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Legal Aspects of Ecosystem-based Marine Management in Europe

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INTRODUCTION

The year 2010 was designated as the International Year of Biodiversity by the United Nations with a view to promoting greater public awareness of the importance of biodiversity to our lives and to highlight the various measures that need to be taken at global, regional and local levels to combat its loss.¹ This initiative helped focus international attention on the failure of the world's governments to achieve the biodiversity conservation targets set down by the Conference of the Parties under the 1992 Convention on Biological Diversity and later endorsed at the 2002 World Summit on Sustainable Development (WSSD).² The scale of this problem was noted by the United Nations Secretary-General in his foreword to the third *Global Biodiversity Outlook*, where he pointed out that "current trends are bringing us closer to a number of potential tipping points that would catastrophically reduce the capacity of ecosystems to provide ... essential services."³ This is particularly the case in the marine environment where marine ecosystems are a major provider of ecological services and a fundamental source of biodiversity with 15 of the 33 types of animal life on the planet found only in the ocean.⁴

Recent findings of the Census of Marine Life support this view and describe life in the ocean as "richer, more connected and more impacted by humans, and yet less explored than we had known."⁵ This finding is tempered by scientific concerns regarding the detrimental impacts on the marine environment of overfishing, lost habitat, invasive species and pollution.⁶ Emerging threats identified by the scientists who prepared the *Census of Marine Life* report include rising water temperature and acidification, as well as the enlargement of areas characterized by low oxygen content (called hypoxia) of seawater. One of the authors of the report believes that "marine species have suffered major declines, in some cases 90 percent losses, due to human activities and may be heading for extinction, as happened to many species on land."⁷

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¹ UNGA Resolution A/RES/61/203, 19.01.2007. See online: <www.cbd.int/2010/welcome/>.

² This target was set down at the sixth meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP 6) (Decision VI/26). The EU is party to the Convention on Biological Diversity which was approved by Council Decision 93/626/EEC, OJ L 309, 13.12.1993. The EU was also committed to implementing the Plan of Implementation of the World Summit on Sustainable Development, UN Doc. A/CONF.199/20, para. 44. Discussed further *infra*.

³ Foreword by the United Nations Secretary-General, *Global Biodiversity Outlook 3*, (Montréal: Secretariat of the Convention on Biological Diversity, 2010).

⁴ *The Ocean: Our Future*, Report of the World Commission on the Oceans (Cambridge: Cambridge University Press, 1998).

⁵ First Census of Marine Life 2010: Highlights of a Decade of Discovery. Available online: <<http://www.coml.org/Highlights-2010>>.

⁶ See Press Release, Census of Marine Life Press Release, October 4, 2010. Available online: <http://www.coml.org/pressreleases/whatlives10/CoML_WhatLivesInTheSea_Public.pdf>.

⁷ *Id.*

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This bleak assessment underscores one of the main findings of the frequently cited Millennium Ecosystem Assessment Report, which concluded that humans have changed ecosystems more rapidly and extensively in the past 50 years than at any other comparable period of time in human history and as a result there has been "a substantial and largely irreversible loss in the diversity of life on Earth."⁸

The *Census of Marine Life* report is fully consistent with recent scientific reports in the European Union (EU) where there is also increased awareness of the scale of biodiversity loss and the corresponding threat to the provision of ecosystem services. Take for example the report on EU biodiversity published by the European Environmental Agency in 2010, which records that only 17 percent of habitats and species and 11 percent of key ecosystems protected under EU legislation are in a favourable conservation status.⁹ Incredibly, the EEA found that the "conservation status of more than 70 percent of the species and 40 percent of the habitats of European interest in marine ecosystems is unknown. Of those that have been assessed, only 2 percent of species are in favourable conservation status."¹⁰ This echoes the assessment of the conservation status of more than 1,182 species and 216 habitat types protected under the Habitats Directive.¹¹ This assessment reveals that only a small proportion of species and habitats that are protected under EU law are considered to have achieved a favourable conservation status.¹² Most notably, the status of coastal habitat types and species is deemed to be particularly poor.¹³ This problem is compounded by a major scientific data deficit with 57 percent of the marine species assessments and about 40 percent of the marine habitats assessments classified as 'unknown' by the Member States.¹⁴ The loss of biodiversity and the information deficit applies to the Mediterranean Sea, the Black Sea, the Baltic Sea, the North Sea, the North-East Atlantic Ocean, including the waters surrounding the Azores, Madeira and the Canary Islands.

More recently, the fragile and vulnerable nature of marine ecosystems is highlighted in an important evaluation report published by the OSPAR Commission that reviews all aspects of human influence on the quality of the marine environment in the North-East Atlantic.¹⁵ The 2010 Quality Status Report points out that there is a "severe decline" in some marine species and habitats in the OSPAR Maritime Area, which extends from Arctic waters down to the Azores.¹⁶ Alarming, species close to extinction include the Azorean limpet, the European sturgeon, and the northern right whale.¹⁷ Some fish species such as bluefin tuna, orange roughy and cod are exploited to unsustainable levels. Other protected species including the leatherback turtle, the Balearic shearwater and many diadromous species of fish are described in the report as at a "low level."¹⁸ This grim scientific picture allowed the OSPAR Commission to conclude in their report that the "management of human activities in the marine environment has not paid enough attention to conserving biodiversity."¹⁹ This conclusion is now compounded by sea-level rise, ocean acidification and many of the other phenomena associated with climate change.

On the whole, the current status of the European marine environment is a major disappointment in light of the ambitious targets set down by the EU Heads of State to halt the decline of biodiversity in

⁸ Finding 1, Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Synthesis*. (Washington D.C.: Island Press, 2005), p. 1.

⁹ EEA Report No. 12/2010, *EU Biodiversity Baseline*. Available online: <<http://www.eea.europa.eu/publications/eu-2010-biodiversity-baseline/>>.

¹⁰ *Id.*, p. 82.

¹¹ Art. 17 of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. OJ L 2067, 22.7.1992. For the assessment see COM(2009) 358 final, 13.7.2009.

¹² COM(2009) 358 final at 6-11.

¹³ COM(2009) 358 final at 16.

¹⁴ COM(2009) 358 final at 5.

¹⁵ OSPAR Quality Status Report 2010 (London: OSPAR Commission, 2010). Available online: <<http://www.ospar.org>>.

¹⁶ OSPAR Quality Status Report 2010 at 125.

¹⁷ OSPAR Quality Status Report 2010 at 139.

¹⁸ OSPAR Quality Status Report 2010 at 125.

¹⁹ *Id.*

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

line with the 2002 WSSD objectives.²⁰ In March 2010, the leaders of the EU acknowledged that the 2010 global biodiversity target would not be achieved and agreed a new target of halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020 with a longer-term vision for 2050.²¹ Subsequently, the European Commission published the *EU Biodiversity Strategy to 2020* that sets out a blueprint on how this will be achieved under various EU policies over the coming decade.²² Clearly, it is too early in the implementation process to assess whether the EU can achieve its biodiversity objectives and global commitments under this strategy and within the prescribed deadlines. For those concerned about the loss of marine biodiversity and the corresponding threat to ecological services, however, some comfort may be drawn from the gradual and perceptible evolution of new normative tools that are beginning to shape the way the law is applied and interpreted by regulatory and judicial bodies in the European Member States. In particular, the emergence of an ecosystem-based approach to the management of human activities in the marine environment as a key normative concept under both regional law and EU law is to be welcomed as a major step aimed at achieving the high-level political commitments to protect biodiversity and to ensure the sustainable use of natural resources. With this in mind, this article has the dual aim of outlining, in the first instance, a number of concrete regulatory measures that have been adopted at international, regional and EU levels, which provide a legal basis for the implementation of the ecosystem approach in the marine environment, and secondly to identify a number of legal and institutional constraints on implementing the concept in practice. First, however, it is necessary to say a little more about the conceptual basis and the methodologies underpinning the ecosystem approach.

1. THE ECOSYSTEM APPROACH: CONCEPT AND METHODOLOGIES

1.1 At a Glance: What is the Ecosystem Approach?

There is no easy answer as this is very much an open-ended question from both a scientific and legal perspective.²³ For a start, the manner in which the ecosystem approach is being implemented in the marine environment at global and regional levels appears to be in a constant state of evolution as a result of the scientific work that is being undertaken on the development of its core elements.²⁴ Much of this

²⁰ COM(2006) 216 final, 22.5.2006.

²¹ See Annex to the conclusions adopted by the Council (Environment) on 15 March 2010. Available online: <<http://register.consilium.europa.eu/pdf/en/10/st07/st07536.en10.pdf>>.

²² COM(2011) 244 final, 3.5.2011.

²³ Part of the discussion here is reproduced and updated from R. Long, *Marine Resource Law* (Dublin: Thomson Round Hall, 2007), p. 46–51.

²⁴ On the ecosystem approach generally, see, inter alia: H. Tallis et al., "The many faces of ecosystem-based management: Making the process work today in real places," *Marine Policy* 34 (2010): 340–348; R. Curtin and R. Prellezo, "Understanding marine ecosystem-based management: A literature review," *Marine Policy* 34 (2010): 821–830; H.G. Österblom et al., "Making the ecosystem approach operational—Can regime shifts in ecological- and governance systems facilitate the transition?," *Marine Policy* 34 (2010): 1290–1299; K. McFadden and C. Barnes, "The implementation of an ecosystem approach to management within a federal government agency," *Marine Policy* 33 (2009): 156–163; G. Bianchi and H.R. Skjoldal, ed., *The Ecosystem Approach to Fisheries* (Rome: Food and Agricultural Organisation of the United Nations, 2008); S. Murawski "Ten myths concerning ecosystem approaches to marine resource management," *Marine Policy* 31 (2007): 681–90; R. O'Boyle and G. Jamieson, "Observations on the implementation of ecosystem-based management: Experiences on Canada's east and west coasts," *Fisheries Research* 79 (2006): 1–12; A.H. Hemphill and G. Shillinger, "Casting the Net Broadly: Ecosystem-Based Management Beyond National Jurisdiction," *Sustainable Development Law & Policy* 7 (2006): 56–59; S.M. Garcia and K.L. Cochrane, "Ecosystem approach to fisheries: A review of implementation guidelines," *ICES Journal of Marine Science* 62 (2005): 311–318; H. Browman and K. Stergiou, "Perspectives on ecosystem-based approaches to the management of marine resources," *Marine Ecology Progress Series* 274 (2004): 269–70; S. Jennings, "The Ecosystem Approach to Fishery Management: A Significant Step towards Sustainable use of the

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work is interdisciplinary and multidisciplinary in nature and thus involves a broad span of the physical and life sciences.²⁵ Some of this work centred on the identification of 64 Large Marine Ecosystems worldwide that are characterised on the basis of ecological criteria pertaining to bathymetry, hydrography, productivity, and trophic relationships.²⁶

Encouragingly, the absence of a universally accepted definition of the "ecosystem approach" or "ecosystem-based management" in international or EU law does not appear to have led to any intractable problems regarding the implementation of the concept in practice.²⁷ Indeed, several international organisations have adopted working definitions of the ecosystem approach and one good starting point in this regard is the 1992 Convention on Biological Diversity (CBD), which defines an ecosystem as "a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit."²⁸ The Conference of the Parties to the CBD has described the ecosystem approach as "a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way."²⁹ Similar thinking is evident in the work of the OSPAR Commission who has suggested "the essence of the ecosystem approach is to allow sustainable exploitation of natural resources while maintaining the quality, structure and functioning of marine ecosystems."³⁰ Again, the United Nations Division for Ocean Affairs and the Law of the Sea (DOALOS) has highlighted the importance of utilising the approach as a policy tool which encompasses "the management of human activities, based on the best understanding of the ecological interactions and processes, so as to ensure that ecosystems' structures and functions are sustained for the benefit of present and future generations."³¹ According to their website, the concept "builds on a number of existing tools and approaches, such as integrated coastal and ocean management, with greater emphasis on ecosystem goals and objectives."³²

Marine Environment?," *Marine Ecology Progress Series* 274 (2004): 269–303; A useful summary is also provided by the United Nations, Office of Legal Affairs, *Ecosystem Approaches and Oceans: Panel Presentations during the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea (Consultative Process), Seventh Meeting, United Nations Headquarters, New York, 12–16 June 2006*, (New York: United Nations, 2008); and in the Report of the Secretary-General on Oceans and the Law of the Sea (UN Doc. A/61/63, 9 March 2006), 46–52.

²⁵ See, inter alia, S. Kidd, A. Plater and C. Frid, *The Ecosystem Approach to Marine Planning and Management*, (London: Earth Scan Publications, 2011); K. McLeod and H. Leslie, ed., *Ecosystem-based Management for the Oceans* (Washington D.C.: Island Press, 2009); E. Levner, I. Linkov and J-M. Proth eds., *Proceedings of the NATO Advanced Study Institute on Strategic Management of Marine Ecosystems, Nice, France, 1–11 October*, (London: Earth Scan Publications, 2003), Vol. 50, 2005, II.

²⁶ G. Hempel and K. Sherman, ed., *Large Marine Ecosystems: Trends in Exploitation, Protection, and Research* (London: Elsevier, 2003). For further information on books and technical reports on the ecosystem approach, available online: <<http://www.lme.noaa.gov>>.

²⁷ One commentary notes that there are up to 40 definitions of the ecosystem approach see B. Hatcher and R. Bradbury, "Marine Ecosystem Management: Is the Whole Greater than the Sum of the Parts?," in D. Rothwell and D. VanderZwaag, *Towards Principled Oceans Governance: Australian and Canadian Approaches and Challenges* (London: Routledge, 2006), p. 205–232. See, inter alia: 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 (New York, 12–16 June 2006) (UN Doc. A/61/156, 17 July 2006) (ICP-7 report), para. 6.

²⁸ Art. 2 of the 1992 Convention on Biological Diversity.

²⁹ Decision V/6 by the Conference of the Parties to the CBD at its Fifth Meeting, Nairobi, 15–26 May 2000, UNEP/COP/5/23. Available online: <<http://www.cbd.int/ecosystem>>.

³⁰ 2010 OSPAR Quality Status Report (London: OSPAR Commission, 2010) at 9. Available online: <<http://www.ospar.org>>.

³¹ See United Nations Division for Ocean Affairs and the Law of the Sea, "Developing and Implementing an Ecosystem Approach to Ocean-related Activities" (New York: United Nations Office of Legal Affairs, 2008).

³² Available online: <http://www.un.org/Depts/los/ecosystem_approaches/ecosystem_approaches.htm>.

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As far back as 1935, Alfred George Tansley described an ecosystem as "a biotic assemblage and its associated physical environment in a specific space."³³ As is well-documented more recently, the marine environment is both an ecosystem and interlocking network of ecosystems.³⁴ For this reason, the spatial scale for taking management action will depend very much on the problem that is being addressed and geographical extent of the relevant ecosystems. Moreover, there appears to be some consensus among the policy experts that the ecosystem approach necessitates an integrated approach to the management of human activities that impinge on the functioning of marine ecosystems.³⁵ This is because "the components of an ecosystem, including the human component, function together and interact to form an integrated network."³⁶ In this regard, the working definition adopted by the International Council for the Exploration of the Seas (ICES) is particularly illustrative as it describes the ecosystem approach as:

The comprehensive integrated management of human activities based on the best available scientific knowledge about the ecosystem and its dynamics, in order to identify and take action on influences which are critical to the health of marine ecosystems, thereby achieving sustainable use of ecosystems goods and services and maintenance of ecosystem integrity.³⁷

The rationale for adopting this approach is that while the ecosystem itself may not be managed, the human activities that interact with and impact upon the ecosystem may be managed with a view to conserving biodiversity and ensuring sustainable development. In the words of a study undertaken by the Swedish Commission on the Marine Environment:

The ecosystem approach implies an integrated, interdisciplinary management system, which on the one hand recognises our right as human beings to use what the ecosystems produce, and on the other ensures that all ecosystem components (i.e., species, habitats, structures, genetic diversity) can be found to such an extent that their survival is guaranteed in the foreseeable future. Ecosystems cannot just be seen as a number of different species, each of which needs to be protected. The interaction among these species must also be safeguarded. The aim is to preserve the structure and function of the ecosystem and hence maintain its capacity to provide us with products and services.³⁸

In line with the evolution of the scientific paradigm, several international organisations have developed conceptual frameworks for the application of the ecosystem approach to the management of human activities in the marine environment. Undoubtedly, the best-known scheme is the one adopted under the 1980 Convention on Conservation of Antarctic Marine Living Resources (CCAMLR), which aims to conserve the entire Antarctic ecosystem and to increase knowledge of its component parts.³⁹ The

³³ For a stimulating discussion of pioneering scholarship on the subject, see A.G. Tansley, "The Use and Abuse of Vegetational Concepts and Terms," *Ecology* 16, no. 3 (1935): 284–307.

³⁴ Statement on the Ecosystem Approach to the Management of Human Activities, First Joint Ministerial meeting of the Helsinki and OSPAR Commissions (JMM) Bremen, 25–26 June 2003, para. 3.

³⁵ *Id.*

³⁶ *Id.*, para. 4.

³⁷ Guidance Document – ICES 2005. Guidance on the Application of the Ecosystem Approach to Management of Human Activities in the European Marine Environment. ICES Cooperative Research Report no. 273. Also see, International Council for Exploration of the Sea, *Report of the Study Group on Ecosystem Assessment and Monitoring*, 8–12 May 2000, ICES CM 2000/E:09, ICES, Copenhagen, available online: <www.ices.dk/reports/MHC/2000/sgeam00.doc>, p. 9.

³⁸ Swedish Commission on the Marine Environment, *The Sea – Time for a New Strategy* (Stockholm, June 24th 2003), p. 61

³⁹ Convention for the Conservation of Antarctic Marine Living Resources "CCAMLR" (adopted on 20 May 1980, entered into force 7 April 1982) 1329 *United Nations Treaty Series* 47. See E.J. Molenaar, "CCAMLR and Southern Ocean Fisheries," *International Journal of Marine and Coastal Law* 16, no. 3 (2001): 465–499.

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Antarctic Marine Ecosystem is defined in the Convention as meaning the complex of relationships of Antarctic marine living resources with each other and with their physical environment.⁴⁰ Resource exploitation is undertaken on the basis of ecological principles that take into account the complex and symbiotic relationship between natural resources and their physical environment. Despite the misgivings of some interested parties regarding its effectiveness, the CCAMLR regime is usually held up as an international benchmark for best practice regarding the implementation of the ecosystem approach in the management of marine living resources.⁴¹ As noted elsewhere, the application of ecosystem approach is facilitated by two distinctive factors that are unique to the Antarctic marine area, namely: the existence of the Antarctic Convergence Current; and the central position of krill in the Antarctic food chain which links all species in the food chain to varying degrees.⁴² The CCAMLR Convention prohibits changes to the marine ecosystem that are not potentially reversible over two or three decades.⁴³ Thus for an activity to take place, it must be demonstrated that changes to the ecosystem as a result are reversible within such a period.

Closer to Europe, one particular illustrative example of the conceptual framework for the implementation of the ecosystem approach is set down in Annex II of the Bergen Declaration which applies to the management, protection and restoration of the North Sea. This framework, which is shown in schematic form in Figure 1, entails the application of a number of principles in the decision-making process, including: stakeholder consultation; best use of available scientific and technical knowledge about the structure and function of the ecosystem; best use of scientific advice; integrated expert assessment; coordinated and integrated monitoring; as well as the adoption of schemes for control and enforcement.

[INSERT FIGURE 1]

From the scheme shown in Figure 1 it is evident that the ecosystem approach entails the implementation of a new management paradigm for the protection of the marine environment and for the utilisation of marine resources. This paradigm focuses on the impacts of human activities on the entire ecological system rather than its component parts.⁴⁴ Perhaps a little perplexing from a legal perspective, there appears to be no single way to implement the ecosystem approach as this is very much contingent upon the measures that are required to achieve ecosystem integrity at local, regional or global levels.⁴⁵ In a key presentation on the subject, one authoritative commentator notes that the ecosystem approach

⁴⁰ Art. I(3) of CCAMLR.

⁴¹ See, inter alia: A. Fabra and V. Gascón, "The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) and the Ecosystem Approach," *International Journal of Marine and Coastal Law* 23 (2008): 567–598; D.C. Ramm, "Managing Antarctic marine living resources: The CCAMLR approach," *International Journal of Marine and Coastal Law* 19, no. 3 (2004): 317–363; B. Clark and A. Hemmings, "Problems and Prospects for the Convention on the Conservation of Antarctic Marine Living Resources Twenty Years On," *Journal of International Wildlife Law & Policy* 4 (2001): 1; A. Constable, W. de la Mare, D. Agnew, I. Everson and D. Miller, "Managing fisheries to conserve the Antarctic marine ecosystem: Practical implementation of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)," *ICES Journal of Marine Science* 57 (2000): 778–791; C. Redgwell, "Protection of Ecosystems under International Law: Lessons from Antarctica," in A.E. Boyle and D. Freestone, eds., *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford: OUP, 1999), pp. 205–224 at 205–06; K. Kock, *Understanding CCAMLR's Approach to Management* (Hobart: CCAMLR, 2000).

⁴² See S.M. Kaye, *International Fisheries Management* (The Hague: Kluwer Law International, 2000) p. 355–375.

⁴³ Art. II(3)(c) of CCAMLR.

