

1-1-2007

Protecting the Mysteries of the Deep: Conserving Biodiversity in Marine Areas Beyond National Jurisdiction

Théa Lowry

Follow this and additional works at: <https://digitalcommons.schulichlaw.dal.ca/djls>

Recommended Citation

Théa Lowry, "Protecting the Mysteries of the Deep: Conserving Biodiversity in Marine Areas Beyond National Jurisdiction" (2007) 16 Dal J Leg Stud 113.

This Article is brought to you for free and open access by the Journals at Schulich Scholars. It has been accepted for inclusion in Dalhousie Journal of Legal Studies by an authorized editor of Schulich Scholars. For more information, please contact hannah.steves@dal.ca.

PROTECTING THE MYSTERIES OF THE DEEP: CONSERVING BIODIVERSITY IN MARINE AREAS BEYOND NATIONAL JURISDICTION

THÉA LOWRY⁺

Living resources in the deep sea have attracted increased attention over the past few decades. As science and technology advance our ability to explore these areas, the extent of marine biodiversity being discovered is astonishing. Unfortunately, beyond national boundaries this abundance of life is largely unprotected. This article will explore the current legal regime governing marine biodiversity in areas beyond national jurisdiction. It will identify gaps in the regime and suggest a solution in the form of a framework for an implementation agreement to the United Nations Convention on the Law of the Sea.

The article begins by describing various aspects of marine biodiversity in areas beyond national jurisdiction, and identifying various threats and impacts to these areas. The article then provides an overview of the current legal regime by describing the primary international and regional frameworks as well as addressing gaps in governance and implementation. On this background, the article discusses the creation of an implementation agreement to the United Nations Convention of the Law of the Sea - exploring central elements of such an agreement and options for international adoption.

The author's ultimate conclusion is that long-term protection of marine biodiversity in areas beyond national jurisdiction requires broad international consensus and definitive action in the form of a legally binding agreement.

INTRODUCTION

The vast area of ocean that extends beyond national boundaries represents one of the "last frontiers" on earth. Scientists are only now coming to grips with the extent of living and non-living resources it contains. Over the past few decades, advances in science have allowed humans to extend their research deeper into these waters. The resultant discoveries have been startling. Hydrothermal vents and seamounts rise from the ocean floor, creating unique ecosystems home to a wide array of different organisms. Discrete deep-sea fish stocks are being discovered with advanced technology taking vessels further and further away from national waters. Advances in research and technology come with a price, however, as they allow humans to exploit ocean resources faster than our limited understanding of them can progress. This acute lack of knowledge about the deep-sea environment means the potential for human activities to cause serious harm is very real. Moreover, the current gaps in the international legal regime allow activities to take place largely unregulated. This "freedom of the high seas" mentality will have dire consequences for the conservation of marine biodiversity. If we do not alter this attitude, we could face the extinction of entire groups of organisms before ever having the opportunity to discover them.

The international community has increasingly turned its attention to the importance of marine "biological diversity", defined by the *Convention on Biological Diversity*

(CBD)¹ as “variability among living organisms from all sources...and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.”² As noted by the *Jakarta Mandate*,³ oceans cover 70 per cent of the planet’s surface, contain diverse habitats and support an abundance of life. Sixty-four per cent of this area is beyond national jurisdiction.⁴ The protection and conservation of marine biodiversity beyond areas of national jurisdiction is therefore generating increasing concern.

Various international bodies have begun to address this concern, organizing a number of working groups and discussion forums over the past few years. The CBD program of work for marine and coastal areas noted an “urgent need for international cooperation and action to improve conservation and sustainable use of biodiversity in marine areas beyond the limits of national jurisdiction.”⁵ Similarly, the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea proposed at its meeting in 2003 that “international bodies at all levels consider urgently how to better address, on a scientific and precautionary basis, the threats and risks to vulnerable and threatened marine ecosystems and biodiversity beyond national jurisdiction.” In February 2006, pursuant to a UNGA resolution,⁶ the first meeting of the United Nations Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction was held, with many delegations expressing views in favour of active conservation.

The general consensus of the international community is that the current legal regime governing the seas beyond national jurisdiction requires strengthening in order to properly manage and conserve biodiversity. Central to many reports is the need for a more comprehensive, integrated approach to management. The general provisions of the *United Nations Convention on the Law of the Sea*⁷ provide little guidance on how best to manage these resources to ensure their sustainable use and conservation for present and future generations. The aim of this paper is to suggest a possible legal route to achieve the integrated, strengthened governance of biodiversity in marine areas beyond national jurisdiction.

† Lowry is a second year student at Dalhousie Law School. She would like to thank Professor David Vander Zwaag for his inspiration, advice and assistance in preparation of this article.

1 June 5 1992, 31 I.L.M. 818 [CBD].

2 *Ibid.* at Art 2.

3 *Jakarta Mandate on Marine and Coastal Biological Diversity*, adopted at the Second Meeting of the Conference of the Parties to the Convention on Biological Diversity, Jakarta, 6-17 November 1995, Decision II/10, online: <http://www.biodiv.org/programmes/areas/marine/default.asp>. Concerned for the conservation and sustainable use of marine and coastal biodiversity, the Parties to the Convention on Biological Diversity agreed on a program of action for implementing the Convention. The programme, called “Jakarta Mandate on Marine and Coastal Biological Diversity” was adopted in 1995. Through its programme of work, adopted in 1998, and reviewed and updated in 2004, the Convention focuses on integrated marine and coastal area management, the sustainable use of living resources, marine and coastal protected areas, mariculture and alien species.

4 Areas “beyond national jurisdiction” in this paper refers to those areas of the ocean extending beyond the Exclusive Economic Zone, as set out in the *United Nations Convention on the Law of the Sea*, December 10 1982, 1833 U.N.T.S. 397.

5 *Seventh Ordinary Meeting of the Conference of the Parties to the Convention on Biological Diversity*, Kuala Lumpur, Malaysia, 9 - 20 February 2004, Decision VII/5 at para. 30, online: <http://www.biodiv.org/decisions/default.aspx?m=COP-07&id=7742&lg=0> [Decision VII/5].

6 United Nations General Assembly, Resolution 59/24, Oceans and the Law of the Sea, UN Doc. A/RES/59/24, (2005) at para. 73, online: <http://www.intfish.net/docs/2005/un/res59-24.pdf>.

7 10 December 1982, 1833 U.N.T.S. 397 [LOS Convention].

I will begin by outlining the mysteries of the seas beyond national jurisdiction, and will examine scientific discoveries recently made in these regions. I will then describe the prominent threats faced by biodiversity in marine areas beyond national jurisdiction. Following this background, I will move on to sketch an overview of the current legal regime, describing both the primary international and regional frameworks, addressing gaps in governance and implementation. I will propose an Implementation Agreement to the LOS Convention that would redress these gaps. I will explore the central objectives and possible elements of such an agreement, concluding with a brief discussion of options for international adoption, compliance and enforcement.

MYSTERIES REVEALED

Advances in technology since the mid-1970s have led towards a much greater scientific understanding of life in the high seas.⁸ We know now that the waters beyond national jurisdiction are home to a huge array of biologically diverse habitats and ecosystems. However, scientists have made great strides in the area, having made many important discoveries. The following provides important examples of these “mysteries revealed,” including hydrothermal vents, seamounts, cold water coral and sponge reefs, cold seeps and submarine canyons.

