatible, not that measures adopted for the high seas have to be compatible with measures adopted for areas under national jurisdiction.[54] In any case, without an institutional mechanism for governing straddling and highly migratory fish stocks, it appears difficult to ensure compatibility of conservation measures between marine spaces under and beyond national jurisdiction. At least, it must be remembered that the application of the ecosystem approach itself cannot automatically overcome the weakness of the zonal management approach with regard to the conservation of straddling and highly migratory species.

f) Marine Protected Areas as an Implementation of the Ecosystem Approach

Concerning the implementation of the ecosystem approach, special attention must be devoted to the inter-linkage between that approach and marine protected areas (MPAs). While the MPA-related concepts are diverse in in-

[52] See for instance, *H. Gherari*, L'accord du 4 août 1995 sur les stocks chevauchants et les stocks de poissons grands migrateurs, 100 R.G.D.I.P. 100 (1996), 377; *L. Lucchini/M. Vœlckel*, Droit de la mer, Tome 2, Vol. 2, Navigation et Pêche, 1996, 681; *P. G. G. Davies/C. Redgwell* (note 13), 263 et seq.; *F. Orrego Vicuña*, The Changing International Law of High Seas Fisheries, 1999, 190.

[53] *R. C. Raigón*, La Pêche en Haute Mer, in: D. Vignes/G. Cataldi/R. C. Raigón, Le droit international de la pêche maritime, 2000, 212.

[54] *A. G. Oude Elferink*, The Impact of Article 7 (2) of the Fish Stocks Agreement on the Formulation of Conservation and Management Measures for Straddling Highly Migratory Fish Stocks, FAO LEGAL PAPERS ONLINE #4, 1999, 4 and 7. This paper is available at: http://www.fao.org/legal/prs-ol/lpo4.pdf.

ternational law,[55] in broad, these concepts can be divided into two main categories, namely, MPAs purporting to protect the marine environment (category 1),[56] and MPAs relating directly to conservation of marine biological diversity (category 2). The second category of MPAs can be divided into two sub-categories.

A first sub-category concerns species-specific MPAs (category 2-1). This type of MPAs seeks to protect specific marine life, such as marine mammals, in the certain region.[57] It appears that basically MPAs in this sub-category are in line with the traditional species specific approach.

A second sub-category relates to MPAs which seek to protect rare or fragile ecosystems and the habitat of depleted or endangered species and other marine life in a particular region or area (category 2-2). In essence, this category of MPAs seeks to protect marine ecosystems of a certain area as a whole. In this sense, this type of MPAs can be regarded as a tool to implement the ecosystem approach. As shown in the table, MPAs for the conservation of marine biological diversity are increasingly enshrined in various treaties at the global and regional levels.

[55] The present author has examined MPAs in some details in *Y. Tanaka* (note 7), 161 et seq. Concerning typology of MPAs in international law, see *Y. Tanaka* (note 7), 169 et seq.

[56] At least five MPA-related concepts must be noted: "Clearly Defined Area" in Art. 211 (6) of the 1982 LOSC, Ice-Covered Areas in Art. 234 of the LOSC, Special Areas under MARPOL 73/78, Particularly Sensitive Sea Areas (PSSA) in IMO Guidelines, and Specially Protected Areas in the 1985 Montreal Guidelines.

[57] Examples include: the 1990 Agreement on the Conservation of Seals in the Wadden Sea, the 1993 Déclaration conjointe relative à l'institution d'un sanctuaire méditerranéen pour les mammifères marins, the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS), the 1999 Agreement Establishing a Sanctuary for Marine Mammals, the Inter-American Convention for the Protection and Conservation of Sea Turtles.

Table: Examples of Treaties which Establish MPAs in Category 2-2[58]

Year	Title	Relevant Provision
1976	Convention on Conservation of Nature in the South Pacific	Article II
1980	Convention on the Conservation of Antarctic Marine Living Resources	Article 9 (2) (g)
1981	Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region	Article 11
1982	Protocol Concerning Mediterranean Specially Protected Areas	Article 3 (1)
1985	Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region	Article 10
1985	Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region	Article 8
1985	ASEAN Agreement on the Conservation of Nature and Natural Resources	Article 3 (3)(a)
1986	Convention for the Protection of the Natural Resources and Environment of the South Pacific Region	Article 14
1989	Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific	Articles 2 and 3
1990	Protocol Concerning Specially Protected Areas and Wildlife in the Wider Caribbean Region	Article 4
1991	Protocol to the Antarctic Treaty on Environmental Protection	Annex V
1992	Convention on Biological Diversity	Article 8 (a)
1992	Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention)	See footnote
1992	Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention)	See footnote
1995	Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean	Articles 8, 9 Annex I

[58] The list is not exhaustive. Although there is no explicit provision relating to MPAs in the OSPAR Convention, the institution of MPAs is developing through the OSPAR Commission. Likewise, Baltic Sea Protected Areas (BSPAs) are developing through the Helsinki Commission, although the Helsinki Convention did not refer to BSPAs.

However, care should be taken that the creation of MPAs does not always successfully protect marine species and ecosystems. In fact, a concern is expressed that in many cases, MPAs have not been effective in meeting their objectives.[59] From a viewpoint of international law, further consideration must be given to particularly three issues.

The first issue involves the inter-linkage between the MPAs and the regulation of marine pollution. Considering that marine species cannot be separated from the marine environment, the regulation of marine pollution is a prerequisite for the conservation of marine ecosystems. However, the establishment of MPAs itself cannot protect marine ecosystems from marine pollution. Accordingly, there will be a need to link MPAs to the regulation of marine pollution in an integrated manner, though usually the regulation of marine pollution is beyond the scope of the MPAs.[60]

The second issue pertains to adverse impacts of climate change on marine ecosystems. The marine environment is sensitive to climate and atmospheric changes. For instance, it is suggested that coral would be seriously damaged if sea surface temperatures increase by more than 1°C above the seasonal maximum temperature.[61] In this regard, the UN General Assembly expressed its concern that "climate change continues to increase the severity and incidence of coral bleaching throughout tropical seas and weakens the ability of reefs to withstand ocean acidification, which could have serious and irreversible negative effects on marine organisms, particularly corals, as well as to withstand other pressures, including overfishing and pollution".[62] Nonetheless, MPAs cannot, in themselves, prevent adverse impacts upon marine ecosystems by climate change.