⁴⁴ See J. Brunnée and S.J. Toope, "Environmental Security and Freshwater Resources: A Case for International Ecosystem Law," *Yearbook of International Environmental Law* 5 (1994): 55.

⁴⁵ See Decision V/6, *id.*, Section A, para. 1.

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requires extensive stakeholder participation, resilient management institutions, as well as scientific institutions of quality and integrity.⁴⁶

In summary, there are many methodologies and paradigms for the implementation of the ecosystem approach and the concept is open to many definitions.⁴⁷ What is relevant to note for the purpose of this article is that the various methodologies and tools advanced by international bodies for the implementation of the ecosystem approach share many similarities and their ultimate aim is to protect and maintain biodiversity with a view to ensuring that the marine environment is clean, healthy and productive.⁴⁸ There also appears to be consensus in the specialist literature that the implementation of the approach entails a shift away from the sector-based approach to the management of maritime activities to a paradigm that allows for adaptive management and greater policy coherence that takes into account a broad range of economic, environmental and social considerations.⁴⁹ This entails the adoption of proactive policies that strive to maintain the delivery of ecosystem services in the longer-term, as well as the harmonisation of various management and conservation objectives, under the umbrella of the ecosystem approach.⁵⁰ Furthermore, satisfactory implementation of the ecosystem approach is very much contingent upon wide stakeholder involvement in the decision-making process and the establishment of appropriate control and enforcement mechanisms with a view to achieving satisfactory levels of regulatory compliance with ecosystem objectives.⁵¹ Significantly, as noted in a key publication on the subject over two decades ago, the legal options for implementing the ecosystem approach are virtually limitless.⁵² In contrast, there is considerable symmetry in the scientific work that has been undertaken in recent years under the stewardship of the regional-seas programmes and this has focused on developing "ecological quality objectives," which as will be seen below are now very much at the heart of the scheme of protection underpinning the concept. Before pressing ahead it may thus be appropriate to say a little bit more about this work and how the methodology has been applied in practice in the North Sea.

1.2 Testing the Concept and Methodology in the North Sea

At European regional seas levels, much of the groundbreaking work on the implementation of the ecosystem approach has been undertaken by the OSPAR and the HELCOM Commissions working in conjunction with the ICES. Essentially, the role of the ICES is to provide independent advice on the scientific aspects of the ecosystem approach as well as a number of practical methodologies for its implementation.⁵³ This includes the identification of practical steps in applying the approach by those concerned with the formulation and implementation of marine resource policy in the Member States and at a European regional seas level.⁵⁴

⁴⁶ Presentation by P. Degnbol included in CD attached to M. Nordquist, R. Long, T. Heidar and J. Norton Moore, eds., *Law, Science and Ocean Management* (Boston/Leiden: Martinus Nijhoff, 2007).

⁴⁷ See n. 24 above.

⁴⁸ Recital 3 of Directive 2008/56/EC of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) OJ L 164/19, 25.6.2008.

⁴⁹ See, inter alia: D.d'A. Laffoley et al., *The Ecosystem Approach. Coherent actions for marine and coastal environments. A Report to the UK Government* (Peterborough: English Nature, 2004), p. 7. Available online: <<http://www.vliz.be/imisdocs/publications/68220.pdf>>.

⁵⁰ See N. Beaumont et al., "Identification, definition, and quantification of goods and services provided by marine biodiversity: Implications for the ecosystem approach," *Marine Pollution Bulletin* 54 (2007): 253–265.

⁵¹ This point is made by a number of writers on fisheries management regimes. See, for example, Fabra and Gascón, n. 41 above, at pp. 589–591.

⁵² M. Belsky, "Management of Large Marine Ecosystems: Developing a New Rule of Customary International Law," *San Diego Law Review* 22 (1985): 733–763 at 763.

⁵³ Report No. 267 of the Thirteenth ICES Dialogue Meeting: Advancing scientific advice for an ecosystem approach to management: Collaborating amongst managers, scientists, and other stakeholders. Dublin, Ireland 26–27 April 2004.

⁵⁴ Guidance Document – ICES 2005, n. 37 above.

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The seven steps identified by the ICES are: 1) scoping (evaluate current ecosystem status; evaluate current ecosystem policies; inventory human activities; evaluate social and economic policies); 2) contrasting current situation with the vision; 3) identify important ecosystem properties and threats; 4) setting ecological objectives; 5) derive operational objectives, indicators and reference points; 6) design ongoing management; and 7) periodic updates. As will be seen below, this methodology is now more or less reflected in the substantive and procedural provisions of the European Marine Strategy Framework Directive (MSFD) and has also been adopted by several of the European regional seas commissions. Suffice to note here that the ICES methodology is very much science driven and perhaps understates the importance of establishing appropriate institutional and compliance structures to facilitate the successful implementation of the approach in practice.⁵⁵

Interestingly, the methodology underpinning the ecosystem approach has been tested by the OSPAR Commission in the North Sea. Central to this methodology is the development of "ecological quality objectives" ("EcoQOs") as a set of operational tools for defining the quality of selected components of the ecosystem and as indicators of human pressures.⁵⁶ In order to fully comprehend how the methodology works in practice, it may be useful to refer to the following description published by OSPAR:

The EcoQO system is designed in a manner that enables OSPAR to consider different components of the marine environment and to build an overall picture of the state of the marine environment. The approach to defining the EcoQO system is firstly to identify the main components (e.g., species, habitats functions and ecological processes) of the marine ecosystem [the ecological quality issues listed in Table 1]. The next step is to identify the main impacts on these components from human uses of the sea (e.g., pollution, overfishing, and eutrophication) and the indicators of these impacts that can be monitored. For each indicator the desired level of quality is defined as an Ecological Quality Objective.⁵⁷

Inherent within this scheme of protection is the central belief that the relevant regulatory bodies ought to move to regulate activities that are impeding the attainment of EcoQOs.

At face value, this appears to be a relatively straightforward exercise in view of the fairly generalised objectives that were set down for the North Sea as shown in Table 1. In practice, however, the most recent evaluation report on the implementation of the system concluded that the objectives have not been achieved in the North Sea over the initial 15-year test period, as can be seen quite clearly from the information summarised in Table 2.⁵⁸ On the one hand, this is a disappointing result and it would appear to augur poorly for the future of ecosystem-based marine management in the European regional seas. On the other hand, one should exercise considerable caution in relation to these findings, as the experience gained in the application of the EcoQO system for the North Sea has several redeeming features. More specifically, it ought to save years of effort in the development of methodologies and the operational framework for the implementation of the MSFD.⁵⁹ As will be seen further below, the latter instrument provides a far more rigorous framework for addressing all human activities that impact the marine environment with a view to ensuring the long-term sustainable use of marine goods and ecological services.⁶⁰ Most importantly, the development of a system of EcoQOs for the North Sea involved a major

⁵⁵ See discussion in Part 5 *infra*.

⁵⁶ For an overview on how this system works see Handbook for the Application of Ecological Quality Objectives in the North Sea (London: OSPAR Commission, 2007/307).

⁵⁷ OSPAR Biodiversity Series, Evaluation of the OSPAR System of Ecological Quality Objectives for the North Sea (update 2010) at 5. Available online: <http://qsr2010.ospar.org/media/assessments/p00406_Evaluation_EcoQO_2010_update.pdf>.

⁵⁸ *Id.*, at 64.

⁵⁹ *Id.*, at 10.

⁶⁰ Recital 44 and Article 1(3) of Directive 2008/56/EC of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive), OJ L 164/19, 25.6.2008.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), OCEAN YEARBOOK Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

cooperative exercise on the part of several OSPAR Contracting Parties working under the overall leadership of the Netherlands and Norway. Accordingly, the experience gained in testing the methodology in the North Sea suggests that the implementation of the ecosystem approach is going to take time, appropriate resources, as well as a considerable intergovernmental/European cooperation before it will achieve the desired, ecological, social and economic objectives. Hence, the development of the EcoQO system for the North Sea constitutes a useful starting point for the practical aspects of ecosystem-based management that can be applied by the various regional seas commissions even if it failed to achieve any of the anticipated results. We can now turn to the normative basis underpinning the ecosystem approach in international and regional law.

[INSERT TABLES 1 and 2]

Table 1.—Ecological Quality Issue and Ecological Quality Objective*

Commercial fish species	Maintain the <i>spawning stock biomass</i> above precautionary reference points for commercial fish stocks agreed by the competent authority for fisheries management.
Marine mammals	<i>Seal Population Trends</i> (a) There should be no decline in harbour seal population size within any of eleven sub-units of the North Sea. (b) There should be no decline in pup production of grey seals within any of nine sub-units of the North Sea. Annual <i>by-catch of harbour porpoises</i> should be reduced to below 1.7 percent of the best population estimate.
Seabirds**	The <i>proportion of oiled common guillemots</i> should be 10 percent or less of the total found dead or dying in all areas of the North Sea. There should be less than 10 percent of northern fulmars (<i>Fulmarus glacialis</i>) having more than 0.1 g <i>plastic particles in the stomach</i> in samples of 50 to 100 beach-washed fulmars found from each of four or five areas of the North Sea over a period of at least five years. Concentrations of mercury in the eggs of Common Tern (<i>Sterna hirundo</i>) and Eurasian Oystercatcher (<i>Haematopus ostralegus</i>) breeding adjacent to the eight industrialised estuaries, should not exceed concentrations in eggs of the same species breeding in similar habitats in south-western Norway and in the Moray Firth. Concentrations of organochlorines in the eggs of Common Tern (<i>Sterna hirundo</i>) and Eurasian Oystercatcher (<i>Haematopus ostralegus</i>) breeding adjacent to the eight industrialised estuaries, should not exceed set values.
Fish communities	At least 30 percent of fish (by weight) should be greater than 40 cm in length.
Benthic communities	(a) The average level of <i>imposex</i> (development of male characteristics by females) in <i>female dogwhelks</i> should be consistent with specified levels. (b) There should be <i>no kills in benthic animal species</i> as a result of oxygen deficiency and/or toxic phytoplankton species.
Plankton community	(a) Maximum and mean <i>phytoplankton chlorophyll a</i> concentrations during the growing season should remain below specified limits. (b) Area-specific <i>phytoplankton species that are indicators of eutrophication</i> should remain below specified limits.
Threatened and/or declining species	<i>Under development.</i>
Threatened and/or declining habitats	<i>Under development.</i>
Eutrophication	<i>All parts of the North Sea should have the status of non-problem areas with regard to eutrophication by 2010.</i> <i>Winter concentrations of dissolved inorganic nitrogen and phosphate</i> should remain below specified limits. <i>Maximum and mean phytoplankton chlorophyll a concentrations during the growing season</i> should remain below specific limits. <i>Area-specific phytoplankton species that are indicators of eutrophication</i> should remain below specific limits. <i>Oxygen concentration</i> should remain above specified limits.

* Some eutrophication EcoQOs correspond to more than one issue.

** Additional seabird EcoQOs are under development for seabird population trends, and local sandeel availability for black-legged kittiwakes.

Table 2.—Present status of individual Ecological Quality Objectives and possible actions

Ecological Quality Objectives	Status	Possible Action
Spawning stock biomass of commercial fish species	Mixed picture. Increased number of stocks in favourable condition within the precautionary values (e.g., haddock, saithe and sole). Increase in the number of stocks outside the limits, reflecting in part the difficult situation for cod and also Norway pout.	Synchronize the objective with the new goals of the EU Common Fisheries Policy and Norwegian Fisheries Policy. EU Member States work together through the EU Common Fisheries Policy, and with Norway, to achieve the (new) objective.
Proportion of large fish in the (demersal) fish community	Not met, although movement towards the objective is detected.	This needs to be considered by the relevant authorities for fisheries management in Region II.
Seal population trends	The EcoQO probably has been met for grey seals for all significant units of the North Sea population. The harbour seal EcoQO has probably not been met; in some areas this may be a consequence of seal epizootics, but in other areas the cause of decline in numbers hauled out is unknown.	Encourage research is in place to explain the decline in harbour seal population in areas where it is unknown. Continue monitoring and/or data reporting especially in units of the eastern North Sea.
Harbour porpoise by-catch	Monitoring of by-catch of harbour porpoises in the North Sea was inadequate to assess whether or not the EcoQO was being met.	Communicate the need for improved monitoring to the EC.
Proportion of oiled Guillemots	Oil rates in the North Sea vary between 4 and 50 percent. Highest oil rates are found in the southern North Sea. Downward trends in oil rates are recorded.	Norway, Sweden, Denmark, France and UK: submit the requested information to the Netherlands before 1 July 2008. Communicate the oiling rates for beached birds to the shipping industry.
Plastic particles in seabird stomachs	The EcoQO is not met in any parts of the North Sea and current levels in most parts of the region are well below the objective.	To achieve the EcoQO level further refinements may be needed on the implementation of the EU Directive on Port Waste Reception facilities and MARPOL Annex V. Action may also be needed to address lost fishing gear.
Contaminants in seabird eggs	EcoQO is met at very few sites.	Continue the reductions in inputs of hazardous substances. Consider data from throughout the North Sea to evaluate the suitability of the EcoQO for MSFD purposes.
Imposex in dogwhelks or	The EcoQO has not been met	The EcoQO has not been met in the North Sea Area

other selected gastropods	in the North Sea Area with the exception of a limited number of locations in France, Denmark and UK (North). Downward trend indicate that the situation in general is improving. The relative absence of positive trends indicates that only a limited input of TBT still remains, linked to very local situations.	with the exception of a limited number of locations in France, Denmark and UK (North). Downward trend indicate that the situation in general is improving. The relative absence of positive trends indicates that only a limited input of TBT still remains, linked to very local situations.
EcoQO on eutrophication	The overarching objective is not met in several parts of the OSPAR Maritime Area. For the North Sea, a number of coastal waters have been classified as problem areas with regard to eutrophication, in particular, off Belgium, Denmark, France, Germany, Netherlands, Norway, Sweden and the UK (estuaries).	Improve monitoring.

Evaluation of the OSPAR system of Ecological Quality Objectives for the North Sea⁶¹

2. NORMATIVE BASIS IN INTERNATIONAL LAW AND POLICY

2.1 Ecosystem-based Management as an International Legal Duty

The concept of an ecosystem approach to the management of human activities in the marine environment has gradually become a feature in a wide-range of international instruments since the 1980s. In this context, it is important to keep in mind that the EU has legal personality and is empowered by the Treaty of the Functioning of the EU (TFEU) to enter into international agreements, which form an integral part of the European legal order.⁶² Indeed, international agreements form an integral part of EU law and rank below EU Treaties and above secondary legislation in the hierarchy of legal sources.⁶³ In view of its broad environmental interests on the world stage, it comes as no surprise to find that the EU and the Member States are party to many international and regional agreements that codify the ecosystem

⁶¹ See OSPAR Biodiversity Series, n. 57 above, at 24.

⁶² Articles 216 to 219 of the TFEU deal with international agreements. Art. 216(2) of the TFEU provides that “agreements concluded by the Union are binding upon the institutions of the Union and on its Member States,” p. 5.

⁶³ On the status of treaties in the internal European legal order see, inter alia: Case 13/00 *Commission v Ireland* [2002] ECR I-2943 para. 14; Case 239/03 *Commission v France* [2004] ECR I-9325 para. 25; and Case C-459/03, *Commission v Ireland* ECR I-4635, paras 82–8.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

approach and are thus under a duty to implement it by means of internal EU laws and policies.⁶⁴ Although it is clearly beyond the scope of this article to enumerate all the agreements that set down legally binding obligations on the EU and the Member States in this regard, it is nonetheless important to emphasise that the implementation of the approach at an internal level within the EU is very much consistent with the genesis and development of the approach in public international law and conforms with general trends in state practice outside the EU.

Moreover, according to the settled case law of the European Court of Justice, international agreements that have been ratified by the EU are not only part of the European legal order and directly applicable in the Member States, but may also be relied upon by interested parties in national courts under the doctrine of direct effect in certain limited circumstances.⁶⁵ Regrettably, the Court has also held this does not, however, apply to the 1982 United Nations Convention on the Law of the Sea, which does not confer rights on individuals capable of being relied upon by them against states.⁶⁶ This means that the provisions on the ecosystem approach in many of the international treaties mentioned below cannot be relied upon by individuals in national courts to challenge the validity or otherwise of EU law. In other words, the legal duty on the EU to implement the ecosystem approach under international law places responsibility on the Member States but does not vest individuals or indeed non-governmental organisations with the right to invoke such a duty against the EU. This shortcoming does not, however, detract from the legally binding nature of the obligation that arises for the EU and the Member States to undertake ecosystem-based management in accordance with the requirements of international and regional law as will be seen next.

2.2 Genesis of the Concept in International Law

The origins of the ecosystem approach may be traced back to national law in several countries. A good example of national legislation that is ground-breaking is the United States *Marine Mammal Protection Act 1972* which was one of the first legal instruments to apply the ecosystem approach to the conservation of all marine mammals with a view to ensuring, inter alia, that "such species and population stocks should not be permitted to diminish beyond the point at which they cease to be a significant functioning element in the ecosystem of which they are a part."⁶⁷ Elements of the ecosystem approach can also be seen in a number of soft law instruments that were adopted by the international community in the early 1970s. One such instrument was the 1972 Stockholm Declaration on the Human Environment that calls upon states to cooperate in the conservation, protection and restoration of the health and integrity of the Earth's ecosystem.⁶⁸ Principle 2 of the Declaration provides that "the natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate." On a similar note, the World Charter for Nature called upon states to manage ecosystems and organisms in such a way as not to endanger the integrity of those other ecosystems or species with which they coexist.⁶⁹ In this regard, it stipulates that natural resources must not be wasted but used with a restraint appropriate to the principles set down by the Charter.⁷⁰

⁶⁴ See discussion in Part 4 *infra* on the normative basis of the ecosystem approach in EU law and policy.

⁶⁵ See, inter alia: Case C-459/03, *Commission v Ireland* [2006] ECR I-4635; Case C-213/03 *Syndicat Professionnel Coordination des Pêcheurs v EDF* [2004] ECR I-7357.

⁶⁶ Case C-308/06 *The Queen on the application of Intertanko and Others v Secretary of State for Transport*, [2008] ECR I-4057. This distinction has been commented upon, see R.R. Churchill and D. Owen, *The EU Common Fisheries Policy* (Oxford: OUP, 2010) at 315–316.

⁶⁷ P.L. 92-522, 86 Stat. 1027. See also 16 U.S.C. § 1361, as since amended.

⁶⁸ U.N. Doc. A/ Conf.49/14/Rev.1, 11 *International Legal Materials* 1416 (1972). See L. Sohn, "The Stockholm Declaration on the Human Environment," *Harvard International Law Journal* 14 (1973): 423.

⁶⁹ Principle 4 of the World Charter for Nature adopted under UNGA Resolution, A/RES/37/7, 28 October 1982 (supported by 111 states, the United States against, and 18 states abstaining), 23 *International Legal Materials* (1983) 455–460. See, inter alia: W. Burhenne and W. Irwin, *The World Charter for Nature: Legislative History*;

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

Since the early 1980s, specific reference is made to the ecosystem approach in a number of international treaties and policy initiatives that are applicable to the marine environment. As mentioned above, these include the 1980 Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), which provides for the commercial exploitation of marine living resources in the CCAMLR area as long as such exploitation does not endanger the ecological relationship between the fauna in the marine ecosystem.⁷¹ The European Economic Community (EEC) became party to the CCAMLR Convention in 1981 and has implemented the ecosystem approach in line with the requirements of the Convention by means of a number of regulations adopted under the Common Fisheries Policy (CFP).⁷²

Reflecting perhaps that it is an outcome of its era and the un-abiding obsession of states with territory, there is no express mention of the "ecosystem approach" in the 1982 United Nations Convention on the Law of the Sea. As is well-documented in the specialist literature, there are, however, a number of implicit references to the approach in the 1982 Convention.⁷³ For instance, the Preamble points out that the problems of ocean space are closely interrelated and need to be considered as a whole.⁷⁴ Similarly, the 1982 Convention mandates co-operation on global and regional levels, as well as a science-based approach to decision making regarding uses and conservation of the marine environment.⁷⁵ Examples include the express obligation placed on states under the 1982 Convention to take into account the effects of fishery management measures on associated or dependent species.⁷⁶ States Parties to the 1982 Convention must adopt fisheries management measures on the basis of the best scientific evidence available and generally recommended international minimum standards.⁷⁷ As will be seen below, it is generally accepted that the conservation and optimum utilization of the sea and the resources that it supports is advanced by the rigorous implementation of the 1982 Convention.

2.3 Developments within CBD, the Malawi Principles, and the Aichi Biodiversity Targets

Much of the political and legal impetus underpinning ecosystem-based management at global and regional levels has been undertaken within the framework of the 1992 Convention on Biological Diversity (CBD). Instructively, the 1992 Rio Declaration requires states to cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem.⁷⁸ Specific reference is made to the marine environment in Chapter 17 of *Agenda 21* which calls upon states to identify marine ecosystems exhibiting high levels of biodiversity and productivity and other critical habitat areas and to provide necessary limitations on use in these areas, through, inter alia, designation of protected areas. In this regard, priority should be given where appropriate to the protection of coral reef ecosystems, estuaries, temperate and tropical wetlands including mangroves, seagrass beds, as well other spawning and nursery areas. As mentioned previously, the Johannesburg Plan of Implementation encouraged the application of an ecosystem approach by 2010 and the approach is one of the principle means for addressing the three objectives of the CBD, namely: conservation, sustainable use, and the fair and equitable sharing of the benefits of biodiversity in a balanced way. Considerable progress was made

Commentary, 2nd rev. ed., (Berlin: E. Schmidt Verlag, 1986); P. Birnie, A. Boyle and C. Redgwell, *International Law and the Environment* (Oxford: OUP, 2009), 603–605.

