

Chapter 1 The Nature of the Marine Environment Beyond National Jurisdiction

1.1 Introduction

From a human perspective the open ocean has always been a source of great mystique and unpredictability.¹ Although some intrepid humans traversed the surface of the open oceans in vessels in earlier centuries, the majority of humankind tended to regard the sea with awe and to retreat from its elemental fury.² Human exploration of the deep sea did not begin in earnest until the mid nineteenth century³ and it is only in recent decades that marine scientific research has begun to reveal the true physical characteristics and resource potential of the open ocean and deep seabed.⁴ Until the latter half of the twentieth century, human use of the oceans beyond a narrow strip of sea adjacent to the land masses was largely confined to navigation, fishing, whaling⁵ and from the mid nineteenth century the laying of submarine cables and pipelines for communication purposes.⁶ With the advent of concepts such as the continental shelf and the exclusive economic zone in the latter half of the twentieth century, coastal states extended their jurisdictional reach to a wider coastal domain for specific purposes such as resource exploitation and marine scientific research.⁷ A combination of factors such as the depletion of inshore fish stocks and an increase in global maritime trade is now leading to greater usage of the vast maritime area beyond

¹ Jonathan Raban (ed.), *The Oxford Book of the Sea* (1992), 1.

² Ibid, 432-433.

³ Sylvia Earle, *Sea Change: A Message of the Oceans* (1995), 21.

⁴ Alastair Couper (ed.), *The Times Atlas and Encyclopaedia of the Sea* (1990), 202-3.

⁵ Earle, above n. 3, 21.

⁶ Couper, above n. 4, 200 notes that the first successful cable was laid between England and France in 1851.

⁷ 1982 *United Nations Convention on the Law of the Sea*, 1833 UNTS 3 (LOSC), Arts. 56 & 77.

the territorial sea and exclusive economic zone limits.⁸ Human activities in this area of ocean, which covers approximately 50% of the world's surface⁹, have expanded to include bioprospecting, exploration for deep seabed minerals, more sophisticated marine scientific research and deep sea tourism.¹⁰ This rise in human activities beyond the offshore zones of coastal states poses actual and potential threats to the physical characteristics and biodiversity of the open ocean and deep sea environments.¹¹ Arbitrary human intrusions into this largely unexplored marine domain have the potential to harm the intricate links between complex marine ecosystems and erode components of marine biodiversity.¹² Until the latter decades of the twentieth century these areas of the ocean were largely untrammelled by international regulation or any systematic form of oceans governance.

This chapter will examine the juridical extent of maritime areas beyond national jurisdiction and the physical characteristics of the open ocean and deep seabed. A variety of deep sea habitats and their faunal inhabitants will be described. Actual and potential threats posed to the marine environment beyond national jurisdiction by human activities will also be considered. This discussion will provide the scientific backdrop and rationale for the protection of the marine environment beyond national jurisdiction. The theoretical basis for an analysis of the

⁸ WWF/ WCPA/ IUCN, *Towards a Strategy for High Seas Marine Protected Areas*, Proceedings of the IUCN, WCPA and WWF Experts Workshop on High Seas Marine Protected Areas, 15-17 January 2003, Malaga , Spain, 6-7.

⁹ Ibid, 5, n.1.

¹⁰ Ibid, 7.

¹¹ Ibid, 6-7.

¹² WWF/WCPA/IUCN, above, n. 8, 7; Claudia E. Mills & James T. Carlton, 'Diversity: Rationale for a System of International Reserves for the Open Ocean' (1998) 12(1) *Conservation Biology*, 245.

international law framework for protection of the marine environment beyond national jurisdiction will then be considered.

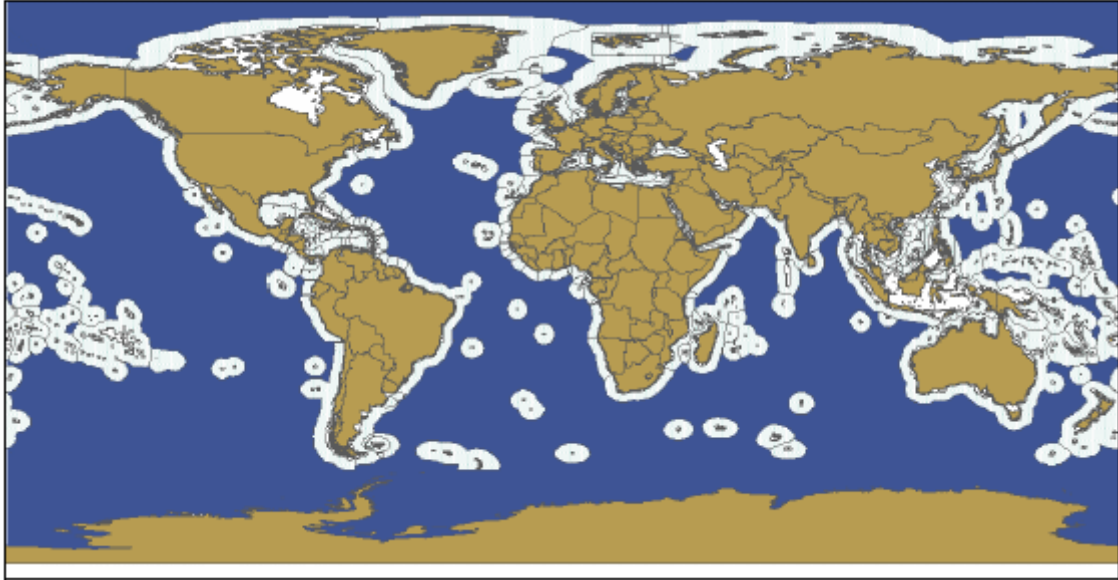


Figure 1.1: The High Seas (Source: IMO, http://www.imo.org/includes/blastDataonly.asp/data_id%3D8594/RaaymakersHighSeasPaper.pdf at 28 November 2005)

1.2 The Juridical Extent of Maritime Areas Beyond National Jurisdiction

Although earlier civilisations did consider the legal status of the sea, it was not until the seventeenth century that European scholars began to analyse its juridical nature in more detail. The high seas as an international law concept is generally considered to have originated in the doctrine of the freedom of the seas advocated by the Dutch jurist Hugo Grotius in his treatise, *Mare Liberum*, published in 1609.¹³ Grotius drew a distinction between the “inner sea” which was surrounded

¹³ D.P. O’Connell (with I.A. Shearer ed.), *The International Law of the Sea*, (1984), Vol. II, 792-793; R.P. Anand, *Origin and Development of the Law of the Sea* (1983) 80-81; J.H.W. Verzijl, *International law in Historical Perspective* (1971) 31-35; United Nations Office for Ocean Affairs and the Law of the Sea (DOALOS), *Navigation on the High Seas. Legislative History of Part VII, Section 1 (Articles 87, 89, 90-94, 96-98) of the United Nations Convention on the Law of the Sea* (1989), 8.

on all sides by the land and thus susceptible to occupation and the “outer sea, the ocean” which he described as “immense... infinite, bounded only by the heavens” which could neither be ‘seized nor inclosed’.¹⁴ His fundamental premise that the sea may not be subjected to the sovereignty of individual states has survived in Article 89 of the *LOSC*. *Mare Liberum* also introduced the principles of freedom of navigation and fishing which remain an integral part of the present high seas regime codified in Part VII of the *LOSC*.¹⁵ The content of these principles will be analysed in Chapter 2.

The doctrines Grotius expounded in *Mare Liberum* were partially a reaction against sovereignty claims by the Western Powers of Europe to vast areas of ocean space in the interest of monopolising the trade routes to the New World and the East Indies.¹⁶ An opposing juridical position of *mare clausum* or the closed sea continued to be popular with British and European rulers building their colonial empires and establishing naval dominance at sea during the seventeenth and eighteenth centuries. States’ sovereignty over large areas of ocean space was defended by English jurists such as Welwood, Selden and Coke in the decades following the publication of Grotius’ *Mare Liberum*.¹⁷ The principles contained in *Mare Liberum* did not gain ascendancy until the nineteenth century when they were used to support the expansion of free trade between European countries and their distant empires.¹⁸ In jurists’ writings and state practice, however, a modified version of coastal state sovereignty over the maritime belt adjacent to land

¹⁴ Hugo Grotius, *The Freedom of the Seas or the Right which Belongs to the Dutch to Take Part in the East Indian Trade* (1608) (trans. Ralph Van Deman Magoffin, 1916) 37.

¹⁵ *Ibid*, 7 & 32.

¹⁶ Verzijl, above n. 13, 30; Thomas Wemyss Fulton, *The Sovereignty of the Sea* (1911) 338-339.

¹⁷ Fulton, above n. 16, 352-357 & 366-375; DOALOS *Navigation on the High Seas*, above n. 13, 8.

¹⁸ Hersch Lauterpacht (ed.), *Oppenheim’s International Law. A Treatise* (1955) 585-587.

territory developed in parallel to the doctrine of the freedom of the seas.¹⁹ The extent of a coastal state's dominion over its adjacent waters was considered by most jurists to relate to its capacity to exercise sovereignty over these areas by means of guns or cannon.²⁰ The three nautical mile distance which subsequently gained currency as a customary breadth for the territorial sea, was related to the maximum range of these weapons. These parallel developments in legal treatises and state practice of the maritime belt adjacent to the coastline of a state and the open or high seas, introduced the basic dichotomy in the law of the sea between areas of water subject to coastal state sovereignty or jurisdiction and the residual area of ocean space which is global commons.

The juridical extent of maritime areas beyond national jurisdiction has diminished over time with the gradual expansion of coastal state jurisdiction over littoral waters and seabed adjacent to the coastline. A precise definition of the outer limit of the coastal state's jurisdiction over its offshore maritime areas was not established until the adoption of the *LOSC* in 1982. Two earlier United Nations Law of the Sea Conferences had not agreed on a maximum breadth for the territorial sea.²¹ Article 3 of the *LOSC* set the maximum breadth of the territorial sea at a limit not exceeding 12 nautical miles measured from the territorial sea baselines. The *LOSC* also introduced the concept of the exclusive economic zone which was a *sui generis* offshore zone beyond and adjacent to the territorial sea

¹⁹ Verzijl, above n.13, 31; Lauterpacht, above n.18, 586; Fulton, above n. 16, 537-575.

²⁰ Fulton, above n. 16, 549.

²¹ Daniel.Patrick O'Connell (with I.A. Shearer ed.), *The International law of the Sea* (1982), Vol. I, 163; Anand, above n. 13, 179-180; A.H. Dean, 'The Second Geneva Conference on the Law of the Sea: The Fight for the Freedom of the Seas' (1960) 54 *American Journal of International Law* 751, 776; D. Bowett, 'The Second United Nations Conference on the Law of the Sea' (1960) 9 *International and Comparative Law Quarterly* 414, 432.

with a maximum breadth of 200 nautical miles from the territorial sea baselines.²² The coastal state had sovereign rights over the natural resources of this zone and exercised jurisdiction for specific purposes which included the establishment and use of artificial islands, installations and structures, marine scientific research and the protection and preservation of the marine environment.²³ The extent of the high seas is defined in the *LOSC* as the residual areas of sea that are not included in the exclusive economic zone, the territorial sea or the internal waters of coastal states or in the archipelagic waters of an archipelagic state.²⁴

The concept of a separate jurisdictional limit for the seabed adjacent to a coastal state's land territory was introduced in President Truman's 1945 Proclamation on the continental shelf.²⁵ Under this proclamation, the United States exercised exclusive sovereign rights over the resources of the continental shelf off its coasts. The first conventional international law definition of the outer limit of the continental shelf in Article 1(a) of the 1958 *Geneva Convention on the Continental Shelf (Continental Shelf Convention)*²⁶ was based on the notion of natural prolongation and exploitability.²⁷ The *LOSC* revised the definition of the outer limit of the continental shelf in Article 76 which is based on a more precise measurement of the outer edge of the continental margin. The continental margin comprises the submerged prolongation of the land mass of the coastal state including the seabed and subsoil of the continental shelf, slope and rise. Where

²² *LOSC*, Arts. 55 & 57.

²³ *Ibid*, Art. 56(1).

²⁴ *Ibid*, Art. 86.

²⁵ Presidential Proclamation No. 2667, Sept 28, 1945, 3 C.F.R. (1943-48 Comp.), 13 DEP'T. STATE BULL., Sept 30, 1945, 484-485, 4 Whiteman Digest of International Law (1965) 752-764.

²⁶ 1958 *Convention on the Continental Shelf*, 499 UNTS 311, (*Continental Shelf Convention*).

²⁷ Art. 1(a) of the *Continental Shelf Convention* defines the continental shelf as:

“the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 metres, or beyond that limit, to where the depth of

the outer edge of the continental margin off a coastal state's land territory does not extend to a distance of 200 nautical miles from its territorial sea baselines, the coastal state may nevertheless claim a continental shelf which extends to an outer limit of 200 nautical miles.²⁸ Where the outer edge of a coastal state's continental margin extends beyond 200 nautical miles, its continental shelf claim is capped at a maximum of 350 nautical miles from the territorial sea baselines or alternatively at a point not exceeding 100 nautical miles from the 2,500 metre isobath which is a line connecting the depth of 2, 500 metres.²⁹ The precise delineation of the seabed beyond national jurisdiction is still indeterminate as States Parties to the *LOSC* are in the process of submitting their continental shelf claims to the Commission on the Limits of the Continental Shelf. The separate jurisdictional limits for the water column and seabed off coastal states highlights the need for cooperation between coastal states and the international community in protecting the marine environment of hybrid maritime areas where continental shelves and high sea areas are co-located.

1.3 The Physical Characteristics of the Open Ocean and the Deep Sea Environments

The vast ocean expanse beyond waters under the national jurisdiction of coastal states is classified by marine scientists and oceanographers as the open ocean and the deep seabed. From the surface, the features of this environment appear quite uniform with only rare traces of the diverse living and non living resources which

the superjacent waters admits of the exploitation of the natural resources of the said areas.”

²⁸*LOSC*, Art. 76(1) defines the continental shelf as follows:

“The continental shelf of a coastal State comprises the sea-bed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance.”

are located in this huge domain. Notwithstanding its featureless exterior, the monotony of the ocean and its endless wave patterns conceal some of the world's rarest creatures and unique habitats.³⁰ To enhance their understanding of marine life and oceanic processes, scientists and oceanographers have divided the water column of the open ocean or pelagic realm into vertical layers and horizontal regions. The physical characteristics of these layers and their marine living resources will be discussed in this section. The deep sea floor at the base of the open ocean has a topography which is comparable in complexity to the terrestrial environment and hosts an abundant variety of living and non living resources. The sea bed has also been divided into zones based on water depth and benthic fauna. The deep sea research cruises of recent times have revealed examples of extraordinary species and habitats previously unknown to humans in the most remote parts of the sea. This section will examine some typical habitats of the open ocean and deep seabed and the living and non living resources which exist in these environments.

1.3.1 *Marine Biological Divisions of the Ocean*

The taxonomy of marine biological layers in the open ocean is described in terms of depth from the surface.³¹ Most marine living resources are endemic to particular zones but there are some species which migrate between the zones.³² The uppermost division of the ocean, to approximately 100 to 200 metres below the surface is known as the epipelagic or photic zone.³³ The lower limit of this

²⁹ LOSC, Art. 76(5).

³⁰ Paul V.R. Snelgrove & J. Frederick Grassle, 'The Deep Sea: Desert and Rainforest' (1995) 38(2) *Oceanus* 25.

³¹ Jeffrey S. Levinton, *Marine Biology. Function, Biodiversity, Ecology* (2001), 14; Couper, above n. 4, 68-69.

³² Couper, above n.4, 68.

³³ Levinton, above n. 31, 14.

zone is the maximum depth to which sufficient sunlight can penetrate to enable photosynthesis, the process by which plants convert the energy derived from sunlight to chemical energy.³⁴ In most oceans of the world the water in this surface zone is warm and floats above the colder denser water of deeper zones. The majority of the world's fisheries are concentrated in this zone.³⁵ The uppermost metre of the surface zone, known as the neuston³⁶ layer, is enriched with nutrients derived from waste chemicals excreted by plankton which float up from the deeper water and the remains of other decaying species. This layer abounds with algae, bacteria and unicellular protozoans not found at greater depths and supports a multitude of plankton and larger animals.³⁷ A further layer known as the mesopelagic or twilight zone extends from approximately 200 to 2000 metres below the surface and is delimited by the maximum depth to which light penetrates from the surface.³⁸ Many of the living creatures in this zone migrate upwards to the surface during the night hours to feed and exhibit physical characteristics which help them to blend into the marine environment and avoid predators during daylight hours.³⁹

The number of species decreases in the bathypelagic or upper part of the dark zone which is directly under the mesopelagic zone and extends to a depth of approximately 4000 to 5000 metres.⁴⁰ The water becomes much colder and denser

³⁴ Couper, n.4, 68.

³⁵ Ibid.

³⁶ Levinton, above n. 31, 14: "Neuston are organisms associated with the sea surface including microorganisms that are bound to the surface slick of the sea."

³⁷ Andrew Byatt, Alastair Fothergill & Martha Holmes, *The Blue Planet: A Natural History of the Oceans* (2001) 278.

³⁸ Couper, above n.4, 68; Byatt, Fothergill & Holmes, above n.37, 314; Levinton, above n. 31, 14.

³⁹ Couper, above n. 4, 68.

⁴⁰ Levinton, above n.31, 14; Byatt, Fothergill & Holmes, above n.37, 322-323.

in this zone with temperatures decreasing to 5 degrees centigrade or less.⁴¹ Migration of species is rare at this depth where survival depends on conservation of energy.⁴² Black and dark red fish such as angler fish, red shrimps and gelatinous squid are typical inhabitants of this zone.⁴³ The next biological layer of the water column from about 4000 to 6000 metres depth to the sea floor is known as the abyssopelagic zone.⁴⁴ The species and habitats of this zone tend to be closely associated with the sea floor environment and its biological communities which are known as the benthos.⁴⁵ The variability and peculiar characteristics of benthic flora and fauna have only been revealed in recent decades with more frequent deep sea research probes.⁴⁶ In an area of the oceans which was previously thought to be moribund and devoid of living resources, marine scientific research is gradually exposing an abundant array of species and habitats. While the majority of benthic organisms beyond national jurisdiction are microscopic and live buried in the sediment of the deep seafloor there are some striking oases of productive life even at this depth.⁴⁷ Specific habitats such as seamounts and hydrothermal vents support endemic communities of slow growing fish with special adaptations to their environment and chemosynthetic organisms which derive their energy from fissures in the earth's crust which extrude superheated gases such as hydrogen sulphide.⁴⁸ A further marine biological layer, known as the hadalpelagic zone extending from approximately 6000 to 10000

⁴¹ Byatt, Fothergill & Holmes, above n.37, 330.

⁴² Couper, above n.4, 68; Byatt, Fothergill & Holmes, above n. 37, 331 & 333.

⁴³ Byatt, Fothergill & Holmes, above n. 37, 331.

⁴⁴ Levinton, above n. 31, 14.

⁴⁵ John D. Gage & Paul A. Tyler, *Deep-Sea Biology: A Natural History of Organisms at the Deep-Sea Floor* (1991) 57: "The fauna of the benthic boundary is comprised of those animals living either on the ocean floor, the *benthos*, or those associated with the immediately overlying water, the *benthopelagic* fauna which comprises swimming or drifting forms, some of which may spend varying amounts of time on, or even buried in, the seabed.

⁴⁶ Snelgrove & Grassle, above n. 30, 25.

⁴⁷ Byatt, Fothergill & Holmes, above n. 37, 362.

metres, is found in the waters of deep sea trenches, the deepest part of the ocean.⁴⁹ This zone is characterised by extreme pressure and the coldest water temperatures. Nevertheless some invertebrates such as starfish and tube worms thrive at this depth. The specific features of some of these habitats will be discussed in the next section.

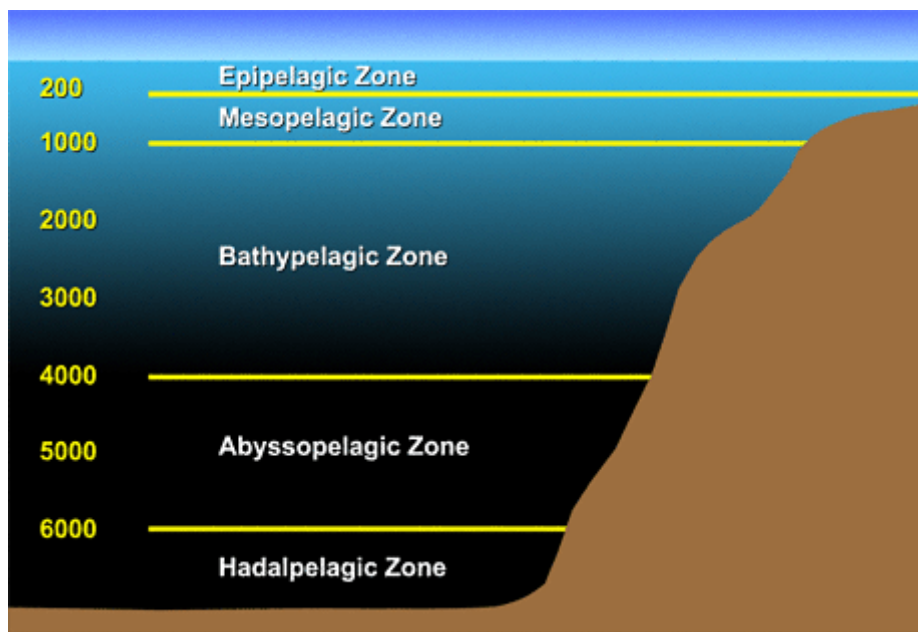


Figure 1.2 Marine Biological Zones of the Ocean (Source: Sea and Sky <http://www.seasky.org/monsters/sea7a4.html> at 16 August 2005)

1.3.2 Biogeographic Divisions of the Ocean

The ocean is also divided into marine biogeographic areas by oceanographers. These are related to sea surface water temperatures and correspond roughly to areas between certain latitudes.⁵⁰ The coldest waters are situated in the Arctic, Sub Arctic and Southern Oceans where surface temperatures are between 5 degrees and a little below 0 degrees centigrade.⁵¹ The marine living resources within these regions include migratory predators such as seabirds and whales supported in

⁴⁸ Ibid, 362-363.

⁴⁹ Levinton, above n.31, 14; Gage & Tyler, above n. 45, 11.

relatively short food chains by a wide variety of fish, crustaceans, bivalves, krill and plankton which inhabit the pelagic and benthic realms.⁵² The isolated species and habitats of the Southern Ocean below the Antarctic Convergence are generally considered to be more diverse and productive than those of the Arctic.⁵³

In the cool surface waters of the boreal regions adjacent to the Arctic and Southern Oceans surface temperatures range from 5 to 10 degrees centigrade.⁵⁴ These waters merge into the temperate regions which have surface temperatures between 10 and 20 degrees centigrade. The boreal and temperate regions are the most consistently productive biogeographic regions of the oceans with a high density of microscopic organisms present in the water column with the highest levels occurring in spring and early summer.⁵⁵ The warmest surface temperatures of 20 degrees centigrade and above occur in the tropical oceans around the Equator.⁵⁶ These areas are characterised by high species diversity but shorter life cycles for the higher quotas of living organisms.⁵⁷ Surface temperatures in the world's oceans are also affected by cold and warm water currents that circle the globe distributing nutrients and affording opportunities for highly migratory species such as tuna to forage for food in multiple oceanic regions.⁵⁸

⁵⁰ Couper, above n.4, 68; Byatt, Fothergill & Holmes, above n.37, 12-13.

⁵¹ Couper, above n.4, 68; Byatt, Fothergill & Holmes, above n.37, 12-13.

⁵² Byatt, Fothergill & Holmes, above n. 37, 224-227; Couper, above n.4, 68.

⁵³ Byatt, Fothergill & Holmes, above n. 37, 227; Couper, above n.4, 78.

⁵⁴ Byatt, Fothergill & Holmes, above n. 37, 68

⁵⁵ Byatt, Fothergill & Holmes, above n. 37, 157; Couper, above n.4, 68.

⁵⁶ Couper, above n.4, 68.

⁵⁷ Ibid.

⁵⁸ Byatt, Fothergill & Holmes, above n.37, 268-269; Couper, above n.4, 51.

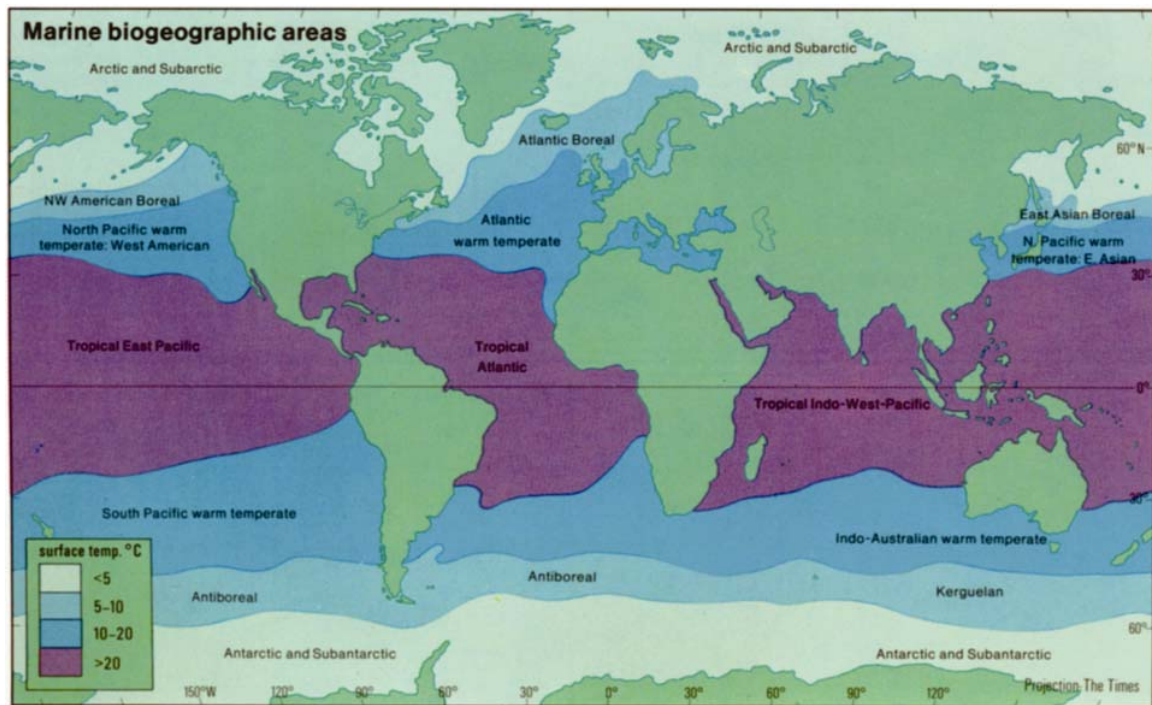


Figure 1.3: Marine Biogeographic Areas of the Ocean (Source: Couper, above n. 4, 68)

1.3.3 Seafloor Topography

The deep seabed beyond national jurisdiction begins at the outer edge of the continental margin which is composed of three topographical features known as the continental shelf, slope and rise.⁵⁹ The majority of the earth's landmasses are surrounded by relatively shallow flat bottomed seas. The seabed in these areas is known as the continental shelf.⁶⁰ This natural prolongation of the land masses varies in width but most commonly ends at a depth of around 200 metres at a point known as the shelf break.⁶¹ From this point the downward gradient of the seabed increases into what is known as the continental slope.⁶² The slope varies in character with some parts having a very gradual and uniform gradient while others have a very uneven gradient with distinctive irregularities such as submarine

⁵⁹ Byatt, Fothergill & Holmes, above n.37, 346; Gage & Tyler, above n. 45, 11.

⁶⁰ Byatt, Fothergill & Holmes, above n.37, 346; Gage & Tyler, above n. 45, 9.

⁶¹ Gage & Tyler, above n. 45, 9.

⁶² Gage & Tyler, above n.45, 9; Byatt, Fothergill & Holmes, above n.37, 346.

canyons and terraces.⁶³ At the foot of the continental slope there is a thick wedge of sediment which has fallen from the slope, termed the continental rise.⁶⁴ The depth and distance from the coastline of this point varies but one commentator has estimated that the continental slope and rise extend on average to a distance of 240 kilometres from land.⁶⁵ Beyond this point, at a depth of approximately 4 kilometres from the surface, the seabed levels off to the flat abyssal plain which is the largest portion of the marine environment.⁶⁶ While the majority of this sediment covered plain is flat and featureless, it is punctuated by unique habitats which harbour concentrated communities of rare benthic fauna.⁶⁷ The next section will describe a selection of deep sea habitats and their associated biological communities and non living resource deposits.

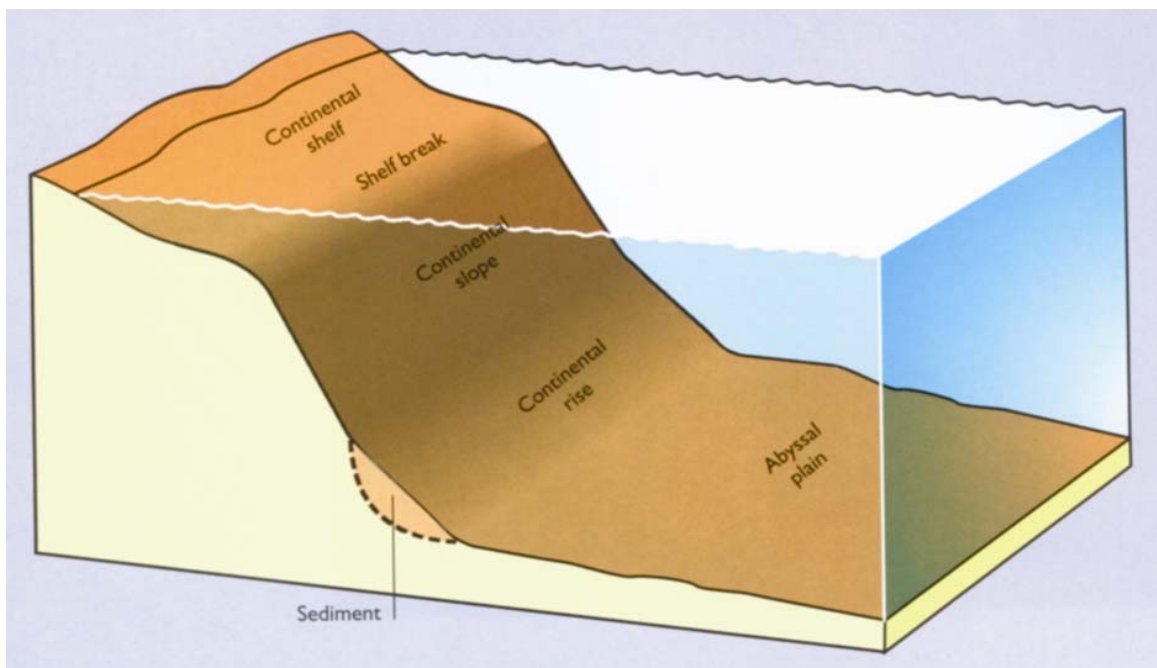


Figure 1.4: Sea Floor Topography (Source: Byatt, Fothergill & Holmes, above n. 37, 346)

⁶³ Gage & Tyler, above n. 45, 9; Byatt, Fothergill & Holmes, above n.37, 346.

⁶⁴ Gage & Tyler, above n.45, 10.

⁶⁵ Byatt, Fothergill & Holmes, above n.37, 346.

⁶⁶ Gage & Tyler, above n. 45, 10; Byatt, Fothergill & Holmes, above n.37, 346.