Third, it seems beyond doubt that fishing activities are one of the major threats to marine ecosystems. With few exceptions,[63] however, normally the

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[59] The Convention on Biological Diversity, Conference of the Parties, Decision VII/5, Review of the Programme of Work on Marine and Coastal Biodiversity, 2004, para. 13. *Agardy* et al. enumerate particularly five shortcomings of MPAs: small size of MPAs, inappropriate plan and management, the degradation of the unprotected surrounding ecosystems, displacement of fishing activities from one place to another, and creation of an illusion of protection when in fact no protection is occurring. *T. Agardy/G. Notarbartolo di Sciara/P. Christie*, Mind the Gap: Addressing the Shortcomings of Marine Protected Areas through Large Scale Marine Spatial Planning, Mar. Pol'y 35 (2011), 226 et seq.

[60] *D. Freestone* (note 10), 94.

[61] Convention on Biological Diversity, SBSTTA, Biological Diversity and Climate Change, Report of the *Ad Hoc* Technical Expert Group on Biodiversity and Climate Change, UNEP/CBD/SBSTTA/9/INF12, 30.9.2003, 37, para. 63.

[62] United Nations General Assembly Resolution, Oceans and the Law of the Sea, A/RES/64/71, 4.12.2009, 3.

[63] Art. 5 (2.4.) of the 1990 Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider

regulation of fisheries falls outside the scope of treaties relating to the conservation of marine biological diversity; conversely, fisheries treaties do not focus on the conservation of marine biological diversity. As a consequence, there is an interruption between two legal fields.[64] Hence, further consideration must be given to a positive co-ordination between the conservation of marine ecosystems and the regulation of fisheries.

2. The Precautionary Approach and Its Limits

a) General Considerations

Another approach that needs particular notice is the precautionary approach.[65] The essence of the precautionary approach is that once a risk has been identified, the lack of scientific proof of cause and effect shall not be used as a reason for not taking action to protect the environment.[66] The precautionary approach is being increasingly incorporated into treaties as well as non-binding instruments respecting conservation of marine living resources. In this regard, it is interesting to note that legal instruments adopting the ecosystem approach tend to refer to the precautionary approach at the same time.

At the treaty level, for example, Art. 6 (1) of the 1995 Fish Stocks Agreement places a clear obligation upon States to apply "the precautionary approach widely to conservation, management, and exploitation of straddling fish stocks and highly migratory fish stocks in order to protect the living marine resources and preserve the marine environment". Annex II of the Agreement provides Guidelines for the Application of Precautionary Reference Points in Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. Under Art. 6 (3) (b) of the Agreement, States

Caribbean Region; Similarly, Art. 19 (d) of the 1985 Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region.

64 Convention on Biological Diversity, *Ad Hoc* Open-Ended Working Group on Protected Areas, Options for Cooperation for the Establishment of Marine Protected Areas in Marine Areas Beyond the Limits of National Jurisdiction, UNEP/CBD/WG-PA/1/2, 20.4.2005, 13, para. 33.

65 It appears that the terminology of "the precautionary approach" or "the precautionary principle" is not unified. In this study, we use the term "the precautionary approach". Concerning the terminology, see *P. Birnie/A. Boyle/C. Redgwell* (note 19), 155.

66 *D. Freestone/E. Hey*, Origin and Development of the Precautionary Principle, in: D. Freestone/E. Hey (eds.), The Precautionary Principle and International Law: The Challenge of Implementation, 1996, 13. See also *J. Cameron/J. Abouchar*, The Status of the Precautionary Principle in International Law, in: D. Freestone/E. Hey (note 66), 45.

are obliged to "apply the guidelines set out in Annex II and determine, on the basis of the best scientific information available, stock-specific reference points and the action to be taken if they are exceeded". When reference points are approached, States are required to take measures to ensure that such points will not be exceeded. In the event that they are exceeded, States shall, without delay, take the action determined under Art. 6 (3) (b) to restore the stocks pursuant to Art. 6 (4). While referring to the ecosystem approach under Art. 4 (a), Art. 4 (c) of the 2006 Southern Indian Ocean Fisheries Agreement explicitly provides that "the precautionary approach shall be applied in accordance with the Code of Conduct and the 1995 Agreement, whereby the absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures". Art. 3 (1) (b) of the 2009 Convention on the Conservation and Management of High Seas Fishery Resources in the South Pacific Ocean places an explicit obligation upon the Contracting Parties to "apply the precautionary approach and an ecosystem approach".[67]

Concerning non-binding instruments, for instance, the 2008 International Guidelines for the Management of Deep-Sea Fisheries in the High Seas requires States and regional fisheries organizations to implement measures in accordance with the precautionary approach and "an ecosystem approach to fisheries".[68] UN General Assembly Resolution 60/31 calls upon all States to "apply, in accordance with international law, the precautionary approach and an ecosystem approach widely to the conservation, management and exploitation of fish stocks, including straddling fish stocks and highly migratory fish stocks".[69] Similarly, Resolution 62/177 encouraged States "to apply the precautionary approach and an ecosystem approach in adopting and implementing conservation and management measures addressing, *inter alia*, by-catch, pollution, overfishing, and protecting habitats of specific concern, taking into account existing guidelines developed by the Food and Agriculture Organization of the United Nations".[70]

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[67] The text of the Convention is available at: http://www.southpacificrfmo.org/. The Convention has not entered into force.

[68] International Guidelines for the Management of Deep-Sea Fisheries in the High Seas (note 34), para. 12.

[69] United Nations General Assembly Resolution, Sustainable Fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and Related Instruments, A/RES/60/31, 29.11.2005, 5, para. 4.