⁷⁰ Principle 10 of the World Charter for Nature.

⁷¹ Adopted on 20 May 1980, entered into force 7 April 1982, 1329 *United Nations Treaty Series* 47.

⁷² Council Decision 81/691/EEC of 4 September 1981 on the conclusion of the Convention on the conservation of Antarctic marine living resources OJ L 252, 5.9.1981 at 26–35. For a description of the relevant EU regulations, see Churchill and Owen, n. 66 above, pp. 360–362. Several Member States are party to the CCAMLR Convention in their own rights including: Belgium, France, Germany, Poland, Spain, Sweden, and the UK.

⁷³ Y. Tanaka, *A Dual Approach to Ocean Governance* (Farnham: Ashgate, 2008), pp. 78–82.

⁷⁴ 3rd Recital, Preamble, 1982 LOS Convention.

⁷⁵ Articles 197 and 204, 1982 LOS Convention.

⁷⁶ Art. 61(2), 1982 LOS Convention.

⁷⁷ Art. 119, 1982 LOS Convention.

⁷⁸ Principle 7 of the 1992 Rio Declaration.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

at the fifth meeting of the Conference of the Parties to CBD, which adopted operational guidance and recommendations for the application of the 12 principles underpinning the approach in Decisions 5 and 6 (referred to as the "Malawi Principles").⁷⁹ These note that:

The ecosystem approach requires adaptive management to deal with the complex and dynamic nature of ecosystems and the absence of complete knowledge or understanding of their functioning... Management must be adaptive in order to be able to respond to such uncertainties and contain elements of 'learning-by-doing' or research feedback. Measures may need to be taken even when some cause-and-effect relationships are not yet fully established scientifically.⁸⁰

These principles are as follows: 1) The objectives of management of land, water and living resources are a matter of societal choices; 2) Management should be decentralized to the lowest appropriate level; 3) Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems; 4) Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should: reduce those market distortions that adversely affect biological diversity; align incentives to promote biodiversity conservation and sustainable use; and internalize costs and benefits in the given ecosystem to the extent feasible; 5) Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach; 6) Ecosystems must be managed within the limits of their functioning; 7) The ecosystem approach should be undertaken at the appropriate spatial and temporal scales; 8) Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term; 9) Management must recognize that change is inevitable; 10) The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity; 11) The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices; and 12) The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

Accompanying these principles, the Conference of the Parties have identified five points of operational guidance for their implementation: focus on the relationships and processes within the ecosystem; enhance benefit sharing; use adaptive management practices; carry out management actions at the scale appropriate for the issue being addressed, with decentralization to the lowest level, as appropriate; and ensure inter-sectoral cooperation.⁸¹

These principles have provided a framework for action and further progress was made at the tenth Conference of the Parties to the CBD that adopted a global Strategic Plan for Biodiversity 2011–2020, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation, and a strategy to mobilise resources for global biodiversity.⁸² The Strategic Plan promotes the effective implementation of the CBD and the decisions of the Conference of the Parties. Importantly, it sets down a comprehensive list of targets (referred to as the "Aichi Biodiversity Targets") on the management of protected areas and the conservation of all ecosystems through the application of the precautionary approach and ecosystem approaches.⁸³ Target 6 requires that "by 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem-based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable

⁷⁹ COP 5 Decisions V/6 and VII/11.

⁸⁰ CBD Decision 5/6.

⁸¹ See "Operational guidance for application of the ecosystem approach," available online: <<http://www.cbd.int/ecosystem/operational.shtml>>.

⁸² Available online: <<http://www.cbd.int/cop/>>.

⁸³ Strategic Plan for Biodiversity 2011–2020 and the Aichi Biodiversity Targets, UNEP/CBD/COP/DEC/X/2, 29 October 2010.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits."⁸⁴ Much of the burden in achieving this target will be borne by regional fisheries management organisations and it is therefore appropriate that we say a little more about their current and future role in the management of marine ecosystems.

2.4 Developments within Regional Fisheries Management Organisations

International bodies responsible for the management of fisheries have undertaken much of the heavy-lifting in the scientific sense regarding the practical aspects of implementing an ecosystem approach.⁸⁵ This development had an inauspicious start when specific reference was made to the ecosystem approach in a number of international agreements and soft law instruments concerning fisheries management that were drafted during the 1990s, including the 1993 FAO Compliance Agreement and the 1995 FAO Code of Conduct for Responsible Fisheries.⁸⁶ The latter set down a broad range of principles and practices for the conservation and management of living aquatic resources and acknowledges the transboundary nature of aquatic ecosystems. Since then, the approach has obtained a solid legal basis in Articles 5 and 6 of the United Nations 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. This was followed by the adoption of the 2001 Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem, which called upon states to develop "guidelines for best practices with regard to introducing ecosystem considerations into fisheries management."⁸⁷

Further political impetus was added with the adoption of the Johannesburg Plan of Implementation at the WSSD and this requires the application of diverse approaches and tools, including the ecosystem approach, to fisheries management by 2010.⁸⁸ In response to these initiatives, an ecosystem approach has been applied by several regional fishery management organisations, including: the Commission for the Conservation of Antarctic Marine Living Resources; the Commission for the Conservation of Southern Bluefin Tuna; the International Commission for the Conservation of Atlantic Tuna, the Indian Ocean Tuna Commission, the Northwest Atlantic Fisheries Organization, and the North East Atlantic Fisheries Commission. The EU of course is a member of over a dozen regional fisheries management organisations and is thus obliged to comply with the obligations that arise under their constituent instruments, including any obligation to implement an ecosystem approach. Over the past decade, many commentators have drawn attention to the pressing need to improve the functioning of these organisations and to strengthen the framework for coordination and cooperation with other relevant organisations at global and regional levels.⁸⁹ Although integrated ecosystem-based approach to fisheries and oceans governance is now generally recognised as a core element in the work of regional

⁸⁴ Target 6 of the Aichi Biodiversity Targets.

⁸⁵ See, inter alia, S. Garcia, "The Ecosystem Approach to Fisheries: On the Way to Implementation," in M. Nordquist et al., n. 46 above, pp. 171–216.

⁸⁶ FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, in force 24 April 2003, 2221 *United Nations Treaty Series* 91. Code of Conduct for Responsible Fisheries, (Rome: FAO, 1995). Available online: <<http://www.fao.org/docrep/005/Y4470E/Y4470E00.HTM>>. Also see, FAO Fisheries Technical Paper. No. 424 (Rome: FAO, 2002).

⁸⁷ Available online: <ftp://ftp.fao.org/fi/DOCUMENT/reykjavik/y2198t00_dec.pdf>.

⁸⁸ Para. 30 of the Johannesburg Plan of Implementation.

⁸⁹ See inter alia: R. Rayfuse, "The Challenge of Sustainable High Seas Fisheries," in N. Schrijver and F. Weiss, eds., *International Law and Sustainable Development: Principles and Practice* (Leiden: Martinus Nijhoff Publishers, 2004), pp. 467–499; E.J. Molenaar, "Unregulated Deep-Sea Fisheries: A Need for a Multi-Level Approach," *International Journal of Marine and Coastal Law* 19 (2004): 223–246; by the same author, "New areas and gaps — How to address them," available online: <http://www.dfo-mpo.gc.ca/fgc-cgp/documents/molenaar_e.htm>.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), OCEAN YEARBOOK Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

intergovernmental fishery bodies,⁹⁰ much remains to be done at an operational level in putting the science into practice regarding the practical aspects of ecosystem-based management in particular. Moreover, there is little doubt that addressing this issue will also complicate what are already difficult management decisions for regional bodies. Nevertheless, if these organisations are to have any credibility on the world stage, the nexus between international fisheries law and environmental law has to be embraced and fisheries management decisions must henceforth focus on the impacts of fishing activity on the entire marine ecosystem and the broader marine environment.

2.5 Multilateral Policy Initiatives

Additional understanding on the legal status of an ecosystem approach as a concept to be applied in ocean and coastal management has come from United Nations General Assembly Resolutions on the topic and through the work of the various parties who participated at the fourth and seventh meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea (UNICPOLOS).⁹¹ The latter recommended that ecosystem approaches to oceans management should be focused on: "managing human activities in order to maintain and, where needed, restore ecosystem health to sustain goods and environmental services; providing social and economic benefits for food security; sustaining livelihoods in support of international development goals, including those contained in the United Nations Millennium Declaration; and conserve marine biodiversity."⁹²

The work undertaken by UNICPOLOS was followed by the adoption of UNGA Resolutions 61/222 and 62/215, which provide a political backdrop to the development of the concept in international law. The former recalls that states should be guided in the application of ecosystem approaches by a number of existing instruments including: the 1982 LOS Convention and its implementation Agreements, the 1992 Convention on Biological Diversity, and the objectives agreed at the 2002 World Summit on Sustainable Development. Moreover, it encourages "states to cooperate and coordinate their efforts and take, individually or jointly, as appropriate, all measures, in conformity with international law, including the Convention and other applicable instruments, to address impacts on marine ecosystems in areas within and beyond national jurisdiction, taking into account the integrity of the ecosystems concerned."⁹³ In Resolution 62/215, the UNGA reiterated *its concern* at the "adverse impacts on the marine environment and biodiversity, in particular on vulnerable marine ecosystems, including corals, of human activities, such as overutilization of living marine resources, the use of destructive practices, physical impacts by ships, the introduction of invasive alien species and marine pollution from all sources." Most importantly, in its annual resolution on oceans and the law of the sea, the UNGA has continuously endorsed the work of UNICPOLOS and the Working Group related to cooperation and coordination for integrated ocean management and ecosystem approaches in relation to marine biodiversity beyond areas of national jurisdiction.⁹⁴ At a more practical level, the Division for Ocean Affairs and the Law of the Sea (DOALOS) has published a useful guide on "Ecosystem Approaches and Oceans" based on the outcome and discussions at the seventh meeting of the UNICPOLOS.⁹⁵

The annual reports of the Secretary-General on oceans and the law of the sea provide updated information on relevant developments on ecosystem-based management in other international forums.

⁹⁰ See Report on the work of the Consultative Process at its sixth meeting, A/60/99, A/CONF.210/2010/1, A/CONF.210/2010/7.

⁹¹ Oceans and Law of the Sea, UNGA Resolution 61/222, 20 December 2006, para. 119. See also A/61/156 and A/58/95.

⁹² A/61/156 at 2.

⁹³ UNGA Resolution 61/222, para. 119.

⁹⁴ UNGA Resolutions: 61/222, para. 119; 62/215, para. 99; 63/111, para. 117; 64/71, para. 134; 65/37, para. 153; 65/37, para. 162.

⁹⁵ United Nations, Ecosystem Approaches and Oceans: Panel Presentations during the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea (Consultative Process), Seventh Meeting, United Nations Headquarters, New York, 12–16 June 2006.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

Suffice to note that there are two other multilateral policy initiatives that ought to be mentioned at this juncture. Firstly, considerable work has been undertaken by UNEP on the integration of the ecosystem approach into development and planning processes in a number of countries and regions under the Ecosystem Management Programme.⁹⁶ Secondly, the concept of ecosystem-based management has been advanced by the Global Environment Facility under the auspices of the World Bank, which provided financial support to 15 large marine ecosystem projects involving more than 100 countries worldwide.⁹⁷ These projects develop capacity and infrastructure for integrated management of marine resources and the environment based upon the ecosystem approach.⁹⁸

Finally, when considering multilateral policy initiatives, it would be remiss not to highlight the sterling endeavours of a number of environmental organisations that have been active in developing the ecosystem approach including the World Wildlife Fund (WWF), which has published a guide to ecosystem-based management for fisheries, and promoted a certification program for marine fisheries under the Marine Stewardship Council.

3. NORMATIVE BASIS IN REGIONAL LAW AND POLICY

3.1 A Regional Seas Paradigm

In Europe, applying the ecosystem approach is being undertaken in large measure by means of the mechanisms and institutions established under the regional seas agreements. This stems from the historical interest of a number of European states in taking initiatives to protect the environment. Indeed, the 1989 Hague Declaration on the Environment codified the "fundamental duty" of states to protect and preserve ecological systems.⁹⁹ More recently, as seen above, the adoption of the 2002 Bergen Declaration by the North Sea Ministers is an important milestone as they agreed to implement the ecosystem approach by identifying and taking action on impacts and pressures, which are critical to the protection and preservation of resources in the North Sea. This was followed by the first Joint Ministerial Meeting of the Helsinki and OSPAR Commissions and the adoption of the Bremen Statement, which set out detailed plans for implementing the approach under the framework of the HELCOM and OSPAR Conventions. Since then, considerable progress has been made within the framework of the regional seas conventions in implementing the ecosystem approach. The EU has been particularly active in this regard and one of the striking features of the MSFD is that the objective of good environmental status is to be achieved using the institutional structures established under a number of regional marine environmental agreements including: the Convention for the Protection of the Marine Environment of the North-east Atlantic; the Convention on the Protection of the Marine Environment of the Baltic Sea;¹⁰⁰ the Convention for the Marine Environment and the Coastal Region of the Mediterranean Sea and its Protocols;¹⁰¹ and the Convention on the Protection of the Black Sea Against Pollution.¹⁰²

This strategic approach to implementation makes good sense as these regional agreements provide a framework for pollution control, environmental monitoring, strengthening co-operation and the sharing of information across the various European maritime regions. The agreements provide a legal

⁹⁶ Further details available online: <<http://www.unep.org/ecosystemmanagement/>>.

⁹⁷ See n. 24 above.

⁹⁸ L. Juda, "Considerations in Developing a Functional Approach to the Governance of Large Marine Ecosystems," *Ocean Development and International Law* 30 (1999): 89–125.

⁹⁹ Available online: <http://www.nls.ac.in/CEERA/ceerafeb04/html/documents/lib_int_c1s2_hag_230300.htm>.

¹⁰⁰ Approved by Council Decision 94/157/EC, OJ L 73, 16 March 1994, p. 19.

¹⁰¹ Approved by Council Decision 77/585/EEC, OJ L 240, 19 September 1977, p. 1 and its amendments from 1995, approved by Council Decision 1999/802/EC, OJ L 322, 14 December 1999, p 32.

¹⁰² At the time of writing, the EU was not party to this agreement but enjoys observer status at the meetings of Contracting Parties. Bulgaria and Romania are, however, party to this Convention. The other parties are the Russian Federation, Georgia, Turkey and Ukraine. Entered into force 15 January 1994. 1764 *United Nations Treaty Series* 4.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

basis for decision-making structures that are mandated to set standards and capable of establishing procedures for the enforcement of common rules. From an EU law perspective, it should also be kept in mind that, with the exception of the Bucharest Convention, the EU is party to these regional agreements in its own right and they form an integral part of the European legal order. Moreover, the EU shares responsibility for good governance in the regional seas with third countries and therefore the ecosystem approach demands a collective response from all of the littoral states within the various regional sea basins where these agreements apply.

As a general comment, it should be noted that many of these regional marine environmental agreements were concluded initially to tackle problems associated with land-based and vessel source pollution of the marine environment, but have since been adjusted over time to reflect new normative concepts such as ecosystem-based management. As a consequence, they are cogent evidence of the evolutionary nature of the law of the sea since the codification of the law by the 1982 Convention and its associated Agreements.¹⁰³ That said, it should also be mentioned that the regional approach suffers from a number of weaknesses. One particular weakness stems from the fact that few, if any, of the regional bodies have a mandate to address problems affecting the entire ecosystem or the inter-relationship between the component species that comprise an ecosystem.¹⁰⁴ The remit of the majority of the regional seas commissions is restricted to the taking of non-binding measures that require transposition and implementation by the subsequent actions of the Contracting Parties. Furthermore, similar to the old adage of a convoy moving at the speed of the slowest ship, progress at a regional level will often depend on the political will and the resources that are available to all of the countries within a region, including the countries that do not have the wherewithal to undertake the sophisticated management to give effect to ecosystem-based marine management. In this context, it should also be kept in mind that the landscape of regional law is littered with examples of states taking unilateral action in response to particular marine environmental incidents outside the regional framework.¹⁰⁵

Despite these shortcomings, it may be appropriate to provide a brief update on the normative basis of the ecosystem approach in the marine environmental regional agreements that are specifically mentioned in the MSFD, and to highlight some of the progress that has been made in implementing the approach to date in the North-East Atlantic, the Baltic Sea, the Mediterranean Sea, and the Black Sea. Each of these regions will now be examined in turn.

3.2 Ecosystem Management and the North-East Atlantic

The 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic (hereinafter referred to as the OSPAR Convention) places an ecosystem approach centre stage by adopting a holistic and sophisticated scheme for its implementation on a regional basis.¹⁰⁶ More specifically, it provides a unified framework for the regulation of all human activities, other than fisheries and the regulation of pollution from shipping, which have an adverse effect on marine ecosystems and biodiversity in the North-East Atlantic.¹⁰⁷ Importantly, the geographical scope of the OSPAR Convention

¹⁰³ See Birnie, et al., n. 69 above, p. 394.

¹⁰⁴ On this point see Belsky, n. 52 above, p. 742.

¹⁰⁵ See, for example, the initial response of Spain, Portugal and France to the loss of the *Prestige* and the subsequent pollution of the marine environment discussed by V. Frank "Consequences of the Prestige Sinking for European and International Law," *International Journal of Marine and Coastal Law* 20 (2005): 1–64.

¹⁰⁶ The OSPAR Convention was signed in Paris in 22 September 1992, in force 25 March 1998, and replaces the Oslo (1972) and Paris (1974) Conventions, 2354 *United Nations Treaty Series* 67, 32 *International Legal Materials* 1069 (1993). Contracting Parties are: Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom. Available online: <www.ospar.com>.

¹⁰⁷ For commentaries on the Convention, see, inter alia: R. Long, n. 24 above, pp. 600–602; E. Hey, T. Ijlstra, A. Nollkaemper, "The 1992 Paris Convention for the Protection of the Marine Environment of the North-East Atlantic: A Critical Analysis," *International Journal of Marine and Coastal Law* 8 (1993): 1; L. de La Fayette, "The OSPAR

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), OCEAN YEARBOOK Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

is extensive as it applies to internal waters, the territorial sea, as well as areas both within and beyond national jurisdiction that are within the OSPAR Maritime Area including a significant part of the Arctic Ocean.¹⁰⁸ The Maritime Area is shown in Figure 2.

[INSERT FIGURE 2]

As can be seen from Figure 2, the maritime area covered by the OSPAR Convention includes 5 regions of the North-East Atlantic: I) Arctic Waters; II) the Greater North Sea; III) the Celtic Seas; IV) the Bay of Biscay and Iberian Coast; and V) the Wider Atlantic. The attainment of environmental protection and conservation objectives in this broad expanse of maritime space is achieved by means of a sophisticated scheme set down in the Annexes appended to the Convention dealing with pollution from land-based sources (Annex I), by dumping or incineration (Annex II), pollution from offshore and other sources (Annex III), the assessment of the quality of the marine environment (Annex IV), as well as the protection and conservation of the ecosystems and biological diversity of the maritime area (Annex V).¹⁰⁹ The OSPAR Convention and its associated strategies are implemented by the adoption of decisions, which are significant in so far as they are legally binding on the Contracting Parties, or by recommendations and other agreements.¹¹⁰

The Convention requires Contracting Parties to use the precautionary principle with a view to achieving "sustainable use of ecosystem goods and services and to safeguard ecosystem integrity."¹¹¹ For practical purposes, as seen in the first part of this article, the OSPAR Commission relies upon an expansive working definition of the ecosystem approach and has undertaken elaborate scientific work in developing the methodology and testing the application of the concept in the greater North Sea area.¹¹² This political commitment towards ecosystem-based management may be traced back to the adoption of Annex V of the Convention and its associated Appendix 3 by the Ministerial Meeting of the OSPAR Commission at Sintra (Portugal) in 1998.¹¹³ In particular, Annex V requires Contracting Parties to adopt "the necessary measures to protect and conserve the ecosystems and the biological diversity of the maritime area, and to restore, where practicable, maritime areas which have been adversely affected."¹¹⁴ In 2003, an important milestone was achieved when the Helsinki and OSPAR Commissions at their joint-meeting in Bremen agreed to adopt a concept and methodology for determining the full range of measures that are necessary to implement the ecosystem approach to the management of human activities in the marine environment by 2010.¹¹⁵ As seen above, OSPAR has developed a system of EcoQO for the Greater North Sea area that serves as a valuable model for use in other seas or ocean regions.

Convention Comes into Force: Continuity and Progress," *International Journal of Marine and Coastal Law* 14 (1999): 247; and W. Heintschel v. Heinegg, "The Development of Environmental Standards for the North-East Atlantic, including the North Sea," in *Marine Issues*, ed. E. Mann Borgese and R. Wolfrum (The Hague: Kluwer Law International, 2002), p. 135–153; R. Lagoni, "Monitoring Compliance and Enforcement of Compliance Through the OSPAR Commission," in *Marine Issues*, ed. E. Mann Borgese and R. Wolfrum (The Hague: Kluwer Law International, 2002), p. 155–163.