⁶⁷ Byatt, Fothergill & Holmes, above n. 37, 348-353.

1.4 Deep Sea Habitats

1.4.1 Seamounts

Seamounts are undersea conical projections which rise steeply from the deep sea floor to heights of 1000 metres or more.⁶⁸ These undersea mountains often occur in clusters or ranges along mid ocean ridges where lava rises from within the Earth continuously forming new oceanic crust.⁶⁹ Seamounts are usually volcanic in origin but may also form as a result of the vertical movement of tectonic plates beneath the earth's surface.⁷⁰ They occur in all oceans but are most common in the Pacific.⁷¹ Recent deep sea exploration has revealed their value as rich repositories of mineral deposits and havens for dense colonies of fish and other species.⁷²

Seamounts are often the site of hydrothermal precipitates such as polymetallic sulphides and cobalt rich crusts which form as a result of superheated gases extruding from fissures in the earth's crust.⁷³ While there is currently no commercial exploitation of these deep seabed minerals occurring beyond national jurisdiction currently, seamounts are likely to be an attractive investment location for this industry in the future.⁷⁴ Seamounts also attract large aggregations of fish which feed on plankton and other marine organisms ensnared as they rise to the surface.⁷⁵ The fish species which inhabit seamounts often have very low fecundity

⁶⁸ Gage & Tyler, above n.45, 10; P. Keith Probert, 'Seamounts, Sanctuaries and Sustainability: Moving Towards Deep-Sea Conservation' (1999) 9 *Aquatic Conservation: Marine and Freshwater Ecosystems* 601.

⁶⁹ Gage & Tyler, above n. 45, 10.

⁷⁰ IUCN/WWF, *The Status of Natural Resources on the High Seas* (2001) 22.

⁷¹ Ibid.

⁷² Ibid, 23-24.

⁷³ Ibid, 24.

⁷⁴ Probert, above n.68, 602.

⁷⁵ Probert, above n.68, 601; J. Anthony Koslow, 'Fish Stocks and Benthos of Seamounts' in Hjalmar Thiel & J. Anthony Koslow (eds.), *Managing Risks to Biodiversity and The Environment*

and are extremely long lived rendering them especially vulnerable to overfishing.⁷⁶ Examples of commercially exploited fish species associated with seamounts include orange roughy, some deep water oreos and the pelagic armour head.⁷⁷ Other migratory fish species and marine mammals which gravitate towards seamounts in search of food include tuna, dolphins, marlin, bonito and mackerel.⁷⁸ The currents which swirl around seamounts increase the supply of food available to suspension feeders such as deep sea corals which thrive in the seamount environment.⁷⁹ Corals which usually occur on protruding areas of seamounts are particularly vulnerable to destructive fisheries practices such as bottom trawling.⁸⁰ Seamounts are also home to a wide variety of invertebrate species including sponges, hydroids and ascidians.⁸¹ In addition, seabirds are known to congregate in the vicinity of seamounts attracted by the large number of fish and other marine species.⁸² Relatively few seamounts have been comprehensively explored but research undertaken on 25 seamounts south of Tasmania has disclosed more than 850 macro and megafaunal species with a high level of endemism for each seamount.⁸³ This research and the prevalence of migratory species visiting seamounts indicate that they are performing important biological functions as reproductive oases and food sources for living creatures in the deep sea environment.⁸⁴

on the High Seas, Including Tools such as Marine Protected Areas – Scientific Requirements and Legal Aspects (2001), Proceedings of the Expert Workshop held at the International Academy for Nature Conservation, Isle of Vilm, Germany, 27 February – 4 March 2001, 43, 45-46.

⁷⁶ Probert, above n.68, 601; Koslow, above n.75, 48.

⁷⁷ IUCN/WWF, above n. 70, 24.

⁷⁸ Byatt, Fothergill & Holmes, above n. 37, 292.

⁷⁹ Probert, above n. 68, 602

⁸⁰ Koslow, above n.75, 49; IUCN/WWF, above n. 70, 25.

⁸¹ Probert, above n. 68, 602; IUCN/WWF above n. 70, 23.

⁸² IUCN/WWF, above n. 70, 24.

⁸³ Koslow, above n. 75, 49; WWF/IUCN, above n. 70, 24.

⁸⁴ IUCN/WWF, above n.70, 24-25; Koslow, above n. 75, 50.

1.4.2 Hydrothermal Vents

One of the most intriguing and biologically diverse habitats of the deep sea environment is the hydrothermal vent. The phenomenal biological communities in the vicinity of hydrothermal vents were first discovered during an expedition by a group of National Geographic researchers in February 1977 in the vessel Knorr to the Galapagos Rift in the Eastern Pacific.⁸⁵ Dense clam colonies normally only found in much shallower coastal waters alerted deep sea scientists to investigate these habitats more closely to discover more about the energy and food sources supporting these unusual bivalve mollusc communities.⁸⁶ They discovered that hydrothermal activity occurs along mid ocean ridges where fissures in the earth's crust allow sea water to penetrate to depths of a few kilometres and mix with hot basalt to produce hot water springs venting through the deep sea floor.⁸⁷ The superheated liquid emerging from these vents can be as hot as 350 to 400 degrees centigrade and is full of minerals from the surrounding rock which form in chimney like deposits around the vents and are known as black or white smokers.⁸⁸ Closer research into these sites, following the initial discovery at Galapagos Rift, revealed that a chemosynthetic reaction taking place in the water of the vents was the energy source for the unique forms of life which occurred in their vicinity.⁸⁹ Large numbers of bacteria were formed in the hydrothermal fluid through a process synthesising organic carbon from carbon dioxide and methane.⁹⁰ These chemoautotrophic bacteria are the food and energy source for

⁸⁵ Robert D. Ballard, *Adventures in Ocean Exploration. From the Discovery of the Titanic to the Search for Noah's Flood* (2001) 55; Robert D. Ballard with Will Hively, *The Eternal Darkness* (2000), 169-173 .

⁸⁶ Ballard, *Adventures in Ocean Exploration*, above n. 85, 237-240.

⁸⁷ Gage & Tyler, above n.45, 363; IUCN/WWF above n.70, 15.

⁸⁸ Gage & Tyler, above n. 45, 366; IUCN/WWF, above n.70, 15.

⁸⁹ Gage & Tyler, above n. 45, 367; Byatt, Fothergill & Holmes, above n.37, 363.

⁹⁰ Byatt, Fothergill & Holmes, above n.37, 363; Gage & Tyler, above n. 45, 367.

the strange communities of bivalves and tube worms which scientists have discovered at the vents.⁹¹



Figure 1.5: Hydrothermal Vent Community (Source: Byatt, Fothergill & Holmes, above n. 37, 363)

Although the precise number of vents occurring beyond national jurisdiction is not yet known, scientists have estimated that there would be approximately 500 on mid ocean ridges averaging one per 100 km ridge length.⁹² Around the 30 vent sites which have been actively researched, approximately 450 invertebrate species

⁹¹ Gage & Tyler, above n. 45, 367.

⁹² IUCN/WWF above n. 70, 15.

have been identified and 32 fish and octopus species have also been observed near the vents.⁹³ The majority of vent species have only been found at one site highlighting the unique nature of these fauna.⁹⁴ Specialised vent species appear to be confined to depths greater than 400 metres.⁹⁵

Hydrothermal vents have multiple commercial exploitation possibilities and scientific value. Species which survive at such extreme temperatures and in highly toxic environments have potential value for a wide range of medical, industrial and agricultural applications.⁹⁶ The organisms derived from hydrothermal vents known as hyperthermophiles and extremophiles are already supporting a nascent biotechnological industry.⁹⁷ The polymetallic sulphides deposited on hydrothermal vent chimneys are potential sources of gold and other valuable minerals.⁹⁸ The heat produced at hydrothermal vents could also form the basis of an alternative energy source in the future through the production of hydrogen fuel.⁹⁹ Since the discovery of the first hydrothermal vent in the Galapagos Rift there has been escalating scientific interest in these sites and frequent sampling of vent living resources is now common.¹⁰⁰ The cumulative effect of such research on particular hydrothermal vent sites is now a source of concern for both environmental organisations and marine scientists. This versatile array of commercial exploitation possibilities and the intense scientific interest in hydrothermal vents entails the corresponding risk that indiscriminate human activities may have harmful effects on vent environments, reducing the long term

⁹³ Ibid, 16.

⁹⁴ Ibid.

⁹⁵ Ibid, 17.

⁹⁶ Ibid.

⁹⁷ Ibid.

⁹⁸ Probert, above n. 68, 602; IUCN/WWF above n. 70, 17.

⁹⁹ IUCN/WWF above n. 70, 17.

viability of their biological communities and exhausting mineral deposits prematurely. These risks highlight the need to have clear legal and institutional arrangements to minimise the adverse impacts of human activities in these areas.

1.4.3 Cold Seeps and Pockmarks

Seepage of fluids such as hydrocarbons and groundwater occurs at other sites on the deep sea floor which are less spectacular than hydrothermal vents but support similarly endowed biological communities.¹⁰¹ These habitats known as cold seeps are caused by a variety of geological events including tectonically induced fluid pressure, petroleum or natural gas escape, groundwater escape and sediment slide.¹⁰² Where these processes result in deep craters of several hundred metres in diameter the resulting feature is known as a pockmark.¹⁰³ Cold seeps and pockmarks have been found in many parts of the ocean including the deep seabed beyond national jurisdiction but their full global distribution is not yet known.¹⁰⁴ Chemosynthetic processes at the seeps produce benthic fauna which resemble those found at hydrothermal vents.¹⁰⁵ Large bivalves such as clams and mussels are common as well as colonies of tubeworms.¹⁰⁶ The majority of these species are endemic to their particular seeps.¹⁰⁷ The more moderate conditions of the cold seeps support a greater range of species than hydrothermal vents but some species are slower to grow in the seep environment.¹⁰⁸ The high biodiversity content of cold seeps will act as a magnet for ongoing scientific research of these

¹⁰⁰ Ibid, 18.

¹⁰¹ S. Kim Juniper, 'Background Paper on Deep-sea Hydrothermal Vents' in Thiel & Koslow, above n.75, 89, 91.

¹⁰² Gage & Tyler, above n.45, 385.

¹⁰³ IUCN/WWF, above n.70, 45.

¹⁰⁴ Ibid, 46.

¹⁰⁵ Gage & Tyler, above n.45, 385; Juniper, above n.101, 91.

¹⁰⁶ Gage & Tyler, above n.45, 385-386; IUCN/WWF, above n.70, 46-47..

¹⁰⁷ Ibid, 47.

communities. In common with hydrothermal vents, chemosynthetic bacteria from cold seeps may contain valuable genetic resources which are attractive to the bioprospecting industry. Commercial exploitation of minerals from seep fluids may also become viable in the future.¹⁰⁹ Identifying cold seeps will require a concerted biogeographic mapping effort as they are less prominent features than hydrothermal vents.

1.4.4 Deep Sea Trenches

Deep sea trenches are formed by the downward collapse of oceanic crust into the hot centre of the Earth when an oceanic tectonic plate collides with a continental plate.¹¹⁰ Deep trenches in the ocean floor ranging in depth from 6,000 to 11,000 metres are formed through this process which is known as subduction.¹¹¹

Subduction occurs most commonly along island arc systems and active continental margins.¹¹² Many of the 37 deep ocean trenches known to scientists occur within the 200 nautical mile offshore zones of coastal states, however, there are examples of deep ocean trenches beyond national jurisdiction in the Pacific, Atlantic and Indian Oceans.¹¹³ Deep ocean trenches are typically elongated and narrow ranging in length from 100 to 3000 kilometres and a few tens of kilometres wide.¹¹⁴ The base of the trench is covered in fine sediment and may also contain terrestrial plant debris and rocks.¹¹⁵

¹⁰⁸ Ibid.

¹⁰⁹ Ibid.

¹¹⁰ Byatt, Fothergill & Holmes, above n.37, 29.

¹¹¹ Gage & Tyler, above n.45, 11.

¹¹² Ibid.

¹¹³ IUCN/WWF, above n.70, 28-29.

¹¹⁴ Ibid, 28.

¹¹⁵ Ibid.

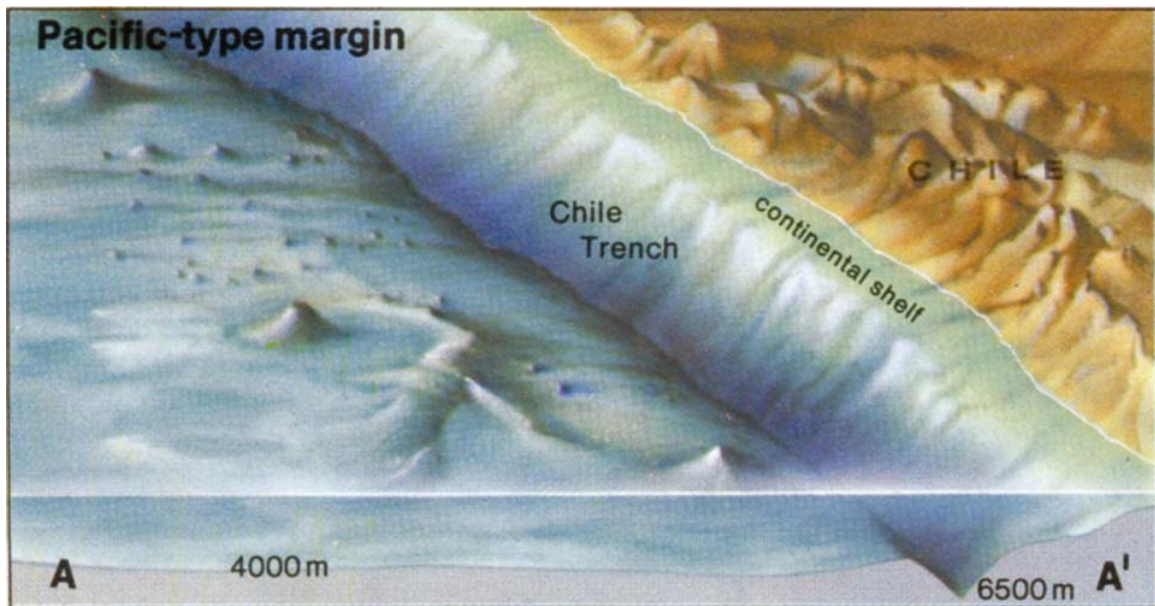


Figure 1.6: Deep Sea Trench (Source: Couper, above n. 4, 28)

As with vent biological communities, trench fauna are highly adapted to their fundamentally unstable environment where they are constantly subject to physical disturbance, immense water pressure and fluctuating nutrients.¹¹⁶ Faunal biodiversity decreases with depth with the greatest range of species inhabiting the shallower parts of the trench.¹¹⁷ Holothurians also known as sea cucumbers, which live on soft sediment and feed on detritus, predominate in the lower zones of trenches.¹¹⁸ Bivalve molluscs and polychaete worms also occur in the nether regions of the trench.¹¹⁹ Some of these species appear to be supported by chemosynthetic processes similar to those at the hydrothermal vents.¹²⁰ In the upper zones more complex organisms appear including sipunculans crustaceans

¹¹⁶ Ibid, 29.

¹¹⁷ Ibid.

¹¹⁸ Gage & Tyler, above n.45, 67; IUCN/WWF, above n.70, 29.

¹¹⁹ IUCN/WWF, above n.70, 29.

¹²⁰ Ibid, 30.

and sea stars.¹²¹ As with seamounts and hydrothermal vents, trench fauna are usually endemic to their particular trench.¹²²

Although difficult to access, deep sea trench species known as hadal fauna have potential commercial applications. Their adaptations to the trench environment provide further knowledge on sustaining life processes under extreme hydrostatic pressure which has synergies with sustaining human life under anaesthetics.¹²³ The unique gene pool of trench fauna also has medical, industrial and other biotechnological applications.¹²⁴ The primary threats to deep sea trench environments are proposals to dump waste including oil, chemicals, sewage, high level nuclear material and mining tailings.¹²⁵ More stringent environmental protection measures beyond those already applicable to vessel source pollution may be necessary to avert such threats.

1.4.5 Deep Sea Coral Reefs

Although the deep sea does not have the extensive coral reefs typical of shallower tropical waters, scientists have discovered some coral species which form large reef structures in deep sea areas.¹²⁶ Stony reef building corals have been found in many areas of the deep sea forming large growths up to 30 metres high in one

¹²¹ Ibid, 29.

¹²² Probert, above n.68, 602.

¹²³ IUCN/WWF, above n.70, 30.

¹²⁴ Ibid.

¹²⁵ Ibid, 31.

¹²⁶ Lauren S. Mullineaux & Susan W. Mills, 'Coral Gardens in the Dark Depths: Scientists Seek to Learn More about these Abundant, Fragile and Now Threatened Communities' (2005) 43(2) *Oceanus* 6; Murray Roberts, 'Managing Impacts on the Marine Environment' in The Irish Coral Task Force and Atlantic Coral Ecosystem Study, *Report on Two Deep-Water Coral Conservation Stakeholder Workshops Held in Galway in 2001 and 2002*, 59; Anthony J. Grehan, 'Deep Water Coral Conservation' in Thiel & Koslow, above n.75, 67; Byatt, Fothergill & Holmes, above n.37, 355-356.

case and extending for several thousand metres in others.¹²⁷ The most prevalent and studied species is *Lophelia pertusa* which often occurs at higher points on the deep seabed such as seamounts, ridges, carbonate mounds and sand mounds where current flow is faster and the food supply of passing plankton is greater.¹²⁸ Other species of coral such as *Madrepora Oculata* and *Desmophyllum* with similar physical characteristics are also common in these locations.¹²⁹ Contrary to earlier perceptions of deep sea marine organisms, the deep water corals are brightly coloured and like their tropical counterparts, display a branch like structure of hard calcium carbonate which harbours the individual polyps.¹³⁰ The densest known concentrations of *Lophelia pertusa* have been found on the continental shelf of the North East Atlantic Ocean area but discoveries have also been made of *Lophelia pertusa* and other species of coral in deep sea areas beyond the continental margin.¹³¹

¹²⁷ IUCN/WWF, above n.70, 33.

¹²⁸ *Ibid.*

¹²⁹ Gage & Tyler, above n.45, 102

¹³⁰ IUCN/WWF, above n. 70, 33; Mullineaux & Mills, above n.126, 6.

¹³¹ IUCN/WWF, above n.70, 33-34.



Figure 1.7: Deep Sea Coral (Source: Byatt, Fothergill & Holmes, above n. 37, 354)

A huge array of species thrive in deep sea coral habitats.¹³² Up to 800 species have been located in *Lophelia pertusa* communities in the North East Atlantic. While the number of fish and mollusc species is relatively low compared to shallow water coral reefs, the deep water reefs host hundreds of invertebrate species such as sponges, bryozoans and hydroids many of them new to marine science.¹³³ The reefs also attract large aggregations of commercially exploited fish such as redfish and ling.¹³⁴ Some fish species use the deep water reef habitats as nursery and spawning grounds.¹³⁵ Smaller fish species and invertebrate suspension feeders use the reefs as refuges.¹³⁶ The fragile reef structure is

¹³² Grehan, above n.126, 67; IUCN/WWF, above n.70, 35.

¹³³ IUCN/WWF, above n.70, 35.

¹³⁴ Grehan, above n.126, 67.

¹³⁵ IUCN/WWF, above n.70, 35.

¹³⁶ Gage & Tyler, above n.45, 102.

extremely susceptible to damage from destructive fisheries practices such as bottom trawling and scientific studies indicate that regrowth rates for *Lophelia pertusa* are very slow.¹³⁷ Substantial destruction of the reef structure and excessive exploitation of endemic fish species will also affect the balance of the dependent ecosystems.¹³⁸ Deep water coral habitats are vulnerable to the heavy impacts of oil and minerals exploration and production activities and the more primitive methods of marine scientific research such as trawling and dredging for samples.¹³⁹

1.5 Threats to the Marine Environment Beyond National Jurisdiction

As science and technology provide more opportunities to access deep sea resources and seaborne trade intensifies, the spectrum of threats to the marine environment beyond national jurisdiction broadens exponentially. The deep sea fishing industry is now supported by a battery of technological innovations including global positioning systems, multibeam sonar, stronger and more powerful cables and winches. Fishing nets and lines are composed of virtually indestructible synthetic material and may be laid in huge swathes across the ocean. Seaborne trade and passenger traffic is rapidly expanding and is expected to double over the next two decades. The risks to the marine environment from spills, intentional discharges, noise and ship strikes of marine mammals are likely to increase with denser high seas traffic. Beyond these proximate threats, newer activities such as marine scientific research, bioprospecting and deep seabed mining have the potential to harm the highly interconnected and fragile ecosystems of the deep sea if not carefully managed now and in the future. This

¹³⁷ Mullineaux & Mills, above n.126, 6; IUCN/WWF, above n.70, 35-36.

¹³⁸ IUCN/WWF, above n.70, 36; Mullineaux & Mills, above n.126, 6.

section will examine the character and extent of actual and potential threats to the marine environment beyond national jurisdiction.

1.5.1 Threats Associated with Marine Living Resource Exploitation

Commercial exploitation of marine living resources beyond national jurisdiction has grown in scale and intensity with the demise of some inshore fisheries and the extension of coastal state resource jurisdiction to 200 nautical miles.¹⁴⁰ An estimated 10 to 20 % of the world's commercial fish catch is now derived from high seas areas.¹⁴¹ Highly migratory stocks such as tuna and marlin have been vigorously exploited by distant water fishers in high seas areas where, until recently, catch restrictions have been rare.¹⁴² With a large proportion of the world's fisheries under pressure from the commercial fishing industry, interest has also grown in previously undisturbed deep sea fisheries such as those which aggregate around seamounts.¹⁴³

Fisheries experts estimate that most tuna stocks are close to or have reached their full level of exploitation or maximum sustainable yield in recent years. Large fleets of long liners and purse seiners have been targeting tuna since the 1950s.¹⁴⁴ While quotas and size limits have been imposed by global and regional organisations managing tuna fisheries, there has been some resistance to such

¹³⁹ IUCN/WWF above n.70, 36.

¹⁴⁰ IUCN/WWF, above n.70, 65; Christopher J. Carr & Harry N. Scheiber, 'Dealing with a Resource Crisis: Regulatory Regimes for Managing the World's Marine Fisheries' (2002) 21 *Stanford Environmental Law Journal* 45.

¹⁴¹ WWF/WCPA/IUCN, above n.8, vii.

¹⁴² Carr & Scheiber, above n.140, 53.

¹⁴³ E. J. Molenaar, 'Unregulated Deep Sea Fisheries: A Need for a Multi-Level Approach' (2004) 19(3) *International Journal of Marine and Coastal Law* 223; Lee A. Kimball, 'Deep Sea Fisheries of the High Seas: The Management Impasse' (2004) 19(3) *International Journal of Marine and Coastal Law* 259, 260.

¹⁴⁴ Earle, above n.3, 182-184; IUCN/WWF, above n.70, 66.

restrictions and enforcement of quotas in high seas areas has been difficult.¹⁴⁵ The incidental catch of long line tuna fishers has been high with a large number of non target species such as billfish, turtles, birds, dolphins and sharks being injured, killed and discarded through encounters with lines and hooks.¹⁴⁶ Regional fisheries organisations managing tuna are beginning to implement a precautionary approach to tuna fisheries imposing measures such as lower quotas, spatial, time and gear restrictions on the fishing vessels of their member states.¹⁴⁷ These organisations are also beginning to examine the need for ecosystem based management of tuna fisheries which takes into account the associated and dependent species and habitats affected by fishing for the target species.¹⁴⁸ Implementation of precautionary and ecosystem based measures in high seas areas, however, is far from comprehensive and is still in the embryonic stages of development.¹⁴⁹

Marine scientists are also concerned about the threats to deep water demersal fish which are concentrated on the continental slopes and around deep sea habitats such as seamounts.¹⁵⁰ These include species such as the grenadiers, smoothheads, orange roughy and the pelagic armourhead. Unlike many inshore and coastal fish species they exhibit characteristics such as great longevity, low fecundity and high age at first maturity.¹⁵¹ They can also be endemic to a particular deepsea

¹⁴⁵ Carr & Scheiber, above n.140, 59; Rosemary Rayfuse, 'The Challenge of Sustainable High Seas Fisheries' in Nico Schrijver & Friedl Weiss (eds.), *International Law and Sustainable Development. Principles and Practice* (2004) 467, 474.

¹⁴⁶ Byatt, Fothergill & Holmes, above n.37, 306-7; WWF/WCPA/IUCN, above n.8, 6..

¹⁴⁷ Rayfuse, above n.145, 473-474.

¹⁴⁸ Ibid, 474-476.

¹⁴⁹ Ibid, 474-475.

¹⁵⁰ Probert, above n. 68, 602; Koslow, above n.75, 43; John D.M. Gordon, 'Deep Water Fish and Fisheries' in Thiel & Koslow, above n.33.

¹⁵¹ Koslow, above n. 75,43; Gordon, above n.150, 32.

habitat.¹⁵² These features of deep water species inhibit their ability to recover quickly from over exploitation. The methods used to fish for these species, especially bottom trawling, have major impacts on their surrounding habitat and on associated and dependent ecosystems.¹⁵³ As well as crushing fragile deep sea coral structures, bottom trawlers sweep up large numbers of non target species. All deep sea fish caught in a trawl including non target species will be dead on reaching the surface as a result of damage to their skins and pressure and temperature changes.¹⁵⁴ In particular oceanic regions there are already examples of deep water species being commercially exploited to levels close to extinction.¹⁵⁵

1.5.2 Threats Associated with Maritime Transport

Threats to the marine environment from vessel source discharges and deliberate disposal of waste did not come to prominence until the latter decades of the twentieth century with the increase in the world oil trade and major disasters such as the Torrey Canyon and Amoco Cadiz groundings where the effects of oil on marine life were clearly visible to the human eye.¹⁵⁶ Prior to a series of global conventions regulating vessel source pollution and dumping at sea,¹⁵⁷ the oceans were used as an uncontrolled rubbish dump absorbing oil and toxic chemicals, untreated sewage and garbage from land and vessel sources, mine tailings,

¹⁵² Koslow, above n.75, 43.

¹⁵³ Gordon, above n.150, 33.

¹⁵⁴ Gordon, above n.75, 33.

¹⁵⁵ Koslow, above n.75, 46-47.

¹⁵⁶ P.M. McGrath & Michael Julian, 'Protection of the Marine Environment from Shipping Operations: Australian and International Responses' in Donald R, Rothwell & Sam Bateman (eds.), *Navigational Rights and Freedoms and the New Law of the Sea* (2000) 188, 188-189.

¹⁵⁷ These conventions are discussed in Chapter 6.

dredged material and nuclear waste.¹⁵⁸ Indiscriminate disposal at sea of waste arising from human activities has deleterious effects on the entire marine environment including the open ocean and the deep seabed beyond national jurisdiction. Although the proportion of contaminants introduced into the sea from vessel sources is small when compared to land based sources of marine pollution, the risks associated with such disposal are high.¹⁵⁹ The physical impacts of waste disposal include burial of marine organisms, increased suspended solids and habitat destruction caused by sedimentation.¹⁶⁰ Hazardous and noxious substances disposed at sea can also have toxic effects on marine organisms and result in contamination of human food sources. Some persistent wastes such as plastics and synthetic materials left suspended in the water column may harm marine life and interfere with navigation.¹⁶¹ Alien species introduced into the deep sea environment, through the practice of ballast water exchange on the high seas, can adversely affect the delicate balance of deep sea ecosystems and destroy fragile habitats.¹⁶²

The effects of uncontrolled waste disposal at sea are not confined to coastal or surface waters. Through the action of currents and gravity, most pollutants and dumped materials will eventually find their way to the deep sea floor. Scientists

¹⁵⁸ United Nations Atlas of the Oceans, *Dumping At Sea*, <http://www.oceansatlas.com/unatlas/uses/oceandumpingwastes/dumping/dumping.htm> at 24 March 2005

¹⁵⁹ Erik Jaap Molenaar, *Coastal State Jurisdiction over Vessel- Source Pollution* (1998) 18, n.12: “Vessel-source pollution accounts for 12% of all marine pollution, land-based and atmospheric for 77%, ocean dumping for 10% and offshore production for 1% (GESAMP Report No. 39, p.88).” This thesis does not address the threat to maritime areas beyond national jurisdiction of pollution sources other than vessel source pollution.

¹⁶⁰ Marcia Collie & Julie Russo, ‘Deep-Sea Biodiversity and the Impacts of Ocean Dumping’ (2000) National Oceanographic and Atmospheric Administration. http://www.oar.noaa.gov/spotlite/archive/spot_oceandumping.html at 26 March 2005

¹⁶¹ WWF/WCPA/IUCN, above n.8, 6-7.

¹⁶² Nicholas Bax, Angela Williamson, Max Aguero, Exequiel Gonzalez & Warren Geeves, *Marine Invasive Species: A Threat To Global Biodiversity* (2003) 27(4) *Marine Policy* 313, 314.

from the US have conducted studies into the effects of large amounts of sewage sludge dumped annually at a deep water site 106 miles off the coast on the continental rise adjacent to the New York Bight.¹⁶³ Over a period of years, this research demonstrated that the sludge material had significant effects on the metabolism, diet and composition of the benthic inhabitants of the dump site itself and the surrounding area. Some organisms such as urchins, starfish and sea cucumbers increased in abundance from ingesting the organic material found in sewage sludge while others diminished as a result of the toxic effects of heavy metals.¹⁶⁴

In regulating the discharge of vessel source pollutants into the ocean, the international community has adopted a zonal approach with more stringent restrictions imposed on vessel discharges closer to land and special areas declared in waters within national jurisdiction where all discharges are prohibited.¹⁶⁵ This incremental approach increases the potential for harmful effects from vessel source pollutants in the open ocean and deep seabed environments beyond national jurisdiction. Initially, deliberate dumping of waste material at sea was controlled in a permissive manner by specifying lists of those substances which could be dumped under certain conditions. This approach has now been reversed with the majority of dumping prohibited and the onus incumbent on a state which proposes to dump material to justify its actions.¹⁶⁶

¹⁶³ Collie & Russo, above n.160.

¹⁶⁴ Ibid.

¹⁶⁵ The global system of regulating vessel source pollution under the 1973 *International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)* is discussed in detail in Chapter 6.

¹⁶⁶ Olav Schramm Stokke, 'Beyond Dumping? The Effectiveness of the London Convention' in Current Issues and Themes, *Yearbook of International Co-operation on Environment and Development* (1998/99) 39, 40-41.

1.5.3 Threats Associated with Deep Seabed Mining

The assessment of the environmental impacts of deep seabed mining has paralleled the development of this incipient industry which is not yet at the stage of commercial viability. Since the mid 1970s, state institutions such as the National Oceanic and Atmospheric Administration of the US, the German Ministry of Research and Technology and Japan's Metal Mining Agency have been conducting research into the effects of deep seabed mining on the benthic environment in conjunction with industrial groups.¹⁶⁷ Following its establishment in 1994, the International Seabed Authority (ISA) has continued this research with the seven licensed deep seabed mining exploration contractors and deep sea research scientists.¹⁶⁸

There are three main groups of deep seabed minerals: polymetallic nodules, polymetallic sulphides and cobalt rich crusts.¹⁶⁹ Most research has concentrated on polymetallic nodules which are currently the subject of exploration by the licensed contractors. Polymetallic nodules are found in the soft sediment of the deep sea floor. They form a hard substrata for the benthic organisms inhabiting the sediment.¹⁷⁰ The deep seabed mining collection system at the seafloor consists of a motorised metal collector and crusher which will sweep up the majority of nodules in any particular area.¹⁷¹ This will result in severe disturbance of the surrounding soft sediment and the destruction of much of the benthic fauna.¹⁷² Organisms in and around the tracks of the collector unit will be buried by the

¹⁶⁷ Jan Magne Markussen, 'Deep Seabed Mining and the Environment: Consequences, Perceptions and Regulations' in *Green Globe Yearbook* (1994) 31, 31-32.