[70] United Nations General Assembly, Sustainable Fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of

Owing to the scientific uncertainty relating to the mechanisms of marine ecosystems, the application of the ecosystem approach necessitates some precautionary considerations. In this sense, it appears logical that the ecosystem approach should be linked to the precautionary approach.[71] In light of growing concern over the depletion of marine living resources, it is not surprising that the precautionary approach is increasingly enshrined in international instruments respecting conservation of marine species. On the other hand, the concept of the precautionary approach seems to leave some room for further consideration with regard to its normativity.

b) The Normativitiy of the Precautionary Approach as a Rule of Conduct

Due to its nature, a need for the application of the precautionary approach is to be determined on the basis of *potential* risks. Nonetheless, the assessment of serious risks is often difficult to make since such risks may not be well known or discoverable through present-day science.[72] Further to this, the results of the assessment of possible serious harm may change in accordance with the development of scientific technology.[73] A difficult question thus arises as to how it is possible to determine the existence of serious or irreversible risks which may trigger the application of the precautionary approach. In this regard, the precautionary approach contains no legal guidance about how to control the environmental risks. The application of the precautionary approach itself does not automatically specify measures that should be taken. As a consequence, the precautionary approach can be applied in different ways in different contexts. In this sense, there are considerable uncertainties with regard to the implementation of the precautionary approach. In summary, the precautionary approach itself contains no criterion for determining the existence of serious or irreversible risks or specific response to such risks. In this sense, the normative density of the precautionary approach remains modest as a rule of conduct.

Straddling Fish Stocks and Highly Migratory Fish Stocks, and Related Instruments (note 43), 6, para. 7. See also, paras. 5 et seq.

71 *Y. Tanaka* (note 7), 86 et seq.

72 *P. Martin-Bidou*, Le principe de précaution en droit international de l'environnement, R.G.D.I.P. 103 (1999), 647.

73 *P. Martin-Bidou* (note 72), 651.

c) The Normativity of the Precautionary Approach as a Rule for Adjudication

In the application of the precautionary approach, there is a need to consider not only scientific factors but also the cost-effectiveness of proposed measures, their technical capabilities, their economic and social priorities, etc.[74] This process essentially involves a matter of national policy, not law. Considering that the decision-making process of the precautionary approach essentially involves national policy, international courts and tribunals seem to encounter considerable difficulties as to its application to a particular case where the application of this approach is at issue. Therefore, it is not surprising that international courts have been wary about applying the precautionary approach in international disputes. To date, there is no international judgment which explicitly applied this approach to a specific case, while the applicability of the precautionary approach was at issue in several cases.[75] Hence, it may be an inescapable conclusion that the role of the precautionary approach is limited in international adjudication.

On the other hand, it is not suggested that the precautionary approach has no normative force in international adjudication. It is arguable that the precautionary approach can be used as an element of interpretation of existing rules of international law.[76] In the context of the conservation of marine living resources, an illustrative example on this matter may be provided by the 1999 *Southern Bluefin Tuna* case. While the ITLOS did not explicitly refer to "the precautionary principle", the Tribunal pronounced that:

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[74] *P. Birnie/A. Boyle/C. Redgwell* (note 19), 163 et seq.

[75] Such cases include: Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment of 20 December 1974 in the *Nuclear Tests Case* (1995, *New Zealand v. France*), ICJ Reports 1995, 288 et seq.; *Case Concerning the Gabčíkovo-Nagymaros Project* (1997, *Hungary v. Slovakia*), ICJ Reports 1997, 7 et seq.; the *MOX Plant Case* (2001, *Republic of Ireland v. the UK*) (Provisional Measures) ITLOS Case No. 10 (3.12.2001); the *Land Reclamation Case* (2003, *Malaysia v. Singapore*) (Provisional Measures) ILTOS Case No. 12 (8.10.2003); WTO-Report of the Appellate Body, EC Measures Concerning Meat and Meat Products (Hormones), WT/DS26/AB/R, WT/DS48/AB/R, 16.1.1998, 45 et seq., para. 123. Because of the limited space, an examination of each and every case on this matter falls outside the scope of this contribution. The present writer examined these cases in *Y. Tanaka*, Rethinking Lex Ferenda in International Adjudication, GYIL 51 (2008), 485 et seq. See also *P.-M. Dupuy*, Le principe de précaution et le droit international de la mer, in: La mer et son droit, Mélanges offerts à Laurent Lucchini et Jean Pierre Quéneudec, 2003, 215 et seq.

[76] *Y. Tanaka* (note 75), 489 et seq. See also *A. Boyle*, Further Development of the Law of the Sea Convention: Mechanisms for Change, ICLQ 54 (2005), 573 et seq.

> "In the view of the Tribunal, the parties should in the circumstances act with prudence and caution to ensure that effective conservation measures are taken to prevent serious harm to the stocks of southern bluefin tuna."[77]

The ITLOS further stated that:

> "[A]lthough the Tribunal cannot conclusively assess the scientific evidence presented by the parties, it finds that measures should be taken as a matter of urgency to preserve the rights of the parties and to avert further deterioration of the southern bluefin tuna stock."[78]

In so ruling, as Judge *Treves* pointed out, the ITLOS appeared to take account of the precautionary approach as an element of the interpretation of the requirement of urgency under Art. 290 of the LOSC.[79] More recently, the ICJ, in the 2010 *Pulp Mills on the River Uruguay* case, explicitly stated that "a precautionary approach may be relevant in the interpretation and application of the provisions of the Statute [of the River Uruguay]".[80]

3. Conclusions

The results of the above considerations can be summarized in three points:

(i) In contrast to the species specific approach, the ecosystem approach focuses on marine ecosystems and ecological conditions surrounding them. In so doing, the ecosystem approach purports to overcome the weakness of the traditional approaches, namely, the lack of ecological considerations.

(ii) While the ecosystem approach is increasingly enshrined in treaties and other non-binding instruments, the normativity of that approach remains modest as a rule of conduct and a rule for adjudication. Further to this, the ecosystem approach may encounter difficulties as to its practical application in light of the scientific uncertainties. Hence, it remains to be

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[77] *Southern Bluefin Tuna Cases* (*New Zealand v. Japan*; *Australia v. Japan*) (Requests for Provisional Measures), ITLOS Case Nos. 3 and 4 (27.8.1999), ILM 38 (1999), 1634, para. 77.

[78] *Southern Bluefin Tuna Cases* (note 77), 1634, para. 80.