¹⁰⁸ Art. 1 of OSPAR Convention defines the maritime area.

¹⁰⁹ Annexes I to IV of the OSPAR Convention.

¹¹⁰ A full list of the decisions, recommendations and other agreements is available online: <http://www.ospar.org/html_documents/ospar/html/ospar_list_of DECRECS.pdf>.

¹¹¹ Art. 2(2)(a) of the OSPAR Convention and Art. 3(1)(b)(ii) of Annex V. Also, Para. 2, Preamble, Strategy of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic 2010–2020.

¹¹² See Statement on the Ecosystem Approach to the Management of Human Activities (Joint Meeting of the Helsinki and OSPAR Commissions 2003, Record of the Meeting, Annex 5), para. 5.

¹¹³ Ministerial Meeting of the OSPAR Commission, Sintra, 22–23 July 1998. Annex V into force 30 August 2000 and approved by Council Decision 98/249/EC, OJ L 118/44, 19.5.2000.

¹¹⁴ Art. 2, Annex 5 of the OSPAR Convention.

¹¹⁵ Statement on the Ecosystem Approach to the Management of Human Activities, First Joint Ministerial meeting of the Helsinki and OSPAR Commissions (JMM) Bremen, 25–26 June 2003. See also Agenda item 6, "Towards an

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), OCEAN YEARBOOK Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

The principal mechanisms for the implementation of the ecosystem approach are OSPAR's six thematic strategies that address, inter alia: biodiversity, eutrophication, hazardous substances, offshore industry, radioactive substances, and assessment/monitoring.¹¹⁶ Much of substantive work in articulating the scientific and management aspects of the ecosystem approach is undertaken by the OSPAR Biodiversity Committee and their work has received the political imprimatur of Contracting Parties with a view to establishing an appropriate strategic framework for its implementation. Most notably, Contracting Parties reaffirmed their environmental protection commitments in 2010 and adopted the North-East Atlantic Environment Strategy (hereinafter referred to as "the Strategy") to direct the future work of the OSPAR Commission.¹¹⁷

Importantly, Part I of the Strategy sets out the strategic objectives as well as the OSPAR Commission's concept for implementing the ecosystem approach and notes that its own role as an institution is to harmonise policies and strategies, including the drawing up of programmes and measures for the protection of the marine environment. The strategic objectives address, inter alia: the loss of biodiversity in the OSPAR Maritime Area; combating eutrophication; reducing discharges, emissions and losses of hazardous substances; measures dealing with the adverse effects of offshore oil and gas activities; preventing pollution from ionising radiation; the integrated management of human activities in the marine environment with due regard to the impacts of climate change and ocean acidification; as well as meeting the requirements of the MSFD.

For each of the strategic objectives, specific operational objectives are described in Part II of the Strategy. This work is undertaken "within the wider political and legal frameworks" that apply to marine environmental protection in the OSPAR Maritime Area.¹¹⁸ Crucially, in this regard, EU Member States have agreed that the OSPAR Commission should be the main platform through which they coordinate their work to implement the objectives of the MSFD in the North-East Atlantic. According to the Strategy, this is to be achieved by utilising the OSPAR cooperation structures:

... in order to facilitate the coordinated implementation of the Marine Strategy Framework Directive, thereby ensuring, where practical and appropriate, inter alia (i) that assessment methodologies are consistent across the North-East Atlantic and its five Regions, of which four are identical with sub-regions of the MSFD; (ii) that environmental targets are mutually compatible; (iii) that monitoring methods are consistent so as to facilitate comparability of monitoring results, and by doing so (iv) that relevant transboundary impacts and transboundary features are taken into account.¹¹⁹

Elsewhere, the Strategy emphasises that the implementation of the ecosystem approach will take place "through cooperation with other relevant competent authorities and collaboration with relevant scientific institutes and organisations."¹²⁰ Thus, for example, the management of fisheries and shipping under the OSPAR Convention are addressed by means of the appropriate international and regional

ecosystem approach to the management of human activities," available online: <http://www.ospar.org/documents/02-03/JMMC03/SR-E/JMM%20ANNEX05_Ecosystem%20Approach%20Statement.doc>.

¹¹⁶ Namely the Biodiversity and Ecosystem Strategy; the Eutrophication Strategy; the Hazardous Substances Strategy; the Offshore Industry Strategy; the Radioactive Substances Strategy; and a Strategy for the Joint Assessment and Monitoring Programme. Strategies of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic, Chapter I (OSPAR Agreement 2003/21; Summary Record OSPAR 2003, OSPAR 03/17/1-E, Annex 31).

¹¹⁷ Strategy of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic 2010–2020. Available online: <http://www.ospar.org/documents/dbase/decrecs/agreements/10-03e_NEA%20Environment%20Strategy.doc#biodiversity>.

¹¹⁸ *Id.*, p. 2.

¹¹⁹ *Id.*, p. 3.

¹²⁰ *Id.*, p. 5.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

institutional structures and procedures dealing specifically with these questions, such as the International Maritime Organization in relation to shipping, and regional fisheries management bodies, such as the European Commission, NEAFC, ICCAT and NASCO in relation to fisheries management issues.¹²¹ The OSPAR Commission has concluded a number of memoranda of understanding with international organisations to facilitate this cooperation.¹²²

The complexity of the decision-making structures and policy process for ecosystem-based management at a regional level is further compounded by the fact that 17 intergovernmental organisations and 33 non-governmental organisations have observer status at OSPAR.¹²³ Also, it should not be forgotten that in some instances ecosystem-based management might require OSPAR Contracting Parties to work with coastal states outside the OSPAR Maritime Area or states whose vessels or nationals are engaged in activities in the OSPAR Maritime Area. Indeed, special provision is made for such states to accede to the Convention and if necessary the definition of the maritime area can be amended by a decision of the OSPAR Commission adopted by unanimous vote of the Contracting Parties.¹²⁴ In relation to the management of fisheries in waters under the sovereignty and jurisdiction of non-EU countries, this may entail utilising national law in third countries such as Norway or Iceland. More importantly, in relation to fisheries in EU waters it entails the European institutions taking measures under the CFP following the procedures set down by the European Treaties.¹²⁵ In other words, there is no scope for the adoption of fisheries management measures by OSPAR Contracting Parties that are applicable to EU Member State fishing vessels outside the framework of EU law.

Despite the complexity of the institutional structures, the Strategy clearly foresees that implementing the ecosystem approach is to be undertaken by means of an iterative process that involves the continuous monitoring and assessment of the status of the marine environment, as well as adaptive management of human activities based upon the precautionary principle. The OSPAR Commission is committed under the Strategy to a course of action that merits verbatim mention here as it gives an incredibly succinct overview of the range of measures that needs to be taken in implementing ecosystem-based marine management in practice. This work includes:

- (a) setting and/or coordinate environmental objectives and targets to conserve the ecosystems and the biological diversity of the OSPAR Maritime Area and protect them from the adverse effects of human activities;
- (b) developing an improved and comprehensive set of indicators on main pressures and ecosystem components, building on the qualitative descriptors for good environmental status of the EU Marine Strategy Framework Directive as well as, where relevant, the Ecological Quality Objectives for the North Sea, in order to enable regular regional assessments of ecosystem functioning and cumulative impacts of human activities on ecosystem health;
- (c) developing monitoring programmes and assessment methodologies, which integrate existing thematic assessment frameworks with new tools for assessing ecosystem health;
- (d) developing and encouraging the application of, regionally coordinated tools for the

¹²¹ See Penultimate Recital of the Preamble and Art. 4 of the OSPAR Convention. However, in relation to the threat posed to the marine environment by invasive species, the Helsinki and OSPAR Commissions have adopted voluntary guidelines for the shipping industry. See The General Guidance on the Voluntary Interim application of the D1 Ballast Water Exchange Standard agreed by all 20 OSPAR Contracting Parties, and the European Community, and which entered into force on 1 April 2008. A copy of the cooperation agreement is available online: <http://www.ospar.org/html_documents/ospar/html/imo_oneils_letter_30_nov_1999_and_attachments_from_imo.pdf>.

¹²² OSPAR has to date concluded memoranda of understanding with the International Maritime Organization, the North-East Atlantic Fisheries Commission, the International Council for the Exploration of the Sea, the UN Economic Commission for Europe, the International Seabed Authority, the International Atomic Energy Agency and the European Environment Agency.

¹²³ A list of the organisations is available online: <<http://www.ospar.org/content/content.asp?menu=0016>>.

¹²⁴ Art. 27 of the OSPAR Convention.

¹²⁵ Art. 4, Appendix V of the OSPAR Convention.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

implementation of integrated management of human activities and ecosystems. This includes tools such as marine spatial planning, integrated coastal zone management and cumulative impact assessment; (e) developing methodologies, including social and economic analysis of the use of the OSPAR Maritime Area, to support evaluations whether the North-East Atlantic is used sustainably; (f) strengthening the OSPAR network of marine protected areas recognising their contribution to the maintenance of ecosystem integrity and resilience against human activities and impacts of climate change and ocean acidification; (g) ensuring adaptive management through improved management mechanisms, including a mechanism to audit the different steps of the management cycle within and across OSPAR's thematic strategies; (h) ensuring working structures and procedures which support integration of knowledge and activities across OSPAR's thematic strategies; (i) continue to invite its observer organisations to take active part in all its work strands, and strengthen stakeholder involvement where and when deemed necessary. The Contracting Parties will ensure that they involve relevant stakeholders in the development of their national approaches to sustainable uses of the seas.¹²⁶

In general, it appears from this list of actions that the OSPAR scheme for implementing the ecosystem approach is one of the most highly developed in international environmental law. One should not however overstate the position regarding ecosystem-based management in the North-East Atlantic as this is somewhat reminiscent of the Curate's egg, in so far as it is good and bad in places. On the positive side, the 2010 Quality Status Report records that inputs into the marine environment of nutrients, contaminants, radioactive substances, as well as pollution from the hydrocarbon industry have been reduced since the publication of the previous assessment in 2000.¹²⁷ Similarly, considerable progress has been made in designating a network of marine protected areas covering about 433,000 km², which represents 3.1 percent of the total OSPAR Maritime Area.¹²⁸ This includes the designation of six MPAs in areas beyond national jurisdiction covering a total area of 285,000 km², as well as the adoption of recommendations on their management closures to bottom fisheries by the North East Atlantic Fisheries Commission until 31 December 2015. In relation to the scientific work undertaken by OSPAR, perhaps what is most impressive to date, are the extensive lists of threatened and/or declining species and habitats that have been adopted under Annex 5 of the Convention. This includes 16 habitats and 42 species of which nine are seabed species.¹²⁹ This provides a stable plinth for achieving the desired conservation status of threatened habitats and species in the North-East Atlantic. On the negative side, it is also clearly apparent from the 2010 Quality Status Report that many problems remain regarding the impact of fishing activity on marine ecosystems and the emerging impacts of climate change and ocean acidification on the wider marine environment. The evidence presented in the report strongly suggests that a reduction in the decline of biodiversity is still to be achieved and that endangered habitats and species are still being damaged by human activities at an unacceptable rate.¹³⁰

What is particularly noteworthy for the purpose of the discussion in this article is that the 2010 Quality Status Report underscores the importance of the ecosystem-based approach as "the way forward" and highlights the importance of the "baseline" status of the information provided therein against which the effectiveness of future management and conservation efforts can be measured for the entire OSPAR Maritime Area.¹³¹ In Bergen 2010, the OSPAR Minister and the European Commission took an important political step by committing themselves to develop a broad range of tools that support the implementation of the ecosystem approach such as integrated assessments, socio-economic analysis, marine spatial

¹²⁶ See n. 117 above, p. 5–6.

¹²⁷ OSPAR Commission, 2010 *Quality Status Report* (London: OSPAR Commission, 2010), pp.

¹²⁸ See E. Molenaar and A. Oude Elferink, "Marine protected areas in areas beyond national jurisdiction: The pioneering efforts under the OSPAR Convention," *Utrecht Law Review* 5(1) (2009): 5–20.

¹²⁹ See Table 10.1 of the 2010 Quality Status Report.

¹³⁰ See Chapter 9 of the 2010 Quality Status Report.

¹³¹ 2010 Quality Status Report at 9.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

planning, and adopted the Joint Assessment and Monitoring Programme (JAMP) for the period 2010–2014.¹³² Again, however, it needs to be emphasised that this is very much work in progress and there is still considerable scope for a more stringent application of existing rules by OSPAR Contracting Parties, independent monitoring and surveillance as well as the adoption of specific management measures that implement the ecosystem approach at an operational level within the OSPAR Maritime Area. In the long-term, the test for the practical implementation of the ecosystem approach within the OSPAR Maritime Area will be how well the new management arrangements work in practice, including those for managing activities that are outside OSPAR competence such as the management of fisheries under the CFP and international shipping by the IMO.

3.3 Ecosystem Management and the Baltic Sea

One of the principal objectives of the Convention on the Protection of the Marine Environment of the Baltic Sea is to restore and safeguard the ecological balance of the Baltic Sea.¹³³ The Convention has extensive geographical scope and applies to the whole of the Baltic Sea Area, including inland waters as well as the water of the sea itself and the seabed, and applies from the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57 44.43'N" (see Figure 3).¹³⁴ In line with general scheme of protection afforded by the Convention, additional measures may be adopted in the whole catchment area of the Baltic Sea to reduce land-based pollution.¹³⁵ One distinctive feature of HELCOM that is worth mentioning here is that all of the States Parties, apart from the Russian Federation, are Member States of the EU and EU law is thus the obvious means for the regulatory delivery of the ecosystem approach in the Baltic Sea and the wider catchment area.¹³⁶

[INSERT FIGURE 3]

In many respects, the Convention is multifaceted and addresses pollution and living marine resources with a view to conserving habitats, biological diversity and ecological processes. In particular, the Convention recognises the importance of ensuring the sustainable use of natural resources by taking appropriate management measures within the Baltic Sea.¹³⁷ To this end, States Parties to the Convention have an impressive history of innovation regarding marine environmental protection and were one of the first regional seas groups to embrace the precautionary principle and the polluter-pays principle. A similar pragmatic attitude is evident in the way they have set about implementing the ecosystem approach, which may be traced back to a number of milestone political decisions including one taken at the joint meeting of the Helsinki Commission (referred to as HELCOM) and OSPAR Commission in 2003 that agreed to develop a methodology for the implementation of the approach with a view to maintaining and restoring where practicable "ecosystem health, integrity and services."¹³⁸ As the Executive Secretary of HELCOM has pointed out, the starting point for the application of ecosystem approach is "the current health of the Baltic Sea and the changes that the Baltic coastal countries would like to see in the future."¹³⁹

In 2006, it was agreed at the first stakeholder's conference to develop a strategic plan that would aim to keep all of the ecological components of the Baltic Sea in balance and at the same time deliver sustainable use of marine resources. Since then, HELCOM parties and the EU have built upon their long-

¹³² See Statement from the Ministerial Meeting of the OSPAR Commission, Bergen: 23–24 September 2010.

¹³³ 1992, 2099 *United Nations Treaty Series* 197.

¹³⁴ Art. 1 of the Helsinki Convention.

¹³⁵ Art. 6 of the Helsinki Convention.

¹³⁶ Denmark, Sweden, Finland, Estonia, Latvia, Lithuania, Poland and Germany.

¹³⁷ Art. 15 of the Helsinki Convention.

¹³⁸ Statement on the Ecosystem Approach to the Management of Human Activities, First Joint Ministerial meeting of the Helsinki and OSPAR Commissions (JMM) Bremen, 25–26 June 2003.

¹³⁹ See A.C. Brusendorff, "Case Study: The Success of Regional Solutions in the Baltic," *Sustainable Development Law & Policy* (Fall 2006): 64–66.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

standing tradition of regional cooperation and are providing considerable leadership at an international level in implementing the ecosystem approach by means of the Baltic Sea Action Plan (BSAP).¹⁴⁰ This sophisticated blueprint aims, inter alia: to reduce the level of nutrients close to natural levels; bring an end to excessive algal blooms; ensure the natural distribution and occurrence of plants and animals; and restore oxygen levels to appropriate levels in the aquatic environment.¹⁴¹ Under the BSAP, initial indicators, targets and deadlines have been agreed by HELCOM parties with a view to making the ecological objectives operational and in order to achieve good ecological status of the Baltic marine environment by 2021.¹⁴² In parallel, several other measures have been taken by the HELCOM with a view to protecting biodiversity and nature conservation, including the establishment of a network of protected areas (Baltic Sea Protected Area) and the protection of specific species such as seals in the Baltic Sea.¹⁴³

At this point in time, it may be premature to come to any conclusions regarding the implementation of the ecosystem approach in the Baltic Sea. In the short period since its adoption, however, there is little doubt that the BSAP has improved the general environmental status of the Baltic Sea and contributed to reducing eutrophication in particular.¹⁴⁴ That said, it would be wrong to be overtly upbeat about progress to date in view of the fact that the results of the integrated thematic assessment on biodiversity and nature conservation in the Baltic Sea published in 2009 notes that there are a number of cases of extinction or disappearance of species in the Baltic Sea in recent decades including the Atlantic sturgeon and the bluefin tuna.¹⁴⁵ Moreover, according to this report a total of 59 species and 16 biotopes in the Baltic Sea are "threatened and/or declining in such a way that their future sustainability depends on protective measures."¹⁴⁶ The report concluded "the management of human activities in the Baltic Sea area is still far from satisfactory and does not put the principles of an ecosystem approach to the management of human activities into practice."¹⁴⁷

Since then, the political response to these findings has been swift and it was agreed at the HELCOM ministerial meeting in 2010 to further develop the role of HELCOM as the main driving force behind the implementation of the ecosystem approach to the management of human activities in the Baltic Sea marine area.¹⁴⁸ Furthermore, it was also agreed at the same meeting that maritime spatial planning should be undertaken in the Baltic Sea using the ecosystem approach as an "overarching principle."¹⁴⁹ The BSAP will be evaluated by a HELCOM ministerial meeting in 2013 with a view to assessing whether it has led to improvements in the overall environmental status of the Baltic Sea area.

In any independent analysis of the progress made in implementing the ecosystem approach in the Baltic Sea, a major question mark hangs over the hortatory nature of the political commitments in so far as the remit of HELCOM is limited to adopting recommendations on the protection of the marine environment on the basis of unanimity on the part of Contracting Parties, which the latter must then

¹⁴⁰ Baltic Sea Action Plan adopted by the HELCOM Extraordinary Ministerial Meeting on 15 November 2007 in Krakow, Poland. Available online: <http://www.helcom.fi/BSAP/ActionPlan/en_GB/ActionPlan/>.

¹⁴¹ See inter alia, Österblom et al., n. 24 above.

¹⁴² Available online: <http://www.helcom.fi/BSAP/ActionPlan/otherDocs/en_GB/indicators/>. Also, H. Backer and J.M. Leppänen, "HELCOM ecological objectives for an ecosystem approach: the process of defining good ecological status of the Baltic Sea," *Aquatic Conservation: Freshwater and Marine Ecosystems* 18 (2008): 321–334.

¹⁴³ See HELCOM Recommendation 15/5 and 27–28/2.

¹⁴⁴ See Fifth Stakeholder Conference on the HELCOM Baltic Sea Action Plan, Helsinki, Finland. 3 March 2010. Available online: <http://www.helcom.fi/BSAP/5thConf2010/en_GB/Fifth_Stakeholder_Conference/>.

¹⁴⁵ HELCOM, 2009 Biodiversity in the Baltic Sea – An integrated thematic assessment on biodiversity and nature conservation in the Baltic Sea. Baltic Sea Environment Proceedings, No. 116B, at 11. Available online: <<http://www.helcom.fi/stc/files/Publications/Proceedings/bsep116B.pdf>>.

¹⁴⁶ *Id.*

¹⁴⁷ *Id.*, p. 156.

¹⁴⁸ HELCOM Ministerial Declaration on the implementation of the HELCOM Baltic Sea Action Plan, 20 May 2010, Moscow.

¹⁴⁹ *Id.*

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

implement by means of their national legislation and environmental management programmes.¹⁵⁰ As mentioned above, a similar weakness exists in some of the other European regional sea agreements where the remit of regional organisations is restricted to the taking of non-binding measures that lack the force of law. Importantly, however, this shortcoming is mitigated by the high number of EU Member States in the region which makes HELCOM the obvious coordinating platform for regional action to implement the European MSFD. As a consequence, the EU Strategy for the Baltic Sea Region reflects many of the objectives of the BSAP.¹⁵¹ This offers Baltic States a high degree of flexibility in accommodating the ecological, economic, geopolitical needs of the region and fits well with their history of adopting common standards. What is more, it allows us to conclude that HELCOM have embraced the ecosystem approach and Baltic Sea states are well on their way to realising shared objectives for its implementation. We will return to this issue towards the end of the article.¹⁵²

3.4 Ecosystem Management and the Mediterranean Sea

In contrast to the Baltic Sea, implementing the ecosystem approach in the Mediterranean Sea presents a unique set of problems due to the complexity of geopolitical environment and the diversity of maritime interests of the 22 littoral states, the majority of who are not EU Member States (see Figure 4).¹⁵³ Moreover, until relatively recently, few Mediterranean states asserted their full maritime jurisdiction by establishing exclusive economic zones (EEZs) in accordance with the scheme set down by the 1982 Convention.¹⁵⁴ Indeed, one Member State, Greece, has not claimed any maritime zones beyond its territorial sea. The various environmental and ecological protection zones claimed by other EU Member States such as France, Italy and Malta compound this situation. As a general rule, disparate state practice regarding maritime jurisdiction and the establishment of EEZs in particular, does not facilitate the uniform application of new normative tools for marine resource management on a cross-boundary basis such as the ecosystem approach.