¹⁶⁸ Chapter 7 addresses the environmental protection regime administered by the ISA and its implementation in the practice of the seven licensed exploration contractors.

¹⁶⁹ Markussen, above n. 167, 31.

¹⁷⁰ IUCN/WWF, above n. 70, 39 & 41.

¹⁷¹ Markussen, above n. 167, 33; IUCN/WWF, above n. 70, 41.

disturbed sediment.¹⁷³ In addition, suspension of a sedimentation plume behind the collector containing particulate matter will result in chemical changes to the bottom water.¹⁷⁴ Even for stalked organisms which penetrate higher into the water column and free floating organisms, mining operations will result in disturbance of food sources such as drifting plankton.¹⁷⁵ Scientists have estimated that benthic communities may take decades to recover from these impacts.¹⁷⁶ At the surface, disposal of waste water containing particulate matter and trace metals may also interfere with photosynthetic processes for marine life in the productive epipelagic layer.¹⁷⁷

The environmental effects of polymetallic sulphides and cobalt rich crusts are not as well researched as those associated with polymetallic nodules but some impacts are predictable. A high potential for adverse environmental impacts exists where polymetallic sulphides are co-located with the unique and fragile ecosystems situated at active hydrothermal vents. Destruction of the vent organisms and habitat is likely to occur with large disturbances of sediment and chemical changes caused by particulate plumes.¹⁷⁸ Some scientists have suggested that the destruction of a mother population capable of recolonising a disturbed hydrothermal vent location may result in the extinction of rare species.¹⁷⁹ Mining of cobalt rich crusts, which are found on seamount summits and the outer rim of ocean terraces, is technically more difficult as the crusts are attached to substrate

¹⁷² Markussen, above n.167, 33.

¹⁷³ Ibid.

¹⁷⁴ Ibid, 33-34.

¹⁷⁵ Ibid, 34.

¹⁷⁶ IUCN/WWF, above n.70, 43.

¹⁷⁷ Markussen, above n.167, 34; IUCN/WWF, above n. 70, 41.

¹⁷⁸ Jochen Halfar & Rodney M. Fujita, 'Precautionary Management of Deep Sea Mining' (2002) 26(2) *Marine Policy* 103, 104.

rock. To prevent dilution of the ore quality, the crusts must be removed without collecting too much substrate. A variety of methods have been suggested including cutting and fragmenting the crusts, water jet stripping of the crusts, chemical leaching of the crust material and sonic separation of the crusts.¹⁸⁰ All these methods are likely to result in physical disturbance to the surrounding seamount species and their habitats.¹⁸¹

1.5.4 Threats Associated with Bioprospecting and Marine Scientific Research

Deep sea habitats such as hydrothermal vents, trenches and cold seeps are the subject of intense interest from bioprospectors interested in the commercial potential of the endemic species and marine scientists who are conducting progressively more invasive experiments.¹⁸² Only a small cross-section of known hydrothermal vents have so far been regularly visited by bioprospectors and marine scientists who often work in conjunction.¹⁸³ The emphasis of scientific research expeditions to these sites has switched from simple discovery and exploration to experiments which involve installation of scientific equipment on the seafloor and the collection of biological and geological samples from particular sites.¹⁸⁴ In situ experiments may introduce the alien elements of light and noise into these deep sea habitats and induce changes in water temperature. Pollution may also occur from biological debris and other biological material

¹⁷⁹ International Seabed Authority, *Polymetallic Sulphides Brochure*, <http://www.isa.org.jm/en/seabedarea/TechBrochures/ENG8.pdf> at 3 May 2005.

¹⁸⁰ International Seabed Authority, *Cobalt Rich Crusts Brochure*, <http://www.isa.org.jm/en/seabedarea/TechBrochures/ENG8.pdf> at 3 May 2005.

¹⁸¹ *Ibid.*

¹⁸² IUCN/WWF, above n. 70, 18.

¹⁸³ Lyle Glowka, 'Putting Marine Scientific Research on a Sustainable Footing at Hydrothermal Vents' (2003) 27(4) *Marine Policy* 303.

¹⁸⁴ IUCN/WWF, above n. 70, 18; Glowka, above n.183, 304; Juniper, above n.101, 93.

imported into the environment.¹⁸⁵ The pressure imposed by cumulative expeditions, in some cases with identical purposes, has led marine scientists to coordinate their visits to avoid simultaneous expeditions and those with cognate purposes. These self regulatory schemes, however, are completely voluntary and far from comprehensive.¹⁸⁶ As commercial interest grows in the financial and health benefits associated with bioprospecting, research expeditions may be tempted to remove larger samples of genetic and biochemical material located at sites such as hydrothermal vents. At present there is no limit on the amount of genetic and biochemical material which can be removed from deep sea sites beyond national jurisdiction and no international law regime regulating the environmental impacts of marine scientific research or bioprospecting activities in such locations.

1.6 Analysis of the International Law Framework

The objective of this thesis is to analyse the current international law framework for protection of the marine environment beyond national jurisdiction and to propose ways in which the components of that framework could be strengthened to provide better protection for the vast oceanic domain outside national maritime zones. While the following sources of international law enumerated in Article 38 of the Statute of International Court of Justice will be considered, the primary focus of this analysis will be international conventions and their soft law adjuncts:

¹⁸⁵ IUCN/WWF, above n.70, 18.

¹⁸⁶ Glowka, above n.183, 308.

- (a) international conventions, whether general or particular, establishing rules expressly recognized by the contesting states;
- (b) international custom, as evidence of a general practice accepted as law;
- (c) the general principles of law recognized by civilized nations;
- (d) judicial decisions and the teachings of the most highly qualified publicists of the various nations.

The relatively recent development of international environmental law has occurred principally through the negotiation of conventional international law instruments and non binding instruments concluded by states in multilateral fora. While the thesis will make some reference to state practice in applying international environmental law principles in maritime areas beyond national jurisdiction, the paucity of recorded state practice beyond national jurisdiction makes it difficult to establish the widespread state practice and *opinio juris* criteria necessary to assess the formation of customary international law.¹⁸⁷ Reference will also be made to case law of international tribunals and the opinions of highly qualified publicists on law of the sea and international environmental law as a subsidiary source of international law.

¹⁸⁷ A widely accepted definition of customary international law, consisting of widespread state practice and accompanying *opinio juris*, i.e. States accepting that they are bound, is found in the

The development of soft law in support of and parallel to the negotiation of conventional international law instruments has been particularly prevalent in the international environmental law sphere. Emerging principles of international environmental law have frequently found political expression in non binding soft law instruments before being translated into binding legal obligations. The soft law instruments reviewed in Chapters 3 and 4 of this thesis, including the *Stockholm Declaration*¹⁸⁸ and the *Rio Declaration*¹⁸⁹ have been seminal statements reflecting political coalescence on key environmental principles which have influenced subsequent conventional international law instruments. Soft law can take many forms including statements of principles, declarations, guidelines, strategy documents, resolutions and communiqués. It is characterised by its non legally binding form, vague and imprecise terms, lack of legal obligation and political rather than legal origins.¹⁹⁰ The proliferation of soft law instruments in the international environmental law field has been associated with a political impetus for rapid development of principles and has served the purpose of articulating emerging agreement in the international community on environmental protection where there is still a reluctance on the part of states to commit to binding legal obligations.¹⁹¹ Soft law documents such as guidelines also perform the function of amplifying conventional law instruments and providing advice on how to implement particular provisions in practical contexts.¹⁹²

majority judgement of the International Court of Justice in the *North Sea Continental Shelf Cases* ICJ Reports (1969) p.3, pp.41-44.

¹⁸⁸ Report of the UN Conference on the Human Environment, UN Doc. A/CONF.48/14 (1972), reprinted in 11 ILM 1416 (*Stockholm Report*).

¹⁸⁹ UN Doc A/CONF.151/PC/WG.III/L.33/Rev.1 (*Rio Declaration*).

¹⁹⁰ Christine Chinkin, 'Normative Development in the International Legal System' in Dinah Shelton (ed.), *Commitment and Compliance: The Role of Non –Binding Norms in the International Legal System* (2000) 21,30.

¹⁹¹ Ibid, 30-31.

¹⁹² Ibid.

A common feature of the *LOSC*, international environmental law instruments such as the *Convention on Biological Diversity (CBD)*¹⁹³ and regional fisheries agreements considered in this thesis is the inclusion of articles which provide for a general duty to cooperate in achieving the objectives of the convention.¹⁹⁴ One method which has been used to clarify and develop the general duty to cooperate on particular issues is the negotiation of an Implementing Agreement which clarifies and develops the content of the duty. The *UN Fish Stocks Agreement*¹⁹⁵ is the primary example of this type of instrument in international fisheries law and has also influenced the development of more recent regional fisheries agreements. Chapter 5 of the thesis examines the content of the *UN Fish Stocks Agreement* and its application of international environmental law principles, such as the precautionary principle, to the management of highly migratory and straddling stocks both within and beyond national jurisdiction. Later chapters examine the potential for further clarifying and developing the duty to cooperate for the protection of biodiversity in maritime areas beyond national jurisdiction articulated in Article 5 of the *CBD*.

1.7 Conclusions

The interdependence of the open ocean and deep sea environments underscores the need for legal and institutional arrangements which allow for integrated protection of the marine environment beyond national jurisdiction and the establishment of connections between global and regional bodies with regulatory

¹⁹³ 1992 *Convention on Biological Diversity*, 31 ILM 822 (*CBD*).

¹⁹⁴ G.L. Lugten, 'Cooperation and Regional Fisheries Management' (2000) 30(5) *Environmental Policy and Law* 251,252.

competence in these areas. Protection of this vast area of ocean from the range of threats posed by intensifying human activity will require concentrated global and regional investment in coordinating and extending the applicable environmental protection regimes. This thesis will investigate the current legal and institutional arrangements which apply to the complex web of ecological relationships in the open ocean and deep sea environments. The powers and functions of global and regional organisations with regulatory competence over human activities which occur in maritime areas beyond national jurisdiction will be examined. Key instruments such as the *LOSC* and the *CBD* will be reviewed to ascertain their potential for legitimizing collective action to protect the marine environment beyond national jurisdiction. The thesis will assess the need for a more comprehensive set of legal and institutional arrangements for the protection of biodiversity in maritime areas beyond national jurisdiction from the adverse effects of human activities on this extensive oceanic domain.

¹⁹⁵ 1995 Agreement for the Implementation of the Provisions of the UN 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, 2167 UNTS 3 (*UN Fish Stocks Agreement*).

Chapter 2 The Development of Global Governance Principles for Maritime Areas Beyond National Jurisdiction

2.1 Introduction

Consistent with the remote nature of the open sea and its relatively sparse human activity, global governance principles for this part of the earth's surface have been slow to develop. Although some early jurists advocated subjugation of the oceans to sovereign states' dominion, the enduring theme in international law, since Grotius' treatise, *Mare Liberum*, has been the free and open character of ocean space.¹⁹⁶ The 1958 *Convention on the High Seas (High Seas Convention)*¹⁹⁷ confirmed the fundamental precept that the oceans beyond a narrow territorial sea were a global commons and enumerated the various freedoms of the high seas.¹⁹⁸ The 1982 *United Nations Convention on the Law of the Sea (LOSC)*¹⁹⁹ expanded on those freedoms and endorsed the global commons status of the high seas.²⁰⁰ It

¹⁹⁶ See Chapter 1; Susan J. Buck, *The Global Commons: An Introduction* (1998) 78.

¹⁹⁷ 1958 *Convention on the High Seas*, 450 UNTS 11 (*High Seas Convention*).

¹⁹⁸ *High Seas Convention*, Art. 2 provides:

"The high seas being open to all nations, no State may validly purport to subject any part of them to its sovereignty. Freedom of the high seas is exercised under the conditions laid down by these articles and by the other rules of international law. It comprises, *inter alia*, both for coastal and non-coastal States:

- (1) Freedom of navigation;
- (2) Freedom of fishing;
- (3) Freedom to lay submarine cables and pipelines;
- (4) Freedom to fly over the high seas.

These freedoms, and others which are recognized by the general principles of international law, shall be exercised by all States with reasonable regard to the interests of other States in their exercise of the freedom of the high seas"

¹⁹⁹ 1982 *United Nations Convention on the Law of the Sea*, 1833 UNTS 3 (*LOSC*).

²⁰⁰ *LOSC*, Art. 87 provides:

- "1. The high seas are open to all States, whether coastal or land-locked. Freedom of the high seas is exercised under the conditions laid down by this Convention and by other rules of international law. It comprises, *inter alia*, both for coastal and land-locked States:
 - (a) freedom of navigation;
 - (b) freedom of overflight;
 - (c) freedom to lay submarine cables and pipelines, subject to Part VI;
 - (d) freedom to construct artificial islands and other installations permitted under international law subject to Part VI;
 - (e) freedom of fishing, subject to the conditions laid down in section 2;
 - (f) freedom of scientific research, subject to Parts VI and XIII.
2. These freedoms shall be exercised by all States with due regard for the interests of other States in their exercise of the freedom of the high seas, and also with

incorporated a further extension of coastal state jurisdiction to a limit of 200 nautical miles for specific purposes including sovereign rights over natural resources and the protection of the marine environment in an offshore area known as the exclusive economic zone.²⁰¹ Juxtaposed with this creeping jurisdiction, the *LOSC* introduced the first example of supranational governance for the seabed beyond national jurisdiction with the concept of the Area²⁰² which was to be administered by the International Seabed Authority (ISA).²⁰³ The jurisdiction of the ISA was limited to managing the mineral resources of the Area with the living resources of the water column and seabed retaining their open access status.²⁰⁴ In addition to the *LOSC* framework of oceans jurisdiction, a complex array of multilateral regimes which regulate sectoral activities in maritime areas beyond national jurisdiction began to develop in the second half of the twentieth century. On paper, the freedom of the high seas is being steadily qualified by these burgeoning regimes but the practical difficulties involved in implementing and enforcing their provisions have been exacerbated by the global commons status of the high seas.²⁰⁵ This chapter will examine the development of the modern high seas and deep seabed regimes. It will also foreshadow some of the challenges posed by the diverse legal status of maritime areas beyond national jurisdiction for the protection of the marine environment.

due regard for the rights under this Convention with respect to activities in the Area.”

LOSC, Art. 89 provides:

“No State may validly purport to subject any part of the high seas to its sovereignty”.

²⁰¹ *LOSC*, Arts. 56 & 57.

²⁰² *LOSC*, Art. 1(1).

²⁰³ *LOSC*, Arts. 156 & 157.

²⁰⁴ *LOSC*, Art. 135.

²⁰⁵ Buck, above n.187, 95-96 & 101; Robin Warner, ‘Jurisdictional Issues for Navies Involved in Enforcing Multilateral Regimes Beyond National Jurisdiction’ (1999) 14(3) *International Journal of Marine and Coastal Law* 321.

2.2 The High Seas Regime

The conventional international law codification of the high seas regime began in the early twentieth century with the efforts of non governmental bodies such as the International Law Association, the Institut de Droit International and the Harvard Research in International Law to distil customary international law principles from state practice and the writings of jurists.²⁰⁶ Early draft conventions by these bodies emphasised the invalidity of states' claims to sovereignty over the high seas and the free and full use of the sea by all states without impediment.²⁰⁷ Later codifications of the high seas regime in the *High Seas Convention* and the 1958 *Convention on Fishing and Conservation of the Living Resources of the High Seas (High Seas Living Resources Convention)* and Part VII of the *LOSC* amplified these principles and recognised the need to balance the unfettered exercise of high seas freedoms with the discharge of certain international responsibilities such as the policing of transnational crime²⁰⁸ and the conservation and management of the living resources of the high seas.²⁰⁹ This section will trace the evolution of those elements of the high seas regime which relate most closely to the protection of the marine environment through the various drafts prepared for the First United Nations Conference on the Law of the Sea (UNCLOS I) by the International Law Commission (ILC), and through the records of Subcommittee II of the Seabed Committee and the Second Committee of the Third United Nations Conference on the Law of the Sea (UNCLOS III).

²⁰⁶ UN Office for Ocean Affairs and the Law of the Sea, *The Law of the Sea: Navigation on the High Seas. Legislative History of Part VII, Section I (Articles 87, 89, 90-94, 96-98) of the United Nations Convention on the Law of the Sea* (1989) 8.

²⁰⁷ *Ibid*, 8-9.

²⁰⁸ *High Seas Convention*, Arts. 13-23; *LOSC*, Arts. 99-111.

²⁰⁹ 1958 *Convention on Fishing and Conservation of the Living Resources of the High Seas*, 559 UNTS 285 (*High Seas Living Resources Convention*); *LOSC*, Arts. 116-119.

2.2.1 *Invalidity of Sovereignty Claims over the High Seas*

The fundamental premise that no state is capable of exercising territorial sovereignty over the high seas appears as a core element in successive codifications of the high seas regime. In its 1956 Report on the Law of the Sea, which formed the basis of deliberations by States at UNCLOS I, the ILC commented that “ the principle generally accepted in international law that the high seas are open to all nations governs the whole regulation of the subject” and “ that no state may subject any part of the high seas to its sovereignty... or exercise jurisdiction over any stretch of water.”²¹⁰ The global commons status of the high seas is reinforced by the retention of an almost identical formulation in Article 2 of the High Seas Convention and Article 89 of the LOSC which provides that “No State may validly purport to subject any part of the high seas to its sovereignty”. Any presumption that the high seas is a jurisdictional vacuum, however, is qualified by other provisions in the High Seas Convention and the LOSC which refer to the principle of flag state jurisdiction which applies to ships transiting the high seas²¹¹ and the collective obligation of States to exercise certain shared responsibilities in high seas areas. All States are required to cooperate to the fullest extent possible in the repression of piracy and illicit traffic in narcotic drugs and psychotropic substances on the high seas²¹² and in the suppression of unauthorised broadcasting from the high seas.²¹³ States are also required to cooperate in the conservation and management of the living resources of the high seas.²¹⁴ The global commons status of the high seas implies, however, that any

²¹⁰ *Official Records of the General Assembly, Eleventh Session, Supplement No. 9*, UN Doc A/3159, Chapter III, Part II, Article 27 commentary, para. 1.

²¹¹ *High Seas Convention*, Art. 4; *LOSC*, Art. 90.

²¹² *High Seas Convention*, Art. 14; *LOSC*, Arts. 100 & 108.

²¹³ *LOSC*, Art. 109.

²¹⁴ See above n.200.

measures taken in exercise of these responsibilities which involve restrictive measures in particular areas of the high seas should be globally endorsed. The need for such endorsement is important in considering the potential content of environmental protection measures for maritime areas beyond national jurisdiction.

2.2.2 *Freedoms of the High Seas*

In Grotius' doctrine of the freedom of the seas, the corollary principle to the invalidity of sovereign claims over the sea was the free and open use of the seas by all nations. Grotius identified the principal freedoms of the sea as navigation and fishing.²¹⁵ The content of this principle evolved to encompass new uses of the high seas in later codifications of the law of the sea. The draft article on the freedom of the high seas in the 1956 ILC Report On the Law of the Sea identifies four freedoms of the high seas considered to be the most prevalent uses of the high seas at the time of drafting.²¹⁶ The long standing freedoms of navigation and fishing are supplemented by the freedom to lay submarine cables and pipelines and the freedom to fly over the high seas. These four freedoms are retained in Article 2 of the High Seas Convention. The ILC's 1956 Report also specifies that these four freedoms are not an exhaustive categorisation of the freedoms of the high seas and refers to other freedoms such as the freedom to undertake scientific research and the freedom to explore or exploit the subsoil of the high seas.²¹⁷ There is an explicit recognition in the ILC report of the need to regulate the exercise of high seas freedoms in the interests of the entire international

²¹⁵ Hugo Grotius, *The Freedom of the Seas or the Right which Belongs to the Dutch to Take Part in the East Indian Trade* (1608) (trans. Ralph Van Deman Magoffin), 7 & 32.

²¹⁶ *Official Records of the General Assembly, Eleventh Session, Supplement No. 9*, UN Doc A/3159, Chapter III, Part II, Art. 27 commentary, para 2.

community.²¹⁸ In this connection the ILC notes the right of individual states to exercise their sovereignty on board ships flying their flag on the high seas, the exercise of certain policing rights by states on the high seas and the right of states relative to the living resources of the high seas.²¹⁹ All these rights are the subject of subsequent articles in the High Seas Convention, High Seas Living Resources Convention and the LOSC²²⁰ and underscore the recognition by the international community of the need for individual and collaborative action by states to regulate human activities on the high seas.

The high seas regime was also considered in the work of the Committee on the Peaceful Uses of the Sea-Bed and the Ocean Floor beyond the Limits of National Jurisdiction (Sea-Bed Committee) established prior to UNCLOS III. In a statement by the Indonesian representative to the 12th meeting of Sub-Committee II of the Sea-Bed Committee there is an early recognition of the need to protect and preserve the marine environment of the high seas. He notes that the freedoms of the high seas formulated in the High Seas Convention should be “coupled with certain responsibilities” and that their exercise should not “endanger the ecology and environment of the oceans”²²¹. The debate on the freedom of fishing on the high seas was the most contentious in the deliberations of Sub-Committee II. The Venezuelan representative highlighted the division of opinion among delegations at the 47th meeting of Sub-Committee II, referring to the divergent views of

²¹⁷ Ibid.

²¹⁸ Ibid, para 5.

²¹⁹ Ibid.

²²⁰ See above ns.200, 203 & 204.

²²¹ *Report of the Twelfth Meeting of Sub-Committee II of the Sea-Bed Committee*, UN Doc A/A.138/SC.II/SR.12, p.111.

delegations that there should no longer be any freedom of fishing on the high seas, that it should be strictly regulated and that it should be maintained.²²²

Similar debates on the qualifications to high seas freedoms continued throughout the UNCLOS III negotiations. The potentially harmful effects of the unregulated exercise of high seas freedoms on the high seas environment is recognised in general terms in the statements of delegates to informal meetings of the Second Committee and proposals received from states for draft articles on the high seas. In a statement to the 31st meeting of the Second Committee on 7 August 1974, Mr. Galindo Pohl (El Salvador) commented that “the regulations concerning navigation, overflight and the laying of cables and pipelines were still relevant to contemporary conditions, though they would need adjusting to ensure that such operations did not adversely affect the marine environment.”²²³ At the same meeting of the Second Committee, Mr. Arias Schreiber (Peru) commented that a future regime for the high seas “should contain adequate provisions for the control and elimination of pollution which endangered the ecological balance in the oceans.”²²⁴ Some delegates to the Second Committee such as Mr. Pollard (Guyana), were in favour of extending the competence of the International Seabed Authority to the water column and its resources as well as the deep seabed.²²⁵

Many delegates expressed concern at the over exploitation of high seas fisheries by vessels from a limited number of distant water fishing nations and the lack of international regulations governing such activities. El Salvador’s representative at

²²² *Report of the Forty-Seventh Meeting of Sub-Committee II of the Sea-Bed Committee*, UN Doc. A/A.138/SC.II/SR.47, p. 95.

²²³ *Official Records of the Third United Nations Conference on the Law of the Sea*, vol. II, Second Committee, 31st Meeting, (7 August 1974), para 49.

²²⁴ *Ibid*, para 76.

the 31st meeting of the Second Committee commented that “Fishing in the high seas must be governed by regulations that would meet the new circumstances created by current technological development with its threat of exhausting species.”²²⁶ His concerns were echoed by Mr. Warioba (Tanzania) who noted that ‘Fishing on the high seas had become piracy and plunder.....Urgent and effective international action was needed...and management of the living resources of the high seas must be placed under effective international control.”²²⁷ The Peruvian and Senegalese representatives noted the need to formulate regulations to “ensure proper international control over fisheries in order to preserve the renewable resources in the international sea”²²⁸ and that fisheries commissions should “genuinely represent the interests of the international community with regard to the protection of the resources in the high seas”.²²⁹

Statements in favour of more extensive regulation of activities on the high seas were balanced in the Second Committee by strong advocacy on the part of delegates from Western nations and distant water fishing nations for the retention of unfettered freedoms of navigation, overflight and fishing. Mr. Anderson (UK), at the 31st Meeting of the Committee commented that while “freedom of the seas had always been subject to qualifications”, his delegation “attached particular importance to the freedom of navigation and overflight” and “favoured the retention of as much as possible of the existing freedom of the high seas in the area beyond the territorial sea.”²³⁰ In addition, Mr. Movchan (USSR) expressed his delegation’s preference for “a firm regime of the high seas which would

²²⁵ Ibid, para 66.

²²⁶ Ibid, para 53.

²²⁷ Ibid, paras 61-62.

²²⁸ Ibid, para 76.

²²⁹ Ibid, para 70.

prevent any interference with the freedom of the high seas”²³¹ and rejected proposals that “would divide the ocean into two parts, one part under national jurisdiction and the other under international jurisdiction.”²³²

In a Working Paper prepared for the Second Committee in the early stages of the UNCLOS III negotiations which reflected the main trends emerging from proposals submitted to the Seabed Committee and UNCLOS III there was a draft Provision 149 which read:

All States shall be obliged to comply with international regulations designed to prevent, reduce or eliminate any damage or risks arising from pollution or other effects detrimental or dangerous to the ecological system of the international seas, water quality and use, living resources and human health.²³³

Later informal proposals to the Second Committee, however, removed this draft provision noting that “ the preservation of the marine environment of the high seas is being dealt with in the Third Committee.” The US, in one draft article for inclusion in the chapter on the high seas, proposed that explicit reference be made to the provisions of the Convention on the protection of the marine environment, modifying the regime of the high seas.²³⁴ In the final text of Part VII, however, there is no specific recognition of the need to protect and preserve the marine environment of the high seas which was considered to be a matter for the Third Committee. Two additional freedoms are included in the non exhaustive list of freedoms of the high seas in Article 87 of the *LOSC*, the freedom to construct

²³⁰ Ibid, para 69.

²³¹ Ibid, para 75.

²³² Ibid, para 74.

²³³ *Official Records of the Third United Nations Conference on the Law of the Sea*, UN Doc A/CONF.62/C.2/WP.1, Draft Provisions, Part VII (15 October 1974), Provision 149.

artificial islands and other installations permitted under international law and the freedom of scientific research. Four of the freedoms are qualified by other parts of the *LOSC* which indicate the linkages between the different maritime zones and provide some indication of how these freedoms might be exercised.²³⁵ The relationship of high seas freedoms with Part XII of the *LOSC* on protection and preservation of the marine environment, however, is not developed in Part VII of the *LOSC*.

2.2.3 *Flag State Jurisdiction*

In the absence of any supranational authority on the high seas, the flag state model of jurisdiction has been the principal method of regulating high seas activities. Linking ships with the nationality of their flag state, automatically imports a system of rights and obligations under national and international law into the high seas domain. Although Grotius' doctrine of the freedom of the seas did not incorporate the notion of flag state jurisdiction or propose that ships possess a nationality, later jurists such as Ortolan were convinced of the indispensable character of this mode of jurisdiction if the activities of multiple vessels on the high seas were not to descend into chaos.²³⁶ The system of flag state jurisdiction was a logical, if not perfect, device to impose a measure of order in maritime areas beyond national jurisdiction. The ascription of nationality to the flag vessels of

²³⁴ *Official Records of the Third United Nations Conference on the Law of the Sea*, UN Doc A/CONF.62/C.2/Blue Paper No. 9 (16 April 1975), Provision 149.

²³⁵ *LOSC*, Art. 87(1)(c), (d), (e) & (f). The freedom to lay submarine cables and pipelines, the freedom to construct artificial islands and other installations permitted under international law, the freedom of fishing and the freedom of marine scientific research are all made subject to other parts of the *LOSC*.

²³⁶ D.P. O'Connell (with I.A. Shearer ed.), *The International Law of the Sea* (1984), Vol. II, 750-751; J.H.W. Verzijl, *International Law in Historical Perspective* (1971) 40.

sovereign states also accorded with the well established customary international law principle of the sovereign equality of states.²³⁷

The *High Seas Convention* and Part VII of the *LOSC*, together with other global and regional instruments on marine living resource exploitation and maritime transport, create a framework within which states can regulate the activities of their flag vessels on the high seas. The articles contained in these instruments specify certain minimum rights and obligations which States must comply with in relation to their flag vessels but allows considerable discretion in implementing these requirements. The codification of this framework began with the ILC's 1955 and 1956 Reports on the Law of the Sea which formed the basis for the relevant articles in the *High Seas Convention*. The right of every state to sail ships under its flag on the high seas was described by the ILC in its 1956 Report on the Law of the Sea as one of the essential adjuncts to the principle of the freedom of the high seas.²³⁸ This comment reinforces the ILC's earlier comment in this report that certain rules are necessary to safeguard the exercise of high seas freedoms.²³⁹ While allowing states to fix the conditions for the registration of ships, draft Article 5 of the high seas articles contained in the ILC's 1955 Report on the Law of the Sea²⁴⁰ was quite prescriptive in enumerating the conditions for recognition of a ship's national character by other states. To be accorded recognition as a flag vessel of a particular state, ships were required to:

²³⁷ Verzijl, above n. 227, 40 n.36 comments: "It would be possible, in theory, to regulate jurisdiction over sea-going vessels in a different way, *inter alia*, by organizing a system of control by the organized community, or by way of mutual acquiescence in concurrent jurisdiction. The first solution, however, is unrealistic and would be too cumbersome; the second would be unacceptable to sovereign states, save as far as the suppression of extremely grave crime is concerned, in which latter case the system has worked (piracy, slave-trade)."

²³⁸ *Official Records of the General Assembly, Eleventh Session, Supplement No. 9*, UN Doc A/3159, Chapter III, Part II, Article 30 commentary, para 1.

1. Be the property of the State concerned; or
2. Be more than half owned by:
 - (a) Nationals of or persons legally domiciled in the territory of the State concerned and actually resident there; or
 - (b) A partnership in which the majority of the partners with personal liability are nationals of or persons legally domiciled in the territory of the State concerned and actually resident there; or
 - (c) A joint stock company formed under the laws of the State concerned and having its registered office in the territory of that State.

In commenting on this draft article, the ILC noted that there must be a minimum national element in the conditions for granting flag ship status “ since control and jurisdiction by a state over ships flying its flag can only be effectively exercised where there is in fact a relationship between the State and the ship other than that based on mere registration.”²⁴¹ The formulation proposed in draft Article 5 of the ILC’s 1955 report was not retained after negative comments from Governments. Instead the vaguer formulation of a “genuine link” was drawn from the 1955 judgement of the International Court of Justice in the *Nottebohm* case²⁴² and applied by analogy to the grant of flag ship status. In a revised draft Article 29 on nationality of ships in its 1956 Report on the Law of the Sea, the ILC adopted the “genuine link” formula without defining its specific content or prescribing relevant sanctions such as non recognition of a ship’s nationality if a “genuine link” between a State and its flag vessels did not exist.²⁴³ The ILC was obviously uneasy about the imprecision of the genuine link formulation, emphasising in its

²³⁹ Ibid, para 5.

²⁴⁰ *Yearbook of the International Law Commission*, Vol. II (1955) UN Doc A/2934, Chapter II, Article 5.

²⁴¹ Ibid, Article 5 comment.

²⁴² *Nottebohm(Second Phase)Case (Lithuania v Guatemala)* [1955] ICJ Rep 4.