[79] Separate Opinion by Judge *Treves* (note 77), 1645, paras. 8 et seq. See also Separate Opinion of Judge *Laing* (note 77), 1642, para. 19; Separate Opinion of Judge *ad hoc Shearer* (note 77), 1650.

[80] *Case Concerning Pulp Mills on the River Uruguay* (*Argentina v. Uruguay*), ICJ Reports 2010, 1, 51, para. 164. See also Memorial Submitted by Argentina, 15.1.2007, 199, para. 5.13; Rejoinder of Uruguay, Vol. I, 29.7.2008, 311, para. 5.66.

seen to what extent the obligation to apply the ecosystem approach can direct conduct of States in reality.

(iii) The precautionary approach represents another new development in international law concerning conservation of marine living resources. To a certain extent, this approach will contribute to strengthen the conservation of those resources in international law. On the other hand, it is argued that the normativity of the precautionary approach is modest as a rule of conduct and a rule for adjudication. Hence, it appears that the precautionary approach has a limited role in State practice and international adjudication. Even so, it must be stressed that the precautionary approach may have some normative force as an element of interpretation of existing rules of international law so as to adapt them to current situations.

IV. New Approaches to Ensure Compliance

1. Limits of the Flag State Jurisdiction

As noted, the implementation of substantive rules cannot be ensured without effective compliance mechanisms. This is particularly true of conservation of living resources on the high seas since there is no centralized machinery securing compliance with relevant rules there. Thus, efforts must be made to strengthen compliance mechanisms in conservation of marine living resources.

Whilst the definition of the concept of compliance in international law varies amongst writers, compliance may be defined broadly as the behavior of a State which conforms to its international obligations.[81] Basically compliance with rules of international law, including the law of the sea, is secured by self-regulation on the basis of reciprocity. In relation to the conservation of living resources on the high seas, the flag State has the primary responsibility to ensure compliance with rules relating to conservation of marine species on the high seas by vessels flying its flag on the basis of the principle of the exclusive jurisdiction of the flag State.[82]

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[81] Concerning the concept of compliance, see for instance, *P. Sands*, Compliance with International Environmental Obligations: Existing International Legal Arrangements, in: J. Cameron/J. Werksman/P. Roderick (eds.), Improving Compliance with International Environmental Law, 1996, 49; *R. Wolfrum*, Means of Ensuring Compliance with and Enforcement of International Environmental Law, RdC 272 (1998), 29; *R. G. Rayfuse*, To Our Children's Children's Children: From Promoting to Achieving Compliance in High Seas Fisheries, IJMCL 20 (2005), 511.

[82] Art. 94 of the LOSC.

Nonetheless, it appears that self-regulation alone is seen as not being adequate in securing compliance with the rules of international law on this subject. State practice shows that in particular, flag of convenience States do not adequately regulate fishing activities by vessels flying their flag due to a lack of will of flag States. Further to this, illegal, unreported and unregulated fishing (IUU fishing) remains a serious threat to conservation of marine living resources.[83] In relation to this, it must be noted that many developing States lack the necessary capability to prevent illegal fishing by foreign fleets.[84] While various treaties and non-binding instruments attempt to strengthen the flag State responsibility,[85] it is becoming apparent that the flag State jurisdiction alone is inadequate to ensure effective compliance with rules relating to conservation of marine species. Thus, there will be a need to develop more institutionalized or concerted mechanisms for ensuring effective compliance. In this regard, growing attention is devoted to non-flag State measures. These measures may be divided into two categories: inspection at sea and inspection in port. Each category is further divided into two sub-categories: inspection of the Contracting Party vessels and inspection of non-Contracting Party vessels.[86]

2. Non-Flag State Measures Concerning the Contracting Parties

a) At-Sea Inspection of Vessels of the Contracting Parties

At-sea inspection of vessels of the Contracting Parties can typically be seen in the 1995 Fish Stocks Agreement. Art. 21 (1) of the Agreement provides that:

> "In any high seas area covered by a subregional or regional fisheries management organisation or arrangement, a state Party which is a member of, or a par-

[83] A definition of IUU fishing is provided in Section 3 of FAO, International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, 2001.

[84] *R. Churchill*, 10 Years of the UN Convention on the Law of the Sea – Towards a Global Ocean Regime? A General Appraisal, GYIL 45 (2005), 107 et seq.

[85] Such attempts can be seen in the 1993 Agreement to Promote Compliance with International Conservation and Management Measures, the 1995 Fish Stocks Agreement, the 1995 FAO Code of Conduct for Responsible Fisheries, etc. Concerning an analysis of these instruments, see *Y. Tanaka* (note 7), 94 et seq.

[86] With respect to an analysis of non-flag State measures in the context of conservation of living resources on the high seas in general, see *R. G. Rayfuse*, Non-Flag State Enforcement in High Seas Fisheries, 2004; *Y. Tanaka* (note 7), 106 et seq.

ticipant in, such organisation or arrangement may, through its duly authorised inspectors, board and inspect, in accordance with paragraph 2, fishing vessels flying the flag of another State Party to this Agreement, whether or not such State Party is also a member of, or a participant in, the organisation or arrangement, for the purpose of ensuring compliance with conservation and management measures for straddling fish stocks and highly migratory fish stocks established by that organisation or arrangement."

To this end, States are required to establish procedures for boarding and inspection through subregional or regional fisheries management organizations or arrangements pursuant to Art. 21 (2). However, the inspection under Art. 21 may encounter difficulties as to its practical implementation without further agreement on inspection procedures. Consequently, the inspection may arguably be qualified by the need to further negotiate on this matter.[87] In practice, non-flag State inspections at sea are echoed by some regional fisheries organizations,[88] such as the North Pacific Anadromous Fish Commission (NPAFC),[89] Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR),[90] Northwest Atlantic Fisheries Organization (NAFO),[91] Northeast Atlantic Fisheries Commission (NEAFC),[92] and in the Central Bering Sea.[93] At-sea inspection of Contracting Party vessels calls for three brief observations.

First, the inspection schemes do not purport to establish a regime applicable to high seas fisheries in general. For instance, the 1995 Fish Stocks Agreement regulates only straddling and highly migratory fish stocks, and the Agreement does not apply to fish stocks found on the high seas alone.[94]

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87 *D. Guilfoyle*, Shipping Interdiction and the Law of the Sea, 2009, 106 et seq. and 168. See also Art. 21 (3) of the 1995 Fish Stocks Agreement.