Hydrothermal Vents

Scientists discovered hydrothermal vents in 1977 when giant tubeworms, clams and muscles were found living at a depth of about 2000 metres. These unique ecosystems do not use the sun to survive, but rather are powered by heat from the earth’s mantle, resulting in a process called chemosynthesis.⁹ Hydrothermal vents support a significant part of marine biodiversity: thus far, researchers have discovered more than 500 new animal species, most of which are endemic to the vents.¹⁰ Due to their unusual physiological characteristics arising from adaptation to the vents’ extreme environment, vent organisms hold great scientific and commercial interest. The biotechnology industry is particularly interested in potential uses of vent organisms’ biological processes.¹¹ Some commercial uses of these deep-sea organisms to date include skin products, anti-allergy agents, and potent cancer fighting drugs.¹²

Seamounts

Just as their name implies, seamounts are underwater mountains. They range from 100 to 3000 metres in height without breaking the surface.¹³ Underwater currents act to concentrate plankton and nutrients around these submerged islands, making

8 “High Seas” will be used as a term throughout this paper referring to marine areas beyond national jurisdiction.

9 S. Kim Juniper, “Deep-Sea Hydrothermal Vent and Seep Habitats and Related Governance Issues” (Paper presented to the Workshop on the Governance of High Seas Biodiversity Conservation, Cairns, Australia, 2003) at 3, online: <http://www.highseasconservation.org/documents/juniper.pdf>.

10 CBD, *Status and trends of, and threats to, deep seabed genetic resources beyond national jurisdiction, and identification of technical options for their conservation and sustainable use*, Subsidiary Body on Scientific, Technical and Technological Advice, 11th Meeting, 22 July 2005, UNEP/CBD/SBSTTA/11/11, at para. 30 [SBSTTA 11].

11 *Ibid.*

12 *Ibid.* at para. 21.

13 Kristina M. Gjerde, “Ecosystems and Biodiversity in Deep Waters and High Seas”, UNEP Regional Seas Reports and Studies No. 178 at 14 (Switzerland: UNEP/IUCN, 2006) [Gjerde/UNEP 2006].

them popular feeding grounds for migratory and bottom-dwelling species.¹⁴ Although researchers have studied less than 200 seamounts in detail, they estimated that over 100,000 exist. Research has shown that seamounts provide the sole habitat for many unique species.

Cold-Water Coral and Sponge Reefs

Some of the largest coral structures in the world are found in the deep, cold waters of the North-East Atlantic.¹⁵ Cold-water corals grow very slowly, at only one-tenth of the rate of their tropical counterparts. They can range from small colonies to vast complexes up to 8000 years in age, and are usually situated near seamounts beyond national jurisdiction.¹⁶ Like corals, sponge reefs are also slow-growing and can form immense fields covering over 700 square kilometres. Both provide important habitats and shelter for a diverse array of marine life. Due to their slow-growing and fragile nature, these structures are particularly vulnerable to human activities and would take centuries to recover from damage, if able to be recovered at all.¹⁷

Deep-Sea Fish

Deep-sea fish live on or near the seabed, at depths generally below 400 metres. Similar to other deep-sea organisms, they are slow to grow and mature, and have low reproductive rates. For example, Orange Roughy, found in the South-West Indian Ocean, can live for up to 240 years, reaching sexual maturity at about age 30.¹⁸ Evidence suggests that previously un-fished areas of the high seas are now subject to exploratory fishing,¹⁹ likely in the hopes to discover new, commercially valuable fish stocks.

Other Important Deep-Sea Habitats

Cold seeps are areas of the seabed where oil or gas oozes from the sediments, usually containing a high concentration of methane.²⁰ Seeps support a large number of biological organisms, including unique bacteria that may be useful in the biotechnology industry. Submarine canyons are also areas that house a number of diverse species. They are important feeding grounds for many pelagics, and support a particularly high number of cetaceans.²¹

CURRENT THREATS AND IMPACTS

This section explores current human threats to and impacts on biological diversity in marine areas beyond national jurisdiction. These include deep-sea bottom fisheries, illegal, unregulated and unreported fishing, marine scientific research and bioprospecting.

14 *SBSTTA 11, supra* note 10 at para. 38.

15 UN, *Protection and conservation of vulnerable marine ecosystems in areas beyond national jurisdiction*, Submitted by the delegation of Norway, United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, 4th Meeting, 2-6 June 2003, UN Doc. A/AC.259/10 at para. 5.

16 *SBSTTA 11, supra* note 10 at para. 41.

17 *Gjerde/UNEP 2006, supra* note 13 at 16-17.

18 Kristina M. Gjerde & David Freestone, "Unfinished Business: Deep Sea Fisheries and the Conservation of Marine Biodiversity Beyond National Jurisdiction, Editors' Introduction" (2004) 19 *Int'l J. Mar. & Coast. L.* 209 [*Gjerde/Freestone 2004*].

19 *Ibid.* at 214.

20 *SBSTTA 11, supra* note 10 at para. 32.

21 *Gjerde/UNEP 2006, supra* note 13 at 13.

Deep-Sea Bottom Fisheries

Among all the current threats facing biological diversity in the deep seas, of greatest concern are unsustainable deep-sea bottom fisheries, particularly those employing bottom trawling. As heavy bottom trawl nets drag along the seabed, they take and damage everything in their path. Trawling negatively affects deep-sea fish stocks in two ways. Since many deepwater species are vulnerable to over-fishing, their slow growth and maturity rates, fishing without adequate management measures in place can have the effect of depleting a stock to potentially unrecoverable levels. In addition to catching target stocks, trawling produces large amounts of bycatch. There is therefore concern for species such as deepwater sharks, a common trawling bycatch, which also tend to be slow growing and late to mature.²² Second, when fishing is carried out carelessly with destructive equipment, the consequences for the associated habitat can be devastating.²³ Given their fragile nature, cold water corals and sponges are particularly vulnerable, with centuries of growth being demolished by the single swipe of a net. When this occurs, the habitat and sheltering structures for thousands of species are eliminated. As a statement from over 1100 scientists warned in 2004, "just as scientists have begun to understand the diversity, importance and vulnerability of deep-sea coral forests and reefs, humans have developed technologies that profoundly disturb them."²⁴

The rise and fall of the South-West Indian Ocean Fishery is a useful illustration of over-fishing by unsustainable methods. Trawling for Orange Roughy began in 1999 when the fish was fortuitously discovered by New Zealand fishing vessels. Without any catch limits yet in place, and with fishing vessels using the highly effective trawling technique, catch levels spiked in 2000 to over 12,000 metric tonnes. Sadly, by August of 2002, the stocks had collapsed. By that time, a management regime had scarcely left the planning stages.²⁵

Illegal, Unreported and Unregulated Fishing

In addition to unsustainable fishing techniques, a global problem affecting areas both within and beyond national jurisdiction is that of illegal, unreported and unregulated (IUU) fishing. In its International Plan of Action for IUU Fishing, the FAO stated:

IUU fishing undermines efforts to conserve and manage fish stocks in all capture fisheries... This situation leads to the loss of both short and long-term social and economic opportunities and to negative effects on food security and environmental protection. IUU fishing can lead to the collapse of a fishery or seriously impair efforts to rebuild stocks that have already been depleted.²⁶

Despite attempted enforcement mechanisms, IUU fishing continues to be an inter-

22 Jean-Francois Pulvenis de Seligny-Maruel, FAO Statement to the Fifth Meeting of the Open-ended Informal Consultative Process on Ocean Affairs and the Law of the Sea on issues related to deep-water fisheries, June 2004, audio available online: <http://www.iisd.ca/oceans/icp5/> [FAO Statement].

23 *Ibid.*

24 *Scientists' Statement on Protecting the World's Deep-Sea Coral and Sponge Ecosystems*, online: Marine Conservation Biology Institute <http://www.mcbi.org/what/dscstatement.htm>.

25 Gjerde/Freestone 2004, *supra* note 18 at 213.

26 *International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing*, online: FAO <http://www.fao.org/DOCREP/003/y1224e/y1224e00.HTM>.

national problem.