[INSERT FIGURE 4]

That said, the principal regional marine environmental agreement, the Convention for the Marine Environment and the Coastal Region of the Mediterranean Sea (the Barcelona Convention) came into force in 1978.¹⁵⁵ The Convention was revised in 1995 and now operates as a framework marine environmental treaty that is supplemented by a series of protocols addressing matters such as: protected areas and biodiversity, dumping, emergency cooperation in combating pollution, pollution from land-based sources, the trans-boundary movement of hazardous waste, and integrated coastal zone management. The EU is party to the Convention and to five of its associated Protocols.¹⁵⁶ Amongst other

¹⁵⁰ See M. Fitzmaurice, *International Legal Problems of the Environmental Protection of the Baltic Sea* (Boston, MA: Graham and Trotman, 1992) at 72–82.

¹⁵¹ COM(2009) 248 final, 10.6.2009.

¹⁵² See the closing points made in the conclusions *infra*.

¹⁵³ There are seven EU Member States bordering the Mediterranean Sea, namely: Spain, Italy, France, Slovenia, Greece, Cyprus and Malta. Monaco has a special status under the European Treaties. Non-EU States are Morocco, Algeria, Tunisia, Libya, Egypt, Israel, Lebanon, Syria, Turkey, Albania, Macedonia, Bosnia and Herzegovina, and Croatia.

¹⁵⁴ See R. Long, "Stepping over Maritime Boundaries and Applying New Normative Tools in European Environmental Law," in ed., M. Nordquist, J. Norton Moore, R. Beckman and H. Djalal, *Maritime Border Diplomacy* (Leiden/Boston: Brill Academic Publishers, 2012)(forthcoming), p. 30.

¹⁵⁵ Signed 16 February 1976, in force 12 February 1978.

¹⁵⁶ Council Decision 77/585/EEC of 25 July 1977 concluding the Convention for the protection of the Mediterranean Sea against pollution and the Protocol for the prevention of the pollution of the Mediterranean Sea by dumping from ships and aircraft; Council Decision 81/420/EEC of 19 May 1981 on the conclusion of the Protocol concerning cooperation in combating pollution of the Mediterranean Sea by oil and other harmful substances in cases of

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

matters, the Convention requires Contracting Parties to take all appropriate measures to protect and preserve biological diversity, rare or fragile ecosystems, as well as species of wild fauna and flora which are rare, depleted, threatened or endangered and their habitats, in the area to which this Convention applies.¹⁵⁷ Crucially, the EU is party to the principal mechanism for delivering the ecosystem approach in the region which is the Protocol concerning specially protected areas and biological diversity in the Mediterranean Sea.¹⁵⁸ This instrument has extensive geographical coverage and extends not only to the same areas covered by the parent Barcelona Convention, but also applies to internal waters and terrestrial coastal areas designated by each Contracting Parties including wetlands.¹⁵⁹ Moreover, it also provides a legal basis for establishment of specially protected areas of Mediterranean importance in maritime zones partly or wholly on the high seas.¹⁶⁰

The Protocol clearly has a transboundary focus in so far as Contracting Parties are obliged to cooperate directly with each other or by means of the institutional mechanisms established by international organisations for the conservation and sustainable use of biodiversity. There are a number of significant exemptions to the scheme of protection afforded by the Protocol that are applicable to traditional subsistence and cultural activities.¹⁶¹ However, these exemptions are precluded from compromising "the preservation of the protected ecosystems," or indeed the "biological processes making up these ecosystems."¹⁶² Furthermore, the exemptions must not cause the "extinction or a substantial fall in numbers of any species or animal or plant populations included within the protected ecosystems."¹⁶³ The EU is committed to implementing the provisions laid down in the annexes of the Protocol by means of the Nature 2000 network of protected areas and by means of fisheries technical conservation measures under the CFP.¹⁶⁴ The Barcelona Convention and its Protocols are the legal basis of the Mediterranean Action Plan that is the first Regional Seas Programme developed under the United Nations Environment Programme.¹⁶⁵ This programme takes into account holistic and ecosystem approaches for the attainment of its objective, which includes improving knowledge of marine and coastal biodiversity, as well as enhancing the protection of endangered species and habitats.¹⁶⁶

emergency; Council Decision 83/101/EEC of 28 February 1983 concluding the Protocol for the protection of the Mediterranean Sea against pollution from land-based sources; Council Decision 84/132/EEC of 1 March 1984 on the conclusion of the Protocol concerning Mediterranean specially protected areas; Council Decision 1999/800/EC of 22 October 1999 on concluding the Protocol concerning specially protected areas and biological diversity in the Mediterranean, and on accepting the annexes to that Protocol (Barcelona Convention); Council Decision 1999/801/EC of 22 October 1999 on accepting the amendments to the Protocol for the protection of the Mediterranean Sea against pollution from land-based sources (Barcelona Convention). Council Decision 1999/802/EC of 22 October 1999 on the acceptance of amendments to the Convention for the Protection of the Mediterranean Sea against Pollution and to the Protocol for the Prevention of Pollution by Dumping from Ships and Aircraft (Barcelona Convention); Council Decision 2004/575/EC of 29 April 2004 on the conclusion, on behalf of the European Community, of the Protocol to the Barcelona Convention for the Protection of the Mediterranean Sea against Pollution, concerning cooperation in preventing pollution from ships and, in cases of emergency, combating pollution of the Mediterranean Sea.

¹⁵⁷ Art. 10 of the Barcelona Convention.

¹⁵⁸ The other parties are Albania, Croatia, Cyprus, Egypt, France, Greece, Italy, Malta, Monaco, Slovenia, Spain, Syria, Tunisia, and Turkey. Entered into force on 12 December 1999.

¹⁵⁹ Art. 2 of Protocol concerning specially protected areas and biological diversity in the Mediterranean.

¹⁶⁰ *Id.*, Art. 9(1).

¹⁶¹ *Id.*, Art. 18(1).

¹⁶² *Id.*, Art. 18(1)(a).

¹⁶³ *Id.*, Art. 18(1)(b).

¹⁶⁴ Art. 4 of Council Regulation No. 1967/2006 21 December 2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea, amending Regulation (EEC) No. 2847/93 and repealing Regulation (EC) No. 1626/94, OJ L 409, 30.12.2006, pp. 11–85.

¹⁶⁵ UNEP-MAP-RAC/SPA: Strategic Action Programme for the Conservation of Biological Diversity (SAP BIO) in the Mediterranean Region, Tunis, 2003.

¹⁶⁶ *Id.*, p. 6.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

Implementation of the ecosystem approach is a relatively new development at a regional level in the Mediterranean Sea and it received political support from Contracting Parties to the Barcelona Convention at their meeting in Almeria in 2008. Subsequently, the European Commission funded a project on the implementation of the ecosystem approach in line with the objectives of the Barcelona Convention.¹⁶⁷ The first part of the project is to assess scientific information and data gaps, and to initiate a socio-economic analysis of the application of the ecosystem approach in the Mediterranean region. At the time of writing, it is anticipated that a set of ecological objectives and operational objectives will be agreed within the framework of the project.

In parallel with the work that has been undertaken within the framework of the Barcelona Convention, the EU has been active in the work of the General Fisheries Commission for the Mediterranean (GFCM) in minimising the impact of fisheries on marine ecosystems in the Mediterranean Sea.¹⁶⁸ In 2009, the Commission brought forward a draft regulation that transposed GFCM recommendations via a single legislative act into EU law.¹⁶⁹ These recommendations apply to the entire GFCM agreement area including the Mediterranean Sea, the Black Sea and connecting waters. They provide for the protection of the deep-sea sensitive habitats and ensure that these areas are protected from the impacts of other activities, apart from commercial sea-fisheries, which jeopardise the conservation of habitats.

In general, the application of the ecosystem approach in the Mediterranean Sea presents a broader range of challenges than it does in the North-East Atlantic of the Baltic Sea. From a regional seas perspective, it appears that the OSPAR Commission and HELCOM have made considerably more progress in the practical aspects of implementing the approach. Furthermore, the EU has been slow to apply the full remit of the CFP to the Mediterranean Sea until relatively recently.¹⁷⁰ In recent years, however, there has been a major change in regulatory aspects of this policy with the adoption of management plans, technical conservation measures, and specific measures aimed at the protection of species and habitats, as well as the establishment of a Regional Advisory Council with specific responsibility for providing stakeholder advice on draft European regulatory measures.¹⁷¹ These measures will all contribute to reducing the impact of fishing on the marine environment of the Mediterranean Sea.

In order to successfully implement the ecosystem approach in the Mediterranean Sea, an important report undertaken under the auspices of UNEP on the implementation of the Mediterranean Action Plan recommends that it is necessary to improve current knowledge on the status of the marine environment, enhance the technical and scientific capacities to undertake taxonomy, foster greater international cooperation, and set national priorities and policies regarding research.¹⁷² Significantly, the

¹⁶⁷ Available online: <<http://www.rac-spa.org/node/53>>.

¹⁶⁸ The General Fisheries Commission for the Mediterranean (GFCM) was set up by international agreement in 1949. The GFCM Agreement was approved by Council by Decision 98/416/EC of 16 June 1998 on the accession of the European Community to GFCM, OJ L 190, 4.7.1998, p. 34. The European Community, Bulgaria, Cyprus, France, Greece, Italy, Malta, Romania, Slovenia and Spain, are parties to the GFCM. On a scientific perspective on the application of the ecosystem approach see K. Cochrane and C. de Young, "Ecosystem approach to fisheries management in the Mediterranean," available online: <<http://agris.fao.org/agris-search/search/display.do?f=2010/XF/XF0906.xml;XF2009440131>>.

¹⁶⁹ Proposal for a Council Regulation on certain provisions for fishing in the GFCM (General Fisheries Commission for the Mediterranean) Agreement Area. COM(2009) 477 final, 6.9.2009. This proposal was debated and adopted by the European Parliament on 3.2.2011.

¹⁷⁰ See Churchill and Owen, n. 66 above, at 250–254.

¹⁷¹ Council Regulation No. 1967/2006. Also see Council Regulation (EU) No. 57/2011 of 18 January 2011 fixing for 2011 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in EU waters and, for EU vessels, in certain non-EU waters, OJ L 24/1, 27.1.2011. Commission Decision 2008/695/EC of 29 August 2008 declaring operational the Regional Advisory Council for Mediterranean Sea under the Common Fisheries Policy, OJ L 232, 30.8.2008.

¹⁷² See, UNEP-MAP RAC/SPA 2010. *The Mediterranean Sea Biodiversity: State of the ecosystems, pressures, impacts and future priorities*.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

report also suggests that funding ought to be provided to enhance national marine scientific research capacity, especially in the countries in the southern part of the Mediterranean. Overall, the position regarding ecosystem-based management in the Mediterranean Sea appears to be fragmented and lacking the same degree of political support that is evident in the European regional sea basins.

3.5 Ecosystem Management and the Black Sea

The Black Sea (Figure 5) has several remarkable oceanographic features that make it an important regional sea for the application of the ecosystem approach. Due to its unique oceanographic features, many of the environmental problems experienced in the Black Sea are transboundary in nature. An illustrative example is the dramatic collapse of sea fisheries catches in the late 1970s that had a profound impact on the maritime economies of the littoral states. Initially, regional collaborative efforts to address transboundary problems were directed at dealing with marine pollution and this has been adjusted over time to address a more diverse range of matters such as the preservation of biodiversity and the protection of the wider marine environment of the Black Sea.

[INSERT FIGURE 5]

The 1992 Convention on the Protection of the Black Sea against Pollution (the Bucharest Convention) is the principal regional marine environmental framework agreement and this is supplemented by a number of protocols dealing with: pollution from land-based sources; cooperation in combating pollution by oil and other harmful substances in emergency situations; dumping at sea; and the conservation of biological diversity and landscapes (the latter protocol is not yet in force).¹⁷³ At the time of its adoption in 1992, the Bucharest Convention was primarily concerned with marine pollution and as a consequence only protected fisheries and other forms of marine life indirectly. With the benefit of hindsight, it is now evident that a fundamental shift in emphasis came about in 1993 with the adoption of a Ministerial Declaration (referred to as "the Odessa Declaration"), which recorded the commitment of the Contracting Parties to implement Chapter 17 of *Agenda 21*, including the requirement to manage marine ecosystems in a holistic manner.¹⁷⁴ Since then, several important initiatives have been taken at a regional level including: the Black Sea Environmental Project; the Black Sea Ecosystem Recovery Project; and the 1996 Strategic Action Plan for the Rehabilitation and Protection of the Black Sea (BSSAP) as since amended in 2002.¹⁷⁵ As is well-documented in the academic and scientific literature, these initiatives failed in several respects to achieve their ambitious policy objectives. In response to these failures, the BSSAP was updated by Ministerial Declaration in 2002 ("the Sofia Declaration") with a view to strengthening the regional and national structures to address four specific transboundary problems: eutrophication, changes in living marine resources, chemical pollution including oil, as well as biodiversity/habitat changes resulting from the introduction of invasive species into the marine environment.¹⁷⁶

The 2009 BSSAP is a concise blueprint that provides for the protection and rehabilitation of the Black Sea. In particular, it sets down a range of the marine management targets as well as the legal,

¹⁷³ Adopted 21 April 1992, in force 15 January 1994. 32 *International Legal Materials* 1101. Bulgaria, Georgia, Romania, the Russian Federation, Turkey and Ukraine. Protocol on Protection of the Black Sea Marine Environment Against Pollution from Land Based Sources; Protocol on Cooperation in Combating Pollution of the Black Sea Marine Environment by Oil and Other Harmful Substances in Emergency Situations; Protocol on Protection of the Black Sea Marine Environment Against Pollution by Dumping; Protocol on Conservation of the Biological Diversity and the Black Sea Landscapes.

¹⁷⁴ Declaration on the Protection of the Black Sea signed in Odessa on 7 April 1993 and the Declaration on the Protection of the Black Sea signed in Sofia on 14 June 2002.

¹⁷⁵ Signed in Istanbul on 31 October 1996, amended 2002.

¹⁷⁶ See Strategic Action Plan for the Environmental Protection and Rehabilitation of the Black Sea, Adopted in Sofia, Bulgaria, 17 April 2009, p. 4.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), OCEAN YEARBOOK Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

institutional and policy reforms, that are needed to preserve the ecosystem of the Black Sea "as a valuable natural endowment of the region" while at the same time ensuring the sustainable development of the littoral states.¹⁷⁷ In line with best practice, the plan is underpinned by three important management concepts, namely: integrated coastal zone management, the ecosystem approach, and integrated river basin management. For the purpose of this article it is significant to note that the plan implements the ecosystem approach by setting down four Ecological Quality Objectives (EcoQOs) and a broad range of associated management targets pertaining to the following: the preservation of commercial marine living resources; the conservation of Black Sea biodiversity and habitats; the reduction of eutrophication; and the attainment of good water quality for human health, recreational use and aquatic biota. These are set out in a number of tables appended to the plan.

Although the Bucharest Convention, its associated Protocols and policy actions clearly provide a mechanism for regional cooperation, it is important to keep in mind that each of the six Black Sea littoral states is responsible for implementing the ecosystem approach and achieving the various regional environmental targets by means of domestic or municipal law. The role of the Black Sea Commission, which is made up of one representative from each of the six coastal states, is limited to coordinating the actions of Contracting Parties in implementing the BSSAP and in taking the prescribed measures to combat marine pollution. A permanent secretariat, advisory groups, regional activity centres and national focal points support the work of the Commission. The advisory groups, in particular, are tasked with developing regional standards, approaches and methodologies for marine environmental protection including the ecosystem approach. Overall, it appears that the governance structures for implementing the ecosystem approach in the littoral states are diffuse and relatively toothless. In more diplomatic terms, the 2009 BSSAP stated that "national environmental legislation is relatively strong, but the enforcement of this legislation has been less robust. The division of responsibilities for environmental monitoring and protection between different ministries and intra-ministerial organizations is sometimes over-complex and could be simplified in some countries at least."¹⁷⁸

From an EU law viewpoint, the various initiatives aimed at improving the marine environment of the Black Sea received additional impetus at a political level with the accession of Romania and Bulgaria to the EU in 2007. This was followed by the publication of the Commission's Communication entitled *Black Sea Synergy: A New Regional Cooperation Agreement* that identifies a number of areas of common concern for the littoral states at a regional level and setting down a number of objectives for sectors such as fisheries and the environment.¹⁷⁹

At a practical level, the pace of law reform and the adjustment of the institutional structures in response to EU enlargement in the region appear to be relatively modest so far. Thus, for example, the EU is not yet party to the Bucharest Convention but retains observer status even though this was set down as a priority objective under the EU's Black Sea Synergy communication. There are, nonetheless, several important aspects of EU law that apply to sea areas under the sovereignty and jurisdiction of Romania and Bulgaria. More specifically, the preamble of the Marine Strategy Framework Directive states that this Directive makes an important contribution to the fulfilment of Member States' obligations under the Bucharest Convention. Likewise, several of the management targets set down by the BSSAP to ensure the implementation of the ecosystem approach require appropriate action by fishery management organisations. In the case of the EU Member States, this can now be achieved by means of the CFP that applies to the Black Sea unless the terms of an EU fisheries instrument states otherwise. A preliminary start on European fisheries management is made by the annual TAC and Quota Regulation, which limits and allocates the fishing opportunities for EU vessels fishing for turbot and sprat in the Black Sea.¹⁸⁰ To date, there are no bilateral fishery agreements between the EU and the other four littoral states in the Black Sea. Moreover, it is difficult to see how the ecosystem approach can be implemented in a thorough

¹⁷⁷ *Id.*, p. 4.

¹⁷⁸ *Id.*, p. 4. Available online: <[http://www.ecbsea.org/files//content/SAP2009_ver_09Apr09\[1\].pdf](http://www.ecbsea.org/files//content/SAP2009_ver_09Apr09[1].pdf)>.

¹⁷⁹ COM(2007) 160 final, 11.04.2007.

¹⁸⁰ Council Regulation (EU) No. 1256/2010 of 17 December 2010, OJ L 343/2, 29.12.2010.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), OCEAN YEARBOOK Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

and effective manner prior to the establishment of a Regional Fisheries Management Organisation with specific responsibility for the management of all transboundary fisheries in the Black Sea. This has been under consideration for a number of years and, in the interim, the General Fisheries Council for the Mediterranean Sea (GFCM) has adopted some fisheries management measures.¹⁸¹ At the time of writing, Russia, the Ukraine and Georgia are not members of the GFCM and thus do not come within the scope of such measures. Similarly, the absence of a Black Sea Regional Advisory Council (RAC) under the CFP with specific responsibility for stakeholder consultation in relation to the adoption of fisheries and marine environmental management measures also appears to be an obvious institutional weakness.

Clearly, much remains to be done at a regional level and within the framework of EU law to strengthen the institutions and structures with responsibility for the implementation of the ecosystem approach in the Black Sea. Obvious starting points are the signature and formal confirmation by the EU of the Bucharest Convention and its associated Protocols, as well as the ratification by all Bucharest Convention Contracting Parties of the Black Sea Biodiversity and Landscape Conservation Protocol. Furthermore, should Turkey accede to the EU in the future, we can expect that the regional dynamic for implementing the ecosystem approach in the Black Sea will change considerably from an EU perspective.

4. NORMATIVE BASIS IN EU LAW AND POLICY

4.1 Legal Basis in EU Treaties

The ecosystem approach is not expressly mentioned in the European Treaties.¹⁸² Nevertheless, there is a clear duty under the TFEU to integrate environmental protection into the definition and implementation of EU policies "in particular with a view to promoting sustainable development."¹⁸³ EU policy on the environment is aimed at, *inter alia*: preserving, protecting and improving the quality of the environment, as well as promoting measures at the international level to deal with regional or global environmental problems, including an ecosystem-based approach to the management of human activities that impinge on the quality and sustainability of the marine environment.¹⁸⁴ In this regard, EU policy must aim at a high level of protection taking into account the "diversity of situations in the various regions of the Union," including obviously by implication the diversity of the European regional seas.¹⁸⁵

The EU's environmental policy is based on key principles such as the precautionary principle, the preventative action principle, the polluter should pay principle, and that environmental damage should be rectified at source.¹⁸⁶ In preparing its policy on ecosystem-based management, the Treaty can also be read as requiring the EU to take into account "available scientific and technical data, environmental conditions in the various regions of the Union, the potential benefits and costs of action or lack of action, as well as the economic and social development of the entire Union and the balanced development of its regions."¹⁸⁷ Importantly, the Treaty provides for EU and Member State cooperation with third countries and with the competent international organisations in the field of environmental management such as the regional seas commissions examined above.¹⁸⁸ One other feature that stands out is that the Treaty allows Member States to introduce more stringent measures to implement the ecosystem approach provided that such

¹⁸¹ COM(2007) 734 final, 20.11.2007 at 3.