88 *R. G. Rayfuse* (note 81), 519.

89 Article V of the 1992 Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean. The text of the convention is available at: http://www.npafc.org/new/index.html.

90 The CCAMLR System of Inspection. This document was appended in Schedule of Conservation Measures in Force 2010/11 Season. The document is available at: http://www.ccamlr.org/pu/E/e_pubs/cm/10-11/all.pdf.

91 Chapter IV of the Northwest Atlantic Fisheries Organisation, Conservation and Enforcement Measures, NAFO/FC Doc. 11/1 (updated 3.12.2010). Available at: http://www.nafo.int/fisheries/CEM/CEM.pdf.

92 Chapter IV of the NEAFC, Scheme of Control and Enforcement (London, February 2010). Entered into Force on 6.2.2010. Available at: http://www.neafc.org/page/3001.

93 Art. X of the 1999 Convention on the Conservation and Management of Pollock Resources Central Bering Sea. The text of the Convention is available at: http://www.afsc.noaa.gov/REFM/CBS/Docs/Convention%20on%20Conservation%20of%20Pollock%20in%20Central%20Bering%20Sea.pdf.

94 *R. Rothwell/T. Stephens* (note 19), 465.

Further, the scope of jurisdiction of regional fisheries organizations is limited to certain regions and specific species.

Second, at-sea inspection schemes are costly, and may entail the risk of causing disputes relating to participation, cost recovery, objectivity of inspections, interference with fishing activity, economic loss, and evidentiary value of surveillance information as well as inspection reports.[95]

Third, it must be stressed that the ultimate discretion concerning prosecution and sanction is always left to the flag State.[96] To this extent, it may be said that the primacy of flag State jurisdiction is basically maintained in the inspection scheme.

b) Inspection of Contracting Party Vessels in Port

At the global level, port inspection of vessels of the Contracting Parties is enshrined in the 1993 Agreement to Promote Compliance with International Convention and Management Measures by Fishing Vessels on the High Seas[97] and the 1995 Fish Stocks Agreement. Take the Fish Stocks Agreement as an example again. Art. 23 provides that:

> "1. A port State has the right and the duty to take measures, in accordance with international law, to promote the effectiveness of subregional, regional and global conservation and management measures. When taking such measures a port State shall not discriminate in form or in fact against the vessels of any State.
>
> 2. A port State may, *inter alia*, inspect documents, fishing gear and catch on board fishing vessels, when such vessels are voluntarily in its ports or at its offshore terminals."

With respect to action after inspection, Art. 23 (3) specifies that the port State may prohibit landings and transshipment where it has been established that the catch has been taken in a manner which undermines the effectiveness of subregional, regional, or global conservation and management measures on the high seas. Port State inspection of Contracting Party vessels is also undertaken by regional fisheries organizations, such as the Inter-

95 *R. G. Rayfuse* (note 81), 520.

96 See Art. XI (7) (c) of the 1994 Convention on the Conservation and Management of Pollock Resources Central Bering Sea; Art. V (2) (d) of the 1992 Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean; Art XI of the CCAMLR System of Inspection; Arts. 38, 39, 40 of the Northwest Atlantic Fisheries Organisation, Conservation and Enforcement Measures; Arts. 30 and 31 of the NEAFC Scheme of Control and Enforcement. See also *R. G. Rayfuse* (note 86), 329.

97 Art. V (2). Entry into force, 24.4.2003. For the text of the Agreement, 2221 UNTS, 120.

national Commission for the Conservation of Atlantic Tunas (ICCAT),[98] the Indian Ocean Tuna Commission (IOTC),[99] NAFO,[100] and NEAFC.[101]

In 2009, Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing was adopted under the auspice of FAO.[102] The Agreement recognized, in its Preamble, that "port State measures provide a powerful and cost-effective means of preventing, deterring and eliminating illegal, unreported and unregulated fishing". This Agreement is global in scope and applies to all ports under Art. 3 (5). Under Art. 3 (3), this Agreement applies to fishing conducted in marine areas that is illegal, unreported or unregulated and to fishing related activities in support of such fishing. When a Party has sufficient proof that a vessel seeking entry into its port has engaged in IUU fishing or fishing related activities in support of such fishing, the Party shall deny that vessel entry into its ports pursuant to Art. 9 (4).

It appears that non-flag State inspections at sea and in port have a valuable role to play in ensuring effective compliance with relevant rules regulating conservation of marine species. Where the Contracting Parties have agreed to the inspection by vessels of other Contracting Parties at sea by becoming a Party to specific treaties or fisheries bodies, no serious question will arise because the inspection relies on the consent of the Parties. For the same reason, where the Contracting Parties have agreed to the port inspection of their vessels by becoming a Party to the relevant global or regional agreements or arrangements, port inspection will not produce legal questions. On the other hand, the legal validity of inspections of non-Contracting Party vessels at sea or in port requires careful consideration.

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98 Recommendation by ICCAT for a Revised Port Inspection Scheme, available at: http://www.iccat.int/Documents/Recs/ACT_COMP_2007_ENG.pdf. Entered into force on 13.6.1998.

99 Resolution 05/03 Relating to the Establishment of an IOTC Programme of Inspection in Port. This document is available at: http://www.iotc.org/files/proceedings/misc/Com ReportsTexts/resolutions_E.pdf.

100 Chapter V of the Northwest Atlantic Fisheries Organisation, Conservation and Enforcement Measures (note 91).

101 Chapter V of the NEAFC, Scheme of Control and Enforcement, London, February 2010.

102 The text of the Agreement is available at: http://www.fao.org/Legal/treaties/037t-e.pdf.

3. Non-Flag State Measures Concerning the Non-Contracting Parties

a) At-Sea Inspection of Non-Contracting Party Vessels

Some fisheries organizations established a scheme for at-sea inspection of vessels of non-Contracting Parties. For example, Chapter VI of the NAFO Conservation and Enforcement Measures of 2010 is devoted to the Scheme to Promote Compliance by non-Contracting Party Vessels (hereafter the 2010 NAFO Scheme).[103] Under Art. 53 (1) of the NAFO Scheme, NAFO inspectors are to request permission to board non-Contracting Party vessels that are sighted engaging in fishing activities in the Regulatory Area. If the vessel consents to be boarded, the inspectors' findings are to be transmitted to the Secretariat without delay. The Secretariat is required to transmit this information to all Contracting Parties and other relevant Regional Fisheries Management Organizations within one business day of receiving this information, and to the Flag State as soon as possible. Under Art. 53 (2), where evidence so warrants, a Contracting Party may take such action as may be appropriate in accordance with international law.