²⁴³ *Official Records of the General Assembly, Eleventh Session, Supplement No. 9*, UN Doc A/3159, Chapter III, Part II, Article 29.

commentary to Article 29, that the grant of a flag to a ship cannot be “a mere administrative formality with no accompanying guarantee that the ship possesses a real link with its new State.”²⁴⁴ The final version of Article 5 of the *High Seas Convention* specified very general indicia of the existence of a genuine link between a State and its flag vessel providing that:

...There must exist a genuine link between the State and the ship; in particular, the State must effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag.

The additional provisions of the *High Seas Convention* on flag state obligations relate principally to safety at sea²⁴⁵ and high seas policing rights.²⁴⁶ There are two articles on marine pollution requiring states to draw up regulations to prevent pollution of the seas by the discharge of oil from ships, pipelines or resulting from exploration of the seabed and its subsoil and to take measures to prevent pollution of the seas from the dumping of radio-active waste.²⁴⁷ These very general articles were later amplified in Part XII of the *LOSC* and specific conventions such as the *International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)*²⁴⁸ and the *Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (London Convention)*.²⁴⁹ The consequences of non recognition of a ship’s flag status and any sanctions and restrictions that might be imposed on states not effectively exercising their flag state duties were not addressed in the *High Seas Convention*.

²⁴⁴ Ibid, Article 29 Commentary, para 3.

²⁴⁵ *High Seas Convention*, Arts. 10-12

²⁴⁶ Ibid, Arts. 13-23,& 27.

²⁴⁷ *High Seas Convention*, Arts. 24 & 25.

²⁴⁸ 1973 *International Convention for the Prevention of Pollution from Ships*, 1340 UNTS 61 (MARPOL 73/78).

²⁴⁹ 1972 *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter*, 11 ILM 1294 (London Convention) & 1996 Protocol, 36 ILM 1 (London Convention).

The genuine link formulation was retained in Article 91(1) of the *LOSC* and the flag State's duty to effectively exercise its jurisdiction and control over ships registered in its territory was amplified. A working paper on the high seas submitted by nine Western European states to the Second Committee set out a catalogue of flag state obligations in draft Article 6 bis which, while mainly connected with safety of navigation, required flag states to take the necessary measures to ensure that the master and officers were fully conversant with and were required to observe the applicable international regulations concerning the prevention and control of marine pollution.²⁵⁰ Flag states were also required to cause an inquiry to be held into every marine casualty or incident of navigation on the high seas involving ships flying their flags where serious damage was caused to the marine environment.²⁵¹ These draft articles were retained in Article 94(4)(c) and (7) of the *LOSC*. The content of Article 94 was heavily influenced by the work of the International Maritime Consultative Organization (IMCO), as it then was, which had submitted a summary of its activities to the Second Session of UNCLOS III on 20 June 1974.²⁵² As IMCO had already sponsored some international conventions and subsidiary regulations on the prevention, reduction and control of marine pollution such as *MARPOL 73*, Article 94 of the *LOSC* incorporated by reference relevant provisions from those conventions which applied to flag vessels on the high seas. The comprehensive nature of Article 94 and its incorporation by reference of "generally accepted international regulations, procedures and practices" concerning marine pollution and other matters such as

²⁵⁰ *Official Records of the Third United Nations Conference on the Law of the Sea*, UN Doc A/CONF.62/C.2/L54, (12 August 1974) Art. 6 bis (2)(g).

²⁵¹ *Ibid.*, Art. 6 bis (2)(e).

²⁵² UN Office for Ocean Affairs and the Law of the Sea, *Legislative History of Part VII*, above n. 197, 53.

safety of life at sea and prevention of collisions, highlights the complex jurisdictional climate which prevails on the high seas.

While the provisions on flag state jurisdiction in Part VII of the *LOSC* provide a global mechanism for the implementation of rights and obligations related to the protection of the high seas environment from marine pollution, economic and organisational factors have had a profound impact on the standard of flag state implementation of the obligations contained in Part VII of the *LOSC* and other marine pollution instruments.²⁵³ Although the majority of flag states have implemented the *LOSC* provisions and IMO conventions in their domestic legislation, this is not always accompanied by a competent maritime administration which oversees compliance with pollution prevention laws for flag vessels.²⁵⁴ In practice, the “genuine link” required by Article 92 of the *LOSC* between the flag state and the operations of its flag vessels in administrative, technical and social terms, is frequently lacking especially in states which operate flags of convenience registries.²⁵⁵ Some flag states have abrogated their responsibility for certification and survey of vessels, relying entirely on non government bodies such as classification societies to fulfil these functions.²⁵⁶ Economic pressures have led ship owners to limit their expenditure on maintenance of vessels and qualified crew to gain short term competitive advantage in the maritime transport industry.²⁵⁷ Poor investigation of ship casualties by some flag states has also lead to the continued operation of unsafe

²⁵³ Erik Jaap Molenaar, *Coastal State Jurisdiction Over Vessel Source Pollution* (1998) 25-26.

²⁵⁴ Ibid; P.M. McGrath & Michael Julian, ‘Protection of the Marine Environment from Shipping Operations: Australian and International Responses’ in Donald R. Rothwell & Sam Bateman (eds.), *Navigational Rights and Freedoms and the New Law of the Sea* (2000) 188, 192-3.

²⁵⁵ Molenaar, above n.244, 30-31; Patrick Quirk, ‘Flag State Implementation’ (Jan/Feb 1999) 104 *Maritime Studies* 3.

²⁵⁶ Quirk, above n. 246, 4.

flag vessels which present a potent threat to the marine environment within and beyond national jurisdiction.²⁵⁸ The decentralised nature of flag state responsibility and the lack of sanctions under international law for recalcitrant flag states militate against adequate protection of the increasingly vulnerable high seas environment. To remedy this situation, additional cooperative measures at the regional and global levels need to be developed together with economic incentives for shipping industry compliance.

2.2.4 *Conservation of the Living Resources of the High Seas*

In the ILC's 1956 Report on the Law of the Sea, the conservation of the living resources of the high seas was viewed as a cognate obligation to the freedom of fishing on the high seas.²⁵⁹ Draft articles prepared by the ILC for UNCLOS I formed the basis for the separate *High Seas Living Resources Convention*. The preamble to this Convention recognises that the development of modern techniques for the exploitation of the living resources of the sea has exposed some of these resources to the danger of over-exploitation. The primary objective for their conservation, in Article 2 of the Convention, is to render possible the optimum sustainable yield from those resources so as to secure a maximum supply of food and other marine products for human consumption. States Parties to the Convention are required to adopt unilateral conservation measures where their nationals are engaged in high seas fishing and to cooperate with other states in three prescribed circumstances. Multilateral cooperation should occur, where the nationals of two or more states are engaged in fishing the same stock of fish or

²⁵⁷ McGrath & Julian, above n.245, 193-2; Quirk, above n.246, 5.

²⁵⁸ McGrath & Julian, above n.245, 194.

²⁵⁹ *Official Records of the General Assembly, Eleventh Session, Supplement No. 9*, UN Doc A/3159, Chapter III, Part II, Article 27 commentary, para 5(iii).

other living marine resources in any area of the high seas²⁶⁰, where a state's nationals are fishing in any area of the high seas adjacent to the territorial sea of a state²⁶¹ and where a states nationals are not engaged in fishing a particular area of the high seas but the state has a special interest in the conservation of the living resources of that area.²⁶² The broader objective of protection and preservation of the marine environment was not evident in the provisions of the *High Seas Living Resources Convention*. The Convention did not achieve wide support²⁶³ and its impact on the conservation of high seas fisheries has generally been regarded as minimal.²⁶⁴

Concern for the effects of marine living resource exploitation on the high seas marine environment emerged in the discussions of the Sea-Bed Committee. A draft Ocean Space Treaty prepared by Malta envisaged that, in international ocean space, a Council of States Parties would “manage the living resources... in such a manner as to secure the maximum sustainable yield taking into due account the need to preserve the ecological balance of ocean space”.²⁶⁵ The decisions of the Council would be based on scientific findings. The theme of conservation and management decisions which took into account environmental factors and were based on scientific findings was also present in two proposals submitted by the

²⁶⁰ *High Seas Living Resources Convention*, Art. 4(1).

²⁶¹ *Ibid*, Art. 6(3).

²⁶² *Ibid*, Art. 8(1).

²⁶³ P.G.G. Davies & C. Redgwell, ‘The International Legal Regulation of Straddling Fish Stocks’ (1996) 67 *British Yearbook of International Law* 199, 218.

²⁶⁴ R.R. Churchill & A.V. Lowe, *The Law of the Sea* (3rd Ed.)(1999) 287; W.T. Burke, *The New International Law of Fisheries* (1994) 12; Stuart Kaye, *International Fisheries Management* (2001), 66 ; Buck, above n.187, 91.

²⁶⁵ Proposal by Malta at the 1971 Session of the Sea-Bed Committee, UN Doc. A/AC.138/53, article 138, para 2(a).

US to the 1971 and 1972 sessions of the Sea-Bed Committee.²⁶⁶ The environmental protection element of the high seas fisheries provisions was amplified in states' proposals to the Second Committee of the UNCLOS III negotiations. A US proposal included in the Main Trends Working Paper required states to adopt measures on "the best evidence available designed to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors including the interdependence of stocks."²⁶⁷ They were also required to take into consideration the effects on species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened.²⁶⁸ This proposal introduced a precautionary element into the draft provision requiring states to adopt conservation measures on the best evidence available even where the best scientific basis might not be present for such measures.²⁶⁹ It also introduced an obligation to maintain or restore associated or dependent species affected by high seas fisheries.²⁷⁰ This proposal formed the basis for Article 119 of the *LOSC* which adopts the maximum sustainable yield objective for determining the allowable catch and establishing other conservation measures for living resources of the high seas but qualifies that objective with broader environmental protection considerations. Under Article 119, States are required to take conservation and management measures for high seas living resources based on the best scientific

²⁶⁶ Proposal by the US at the 1971 Session of the Sea-Bed Committee, UN Doc. A/AC.138/SC.II/L.4 and Corr.1, article III, para 2, sub-para. A & B; Proposal by the US at the 1972 Session of the Sea-Bed Committee, UN Doc. A/AC.138/SC.II/L.9, article IV.

²⁶⁷ *Official Records of the Third United Nations Conference on the Law of the Sea*, Main Trends Working Paper (15 October 1974), UN Doc. A/CONF.62/WP.1, Provision 156, Formula C, para 2(a).

²⁶⁸ *Ibid*, para 2 (b).

²⁶⁹ *Ibid*, para 2(a).

²⁷⁰ *Ibid*, para 2 (b).

evidence available as qualified by relevant environmental factors such as the interdependence of stocks²⁷¹ and taking into consideration the effects on associated and dependent species with a view to maintaining their populations above levels at which their reproduction may be seriously threatened.²⁷² Article 119 of the *LOSC*, and its associated articles 117 and 118, which require states to take unilateral and cooperative measures to conserve the living resources of the high seas, have been further implemented in 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 (UN Fish Stocks Agreement)*²⁷³ and in the provisions of regional fisheries management agreements.

2.3 The Deep Seabed Mining Regime

The deep seabed mining regime contained in Part XI of the *LOSC* and the subsequent Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 (Part XI Implementing Agreement)²⁷⁴ is the vestige of a broader vision for supranational governance of the seabed and ocean floor beyond national jurisdiction and the equitable distribution of its resources among developed and developing states advanced prior to UNCLOS III. In 1967, Arvid Pardo, Malta's then Ambassador to the UN, requested the inclusion of an item in the agenda of the UN General Assembly (UNGA) which proposed that the seabed and the ocean floor beyond

²⁷¹ *LOSC*, Art. 119(1)(a).

²⁷² *Ibid*, Art. 119(1)(b).

²⁷³ 1995 *Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*, 2167 UNTS 3 (*UN Fish Stocks Agreement*).

the limits of national jurisdiction be declared the common heritage of mankind.²⁷⁵ As a result of this initiative, the UNGA established the Sea-Bed Committee which developed a Declaration of Principles Governing the Seabed and the Ocean Floor, and the Subsoil Thereof, beyond the Limits of National Jurisdiction (the Seabed Declaration)²⁷⁶, adopted by the UNGA on 17 December 1970. These principles declared the sea-bed and the ocean floor beyond the limits of national jurisdiction or “the Area” as the common heritage of mankind and further declared that no state or person, natural or juridical was able to claim, exercise or acquire rights with respect to the Area or its resources which were incompatible with the international regime to be established for the Area. Under the Seabed Declaration, the exploration of the Area and the exploitation of its resources were to be carried out “for the benefit of mankind as a whole taking into particular consideration the interests and needs of developing countries.”

The Seabed Declaration formed the basis for the development of the deep seabed mining regime in Part XI of the LOSC.²⁷⁷ Part XI endorsed the common heritage of mankind principles for the non living resources of the deep seabed and established an elaborate supranational regime to regulate the exploration for and exploitation of deep seabed minerals and to distribute the profits among states on the basis of equity and need.²⁷⁸ The primary institution created by Part XI was the International Seabed Authority (ISA) which consisted of all the States Parties to the LOSC and was responsible for controlling and organising activities in the

²⁷⁴ 1994 *Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982*, 33 ILM 1309 (*Part XI Implementing Agreement*).

²⁷⁵ Malta: Request for the Inclusion of a Supplementary Item in the Agenda of the Twenty-second Session, UN Doc A/6695 (18 August 1967).

²⁷⁶ UN Doc. GA Res.2749 (XXV) (17 December 1970).

²⁷⁷ Lawrence Juda, *International Law and Ocean Use Management* (1996) 188-189.

²⁷⁸ John Vogler, *The Global Commons: A Regime Analysis* (1995) 64.

Area.²⁷⁹ The ISA had an Assembly comprising representatives from all States Parties²⁸⁰ and a Council of 36 members of the ISA elected by the Assembly²⁸¹ which functioned as the executive organ.²⁸² Within the Council there were two further organs, the Economic Planning Commission and the Legal and Technical Commission²⁸³ which performed advisory functions.²⁸⁴ The Enterprise was conceived as the operating arm of the ISA to carry out activities in the Area as well as transporting, processing and marketing of minerals.²⁸⁵ A Secretariat was established under Part XI to provide administrative support to the ISA²⁸⁶ and a Seabed Disputes Chamber was formed within the International Tribunal for the Law of the Sea to adjudicate disputes concerning activities in the Area.²⁸⁷ Part XI also contained provisions which required States Parties to initiate and promote programmes for the transfer of technology to the Enterprise and to developing states under fair and reasonable terms and conditions²⁸⁸ and for equitable sharing by the ISA of the financial and other economic benefits derived from the activities of the Area among States Parties.²⁸⁹

Part XI was the most contentious aspect of the UNCLOS III negotiations and produced deep divisions among the industrialised states and the G77 group of developing states on the fundamental basis for exploiting and allocating the mineral resources of the Area.²⁹⁰ The industrialised states, led by the US, favoured

²⁷⁹ *LOSC*, Art. 157(1).

²⁸⁰ *Ibid*, Art 159(1).

²⁸¹ *Ibid*, Art. 161(1).

²⁸² *Ibid*, Art. 162(1).

²⁸³ *Ibid*, Art. 163(1).

²⁸⁴ *Ibid*, Arts. 164 & 165.

²⁸⁵ *Ibid*, Art. 170(1).

²⁸⁶ *Ibid*, Art. 166.

²⁸⁷ *Ibid*, Art. 187.

²⁸⁸ *Ibid*, Art. 144(2).

²⁸⁹ *Ibid*, Art. 140(2).

²⁹⁰ Vogler, above n.269, 65-67; Juda, above n.268, 210-211; Buck, above n.187, 88.

a free access regime for deep seabed mining with only limited international involvement, while the G77 supported a centralised international authority which would control access to the mineral resources of the deep seabed and distribute the profits in a fair and equitable manner.²⁹¹ There were also concerns on the part of the industrialised states over the compulsory imposition of transfer of technology and production limitation policies on those States Parties whose industries would bear the financial burden of exploration and exploitation without reaping the commensurate profits.²⁹² Other issues which featured in the broad debate about Part XI were the substantial costs involved in establishing the ISA and its institutions and the impact of deep seabed mining on land based producers of the same minerals.²⁹³ Opposition to the provisions of Part XI were the principal cause of key industrialised states such as the US, the UK, Germany and Italy voting against or abstaining from the adoption of the LOSC and delaying their ratification.²⁹⁴

Extensive informal consultations sponsored by the UN Secretary General in the early 1990s produced the Part XI Implementing Agreement. This Agreement became an integral part of the LOSC which is read as one instrument together with the existing Part XI with the Part XI Implementing Agreement prevailing in the event of inconsistency.²⁹⁵ While reaffirming the common heritage of mankind principle, the Part XI Implementing Agreement removed many of the contentious provisions of Part XI, reduced some of the potential costs for industrialised States Parties to the LOSC and reflected a more market oriented approach to the

²⁹¹ Vogler, above n.269, 66; Buck, above n.187, 88.

²⁹² Vogler, above n.269, 66; Buck, above n.187, 90.

²⁹³ Juda, above n.268, 221-222; Buck, above n.187, 89.

²⁹⁴ Juda, above n.268, 221; Vogler, above n.269, 67.

²⁹⁵ *Part XI Implementing Agreement*, Art. 2(1).

development of the seabed mining industry.²⁹⁶ Under the modified terms of the Part XI Implementing Agreement, the Enterprise will conduct its initial mining operations by way of joint ventures with state sponsored mining consortia.²⁹⁷ Mandatory transfer of seabed mining technology to developing states and the Enterprise has been abolished and these entities must now acquire such technology on the open market at commercial rates.²⁹⁸ The provisions of Part XI imposing production controls on seabed mining have been removed and exploitation is to occur on a commercial basis and consistent with States Parties obligations under the General Agreement on Tariffs and Trade (GATT).²⁹⁹ Provision has also been made for the introduction of chambered voting procedures in the ISA Council which enables better representation of special interest groups such as the land based producers of the same minerals and producers and consumers of minerals derived from the deep seabed.³⁰⁰ The adoption of the Part XI Implementing Agreement in 1994 created an incentive for a number of states to ratify the LOSC resulting in its entry into force on 16 November 1994 and the formal establishment of the ISA.³⁰¹ In its first decade of operations, the ISA has presided over limited exploration activities.³⁰² The still developing state of deep seabed mining technology, the potentially large costs associated with commercial operations, the uncertainties of the commercial environment and the continuing

²⁹⁶ Bernard H. Oxman, 'The 1994 Agreement Relating to the Implementation of Part XI of the UN Convention on the Law of the Sea' in Davor Vidas & Willy Ostreng, *Order for the Oceans at the Turn of the Century* (1999) 15, 24; L.D.M. Nelson, 'The New Deep Sea-Bed Mining Regime' (1995) 10(2) *International Journal of Marine and Coastal Law* 189, 203.

²⁹⁷ Oxman, above n.287, 25; E.D. Brown, 'The 1994 Agreement on the Implementation of Part XI of the UN Convention on the Law of the Sea: Breakthrough to Universality' (1995) 19(1) *Marine Policy* 5, 11.

²⁹⁸ Nelson, above n.287, 198; Brown, above n.288, 11-12; Oxman, above n.287, 24-25.

²⁹⁹ Brown, above n.288, 12-13; Nelson, above n.287, 199; Oxman, above n.287, 23-24.

³⁰⁰ Brown, above n.288, 12; Nelson, above n.287, 197-198; Oxman, above n.287, 28-29.

³⁰¹ Oxman, above n.287, 34-35.

³⁰² Seven Governments and entities were registered as pioneer investors in 1987 by the General Committee of the Preparatory Commission of the International Seabed Authority (ISA) and have since been licensed as exploration contractors by the ISA. See Chapter 7, n.1186.

viability of land based mining for similar minerals have all militated against substantial investment in the industry.³⁰³

Environmental protection has been an integral and relatively uncontentious element in the deep seabed mining regime from its inception.³⁰⁴ One of the primary functions of the ISA under Part XI is to ensure effective protection for the marine environment from the harmful effects of activities in the Area.³⁰⁵ The Part XI Implementing Agreement goes further in requiring potential exploration contractors to submit an environmental impact assessment of their proposed activities with their application for approval of a plan of work.³⁰⁶

2.4 Conclusions

Many different influences have shaped the complex and fragmentary pattern of global governance which has been developed for maritime areas beyond national jurisdiction. The models of supranational governance for an international sea area such as that advanced by Malta prior to the UNCLOS III negotiations have failed to eventuate. Governance arrangements for maritime areas beyond national jurisdiction now comprise a motley amalgam of supranational, regional and national elements which regulate diverse sectoral activities. Global regulation of marine pollution in high seas areas relies heavily on flag state implementation and enforcement of vessel source discharge restrictions. The international law framework and institutional arrangements governing high seas living resources exhibit a higher degree of regional cooperation but still depend to a large extent

³⁰³ Jochen Halfar & Rodney M. Fujita, 'Precautionary Management of Deep-Sea Mining' (2002) 26(2) *Marine Policy* 103.

³⁰⁴ Brown, above n.288, 16.

³⁰⁵ *LOSC*, Art. 145.

³⁰⁶ *Part XI Implementing Agreement*, Annex, Section 1, para 7.

on flag state compliance and enforcement for their efficacy. The deep seabed mining regime administered by the ISA is the primary example of limited supranational governance of an activity in maritime areas beyond national jurisdiction but has minimal influence on the effectiveness of environmental protection in maritime areas beyond national jurisdiction as the deep seabed mining industry is still in its infancy. Interspersed with the mixture of regulated activities in maritime areas beyond national jurisdiction are expanding and emerging human activities such as bioprospecting and marine scientific research which are largely unregulated or in some cases self regulated. A common element of all the human activities which occur beyond national jurisdiction is their potential for adverse effects on the vulnerable marine environment. The hybrid nature of governance arrangements for maritime areas beyond national jurisdiction highlights the need for the global and regional organisations with regulatory competence in these areas to coordinate their efforts to protect and preserve the marine environment beyond national jurisdiction. Later chapters will examine options for further integration of the international law instruments which govern the protection of the environment and for strengthening the connections between global and regional organisations responsible for their implementation.

Chapter 3 The Development of an International Law Framework to Protect and Preserve the Marine Environment

3.1 Introduction

The impetus for protection and preservation of the marine environment grew in the 1960s and 1970s with the advent of factors such as the increasing appearance of land based and vessel sourced pollutants in the world's oceans and developing knowledge as to the potential resources and genetic diversity of the marine environment. As these and other environmental issues ascended the international political agenda in the latter years of the twentieth century, global and regional fora began to address protection and preservation of the environment and to develop an array of hard and soft law regimes which contained general principles for protection and preservation of the environment as a whole including its marine components. The need to protect global commons areas such as the high seas, and the deep sea-bed was recognised early in the development of international environmental law and has been reiterated in successive conventional international law instruments and soft law principles. The Declaration which emanated from the first global conference on the human environment, held in Stockholm in 1972 contained specific reference in paragraph 7 of the preamble to "a growing class of environmental problems" which affect "the common international realm" and which will "require extensive co-operation among nations and action by international organisations in the common interest."³⁰⁷ . Despite this recognition, detailed provisions in conventional international law instruments and soft law documents relating to the marine environment have tended to focus on the implementation of environmental protection in maritime areas within national jurisdiction.

While international environmental law principles are usually expressed to apply to the whole marine environment, their practical implementation in areas beyond national jurisdiction is not often addressed. This chapter will trace the evolution of general international law principles to protect and preserve the marine environment and their application to maritime areas beyond national jurisdiction.

3.2 Establishing a Framework

3.1.1 1972 Stockholm Declaration on the Human Environment

The 1972 Stockholm Conference on the Human Environment was the first diplomatic conference to consider the preservation and enhancement of the human environment on a global scale. The Declaration, Recommendations and Action Plan³⁰⁸ produced by the Conference contain in embryonic form most of the general principles of international environmental law subsequently developed in conventional international law instruments and soft law documents. The protection of the marine environment was a predominant theme in the preparatory process, deliberations and Report of the Conference.³⁰⁹ In its discussions on the marine environment, the Conference was preoccupied with the prevention of marine pollution, although a series of its recommendations also addressed the management of fish stocks and the protection of marine species and aquatic organisms.³¹⁰ The Report of the Conference also reflected growing international concern for the protection of the environment beyond national jurisdiction. This section of the chapter will analyse those aspects of the Conference Report which

³⁰⁷ Report of the UN Conference on the Human Environment, UN Doc. A/CONF.48/14 (1972), reprinted in 11 ILM 1416 (*Stockholm Report*).

³⁰⁸ *Ibid.*

³⁰⁹ Diana L. Torrens, 'Protection of the Marine Environment in International Law: Towards an Effective Regime of the Law of the Sea' (1994) 19(2) *Queens Law Journal* 613, 614.

³¹⁰ *Stockholm Report*, Recommendations 32, 33, 41, 42, 46, 47, 48, 49 & 50, 1434 – 1443.

relate specifically to the marine environment and to the protection of maritime areas beyond national jurisdiction.

3.2.1.1 *Marine Pollution*

The problem of marine pollution assumed prominence in the Conference deliberations as the priority issue in the marine environment warranting urgent international action. The pervasive nature of marine pollution and its global effects were emphasised by many State representatives in the general debate.³¹¹

The various sources of marine pollution noted in the general debate, foreshadowed the categories of marine pollution which would be addressed in Part XII of the 1982 *United Nations Convention on the Law of the Sea (LOS)*³¹² and the Annexes to the 1973 *International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)*.³¹³ Specific encouragement was given in the general debate to ongoing negotiations within the International Maritime Consultative Organisation to conclude a convention on ocean dumping.³¹⁴

Marine pollution received special attention in Principle 7 of the Declaration which provided that:

³¹¹ UNEP, Brief Summary of the General Debate, <<http://www.unep.org/Documents/Default.asp?DocumentID=97&ArticleID=1503>> at 5 Sep 2001: "The problem of marine pollution was stressed by many speakers. Contamination of the oceans had global consequences, affecting peoples many thousands of miles away from the source of pollution. Mention was made of natural disasters at sea, oil discharges, excessive use of pesticides and atmospheric pollution which eventually contaminated the sea. Several speakers welcomed recent international action to curtail ocean dumping. Particular reference was also made to the problems of certain seas, which could be solved only by regional cooperation and action."

³¹² 1982 *United Nations Convention on the Law of the Sea*, 1833 UNTS 3 (LOS).

³¹³ 1973 *International Convention for the Prevention of Pollution from Ships*, 1340 UNTS 61 (MARPOL 73/78).

³¹⁴ See above n.302.

States shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.³¹⁵

Unlike many of the Principles in the Stockholm Declaration, Principle 7 is cast in obligatory terms indicating a high degree of political will in the international community at the time to address the problems of marine pollution and undertake binding obligations to control its effects.³¹⁶ The shared interest of the international community in preventing pollution of maritime areas which were predominantly international in character is implicit in the Principle 7 references to human health, living resources, marine life and legitimate uses of the sea.³¹⁷ At the time of the Stockholm Conference the maritime area beyond national jurisdiction was larger as the Conference preceded the extension of the maximum breadth of the territorial sea to 12 nautical miles and the introduction of the 200 nautical mile exclusive economic zone in the *LOSC*.

The Conference adopted nine specific recommendations on marine pollution in its Action Plan. Recommendation 92 proposed that Governments collectively endorse the following Statement of Objectives agreed at the 2nd session of the Intergovernmental Working Group on Marine Pollution:

The marine environment and all the living organisms which it supports are of vital importance to humanity, and all people have an interest in assuring that this environment is so managed that its quality and resources are not impaired. This applies especially to coastal nations which have a particular interest in the management of coastal area

³¹⁵ *Stockholm Report*, 1418.

³¹⁶ Louis B. Sohn, 'The Stockholm Declaration on the Human Environment' (1973) 14 *Harvard International Law Journal* 423, 463-4.

resources. The capacity of the sea to assimilate wastes and render them harmless and its ability to regenerate natural resources are not unlimited. Proper management is required and measures to prevent and control marine pollution must be regarded as an essential element in the management of the oceans and the seas and their natural resources.”³¹⁸

The first sentence of this statement promotes the concept of long term stewardship of the whole marine environment as the responsibility of all nations. The global responsibility referred to in the statement is a soft law precursor to the binding legal obligation to protect and preserve the marine environment in Articles 192 and 194 of the *LOSC*.³¹⁹ The remainder of the statement, which adverts to the particular interest of coastal nations in managing coastal area resources and the prevention and control of marine pollution, is indicative of States’ initial priorities for the protection and preservation of the marine environment.

Recommendation 86³²⁰ of the Action Plan directs Governments to support specific multilateral initiatives to prevent and control marine pollution by accepting and implementing available instruments on the control of the maritime sources of marine pollution and participating in negotiations for the London Dumping Convention, the 1973 International Maritime Consultative Conference on Marine Pollution and the United Nations Conference on the Law of the Sea. Sub-paragraphs (b) and (c) of Recommendation 86 urge Governments to ensure that ships flying their flags and those operating in areas under their national jurisdiction comply with instruments on the control of marine pollution and that

³¹⁷ Ibid, 463-4 contrasting terrestrial pollution, where effects are likely to be restricted to specific localities, with marine pollution which causes harm to the “common heritage of mankind or the common international realm.”

³¹⁸ *Stockholm Report*, 1456.

³¹⁹ Moira L. McConnell and Edgar Gold, ‘The Modern Law of the Sea: Framework for the Protection and Preservation of the Marine Environment’ (1991) 23(1) *Case Western Reserve Journal of International Law* 83, 85.

ocean dumping by their nationals or persons in areas under their national jurisdiction is controlled. The provisions of these sub-paragraphs emphasise individual state compliance with marine pollution measures rather than implementation efforts coordinated at regional and global levels, although Recommendation 92(b)³²¹ does urge Governments to act in concert and coordinate their marine pollution control measures regionally and on a wider international basis. The other recommendations in the Marine Pollution section of the Action Plan propose ongoing financial and political support for the existing network of international organisations and Governments engaged in research monitoring and information exchange on marine pollution issues.³²²

3.2.1.2 *Conservation and Management of Marine Resources*

The language of Principle 2 of the Stockholm Declaration³²³ embodies the general precept that the natural resources of the earth including those contained in the marine environment must be safeguarded for the benefit of present and future generations through careful planning or management. In the context of natural resources, Principle 2 was an amplification of the precept already enunciated in Principle 1 that ‘man bears a solemn responsibility to protect and improve the environment for present and future generations’.³²⁴ Principles 1 and 2 of the Declaration were one of the earliest formulations of the principle of intergenerational equity which has been a fundamental tenet in the subsequent development of international environmental law and policy.³²⁵ The concept of safeguarding natural resources for the benefit of present and future generations in

³²⁰ *Stockholm Report*, 1454.

³²¹ *Ibid.*

³²² *Ibid.*, Recommendations 87-9, 1454 - 1457.

³²³ *Ibid.*, 1418

Principle 2 is also related to the principle of the common heritage of mankind which had been enunciated at the global level in *UN General Assembly Resolution 2749 concerning the Sea-Bed and Ocean Floor Beyond National Jurisdiction (Seabed Declaration)*.³²⁶ Principles 3 and 5 of the Declaration gave further content to the Principle 2 concept of safeguarding natural resources for the benefit of present and future generations. Principle 3 expounds on the necessity to maintain, restore and improve the capacity of the earth to produce vital renewable resources but is qualified by the words “wherever practicable” thereby weakening the accompanying obligatory language.³²⁷ An earlier Swedish formulation of Principle 3 had included fish in its examples of vital renewable resources implying that the principle was intended to have application to the oceans as the repository of vital renewable resources.³²⁸ Principle 5 is cast in more mandatory terms asserting that “The non renewable resources of the earth must be employed in such a way as to guard against the danger of their future exhaustion and to ensure that benefits from such employment are shared by all mankind.”³²⁹ The formulation in Principle 5 is an expanded version of the common heritage of mankind principle contained in the *Seabed Declaration*, applying it to all non renewable resources and incorporating the allied concept of equitable utilisation of all non renewable resources which had already been applied to the deep sea-bed.