Marine Scientific Research, Bioprospecting and Other Impacts

Marine scientific research and bioprospecting²⁷ pose inadvertent threats to organisms in the deep sea. The removal of organisms or disruptive seismic testing could have potentially serious effects on fragile ecosystems; given our limited understanding, the exact repercussions are difficult to predict.²⁸ The threat of bioprospecting will likely continue to increase as the associated technology progresses.²⁹ It is thus imperative that a preliminary conservation regime be put in place to limit the damage these activities could cause.

Finally, the impacts associated with pollution, toxic waste, shipping, and climate change do not remain within the limits of national jurisdiction. Despite their vastness and their seemingly limitless ability to absorb human influence, the waters beyond national jurisdiction are equally at risk from these threats as are those closer to shore.

Thus, the question must be asked: how must the international legal regime meet these threats? To answer this question, we must first analyse the current state of international law as it relates to biodiversity in the high seas.

CURRENT LEGAL FRAMEWORK

The legal framework for the marine area beyond national jurisdiction is a complex mix of international and regional conventions and bodies. The primary international instruments covered here are, the UN Convention on the Law of the Sea, the Convention on Biological Diversity, the Fish Stocks Agreement, the Convention on Migratory Species, the Convention on International Trade in Endangered Species of Wild Flora and Fauna, and the International Maritime Organization. The regional framework discussed in this paper is comprised of the Regional Seas Programmes and Regional Fisheries Management Organizations.

International Legal Instruments

UN Convention on the Law of the Sea

The high seas exist as a global commons lying beyond the national boundaries imposed by the LOS Convention. They are consequently subject only to general provisions provided by the Convention. "Freedom of the high seas" appears to be the central message, giving states the right of navigation and over-flight, and the rights

²⁷ While a comprehensive discussion of the practice of "marine bioprospecting" is beyond the scope of this paper, it has been described by Daniel Owen (in his report cited below) as "the collection of organisms from the marine environment for the purpose of then exploring their biotechnology potential back in the laboratory". He notes that organisms may be collected via differing methods, namely "diving in coastal waters, trawling from the water column, grab-sampling of the seabed from a ship, or use of a manned submersible". See Daniel Owen, "A Study into the Legal Framework for Marine Biotechnology Development in the United Kingdom" (U.K.: Foresight Marine Panel, 2004).

²⁸ *Gjerde/UNEP 2006, supra* note 13.

²⁹ A parallel issue not covered in this paper, though worthy of mention, is the current international dispute over genetic resources discovered in marine areas beyond national jurisdiction. Who shall have access and rights to genetic resources discovered beyond national jurisdiction by the bioprospecting activities of wealthy states is an issue currently being hotly debated – one that will likely continue to emerge.

to lay submarine cables and pipelines, construct artificial islands, fish and conduct scientific research.³⁰ These provisional rights are qualified by other provisions in the Convention, notably, those requiring international cooperation³¹, those concerning allowable catch and best scientific evidence³², and those enforcing the protection and preservation of the marine environment.³³ Details or guidelines on how to implement these provisions, such as what constitutes “best scientific evidence”, or *how* to “protect and preserve the environment” are not present in the Convention. With respect to fishing in the high seas, the general duty to cooperate provided by the LOS Convention does not establish legal mechanisms sufficient to compel unwilling fishing states to join in collaborative management and conservation efforts. Many states choose instead to continue with unregulated fishing under their right to freedom of the high seas. The same could likely be said for a state wishing to take on a bioprospecting project over a distant seamount. The state is required only to comply with the general provisions of the LOS Convention, which do not spell out “best practices” for bioprospecting on seamounts. It is therefore unlikely that state activity carried out in this regard will attract much international scrutiny.

Convention on Biological Diversity

The Convention on Biological Diversity (CBD) is complementary to the LOS Convention, in that signatory parties are required to implement the CBD provisions consistently with their rights and obligations under the law of the sea.³⁴ The provisions of the CBD apply only to activities carried out within signatory parties’ jurisdiction or control. They do not apply to the components of biodiversity beyond areas of national jurisdiction. Therefore, if parties are to achieve conservation and sustainable use of biodiversity in these areas, cooperation with one another - either directly or through competent international organizations - will be necessary.

In 2004, the Conference of the Parties to the CBD recognized the urgent need for international cooperation to establish marine protected areas for the conservation of biodiversity in areas beyond national jurisdiction.³⁵ The decision *invites* Parties and other States to identify activities and processes under their jurisdiction or control which may have significant adverse impact on deep seabed ecosystems and species beyond the limits of national jurisdiction.³⁶

However, simply urging cooperation and “inviting” parties to identify damaging activities does little in the way of suggesting a concrete implementation strategy. It does little more than reiterate provisions in the convention, such as cooperation and identification of risky activity. Missing under both the CBD and LOS Convention are specific guidelines to direct parties on how to implement marine environmental protection and biodiversity conservation strategies in areas beyond national jurisdiction.

30 *LOS Convention, supra* note 7, Art. 87.

31 *Ibid.*, Art. 117

32 *Ibid.*, Art. 119

33 *Ibid.*, Art. 145

34 Lee A. Kimball, *The International Legal Regime of the High Seas and the Seabed Beyond the Limits of National Jurisdiction and Options for Cooperation for the establishment of Marine Protected Areas (MPAs) in Marine Areas Beyond the Limits of National Jurisdiction*, Technical Series No. 19 (Montreal: Secretariat of the Convention on Biological Diversity, 2005), online: <http://www.iucn.org/themes/marine/pdf/cbd-ts-19.pdf> [Kimball].

35 *Decision VIII/5, supra* note 5.

36 *Ibid.* at para. 56.

UN Fish Stocks Agreement

After the LOS Convention had come into force, it became quite clear that the conservation and sustainable use of straddling and highly migratory fish stocks³⁷ in the high seas was a pressing concern. It was apparent that the provisions of the LOS Convention were inadequate to prevent the depletion of some of the world's largest fish stocks. The Fish Stocks Agreement³⁸ was developed in the early 1990s specifically to address this problem. The agreement was designed to implement provisions of the LOS Convention in order to provide more stringent obligations for the conservation and management of highly migratory and straddling stocks.

The Fish Stocks Agreement is intended to apply primarily to areas beyond national jurisdiction.³⁹ The provisions that provide for the precautionary approach to management of straddling and highly migratory fish stocks create some protection for other components of biodiversity. For example, parties must assess the impact of fishing on associated or dependent species and their environment. They must then adopt plans to ensure the conservation of such species and protect habitats of special concern.⁴⁰ In addition, parties must adopt conservation and management measures for species belonging to the same ecosystem as target stocks,⁴¹ use selective, environmentally safe fishing gear and techniques,⁴² and must generally protect biodiversity in the marine environment.⁴³ The agreement is intended to enhance monitoring, control and enforcement at the regional level through regional fishery management organizations (RFMOs).⁴⁴ Despite the apparent contributions the Fish Stocks Agreement has made to the provisions of the LOS Convention and the management regime for straddling and migratory stocks, issues have arisen with respect to its continued implementation.⁴⁵ The foremost limiting factor is lack of participation, with only 62 parties as of November 2006, compared with the 152 parties to the LOS Convention.⁴⁶ As Lodge and Nandan point out,

[a]s long as this remains the situation, the incentives exist for states to ignore commitments made by others and act as "free-riders". In this situation, it is likely that *unregulated* high seas fishing...will remain a considerable problem

37 The terms "straddling and highly migratory fish stocks" come from the *LOS Convention*, *supra* note 7. While not explicitly defined, "straddling stocks" come from article 63, which provides for "Stocks occurring within the exclusive economic zones of two or more coastal states or both within the exclusive economic zone and in an area beyond and adjacent to it." Article 64 governs "highly migratory species", which are those listed in Annex 1 of the Convention. This is a legal definition rather than a scientific definition based on the actual migratory behaviour of the species. Nevertheless, the species listed in Annex 1 are generally capable of migrating relatively long distances, and stocks of these species are likely to occur both within EEZs and on the high seas. See also: Jean-Jacques Maguire et. al, *The state of world highly migratory, straddling and other high seas fishery resources and associated species*, FAO Fisheries Technical Paper 495, (Rome: FAO, 2006), s. 2.1.