Similar procedures for inspecting non-Contracting Party vessels can be seen in the 2010 NEAFC Scheme of Control and Enforcement (hereafter the 2010 NEAFC Scheme).[104] Under Art. 37 (1) of the Scheme, Contracting Parties to NEAFC are obliged to transmit to the Secretary without delay any information regarding non-Contracting Party vessels sighted or by other means identified as engaging in fishing activities in the Convention Area. The Secretary is to transmit this information to all Contracting Parties within one business day. NEAFC inspectors shall request permission to board and inspect non-Contracting Party vessels pursuant to Art. 38 (1). Under the same provision, if the master of the vessel consents for his vessel to be boarded, the inspection shall be documented by completing an inspection report as set out in Annex XIII. If the master does not consent for his vessel to be boarded and inspected or does not fulfill any one of the obligations laid down in Art. 19 (a) to (e) of the 2010 NEAFC Scheme, the vessel shall be presumed to have engaged in IUU activities in accordance with Art. 38 (3).

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[103] 2010 NAFO Scheme (note 91). Statistics concerning inspection of non-Contracting Party vessels was furnished by *R. G. Rayfuse* (note 86), 252.

[104] NEAFC, Scheme of Control and Enforcement (London, February 2010). Generally on NEAFC, see *T. Bjørndal*, Overview, Roles and Performance of the North East Atlantic Fisheries Commission (NEAFC), 33 Mar. Pol'y (2009), 685 et seq.

It is of particular interest to note that NAFO and NEAFC co-operate in order to exchange information on vessels engaging IUU fisheries. In this regard, the 2010 NAFO Scheme provides that upon receipt of information concerning non-Contracting Party vessels from Contracting Parties pursuant to Arts. 52 to 55, the Secretariat of NAFO must make a Provisional List in accordance with Art. 56 (1). At the same time, the Executive Secretary is to advise relevant non-Contracting Parties of the vessels flying their flag that have been included in the Provisional List and provide relevant information to the non-Contracting Party pursuant to Art. 56 (3). If a non-Contracting Party agrees to a listing, the vessel concerned is to be transferred from the Provisional List to the IUU List in accordance with Art. 56 (6). If the period of 30 days set out in Art. 56 (3) (d) has elapsed, Standing Committee on International Control (STACTIC) is required to consider vessels for inclusion on the IUU list. The Executive Secretary is required to place the IUU List on the NAFO website by virtue of Art. 57 (5). At the same time, the Secretariat is required to transmit the IUU List and any relevant information to the Secretariats of the CCAMLR, NEAFC and SEAFO. The Secretariat is also required to circulate the IUU list to other regional fisheries management organizations pursuant to Art. 57 (6).

Similarly, Art. 44 (5) of the 2010 NEAFC Scheme requires the Secretariat to transmit the IUU B-List, which is a confirmed IUU list, to the Secretariats of the Commission of the CCAMLR, NAFO, SEAFO and other Regional Fisheries Management Organizations. A similar obligation to circulate an IUU list is provided in the 2009 Scheme to Promote Compliance by Non-Contracting Party Vessels with CCAMLR Conservation Measures (hereafter the 2009 CCAMLR Scheme).[105]

On the other hand, an issue that needs further consideration involves the presumption of undermining conservation and enforcement measures by regional fisheries organizations. In this regard, Art. 52 (1) of the 2010 NAFO Scheme provides as follows:

> "A non-Contracting Party vessel that has been sighted or by other means identified by a Contracting Party as engaging in fishing activities in the Regulatory Area is presumed to be undermining the effectiveness of Conservation and Enforcement Measures. In the case of any transshipment activities involving a sighted non-Contracting Party vessel, inside or outside the Regulatory Area, the presumption of undermining Conservation and Enforcement Measures applies to

[105] Para. 23 of Conservation Measure 10-07 (2009): Scheme to Promote Compliance by Non-Contracting Party Vessels with CCAMLR Conservation Measures. This document is available at: http://www.ccamlr.org/pu/e/e_pubs/cm/09-10/all.pdf.

any other non-Contracting Party vessel that has engaged in such activities with that vessel."

Art. 52 (2) further provides that "a non-Contracting Party vessel that has been placed on the NEAFC IUU list is presumed to be engaging in fishing activities in the NRA [NAFO Regulatory Area] and thereby undermining the effectiveness of Conservation and Enforcement Measures".

Similarly, Art. 37 (2) of the 2010 NEAFC Scheme stipulates that the non-Contracting Party vessel that has been sighted or by other means identified as engaging in fishing activities in the Convention Area is presumed to be undermining the Recommendations established under the Convention.[106] Art. 37 (3) of the NEAFC Scheme further provides that:

> "In the case of a non-Contracting Party vessel sighted or by other means identified as engaging in transshipment activities, the presumption of undermining conservation and enforcement measures applies to any other non-Contracting Party vessel that has been identified as having engaged in such activities with that vessel."

The presumption is provided in regulatory measures of other fisheries organizations,[107] such as the Indian Ocean Tuna Commission (IOTC),[108] the International Commission for the Conservation of Atlantic Tunas (ICCAT),[109] and CCAMLR.[110] Nonetheless, the validity of the presumption of undermining the effectiveness in the regulatory areas is not free from controversy.

First, it appears that this presumption shifts the burden of proving innocence to vessels of non-Contracting Parties. Nonetheless, there is scope to consider the question whether the reversal of the burden of proof is not contrary to the principle of freedom of fisheries. In this regard, it must be remembered that with some exceptions, such as high seas fishing for ana-

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106 However, vessels of the co-operating non-Contracting Parties under Art. 34 are exempted from the presumption.