³²⁴ Ibid, 1417-1418.

³²⁵ Alexandre Kiss & Dinah Shelton, *International Environmental Law* (1991) 14.

³²⁶ Sohn, above n 307, 457; David M. Dziedzic, ‘Four Principles in Marine Environment Protection: A Comparative Analysis’ (1998) 29(2) *Ocean Development and International Law*, 91 examines the interaction of four general principles in marine environmental protection and ways in which they reinforce and complement each other. A similar interaction occurs between the principles of intergenerational equity and the common heritage of mankind in Principles 1 and 2 of the Stockholm Declaration.

³²⁷ *Stockholm Report*, 1418.

Many of the recommendations in the Action Plan for the Human Environment which emerged from the Stockholm Conference related to the implementation of Principle 2 and its companion Principles 3 and 5. Some recommendations on marine resources referred to improving international cooperation in fisheries management³³⁰ but there were also some prescient recommendations which foreshadowed later conventional international law instruments on the protection of marine ecosystems and biodiversity.³³¹ Recommendation 38 proposed that “Governments take steps to set aside areas representing ecosystems of international significance for protection under international agreement” while Recommendations 41 and 42 proposed that registers of aquatic organisms be compiled with a view to studying their preservation and that gene pools of aquatic species be maintained.

3.2.1.3 *Protection of the Environment Beyond National Jurisdiction*

The shared responsibility of States for protection of the environment beyond national jurisdiction was recognised early in the preparatory process for the Stockholm Conference. In introducing the draft Declaration of Principles which formed the basis for the Conference deliberations, an Intergovernmental Working Group established by the Preparatory Committee for the Conference identified the responsibility of States for damage to the environment of areas beyond the limits of national jurisdiction as one of the key bases for the Declaration.³³² Statements by representatives to the Working Group on the Declaration during the

³²⁸ Ibid, 458 – the Swedish proposal read: “The productive basis of renewable resources of the earth, such as farmland, forests, crops and fish, which in many cases and places have been threatened or destroyed, must be maintained or enhanced.”

³²⁹ Ibid, 1418.

³³⁰ Ibid, Recommendations 46, 47 & 50, 1441, 1442 & 1443.

³³¹ Ibid, Recommendations. 38,40, 41(g),42 & 49, 1435, 1436, 1437, 1437, 1442-3.

³³² Sohn, above n.307, 429.

Conference reflect a growing international concern with the protection and remedying of harm for global commons areas such as the high seas. The United Kingdom's representative to the Working Group on the Declaration commented that "the common estates (air, water) must be tackled on an international level" while the Swedish delegate "attached decisive importance to the general principle that States should accept responsibility for damage caused beyond their jurisdiction."³³³ Paragraph 7 of the Preamble to the Declaration provided the most explicit formulation of international responsibility for the environment beyond national jurisdiction declaring that:

A growing class of environmental problems, because they are regional or global in extent or because they affect the common international realm, will require extensive co-operation among nations and action by international organizations in the common interest.³³⁴

This preambular statement of international responsibility for the common international realm was reinforced by Principle 21 of the Stockholm Declaration which juxtaposes States sovereign rights to exploit their own resources in accordance with their own environmental policies with their responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.³³⁵ The "sic utere" or no harm principle which related to States' responsibility for transboundary environmental harm in the *Trail Smelter*³³⁶ and

³³³ *Stockholm Report*, 1418.

³³⁴ *Ibid*, 1417.

³³⁵ *Ibid*, 1420. Principle 21 reads: "States have in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction."

³³⁶ *Trail Smelter Arbitration (United States of America v Canada)* (1941) 33 AJIL 182 (1939); 35 AJIL 684 (1941) 42.

*Lac Lanoux*³³⁷ arbitrations was extended in Principle 21 to encompass States' responsibility for damage to the environment beyond national jurisdiction.³³⁸

Although Principle 21 does not contain a positive statement of States obligations to protect the environment beyond national jurisdiction, it was the precursor to other conventional international law instruments and soft law documents which did articulate positive duties to protect the environment beyond national jurisdiction.³³⁹ Principle 21 had wide support from State representatives during the Stockholm Conference in the preparatory process with some States, such as Canada, proposing an even stronger version of state responsibility for the protection of the environment beyond national jurisdiction to the effect that: "No State may use areas beyond the limits of national jurisdiction in such a manner as to cause damage to the environment of such areas or to the environment of other States."³⁴⁰

Principle 22 of the Stockholm Declaration complements Principle 21 by exhorting States to cooperate in further developing liability and compensation regimes for environmental damage caused by activities within their jurisdiction and control to areas beyond their jurisdiction. While there was some support for a more stringent undertaking on States' liability for environmental damage during the preparatory process and Conference itself, opposition to prescribing a strict liability standard prevailed in the final version of Principle 22.³⁴¹

³³⁷ *Lac Lanoux Arbitration (France v Spain)* (1963) 24 ILR 101.

³³⁸ Patricia W. Birnie & Alan E. Boyle, *International Law and the Environment* (2nd ed.) 186.

³³⁹ Birnie & Boyle, above n.329, 91.

³⁴⁰ Sohn, above n.307, 487-488.

³⁴¹ Sohn, above n.307, 494.

The Working Group on the Stockholm Declaration also considered a draft Principle 20 proposed by the Preparatory Committee which related to the provision of information by States on activities or developments within their jurisdiction or under their control where they had reason to believe that the information would be needed to avoid the risk of significant adverse effects on the environment in areas beyond their national jurisdiction.³⁴² Consensus on the draft principle was not reached during the Conference but the participants agreed to present a draft resolution to the UN General Assembly sponsored principally by developing States and a few developed States. The final form of the resolution reiterated the duty of States, in exercising sovereignty over their natural resources, not to produce harmful effects in zones outside their national jurisdiction and recognised that implementation of Principles 21 and 22 would be more effective if official and public knowledge was provided of technical data relating to the work being carried out by States within their national jurisdiction with a view to avoiding significant harm to the human environment of the adjacent area. This statement was qualified by a further recognition that the provision of technical data would not be construed as enabling States to delay or impede other States in the exploration, exploitation or development of their natural resources.³⁴³ This procedural requirement did garner substantial support in the UN General Assembly and was the forerunner of later conventional international law provisions imposing a duty on States to notify other States of the potential adverse environmental effects of activities within their national jurisdiction.³⁴⁴ An interesting aspect of the UNGA resolution proposed by the Stockholm Conference was the requirement for the provision of information to relevant international

³⁴² Ibid, 496.

³⁴³ Ibid, 499-500.

organisations such as the International Maritime Organization (IMO) as well as to other States.

In the recommendations of the Conference there is some recognition of the unique nature of the high seas marine environment and the need to protect and preserve species which are endemic to international waters or which regularly transit this part of the marine environment. Recommendation 32 in the Report of the Conference proposed that “Governments give attention to the need to protect species inhabiting international waters, or those, which migrate from one country to another”³⁴⁵ while Recommendation 33 proposed strengthening the International Whaling Commission and called for an international agreement which would impose a ten year moratorium on commercial whaling.³⁴⁶ Recommendation 48 proposed that states ensure international cooperation in the research, control and regulation of the side effects of national activities in resource utilisation where these affect the aquatic resources of other nations and noted that the discharge of toxic chemicals, heavy metals and other wastes may affect even high seas resources.³⁴⁷ The invasion of high seas areas by exotic species such as the carp, lamprey and alewife was also noted as having deleterious effects on the high seas environment.³⁴⁸

3.2.1.4 *Legacy of the Stockholm Conference*

The broad international consensus reached at the Stockholm Conference on a range of general principles which related to the protection of the marine

³⁴⁴ Ibid, 502.

³⁴⁵ *Stockholm Report*, 1434.

³⁴⁶ Ibid.

³⁴⁷ Ibid, 1442.

³⁴⁸ Ibid.

environment provided a strong foundation for the negotiation of a legally binding framework for preservation and protection of the marine environment during the UNCLOS III negotiations.³⁴⁹

While not dealing specifically with the maritime environment beyond national jurisdiction, the Declaration and Action Plan produced by the Conference did highlight the shared responsibility of states within the international community and the relevant international organisations for the environmental protection of areas beyond national jurisdiction. The political and moral duty of States not to prevent harm to areas beyond national jurisdiction was expressed for the first time in Principle 21 with states being urged to develop the law on liability and compensation for damage to areas beyond national jurisdiction in Principle 22. Innovative international law principles such as the common heritage of mankind and intergenerational equity, which had particular application to the environment and resources beyond national jurisdiction, also receive endorsement in the Declaration and Action Plan of the Stockholm Conference.

3.1.2 1982 United Nations Convention on the Law of the Sea (LOSC)

The provisions of Part XII of the *LOSC* and related articles throughout the Convention created an overarching framework for the protection and preservation of the marine environment in a conventional international law instrument designed to establish a legal order for the oceans and seas.³⁵⁰ The study, protection and preservation of the marine environment is cited in the preamble to the *LOSC* as one of the key objectives in establishing that order. The

³⁴⁹ Myron H. Nordquist, Shabtai Rosenne & Alexander Yankov (eds.), *United Nations Convention on the Law of the Sea 1982. A Commentary* Vol. IV (1991) 37.

incorporation of Part XII in the *LOSC* created an important nexus between emerging and established international environmental law principles and the international law regimes governing oceans use and jurisdiction.³⁵¹ Unlike earlier conventional international law instruments on vessel source pollution, Part XII is applicable to all maritime zones including the high seas and covers a wide range of marine pollutants.³⁵² It looks beyond single species protection and directs

³⁵⁰ United Nations, *The Law of the Sea. Official Text of the United Nations Convention on the Law of the Sea with Annexes and Index*. (1983), xxiv; Nordquist, Rosenne & Yankov, above n.340, 3.

³⁵¹ Alexander Yankov, 'The Significance of the 1982 Convention on the Law of the Sea for the Protection of the Marine Environment and the Promotion of Marine Science and Technology – A Paper on Third Committee Issues' in Albert W. Koers & Bernard H. Oxman (eds.), *The 1982 Convention on the Law of the Sea* (1984) 71: "For the first time in the history of international law, an international treaty of such magnitude and widespread international recognition has attempted to draw together the basic components of the regime of ocean space in a manner that is universal in its scope and geographical application. The fundamental objective of this regime is the achievement of optimum coordination and harmony among the multifarious uses of the marine environment and the protection and preservation of its natural resources."

³⁵² Nordquist, Rosenne & Yankov, above n.340, 4-5 describes the pre *LOSC* approach of "preparing international instruments dealing only with a specific type of marine pollution by oil from ships within areas adjacent to the coast (generally up to 50 miles offshore)". The International Law Commission in its draft Articles prepared for UNCLOS I did seek to broaden the scope of provisions in relation to marine pollution of the seas. Draft Article 48 on pollution of the high seas read:

- "1. Every State shall draw up regulations to prevent pollution of the seas by discharge of oil from ships or pipelines resulting from the exploitation of the seabed and its subsoil, taking account of existing treaty provisions on the subject.
2. Every State shall draw up regulations to prevent pollution of the seas from the dumping of radioactive waste.
3. All States shall cooperate in drawing up regulations with a view to the prevention of pollution of the seas or air space above, resulting from experiments or activities with radioactive materials or other harmful agents.

In its Commentary on this article the International Law Commission emphasised the inadequate nature of regulations only designed to prevent pollution of maritime areas within national jurisdictions stating that:

- "(1) Water pollution by oil raises serious problems: danger to the life of marine species, fish and birds; pollution of ports and beaches; fire risks. Almost all maritime States have laid down regulations to prevent the pollution of their internal waters and their territorial sea by oils discharged from ships. But these special regulations are clearly inadequate. Petroleum products discharged on the high seas may be washed towards the coasts by currents and wind. All States should therefore enact regulations to be observed, even on the high seas, by ships sailing under their flags, and the observance of these regulations should be controlled. It is obvious that only an international solution of the problem can be effective."

States Parties to take measures to protect and preserve rare and fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.³⁵³ This section will examine the provisions of Part XII and their application to maritime areas beyond national jurisdiction.

3.2.2.1 *Part XII – General Provisions*

At the apex of the *LOSC* framework for the protection and preservation of the marine environment is Article 192 which imposes a general obligation on States to protect and preserve the marine environment. The origins of this general obligation can be traced back to the principles for the preservation of the marine environment adopted by the Intergovernmental Working Group on Marine Pollution (IWGMP) at its second session in Ottawa in 1971 and incorporated in Recommendation 92 of the Stockholm Conference Action Plan as guiding concepts for the Third United Nations Conference on the Law of the Sea and the International Maritime Consultative Organisation Marine Pollution Conference in 1973. As well as stating the general obligation of every State to protect and preserve the marine environment, Principle 1 of the IWGMP Principles explicitly recognises the mutual responsibility of all States to prevent pollution of maritime areas beyond national jurisdiction providing that:

Every State has a duty to protect and preserve the marine environment and, in particular, to prevent pollution that may affect areas where an internationally shared resource is located.

Draft Article 48 was the basis for Articles 24 and 25 of the 1958 Geneva Convention on the High Seas.

³⁵³ *LOSC*, Article 194(5).

An earlier version of Article 192 in the Informal Single Negotiating Text of May 1975 recognised the global ambit of States' obligations "to protect and preserve **all** the marine environment" (own emphasis).³⁵⁴ The obligation in Article 192 applies across all ocean space although in practice the relative strength of enforcement measures within different divisions of ocean space have a profound impact on the efficacy of its implementation.³⁵⁵ Notwithstanding the unqualified nature of the language in Article 192, the debates in the Third Committee and other articles of the *LOSC* indicate that the general obligation contained in Article 192 is circumscribed to a large extent by States rights and obligations under the *LOSC* and other conventions.³⁵⁶ In respect of the maritime area beyond national jurisdiction, the general obligation of States under Article 192 of the *LOSC* must be balanced with their rights and obligations under Part VII on the High Seas, Part XI on the Area and the *Part XI Implementing Agreement*.³⁵⁷

Article 193 in Part XII of the *LOSC* has its origins in Principle 21 of the Stockholm Declaration and confirms the sovereign right of States to exploit their natural resources pursuant to their own environmental policies but in accordance with the duty previously stated in Article 192 to protect and preserve the marine environment. As with Stockholm Principle 21, this formulation recognises the economic needs of developing states but qualifies their realisation with the obligation to protect and preserve the marine environment. The second limb of Principle 21 which refers to States responsibilities to ensure that activities within

³⁵⁴ UN Doc. A/CONF.62/WP.8/PART III.

³⁵⁵ Nordquist, Rosenne & Yankov, above n.340, 43.

³⁵⁶ Australian Government, *Report of the Australian Delegation to the Third United Nations Conference on the Law of the Sea. Second Session, Caracas Venezuela*, Parliamentary Paper 164 (1974) Item 12 – Preservation of the Marine Environment, para. 127: "The emphasis on the part of the maritime States was to give the greatest protection possible to freedom of navigation."

their jurisdiction and control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction, is missing from Article 193 although it does appear in Article 194 (2) in respect of damage caused to the marine environment by pollution beyond the area in which states exercise sovereign rights. Earlier formulations of this article proposed by the Canadian and Australian delegations would have retained a statement concerning States' responsibilities not to cause damage to the environment of other States and to areas beyond the limits of national jurisdiction.³⁵⁸

Article 194(1) begins the process of giving content and defining the scope of States' general obligation to protect and preserve the marine environment. Following the priorities defined for protection of the marine environment in Principle 7 of the Stockholm Declaration, Article 194(1) codifies the duty of States to prevent, reduce and control pollution of the marine environment from any source.³⁵⁹ Birnie and Boyle characterise the obligation of States as one of due diligence rather than strict liability, noting the allowance made for the variable capacity of States to fulfil their obligations in the words "using the best practicable means at their disposal and in accordance with their capabilities."³⁶⁰ The global scope of State responsibility to prevent reduce and control pollution of the marine environment is evident in Article 194(2) which is similar in its terms to Principle 21 of the Stockholm Declaration but does not refer specifically to maritime areas beyond national jurisdiction referring instead, to States

³⁵⁷ 1994 *Agreement Relating to the Implementation of Part XI of the UN Convention on the Law of the Sea of 10 December 1982*, 33 ILM 1309 (Part XI Implementing Agreement)

³⁵⁸ Nordquist, Rosenne & Yankov, above n.340, 46-7.

³⁵⁹ Alan E. Boyle, 'Protecting the Marine Environment. Some Problems and Developments in the Law of the Sea' (1992) 16(2) *Marine Policy* 79, 80 describes the general obligation of States to protect the marine environment from all sources of pollution as a rule of customary international law.

responsibility to ensure that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights. Article 194(3) is an indicative list of pollution prevention measures which States are obligated to take to “minimize to the fullest possible extent” pollution of the marine environment from land based sources, vessels, installations and devices used in exploration or exploitation of the natural resources of the sea-bed and subsoil and other installations and devices operating in the marine environment.

Article 194(3) is a general guide to pollution prevention measures in the marine environment recognising the already extensive array of global and regional measures to combat vessel source pollution and the more limited regional measures in relation to land based sources of marine pollution as well as identifying the need for measures to control pollution from the exploitation of seabed resources and the atmosphere.³⁶¹ Rather than being prescriptive, Article 194(3) accords States a large measure of discretion in developing pollution prevention measures to address ongoing and future threats to the marine environment. The enjoiner in Article 194(4) to States taking pollution prevention measures to refrain from unjustifiable interference with activities carried out by other States in the exercise of their rights and duties under the Convention reflects the constant balancing of coastal state and maritime power interests which was necessary to achieve consensus during the UNCLOS III negotiations.³⁶²

³⁶⁰ Birnie & Boyle, above n.329, 352.

³⁶¹ Jan Schneider, ‘Protection and Preservation of the Marine Environment: What is New About the Law of the Sea Convention?’ in Koers & Oxman, above n.342, 569-571.

³⁶² Helge Vindenes, ‘The Environmental Rights of Coastal States and the Freedom of Navigation’ in Koers & Oxman, above n.342, 580-81. This commentator describes the long process of mutual accommodation between coastal state interests and those of the maritime powers in negotiating

Article 194(5) introduces a positive duty on the part of States to take measures to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species from marine pollution. In relation to maritime areas beyond national jurisdiction, this provision transforms Recommendation 32 of the Stockholm Conference Action Plan, which proposed that Governments give attention to the need to enact international conventions and treaties to protect species which inhabit international waters, into a more concrete legal obligation.³⁶³ The obligation imposed on States in Article 195 of Part XII not to transfer, directly or indirectly, damage or hazards from one area to another could be interpreted as providing greater protection for maritime areas beyond national jurisdiction by prohibiting their employment as dumping grounds for vessel source and other forms of pollution. Article 196(1) which imposes a duty on States to prevent reduce and control pollution of the marine environment resulting from the intentional or accidental introduction of alien or new species that may cause significant and harmful changes to a particular part of the marine environment gives legal substance to Recommendation 48 of the Stockholm Conference Action Plan which had noted the invasion of international waters by certain exotic species and the consequential deleterious effects.³⁶⁴

3.2.2.2 Prescriptive Jurisdiction Over Pollution of the Marine Environment Beyond National Jurisdiction

The articles in Section 5 of Part XII amplify the Article 194(3) list of pollution prevention measures by describing States' regulatory competence to establish rules, regulations and standards for pollution prevention and control. Section 5

Part XII and assesses the final consensus as leaning rather heavily in the direction of the positions taken by the maritime powers.

³⁶³ *Stockholm Report*, 1434.

also describes the interaction of international rules and national legislation on the prevention, reduction and control of marine pollution.

3.2.2.2.1 *Land Based Sources of Marine Pollution*

In Article 207, which deals with pollution from land based sources and supplements Article 194(3)(c), national legislation assumes primacy over global and regional rules. Article 207(1) only requires States to take into account internationally agreed rules, standards and recommended practices and procedures in adopting their own laws and regulations on land based sources of marine pollution. Likewise, Article 207(4) only requires States to “endeavour to establish” global and regional rules to prevent pollution of the marine environment from land based sources. These relatively weak stipulations reflect the location of the pollution source within areas subject to territorial sovereignty and the reluctance of states to fetter their discretion in relation to the control of land based sources of marine pollution by committing to potentially more stringent international standards.³⁶⁵ In the second part of the 1973 session of the Sea-Bed Committee prior to UNCLOS III, draft articles introduced by Norway had envisaged a much higher standard for States which specifically referred to States’ obligations in relation to high seas areas. Draft Article 4 read:

States shall exercise due diligence in the control of the types and quantities of wastes which are disposed of through discharge systems, or in any other manner into the inland water or into the sea, in order to prevent unjustified damage to person, property or natural resources in the territory of another State or on the high seas.

3.2.2.2.2 *Pollution from Seabed Activities*

Articles 208 and 209 supplement Article 194(3)(b) and (c) and for the purposes of pollution prevention measures in connection with seabed activities divide

³⁶⁴ *Stockholm Report*, 1442.

regulatory competence in terms of areas within or beyond national jurisdiction.³⁶⁶

Article 209 is a complementary provision to Article 145 of Part XI which provides for a comprehensive system of environmental protection of the sea-bed beyond national jurisdiction from activities conducted in the Area.³⁶⁷

States are required in Article 209(2) to adopt laws and regulations to prevent reduce and control pollution of the marine environment from activities in the Area undertaken by vessels, installations, structures and other devices flying their flag or of their registry or operating under their authority. Such laws are required to be no less effective than the international rules, regulations and procedures established by the ISA. The specific and comprehensive international regime being established by the ISA for the protection of the marine environment beyond national jurisdiction from the harmful effects of exploitation activities in the Area contrasts markedly with the more general regulatory protection afforded to the marine environment beyond national jurisdiction by other provisions in Section 5 relating to land based, atmospheric and water column activities.³⁶⁸ The full efficacy of the ISA's environmental protection provisions has yet to be assessed in the context of commercial deep seabed mining operations.³⁶⁹

3.2.2.2.3 *Pollution from Dumping*

³⁶⁵ Nordquist, Rosenne & Yankov, above n.340, 132; Boyle, above n.350, 80.

³⁶⁶ Nordquist, Rosenne & Yankov, above n.340, 151: The distinction between marine pollution from activities within maritime zones under national jurisdiction and such pollution beyond the limits of national jurisdiction was drawn during the Sea-Bed Committee phase of negotiations prior to UNCLOS III.

³⁶⁷ Article 145 and the regulations introduced and being drafted by the International Seabed Authority for the protection of the marine environment of the Area from the harmful impacts of deep seabed mining exploration and exploitation activities are discussed in Chapter 7.

³⁶⁸ Nordquist, Rosenne & Yankov, above n.340, 149.

³⁶⁹ See Chapter 7 for a full discussion of this issue.

Article 210 builds on Article 194(3)(a) by providing that States are to adopt laws and regulations to prevent reduce and control pollution of the marine environment by dumping. This article creates a nexus between the specific international rules on sea dumping contained in the 1972 *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter* (*London Convention*)³⁷⁰ and the broad scheme of oceans jurisdiction and use contained in the *LOSC*.³⁷¹ The provisions of the *London Convention* are automatically endorsed as the minimum standard for national legislation in Article 210 (6) which prescribes that the national laws, regulations and measures adopted by States are required to be no less effective in preventing and reducing pollution by dumping than the global rules and standards. Although the *London Convention* applies to all maritime zones including the high seas, the focus of Article 210 is on areas under national jurisdiction, including the territorial sea, the exclusive economic zone and the continental shelf where dumping is not be carried out without the express prior approval of the coastal State. This extra level of coastal state control and monitoring which applies to dumping in maritime areas within national jurisdiction does not apply to maritime areas beyond national jurisdiction where compliance with the provisions of the *London Convention* has been almost entirely dependent on flag state implementation.³⁷²

3.2.2.2.4 *Pollution from Vessels*

Article 211 on vessel source pollution was one of the most controversial articles negotiated in the Third Committee of the UNCLOS III negotiations. The

³⁷⁰ 1972 *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter*, 11 ILM 1294 (*London Convention*) & 1996 *Protocol*, 36 ILM 1(*London Protocol*).

³⁷¹ Nordquist, Rosenne & Yankov, above n.340, 157.

controversy centred on the interests of maritime states in maintaining navigational rights for their merchant vessels in all areas of ocean space and the interests of coastal states in protecting and preserving the marine environment in areas adjacent to their coastline.³⁷³ The delicate compromise achieved in the final version of Article 211 varied the customary flag state competence over rules and standards in relation to vessel source pollution to recognise a descending system of competence on the part of the coastal state to make laws and regulations for the prevention, reduction and control of marine pollution from foreign vessels in areas where it exercised national jurisdiction under the provisions of Part II of the LOSC.³⁷⁴ The negotiations on the coastal state's regulatory competence in relation to vessel source pollution were made more complex by the parallel negotiations in the Second Committee on the breadth of the coastal state's offshore zones and the extent of coastal state jurisdiction in the territorial sea and the exclusive economic zone.³⁷⁵ Notwithstanding the intricacies of negotiations on vessel source pollution

³⁷² Chapter 6 discusses the *London Convention* and its implementation beyond national jurisdiction in detail.

³⁷³ Australian Government, *Report of the Australian Delegation to the Sixth Session of the Third United Nations Conference on the Law of the Sea* (1977) 58-59 records the strength and describes the basic elements of the controversy: "This subject was one of the most controversial matters considered in the marine environment field. Maritime States and some developing States with ambitions to develop their own merchant fleets sought to limit the powers of coastal States to establish laws and regulations for the control of vessel sourced pollution. They were concerned that excessive coastal State powers would lead to the enactment of standards which would be costly for ship owners to implement. Moreover, such powers could result in a lack of uniformity as between the standards applying in the waters of different coastal States. On the other hand many coastal States argued that the increased incidence of pollution resulting from vessel discharges pointed to the need for strengthened coastal state powers in this field. In particular it was argued that under the new concept of the EEZ, the coastal State should have the right to establish laws and regulations for the control of vessel-sourced pollution which gave effect to generally accepted international rules and standards.

³⁷⁴ The coastal state's prescriptive jurisdiction under Article 211 and other articles of the *LOSC* in relation to vessel source pollution in maritime zones within its jurisdiction is described in detail in Birnie and Boyle, above n. 32, 274-280 and in Erik Jaap Molenaar, *Coastal State Jurisdiction Over Vessel- Source Pollution* (1998) 186, 199, 276, 343, 363 & 403.

³⁷⁵ *Report of the Australian Delegation to the Sixth Session of the Third United Nations Conference on the Law of the Sea*, 54: "Discussions on the protection and preservation of the marine environment are complicated by the fact that the legal status of the EEZ remains under consideration in the Second Committee. Participants in discussions on vessel-sourced pollution have been very conscious of the need to avoid adopting positions on these issues which might have

in the Third Committee, the result for the high seas area beyond national jurisdiction was relatively straightforward. Under Article 211(2), the flag state retains exclusive competence to adopt rules and standards in relation to vessel source pollution for vessels flying its flag on the high seas but the rules and standards were required to have at least the same effect as generally accepted international rules and standards established through the competent international organisation or general diplomatic conference.³⁷⁶

The first two sub clauses of Article 211 are the most relevant for the high seas area. Article 211(1) establishes the primacy of international rules and standards concluded by States acting through the competent international organisation or general diplomatic conference to prevent reduce and control vessel source pollution.³⁷⁷ In Article 211 (2), states are enjoined to adopt laws and regulations for the prevention, reduction and control of vessel source pollution for vessels flying their flag or of their registry. Such laws and regulations are required to have at least the same effect as that of generally accepted international rules and standards established through the competent international organisation or general diplomatic conference but can also be more stringent if the flag state so determines.³⁷⁸

3.2.2.2.5 *Pollution From or Through the Atmosphere*

the effect of compromising the position of their delegations in the discussions in the Second Committee on the legal status of the EEZ.”

³⁷⁶ Birnie & Boyle, above n.329, 370.

³⁷⁷ Nordquist, Rosenne & Yankov, above n.340, 201 comment in relation to the use of the words “competent international organization” that: “The underlying concept is that only one international intergovernmental organization – the International Maritime Organization – is competent for the purposes of establishing international rules and standards to prevent, reduce and control pollution of the marine environment from vessels...”

³⁷⁸ Ibid, 203.

Article 212 of the *LOSC* obligates States to adopt laws and regulations to prevent, reduce and control pollution of the marine environment from or through the atmosphere. This obligation is applicable to the air space within States' sovereignty and to vessels flying their flag or vessels or aircraft of their registry, taking into account internationally agreed rules and standards and recommended practices and procedures and the safety of air navigation. At the time the *LOSC* was negotiated, international rules and standards relating to marine pollution had not been extensively developed by the international community. This is reflected in the less stringent terms of Article 212(1) which only requires States to take into account internationally agreed rules and standards and Article 212(3) which exhorts States to endeavour to establish global and regional rules concerning this form of marine pollution. The first substantive example of international rules and standards on this form of marine pollution is Annex VI to the *International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)*³⁷⁹ which entered into force on 19 May 2005. It binds flag state vessels and aircraft belonging to the registries of States Parties to Annex VI of *MARPOL 73/78* when they are navigating on or over maritime areas beyond national jurisdiction.

3.2.2.3 Enforcement Jurisdiction over Pollution of the Marine Environment Beyond National Jurisdiction

Section 6 of Part XII complements the prescriptive jurisdiction articles of Section 5 with a corresponding set of articles conferring enforcement jurisdiction. Section 6 introduces for the first time a tripartite system of enforcement jurisdiction over

³⁷⁹ 1973 *International Convention for the Prevention of Pollution from Ships*, 1340 UNTS 61 (*MARPOL 73/78*).

pollution of the marine environment.³⁸⁰ The previously exclusive flag state responsibility for enforcing international rules and standards on pollution control is supplemented by coastal and port state enforcement powers.³⁸¹ Under the Section 6 provisions, flag state jurisdiction remains the dominant mode of enforcement in maritime areas beyond national jurisdiction, however, port state enforcement jurisdiction can have application to pollution violations which occur in high seas areas subject to flag state consent. This section will analyse Articles 217 and 218 of the LOSC which relate respectively to flag and port state enforcement jurisdiction and their application to maritime areas beyond national jurisdiction.

3.2.2.3.1 *Flag State Enforcement of International Rules and Standards on Vessel Source Pollution*

Article 217 of the LOSC adds enforcement responsibilities for vessel source pollution to the general duties of the flag state enunciated in Articles 92 and 94 of the LOSC.³⁸² The provisions of Article 217 were designed to strengthen and improve the efficacy of the flag state enforcement regime which under previous multilateral agreements such as the 1954 *International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL Convention)*³⁸³ had failed to

³⁸⁰ *Report of the Australian Delegation to the Sixth Session of the Third United Nations Convention on the Law of the Sea*, 55; Birnie & Boyle, above n.329, 375: "It was eventually accepted during the UNCLOS negotiations that the problem of non compliance with international regulations could not be remedied by flag state enforcement alone, and that the port state control provisions of MARPOL were not in themselves a sufficient alternative".

³⁸¹ Jan Schneider 'Prevention of Pollution from Vessels or Don't Give Up the Ship' in Jonathan I. Charney (ed.), *The New Nationalism and the Use of Common Spaces* (1982) 7, 15: "In the area of enforcement competence, UNCLOS III has developed several important new concepts, in particular, universal port state enforcement. While traditionally the province almost exclusively of flag states (states of registry), new enforcement powers are now recognized to lie with port and coastal states also."; Birnie & Boyle, above n.329 360.

³⁸² Nordquist, Rosenne & Yankov, above n.340, 242.