38 *Agreement for the Implementation of the Provisions of the United Nations Convention of the Law of the Sea of December 10, 1982, Relating to the Conservation and Management of Straddling Fish Stocks, and Highly Migratory Fish Stocks*, 4 August 1995, 34 I.L.M. 1542 [UNFSA].

39 *Ibid.* Art. 6-7.

40 *Ibid.*, Art. 6(3)(d).

41 *Ibid.*, Art. 5(e).

42 *Ibid.*, Art. 5(f).

43 *Ibid.*, Art. 5(g).

44 *Ibid.*, Arts. 8-13.

45 Michael W. Lodge & Satya N. Nandan, "Some Suggestions Towards Better Implementation of the United Nations Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks of 1995" (2005) 20 Int'l J. Mar. & Coast. L. 345 [Lodge & Nandan].

46 For chronological lists of ratifications, accessions and successions to the Convention on the Law of the Sea and related Agreements as of 2 November 2006, online: <http://www.un.org/Depts/los/index.htm>.

[emphasis in original].⁴⁷

Lodge and Nandan also point out that, in addition to there being problems of participation, the precautionary and ecosystem-based approaches to management have been poorly implemented. Most RFMOs lack the capacity to cope with the inherent uncertainties of marine fisheries, and continue to apply single-species management models. Moreover, despite provisions in the Fish Stocks Agreement designed to combat the issue of “flags of convenience”⁴⁸ fishing, this remains a serious problem. Regulation through the boarding and inspection of suspect vessels is both difficult and dangerous to carry out on the high seas.⁴⁹

The last obvious defect in the Fish Stocks Agreement for the conservation of biodiversity beyond areas of national jurisdiction is its limited scope. It does not apply to discrete, high seas fish stocks. Thus, bottom dwelling species such as Orange Roughy do not fall directly under the guidelines of the agreement, except as they fall into the category of associated species and ecosystems of target stocks.

Protected-Species Conventions

International protected-species conventions also form part of the current legal regime protecting biodiversity in areas beyond national jurisdiction. Both the 1979 Convention on the Conservation of Migratory Species of Wild Animals (Convention on Migratory Species)⁵⁰ and the 1973 Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)⁵¹ include relevant protective provisions.

The Convention on Migratory Species lists in its appendices a number of migratory marine species in danger of extinction or in unfavourable conservation status. These include seabirds, small cetaceans and marine turtles. To the extent that activities undertaken within national jurisdiction may endanger species beyond national jurisdiction, parties are required to control damaging effects.

CITES lists threatened and endangered species in three different appendices and includes measures to curtail their global trade. A variety of marine species now appear in the appendices, including turtles, corals, whale sharks, seahorses and cetaceans. The CITES provisions on “introduction from the sea” pertain to transportation into a state of any species taken from the marine environment beyond national jurisdiction. However, there is a current debate surrounding how to implement this provision, including the role RFMOs may play with the listing of certain endangered fish species.

⁴⁷ Lodge & Nandan, *supra* note 45.

⁴⁸ The term “flag of convenience” refers to a state who sells the use of their flag to vessel owners from a different state. This allows vessel owners to disobey regional fisheries regulations by flying the flag of a non-member state. See generally Jessica K. Ferrell, “Controlling Flags of Convenience: One Measure to Stop Overfishing of Collapsing Fish Stocks” (2005) 35 *Environmental Law* 323.

⁴⁹ Lodge & Nandan, *supra* note 45.

⁵⁰ *Convention on the Conservation of Migratory Species of Wild Animals*, 23 June 1979, online: *Convention on the Conservation of Migratory Species of Wild Animals* http://www.cms.int/documents/convtxt/cms_convtxt.htm.

⁵¹ *Convention on International Trade in Endangered Species of Wild Flora and Fauna*, 3 March 1973, online: *Convention on International Trade in Endangered Species of Wild Flora and Fauna* <http://www.cites.org/eng/disc/text.shtml>.

International Maritime Organization

The International Maritime Organization (IMO) governs worldwide shipping. It is the international body charged with establishing special protective measures in areas where shipping presents a risk to the environment.⁵² In a 2001 resolution, the IMO adopted provisions providing for the designation of "Particularly Sensitive Sea Areas" (PSSAs).⁵³ The IMO defines a PSSA as:

an area that needs special protection through action by IMO because of its significance for recognized ecological, socio-economic, or scientific reasons and because it may be vulnerable to damage by international shipping activities.⁵⁴

Although none currently exist beyond areas of national jurisdiction, the PSSA guidelines do not contain any restrictions on the marine areas where a PSSA may be designated. There is no separate legal status for PSSAs, however, and their value lies in unenforced international recognition and adoption of protective measures based upon IMO conventions.⁵⁵

Regional Legal Instruments

The regional legal regime provides defined geographic areas beyond national jurisdiction with a series of binding and non-binding conventions and agreements for conservation and management. It has a significant role to play in implementing and elaborating provisions of the LOS Convention, as evidenced by the prominent position of RFMOs in the Fish Stocks Agreement. Unfortunately, not all regional bodies have the legal mandate or ability to do this effectively. Without more support from the international community, reform and progress in the regional legal regime will be minimal.

Regional Seas Programme

The United Nations Environment Program (UNEP) established the Regional Seas Programme⁵⁶ in 1974 in the wake of the 1972 UN Conference on the Human Environment,⁵⁷ held in Stockholm. Most regional seas agreements fall under the auspices of the UNEP program, though some were made prior to its inception. There is substantial variation among regions as to the degree of commitment and control agreed to by governments, and not all programs have adopted a binding convention. Only four regional conventions explicitly cover areas beyond national jurisdiction.⁵⁸ The two described below have been particularly proactive in establishing

52 Kimball, *supra* note 34 at para. 46.

53 *Guidelines for the Designation of Special Areas Under MARPOL 73/78 and Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas*, Resolution A.927(22), 29 November 2001, 2nd Sess., UN Doc. A/22/Res.927.

54 *Ibid.* Annex II at para. 1.2.

55 Kimball, *supra* note 34 at para. 52.

56 See generally *United Nations Environment Program, Regional Seas Programme*, online: <http://www.unep.org/regionalseas/>.

57 *Declaration of the United Nations Conference on the Environment*, 14 June 1972, (1972) 11 I.L.M. 1416.

58 These are the *Convention for the Protection of the Marine Environment of the North East Atlantic*, 22 September 1992, online: <http://www.ospar.org/eng/html/convention/welcome.html> [OSPAR Convention]; the *Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean*, 16 February 1976, online: http://www.unep.ch/regionalseas/regions/med/t_barcel.htm [Barcelona Convention]; the *Convention for the Protection of Natural Resources and Environment of the South Pacific Region*, 22 August 1990, online: <http://www.austlii.edu.au/au/other/dfat/treaties/1990/31.html> and the *Antarctic Treaty*, 1 December 1959, online: <http://www.austlii.edu.au/au/other/dfat/treaties/1959/31.html>

strategies for the protection of the marine environment and the conservation of biodiversity.