107 *R. G. Rayfuse*, Regulation and Enforcement in the Law of the Sea: Emerging Assertions of a Right to Non-Flag State Enforcement in the High Seas Fisheries and Disarmament Contexts, Austr. Yb Int'l L. 24 (2005), 188.

108 Para. 2 of Resolution 01/03 Establishing a Scheme to Promote Compliance by Non-Contracting Party Vessels with Resolutions Established by IOTC, 2001. The resolution is available at (note 99).

109 Para. 1 of the Recommendation by ICCAT Concerning the Ban on Landings and Transhipments of Vessels from Non-Contracting Parties Identified as Having Committed a Serious Infringement, entered into Force 21.6.1999. This recommendation is available at (note 98).

110 Para. 4 of the 2009 CCAMLR Scheme (note 105).

dromous and catadromous species,[111] fishing on the high seas is, *prima facie*, lawful in international law. It is true that all States are under the duty to co-operate with other States in taking the conservation measures concerning the living resources of the high seas in accordance with Arts. 117 and 118 of the LOSC. However, it is questionable whether the duty to co-operate will automatically lead to the reversal of the burden of proof.[112]

Second, as the regulatory measures are qualified by economic, political and social needs of the coastal State(s), in some cases, opinions of the Member States to a fisheries organization may be divided with respect to the validity of regulatory measures. Some fisheries organizations thus affirm that a State Party which is opposed to a regulatory measure adopted by a fisheries organization is exempted from the application of the measure.[113] It appears unreasonable to argue that vessels of third States are automatically bound to the regulatory measures of the regional fisheries organizations, while Member States may be released from such regulations by opposition.

Third, in accordance with the principle *pacta tertiis nec nocent nec prosunt*, the regional treaty is not binding upon non-Contracting Parties unless rules of the treaty become part of customary law. Thus, in positive international law, there is no obligation upon the non-Contracting Parties to *automatically* accept regulatory measures of regional fisheries organizations on the high seas. It appears that the presumption of undermining the effectiveness of regulations runs a risk of unilaterally imposing regulatory measures on third States without their consent.

b) Port Inspection of Non-Contracting Party Vessels

Some regional fisheries organizations apply port inspection of non-Contracting Party vessels. For example, Art. 54 (1) of the 2010 NAFO Scheme obliges masters of non-Contracting Party vessels intending "to call into a port to notify the competent authority of the port State Contracting Party in accordance with the provisions of Article 48". Next, the port State

111 Fishing of anadromous and catadromous species beyond 200-nautical mile limits is in principle forbidden by Arts. 66 (3) and 67 (2) of the LOSC, respectively.

112 *M. Hayashi*, New Developments in International Fisheries Law and the Freedom of High Seas Fishing (in Japanese), The Journal of International Law and Diplomacy 102 (2003), 172 et seq.

113 For instance, see Art. 12 (2) (b) (c) of the NEAFC Convention; Art. XII (1) and (3) of the 1978 Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries; Art. VIII (3) (c) and (e) of the 1966 International Convention for the Conservation of Atlantic Tunas as amended by the 1984 and 1992 Protocols.

Contracting Party is required to forward without delay this information to the flag State of the vessel and to the Executive Secretary. Art. 54 (2) further provides that:

> "The port State Contracting Party shall prohibit the entry into its ports of vessels that have not given the required prior notice and provided the information referred to in paragraph 1. The vessel shall in any case not be allowed to enter the port unless a confirmation issued by the flag State in accordance with the provisions in Article 47 (2) is presented."

When a non-Contracting Party vessel enters a port of any Contracting Party, it is to be inspected by authorized Contracting Party officials knowledgeable of the Conservation and Enforcement measures (and the NAFO Scheme) pursuant to Art. 54 (3). This provision ensures that the vessel shall not be allowed to land or transship until this inspection has taken place; and that such inspections shall include the vessels documents, log books, fishing gear, catch on board, and any other matter relating to the vessels activities in the Regulatory Area. Under Art. 54 (4), information on the results of all inspections of non-Contracting Party vessels conducted in the ports of Contracting Parties, and any subsequent action, shall without delay be sent to the Executive Secretary who shall post the information on the secured part of the NAFO website and inform the flag State, relevant regional fisheries management organizations (RFMOs) and other Contracting Parties.

The 2010 NEAFC Scheme contains similar procedures for inspections of non-Contracting Party vessels in port.[114] Art. 40 (1) of the Scheme stipulates that: "When a non-Contracting Party vessel enters a port of any Contracting Party, it shall be inspected by authorized Contracting Party officials knowledgeable of Recommendations established under the Convention and shall not be allowed to land or transship any fish until this inspection has taken place." Art. 41 further provides that landings and transshipments of all fish from a non-Contracting Party vessel which has been inspected in port "shall be prohibited in the ports and waters of all Contracting Parties if such an inspection reveals that the vessel has species onboard which are subject to Recommendations established under the Convention unless the master of the vessel provides satisfactory evidence to the competent authorities proving that the fish were caught outside the Regulatory Area or in compliance with all relevant Recommendations established under the Convention".

Further to this, para. 3 of IOTC Resolution 05/03 Relating to the Establishment of an IOTC Programme of Inspection in Part provides that each

[114] Arts. 39, 40 and 41.

Contracting Party and Co-operating Non-contracting Parties "may, *inter alia*, inspect documents, fishing gear and catch on board fishing vessels, when such vessels are voluntarily in its ports or at is offshore terminals". Where a port State considers that there has been evidence of a violation by a Contracting Party or a non-Contracting Party vessel of conservation measures adopted by IOTC, the port State is obliged to draw this to the attention of the flag State concerned and, as appropriate, the Commission.[115] While inspection in port should be carried out on a non-discriminatory basis, priority should be given to inspection of non-Contracting vessels.[116]

Moreover, the ICCAT's Recommendation concerning the Ban on Landings and Transshipments of Vessels from non-Contracting Parties states that when a vessel of a non-Contracting Party which has been sighted in the ICCAT Convention Area enters voluntarily a port of any Contracting Party, it shall be inspected by authorized Contracting Party officials and shall not be allowed to land or transship any fish until this inspection has taken place. [117] Landings and transshipments of all fish from non-Contracting Party vessels which have been inspected in port shall be prohibited in all Contracting Party ports if such inspection reveals that the vessel has on board species subject to ICCAT conservation measures, "unless the vessel established that the fish were caught outside the Convention Area or in compliance with the relevant ICCAT conservation measures and requirements under the Convention".[118] Inspection of non-Contracting Party vessels in port is also incorporated into the 2009 CCAMLR Scheme.[119]

Given that the port is part of internal waters which are under the territorial sovereignty of the coastal State, it is arguable the State is entitled to regulate access to its ports and landings and transshipments there. On the other hand, four points must be noted.