³⁸³ *International Convention for the Prevention of Pollution of the Sea By Oil*, 327 UNTS 3 (*OILPOL Convention*).

secure widespread compliance among shipping states.³⁸⁴ The system of monitoring compliance with international rules and standards on vessel source pollution was largely confined to waters within national jurisdiction and the shipping trade generally lacked the interest and commitment to enforce the relevant standards.³⁸⁵ Article 217(1) imposes a general obligation on flag states to ensure compliance by vessels flying their flag or of their registry with applicable international rules and standards established through the competent international organisation and with their own laws and regulations for the prevention, reduction and control of pollution of the marine environment from vessels.³⁸⁶ Flag states are required to provide for the effective enforcement of such rules, standards, laws and regulations, irrespective of where a violation occurs. Article 217(1) by reference to international rules and standards established through the competent international organisation, incorporates the relevant instruments relating to the control of vessel source pollution concluded by member States of the International Maritime Organisation.³⁸⁷ The words “irrespective of where the violation occurs” in Article 217(1) emphasise the uniform responsibility of flag states to enforce

³⁸⁴R. Michael M’Gonigle & Mark W. Zacher, *Pollution, Politics and International Law* (1979) 227: By 1973, there was no longer any denying the inadequacy of the existing enforcement system. As one study noted, “The enforcement record under the 1954 agreement...is dismal, with very few cases being prosecuted and even fewer significant penalties being assessed for violations.”

³⁸⁵ *Ibid.*, 227-228: “Reliance on coastal state inspection and surveillance had also proved itself unworkable. National reports revealed a huge disparity in the seriousness with which different states attempted to enforce the convention. As usual the vast majority of violations that were detected occurred in ports or inland waters...Even the United States Coast Guard, which possessed the world’s most extensive enforcement capabilities, conducted patrols in port twice daily but only twice a week in the territorial sea and contiguous zone and only occasionally (“random flights”) beyond that point. Such detections as did occur on the high seas resulted in few successful prosecutions by the flag states to which they were referred....To most individual shipowners engaged in this massive and highly competitive business, the state of the marine environment- and their small contribution to it – were just not important.”

³⁸⁶ Birnie & Boyle, above n.329, 370; Molenaar, above n.365, 99.

³⁸⁷ Nordquist, Rosenne & Yankov, above n.340, 255; Birnie & Boyle above n.329, 370; Molenaar, above n.365, 100. The relevant instrument for this purpose is *MARPOL 73/78*.

rules and standards across the whole of the marine environment including areas beyond national jurisdiction.

The remaining provisions of Article 217 define the flag state's enforcement obligations in more detail. As the UNCLOS III negotiations progressed, these supplementary requirements were progressively tightened.³⁸⁸ Article 217(2) requires flag states to ensure that vessels are prohibited from sailing until they can proceed to sea in compliance with the applicable international rules and standards concerning pollution control including requirements related to construction, design, equipment and manning.³⁸⁹ Flag states are also required to ensure that their flag vessels carry the required certificates of compliance with international rules and standards concerning vessel source pollution under Article 217(3). In the case of violations of rules and standards, flag states are required under Article 217(4) to conduct immediate investigations and institute proceedings irrespective of where the violation occurred or where the pollution caused by the violation has occurred or been spotted. Cooperation between States in investigating violations is encouraged in Article 217(5). Many of the procedural requirements incorporated in Article 217 are modelled on those contained in *MARPOL 73/78*.³⁹⁰ Under Article 217(6) and (7), flag states are required to investigate any violation by their flag vessels at the written request of another State, institute proceedings where sufficient evidence of the violation is available and inform the requesting State of the outcome of the investigation. States are enjoined in Article 217(8) to provide penalties which are adequate in severity to discourage violations wherever they occur. Notwithstanding the detailed character of these provisions, the system

³⁸⁸ M'Gonigle & Zacher, above n.375, 248.

³⁸⁹ M'Gonigle & Zacher, above n.375, 248; Molenaar, above n.365, 99.

of flag state jurisdiction over vessel source pollution is still largely based on the commitment and resources of states to monitor the compliance of their own fleets. There are no independent monitoring bodies at the global or regional level.³⁹¹ For vessel source pollution, there is clearly more impetus for flag states to conduct investigations and prosecute offenders where violations affect maritime areas within national jurisdiction.

3.2.2.3.2 *Port State Enforcement of International Rules and Standards on Vessel Source Pollution*

Article 218 of the *LOSC* introduced a relatively new species of enforcement jurisdiction to the growing body of international law on marine pollution. Port state enforcement jurisdiction was first proposed in 1973 by the United States in the Sea-Bed Committee to address violations which occurred outside the port state's internal waters, territorial sea or exclusive economic zone.³⁹² Article 218 was introduced in response to the concern on the part of States participating in UNCLOS III that the system of flag state jurisdiction over vessel source pollution control did not provide an effective mechanism for protecting the international community's interest in the marine environment beyond national jurisdiction.³⁹³ Under Article 218(1) a port State is accorded a discretion to undertake investigations and institute proceedings in respect of any discharge from a vessel voluntarily within its port or at an offshore terminal outside its internal waters, territorial sea or exclusive economic zone which violates applicable international

³⁹⁰ Nordquist, Rosenne & Yankov, above n. 340, 255-257.

³⁹¹ M'Gonigle & Zacher, above n.375, 248.

³⁹² Nordquist, Rosenne & Yankov, above n.340, 261; *Report of the Australian Delegation to the Sixth Session of the Third United Nations Conference on the Law of the Sea*, 55: "The grant of a significant range of powers to the port State to take enforcement action in respect of pollution violations is one of the innovatory features of the RSNT. In particular, the text recognizes for the first time the right of a port State to institute proceedings against a vessel for discharge offences on the high seas."

rules and standards. Where the proceedings relate to discharges occurring within maritime areas under another State's jurisdiction, that State must consent to the proceedings under Article 218(2). The port State's power in relation to areas beyond national jurisdiction appears on first reading to be tantamount to a grant of universal jurisdiction in relation to violations which occur beyond national jurisdiction, however, it is limited by the flag state's right of pre-emption set out in Article 228 of the *LOSC*. The flag State has the right under that article to take over proceedings from the port State within six months of the proceedings being instituted unless the proceedings relate to a case of major damage to a coastal state or the relevant flag state repeatedly disregards its obligation to enforce effectively the applicable international rules and standards. In practice, the implementation of Article 218 in national legislation has been slow. Birnie and Boyle and Molenaar note that only a few states are known to have implemented Article 218(1) in their national legislation.³⁹⁴ As a consequence, enforcement action against vessel source pollution violations beyond national jurisdiction is still largely determined by flag States.³⁹⁵ In the context of such violations, the efficacy of port state enforcement measures which still depend on the prerogative of an individual port state to protect the marine environment beyond national jurisdiction appear to be relatively limited.³⁹⁶

³⁹³ Nordquist, Rosenne & Yankov, above n. 43, 260.

³⁹⁴ Birnie & Boyle, above n. 32, 376; Molenaar, above n 68, 109: "So far only a few states have enacted provisions which implement or provide a basis for further implementation of Article 218 entirely or partially. No information on actual cases of enforcement was available."

³⁹⁵ Birnie & Boyle, above n. 32, 377.

³⁹⁶ But see the discussion on collaborative port state measures to prevent control and reduce vessel source pollution such as Port State Control Memoranda of Understanding in Chapter 6.

3.2.2.3.3 *Intervention in Maritime Areas Beyond National Jurisdiction*

Article 221 in Section 6 of Part XII is one of the recognised exceptions in the LOSC to the inviolability of flag state jurisdiction.³⁹⁷ This article provides for a right of intervention on the part of coastal states in maritime areas beyond national jurisdiction to take and enforce measures proportionate to the actual or threatened damage to protect their coastline or related interests from pollution or threats of pollution following upon a maritime casualty. Article 221 confirms a conventional international law right already provided for in Article 1(1) of the 1969 *International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties*³⁹⁸ which had been concluded in response to the *Torrey Canyon* disaster off the coast of the United Kingdom in 1967.³⁹⁹ The right of intervention codified in Article 221 is also linked to a customary international law right of intervention in circumstances of imminent harm to a coastal state's interests from marine pollution, based on the doctrines of self help, self preservation and necessity.⁴⁰⁰ The requirement that measures taken be proportionate to the actual or threatened damage to the coastal state also reflects the traditional customary international law constraints on actions taken in self help. Although the right of intervention beyond the territorial sea under Article 221 is triggered by and related specifically to coastal state interests, action taken under the article has been compared to enforcement action based on the principle

³⁹⁷ Other exceptions to the inviolability of flag state jurisdiction are prescribed in Articles 110 and 111 of the LOSC.

³⁹⁸ 1969 *International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties*, UKTS 77 (1975) (*High Seas Intervention Convention*). This Convention was supplemented by the 1973 *Protocol relating to Intervention on the High Seas in Cases of Marine Pollution by Substances Other Than Oil*, 34 UST 3407 (*High Seas Intervention Protocol*).

³⁹⁹ Nordquist, Rosenne & Yankov, above n.340, 305; Molenaar, above n.365, 47.

⁴⁰⁰ Nordquist, Rosenne & Yankov, above n.340, 305-6; M'Gonigle & Zacher, above n.375, 148-9.

of universal jurisdiction under international law.⁴⁰¹ In this context, the grant of extraterritorial enforcement rights under Article 221 is a recognition of the universal effects of serious maritime casualties on the marine environment. Massive marine pollution on the high seas as the result of a deliberate or reckless act has been categorised by the International Law Commission in its draft Articles on State Responsibility and by some commentators⁴⁰² as an international crime comparable to piracy and genocide⁴⁰³ which requires similar global action to be combated.

3.2.2.4 *Safeguards*

Section 7 of Part XII contains a set of safeguards which balance the enforcement powers prescribed in Section 6 with flag states' procedural and navigation rights. The interests of the maritime powers in maintaining freedom of navigation and "the integrity of the global navigation system" was a potent influence on the content of these articles during the UNCLOS III negotiations.⁴⁰⁴ This section will examine those articles in Section 7 which are relevant to the maintenance of navigation rights and other ocean uses in the maritime area beyond national jurisdiction.

The protection of other legitimate uses of the ocean was the impetus for Article 225 which provides that States shall not endanger the safety of navigation or otherwise create any hazard to a vessel, or bring it to an unsafe port or anchorage,

⁴⁰¹ Molenaar, above n.365, 85-86.

⁴⁰² International Law Commission (ILC), *Draft Articles on State Responsibility*, UN Doc. A/51/10 (1996), Art. 19(3)(d): "the breach of rules concerning the environment may constitute....in some cases, an international crime."

⁴⁰³ Molenaar, above n.365, 85; Robert McLaughlin, 'Improving Compliance: Making Non State International Actors Responsible for Environmental Crimes' 11(2) *Colorado Journal of International Environmental Law and Policy* (2000) 377, 393

or expose the marine environment to an unreasonable risk.⁴⁰⁵ This article was directed at the exercise of enforcement jurisdiction by coastal states for the purpose of preventing marine pollution so it has limited application to marine pollution violations beyond national jurisdiction. The constraints expressed in Article 225 may nevertheless be applicable to the exercise of intervention rights by coastal states in maritime areas beyond national jurisdiction. The final constraint of not exposing the marine environment to an unreasonable risk in the course of enforcing pollution prevention measures is consistent with the proportionality constraint contained in Article 221 on intervention.

Article 226 relates to coastal and port state enforcement measures against pollution by dumping and vessel source pollution. The principal objective of this section was to prevent coastal and port states imposing undue delays on vessels in the exercise of their enforcement powers under Section 6.⁴⁰⁶ States are required not to delay a vessel longer than is essential for the purpose of investigations and where investigations indicate a violation the vessel should be promptly released subject to appropriate bonding arrangements. Prompt release may be refused where the vessel would present an unreasonable threat of damage to the marine environment. In the case of flag vessels being detained by port states for investigation of pollution offences beyond national jurisdiction, the provisions of Article 226 would only have application where the flag state has chosen not to exercise its right of pre-emption under Article 228.

⁴⁰⁴ Nordquist, Rosenne & Yankov, above n.340, 321; Molenaar, above n.365, 459.

⁴⁰⁵ Nordquist, Rosenne & Yankov, above n.340, 331.

⁴⁰⁶ Nordquist, Rosenne & Yankov, above n.340, 336.

Article 228 allocates priorities among the various categories of state actors in the tripartite system of marine pollution enforcement introduced by the LOSC. The continuance of port or coastal state proceedings relating to marine pollution violations beyond the territorial sea of the initiating state is subject to suspension if the flag state brings corresponding proceedings within six months of the initiating state's proceedings first being instituted. This provision does not amount to a complete dilution of the port or coastal state's enforcement prerogatives as there are two exceptions to the flag state's right of pre-emption. The coastal or port state's proceedings may continue if they relate to a case of major damage to the coastal state or the flag state has repeatedly disregarded its obligation to enforce effectively the applicable international rules and standards for violations committed by its vessels. These exceptions have the potential to provide a partial resolution to the dilemma of flags of convenience states abrogating their responsibility to prosecute marine pollution violations by their flag vessels. In the case of marine pollution violations beyond national jurisdiction, however, the initiation of proceedings still depends on an individual flag or port state discerning sufficient national interest to pursue a prosecution.

3.2.2.5 *State Responsibility and Liability*

Article 235(1) of the LOSC declares that States are responsible for the fulfilment of their international obligations concerning the protection and preservation of the marine environment and that they shall be liable in accordance with international law. It requires States to ensure that recourse is available within their legal systems for prompt and adequate compensation or other relief for damage caused by pollution of the marine environment by natural or juridical persons under their

jurisdiction. While Article 235 does not address the distinction between the responsibility and liability of States for damage to maritime areas within national jurisdiction and those beyond national jurisdiction, it does require States to cooperate in the implementation of existing international law and the further development of international law relating to their responsibility and liability for damage to the marine environment as a whole.

Some commentators have identified deficiencies in utilising the principles of state responsibility to protect the environment beyond national jurisdiction and proposed alternative mechanisms to obtain more effective results. Leigh discusses the concept of an *actio popularis* under customary international law and treaty regimes whereby any party or State would have the right to bring an action in relation to damage to global commons areas such as the high seas.⁴⁰⁷ Birnie and Boyle comment however that “although the International Law Commission, in its Draft Articles on State Responsibility has recognised the right of States to enforce collective interests in terms broad enough to encompass the more significant global responsibilities and to permit an *actio popularis* in certain circumstances, collective supervision of such global responsibilities by intergovernmental treaty commissions or conferences of the parties will often be a more effective and realistic remedy than public interest claims or countermeasures by States.”⁴⁰⁸ Stone argues that although there are legal doctrines such as the *erga omnes* doctrine from which a suit to protect the commons areas might be constructed, very few claims of this nature have been pressed.⁴⁰⁹ He proposes establishing a system of

⁴⁰⁷ Kathy Leigh, ‘Liability for Damage to the Global Commons’ (1993) 14 *Australian Yearbook of International Law* 129, 150-151.

⁴⁰⁸ Birnie & Boyle, above n.329, 196 & 198.

⁴⁰⁹ Christopher Stone, ‘Defending the Global Commons’ in Philippe Sands, *Greening International Law* (1993) 34, 38.

guardians drawn from existing international environmental agencies and non government organisations who would be legal representatives for the natural environment and perform monitoring and legislative functions as well as intervening in bilateral and multilateral disputes.⁴¹⁰ McLaughlin notes that “not only are the commons generally outside state jurisdiction but so too are many of the international actors who actually conduct polluting activities or cause damage to the environment within the commons.”⁴¹¹ He argues that non state actors such as transnational corporations are not directly amenable to the jurisdiction and regulation of states who are the very actors accorded responsibility for enforcement and compliance with international environmental law standards. He proposes a system of subjecting these non state actors to the jurisdiction of the International Criminal Court in respect of environmental crimes beyond national jurisdiction.⁴¹²

The import of these commentators’ arguments for the LOSC scheme of marine environmental protection is that although Article 235 includes within the scope of state responsibility and liability for damage to the marine environment, maritime areas beyond national jurisdiction, this prescription of state responsibility and liability does not address the realities of environmental despoliation in maritime areas beyond national jurisdiction. The diversity of actors and activities which now impact on the marine environment beyond national jurisdiction demands

⁴¹⁰ Ibid, 40-41.

⁴¹¹ McLaughlin, above n.394, 388.

⁴¹² Ibid.

more innovative and dynamic approaches to its protection under international law.⁴¹³

3.2.2.6 *Sovereign Immunity*

Article 236 of the LOSC exempts any warship, naval auxiliary, other vessels or aircraft owned or operated by a State and used for the time being only on government non-commercial service from the application of the Convention's provisions. This exemption is qualified by the second sentence of Article 236 which provides that each State shall ensure by the adoption of appropriate measures not impairing the operations or operational capabilities of its vessels or aircraft owned or operated by it that its vessels act in a manner consistent so far as is reasonable and practicable with the Convention. For sovereign immune vessels, this provision is consistent with Articles 95 and 96 of the LOSC which grant complete immunity to warships and ships owned or operated by a State and used only on government non commercial service from the jurisdiction of any State other than the flag State. The exemption granted in Article 236 applies to all those provisions of the LOSC which relate to the protection and preservation of the marine environment and not just those in Part XII.

Following the increased concern in the international community for the protection of the marine environment since the Stockholm Conference and the conclusion of the LOSC, navies of the Western maritime powers have placed more emphasis on complying with international and domestic environmental law.⁴¹⁴ Some

⁴¹³ Christopher C. Joyner & Elizabeth A. Martell, 'Looking back to See Ahead: UNCLOS III and Lessons for Global Commons Law' (1996) 27 *Ocean Development and International Law* 73, 90-91.

⁴¹⁴ Rear Admiral Bruce A. Harlow and Commander Michael E. McGregor, 'International Environmental Law Considerations During Military Operations Other Than War' in Richard J.

conventional international law provisions relating to environmental protection during armed conflict have been negotiated at the global level⁴¹⁵ but compliance with international environmental law applicable to the maritime area beyond national jurisdiction during peacetime operations by sovereign immune vessels and aircraft is largely unregulated and left to the discretion of sovereign states.

3.2.2.7 Relationship of Part XII to Other Conventions on the Protection and Preservation of the Marine Environment

Article 237 identifies Part XII of the LOSC as the lynch pin for all previous and subsequent international conventions and agreements on the protection and preservation of the marine environment with the general law of the sea. It provides that the provisions of Part XII are without prejudice to the specific obligations assumed by States under these agreements but that such obligations should be carried out in a manner consistent with the general principles and objectives of the LOSC. Article 237 was designed as a trump card which would ensure that any future developments in international law to protect the marine environment would be consistent with the balance of ocean uses prescribed in the LOSC.⁴¹⁶ For the maritime area beyond national jurisdiction, any global or regional approach to the protection and preservation of the marine environment must be consistent with States' rights and obligations under Part VII of the LOSC and those of the ISA under Part XI of the LOSC. For the water column component of the maritime area beyond national jurisdiction, Article 237 entrenches the pre-eminent nature of individual state freedoms on the high seas without specifying in

Grunawalt, John E. King & Ronald S. McClain (eds.), *Protection of the Environment During Armed Conflict* International Law Studies Vol 69 (1996) 315, 315.

⁴¹⁵ 1977 Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts, 29 ATS (1991) (Additional Protocol I), Art. 55.

any detail how the general obligation to protect and preserve the marine environment in Article 192 can be cooperatively discharged by state and non state users of the high seas.

3.3 Conclusions

The general obligation imposed on all States to protect and preserve the marine environment by Article 192 of the *LOSC* identifies the global dimensions of the task confronting the international community and provides the legal endorsement for further international conventions to address specific aspects of marine environmental protection. Article 197 mandates cooperation between States on a global and regional basis to formulate and elaborate detailed international rules for the protection and preservation of the marine environment. An integrated approach to marine environmental protection is also reflected in Article 194 which requires States to take measures to prevent reduce and control marine pollution from any source and to protect and preserve rare or fragile ecosystems and the habitats of endangered species. This emphasis on holistic and coordinated efforts to protect and preserve the marine environment is continued in the Part XII articles on global and regional cooperation⁴¹⁷, technical assistance⁴¹⁸, monitoring and environmental assessment⁴¹⁹.

Divisions in the approach to managing the marine environment begin to develop in the later articles of Part XII. The basic distinction between areas within and beyond national jurisdiction is overlaid with further distinctions based on offshore

⁴¹⁶ George K. Walker, 'Oceans Law, the Maritime Environment, and the Law of Naval Warfare' in Grunawalt, King & McClain, above n.405, 185, 189.

⁴¹⁷ *LOSC*, Arts. 197-201.

⁴¹⁸ *Ibid*, Arts. 202-3.

⁴¹⁹ *Ibid*, Arts. 204-6.

maritime zones, the physical components of the marine environment, and the jurisdictional authorities which prescribe and enforce environmental rules and standards. Under the *LOSC* regime, the maritime area beyond national jurisdiction is split into the sea bed and water column for the purposes of resource management and environmental protection. The ISA has jurisdiction over the deep seabed beyond national jurisdiction for the purposes of non living resource management and environmental protection. In contrast, the *LOSC* scheme of oceans jurisdiction appoints no predominant sovereign authority for the water column beyond national jurisdiction. It treats the high seas as a *res nullius* area open to use by every State rather than a global commons where resources are managed and shared by all nations.⁴²⁰ States may combine to develop international rules and standards on protection of the water column environment beyond national jurisdiction but implementation of these rules is dependent on individual states rather than on an international authority or multinational enforcement mechanism. Although the general principles enunciated in Part XII augured well for the integrated protection of the marine environment⁴²¹, there was still much work to be done to negotiate global and regional instruments and to establish institutional arrangements to implement those general principles in

⁴²⁰ Joyner & Martell, above, n.404, 75.

⁴²¹ *Communication Received From the United Nations Environment Programme at the Tenth Session of the UNCLOS III Negotiations*, UN Doc A/CONF.62/112, (9 March to 17 or 24 April 1982). Annex, 1: "from the environmental perspective, one of the significant achievements of the Convention is the inclusion in treaty form of a general obligation of all States to protect and preserve the marine environment as a whole....UNEP is also pleased to see specific treaty articles dealing with international rules and national legislation to prevent reduce and control pollution of the marine environment from land based sources, from sea bed activities, from activities in the international area and from or through the atmosphere; again these prescriptive provisions and their companion enforcement articles, while far from fully developed, represent a sound basis for future lawmaking and implementation....The Delegations to the Conference should also be commended for the extraordinary efforts devoted to the problem of ship generated pollution in the Third Committee....considerable diplomatic skill has been displayed in accommodating conflicting interests in the freedom of navigation and in the need for environmental regulation...There are of course many remaining difficulties. Many of the Conference

maritime areas beyond national jurisdiction. The lack of jurisdictional infrastructure covering the protection of the water column environment beyond national jurisdiction, in Part XII of the LOSC, poses problems for a coordinated strategy to address the degradation and continuing threats to the marine environment beyond national jurisdiction.

environmental provisions.....while admirable in their general import, still require a great deal of concentrated and detailed future work for their effectuation.”

Chapter 4 Steps Towards Integrated and Ecosystem Based Protection of the Oceans

4.1 Introduction

The symbiotic relationship between environmental protection and economic development had been recognised in the *Stockholm Declaration*⁴²² but it was not until the 1980s that a series of environmental declarations and reports initiated by the International Union for the Conservation of Nature (IUCN)⁴²³ and the United Nations General Assembly⁴²⁴ attempted to synthesise these two factors in the concept of sustainable development. In its 1987 Report, “Our Common Future” (the Brundtland Report), the World Commission on Environment and Development (WCED) defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”⁴²⁵ On a practical level sustainable development entailed finding a balance between economic and social development goals and the protection of the environment for present and future generations.⁴²⁶ In many of the soft law documents examined in this chapter, integrated management of the environment which takes into account ecosystems and their connections rather than concentrating on single species or issues such as

⁴²² *Report of the U.N Conference on the Human Environment*, UN Doc. A/CONF.48/14 (1972) (*Stockholm Report*), para 2 Preamble: “The protection and improvement of the human environment is a major issue which affects the well being of peoples and economic development throughout the world” and Principle 13: “In order to achieve a more rational management of resources and thus to improve the environment, states should adopt an integrated and coordinated approach to their development planning so as to ensure that development is compatible with the need to protect and improve the human environment for the benefit of their population.”

⁴²³ International Union for Conservation of Nature and Natural Resources (IUCN)/World Wildlife Fund (WWF)/ United Nations Environment Programme (UNEP), *World Conservation Strategy* (1980).

⁴²⁴ *UNGA Res. 37/7* (9 Nov 1982) 22 ILM (1983), 455, Annex, para 7: “In the planning and implementation of social and economic development activities, due account shall be taken of the fact that the conservation of nature is an integral part of those activities.”

⁴²⁵ World Commission on Environment and Development (WCED), *Our Common Future*, (1987)(*Brundtland Report*) 43.

⁴²⁶ *Ibid*, 44-45: “At a minimum sustainable development must not endanger the natural systems that support life on Earth: the atmosphere, the waters, the soils and the living beings.”

marine pollution in devising environmental protection policies is conceived as an important means of attaining sustainable development.

In the context of the oceans, the Brundtland Report's findings demonstrated that the ecological resilience of the oceans was under threat from "over exploitation, pollution and land based development".⁴²⁷ Noting the underlying unity of the oceans and the interdependence of marine ecosystems, it emphasised the need for global and regional cooperation in oceans management if sustainable development was to be realised.⁴²⁸ For the high seas, as with other parts of the planet that fell outside national jurisdiction, the Report concluded that sustainable development could only be secured through "international cooperation and agreed regimes for surveillance, development and management in the common interest."⁴²⁹ The Report assessed that the sum of the multiple conventions and programmes in place did not represent an adequate management regime either for ocean space within national jurisdiction or for extraterritorial ocean space.⁴³⁰

In the early 1990s, the Preparatory Commission meetings for the United Nations Conference on Environment and Development (UNCED) began to analyse the practical implications of sustainable development and to devise an action plan for implementing sustainable development across the whole spectrum of human interactions with the environment. Chapter 17 of the UNCED action plan, *Agenda*

⁴²⁷ Ibid, 263.

⁴²⁸ Ibid, 264-5.

⁴²⁹ Ibid, 261.

⁴³⁰ *Brundtland Report*, 265; Clifton E. Curtis, 'International Ocean Protection Agreements. What is Needed?' in Jon M. Van Dyke, Durwood Zaelke & Grant Hewison, *Freedom for the Seas in the 21st Century* (1993) 187, 188.

21,⁴³¹ was devoted to the protection of the oceans. The *Convention on Biological Diversity (CBD)*⁴³² which was designed to arrest the rapid extinction of vast numbers of species by committing States to the preservation of the widest possible range of representative species and ecosystems was also concluded at UNCED. This Chapter will examine the considerable body of hard and soft law which has evolved in relation to the protection and preservation of the marine environment both during and since the *LOSC* negotiations. This analysis will assess the relevance of these developments for the marine environment beyond national jurisdiction and the ways in which they have amplified the general obligation to protect and preserve the marine environment in Article 192 of the *LOSC*.

4.2 World Conservation Strategy – IUCN/UNEP/WWF Report 1980

Simultaneously with the final stages of the *LOSC* negotiations, the IUCN, in conjunction with the UNEP and WWF, issued the World Conservation Strategy⁴³³ in 1980. The Strategy focussed on the advancement of sustainable development through living resource conservation and identified priorities for action at the national, regional and global level to achieve this goal.⁴³⁴ It defined the three main objectives of living resource conservation as:

- The maintenance of essential ecological processes and life-support systems;
- The preservation of genetic diversity; and

⁴³¹ United Nations Conference on Environment and Development, *Agenda 21*, UN Doc. A/CONF.151/26 (1992) (*Agenda 21*).

⁴³² 1992 *Convention on Biological Diversity*, 31 ILM 822 (*CBD*).

⁴³³ *World Conservation Strategy*, above n.414.

⁴³⁴ *Ibid*, IV.

- Ensuring the sustainable utilisation of species and ecosystems.⁴³⁵

The Strategy outlined the principal obstacles to the achievement of living resource conservation as:

- The belief that resource conservation is a limited sector rather than a cross sectoral process;
- The consequent failure to integrate conservation with development;
- A development process that is often inflexible and needlessly destructive;
- The lack of capacity to conserve; and
- The lack of support for conservation;⁴³⁶

It identified overfishing as the main threat to achieving sustainable utilisation of marine living resources.⁴³⁷ The effects of incidental capture and killing of non target species such as cetaceans and seabirds was classified as one of the more destructive yet neglected problems of aquatic living resource management.⁴³⁸ As part of preserving genetic diversity, the Strategy recommended that special attention be paid to marine ecosystems which are particularly poorly represented among protected areas.⁴³⁹

⁴³⁵ Ibid, VI.

⁴³⁶ Ibid, VII.

⁴³⁷ Ibid, Section 4, para 4.

⁴³⁸ Ibid, Section 4, para 5.

⁴³⁹ Ibid, Section 6, para 9.

In a section devoted to the global commons, the Strategy highlighted the open oceans and their living resources as a priority for international conservation action.⁴⁴⁰ It adopted the view that species that are confined to the open ocean should be regarded as the common resource of all humanity and those that moved between the open ocean and waters under national jurisdiction as shared resources.⁴⁴¹ The Strategy noted the unique nature of open ocean ecosystems⁴⁴², their vulnerability to overexploitation⁴⁴³ and the paucity of international measures devoted to their conservation.⁴⁴⁴ The increasingly intensive use of ocean space generally and the advent of deep sea mining were cited as cogent reasons for augmenting international measures to protect open ocean species and their habitats.⁴⁴⁵ Specific measures were recommended including the preparation of a discussion document, possibly as a prelude to an expert consultation, on priority species and ecosystems in the open ocean and on ways and means of conserving them. The introduction of more effective measures to regulate exploitation of marine living resources and the establishment of sanctuaries, where the habitats of cetaceans and other marine creatures are protected and exploitation is prohibited, were also foreshadowed.⁴⁴⁶ Early portents of international environmental law principles such as the precautionary principle and requirements for prior environmental impact assessment and monitoring of environmental quality were evident in the Strategy's recommendations on deep sea mining.

⁴⁴⁰ Ibid, Section 18.

⁴⁴¹ Ibid, Section 18, para 2.

⁴⁴² Ibid: "While the open ocean is not as biologically rich as continental shelf areas, it includes unique ecosystems and provides some (and in some cases all) of the critical habitats of several culturally and economically important groups of animals, notably whales and tunas."

⁴⁴³ Ibid: "Much of the open ocean remains frontier country in which people can exploit living resources as they please as long as they have the technology to do so."

⁴⁴⁴ Ibid, Section 18, para 3: "Living resource exploitation in the open ocean is regulated only in the case of two groups of species: tunas and whales. There is no protection of the habitats of open ocean species and hitherto none has been needed."

It recommended that “all nations engaged in or considering deep sea mining – or any other activities with currently unpredictable events on open ocean ecosystems – should:

precede commercial mining operations or similar activities by commissioning a comprehensive ecological survey to determine the impact of such activities;
designate appropriate areas of the deep sea bed as baseline reference and resource zones in which no mining or other significant disturbance will be allowed, ensuring that the size and shape of each area is such that its stability will be maintained;
*establish guidelines for scientific research to ensure minimum disruption of the natural state of such areas, and provide for full exchange of information on the results of research.*⁴⁴⁷

In the context of the marine environment beyond national jurisdiction, the Strategy’s content was significant in that it treated the water column and the sea bed as an indivisible whole for the purposes of living resource conservation and characterised marine living resources beyond national jurisdiction as the common resource of humanity. The measures recommended in the Strategy to conserve marine and other living resources also presage many of the sustainable development principles which emerged at UNCED in the *Agenda 21* Action Plan.