The parties to the 1992 Convention for the Protection of the Marine Environment in the North East Atlantic (OSPAR Convention)⁵⁹ have developed a comprehensive biological diversity and ecosystems strategy. The elements of the strategy include development of ecological quality objectives for an ecosystem approach to management, assessment and protection of threatened species and habitats, marine protected areas and measures to assess and mitigate threats from human activities. Together with the Baltic Marine Environment Protection Commission (HELCOM), the parties to the OSPAR Convention have formulated a program to establish a network of ecologically coherent MPAs by 2010. The OSPAR Commission has also developed a framework to identify and map threatened species and priority habitats. OSPAR has identified seamounts, hydrothermal vents, cold water coral and sponge reefs as habitats of special importance.⁶⁰

The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention)⁶¹ provides the basis for the Mediterranean Action Plan, which aims to protect biodiversity in the Mediterranean Sea. Parties to the Convention adopted a Protocol Concerning Specially Protected Areas and Biodiversity in the Mediterranean in 1995, in order to implement provisions of the CBD. Further implementation of the protocol culminated in the creation of a Strategic Action Programme for the Conservation of Marine and Coastal Biodiversity in the Mediterranean. This program incorporates precautionary and ecosystem approaches in order to improve the management and creation of marine protected areas, enhance the protection of endangered species and habitats and contribute to the reinforcement of national and international governance.⁶² The Protocol also recommends setting up Specially Protected Areas of Mediterranean Interest (SPAMIs), which include trans-boundary and international waters. A 2001 meeting of the parties established the first twelve SPAMIs. Of particular relevance is the marine mammals sanctuary, located between France and Italy,⁶³ as it covers a large area of the high seas. Parties to the Sanctuary Agreement have pledged, among other things, to promote the adoption of regulations concerning the use of new fishing methods that could endanger marine mammals or their food resources.

Regional Fisheries Management Organizations

The role of regional fisheries management organizations (RFMOs) is to implement regional conventions or agreements whose general aim is to conserve and manage fish species within specific geographic areas. Unfortunately, the scope of each RFMO's responsibilities and mandate vary widely from region to region, with some RFMOs focused on managing a single target fishery and others broadly focused on

antarctica.ac.uk/About_Antarctica/Treaty/treaty.html.

59 *OSPAR Convention, Ibid.*

60 *Ibid. Biological Diversity and Ecosystems Strategy*, 2003 Strategies of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic, online: OSPAR <http://www.ospar.org/eng/html/welcome.html>.

61 *Barcelona Convention, supra* note 58.

62 UNEP SAP, *Strategic Action Programme for the Conservation of Marine and Coastal Biodiversity (SAP BIO) in the Mediterranean Region*, (Tunis: UNEP, 2003), available online: www.unepmap.org.

63 *Agreement Concerning the Creation of a Marine Mammal Sanctuary in the Mediterranean* (25 November 1999), online: <http://www.intfish.net/treaties/sanctuary.htm>.

various species and their related ecosystems. At present, only five RFMOs, located in the Southern Ocean, Northwest Atlantic, Northeast Atlantic, Southeast Atlantic and the Mediterranean, have the legal competence to manage most or all of the species within their areas of application, including deep-sea species living beyond national jurisdiction.⁶⁴ Of these, only CCAMLR, NAFO and NEAFC have actually exercised this competence. Obvious problems arise where there is a need for regulation with respect to deep-sea fish stocks in areas not subject to RFMO coverage. As previously mentioned, the characteristics of these fisheries may be such that by the time a management regime is operational they have already been fully exploited.⁶⁵

For the most part, only recently established commissions, such as the new Western and Central Pacific Fisheries Commission, or amended conventions, reflect the precautionary and ecosystem-based management approach that the Fish Stocks Agreement calls for.⁶⁶ In particular, management of the Antarctic Southern Ocean has pioneered a broad-based, holistic approach to conservation. The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), has established detailed guidelines and practices for ecosystem-based management of Antarctic marine living resources. For example, CCAMLR has addressed the impacts of pelagic long-lines and bottom trawling, and has implemented mitigatory measures to curb those techniques' damaging effects on non-target species and habitat. In addition, CCAMLR's precautionary approach to new and exploratory fisheries requires that member states notify CCAMLR of their intention to start a new fishery, and supply information on the nature of the target species and the possible effects of the proposed activities on any dependent and associated species. The Commission then imposes limited catch and scientific observation measures.⁶⁷ Regrettably, examples like this continue to be rare.

TOWARDS A STRENGTHENED REGIME

As the preceding section demonstrates, the current legal regime governing marine areas beyond national jurisdiction is a complex, fragmented network with little in the way of concrete guidance to protect biodiversity. The international community is beginning to address this rather prominent gap in the regime, and various suggestions have been proposed. These suggested legal routes include an amendment to the LOS Convention, an amendment to the Fish Stocks Agreement, a CBD protocol, a UN General Assembly resolution placing a moratorium on bottom trawling, and an Implementing Agreement to the LOS Convention. Obviously such a diverse area with vast resource potential will garner differing views from various international actors, depending on their interests and priorities. Some States feel the current regime is sufficient, while others believe we should work within the existing framework to guide States in conserving biodiversity in the high seas. A

64 These are the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), Northwest Atlantic Fisheries Organization (NAFO), Northeast Atlantic Fisheries Commission (NEAFC), General Fisheries Commission for the Mediterranean (GFCM), and the Southeast Atlantic Fisheries Organization (SEAFO).

65 See also E.J. Molenaar, "Unregulated Deep-Sea Fisheries: A Need for a Multi-Level Approach" (2004) 19 *Int'l J. Mar. & Coast. L.* 223.

66 See *Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean*, 19 June 2004, Arts. 5-6, online: <http://www.wcpfc.int/>.

67 Karl-Hermann Kock, ed., *Understanding CCAMLR's Approach to Management*, online: http://www.ccamlr.org/pu/e/e_pubs/am/p4.htm#3.CCAMLRs-Approach.

suggestion from the European Union made in February 2006 at global discussions, held under the auspices of the UN, proposed that an Implementing Agreement be established to provide for, among other things, high seas marine protected areas. This garnered some debate, and will hopefully be discussed further at meetings in 2007.⁶⁸ The EU suggestion is the position I will explore as a genuine possibility for strengthening the governance regime in the high seas.

The following section will describe primary objectives and elements of an Implementation Agreement. This Agreement would adopt precautionary and ecosystem approaches, promote sustainable fishing practices, set up marine protected areas, strengthen regional governance structures, and establish criteria for environmental impact assessments. This paper will conclude by providing suggestions for adoption, compliance and enforcement.

OBJECTIVES AND ELEMENTS OF AN IMPLEMENTATION AGREEMENT

The goal of an Implementation Agreement to protect marine biodiversity in areas beyond national jurisdiction (hereinafter referred to as the "Agreement") would be to implement, improve and strengthen the relevant provisions of the LOS Convention, thus filling the gaps in the current legal framework. It would assume a format similar to that of the Fish Stocks Agreement, with a few obvious differences and possible improvements. The rationale behind such an Agreement would be that biodiversity in areas beyond national jurisdiction warrants extended protection, and the Agreement would be forged in the recognition that the voluntary cooperative guidelines laid down by the LOS Convention and its related agreements have proven insufficient.

The elements of the Agreement would be based upon the precautionary and ecosystem approaches. These approaches would direct the central aims of creating a framework for sustainable fishing practices in the high seas, providing the legal basis for a network of marine protected areas, promoting and strengthening regional governance structures and providing guidelines and mechanisms for environmental impact assessment procedures.