First, inspection in port must be applied without discrimination among vessels. Thus, it appears that the validity of inspection against only non-Contracting Party vessels is a matter for discussion.[120]

Second, port inspection must be carried out by relevant port States in a uniformed manner. In this regard, a concern is voiced that the current system of port inspections is not effective very much due to insufficient vessel information and lack of compliance among port States. Vessels of non-Contracting Parties can also avoid the port State inspection simply by using

115 Para. 5.
116 Para. 7.
117 ICCAT (note 109), para. 2.
118 ICCAT (note 109), para. 3.
119 Para. 5.
120 *R. G. Rayfuse* (note 81), 523.

ports in non-Contracting Party States which will accept their landings.[121] Thus, efforts must be made in order to prevent the emergence of "ports of convenience", undermining the effectiveness of port State inspections.[122]

Third, it appears that inspections in port shift the burden of proving innocence to vessels of non-Contracting Parties. In reality, however, it appears difficult, if not impossible, to establish evidence that the fish on board were caught outside the Convention Area.

Fourth, as typically shown in the *EU-Chile Swordfish* dispute, the unilateral prohibition of access, landing and transshipments in the port may run a risk of producing a dispute between the port State and the fishing State. Indeed, a question may arise whether unilateral prohibition in port by the coastal State is equivalent to *de facto* extension of its national jurisdiction toward the high seas. It is arguable, therefore, that the coastal State should be cautious about unilaterally applying its conservation measures to vessels of third States fishing on the high seas.[123]

4. Conclusions

The above review of contemporary practice will yield the following conclusions:

(i) In response to the limits associated with the flag State responsibility, non-flag State measures, such as at-sea inspection and inspection in port, are increasingly introduced in international instruments.

(ii) While at sea inspection of Contracting Party vessels will not raise serious question, the validity of at sea inspection of non-Contracting Party vessels seems to remain a matter for discussion. In particular, the presumption of undermining the effectiveness of conservation measures in the regulatory areas may entail the risk of *de facto* applying these measures to non-

121 *S. Flothmann/K. von Kistowski/E. Dolan/E. Lee/F. Meere/G. Album*, Closing Loopholes: Getting Illegal Fishing under Control, Science 328 (2010), 1235 et seq.; *R. G. Rayfuse* (note 86), 223.

122 The Report of the Review Conference of the 1995 Fish Stocks Agreement recorded that a number of delegations called for the development of international standards and guidelines to prevent the emergence of "ports of convenience". United Nations, Report of the Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, A/CONF.210/2006/15, 5.7.2006, 24, para. 108.

123 *M. Hayashi* (note 112), 172 et seq.

Contracting Party vessels on the high seas without the explicit consent of the flag State.

(iii) Port inspection is increasingly adopted by many regional fisheries organizations. On the other hand, care should be taken that the effectiveness of port inspection may be undermined by the practice of "port of convenience". In response, concerted actions by relevant costal States will be needed in order to ensure effective implementation of port inspection.

V. General Conclusions

The results of the above consideration can be summarized as follows.

(i) The legal framework governing conservation of marine living resources in the LOSC relies essentially on the zonal management approach and the species specific approach. However, the traditional approaches to conservation of marine living resources comprise limitations particularly in three respects:

- The lack of ecological consideration,
- Difficulties with regard to the conservation of migratory species,
- Weakness of obligations to conserve living resources in the EEZ and high seas.

(ii) In response to the limits of the traditional approaches, more conservation-oriented approaches, namely, the ecosystem and precautionary approaches, are increasingly enshrined in various international instruments. With the emergence of those approaches, it appears that international law governing conservation of marine living resources is strengthening its ecological dimension.

(iii) On the other hand, there are considerable uncertainties with regard to the normative content of the ecosystem and precautionary approaches. As a consequence, it may be open to question to what extent these approaches can *legally* constrain the behavior of States. For the same reason, it appears difficult, if not impossible, for international courts and tribunals to judge conformity of the conduct of a State with treaty obligations respecting the implementation of the ecosystem and precautionary approaches. Without authoritative third-party decision-making, it would be difficult to clarify the exact meaning and scope of these approaches. This situation would further weaken the normativity of the ecosystem and precautionary approaches as a norm purporting to constrain behavior of States.

(iv) It is also important to note that adequate and reliable scientific data is a prerequisite to apply the ecosystem approach. Similarly, there must be some scientific basis for predicting the possibility of harmful effects before applying the precautionary approach.[124] Thus, marine scientific research is highly important in the application of ecosystem and precautionary approaches to conservation of marine living resources.

(v) The establishment of mechanisms for securing compliance with relevant rules is crucial with a view to enhancing the effectiveness of international law concerning conservation of marine living resources. In this regard, it is noteworthy that non-flag State measures, such as at-sea inspection and inspection in port, are increasingly introduced in international instruments. On the other hand, at-sea and port inspections of non-Contracting Party vessels may need careful consideration because those inspections may run the risk of *de facto* extension of coastal States measures toward the high seas.

(vi) Historically the promotion of economic and commercial interests of States has been the catalyst of the development of the law of the sea. Reflecting this situation, it is arguable that rules of the law concerning conservation of marine living resources are essentially characterized by economic interests of States. This may be the fundamental reason why the normativity and effectiveness of the law remain modest. In order to prevent the degradation of marine living resources and to ensure sustainable use of those resources, however, there will be an urgent need to reconsider the validity of the exploitation-oriented nature of international law on this subject. This is a matter of wisdom of the mankind as a whole.

[124] *P. Birnie/A. Boyle/C. Redgwell* (note 19), 156.