¹⁸² The Treaty on European Union (TEU) and the TFEU came into force on 1 December 2009 as a result of the ratification of the Lisbon Treaty by the 27 Member States. A copy of the Consolidated Treaties is published in the Official Journal of the European Union at OJ C 306/50, 17.12.2007. An electronic copy is available online: <http://europa.eu/lisbon_treaty/full_text/index_en.htm>.

¹⁸³ Art. 11 of the TFEU.

¹⁸⁴ Art. 191(1) of the TFEU.

¹⁸⁵ Art. 191(2) of the TFEU.

¹⁸⁶ *Id.*

¹⁸⁷ Art. 191(3) of the TFEU.

¹⁸⁸ Art. 191(4) of the TFEU.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

measures are compatible with the Treaties and are notified to the Commission.¹⁸⁹ The European Court of Justice, however, has placed firm limits in *Commission v Sweden* on the scope afforded to Member States in areas of shared competence under a multilateral environmental agreement where there is a duty of close cooperation between the Member States and the Union institutions in the achievement of EU tasks and in ensuring coherence and consistency of action in international representation.¹⁹⁰ By way of analogy, this decision of the Court appears to fetter the scope for Member State action to take more stringent measures than the EU in the context of ecosystem-based management within the framework of the regional seas conventions. Despite these constraints and although it is entirely implicit, there nonetheless appears to be a relatively solid normative basis in the EU Treaties for ecosystem-based management. Furthermore, many of the Treaty provisions may be used to interpret the secondary instruments that give legal effect to the concept in practice. In this regard, they have shaped many of the substantive and procedural measures that are codified in instruments such as the MSFD and the Habitats and Birds Directives.

4.2 EU Policy Backdrop

At a political level, the EU recorded its commitment to implement the ecosystem approach in line with the 2002 World Summit on Sustainable Development (WSSD) and the Johannesburg Plan of Implementation (JPOI) by 2010.¹⁹¹ In this context it should not be forgotten that the EU and the Member States are international actors in their own right and party to many of the international agreements mentioned above that provide a legal basis for its implementation of the ecosystem approach including: the 1982 LOS Convention, the United Nations Fish Stocks Agreement, and the 1992 Convention on Biological Diversity. Moreover, representatives of the Commission and the Member States have actively participated in the work of several international organisations, which have elaborated the legal and scientific parameters for the implementation of the ecosystem approach. This includes the work of the FAO, COFI, UNICPOLOS, and in the expert consultations, which culminated with the adoption of the 2001 Reykjavik Declaration.

At an internal level within the EU, the sixth Environment Action Plan sets out the objective for the EU to promote sustainable use of the seas and conservation of marine ecosystems, including the seabed, estuarine and coastal areas, and to encourage and promote effective and sustainable use and management of land and sea.¹⁹² The ecosystem approach is at heart of the sixth Environment Action Plan and is implemented through a number of policies and legal instruments including the European Integrated Maritime Policy, marine spatial planning, integrated coastal zone management, the MSFD and by means of a broad range of measures under the CFP.¹⁹³ Additional impetus for the approach is obtained through the establishment of the Natura 2000 network under the Habitats and Birds Directives, as well as the promotion of various spatial management tools such as marine spatial planning and integrated coastal zone management. Marine biodiversity is also addressed in the Biodiversity Action Plan for the Conservation of Natural Resources and the related Biodiversity Action Plan for Fisheries.¹⁹⁴ In order to provide context for the discussion at the end of this article, it is now proposed to elaborate on some of these initiatives as they clearly demonstrate that concerted action is being taken to implement the approach through the progressive development of EU law as it applies to fisheries, living marine resources, marine biodiversity and marine scientific research.

¹⁸⁹ Art. 193 of the TFEU.

¹⁹⁰ Case C-246/07 *Commission v Sweden*, 20 April 2010.

¹⁹¹ COM(2006) 216 final, 22.5.2006.

¹⁹² Art. 6(2)(g) of Decision No. 1600/2002/EC of the European Parliament and of the Council of 22 July 2002 laying down the Sixth Community Environment Action Programme, OJ L 242/1, 10.09.2002.

¹⁹³ S. Apitz et al., "European Environmental Management: Moving to an Ecosystem Approach," *Integrated Environmental Assessment and Management* 2, no. 1 (2006): 80–85.

¹⁹⁴ COM/2001/0162 final, 27.03.2001.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

In terms of identifying a key policy initiative, perhaps it is appropriate to start with the publication by the Commission of a Blue Paper and an ambitious Action Plan for the adoption of an Integrated Maritime Policy (IMP) by the EU in 2007.¹⁹⁵ This stands out as a major milestone in EU policy formulation and followed a period of broad public consultation in the Member States which highlighted that European regulatory measures ought to be focused on the protection of ecosystems and eco-regions to ensure the sustainable management of the sea and coastal areas.¹⁹⁶ Surprisingly enough, the IMP lacks an explicit legal basis in the European Treaties. Notwithstanding this deficiency, it is beginning to shape many other EU sector policies which have an express legal basis in the Treaties such as the policies on fisheries, transport, industry, territorial cohesion, research, environment, energy, tourism, justice and home affairs.¹⁹⁷ Essentially, the IMP has a number of objectives which are aimed at: promoting the integration of governance structures in the Member States by making them more inclusive and cooperative; building scientific knowledge on the status of the marine environment and the resources that it supports; improving the quality of sector policies such as in transport and the CFP; as well as implementing tailor-made integrated solutions to specific problems while taking into account the characteristics and diversity of the European regional seas. Under the IMP, the Commission has demonstrated leadership in ocean governance matters by taking a broad range of policy initiatives to address specific issues such as climate change, scientific observation of the ocean and the sharing of data, marine spatial planning, maritime surveillance and integrated coastal zone management.¹⁹⁸

One of the unique features of the IMP has been the establishment of a unique governance structure within the European institutions, as well as the promotion of national maritime policies in the coastal Member States that reflect the ideals underpinning the IMP. In this regard, the Commission has recommended that national policies of the Member States should be guided by the principles of subsidiarity, competitiveness, sustainable economic development, stakeholder participation, and the ecosystem approach.¹⁹⁹ In 2009, the Commission published a progress report that sets out the achievements of the IMP since its creation in 2007. The General Affairs Council endorsed the policy at a political level on 16 November 2009 and acknowledged the role of ecosystem-based approach as the "overarching principle" that informs the management of human activities in the marine environment.²⁰⁰ In September 2010, the Commission brought forward a proposal for a Regulation establishing a programme to support the further development of the IMP.²⁰¹ In parallel, with these initiatives the EU has been active in the law-making field and shepherded a number of important legal instruments through the European institutions, which will have a profound impact on the regulation of maritime activities in the Member States.

In 2011, the European Commission launched an elaborate biodiversity strategy aimed at halting biodiversity loss by 2020.²⁰² The strategy is a response to the global strategic plan for biodiversity 2011–

¹⁹⁵ An Integrated Maritime Policy for the European Union, COM(2007) 575 final of 10.10.2007 and SEC(2007) 1278 of 10.10.2007: and Commission Staff Working Document, SEC(2007) 1278, Brussels, 10.10.2007. This followed the adoption of the Green Paper on a Future Maritime Policy for the European Union by the Commission on 7 June 2006.

¹⁹⁶ COM(2007) 574 final, 10.10.2007.

¹⁹⁷ See Proposal for a Regulation of the European Parliament and of the Council establishing a Programme to support the further development of an Integrated Maritime Policy, SEC(2010) 1097 final which is based on Article 43(2), Article 74 and 77(2), Article 91(1) and 100(2), Article 173(3), Article 175, Article 188, Article 192(1), Article 194(2) and Article 195(2).

¹⁹⁸ On EU measures in the field of marine scientific research, see R. Long, "Regulating Marine Scientific Research in the European Union: It Takes More Than Two to Tango," in ed. M. Nordquist, J. Norton Moore, F. Soons, *Globalisation and the Law of the Sea* (Leiden/Boston: Brill Academic Publishers, 2011) (in press), p. 58.

¹⁹⁹ COM(2008) 395 final, 26.6.2008 at 9.

²⁰⁰ See Press Release on the 2973rd Council meeting of the General Affairs and External Relations Council, available online: <http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/gena/111231.pdf>.

²⁰¹ COM(2010) 494 final, 29.9.2010.

²⁰² COM(2011) 244 final, 3.5.2011.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

2020 adopted by the tenth Conference of the Parties to the Convention on Biological Diversity at Nagoya in 2010.²⁰³ Ostensibly, the ecosystem approach is at the heart of the EU strategy which extends to maintaining and enhancing ecosystem services and restoring degraded ecosystems in both the terrestrial and marine environments. The strategy entails the adoption by the EU of 20 actions covering, inter alia: nature conservation, fisheries management and combating invasive alien species, as well as specific measures aimed at eliminating adverse impacts on fish stocks, species, habitats and ecosystems.²⁰⁴ The strategy forms an important policy backdrop for instruments such as the Marine Strategy Framework Directive that set down binding legal obligations regarding ecosystem-based management.

4.3 The Marine Strategy Framework Directive as the Principal Instrument

The ecosystem approach is a core feature of the MSFD,²⁰⁵ which constitutes the environmental pillar of the IMP and may in some respects be viewed as a sister or marine "equivalent" to the Water Framework Directive.²⁰⁶ Both directives are cornerstones of the European *Thematic Strategy for the Protection and Conservation of the Marine Environment* which was launched in 2005.²⁰⁷ They share many similar conceptual features and provide a framework for the implementation of an iterative process leading to adaptive management of human activities that impinge upon the quality of the marine environment and marine ecological services.

The MSFD is aimed at protecting the resource base upon which all marine-related economic and social activities depend and this requires all Member States to achieve good environmental status of marine waters by 2020 at the latest. Further to the MSFD, the Commission adopted a Decision on the criteria and methodology to be applied in determining Good Environment Status (GES).²⁰⁸ Clearly, under these instruments, the concept of "good environmental status" includes the conservation of biodiversity and the maintenance of ecosystem health and integrity.²⁰⁹ As noted in the preamble of the Directive, applying an ecosystem-based approach to the management of human activities entails giving priority to

²⁰³ COM(2011) 244 final at 2.

²⁰⁴ In particular, see Actions 13–16 of the EU Biodiversity Strategy to 2020.

²⁰⁵ Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) OJ L 164/19, 25 June 2008. For commentary on this Directive see R. Long, "The EU Marine Strategy Framework Directive: A New European Approach to the Regulation of the Marine Environment, Marine Natural Resources and Marine Ecological Services," *Journal of Energy and Natural Resources Law* 29, no. 1 (2011): 1–45; A. Trouwborst and H. Harm, "Comparing European Instruments for Marine Nature Conservation: The OSPAR Convention, the Bern Convention, the Birds and Habitats Directives, and the Added Value of the Marine Strategy Framework Directive," *European Energy and Environmental Law Review* 20, no. 4 (2011): 129–149; L. Juda, "The European Union and the Marine Strategy Framework Directive: Continuing the Development of Ocean Use Management," *Ocean Development and International Law* 41 (2010): 34–54; N. Westaway, "The New European Marine Strategy Framework Directive," *Environmental Law Review* 10 (2008): 218–224; S. Fletcher, "Converting science to policy through stakeholder involvement: An analysis of the European Marine Strategy Directive," *Marine Pollution Bulletin* 54 (2007): 1881–1886; R. Barnes and D. Metcalfe, "The Marine Strategy Framework Directive," *International Journal of Marine and Coastal Law* 25, no. 1 (2010): 81–91.

²⁰⁶ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, OJ L 327, 22 December 2000, 1. Directive as last amended by Directive 2008/32/EC OJ L 81/60, 20 March 2008. On the relationship between the two instruments, see A. Borja et al., "Marine management – Towards an integrated implementation of the European Marine Strategy Framework and the Water Framework Directives," *Marine Pollution Bulletin* 12 (2010).

²⁰⁷ COM(2005) 504 final, 24.10.2005.

²⁰⁸ Commission Decision of 1 September 2010 on criteria and methodological standards on GES of marine waters, OJ L 232/14, 2.9.2010.

²⁰⁹ See Descriptors 1, 5 and 6 of Commission Decision of 1 September 2010 on criteria and methodological standards on GES of marine waters, OJ L 232/14, 2.9.2010.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

achieving or maintaining good environmental status in the European marine environment.²¹⁰ The scheme advanced by the Directive is based upon the precautionary approach and is intended to be both flexible and adaptive with a view to responding quickly to several factors including scientific knowledge, the evolving nature of different patterns of human activity in the marine environment, and catering to the variable impacts of climate change.²¹¹

Under the Directive, marine regions and sub-regions are established on the basis of geographical and environmental criteria. Each Member State is required by 2012 to develop strategies for sea areas under their sovereignty and jurisdiction and these must contain a detailed assessment of the state of the environment, a definition of "good environmental status" at the regional level, as well as the establishment of clear environmental targets and monitoring programmes. Each Member State must then draw up a programme of cost-effective measures by 2015 in coordination with other Member States in their marine region. Prior to the implementation of any new measure there is a requirement to undertake an impact assessment that contains a detailed cost-benefit analysis of the proposed measures. Where Member States cannot reach the environmental targets, the MSFD provides a legal basis for the adoption of EU measures.

The Directive has a number of unusual features. Firstly, it does not envisage the adoption of horizontal management measures at the EU level, but entails the adoption of operational and implementation measures through the regional seas agreements described above, namely: the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic, the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea, the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, and the Bucharest Convention on the Protection of the Black Sea against Pollution. Secondly, implementation of the MSFD will bring about a major shift in the emphasis of EU law-making in so far as maritime regulation and decision-making will no longer be organised exclusively along the vertical lines of sector policies but will be more integrated in form and content at a horizontal level across a range of policies.²¹² As a consequence, regulatory measures will as a matter of practice focus on mitigating the impacts of particular activities on the wider marine environment and will not be limited by the maritime boundaries of the Member States. We will return to this issue towards the end of this article.

4.4 Ecosystem Approach and European Fisheries Law

The ecosystem approach is now a key feature in the European CFP, which is comprised of complex legislation regulating the quantities of fish caught by fishing vessels, the number of vessels that may have access to a fishery, the marketing of fishery products, the enforcement of the law, and rules pertaining to the international dimension of the policy.²¹³ The policy has a long and controversial history with one of the longstanding criticisms being that it was traditionally based on single species management and has been slow to embrace new legal principles such as the precautionary principle. In spite of this legacy, the EU has taken the lead at a global level in implementing the ecosystem approach to fisheries management.²¹⁴ This development may be traced back to the review of the CFP in 2002 and the adoption of a new Basic Fishery Management Regulation, which states that one of the aims of the policy is to minimise the impact of fishing activities on marine ecosystems and to ensure the progressive implementation of an ecosystem-based approach to fisheries management.²¹⁵

²¹⁰ Recital 8 of Directive 2008/56/EC.

²¹¹ Article 3(5) of Directive 2008/56/EC of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) OJ L 164/19, 25.6.2008.

²¹² COM(2008) 395 final. 26.6.2008, p. 8.

²¹³ For a comprehensive analysis of the policy prior to the ratification of the Lisbon Treaty, see Churchill and Owen, n. 66 above.

²¹⁴ See Churchill and Owen, n. 66 above, p. 76.

²¹⁵ Article 2 of Council Regulation 2371/2002.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

Much of the momentum for the implementation of the ecosystem approach by means of the CFP has come from the scientific work undertaken by ICES, the various expert working groups within the Commission, as well as international bodies such as the FAO.²¹⁶ From a geographical point of view, implementation through EU law concerns not only sea areas under the sovereignty and jurisdiction of the Member States but also includes areas beyond national jurisdiction including areas of the high seas under the remit of Regional Fisheries Management Organisations or sea areas under the sovereignty and jurisdiction of third countries with which the EU has negotiated bilateral fisheries partnership agreements.²¹⁷ In 2008, the Commission published a communication on the role of the CFP in implementing an ecosystem approach to marine management.²¹⁸ The Commission's understanding is that:

An ecosystem approach to fisheries management is about ensuring goods and services from living aquatic resources for present and future generations within meaningful ecological boundaries. Such fisheries management will strive to ensure that benefits from living marine resources are high while the direct and indirect impacts of fishing operations on marine ecosystems are low and not detrimental to the future functioning, diversity and integrity of these ecosystems.²¹⁹

According to the communication, the Commission has identified two tasks for fisheries management. Firstly, "to keep direct and indirect impacts of fisheries on marine ecosystems within bounds in relation to healthy marine ecosystems and ecologically viable fish populations by including all the knowledge we have about the interactions between fisheries and marine ecosystems in decisions under the CFP." Secondly, to ensure that actions taken in fisheries are consistent with and supportive of actions taken under the Marine Strategy and Habitats Directives.

In the intervening years since publication of the communication, several proactive regulatory measures have been adopted under the CFP to give effect to the ecosystem approach. Most notably, these include legislation underpinning the establishment of participatory governance structures for stakeholder consultation – the Regional Advisory Councils.²²⁰ Measures aimed at reducing fishing pressure to sustainable levels through the adoption of long-term management plans based on multiple sustainable yield (MSY) concepts and ecosystem considerations are now applied to specific fisheries such as North Sea herring, northern hake, all cod stocks in EU waters, and bluefin tuna in the International Commission for the Conservation of Atlantic Tunas (ICCAT) area. Other elements with an environmental focus are the protection of habitats and sensitive species under the Habitats Directive such as the deep-sea coral habitats to the west of Ireland and special measures to protect *Posidonia* and mäerl beds in the Mediterranean Sea. Soft law measures include the adoption by the Commission of Action Plans to protect sharks in 2008 and seabirds in 2009. Similarly, the adoption of a regulation aimed at reducing unintended by-catches of sea mammals by making the use of electronic devices (pingers) compulsory on gillnets, as well as the prohibition on fishing sandeels in certain parts of the North Sea to protect populations of seabirds, are all focused on integrated ecosystem considerations in the CFP.

Importantly, measures for the implementation of the ecosystem approach are not limited to EU waters but include the adoption of a regulation on the protection of vulnerable marine ecosystems from the adverse impacts of bottom fishing gears in areas of the high seas not covered by a regional fishery management organisation.²²¹ The EU was the first regional entity to adopt such an implementation measure following United Nations Resolutions on the subject and this perhaps illustrates the influence

²¹⁶ Guidance Document – ICES 2005, n. 37 above.

²¹⁷ COM(2008) 187, p. 2.

²¹⁸ *Id.*

²¹⁹ *Id.*

²²⁰ R. Long, "The Role of Regional Advisory Councils in the European Common Fisheries Policy: Legal Constraints and Future Options," *International Journal of Marine and Coastal Law* 25, no. 3 (2010): pp. 289–346.

²²¹ Council Regulation No. 734/2008 of 15 July 2008 on the protection of vulnerable marine ecosystems in the high seas from the adverse impacts of bottom fishing gears, OJ L/201/8 of 15.07.08.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

that the international multilateral process is having on the implementation of the ecosystem approach by regional bodies with responsibility for fisheries management.²²² At an internal level within the EU, there has been considerable financial support from the European Fisheries Fund for the development of fishing methods and technologies with a low impact on ecosystems. In this context, one of the most controversial practices in EU fisheries management is the prohibition on discarding unwanted catches. This practice is not consistent with the ecosystem approach to fishery management and the Commission brought forward proposals in 2008 to eliminate the practice of discarding on an incremental basis, fishery-by-fishery over time. Moreover, at the time of writing, the Commission is in the process of tabling a proposal for the prohibition of this practice under the revised CFP.

As seen from the description presented at the start of this article, implementing the ecosystem approach is very much a science-driven process. In this context it is noteworthy that a number of EU research initiatives are focused on delivering the scientific data and information that is necessary to put into action the adaptive management process that is necessitated by the ecosystem approach. Of particular importance in this regard is the amendment of the Data Collection Regulation to cover the collection of data that can underpin the selection of indicators relating to ecological impacts of fisheries.²²³ The first set of indicators to monitor the fisheries impact on the ecosystem has been selected under the CFP and several major research programmes are underway that will augment the work of ICES and the Scientific, Technical and Economic Committee for Fisheries (STECF) in providing advice on the interaction between fisheries and ecosystems.²²⁴ One such project is the European Seventh Framework Programme project *Options for Delivering Ecosystem-Based Marine Management* that is evaluating the various management options for delivering the objectives of the MSFD, the Habitats Directive, the European Commission Blue Book, as well the Guidelines for the Integrated Approach to Maritime Policy.²²⁵

Taken together, all of these developments are indicative of the commitment of the EU to implement the approach in a comprehensive and thorough fashion. Nonetheless, one recent authority has suggested that the range of measures adopted by the Commission "has the feeling of an *ad hoc* amalgam of things that fit with the ecosystem approach, rather than representing the strategic approach of the task at hand."²²⁶ On the other hand, it should also be pointed out that these measures have the full political support of the Council who wish to see the approach continue to serve as a guide for the preparation of new initiatives under the CFP.²²⁷

From a legal perspective, the CFP is particularly well-suited to the implementation of the ecosystem approach as the Court of Justice has long since upheld that the management of fisheries is an exclusive European competence and this is now codified by the Treaty of the Functioning of the EU.²²⁸ As a result, European regulatory measures are a prerequisite for implementation of the ecosystem approach. This makes good sense as fish stocks and ecosystems cover wide geographical areas and cannot be managed by individual Member States acting in isolation and without due regard for the geographical distribution of such stocks that frequently straddle and migrate across national maritime boundaries.