Precautionary and Ecosystem Approaches

The precautionary and ecosystem approaches would lie at the heart of such an Agreement. The underlying value of the precautionary approach seems intuitive – that is, in order to protect deep-sea biodiversity, the international community should err on the side of caution. However, it bears mentioning that the definitions of what constitutes a "precautionary approach" vary widely⁶⁹, and any attempt to incorporate it into a binding legal document should be clear in specifying what is meant by the term. It is suggested here that the Agreement ought not to propound a specific definition of the precautionary approach. Rather, the content of the Agreement's provisions, which would promote such practices as sustainable fishing and

68 Kristina M. Gjerde & Graeme Kelleher, "High Seas marine protected areas on the horizon: legal framework and recent progress" (2005) 15:3 Parks 11, online: www.iucn.org/themes/wcpa/pubs/pdfs/PARKS/15_3_lowres.pdf.

69 See, David VanderZwagg, "The Precautionary Principle and Marine Environmental Protection: Slippery Shores, Rough Seas, and Rising Normative Tides" (2002) 33 Ocean Devel. & Int'l Law 165.

environmental impact assessment, will make clear the aspects of precaution necessary to achieve the Agreement's purpose.

The rationale behind the ecosystem approach is that marine areas beyond national jurisdiction encompass a wide variety of species, habitats and interrelated ecosystems; therefore, any attempt to conserve biodiversity within them must recognize the essential processes, functions and interactions among all living organisms involved, including humans. Decision V/6 of the Conference of the Parties to the CBD states that "the ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way."⁷⁰ While internationally there is still wide variation on the exact definition of the ecosystem approach, there is general agreement on the approach's underlying goals.⁷¹ Rather than addressing the debate that surrounds the definition and management issues, the Agreement could attempt to flesh out and expand upon the common underlying goals. Among these are promoting sustainable fishing practices, establishing marine protected areas, promoting decentralized governance, and applying environmental impact assessments to potentially harmful activities.⁷² In this way, the precautionary and ecosystem approaches intersect and compliment each other in a manner in which they can be practically implemented.

Sustainable Fishing Practices

The ecosystem approach is elaborated in a number of soft law documents that could provide guidance for the regulation of sustainable fishing practices in the high seas. The FAO Code of Conduct for Responsible Fisheries⁷³ provides various provisions calling for the conservation of aquatic ecosystems. Noteworthy among these are article 6.2, calling for measures to ensure the conservation of target species, species associated with or dependent on them, and species belonging to the same ecosystem; article 6.4, calling for research and data collection to improve scientific knowledge of interactions between fisheries and ecosystems; and article 6.6, calling for the development and use of selective and environmentally safe fishing techniques, which would help to maintain biodiversity and conserve aquatic ecosystems.⁷⁴ These provisions could be adapted and incorporated into the Agreement under a section devoted to fisheries management in the high seas. For further guidance, the Agreement could recognize the FAO Technical Guidelines⁷⁵ on the ecosystem approach to fisheries management, and encourage parties and regional authorities to apply them. Additionally, fishing gear and techniques that have proven to be destructive to marine ecosystems should be identified and prohibited (subject perhaps to certain area restrictions), in an annex to the Agreement. In this way, the Agreement

70 Fifth Ordinary Meeting of the Conference of the Parties to the Convention on Biological Diversity, Nairobi, Kenya, 15 - 26 May 2000, Decision V/6 at para. A/1, online: <http://www.biodiv.org/decisions/default.aspx?m=COP-05&id=7148&lg=0> [Decision V/6].

71 See generally Volkmar Hartje, Axel Klaphake & Rainer Schliep, "The International Debate on the Ecosystem Approach: Critical Review, International Actors, Obstacles and Challenges" (2003) BEn Skipten 80.

72 UN, *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*, 17 July 2006, UN Doc. A/61/156, Part A: Ecosystem approaches and oceans, online: UN Division of Ocean Affairs and the Law of the Sea http://www.un.org/Depts/los/consultative_process/consultative_process.htm#A/61/156.

73 Food and Agriculture Organization of the United Nations, *Code of Conduct for Responsible Fisheries* (Rome: Food and Agriculture Organization of the United Nations, 1995).

74 *Ibid.*, Art. 6.2, 6.4 and 6.6.

75 FAO Fisheries Department, *FAO Technical Guidelines for Responsible Fisheries: The ecosystem approach to fisheries*, No. 4, Suppl. 2, (Rome: FAO, 2003).

could reduce the harmful effects of bottom trawling and pelagic long-lining.

A precautionary approach to deep-sea fisheries could be modelled after the Fish Stocks Agreement. There, parties must comply with article 6, which sets out guidelines for the implementation of the precautionary approach to fisheries management. Noteworthy among these for the purpose of this Agreement are, *inter alia*, stock-specific reference points,⁷⁶ enhanced monitoring when stock status is of concern,⁷⁷ and catch and effort limits for exploratory fisheries.⁷⁸

Regional Cooperation and Governance

Decentralized governance is common under the ecosystem approach. Decision V/6 of the Conference of the Parties to the CBD provides that ecosystem-based "management should be decentralized to the lowest appropriate level."⁷⁹ Furthermore, the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem states that, "it is important to...establish regional and international fisheries management organizations and incorporate in their work ecosystem considerations."⁸⁰ The Agreement should call on regional seas programs and regional fisheries management organizations to implement strategies consistent with its provisions in order to protect and conserve biodiversity in areas beyond national jurisdiction. Until such strategies are widely in place, all parties would be obliged to conduct activities in a manner consistent with the Agreement in areas beyond national jurisdiction.

In order to effectively implement sustainable fishing practices for discrete high seas fish stocks, it has been suggested that an Agreement bridge the gap between the LOS Convention and RFMOs in much the same way that the Fish Stocks Agreement did for straddling and migratory fish stocks.⁸¹ Thus, beyond simply being subject to a general duty under the LOS Convention to cooperate and conserve high seas stocks and fish using responsible methods, parties to the Agreement would be compelled to join or comply with RFMOs. These RFMOs would in turn be obliged to implement and facilitate the Agreement. A number of provisions from the Fish Stocks Agreement could be adapted and used in this regard. Specifically, the Agreement could adopt Part III, which outlines mechanisms for international co-operation. It also requires States fishing for deep-sea stocks to join RFMOs that have the competence to establish conservation and management measures. As per article 8(5) of the Fish Stocks Agreement, where an RFMO does not exist or have the mandate to establish effective conservation and management measures, parties should cooperate to establish an RFMO or strengthen an existing one. In the meantime, they should be obliged to enter into cooperative agreements with one another, while concurrently conducting fishing activities in a manner consistent with the Agreement. The Agreement should include an annex of listed species to be regulated and guidelines for the conservation and management measures required. This annex would represent binding measures for RFMOs. As Moritaka Hayashi points out, the conservation measures and groups of regulated fish species should be subject to review

76 UNFSA, *supra* note 38, Art 6(3)(b).

77 *Ibid.*, Art. 6(5).

78 *Ibid.*, Art. 6(6).

79 *Decision V/6, supra* note 70, Principle B.6.

80 FAO, *Report of the Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem*, Reykjavik, Iceland, 1-4 October 2001, FAO Fisheries Report No. 658, Appendix I, Art. 3 (Rome: FAO, 2002).