4.3 Our Common Future – Brundtland Report 1987

The common and claimed waters under the *LOSC* scheme of oceans jurisdiction are described in the Brundtland Report as forming interlocked ecological and economic systems in which the health of one depends on the health of the other.⁴⁴⁸

The Report illustrates the fundamental unity of the oceans in terms of

⁴⁴⁵ Ibid.

⁴⁴⁶ Ibid, Section 18, para 4.

⁴⁴⁷ Ibid, Section 18, para 7.

interconnected cycles of energy, climate, marine living resources and human activities and their function as the ultimate sink for the by-products of human activities.⁴⁴⁹ While the Report asserts that the underlying unity of the oceans requires effective global management regimes⁴⁵⁰ and coordination of national actions⁴⁵¹, the evolutionary nature of that process⁴⁵² and the political and economic obstacles to its realisation are acknowledged.⁴⁵³ The most critical threats to the oceans are assessed as being within waters under national jurisdiction.⁴⁵⁴ Urgent remedial action at the national and regional levels to combat the effects of pollution, over exploitation of living resources and land based development in waters under national jurisdiction is seen as the first priority for oceans management.⁴⁵⁵

The Oceans Management section of the Report contains some of the fundamental elements of an integrated approach to oceans management but emphasises offshore waters under national jurisdiction and regional cooperation in their management.⁴⁵⁶ Coastal states are enjoined to launch an urgent review of the legal and institutional requirements for integrated management of their exclusive economic zones (EEZs) and their roles in arrangements for international cooperation.⁴⁵⁷ As part of this process, states are to develop a clear statement of national goals and priorities in oceans management. Some of the goals relate to specific problems such as overfishing and marine pollution, while others are

⁴⁴⁸ *Brundtland Report*, 261.

⁴⁴⁹ *Ibid*, 262.

⁴⁵⁰ *Ibid*, 264.

⁴⁵¹ *Ibid*, 264-265.

⁴⁵² *Ibid*, 261.

⁴⁵³ *Ibid*, 261 & 265.

⁴⁵⁴ *Ibid*, 263.

⁴⁵⁵ *Ibid*, 265.

⁴⁵⁶ *Ibid*, 264.

broader in scope such as the strengthening of national research and management capacities and the production of inventories of coastal and marine resources.⁴⁵⁸

The Report endorses the critical importance of the *LOSC* as “a major step towards an integrated management regime for the oceans....” and urges states to ratify the Convention “in the interests of the oceans’ threatened life support system.”⁴⁵⁹

The tenor of the Report in relation to the maritime area beyond national jurisdiction is that the protection and management of the high seas is a necessary but prospective endeavour. The Report foreshadows increasing threats to the high seas from a variety of marine pollutants and over-exploitation of its resources⁴⁶⁰ in a “free for all” situation which disadvantages less developed states and destroys the ecological integrity of the high seas.⁴⁶¹ It asserts that sustainable development of a global commons such as the high seas “can be secured only through international cooperation and agreed regimes for surveillance, development and management in the common interest.”⁴⁶² The “common heritage of mankind” principle and its application to the sea-bed beyond national jurisdiction is

⁴⁵⁷ Ibid, 265.

⁴⁵⁸ Ibid, 265-266.

⁴⁵⁹ Ibid, 273-274.

⁴⁶⁰ Ibid, 264: “Even the high seas are beginning to show some signs of stress from the billions of tons of contaminants added each year. Sediments brought to the oceans by great rivers such as the Amazon can be traced for as much as 2,000 kilometres out to sea. Heavy metals from coal-burning plants and some industrial processes also reach the oceans via the atmosphere. The amount of oil spilled annually from tankers now approaches 1.5 million tons. The marine environment, exposed to nuclear radiation from past nuclear weapons tests, is receiving more exposure from the continuing disposal of low-level radioactive wastes...The sea-floor is a region of complex physical, chemical and biological activity where microbial processes play a major role, but as yet, serious damage is known to have occurred only in very localized regions. Although these findings are encouraging, given accelerating pressures and the inadequacy of present data they provide no grounds for complacency.”

⁴⁶¹ Ibid, 261: “...without agreed, equitable, and enforceable rules governing the rights and duties of states in respect of the global commons, the pressure of demands on finite resources will destroy their ecological integrity over time. Future generations will be impoverished, and the people who suffer most will be those who live in poor countries that can least assert their own claims in a free-for-all.”

⁴⁶² Ibid.

applauded as “a milestone in the realm of international cooperation”⁴⁶³ but the opposition of significant states to its implementation is noted.⁴⁶⁴ Conscious of the residual political opposition to international regulation of the high seas, the Report does not suggest extending the common heritage of mankind principle to the water column beyond national jurisdiction or the form that international cooperation should take in managing the high seas.⁴⁶⁵ The reticence of this approach is in marked contrast to ambitious pre *LOSC* proposals for management such as those contained in Ambassador Pardo’s Draft Ocean Space Treaty⁴⁶⁶ and the Global Commons section of the World Conservation Strategy and can perhaps be explained by the political controversy over the application of the common heritage of mankind principle to the deep seabed during the *LOSC* negotiations. The principal value of the Brundtland Report for the oceans lies in its early outline of an integrated approach to oceans management which exhorts states to consider the impact of social and economic development on the marine environment with a view to maintaining the long term viability of the oceans and their resources for present and future generations.

⁴⁶³ Ibid, 273.

⁴⁶⁴ Ibid, 274.

⁴⁶⁵ Ibid, 265 - The report is non committal on the form that international cooperation should take in relation to the high seas asserting only that: “When it comes to the high seas beyond national jurisdiction international action is essential.” The Foreword to R. D. Munro & J. G. Lammers, *Environmental Protection and Sustainable Development* (1987), which was published in the same year as the Brundtland Report as a companion document, provides some insight into the Brundtland Report’s reluctance to propose a legal regime for extraterritorial ocean space at p. xix. While acknowledging the “pressing need for the proper regulation of newly identified extraterritorial spaces” it explains that there is “no real measure of agreement on how much of extraterritorial space in fact has the status of a part of the common heritage of mankind. Under the Law of the Sea Convention, the sea-bed and ocean floor beyond national jurisdiction have this status, and the convention provides an elaborate regime to administer the potential mineral wealth of the area by means of a joint Authority and Enterprise. This regime....may perhaps come to be a model for legal regimes to govern other extraterritorial areas. The convention must, however, be in force and its provisions in operation if there is to be sufficient international confidence for States and groups of States to seek to emulate it for the regulation of other areas..”

⁴⁶⁶ See discussion of some provisions of the Pardo draft Ocean Space Treaty in Chapter 2 above; Elisabeth Mann Borgese, ‘The Process of Creating an International Ocean Regime to Protect the Ocean’s Resources’ in Van Dyke, Zaelke & Hewison, above n.421, 23, 30.

4.4 Legal Principles for Environmental Protection and Sustainable Development – Report of the Experts Group on Environmental Law 1986

The Experts Group on Environmental Law was established in 1985 to provide the WCED with a report on legal principles for environmental protection and sustainable development. In its terms of reference, the Group was required among other things:

- To consider not only principles regarding the obligations of States to reduce or avoid activities affecting the environment of other States, but also principles regarding the individual and collective responsibilities of States concerning future generations, other species and ecosystems of international significance and the global commons.
- To prepare proposals for strengthening the legal and institutional framework for accelerating the development and application of international law in support of environmental protection and sustainable development within and among all States.⁴⁶⁷

The Experts Group prepared a comprehensive set of legal principles intended as elements for a Draft Convention on Environmental Protection and Sustainable Development which reinforced the *Stockholm Declaration* principles and introduced new principles relating to the maintenance of biodiversity, transboundary environmental harm and environmental dispute settlement. A summary of the principles is included as an Annex to the Brundtland Report.⁴⁶⁸ While none of the principles relate specifically to the marine environment beyond

⁴⁶⁷ Munro & Lammers, above n.456, 1.

national jurisdiction, Part I which contains General Principles Concerning Natural Resources and Environmental Interferences and Part III on State Responsibility amplify the general obligation of States to protect and preserve the marine environment in Article 192 of the *LOSC* and have parallels in the *Rio Declaration* and Chapter 17 of *Agenda 21*.

Of particular relevance to the marine environment beyond national jurisdiction was the Group's recommendation to appoint an International Ombudsman for the Environment in the form of a UN High Commissioner for Environmental Protection and Sustainable Development who would have special responsibilities regarding the protection and use of areas beyond national jurisdiction.⁴⁶⁹ The High Commissioner's functions would have included the reception and assessment of communications from private organisations and individuals concerning compliance with or violations of the proposed Convention on Environmental Protection and Sustainable Development.⁴⁷⁰ This ambitious proposal was an attempt to address the lack of jurisdictional infrastructure for environmental protection in areas beyond national jurisdiction such as the high seas in a legally binding framework.

4.5 Caring For the Earth – A Strategy for Sustainable Living – IUCN/UNEP/WWF Report – 1991

In 1991, the IUCN, in conjunction with UNEP and WWF, expanded its earlier World Conservation Strategy, which had focussed on achieving sustainable development through living resource conservation, in a broadly scoped strategic

⁴⁶⁸ *Brundtland Report*, 348.

⁴⁶⁹ *Ibid*, 16.

⁴⁷⁰ *Ibid*.

document entitled 'Caring for the Earth',⁴⁷¹ which sets out principles for sustainable living. Chapter 16 of the *Caring for the Earth Report* addresses the management of the oceans and coastal areas describing the oceans as the dominant feature of the planet with multiple and increasing functions in the quest for sustainable living.⁴⁷² The challenge for management of the oceans is described as using resources and services provided by the marine environment to meet development objectives without degrading the quality of the environment or exhausting stocks of living resources.⁴⁷³ Chapter 16 envisages that meeting the challenge will involve integrated approaches to coastal and ocean management, better global and regional cooperation and conservation of coastal and oceanic ecological processes, biological diversity and the sustainable development of marine resources.⁴⁷⁴ It notes that the ecosystems and resources of the open ocean beyond 200 miles from the coast are still open access resources with no effective, comprehensive legal regime to regulate their use⁴⁷⁵ and recommends that national policies should provide for cooperative action and shared use of the ocean and its resources beyond national jurisdiction.⁴⁷⁶ In addition, it recommends that States develop an effective regime for sustainable use of open ocean resources noting that none of the existing international mechanisms provide sufficient direct control of resource conservation and fisheries development outside EEZs.⁴⁷⁷ It proposes that the regime should require a moratorium on exploitation of newly discovered resources of the open ocean and the deep sea-bed, including fans, vents and mounts, and of known resources not yet being used. It recommends that

⁴⁷¹ IUCN/UNEP/WWF *Caring for the Earth: A Strategy for Sustainable Living* (1991)(*Caring for the Earth Report*).

⁴⁷² *Ibid*, 150.

⁴⁷³ *Ibid*, 152.

⁴⁷⁴ *Ibid*.

⁴⁷⁵ *Ibid*, 151-2.

⁴⁷⁶ *Ibid*, 154.

all exploitation should be subject to environmental impact assessment, and that the moratorium should be maintained until adequate provision is made for conservation of the resources concerned.⁴⁷⁸ Finally it recommends that a worldwide network of marine protected areas be established to safeguard marine representative ecosystems and that States seek means to protect localised, biologically and scientifically important oceanic ecosystems such as sea vents and sea mounts.⁴⁷⁹

The *Caring for the Earth Report* is the most comprehensive of the soft law documents which preceded UNCED and the first to adopt a truly systematic approach to sustainable development and its implementation across the whole marine environment. The methodical and detailed plan of action contained in this document provided a blue print for the Action Plan which was to emerge from UNCED. The priorities for action identified for the maritime area beyond national jurisdiction in the *Caring for the Earth Report*, however, were to confront considerable vicissitudes in the political maelstrom of UNCED.

4.6 United Nations Conference on Environment and Development (UNCED) – 1992

UNCED was conceived as a successor to the Stockholm Conference on the Human Environment which would review the interrelated problems of environment and development for the global community and develop a program of action to address these concerns.⁴⁸⁰ On a much larger scale than the Stockholm

⁴⁷⁷ Ibid, 160.

⁴⁷⁸ Ibid.

⁴⁷⁹ Ibid, 157-8.

⁴⁸⁰ Nicholas A. Robinson (ed.), *Agenda 21 & The UNCED Proceedings*, (1992) Vol 1 xix; Michael Grubb, Matthias Koch, Koy Thomson, Abby Munson & Francis Sullivan, *The 'Earth Summit' Agreements. A Guide and Assessment* (1993) 8.

Conference⁴⁸¹, it performed the functions of reaffirming the principles contained in the *Stockholm Declaration* and coalescing global support for environmental policies and principles which had emerged in the intervening period. Of the five products of UNCED, the two non binding documents, the *Rio Declaration*⁴⁸² and *Agenda 21*, and the legally binding instrument, the *CBD*, have the most relevance for the subsequent development of international environmental law as it relates to the marine environment. The *Rio Declaration* contains 27 basic principles to guide States and the international community in their efforts to achieve sustainable development.⁴⁸³ These principles reiterate some of the basic tenets of the *Stockholm Declaration* and incorporate new concepts such as the precautionary principle and the common but differentiated responsibility of developed and developing states in a series of carefully worded political compromises.⁴⁸⁴ *Agenda 21* is a wide ranging action plan which addresses the integration of environment and development concerns from a number of different angles and recommends global, regional and national measures to achieve sustainable development in particular programme areas.⁴⁸⁵ The *Agenda 21* Action Plan contains four main sections which examine respectively the Social and Economic Dimensions of Sustainable Development (Section 1), the Conservation and Management of Resources for Development (Section 2), Strengthening the Role of Major Groups in attaining sustainable development (Section 3) and national and international means of implementing sustainable development objectives (Section 4). Protection of the marine environment and the sustainable

⁴⁸¹ David Freestone, 'The Road from Rio: International Environmental Law After The Earth Summit' (1994) 6 *Journal of Environmental Law* 193, 193-194.

⁴⁸² UN Doc A/CONF.151/PC/WG.III/L.33/Rev.1 (*Rio Declaration*)

⁴⁸³ Grubb, Koch, Thomson, Munson & Sullivan, above n.471, xv.

⁴⁸⁴ *Ibid*, 86.

⁴⁸⁵ Robinson, above n.471, xxvi.

development of its resources is addressed in Chapter 17 of Section 2. A parallel negotiating process which culminated at UNCED produced the *CBD* which aims to conserve “biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.”⁴⁸⁶ This section will examine the implications of the UNCED documents for the protection of the marine environment beyond national jurisdiction and their relationship with the *LOSC*.

4.6.1 *Rio Declaration on Environment and Development*

The *Rio Declaration* was originally conceived as the ‘Earth Charter’, an inspirational document,⁴⁸⁷ which would enunciate the basic principles of sustainable development and the aspirations of humanity and the community of nations for the “future viability and integrity of the Earth as a hospitable home for human and other forms of life.”⁴⁸⁸ The final form of the document retains vestiges of this optimistic conception but also reflects the political compromises necessary to reach agreement between States with vastly different development agendas and political ideologies.⁴⁸⁹ The *Rio Declaration* is more heavily influenced by the pragmatic reality of economic imperatives and global inequities than its predecessor the *Stockholm Declaration*.⁴⁹⁰

⁴⁸⁶ *CBD*, Art. 1.

⁴⁸⁷ Ved P. Nanda, *International Environmental Law and Policy* (1994) 104.

⁴⁸⁸ Grubb, Koch, Thomson, Munson & Sullivan, above n.471, 85.

⁴⁸⁹ *Ibid*; Nanda, above n.478, 105.

⁴⁹⁰ *Ibid*, 94-95.

Principle 1 of the Rio Declaration confirms the anthropocentric focus of the sustainable development concept⁴⁹¹ and when applied to the marine environment, is complementary in nature to the balance of human uses of the ocean envisaged in the *LOSC*. This statement of principle tends to weaken a purely ecocentric interpretation of the duty to protect and preserve the marine environment and to verify the rational use of ocean resources for human purposes taking environmental protection into account.⁴⁹² Principle 4 encapsulates the central theme of UNCED identifying the integration of environmental protection concerns in the development process as an essential prerequisite to the attainment of sustainable development.⁴⁹³ Principle 7 promotes global cooperation to conserve, protect and restore the Earth's ecosystem but recognises that States, based on their different contributions to global environmental degradation, have common but differentiated responsibilities in this endeavour. The heavier burden borne by developed states in discharging this responsibility, in view of the pressures their societies place on the global environment and their technological and financial resources, is acknowledged in the second sentence of the principle. This principle was indicative of the fundamental political divide between the developed and developing countries which was a persistent feature of the UNCED negotiations.⁴⁹⁴

The Rio process had the effect of catalysing the formation of a whole body of emerging international environmental law principles and demonstrating their

⁴⁹¹ Principle 1 reads: "Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature."; Nanda, above n.478, 106.

⁴⁹² Grubb, Koch, Thomson, Munson & Sullivan, above n.471, 85; Nanda, above n.478, 106.

⁴⁹³ Nanda, above n.478, 107.

⁴⁹⁴ Grubb, Koch, Thomson, Munson & Sullivan, above n.471, 91.

application to various components of the environment.⁴⁹⁵ Principles 15 to 19 of the Declaration were in this category. Although different versions of the precautionary principle or approach had been articulated and applied in other regional and global instruments prior to UNCED⁴⁹⁶, its inclusion in Principle 15 of the Rio Declaration was a major step in its global maturation as an emerging principle of customary international law.⁴⁹⁷ The Principle 15 version of the precautionary approach contains a familiar but qualified formulation of the principle specifying that where there are threats of serious or irreversible damage to the environment, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation. As well as only requiring that cost effective measures be taken, Principle 15 dilutes the obligation by providing that the precautionary approach shall be widely applied by States according to their capabilities.⁴⁹⁸

In the context of the marine environment beyond national jurisdiction, the precautionary principle has particular piquancy in view of the developing state of scientific knowledge in relation to most aspects of the deep sea environment which arguably imposes an even greater responsibility on the international community to adopt preventive strategies to protect this part of the global environment. The more stringent nature of the obligation in relation to areas beyond national jurisdiction is borne out by the content of provisions

⁴⁹⁵ Freestone, above n.472, 216.

⁴⁹⁶ Patricia Birnie & Alan E. Boyle, *International Law and the Environment* (2nd ed.), 116; Patricia Birnie, 'The Status of Environmental 'Soft Law': Trends and Examples with Special Focus on IMO Norms' in Henrik Ringbom, *Competing Norms in the Law of Marine Environmental Protection* (1997) 31, 51; Stuart B. Kaye, *International Fisheries Management* (2001) 171-172.

⁴⁹⁷ Freestone, above n.472, 216: "Some of these principles, like the Stockholm Principles of 1972, are still in the form of aspirations, but some- and one may single out the precautionary principle – demonstrate the passage of discipline-specific principles into customary law."

⁴⁹⁸ Grubb, Koch, Thomson, Munson & Sullivan, above n.471, 93.

incorporating the precautionary principle in some of the global instruments which apply to global commons areas. Birnie and Boyle cite examples of instruments where the burden of proof is reversed in these circumstances making it impermissible to carry out an activity unless it can be shown that it will not cause unacceptable harm to the environment.⁴⁹⁹ Variations on the content of Principle 15 have been embedded in most of the subsequent regional and global instruments dealing with the protection of the marine environment. In the opinion of some commentators, the basic elements of the precautionary principle are approaching the status of customary international law although others are reluctant to award this status to the principle in view of the high degree of variability in its interpretation and content.⁵⁰⁰

Principle 16 provides qualified support for the internalisation of environmental costs and the polluter pays principle provided due regard is paid to the public interest and international trade and investment is not distorted.⁵⁰¹ The use of environmental impact assessment for proposed activities that are likely to have a significant adverse impact on the environment is encouraged in Principle 17. Many of the principles contained in the *Rio Declaration* such as the precautionary approach, the polluter pays principle and the obligation to conduct environmental impact assessments were applied systematically across all the programme areas in the UNCED Action Plan, *Agenda 21*, translating environmental theory into

⁴⁹⁹ Birnie & Boyle, above n.487, 118.

⁵⁰⁰ Birnie & Boyle, above n.487, 120 comment: "it is too simplistic to conclude that the precautionary principle is or is not customary international law. They note however that it does have a legally important core on which there is international consensus – that in performing their obligations of environmental protection and sustainable use of natural resources states cannot rely on scientific uncertainty to justify inaction when there is enough evidence to establish the possibility of a risk of serious harm even if there is as yet no proof of harm" ; Freestone, above n. 472, 212; Kaye, above n.487, 182-186..

⁵⁰¹ Grubb, Koch, Thomson, Munson & Sullivan , above n.471, 93; Nanda, above n.478, 112.

practical forms of action. In addition, the nexus between the environment and economic development was solidified in the *Rio Declaration* removing environmental protection from the realm of the esoteric in the international mindset. The irrevocable coupling of environment and development concerns in the *Rio Declaration* focussed international attention on politically viable solutions to counter environmental degradation.

4.6.2 *Agenda 21- Chapter 17 (Oceans Chapter)*

The Introduction to the Oceans Chapter of *Agenda 21* resonates with the earlier *Brundtland Report*, which had recognised the underlying unity of the oceans in its description of the “oceans and all seas and adjacent coastal areas as an integrated whole that is an essential component of the global life support system”.⁵⁰² A pragmatic note is struck by the additional description of the oceans as “a positive asset that presents opportunities for sustainable development.”⁵⁰³ The primacy of the *LOSC* as the governing framework for the protection and sustainable development of the marine and coastal environment and its resources is acknowledged in the second sentence of the Introduction,⁵⁰⁴ immediately overlaying the *LOSC* template of oceans jurisdiction with its inbuilt divisions of ocean space onto the programmatic aspirations of the Oceans Chapter. Having recognised the seminal nature of the *LOSC* in the management of the oceans, the Introduction, nevertheless, signals the need for fresh approaches to marine and coastal management at the various levels of ocean governance, specifying that they should be “integrated in content” and “precautionary and anticipatory in

⁵⁰² *Agenda 21*, Chapter 17, para. 17.1.

⁵⁰³ *Ibid.*

⁵⁰⁴ *Ibid.*

ambit.”⁵⁰⁵ Some commentators have characterised the Oceans Chapter of *Agenda 21* as part of an incremental process to implement the *LOSC* framework of ocean governance rather than a radical restructure of oceans management.⁵⁰⁶

In its listing of programme areas for action, the Introduction to the Oceans Chapter adopts a phased approach to integrated management of the oceans tackling the management of coastal areas, including exclusive economic zones in the first programme area.⁵⁰⁷ Marine pollution is addressed on a holistic basis in the second programme area, reflecting the global ambit of many of the existing marine pollution instruments.⁵⁰⁸ The programme areas dealing with marine living resources,⁵⁰⁹ although originally intended as a single programme area, became bifurcated between areas under national jurisdiction and those beyond national jurisdiction as a result of the opposing interests of coastal and high seas fishing states at UNCED.⁵¹⁰ Coordination mechanisms for oceans management are addressed in a further programme area.⁵¹¹ Each of the programme areas follows a basic format, discussing the basis for action initially, defining its objectives, describing a range of management related activities which relate to the objectives and prescribing the means of implementation. This section will analyse the two programme areas, Marine Environmental Protection and the Sustainable Use and Conservation of Marine Living Resources of the High Seas, which have particular application to the protection of the marine environment beyond national

⁵⁰⁵ Ibid.

⁵⁰⁶ Jonathan Charney, ‘The Marine Environment and the 1982 United Nations Convention on the Law of the Sea (1994) 28 *International Lawyer* 879, 882, n.11; Erik Jaap Molenaar, *Coastal state Jurisdiction Over Vessel Source Pollution* (1998) 56-57.

⁵⁰⁷ *Agenda 21* Chapter 17, para 17.1(a).

⁵⁰⁸ Ibid, para 17.1(b).

⁵⁰⁹ Ibid, para 17.1(c).

⁵¹⁰ William T. Burke, ‘UNCED and the Oceans’ (1993) 17 *Marine Policy* 519, 521; Kaye, above n. 487, 202 n. 117.

jurisdiction and will also examine the general principles which emerge from the programme area on integrated coastal zone management.

4.6.2.1 Chapter 17 Section A – Integrated Management And Sustainable Development of Coastal and Marine Zones

Although Section A of Chapter 17 applies specifically to maritime areas under national jurisdiction, it contains the basic elements of an integrated approach to oceans management which can be translated prospectively to the maritime area beyond national jurisdiction. Section A describes the mechanisms which States should put in place to link and coordinate sectoral efforts to manage coastal and marine zones sustainably. It accords political validity to the concepts of integrated oceans management and the balance and compatibility of ocean uses.⁵¹²

Endorsement of these concepts can also be derived from the substantive provisions of the LOSC, but are not expressly stated in that instrument. The objectives list the provision of an integrated policy and decision making process as the first prerequisite in establishing integrated management of the coastal and marine zone.⁵¹³ Related to this objective, coastal states are urged to consider establishing appropriate coordinating mechanisms for integrated management and sustainable development of coastal and marine areas and their resources at both the local and national levels.⁵¹⁴ The equivalent of this for maritime areas beyond national jurisdiction could be a high level coordinating mechanism for the global and regional organisations and non state actors with competence and interests in these areas.

⁵¹¹ *Agenda 21*, Chapter 17, para 17.1(f).

⁵¹² Biliana Cicin-Sain, 'Earth Summit Implementation: Progress Since Rio' (1996) 20 *Marine Policy* 123, 126; Molenaar, above n.497, 57.

⁵¹³ *Agenda 21*, Chapter 17, para 17.5(a).

⁵¹⁴ *Ibid*, para 17.6.

The inclusion of the precautionary approach and environmental impact assessment as essential objectives in integrated management and sustainable development in this programme area adds to their growing status as principles of international environmental law with broad application to the full spectrum of ocean uses.⁵¹⁵ Section A also emphasises practical tools in oceans management including:

- a) The preparation of coastal profiles indicating degraded areas, user conflicts and priorities for management;⁵¹⁶
- b) National resource and environmental accounting that reflects changes in value resulting from uses of coastal and marine areas;⁵¹⁷
- c) Systematic observation and follow up of major projects, including the systematic incorporation of results in decision-making;⁵¹⁸
- d) Contingency plans for human induced and natural disasters, including likely effects of potential climate change, sea level rise and pollution of anthropogenic origin;⁵¹⁹
- e) Conservation and restoration of altered critical habitats;⁵²⁰

⁵¹⁵ Ibid, para 17.5(d); Freestone, above n.472, 211.

⁵¹⁶ *Agenda 21*, Chapter 17, para 17.6(c).

⁵¹⁷ Ibid, para 17.5(e).

⁵¹⁸ Ibid, para 17.6(d).

⁵¹⁹ Ibid, para 17.6(e).

⁵²⁰ Ibid, para 17.6(h).

- f) Integration of sectoral programs on sustainable development such as fishing and other industries affecting the coastal area;⁵²¹
- g) Promoting environmentally sound technology and sustainable practices;⁵²²
and
- h) Development and simultaneous implementation of environmental quality criteria.⁵²³

All these tools could be adapted to managing the maritime area beyond national jurisdiction given the jurisdictional infrastructure and the political will.

Section A highlights the critical importance of maintaining biological diversity and the productivity of marine species and habitats under national jurisdiction. It specifies appropriate measures to achieve these objectives including surveys of marine biodiversity, inventories of endangered species and critical coastal and marine habitats, establishment and management of protected areas and support of scientific research and dissemination of its results.⁵²⁴ The application of the sample measures given in this paragraph can be extrapolated to paragraph 17.46 (e) and (f) which defines comparable objectives for the sustainable use and conservation of marine living resources of the high seas.⁵²⁵ A predominant theme in Section A is the strengthening of links between all levels of government, non government organisations, the academic and private sectors, resource user groups,

⁵²¹ Ibid, para 17.6(i).

⁵²² Ibid, para 17.6(m).

⁵²³ Ibid, para 17.6(n).

⁵²⁴ Ibid. para 17.7.

local communities and indigenous people with interests in the coastal and marine zones through the use of coordinating mechanisms.⁵²⁶ Similar links could be established between global and regional organisations with regulatory competence in maritime areas beyond national jurisdiction and other non state actors with interests in these areas such as the shipping, fishing and biotechnology industries and the marine scientific research community.

4.6.2.2 Chapter 17 Section B – Marine Environmental Protection

Section B of Chapter 17 on Marine Environmental Protection amplifies the general obligation of States to protect and preserve the marine environment in Article 192 of the *LOSC* by specifying a set of objectives to guide States' efforts in arresting the degradation of the marine environment. Many of these are derived from the principles contained in the *Rio Declaration*. They include the application of preventive, precautionary and anticipatory approaches to reduce the risk of long term or irreversible damage to the marine environment,⁵²⁷ the prior assessment of activities that may have significant adverse impacts on the environment,⁵²⁸ the integration of marine environmental protection into social and economic development policies⁵²⁹ and the development of economic incentives such as the polluter pays principle to encourage the application of clean technologies and other means consistent with the internalisation of environmental costs.⁵³⁰ This succinct statement of guiding objectives has influenced the subsequent

⁵²⁵ Ibid. para 17.46 requires States to commit themselves to the protection and restoration of endangered marine species and the preservation of habitats and other ecologically sensitive areas.

⁵²⁶ Ibid, para 17.6 Preamble.

⁵²⁷ Ibid, para 17.22(a).

⁵²⁸ Ibid, para 17.22 (b).

⁵²⁹ Ibid, para 17.22(c).

⁵³⁰ Ibid, para 17.22(d)

development of national, regional and global policies and laws on the prevention and control of marine pollution.

In its basis for action and recommendations for management related activities, Section B of Chapter 17 targets degradation of the marine environment caused by land based sources of marine pollution as the principal lacuna in global efforts to control marine pollution. The basis for action in para 17.18 identifies land based sources as the major contaminants of the marine environment and those that pose the greatest risk to the marine environment due to their toxicity, persistence and bioaccumulation in the food chain. The management related activities section lists a variety of practical measures states can take to control land based sources of marine pollution. As part of the follow up to UNCED, the UNEP Governing Council was invited to convene an intergovernmental meeting on protection of the marine environment from land based activities⁵³¹. An Intergovernmental Conference convened by UNEP in 1995 did adopt a Global Programme of Action designed to coordinate and assist the activities of States in controlling land based sources of marine pollution and established an intergovernmental review mechanism to periodically assess progress in implementing the Global Programme of Action (GPA).⁵³² This part of the Oceans Chapter played an important role in harnessing the energies of the international community to address the complex problem of land based sources of marine pollution and in translating the admonitions to States in Part XII of the *LOSC* into practical action at the national and regional level. The GPA has been implemented through the regional seas programmes, a network of regional marine environmental protection

⁵³¹ Ibid, para 17.25(f).

⁵³² Cicin-Sain, above n 503, 131.

organisations considered in more detail in Chapter 9. This regional infrastructure is a potential basis for further coordinated initiatives to protect and preserve the marine environment beyond national jurisdiction.

The second part of the management related activities in Section B deals with marine pollution from sea based activities and recommends that States take measures in relation to marine pollution from shipping, dumping, offshore oil and gas platforms and ports.⁵³³ The International Maritime Organisation (IMO) had a substantial influence on the content of this Section submitting reports on its ongoing activities to regulate marine pollution from sea based activities at the request of the Preparatory Committee for UNCED.⁵³⁴ States are encouraged to cooperate in monitoring marine pollution from ships and engage in more rigorous enforcement of the provisions of the *International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)*⁵³⁵ using methods such as aerial surveillance of illegal discharges.⁵³⁶ States Parties to the *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention)*⁵³⁷ are encouraged to take appropriate steps to stop ocean dumping and incineration of hazardous substances.⁵³⁸ States are also urged to participate in new IMO initiatives to develop rules on ballast water discharge to prevent the spread of non indigenous organisms⁵³⁹, to develop appropriate measures for

⁵³³ Agenda 21, Chapter 17, para 17.30(a), (b), (c) & (d).