All of this bodes well for the future of maritime governance and fisheries management in the EU. Conspicuously, the importance of achieving coherence between the various legal instruments underpinning the CFP and those aimed at implementing the broader maritime policy has been emphasised by the Commission on a number of occasions as overfishing has rendered marine ecosystems more vulnerable to climate change and this has led directly to further degradation of the marine environment

²²² UNGA Resolution 61/105 and 64/72.

²²³ Council Regulation (EC) No. 199/2008 of 25 February 2008 concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy, OJ L 60/51/1 of 5.03.2008.

²²⁴ Available online: <http://cordis.europa.eu/fp7/home_en.html>.

²²⁵ Available online: <<http://www.liv.ac.uk/odemmm/>>.

²²⁶ Churchill and Owen, n. 66 above, at 285–289.

²²⁷ Council Conclusion 12769//08, Brussels, 8 September 2008.

²²⁸ Arts. 38–44 of the TFEU.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

from biodiversity loss. Furthermore, it is also apparent that the first task of applying an ecosystem approach to fisheries management in the EU is the difficult task of returning fishing activity to sustainable levels. The size of this task and the case supporting the implementation of the ecosystem approach from a scientific perspective appears to be unequivocal. The current deplorable status of European fisheries is described in the 2009 Green Paper as eroding their own ecological and economic basis. The Commission has identified several structural failings with the CFP in the Green Paper and the policy will be subject to reform in 2012.²²⁹

Significantly, the reform proposals published by the Commission are aimed at achieving environmental sustainability of European fisheries within a flexible time horizon while limiting short-term negative economic and social impacts.²³⁰ The proposal notes that "fisheries management must be based on *sound scientific advice* and must follow the ecosystem and precautionary approach."²³¹ The ecosystem approach is defined somewhat arbitrarily in the draft regulation as meaning an approach that ensures the "benefits from living aquatic resources are high while the direct and indirect impacts of fishing operations on marine ecosystems are low and not detrimental to the future functioning, diversity and integrity of those ecosystems."²³² Importantly, the draft proposal provides a legal basis for the adoption of specific technical conservation measures to reduce the impact of fishing activities on marine ecosystems and non-target species with a view to protecting biologically sensitive stocks and habitats.²³³ The draft regulation also places an express legal obligation on Member States to collect the various categories of data necessary to undertake ecosystem-based fisheries management and to make this information available to various entities designated by the European Commission, including bodies responsible for marine environmental management.²³⁴ On the resource management side, the draft regulation controversially provides for a system of transferable fishing rights (referred to as "concessions") for the majority of fish stocks that come within the scope of the CFP as a means to reduce and eliminate the overcapacity in the European fishing fleet. Although these do not give the holder of the concession any property rights, it does nevertheless entitle them to a fixed share of the national fishing opportunity for each year up to a minimum period of 15 years. Under this system, it is foreseen that the fishing industry will be vested with responsibility for the sustainable management of fishery resources. The proposals will be debated and voted upon by the European Parliament and the European Council and the revised system will come into force in 2013.

4.5 Ecosystem Approach and Marine Area-based Management in the EU

Outside the domain of sea-fisheries, the implementation of the ecosystem approach in the EU is closely aligned with developments in EU law and policy concerning area-based management in the marine environment. For reasons of space, it is only possible to touch upon three specific initiatives here: marine protected areas, marine spatial planning and integrated coastal zone management.

The importance of establishing a coherent network of marine protected areas as a means to achieve ecosystem objectives is reviewed comprehensively in the specialist literature.²³⁵ In the EU, the Habitats and Birds Directives provide a legal basis for the establishment of protected areas and are aimed at the maintenance of biodiversity and contribute to the general objective of sustainable development in

²²⁹ COM(2009)163 final, 22.4.2009, at 8.

²³⁰ COM(2011) 425 final, 13.7.2011. Available online: <<http://ec.europa.eu/fisheries/reform/>>.

²³¹ Art. 2(3) of the Proposal for a Regulation on the Common Fisheries Policy. Also see COM(2011) 417 final, 13.7.2011 at 9.

²³² Art. 5 of the Proposal for a Regulation on the Common Fisheries Policy.

²³³ Art. 9 and 15 of the Proposal for a Regulation on the Common Fisheries Policy.

²³⁴ Art. 37 of the Proposal for a Regulation on the Common Fisheries Policy.

²³⁵ See, inter alia: Trouwborst and Harm, n. 205 above, pp. 142–148; Molenaar and Oude Elferink, n. 128 above; Fabra and Gascón, n. 41 above, pp. 591–594; H. Browman and K. Stergiou, "Marine Protected Areas as a Central Element of Ecosystem-Based Management: Defining their Location, Size and Number," *Marine Ecology Progress Series* 274 (2004): 271–272.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), OCEAN YEARBOOK Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

EU law.²³⁶ Briefly stated, the Habitats Directive seeks to preserve and restore the natural habitats, the wild fauna and flora by obliging Member States to establish a comprehensive network of special areas of conservation (SAC) for endangered and vulnerable species and habitats.²³⁷ The Birds Directive provides for the conservation of wild bird species, their eggs, nests and habitats.²³⁸ The nature network established by the Habitats Directive in conjunction with the Birds Directive is known as Natura 2000 and consists of sites of international importance.²³⁹ Both Directives are sophisticated science-driven instruments and the Annexes of the Habitats Directive list the broad categories of natural habitat types and the specific animal and plant species of Community interest. Significantly, the European Court of Justice has affirmed that the Habitats Directive must be implemented in the EEZ and in other offshore areas under coastal Member State jurisdiction.²⁴⁰ This decision of the Court ensures that the protection of sensitive habitats and species under both the Habitats and Birds Directives is a key feature in making the ecosystem approach operational in sea areas under the sovereignty and jurisdiction of the Member States. This in turn should make a significant contribution to the achievement of good environmental status under the MSFD.²⁴¹

In practice, however, the contribution of the Habitats and Birds Directives to ecosystem-based management should not be overstated as it is complicated by a number of unique features in EU law and policy as it applies to the marine environment. In particular, as seen above, any legal restrictions on the activities of fishing vessels with a view to implementing the ecosystem approach in marine protected areas can only be taken through the medium of EU fisheries law following the procedures set down in the TFEU for the adoption of fishery conservation measures.²⁴² Experience over the past two decades demonstrates nonetheless that inherent tension often exists between the environmental policy and common fisheries policy regarding the adoption of regulatory and management measures for specific sites such as the protection of cold water corals.²⁴³ Significantly, the European Commission's proposals for the reform of the CFP in 2012 address some of these concerns by placing ecosystem-based management at the heart of the revised fisheries policy.²⁴⁴ On a similar vein, one of the objectives of the EU Biodiversity Strategy to 2020 is to preserve or restore vulnerable marine ecosystems that are protected under the Habitats and Birds Directives.²⁴⁵ This trend in EU law and policy towards ecosystem-based management is entirely understandable as the cold reality of the *realpolitik* in the Member States over the past two decades demonstrates that the implementation of the Habitats and Birds Directives in the European marine environment is far from satisfactory. At the time of writing, although more than 1,800 sites with a marine component are designated within 12 miles of the coast of 22 coastal Member States, only a few dozen sites have been designated further offshore.²⁴⁶ Likewise, the overall spatial area subject to habitat

²³⁶ Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds, O.J. L 103/1, 25.04.1979. Subsequently codified by Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds OJ L 20/7, 26.1.2010. Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora OJ L 206/7, 22.7.1992. Consolidated version published on 1.01.2007.

²³⁷ Art. 2(1) of Directive 92/43/EEC.

²³⁸ Art. 1 of Directive 2009/147/EC.

²³⁹ Information available online: <http://ec.europa.eu/environment/nature/natura2000/index_en.htm>.

²⁴⁰ Case C-6/04 *Commission v United Kingdom* [2005] ECR I-9017 para. 117.

²⁴¹ On this point, see Long, n. 205 above, especially at pp. 13–19.

²⁴² Articles 38–44 of the TFEU.

²⁴³ For an early example, see R. Long and A. Grehan, "Marine habitat protection in a coastal Member State of the European Union: The case of deep-water coral conservation in Ireland," *International Journal of Marine and Coastal Law* 17, no. 2 (2002): 241–269.

²⁴⁴ COM(2011) 417 final, Brussels, 13.7.2011, at 9.

²⁴⁵ Action 14 of the EU Biodiversity Strategy to 2020, COM(2011) 244 final, Brussels, 3.5.2011, at 14–15.

²⁴⁶ Natura Barometer is managed by European Commission with the technical assistance of the European Environment Agency and is based on information officially transmitted by Member States to the European Topic Centre on Biological Diversity in Paris. Available online: <http://ec.europa.eu/environment/nature/natura2000/barometer/index_en.htm>.

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designation is relatively small and amounts to a total coverage of 198,760 km² or an area twice the size of Portugal. This is compounded by an absence of uniformity in Member State practice regarding habitat designation with Germany, France, Denmark and the United Kingdom taking a lead in designating a substantial portion of their respective marine waters for protection.²⁴⁷ In contrast, other Member States such as Ireland have a poor record and designated less than 6 percent of their marine waters under the Directives.²⁴⁸ In recent years, there has been some progress at a pan-European level on this issue and it is notable that more than half of the areas added to the Natura 2000 Network in January 2011 were marine sites including nine new sites for the protection of harbour porpoise, *Phocoena phocoena*.²⁴⁹

Despite this progress it is now evident with the benefit of hindsight that several legal and policy impediments have contributed to the tardiness of Member States in completing the Natura 2000 Network of MPAs.²⁵⁰ From a legal perspective, there are considerable limitations stemming from the material scope (*ratione materiae*) of the Habitats Directive which has only a limited "focus on marine species and habitat types, especially those that occur in the offshore marine environment."²⁵¹ Clearly, if the scheme of protection afforded by the Habitats Directive is going to make a real substantive contribution to ecosystem-based management, it is submitted that a number of actions need to be taken by the EU and the Member States as a matter of priority. Firstly, the current range of conservation instruments have to be fully implemented in all maritime areas under Member State jurisdiction including the outer continental shelf. Secondly, the Annexes of the Habitats Directive need to be amended to take account of a much broader range of habitats, species and ecological processes, such as those identified and listed under the OSPAR Convention.²⁵² Thirdly, appropriate conservation and management measures have to be adopted for the designated sites in a timely manner with a view to achieving and maintaining an appropriate conservation status in line with the objectives of the Directives.²⁵³ One must assume that if these measures are not taken expeditiously that it is unlikely that the EU and the Member States will be able to deliver on the targets set down by the new EU Biodiversity Strategy and establish a truly ecological coherent network of MPAs that takes into account the complex interrelationships and interactions between marine species and their environment, as well as the meet the requirements that arise under regional agreements such as the OSPAR, HELCOM and Barcelona Conventions.²⁵⁴ Fourthly, the Natura 2000 Network should not be viewed in isolation as it complements the scheme of protection afforded to ecosystems and habitats in areas beyond national jurisdiction under the regional seas conventions and by the regional fisheries management organisations, as well as by the various bodies established under the 1982 United Nations Convention on the Law of the Sea.²⁵⁵ Progress on establishing MPAs in areas beyond national jurisdiction is outside the EU's exclusive remit and is entirely dependent on the EU's ability to foster international cooperation and coordination regarding the adoption of appropriate conservation measures. Despite these shortcomings, one should not be overtly pessimistic as there are many positive features in the EU regulatory regime on MPAs and some solace may be drawn from a whole raft of cases in the European Court of Justice where the Court held that it is ecological and ornithological criteria that apply in the selection and delineation of protected areas and species under both the Habitats and Birds Directives.²⁵⁶

²⁴⁷ *Id.*

²⁴⁸ *Id.*

²⁴⁹ European Commission Nature and Biodiversity Newsletter, No. 3, June 2011, p. 15. Available online: <http://ec.europa.eu/environment/nature/info/pubs/docs/nat2000newsl/nat30_en.pdf>.

²⁵⁰ See n. 12 above. On the shortcomings see inter alia: Trouwborst and Harm, n. 205 above, at 146.

²⁵¹ European Commission, Guidelines for the establishment of the Natura 2000 network in the marine environment. Application of the Habitats and Birds Directives, (May 2007) at 14. Available online: <http://ec.europa.eu/environment/nature/natura2000/marine/docs/marine_guidelines.pdf>.

²⁵² On this point see OSPAR Quality Status Report 2010 at 130.

²⁵³ Art. 6 of Directive 92/43/EEC and Directive 2009/147/EC.

²⁵⁴ On this point, see, Trouwborst and Harm, n. 205 above, at 144–145.

²⁵⁵ See Long, n. 154 above, *passim*.

²⁵⁶ See, inter alia: Case C-71/99 *Commission v Germany* [2001] ECR I-05811; Case C-67/99 *Commission v Ireland* [2001] ECR I-5757; Case C-220/99 *Commission v France* [2001] ECR I-5831; C-3/96 *Commission v Netherlands*

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These decisions firmly circumscribe the application of economic criteria in the site selection process and this in turn accords fully with the central thrust and spirit of ecosystem-based management. Decisions ought to be made on the basis of scientific merit and not necessarily on pressing economic or political imperatives, which may often be to the fore in times of economic recession.

The importance of marine spatial planning (MSP) in advancing ecosystem-based management is also well-documented in the academic literature.²⁵⁷ Thus it comes as no surprise to see that the European Commission is highlighting the importance of marine spatial planning and integrated coastal zone management (ICZM) as planning frameworks for public authorities and stakeholders to coordinate their action with a view to optimising the use of marine space in sea areas under the sovereignty and jurisdiction of the Member States. There have been a number of important developments in this regard which are relevant to ecosystem-based management.²⁵⁸ In 2008, for example, the Commission adopted the "Roadmap on Maritime Spatial Planning: Achieving Common Principles in the EU" which sets out ten key principles and seeks to promote the development of a common approach among Member States in the implementation of MSP at the national and EU levels.²⁵⁹ Since then, the Commission organised two preparatory actions in the Baltic Sea and in the North Sea/North-East Atlantic.²⁶⁰ These aim to develop the cross-border cooperation aspects and economic benefits of MSP. In addition, they have commissioned a study on the potential of MSP in the Mediterranean Sea.²⁶¹ The Commission is strongly of the view that MSP can drastically improve the way we manage our maritime spaces and preserve their ecosystems.²⁶² A number of options have been published by the Commission on how this can be achieved and they have formally acknowledged that the ecosystem approach must form the overall basis for MSP.²⁶³ Provided that Member States can agree a common plinth for future action, there is little doubt that the implementation of MSP will be beneficial in terms of protecting vulnerable marine ecosystems and in ensuring an appropriate framework for the development of offshore activities.

In parallel with MSP, it needs to be pointed out that ICZM is an important management concept that complements the ecosystem approach. Briefly stated, ICZM is aimed at integrating policies, sectors and interests into the planning and management of human activities to achieve sustainable development in the coastal zone. In 2002, the European Commission adopted a Recommendation on integrated coastal zone management and this is now perceived as an important instrument in delivering the EU's Integrated Maritime Policy.²⁶⁴ At the end of 2008, the Council signed the Protocol on Integrated Coastal Zone Management under the Barcelona Convention.²⁶⁵ This was followed in 2009, by a support project (the OURCOAST initiative) to stimulate the sharing of best coastal planning and management practices in the Member States and a research project PEGASO to test the application of the concept in a number of

[1998] ECR I-3031; Case C-44/95 *Regina v Secretary of State for the Environment, ex parte: Royal Society for the Protection of Birds (Lappel Bank)* [1996] ECR I-03805, para. 26; Case C-355/90 *Commission v Spain* [1993] ECR 4221, para 26–27.

²⁵⁷ F. Douvère, "The importance of marine spatial planning in advancing ecosystem-based sea use management," *Marine Policy* 32 (2008): 762–771; P. Gilliland and D. Laffoley, "Key elements and steps in the process of developing ecosystem-based marine spatial planning," *Marine Policy* 32 (2008): 787–796; F. Maes, "The international legal framework for marine spatial planning," *Marine Policy* 32 (2008): 797–810.

²⁵⁸ Further information available online: <http://ec.europa.eu/maritimeaffairs/spatial_planning_en.html>.

²⁵⁹ COM(2008) 791 final, 25.11.2008.

²⁶⁰ Referred to as the MASPNOSE and Plan BOTHNIA projects, available online: <<https://www.surfgroepen.nl/sites/CMP/maspnose/default.aspx>>; and <<http://planbothnia.org/>>.

²⁶¹ Available online: <http://ec.europa.eu/maritimeaffairs/studies/msp_med/msp-med_final_report_en.pdf>.

²⁶² Progress Report on the EU's Integrated Maritime Policy, COM(2009) 540, Brussels, 15 October 2009 at 11.

²⁶³ COM(2010) 771, 17.12.2010, at 3.

²⁶⁴ Recommendation of the European Parliament and of the Council of 30 May 2002 concerning the implementation of Integrated Coastal Zone Management in Europe, OJ L 148/24, 6.6.2002.

²⁶⁵ Council Decision of 13 September 2010 concerning the conclusion, on behalf of the European Union, of the Protocol on Integrated Coastal Zone Management in the Mediterranean to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, OJ L 279/1, 23.10.2010.

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littoral countries around the Mediterranean and Black Seas.²⁶⁶ The 2009 Commission White Paper on adapting to climate change provides for European guidelines on adaptation in coastal and marine areas.²⁶⁷ In addition, the Commission is planning a further proposal to strengthen the ICZM Recommendation in 2011 to further support comprehensive and effective climate strategies for coastal zones. Furthermore, an important milestone was reached in 2011 when the Commission published a regulatory impact assessment and a public consultation document on the possible ways forward for MSP and ICZM in the EU.²⁶⁸

Finally, mention ought to be made of strategic environmental assessment (SEA) which is the process by which environmental considerations are integrated into the preparation of plans and programmes. This type of assessment is mandatory under the SEA Directive for sectors such as fisheries, energy, industry and transport and thus can contribute to ecosystem-based management at an early stage in the planning process.²⁶⁹

All of the aforementioned initiatives have merit and should not be viewed in isolation as they are intended to complement each other. Undoubtedly, if applied correctly and rigorously, they can contribute enormously to the implementation of ecosystem-based management of the marine environment as well as to the broader objective of good ocean governance at global and regional levels by the EU.

5. MAKING THE ECOSYSTEM APPROACH WORK WELL IN PRACTICE

5.1 Obstacles to Ecosystem-based Management in the EU

More than a decade ago, a leading legal scholar at Berkeley University noted that there was an extraordinary amount of controversy and some confusion in the United States about the political, scientific, legal and administrative aspects of implementing the ecosystem approach in the marine environment.²⁷⁰ As is evident from the brief review undertaken above, this did not appear to stymie the subsequent development of the ecosystem approach as a normative concept in international law or within the domestic legal orders of many states. What is more, the approach has been implemented with varying degrees of success by a number of regional management organisations such as CCAMLR.²⁷¹ Clearly, however, implementing the ecosystem approach in the European maritime area is a considerably different proposition due to the unique legal order of the EU as a supranational entity aimed at regional economic and political integration. That said, EU law on the subject has evolved steadily in recent years and the absence of a universal definition of the ecosystem approach has not proved insurmountable. As seen above, there is now a clear normative basis for its application in the European treaties and in a number of secondary legal instruments that have been adopted by the EU institutions. Furthermore, the steady adoption of secondary legislation demonstrates a clear response by the EU to fulfil the commitment given at the 2002 World Summit on Sustainable Development to apply an ecosystem approach to oceans

²⁶⁶ Further information available online: <<http://www.pegasoproject.eu/>>.

²⁶⁷ COM(2009) 147 final, 1.4.2009.

²⁶⁸ European Commission, ENV.D2 (2011), 10.06.2011.

²⁶⁹ Council Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, OJ L 197/30, 21.7.2001.

²⁷⁰ H. Scheiber, "From Science to Law to Politics: An Historical View of the Ecosystem Idea and its Effects on Resource Management," *Ecology Law Quarterly* 24 (1997): 631.

²⁷¹ Considerable care should however be taken with this example, as I have noted elsewhere: "The application of ecosystem approach is facilitated by two distinctive factors that are unique to the Antarctic marine area. Firstly, the existence of the Antarctic Convergence Current which divides the cold waters of Antarctic from the warmer waters of the Atlantic, Pacific and Indian Oceans and is a natural barrier to delimit the ecology of the region. Secondly, this approach is facilitated by the central position of krill in the Antarctic food chain which links all species in the food chain to varying degrees." See R. Long, n. 23 above, citing Kaye, n. 42 above, pp. 355–375. For a critical view on the success of CCAMLR, see Redgwell, n. 41 above, Chapter 9.