81 Moritaka Hayashi, "Global Governance of Deep Sea Fisheries" (2004) 19 *Int'l J. Mar. & Coast. L.* 289 at 296.

and modification procedures as new scientific knowledge becomes available.⁸²

Marine Protected Areas

Another essential element of the Agreement is the establishment of marine protected areas (MPAs) beyond national jurisdiction. Important global discussions have addressed this strategy to conserve marine biodiversity since the 1992 United Nations Conference on Environment and Development (UNCED). The subsequent report, Agenda 21, provides that

states should identify marine ecosystems exhibiting high levels of biodiversity and productivity and other critical habitat areas and provide necessary limitations on the use in these areas, through, *inter alia*, designation of protected areas.⁸³

In 2002, the Plan of Implementation of the World Summit on Sustainable Development (WSSD) called on states to establish a representative network of MPAs by 2012.⁸⁴ In response, the Conference of the Parties to the CBD, in its decision VII/28 on protected areas, adopted a Programme of Work and established an *Ad Hoc* Open-ended Working Group on Protected Areas. This group met in June 2005 to discuss options for the establishment of an MPA network in areas beyond national jurisdiction. It identified major gaps in the international legal framework, such as the inadequate regulation of certain high seas fisheries and the lack of a coordinating mechanism to create a cooperative, integrated approach.⁸⁵ It suggested a staged approach to identifying and protecting priority areas, and considered the possible development of a binding legal instrument pursuant to an existing convention to provide for the identification and establishment of MPAs.⁸⁶ In addition, the FAO's Committee on Fisheries (COFI) acknowledged in March 2005 that MPAs could enhance fisheries management and protect biodiversity. Subsequently, an MPA network beyond areas of national jurisdiction was addressed at the March 2006 meeting of the UN *Ad Hoc* Open-ended Informal Working Group. This meeting studied issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction. Most delegations felt MPAs were a key tool for achieving integrated conservation and sustainable use of biodiversity in the deep seas. Furthermore, a number of delegations suggested that an Implementing Agreement to the LOS Convention could create the necessary regulatory and governance regime for such a network.⁸⁷

Based on these global discussions, it appears that much of the international com-

82 *Ibid.*

83 UN, *Report of the United Nations Conference on Environment and Development*, Rio de Janeiro, Brazil, 3-14 June 1992, Agenda 21, UN Doc. A/CONF.151/26 (Vol. II) at para 17.85, online: UN Department of Economic and Social Affairs <http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21toc.htm>.

84 UN, *Report of the World Summit on Sustainable Development*, Johannesburg, South Africa, 26 August- 4 September 2002, Resolution 2: Plan of Implementation of the World Summit on Sustainable Development, UN Doc. A/CONF.199/20, Sec. IV, at para. 32(c).

85 CBD, *Options for Cooperation for the Establishment of Marine Protected Areas in Marine Areas the Limits of National Jurisdiction*, Ad Hoc Open-ended Working Group in Protected Areas, UNEP/CBD/WG-PA/1/2, 2005, at para. 20(a) & (c), online: <http://www.biodiv.org/doc/meetings/pa/pawg-01/official/pawg-01-02-en.pdf>.

86 *Ibid.* at para. 37.

87 UN, *Report of the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction*, 20 March 2006, 61st Session, Oceans and the law of the sea, UN Doc. A/61/65 [*Working Group Report*].

munity supports the establishment of a network of MPAs in areas beyond national jurisdiction for the conservation and sustainable use of biodiversity. Consequently, many States may indeed recognize a new legal instrument, such as an Implementation Agreement to the LOS Convention, designed in part to facilitate this goal.

The Agreement would help to facilitate the establishment of high seas MPAs by giving them a strengthened, distinct legal status.⁸⁸ It should additionally provide a framework for the identification of priority biodiversity areas in need of extended protection. Expert scientific advice will need to be gathered to provide an identification framework. Many governmental and non-governmental groups have or are currently conducting research and compiling data with this goal in mind, and Canada recently hosted the Scientific Experts' Workshop on Criteria for Identifying Ecologically or Biologically Significant Areas beyond National Jurisdiction for precisely this purpose.⁸⁹ Another source for scientific information is the Census of Marine Life, a growing global network of researchers engaged in a ten-year initiative to assess and explain the diversity, distribution and abundance of life in the oceans.⁹⁰ In addition, elements could be drawn from the criteria and frameworks established by OSPAR, the Mediterranean Action Plan and CCAMLR in their pioneering regional strategies. By taking these various sources into account, the Agreement could articulate commonly recognized criteria for defining priority biodiversity areas beyond national jurisdiction. In a non-exhaustive list, an annex to the Agreement could enumerate specific regions containing such features as seamounts, cold-water coral reefs or hydrothermal vents, or containing rare, threatened or endangered species.

Once it identified these regions, the Agreement would need to provide a mechanism to designate a priority area an MPA. Protection and conservation measures specific to identified MPAs must also be included in the Agreement. This would in turn provide parties and their regional governance structures a uniform basis for the creation of protected areas and the enforcement of related regulations.

Environmental Impact Assessment

In order to adequately address potential harms to biodiversity in waters beyond national jurisdiction, the Agreement must include activity impact assessment provisions. Environmental impact assessment (EIA), and more recently strategic environmental assessment (SEA), are widely endorsed concepts in national and international law.⁹¹ International conventions such as the CBD⁹², the Convention on Migratory Species⁹³ and the Ramsar Convention⁹⁴, as well as international or-

88 See generally Tullio Scovazzi, "Marine Protected Areas on the High Seas: Some Legal and Policy Considerations" (2004) 19 Int'l J. Mar. & Coast. L. 1 [Scovazzi].

89 UN, *Report of the Scientific Experts' Workshop on Criteria for Identifying Ecologically or Biologically Significant Areas beyond National Jurisdiction*, 6-8 December 2005, Ottawa, Canada, submitted at the UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea, 7th meeting, 12-16 June 2006, UN Doc. A/AC.259/16.

90 See generally, Census of Marine Life, online: <http://www.coml.org/aboutcoml.htm>.

91 See Mikael Gontier, Berit Balfors & Ulla Mortberg, "Biodiversity in environmental assessment—current practice and tools for prediction" (2006) 26 Environmental Impact Assessment Review 268.

92 *Supra* note 1.

93 *Convention on Migratory Species*, resolution 7.2, Impact Assessment and Migratory Species, 7th meeting of the Conference of the Parties, Bonn, 18-24 September 2002, online: http://www.cms.int/bodies/ScC/12th_scientific_council/pdf/English/Inf08_Resolutions_and_Recommendations_E.pdf.

94 *Ramsar Convention on Wetlands*, 2 February 1971, online: http://www.ramsar.org/key_conv_e.htm.

ganizations such as the International Association for Impact Assessment⁹⁵, integrate biodiversity concerns with environmental impact assessment by including relevant provisions and providing process guidelines. In addition, article 206 of the LOS Convention requires that States assess the potential effect of activities on the marine environment which they have reasonable grounds to believe may cause substantial pollution or significant harm. Similarly, Article 14 of the CBD states that a Party shall conduct an “environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects.”⁹⁶

Though these provisions are useful as potential starting points, their wording would be insufficient in the proposed Agreement. Specifically, “likely to have significant adverse effects” suggests that it must be fairly certain an activity will cause significant harm to the environment before it should be subject to an EIA under the CBD. Given the complex nature of marine ecosystems beyond national jurisdiction and our limited understanding of their functions, the Agreement would be prudent to apply a more precautionary approach to impact assessments.

The Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol) provides a helpful model for such an approach. Under Article 8 of the Protocol, parties must conduct an environmental impact assessment for activities identified as having simply a “minor or transitory impact”.⁹⁷ The Protocol then describes a procedure and guidelines for EIAs under Annex I. Parties must complete a Comprehensive Environmental Evaluation, which includes consideration of possible indirect or secondary impacts, identification of monitoring programs to mitigate impacts, and identification any gaps in knowledge and uncertainties associated with the proposed activity.⁹⁸

The Agreement could be partly modelled after the Madrid Protocol, requiring an EIA for any proposed activity that is likely to have anything more than a “minor or transitory impact”⁹⁹ on marine areas beyond national jurisdiction. This requires a proactive approach to impact assessments, such that precaution is taken in the face of almost all activities with the potential for harm. The objective would be for each new or exploratory activity to be reasonably assessed for potential harms using agreed upon standards. Activities likely requiring an impact assessment would include new or exploratory fisheries, new types of large-scale fishing equipment and methods, marine scientific research and bioprospecting activities. For example, before a new area could be trawled for deep-sea fish stocks, it would be subject to an initial screening to determine whether an unexplored cold-water coral reef exists in the area in question.

95 The International Association for Impact Assessment “provides an international forum for advancing innovation and communication of best practice in all forms of impact assessment to further the development of local, regional, and global capacity in impact assessment,” online: http://www.iaia.org/Non_Members/About%20IAIA/about_iaia.htm. See also “Biodiversity in Impact Assessment” (2005), IAIA Special Publication Series No. 3, online: http://www.iaia.org/Non_Members/Pubs_Ref_Material/SP3.pdf.

96 CBD, *supra* note 1 at Art. 14.

97 *Protocol on Environmental Protection to the Antarctic Treaty*, 4 October 1991, Art. 8, online: http://www.antarctica.ac.uk/About_Antarctica/Treaty/protocol.html.

98 *Ibid.* at Annex I, Art. 3.

99 *Ibid.*

The Conference of the Parties (COP) to the CBD, in decision VI/7, adopted guidelines to incorporate biodiversity-related issues into environmental assessment legislation. Furthermore, the COP CBD recently produced the “Voluntary Guidelines on Biodiversity-Inclusive Environmental Impact Assessment”, intended to assist national and regional authorities or international agencies.¹⁰⁰ The Agreement could recognize these guidelines as providing a helpful tool for states to utilize.

With respect to marine scientific research and bioprospecting, it is important to note that a strict impact assessment regime may be met by opposition from some States and their scientific communities. States may object to over-regulating scientific activities, as this could inhibit the work of the scientific community, wasting both time and their resources.¹⁰¹ Such objections to an “over-regulatory regime” may be difficult to overcome, short of providing that EIAs remain optional. If an activity is expected to have only a minor or transitory effect, however, an initial assessment stage to meet a threshold test should be less onerous than a full EIA procedure. This might provide a sufficient compromise.

Adoption, Compliance and Enforcement

The effectiveness of the Agreement would rest on the willingness of states to adopt and implement it. As has been observed with the Fish Stocks Agreement, widespread adoption is not always easily achieved. The issue of “free-rider” States, which choose not to adopt the Agreement but rather continue to execute their right to freedom of the high seas must be carefully considered. However, as Scovazzi points out, States would first and foremost be subject to customary international law and their obligations under the LOS Convention.¹⁰² Thus, the duty to protect and preserve rare or fragile ecosystems and to cooperate in establishing allowable catch and conservation measures for fisheries governs any decision by a party to the LOS Convention that does not wish to adopt the Agreement. Presumably, if a “free-rider” state caused measurable harm to biodiversity in areas beyond national jurisdiction, it would be breaching its obligations under the LOS Convention (providing it is a party to this Convention). Unfortunately, this is of little practical consequence. As things currently stand, parties to the LOS Convention continue to trawl the high seas, causing immense damage to fragile ecosystems, but only the Greenpeace protesters appear ready to stand in their way. Thus, at every level of the drafting phase, it must be remembered that an Agreement’s ultimate effectiveness hinges on its widespread adoption and enforcement.

The Agreement’s drafters must consider possible impediments to adoption in order to avoid them, or at least lessen their severity. Consideration of the findings of the Fish Stocks Review Conference is particularly useful here.¹⁰³ The conference shed light on strengths and weaknesses of the approach taken in implementing the Fish Stocks Agreement. One major impediment to the effective implementation identified was the ability of developing states to gather the human and financial resources required to carry out the agreement’s conservation and management measures.

100 CBD, *Impact Assessment: voluntary guidelines on biodiversity-inclusive impact assessment*, COP Dec. VIII/28, UN/CBD/COP, 8th COP, (2006) at 248-268, online: <http://www.biodiv.org/doc/decisions/COP-08-dec-en.pdf>.

101 *Working Group Report*, *supra* note 87 at para. 27.

102 Scovazzi, *supra* note 88 at 5.

103 *Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*, New York, 22-26 May 2006, UN Doc. A/CONF.210/2006/15.

In addition, these States' ability to join or comply with RFMOs was hampered by a similar lack of resources.¹⁰⁴ The Fish Stocks Review Conference suggested that targeted delivery of assistance and capacity-building in this regard was critical, specifically in the form of development assistance for national fishery policies rather than simply provisional funds.¹⁰⁵ In addition, it was noted that the collection and sharing of scientific data would aid in the adoption of conservation and management measures.¹⁰⁶

The conference also addressed issues relating to enforcement of the Fish Stocks Agreement, providing useful insight. Vessel monitoring systems and port state controls were identified as areas in need of improvement in order to curb illegal and unreported fishing. Moreover, States stressed that sanctions needed to be more significant than simply the imposing minimal costs in order to act as sufficient deterrents for illegal practices. Interestingly, it was suggested that the use of compulsory indication of origin for fish and fish products be introduced as one such deterrent.¹⁰⁷

The conference identified regional governance as occupying a central role in the implementation of the Agreement. The need to build upon, strengthen and modernize the mandates of existing organizations was emphasized. Filling the gaps in regional management, in terms of geographic and species coverage, was noted as an area in need of continued efforts.¹⁰⁸

If a new Agreement to protect and conserve biodiversity beyond areas of national jurisdiction is to take effect, it must consider and act on these considerations. Despite obvious differences between the two agreements, they each face similar hurdles in terms of enforcing conservation and management measures. Whereas the Fish Stocks Agreement covers migratory and straddling high seas fish stocks, both agreements are concerned with enforcing a regulatory regime in areas beyond national jurisdiction, far from coastal state control and vast in geographic range. The Agreement's drafters would have to take heed of the proceedings of the Fish Stocks Review Conference, while also anticipating and heading off any additional implementation concerns particular to their project. Many issues would demand careful attention: how to enforce and monitor MPAs, how to ensure that developing countries have the assistance they need to adopt and implement the Agreement, and how to ensure that regional governance structures (RSPs and RFMOs) strengthen and harmonize their mandates in line with the Agreement.

CONCLUSION

The task of negotiating a new Implementing Agreement to the LOS Convention may seem like a long and daunting road. Ensuring adequate adoption and implementation of its provisions may seem even longer still. Yet, to initiate the process now would be to take a proactive stance in countering the damaging effects of human activities to biodiversity in the high seas. Rather than waiting until another

104 *Ibid.* at para. 80.

105 *Ibid.* at para. 116.

106 *Ibid.* at para. 66.

107 *Ibid.* at paras. 105-107.

108 *Ibid.* at paras. 85-95.

deep-sea fish stock is depleted, or an ancient coral reef is destroyed, the international community should act now. The days where we could claim ignorance to excuse human repercussions on the marine environment have come to an end. We now know that the deep-sea supports an abundance of incredibly important life structures, and the knowledge that we still have much to learn only bolsters the position that we must act before it is too late. The LOS Convention and CBD provide the outline; what an Implementing Agreement will do is to fill in the gaps.

In the meantime, the international community may implement short-term stop-gap measures to protect the areas lying beyond national jurisdiction. A moratorium on high seas bottom trawling remains an issue of contention at the UN, although in the past few months international support for such a measure and awareness of trawling's harms has increased dramatically. It may only be a matter of time before this type of solution comes into effect, whether in the entire area beyond national jurisdiction or at least priority areas in need of extended protection. The World Conservation Union is tirelessly advocating for a network of high seas MPAs, and continued international support for this initiative could very well work in favour of the development of an Implementing Agreement.

In the end, however, long-term goals require long-term solutions. If biodiversity in our oceans is to remain sustainable for present and future generations, concrete steps must be taken to harmonize the legal regime and provide a clear strategy for future conservation and sustainable use. We must act now before it's too late. Our oceans depend on it.