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management by 2010. Despite this progress, there remain several obstacles to applying the concept in practice in the European maritime area, which will be briefly touched upon here.²⁷²

5.2 Ecosystem Boundaries

Firstly, as is well-known, practical difficulties arise when the boundaries of the ecosystem do not correspond to the maritime jurisdictional zones set down by the Law of the Sea as is evident from Figure 6.²⁷³

[INSERT FIGURE 6]

These difficulties arise because the physical extent of an ecosystem is based on ecological, rather than political or economic, criteria. The resulting mismatch between ecosystem boundaries and the boundaries of the various maritime jurisdictional zones as codified in the 1982 LOS Convention may mean that the rights and duties of various parties vary across the ecosystem. Frequently, these difficulties are compounded by the absence of a single regulatory body with exclusive legal competence to adopt management measures that apply to the entire ecosystem. Significantly, the International Court of Justice has consistently rejected attempts to redraw maritime boundaries in accordance with ecosystem or environmental considerations.²⁷⁴ As a result, cross-boundary cooperation at global and regional levels is essential to implementing the concept in practice. From the perspective of EU law, this problem is mitigated to a certain extent as the European institutions have legal competence in a number of areas to adopt regulatory measures that are transboundary in scope such as fisheries conservation measures under the CFP. This is particularly relevant in light of the ambulatory nature of ecosystem boundaries and the need to periodically adjust the geographical scope of the various regulatory measures that are common to the entire ecosystem. Moreover, in exercising its exclusive competence with regard to the conservation and management of living aquatic resources, the rule-making powers of the EU extends to concluding agreements with third countries and international organisations.²⁷⁵ These powers are clearly germane to implementing the ecosystem approach on a regional basis. Indeed, as seen above, the MSFD is predicated on utilising the regional seas institutional structures to deliver on its fundamental objective of attaining good environmental status of all EU marine waters by 2020 at the latest.

5.3 Scientific Doubt

From a scientific viewpoint, ecosystem processes and functioning may be inchoate and at best are complex to understand and manage. Indeed, one early study of the subject cast some doubt on the ability of ecologists to agree on what constitutes an ecosystem and some legal scholars have since suggested that scientific uncertainty may undermine the long-term utility of the ecosystem approach as a normative concept that informs the difficult decisions that need to be taken in marine environmental management.²⁷⁶ This leads directly to the second difficulty at a European level, which relates to the availability of scientific data, as well as appropriate programmes for the monitoring of the marine environment. In other words, without appropriate data and monitoring programmes, the ecosystem approach will be difficult if not impossible to implement successfully in practice. Once again, considerable progress has been made by the EU on this issue with the adoption of Regulation 199/2008 that sets down specific requirements

²⁷² On the limitations of the approach in international law see Tanaka, n. 73 above, pp. 78–82.

²⁷³ See Belsky, n. 52 above.

²⁷⁴ *Gulf of Maine Case* 1984 ICJ 246; *Jan Mayen Case* (1993) ICJ Reports 38.

²⁷⁵ Joined Cases 3, 4, 6/76, *Kramer* (1976) ECR 1279.

²⁷⁶ R.V. O'Neill, D.L. DeAngelis, J.B. Waide and T.F.H. Allen, *A Hierarchical Concept of Ecosystems* (Princeton: Princeton University Press, 1986), p. 4. The difficulties regarding scientific uncertainty and ecosystem-based management have been raised by Tanaka, n. 73 above, *passim*.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), OCEAN YEARBOOK Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

regarding the collection of data on the environmental impact of fisheries on the marine ecosystem. Similarly, the move towards the installation of remote sensing and ocean observation systems will lessen the considerable expense associated with traditional marine environmental monitoring programmes. From a legal perspective, these developments are important in so far as Member States must obtain a comprehensive scientific overview of the current and future status of the marine environment in order to comply with the requirements of the MSFD.²⁷⁷ Fortunately, the EU is developing an infrastructure for the sharing and transmission of spatial information and environmental data (the Inspire Directive), which will be particularly useful in ensuring that Member States adopt a transparent and consistent approach to implementation of their obligations under the MSFD.²⁷⁸ The Public Sector Information Directive also facilitates access and re-use of all public information. Moreover, the development of the new European Marine Observation and Data Network (EMODNET) and the establishment of a Common Information Sharing Environment are fundamental to implementing the ecosystem approach at a regional level.

In reality, considerable practical difficulties have to be overcome in some Member States where, for example, bathymetric data is protected under national security law as a military secret, either for all sea areas under national jurisdiction such as Finland, or in some parts of them such as France.²⁷⁹ In such cases public acquisition is either forbidden or there may be a restriction on the scale or resolution of the data that is made available.²⁸⁰ However, a number of initiatives are being taken at an EU level to support the availability of scientific data and appropriate programmes for the monitoring of the marine environment. For instance, as part of their programme to support the further development of the Integrated Maritime Policy, the Commission has brought forward a legislative proposal which will provide financial support aimed at fostering, inter alia, "the development of a comprehensive and publicly accessible marine data and knowledge base of high quality which facilitates sharing, re-use and dissemination of these data among various user groups and ensures visualisation of maritime information through web-based tools."²⁸¹ This will entail the EU spending close to €130 million per year for the collection of marine data.²⁸² Under the Global Monitoring for Environment and Security initiative and the EMODNET, electronic access is provided to bathymetric, geological, physical, chemical, biological and habitat data for selected sea basins. The collection of data or "marine observation" remains the responsibility of the Member States and this raises several important issues regarding the efficacy of national data acquisition programmes and the legal aspects of marine scientific research in the EU.²⁸³

In parallel with these developments, it should also be kept in mind that the EU is party to a number of international agreements that are aimed at facilitating the free flow of scientific information

²⁷⁷ Art. 5 of Directive 2008/56/EC. Indeed, one of the reasons leading to the adoption of the MSFD was the long-standing failure of the Member States to undertake adequate scientific monitoring of the status of the ocean environment, as well as the natural resources and ecological systems that it supports. See Communication from the Commission to the Council and the European Parliament, Thematic Strategy on the Protection and Conservation of the Marine Environment, COM(2005)504 final, Brussels, 24.10.2005, p. 4.

²⁷⁸ Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (Inspire) OJ L 108, 25.4.2007, p. 1. Under Art. 19(3) of the Directive, Member States are obliged to provide the Commission with access to the data and information acquired during the initial assessment in order to fulfil its tasks under the Directive. Such information must also be made available to the European Environment Agency for the performance of its tasks pursuant to Art. 25 of the Directive. The EU is also developing an information sharing system covering all water-related reporting requirements, ranging from drinking water to urban wastewater treatment. This will include reporting requirements under the MSFD, see, P. Gammeltoft, *Genera; Overview of the MSFD*, available online: <<http://www.ifremer.fr/2012MarineTargets/actes/Gammeltoft.html>>.

²⁷⁹ See SEC(2009) 499 final. 7.4.2009, p. 19.

²⁸⁰ *Id.*

²⁸¹ COM(2010) 494 final. 29.9.2010.

²⁸² *Id.* This includes €40 million for fisheries data, €70 million for space data and €18.5 million per year for assembling data through the Global Monitoring for Environment and Security initiative and under the proposed financial regulation for integrated maritime policy.

²⁸³ See Long, n. 198 above, pp. 75.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

and data between the various international bodies concerned with the implementation of the ecosystem approach. Of particular relevance in this regard is the Memorandum of Understanding (MOU) between the European Community and the ICES, which provides a framework for enhanced cooperation between the two bodies and the provision of scientific advice on matters such as the CFP, the MSFD, and the integrated maritime policy.²⁸⁴ The geographical scope of the agreement is the North-east Atlantic and the Baltic Sea. Importantly, the advice is free from political influence and subject to the best quality standards for the provision of such advice. Moreover, the MOU provides a clear policy context in so far as it states the advice and the related scientific services must reflect the latest policy developments such as the "emphasis on the ecosystem approach."²⁸⁵ The MOU also notes that the advice is given within the wider context of international agreements and guidelines which set down obligations on the EU and Member States including the UN Fish Stocks Agreement, the World Summit Implementation Plan, the FAO Code of Conduct for Responsible Fisheries, and the 1992 Convention on Biological Diversity.²⁸⁶ Again, most notably, one of the issues that come within the scope of the MOU is the provision of advice and information on "the application of ecosystem approaches to management of human activities which have an impact on the marine environment."²⁸⁷ At a practical level, this MOU should not be viewed in isolation as it complements several other agreements between international bodies on the provision of scientific advice and information on the protection of marine ecosystems that are applicable to the European marine environment.²⁸⁸

5.4 Institutional Structures

The third challenge to implementing the ecosystem approach is the need for sophisticated institutional structures at appropriate levels that are capable of undertaking the diverse range of management, monitoring, and enforcement tasks that are associated with marine resource management.²⁸⁹ As succinctly stated in the European Commission's Guidelines for an Integrated Approach to Maritime Policy:

Decision-making may no longer be organised exclusively along the lines of traditional sectoral policies, but needs to reflect the large, transfrontier marine ecosystems which must be preserved in order to maintain the resource base of all maritime activities.²⁹⁰

In practice, however, there are few mechanisms and institutional structures in the Member States that facilitate cross-sectoral decision-making as envisaged in the European Maritime Policy. Some Member States such as France, Germany, Portugal, the Netherlands and Slovenia are moving towards the establishment of more integrated structures but several others such as Ireland do not have appropriate administrative or governance structures at a national level which are capable of the integrated management of maritime space with a view to protecting and preserving ecosystems. For this reason, the enactment of the UK's *Marine and Coastal Access Act 2009* is a welcome milestone as it reflects a new

²⁸⁴ This MOU between the European Community and ICES was updated in 2007. Copy available online: <<http://www.ices.dk/advice/request/2008/MoUs/20070524%20MoU%20between%20EC%20and%20ICES.pdf>>.

²⁸⁵ Para. 4 of the Agreement in the form of an MOU between the European Community and ICES.

²⁸⁶ *Id.*

²⁸⁷ *Id.*, para 5(b) third indent.

²⁸⁸ See for example, the 2008 MOU between NEAFC and the OSPAR Commission that provides a framework for mutual cooperation towards the conservation and sustainable use of marine biological diversity as well as the protection of marine ecosystems in the North-East Atlantic. Memorandum of Understanding (MOU) between NEAFC and OSPAR as adopted by the OSPAR Commission is contained in Annex 13 to Summary Record OSPAR 2008, OSPAR 08/24/1-E, at Annex 13. See also Para. 7.23(f). The MOU entered into force on 5 September 2008.

²⁸⁹ Project Hermes, "Promoting an ecosystem approach to the sustainable use and governance of deep-water resources," *Oceanography* 22, no. 1 (2009): 154–165.

²⁹⁰ COM(2008) 395 final. 26.6.2008.

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approach to marine resource management that is fully consistent with the ecosystem approach.²⁹¹ In particular, it establishes a "one-stop shop," the Marine Management Organisation, which has an extraordinary range of functions pertaining to, inter alia: marine planning, offshore licensing, nature conservation, and fisheries management. Importantly, it addresses one particular obstacle in implementing the ecosystem approach, which is the absence of a central body in the Member State with responsibility for law enforcement by providing a statutory basis for the appointment of officers with extensive enforcement powers in relation to licensing, nature conservation and fishing in the marine area.

In relation to stakeholder consultation structures, the range of consultative bodies in the Member States varies enormously. The establishment of the regional Fishery Advisory Councils under the CFP is a welcome and long-overdue step in the right direction. Nevertheless, the remit of these bodies is limited to the provision of advice on fishery management measures and does not extend to providing advice on regulatory measures governing other maritime sectors such as transport, renewable energy, the offshore hydrocarbon industry, or indeed coastal development in general. The absence of appropriate stakeholder consultation structures may deprive regulatory measures of their legitimacy and certainly does not sit very comfortably with the guidance offered by the Malawi Principles and with international best practice on ecosystem-based management.

6. CONCLUSIONS

The EU has not achieved the ambitious targets to halt the decline of biodiversity by 2010 in accordance with its commitment under the Convention on Biological Diversity. The *EU Biodiversity Strategy to 2020* is aimed at ameliorating this shortcoming and recent scientific work has focused on devising creative solutions with a view to halting the loss of biodiversity and to conserve functioning ecosystems. Undoubtedly, ecosystem-based management has emerged as one of the principal normative concepts aimed at promoting sustainable use of the seas and conservation of marine ecosystems. As seen above, the absence of a universally accepted definition of the "ecosystem approach" or "ecosystem-based management" in international, regional or EU law has not impeded the implementation of the concept in practice. Indeed, from the brief review undertaken in this article, it is evident that the initial stages of implementation appear to be progressing relatively well and much practical experience has been gained in testing the concept and methodology in the North Sea and under several of the regional seas agreements. Unsurprisingly perhaps, experience has demonstrated that there is no single way to implement the ecosystem approach in practice as this is very much contingent upon the measures that are required to achieve ecosystem integrity at local, regional or global levels. That being said, it is now clearly apparent that collaboration between Member States, third countries, scientific institutions and competent international organisations is fundamental to undertaking cross-boundary and cross-sectoral management of human activities in the marine environment. Furthermore, the experience gained in the North Sea suggests that the implementation of the ecosystem approach is going to take time, appropriate resources, as well as a considerable intergovernmental/European cooperation before it will achieve the desired, ecological, social and economic objectives.

At a global level, the ecosystem approach is now considered to be one of the most important concepts to evolve in environmental and natural resource management in recent decades.²⁹² In contrast, several academic commentators have been less assertive and have suggested that the ecosystem approach is a policy or regulatory tool and not a positivist legal concept *per se*.²⁹³ Whatever the merits of these views, considerable progress is now being made in the wider European maritime area to move the concept

²⁹¹ Received Royal Assent on 12 November 2009.

²⁹² Report of the Secretary-General, *Oceans and the Law of the Sea*, A/59/62/ Add.1 18 August 2004, p. 63, para. 244.

²⁹³ See H. Wang, "Ecosystem Management and Its Application to Large Marine Ecosystems: Science, Law, and Politics," *Ocean Development and International Law* 35, no. 1 (2004): 41–74.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), *OCEAN YEARBOOK* Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

forward into the real world of practical implementation through the medium of regulatory action. Most importantly, much of the impetus in this regard is being derived from the solid normative basis for the concept in several international and regional legal instruments including: the 1992 Convention on Biological Diversity and the European Regional Seas Conventions, and the various regional fisheries management agreements. One can also point to an implicit basis for the application of concept under several key provisions in the 1982 United Nations Convention on the Law of the Sea.

For understandable reasons, much of the burden regarding the practical application of the concept is being undertaken within the framework of the regional seas agreements. Yet, this might prove to be the Achilles heel of the concept in the longer-term as few regional bodies have a mandate to address problems affecting the entire marine ecosystem or across the broad spectrum of sectors engaged in maritime activities. Moreover, measures taken by regional bodies nearly always require transposition and implementation by the subsequent actions of the Contracting Parties. In this context, the regional solution will require a large dose of political commitment and appropriate resources applied at a regional level. This may prove to be particularly difficult in some regional seas such as the Mediterranean and the Black Sea where the regional structures and the geo-political environment is not as well developed as other maritime areas such as the North-east Atlantic and the Baltic Sea.

Although lacking an express legal basis in the EU Treaties, the EU is firmly committed to ecosystem-based management in the marine environment as evidenced by the comprehensive structures and procedures that are now being established in the Member States under the MSFD. In parallel, the EU has orientated a number of legal and policy instruments towards ecosystem-based management such as: the Habitats and Birds Directives; the Common Fisheries Policy; the European Integrated Maritime Policy; as well as several soft law initiatives concerning marine spatial planning and integrated coastal zone management. Again, many of these measures aim to strike a balance between sustainable use and the protection of marine natural resources with a view to safeguarding the long-term capacity of the environment to deliver ecological services. These efforts have been facilitated by the unique legal nature of the EU as a supranational, regional integration organisation with the capacity to adopt measures that are legally binding on the Member States in specific policy areas such as fisheries, as well as the power to conclude international agreements in areas where it exercises exclusive jurisdiction. These features will help the EU overcome some of the problems encountered due to the open and ambulatory nature of ecosystem boundaries as well as the absence of definitive scientific evidence concerning the precise ecological status of marine ecosystems. Furthermore, they will help the EU realise the objectives of a whole raft of international agreements such as the Convention on Biological Diversity, the Bern Convention on the Conservation of European Wildlife and Natural Habitats, and the Bonn Convention on the Conservation of Migratory Species of Wild Animals. Significantly, the latter two treaties do not mention the ecosystem approach expressly but will nonetheless benefit from its implementation indirectly. Over the coming years, however, the future of ecosystem-based management and the success of these instruments are firmly linked with the implementation of the MSFD by the Member States.

In the final analysis, as seen in the final section of this article, it would be remiss not to point out that the implementation of the ecosystem approach is placing new demands on a wide range of organisations including: the regional seas commissions; national data collection and marine scientific agencies; as well as the environmental protection agencies and the other national bodies that are responsible for offshore licensing and planning in the Member States. One notable weakness in the regulatory instruments adopted is the absence of appropriate enforcement and compliance mechanisms and this continues to be a challenge for the EU. There is little doubt that the lack of suitable resources, technical ability to undertake the enforcement task at sea and political will in the Member States has contributed to this issue. Experience in other areas of EU law suggests that all efforts to implement the ecosystem approach will be rendered relatively futile if this issue is not addressed forthwith by the European institutions.²⁹⁴ At the time of writing, it remains to be seen if the initiatives highlighted in this

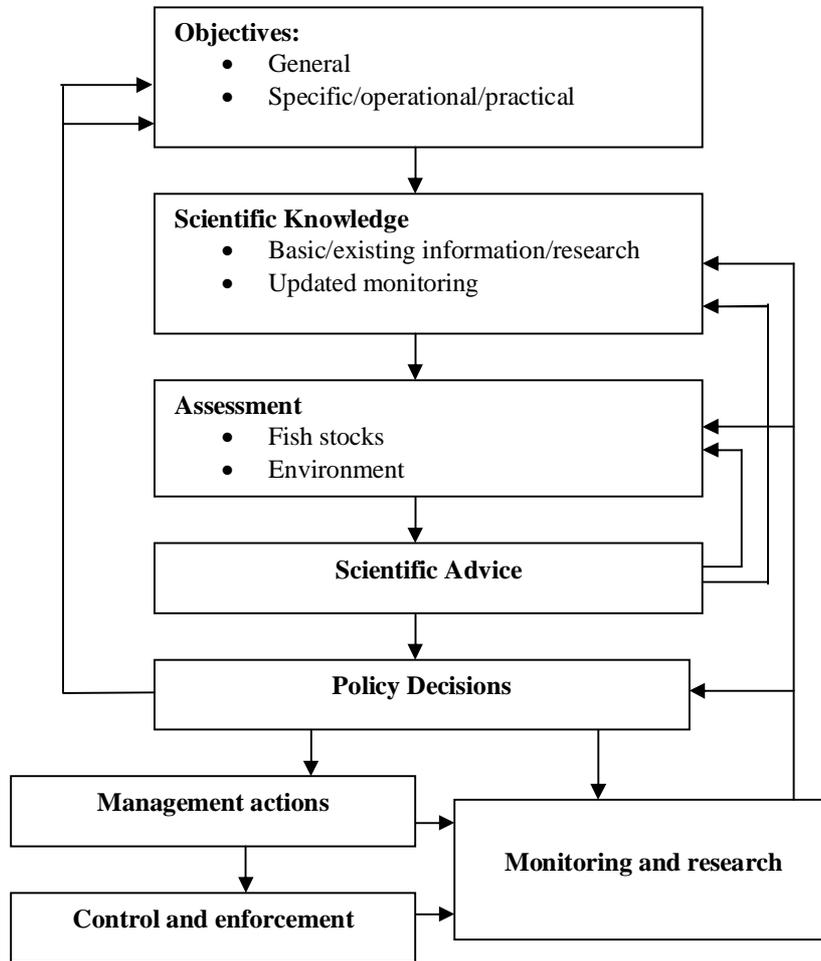
²⁹⁴ On the failure of enforcement structures and procedures under the Common Fisheries Policy, see inter alia: R. Long and P. Curran, *Enforcing the Common Fishery Policy* (Oxford: Blackwell Science, 2000); A. Berg,

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), OCEAN YEARBOOK Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012) pp.417-484

article will be sufficient to overcome the difficulties encountered in implementing the concept in practice by the EU Member States. Furthermore, assuming that science can provide the right answers, the ultimate test of the ecosystem approach will be how well it delivers sustainable ocean use and conserves functioning ecosystems in the interest of the common good.

Implementing and Enforcing European Fishery Law: The Implementation and Enforcement of the Common Fisheries Policy in the Netherlands and the United Kingdom (The Hague: Kluwer Law, 1999); Court of Auditors, Special Report No. 7/2007 on the control, inspection and sanction systems relating to the rules on conservation of Community fisheries resources together with the Commission's replies (pursuant to Art. 248(4) second paragraph, EC) (2007/C 317/01). OJ C 317/1, 28.12.2007; and C. Johnson, "Fisheries Enforcement in European Community Waters Since 2002—Developments in Non-Flag Enforcement," *International Journal of Marine and Coastal Law* 23, no. 2 (2008): 249–270.

Figure 1.—Conceptual Framework for the Application of the Ecosystem(s) Approach under the Bergen Declaration.*



* This Declaration was signed by the Ministers responsible for the protection of the environment of the North Sea and the European Commissioner responsible for environmental protection at the Fifth International Conference on the Protection of the North Sea, Bergen, 20–21 March 2002.

R. Long, "Legal Aspects of Ecosystem-Based Marine Management in Europe" in A. Chircop, M. L. McConnell, S. Coffen-Smout (ed.), OCEAN YEARBOOK Vol. 26, (Boston/Leiden, Brill Academic Publishers, c. April 2012)
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