⁵³⁴ See for example *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972. Outcome of the Fourteenth Consultative Meeting of Contracting Parties, London 25-29 November 1991*, UN Doc A/CONF.151/PC/31/Add.1; Andre Nollkaemper, 'Agenda 21 and Prevention of Sea-Based Marine Pollution' (1993) 17 *Marine Policy*, 537, 538.

⁵³⁵ 1973 *International Convention for the Prevention of Pollution from Ships*, 12 ILM 1319 (MARPOL 73/78).

⁵³⁶ Agenda 21, Chapter 17, para 17.30(a)(iii).

⁵³⁷ 1972 *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter*, 11 ILM 1294 (London Convention).

⁵³⁸ Ibid, para 17.30(b)(ii).

⁵³⁹ Ibid, para 17.30(a)(vi).

reducing air pollution from ships⁵⁴⁰, to develop an international regime governing the transportation of hazardous and noxious substances by ships⁵⁴¹ and to complete consideration of a code on the carriage of irradiated nuclear fuel in flasks on board ships.⁵⁴² The principal value of the section related to sea based impacts on the marine environment lies in the global profile it gives to the multiple activities of the IMO in managing pollution from sea based activities and its call for more rigorous compliance and enforcement of global protection regimes on the part of States.⁵⁴³ This part of Section B is credited by Nollkaemper with reinvigorating global efforts to arrest degradation of the marine environment caused by sea based activities.⁵⁴⁴ It demonstrated that the most intensive measures to protect the whole marine environment including areas beyond national jurisdiction were those relating to the prevention, reduction and control of marine pollution from sea based activities.

4.6.2.3 *Chapter 17 Section C - Sustainable Use and Conservation of Marine Living Resources of the High Seas*

Section C of Chapter 17 is the only programme area of the Oceans Chapter which deals specifically with environment and development issues related to the maritime area beyond national jurisdiction. Although initially the Preparatory Committee of UNCED discussed the sustainable use and conservation of marine living resources as a single programme area, this approach succumbed to the potent influence of the *LOSC* provisions on high seas fisheries and the divisive interests of coastal states and distant water fishing nations in fisheries

⁵⁴⁰ Ibid, para 17.30(a)(xi).

⁵⁴¹ Ibid, para 17.30(a)(xii).

⁵⁴² Ibid, para 17.30(a)(ix).

⁵⁴³ Molenaar, above n.497, 57; Nollkaemper, above n.525, 550.

⁵⁴⁴ Nollkaemper, above n.525, 537.

management.⁵⁴⁵ The basis for action in Section C highlights the increasing pressures on high seas fisheries as a whole and the unregulated nature of the sector.⁵⁴⁶ Notwithstanding that a whole programme area is devoted to these issues, there are few significant advances on the priorities for action and management methods already identified in the *LOSC* provisions on the conservation and management of the living resources of the high seas and on highly migratory species and straddling stocks. The basis for action and objectives in Section C specifically endorse the *LOSC* provisions on the marine living resources of the high seas as the primer for action on conservation and utilisation of those resources.⁵⁴⁷ Articles 117 and 118 of the *LOSC* on the duty of States to adopt measures and cooperate in the conservation and management of the living resources of the high seas are reflected in the Basis for Action.⁵⁴⁸ In addition, the *LOSC* prescription of conservation and management methods for high seas living resources in Article 119(1), based on maximum sustainable yield and taking into consideration relationships among species, is retained in the Objectives of Section C.⁵⁴⁹

Special prominence is given to the duty of coastal States and high seas fishing States to agree on measures to conserve straddling stocks and highly migratory species under Article 63(2) and 64 of the *LOSC*. States are encouraged to give full effect to the provisions of the *LOSC* for fisheries populations whose ranges lie both within and beyond EEZs (straddling stocks) and for highly migratory

⁵⁴⁵ Burke, above n.501, 521.

⁵⁴⁶ *Agenda 21*, Chapter 17, para. 17.45.

⁵⁴⁷ *Ibid*, paras 17.44 & 17.49.

⁵⁴⁸ *Ibid*, para 17.45.

⁵⁴⁹ *Ibid*, para 17.46(b).

species.⁵⁵⁰ Although States participating in the UNCED deliberations did not reach agreement on the mode of implementing these provisions there was sufficient political impetus to agree on the convening of an intergovernmental conference on straddling fish stocks and highly migratory fish stocks which was reflected in Article 17.49(e) of Section C.⁵⁵¹ New approaches to international fisheries management based on the characteristics of large marine ecosystems and the precautionary principle, although raised by some participants during the PrepCom deliberations for UNCED, did not gain sufficient support to feature in the final version of Section C. Burke attributes this to the perceived impracticality of the ecosystem based management concept and the precautionary principle when applied to high seas fisheries and the reluctance on the part of coastal states and high seas fishing states to suffer any diminution in their fishing rights.⁵⁵²

Although the principal focus of Section C was on the further implementation of the *LOSC* provisions on the conservation and management of high seas fisheries, there were some calls for practical action which went beyond the relevant *LOSC* articles. States were urged to develop and use selective fishing gear and fisheries practices that minimise waste in the catch of target species and by-catch of non target species⁵⁵³ and to prohibit dynamiting, poisoning and other comparable destructive fisheries practices.⁵⁵⁴ They were also encouraged to ensure that fishing activities by vessels flying their flags on the high seas minimised incidental

⁵⁵⁰ Ibid, paras. 17.49(a) & (b).

⁵⁵¹ Burke, above n.501, 524; Kaye, above n.487, 205; Grubb, Koch, Thomson, Munson & Sullivan, above n.471, 128. The outcome of this intergovernmental conference, the *UN Fish Stocks Agreement* and its implications for the protection and preservation of the high seas marine environment will be considered in Chapter 5.

⁵⁵² Burke, above n.501, 522; Kaye, above n.487, 275 & 275, n. 22.

⁵⁵³ *Agenda 21*, Chapter 17, para 17.46(c).

⁵⁵⁴ Ibid, para 17.53.

catch,⁵⁵⁵ and complied with applicable conservation and management rules⁵⁵⁶ and to take effective action to deter reflagging of vessels by their nationals as a means of avoiding compliance with applicable conservation and management rules for fishing activities on the high seas.⁵⁵⁷ In addition, States were encouraged to fully implement UN General Assembly Resolution 46/215 of 20 December 1991 prohibiting large scale pelagic drift-net fishing.⁵⁵⁸

The other aspect of marine living resources on the high seas which receives special attention in Section C is the conservation of marine mammals. Although Section C identifies the conservation of marine mammals as a unique case among high seas marine living resources deserving of special protection, it does not take a position on suitable management methods for these species, deferring to the appropriate international organisations in this regard.⁵⁵⁹ Para 17.47 adopts the language of Article 65 of the *LOSC* and its application to the high seas in Article 120 permitting States and international organisations to prohibit, limit or regulate the exploitation of marine mammals on the high seas more strictly than is provided for under the principles of optimum utilisation and maximum sustainable yield. The specific responsibility of the International Whaling Commission (IWC) for the conservation and management of whale stocks and the regulation of whaling under the *International Convention for the Regulation of Whaling* (*ICRW*)⁵⁶⁰ and the duty of states to cooperate with the IWC is recognised as is the

⁵⁵⁵ Ibid, para 17.50.

⁵⁵⁶ Ibid, para 17.51.

⁵⁵⁷ Ibid, para 17.52.

⁵⁵⁸ Ibid, para 17.54.

⁵⁵⁹ Patricia Birnie, 'UNCED and Marine Mammals' (1993) 17 *Marine Policy* 501, 514.

⁵⁶⁰ 1946 *International Convention for the Regulation of Whaling*, 161 UNTS 72 (*ICRW*).

work of other organisations involved in the conservation and management of cetaceans and other marine mammals.⁵⁶¹

Although in general, Section C does not depart from the agenda set in the *LOSC* and other global instruments for the conservation of high seas marine living resources, there are two prescient objectives which signpost the development of a more holistic approach to the protection and preservation of the marine environment beyond national jurisdiction. Sub-paragraphs 17.46(e) and (f) require States to “protect and restore endangered marine species” and to “preserve habitats and other ecologically sensitive areas”. The language in these sub-paragraphs is close to that of Article 194(5) of the *LOSC* which applies to the effects of marine pollution on the whole marine environment. These objectives align more closely with ecosystem based management concepts and the precautionary approach to ocean space management advocated for the coastal zone in Section A of Chapter 17. Article 17.46(f), in particular, introduces the possibility of applying special protection measures for ecologically sensitive areas of the high seas. Freestone notes that this paragraph is all that remains of a US proposal to designate areas of the high seas beyond national jurisdiction, which could be irreparably damaged before their environmental importance in the ocean system is appreciated, as wild ocean reserves.⁵⁶² Similar concepts had been envisaged in Article 211(6)(a) of the *LOSC* for the EEZ and in the IMO’s 1991

⁵⁶¹ *Agenda 21*, Chapter 17, paras 17.47 and 17.61.

⁵⁶² Freestone, above n 472, 209: “Buried deep in Agenda 21 there is reference to the need ‘to preserve high seas marine habitats and other ecologically sensitive areas’. This is all that remains of a US proposal to recognize the importance of setting aside areas of the high seas beyond national jurisdiction about which we know so little and which could be irreparably damaged before we appreciate their environmental importance to the ocean system. This concept was the brain child of Dr. Sylvia Earle. Her idea was to designate these high seas areas as Wild Ocean Reserves. It is a bold idea; the legal obstacles to establishing an effectively protected area in a part of the ocean that is outside national jurisdictional control are daunting, but it is an attempt to address the

*Guidelines for the Designation of Special Areas and the Identification of Particularly Sensitive Sea Areas*⁵⁶³ which apply to all maritime areas but both these provisions were confined to protective measures associated with shipping

4.6.2.4 *The Legacy of the Agenda 21 Oceans Chapter for the Marine Environment Beyond National Jurisdiction*

While the Oceans Chapter of Agenda 21 fell short of the utopian aspirations of earlier soft law documents for the protection of the marine environment beyond national jurisdiction, it did provide a political fulcrum for initiating discussions and obtaining commitments from States on the protection of the marine environment and the conservation and sustainable use of living resources beyond national jurisdiction. Two important practical outcomes of the Oceans Chapter were the convening of Intergovernmental Conferences on Land Based Sources of Marine Pollution and on Straddling and Highly Migratory Fish Stocks. In addition, the Oceans Chapter secured political endorsement at the global level for an integrated approach to oceans management with supporting principles and implementing mechanisms. The contentious political milieu of UNCED demonstrated the difficulties involved in reaching minimal agreement on measures to protect the marine environment beyond national jurisdiction but also States' preparedness to tackle the challenges incrementally.

level of protection that the biological system needs rather than what it is legally convenient to provide. It could be achieved if the political will to do so existed.”

⁵⁶³ *Guidelines for the Designation of Special Areas and the Identification of Particularly Sensitive Sea Areas*, (6 November 1991) IMO Doc A.720(17). The original guidelines have now been replaced by separate guidelines for particularly sensitive sea areas in IMO Doc Assembly Res. A/22/927 of 29 November 2001, Annex . Both sets of Guidelines are discussed in Chapter 6.

4.7 1992 Convention on Biological Diversity

Although negotiated in a separate process⁵⁶⁴, the *CBD* is closely linked to the vision expounded in the *Rio Declaration* and *Agenda 21* of integrated and ecosystem based management of the environment. Biological diversity is an all encompassing term defined in Article 2 of the Convention as “the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part” including “diversity within species, between species and of ecosystems.” The *CBD* was negotiated under the auspices of UNEP and at the urging of IUCN and other nongovernmental organisations, as a conventional international law framework which would assist states in arresting the alarming rate of extinction of species and the destruction of their habitats.⁵⁶⁵ In the context of the marine environment, the concept of biodiversity is allied to the notion of large marine ecosystems forming an interconnecting web of marine living resources and their habitats.⁵⁶⁶ This comprehensive approach adds new dimensions to the protection of the marine environment which previously, had been largely based on pollution control and the conservation of single species.⁵⁶⁷ The conservation of marine biodiversity entails protection of a range of components in the marine environment including species, ecosystems and genetic material.⁵⁶⁸ This inclusive form of protection also takes into account the social, economic and political factors affecting the various components of marine biodiversity.⁵⁶⁹

⁵⁶⁴ Grubb, Koch, Thomson, Munson & Sullivan, above n.471, 75-76.”

⁵⁶⁵ Birnie & Boyle, above n 487, 569; Grubb, Koch, Thomson, Munson & Sullivan, above n.471, 75; Christopher C. Joyner, ‘Biodiversity in the Marine Environment: Resource Implications for the Law of the Sea’ (1995) 28 *Vanderbilt Journal of Transnational Law*, 635, 644.

⁵⁶⁶ Joyner, above n 556, 637.

⁵⁶⁷ *Ibid.*

⁵⁶⁸ *Ibid.*, 646.

⁵⁶⁹ *Ibid.*, 644

The three key objectives of the *CBD* are expressed in Article 1 of the Convention as the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources. For the purposes of allocating substantive rights and obligations under the Convention, however, the components of biological diversity are divided between those within and beyond the limits of national jurisdiction.

Adopting the language of Principle 21 of the *Stockholm Declaration*, Article 3 of the *CBD* confirms States' sovereignty over their own resources and responsibility for damage to the environment of other States and of areas beyond the limits of national jurisdiction.⁵⁷⁰ Building on this affirmation of sovereign rights over natural resources within national jurisdiction, Article 4 defines the jurisdictional scope of the *CBD* as confined to components of biological diversity in areas within the limits of Contracting Parties jurisdiction and to processes or activities carried out or under the control of Contracting Parties within or beyond national jurisdiction.⁵⁷¹ For the conservation of components of biological diversity beyond national jurisdiction, Article 5 limits the obligations of Contracting Parties to a duty to cooperate directly or through competent international organisations.⁵⁷² The remainder of the *CBD*'s provisions relate to components of biological diversity within national jurisdiction and largely devolve responsibility for their

⁵⁷⁰ Grubb, Koch, Thomson, Munson & Sullivan, above n.471, 77.

⁵⁷¹ Grubb, Koch, Thomson, Munson & Sullivan, above n.471, 77; Joyner, above n.556, 646.

⁵⁷² Grubb, Koch, Thomson, Munson & Sullivan, above n.471, 77; Joyner, above n.556, 646: "Significantly, the Biodiversity Convention imposes no direct management obligations on a party acting individually with regard to the components of biological diversity within another state's national jurisdiction or on the high seas. Parties obligations with respect to high seas resources are limited to 'cooperation' on relevant issues. Parties are obligated to cooperate with respect to areas beyond national jurisdiction and on other matters of mutual interest for the conservation and sustainable use of biological diversity. Other matters of mutual interest might include migratory species, shared sea resources, or maritime activities causing transboundary pollution."

conservation and sustainable use to individual Contracting Parties⁵⁷³ with some provisions relating to cooperation between Contracting Parties on access to and transfer of technology,⁵⁷⁴ distribution of the benefits of biotechnology and provision of financial resources to developing countries.⁵⁷⁵

The *CBD* is more in the nature of a loose template to guide States in their efforts to conserve the components of biodiversity within national jurisdiction rather than a set of binding obligations.⁵⁷⁶ States are accorded a large measure of discretion in how they implement its very general provisions and many of its provisions are qualified with language such as “as far as possible” and “as appropriate”.⁵⁷⁷ Under general measures in Article 6, Contracting Parties are required to develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity and to integrate “as far as possible and as appropriate” the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies. The more specific obligations begin at Article 7 with requirements that Contracting Parties identify components of biological diversity, monitor which of those components require urgent conservation measures and which offer the greatest potential for sustainable use, and identify processes and activities likely to have significant adverse impacts on the conservation and sustainable use of biodiversity. Article 8 specifies *in situ* methods of conservation, placing great emphasis on the establishment of systems of protected areas where special measures need to be taken to conserve biological

⁵⁷³ Grubb, Koch, Thomson, Munson & Sullivan, above n.471, 77.

⁵⁷⁴ *CBD*, Article 16.

⁵⁷⁵ *Ibid*, Articles 19 & 20.

⁵⁷⁶ Lee A. Kimball, ‘The Biodiversity Convention: How to Make it Work’ (1995) 28 *Vanderbilt Journal of Transnational Law* 763, 765; Grubb, Koch, Thomson, Munson & Sullivan, above n. 471, 82-83.

⁵⁷⁷ Kimball, above n.567, 765.

diversity, the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings. Article 9 is a complementary article dealing with the *ex situ* conservation of components of biological diversity outside their natural habitats. Other articles provide for the adoption of economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity⁵⁷⁸, environmental impact assessment of proposed projects that are likely to have significant adverse effects on biological diversity⁵⁷⁹, exchange of information⁵⁸⁰ and technical and scientific cooperation on biological diversity.⁵⁸¹ A number of the remaining provisions deal with the contentious issue of ownership and access to genetic resources.⁵⁸²

In relation to the marine environment, Article 22(2) of the *CBD* specifies that Contracting Parties are to implement the Convention consistently with the rights and obligations of States under the *LOSC*. For the marine environment beyond national jurisdiction, this provision imposes obvious constraints related to accommodating the freedoms of the high seas specified in Part VII of the *LOSC*. Arguably, however, the general obligation of States under Article 192 of the *LOSC* to protect and preserve the marine environment and their more specific obligations to take measures to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species in Article 194(5) of the *LOSC* must now be interpreted in the light of the provisions of the *CBD* and

⁵⁷⁸ *CBD*, Article 11.

⁵⁷⁹ *Ibid*, Article 14.

⁵⁸⁰ *Ibid*, Article 17.

⁵⁸¹ *Ibid*, Article 18.

⁵⁸² *Ibid*, Articles 15 & 19; Grubb, Koch, Thomson, Munson & Sullivan, above n.471, 83.

Agenda 21 on biodiversity protection.⁵⁸³ Birnie discusses the ways in which the provisions of the *LOSC* and other pre UNCED and *CBD* treaties have been liberally interpreted to take account of new conservatory approaches in intertemporal law.⁵⁸⁴ Adopting a liberal interpretation of the provisions in Part XII of the *LOSC*, the duty of Contracting Parties under Article 5 of the *CBD* to cooperate through competent international organisations in respect of areas beyond national jurisdiction for the conservation and sustainable use of biological diversity is simply an amplification of the Article 192 obligation to protect and preserve the marine environment.

Joyner argues that several guiding principles and legal obligations in the *CBD* implicitly relate to protecting the variability of species in the marine environment.⁵⁸⁵ He links the conservation and management of high seas resources to the preservation of international marine biodiversity⁵⁸⁶ and comments that the international efforts that have already been taken to control marine pollution have established a “broad legal framework for protecting and preserving marine biodiversity beyond national jurisdiction”.⁵⁸⁷ Notwithstanding these incremental measures to conserve marine biodiversity beyond national jurisdiction, Joyner notes the lack of a comprehensive legal system for global ecosystem management to protect marine biodiversity⁵⁸⁸ and the deficiencies of the *CBD* in relation to protecting marine biodiversity beyond national jurisdiction.⁵⁸⁹ In his view, the

⁵⁸³ Kimball, above n.556, 769-71

⁵⁸⁴ Patricia Birnie “Are Twentieth Century Marine Conservation Conventions Adaptable to Twenty-First Century Goals and Principles?: Part 1” (1997) 12 *International Journal of Marine and Coastal Law* 307, 338.

⁵⁸⁵ Joyner, above n.556, 647.

⁵⁸⁶ *Ibid*, 653.

⁵⁸⁷ *Ibid*, 655.

⁵⁸⁸ *Ibid*, 654.

⁵⁸⁹ *Ibid*, 650.

keystone for substantiating international efforts to protect biodiversity in the marine environment is contained in Article 197 of the *LOSC* which requires States Parties to “co-operate on a global basis and, as appropriate, on a regional basis...in formulating and elaborating international rules...for the protection and preservation of the marine environment.”⁵⁹⁰

The generality of the *CBD*’s provisions illustrates the need for strong policy making authorities and coordinating mechanisms to develop the measures needed for comprehensive protection of biodiversity and equitable distribution of its benefits. Currently implementation of the biodiversity protection measures and genetic resource distribution provisions envisaged in the Convention is dependent on national control over species, ecosystems and genetic resources. Similar comprehensive protection of marine biodiversity and equitable distribution of genetic resources beyond national jurisdiction is frustrated by the common property status of the marine biodiversity composite beyond national jurisdiction. The current system of ad hoc conventions and devolved flag state responsibility to control particular forms of marine pollution, conserve some of the marine living resources, and protect some of the species beyond national jurisdiction, falls far short of the coordinated system of biodiversity protection foreshadowed in the *CBD*. The attainment of effective environmental protection in maritime areas beyond national jurisdiction will require much greater cohesion among global and regional organisations with regulatory competence in these areas.

⁵⁹⁰ Ibid, 657.

4.7.1 Jakarta Mandate on Coastal and Marine Biodiversity

The *CBD* establishes three main bodies to assist in the implementation of the Convention. The Conference of the Parties (COP) is to keep under review the implementation of the *CBD*, to review scientific, technical and technological advice and to adopt protocols and amendments to the Convention as required.⁵⁹¹

The *CBD* also establishes a Secretariat to perform administrative functions for the COP.⁵⁹² A further Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) is to provide the COP with scientific and technical assessments of the status of biological diversity, the effects of different types of protective measures and advice on scientific programmes and international cooperation in research and development related to the conservation and sustainable use of biological diversity.⁵⁹³ At its first meeting in 1994, the COP determined the provisional agenda for the SBSTTA and accorded priority status to the issue of marine and coastal biodiversity.⁵⁹⁴ SBSTTA considered this item at its first meeting in September 1995 focussing on five thematic issue areas:

- (1) integrated marine and coastal area management;
- (2) marine and coastal protected areas;
- (3) sustainable use of coastal and marine living resources;
- (4) mariculture; and

⁵⁹¹ *CBD*, Article 23.

⁵⁹² *Ibid.* Article 24.

⁵⁹³ *Ibid.* Article 25.

(5) the introduction of alien species.⁵⁹⁵

Following advice from the SBSTTA on the five thematic areas, the Ministerial Segment of the COP at its second meeting in 1995 reached a consensus on the importance of the conservation and sustainable use of marine and coastal biodiversity, which is commonly referred to as the *Jakarta Mandate on Marine and Coastal Biological Diversity (Jakarta Mandate)*.⁵⁹⁶ The *Jakarta Mandate* (Decision II/10) supported the recommendations of the SBSTTA on the five thematic issue areas and added its own conclusions to the SBSTTA conclusions.⁵⁹⁷

Other aspects of the Mandate which are of particular relevance to maritime areas beyond national jurisdiction, are the issues of bio-prospecting for genetic resources on the deep sea-bed, the establishment of representative systems of marine protected areas and the implementation of international instruments relating to marine and coastal biodiversity. Although the *CBD*'s provisions on access to genetic resources and benefit sharing are not applicable to maritime areas beyond national jurisdiction, the *Jakarta Mandate* called upon the *CBD* Secretariat, in consultation with the UN Office for Oceans Affairs and the Law of the Sea (DOALOS), to undertake a study of the relationship between the *CBD* and

⁵⁹⁴ Maas M. Goote, 'Convention on Biological Diversity. The Jakarta Mandate on Marine and Coastal Biological Diversity' (1997)12 *International Journal of Marine and Coastal Law* 377, 378.

⁵⁹⁵ Ibid.

⁵⁹⁶ The *Jakarta Mandate* is reproduced in Annex 5 of Decision II/10 of the COP, Jakarta 6-17 November 1995, UN Doc UNEP/CBD/COP/2/19; Goote, above n. 173, 377; Kaye, above n.487, 277-78; Marjo Vierros, Sam Johnston & Dan Ogalla, 'The Convention on Biological Diversity (CBD) and Marine Protected Areas on the High Seas' in Hjalmar Thiel & J. Anthony Koslow (eds.) *Managing Risks to Biodiversity and the Environment on the High Seas, Including Tools such as Marine Protected Areas – Scientific Requirements and Legal Aspects*, Proceedings of the Expert Workshop held at the International Academy for Nature Conservation, Isle of Vilm, Germany, 27 February – 4 March 2001 (2001) 169.

the *LOSC* with regard to the conservation and sustainable use of genetic resources on the deep sea-bed.⁵⁹⁸ The results of that study are discussed in Chapter 8.

The *Jakarta Mandate* endorsed the recommendations of the SBSTTA on marine and coastal protected areas stating that:

networks of marine and coastal protected areas, other conservation areas and biosphere reserves, provide useful and important management tools for different levels of conservation, management and sustainable use of marine and coastal biological diversity and resources, consistent with customary international law.”⁵⁹⁹

While acknowledging the utility of marine protected areas as a primary tool for conserving marine biodiversity in all areas of the marine environment, the reference to customary international law in this recommendation highlights the jurisdictional constraints which will arise in establishing such areas particularly in locations beyond national jurisdiction.⁶⁰⁰

The Mandate also supports the implementation of international instruments relating to marine and coastal biodiversity in ways that are consistent with and conform to the objectives of the *CBD*. It invites international and regional bodies responsible for such legal instruments, agreements and programmes ‘to review their programmes with a view to improving existing measures and developing new actions which promote conservation and sustainable use of marine biological diversity, taking into account recommendations for action by the parties to the

⁵⁹⁷ Goote, above n.585, 382.

⁵⁹⁸ Lyle Glowka, ‘Beyond the Deepest of Ironies: Genetic Resources, Marine Scientific Research and International Seabed Area’ in Jean Pierre Beurier, Alexandre Kiss and Said Mahmoudi (eds.), *New Technologies and Law of the Marine Environment* (2000) 75, 85.

⁵⁹⁹ Goote, above n.585, 380.

CBD.”⁶⁰¹ The Mandate’s conclusions are relevant to the need for improved coordination between international and regional bodies with responsibilities relating to the conservation of marine biodiversity and the protection and preservation of the marine environment beyond national jurisdiction.

4.8 World Summit on Sustainable Development – Johannesburg 2002

Although it did not specifically address the protection of the marine environment beyond national jurisdiction in any detail, the World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002 reaffirmed the commitment of the international community to all the major hard and soft law instruments which had emerged in earlier years on the protection and preservation and of the marine environment. The fundamental theme of many of the oceans related recommendations contained in its Plan of Implementation was a call for states to make existing global and regional instruments and arrangements work more effectively to protect the marine environment and its biodiversity rather than a call for the creation of new multilateral instruments or institutions. The Plan of Implementation notes that the oceans form an integrated and essential component of the Earth’s ecosystem which is critical for global food security and economic prosperity.⁶⁰² The key to ensuring sustainable development of the oceans is identified as the effective coordination and cooperation of relevant bodies at the global and regional levels.⁶⁰³ The *LOSC* is endorsed as providing the overall

⁶⁰⁰ Ibid.

⁶⁰¹ Ibid, 383-4.

⁶⁰² *Report of the World Summit on Sustainable Development*, 26 August – 4 September 2002, Johannesburg, UN Doc A/CONF.199/20, Annex, para 30, <http://daccessdds.un.org/doc/UNDOC/GEN/NO2/636/93/PDF/NO263693.pdf?Open+Element> at 15 Sep 2005

⁶⁰³ Ibid.

framework for oceans activities⁶⁰⁴ while Chapter 17 of *Agenda 21* and the *Jakarta Mandate* are recognised as providing the programme of action for achieving the related objectives of sustainable development of oceans⁶⁰⁵ and the conservation of marine biodiversity.⁶⁰⁶ Some of the actions recommended in the Plan of Implementation include the maintenance of the productivity and biodiversity of important marine areas within and beyond national jurisdiction,⁶⁰⁷ the development and application of the ecosystem approach in fisheries conservation and management by 2010⁶⁰⁸, the elimination of destructive fisheries practices,⁶⁰⁹ the establishment of marine protected areas including representative networks of such areas by 2012 and time/area closures for the protection of nursery fishing grounds.⁶¹⁰ States are encouraged to develop regional and international programmes for halting the loss of marine biodiversity.⁶¹¹ There is a specific recommendation to establish an effective, transparent and regular interagency coordination mechanism on ocean and coastal issues within the UN system⁶¹² and to strengthen regional cooperation and coordination between the relevant regional organisations and programmes including the UNEP regional sea programmes and the regional fisheries management organisations.⁶¹³

⁶⁰⁴ Ibid, para 30(a).

⁶⁰⁵ Ibid, para 30(b).

⁶⁰⁶ Ibid, para 32(b).

⁶⁰⁷ Ibid, para 32(a).

⁶⁰⁸ Ibid, paras 30(d) & 32(c).

⁶⁰⁹ Ibid, para 32(c).

⁶¹⁰ Ibid, para 32(c).

⁶¹¹ Ibid, para 32(d).

⁶¹² Ibid, para 30(c).

⁶¹³ Ibid, para 30 (f).

4.9 UN Informal Consultative Process on Oceans and the Law of the Sea (UNICPOLOS) – 2000-2005

The disjunction between the policy fora considering integrated oceans management and the States Parties to the LOSC was formally recognised by the Commission for Sustainable Development (CSD)⁶¹⁴ at its Seventh Session in 1999. To remedy this, the conclusions of CSD 7 recognised the need for a more specialised preparation for the UN General Assembly's (UNGA) annual debates on oceans and law of the sea and the need to reconcile legal issues arising out of the LOSC with developing policy aspirations on integrated oceans management. CSD 7 recommended that the UNGA set up a mechanism to provide for more detailed and expert preparation of the UNGA Oceans debates.⁶¹⁵ On 17 November 1999, at its 54th Session, the UNGA passed Resolution 54/33 to establish the UN Open-Ended Informal Consultative Process on Oceans (UNICPO) to facilitate annual review by the UNGA of developments in Ocean Affairs. The process later became known as the UN Informal Consultative Process on Oceans and the Law of the Sea (UNICPOLOS). While the initial establishment of UNICPOLOS was not without political controversy,⁶¹⁶ its six meetings have raised the profile of issues associated with protecting the marine environment beyond national jurisdiction and identified a range of oceans management issues which could benefit from enhanced coordination between UN organisations and national governments. The fifth meeting of UNICPO in 2004 discussed new and sustainable uses of the oceans including the conservation and management of the

⁶¹⁴ Gunmar Kullenberg, 'Global International Organizations and the Implementation of the Law of the Sea Convention' in Davor Vidas & Willy Ostreng (eds.), *Order for the Oceans at the Turn of the Century* (1999) 343, 352: "Following UNCED the Commission on Sustainable Development was created, as an intergovernmental mechanism to follow the implementation."

⁶¹⁵ Alan J. C. Simcock, 'The UN Open-ended Informal Consultative Process on the Oceans and the Law of the Sea (UNICPOLOS) – Current Status, in Thiel & Koslow, above n. 587, 133, 134. The acronym UNICPO was later changed to UNICPOLOS.

⁶¹⁶ *Ibid*, 134-135.

biodiversity of the seabed in areas beyond national jurisdiction.⁶¹⁷ Following that meeting an ad hoc open-ended informal working group was established to study issues relating to the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction by the UN General Assembly and will convene for its first meeting in February 2006.⁶¹⁸ A proposal by UNICPOLOS also led to the establishment of an intergovernmental coordination mechanism for the consideration of oceans issues within the UN system in 2004 which has a task force dealing with biodiversity in marine areas beyond national jurisdiction.⁶¹⁹ UNICPOLOS has the potential to engender further discussion and action at the global level on the protection and preservation of the marine environment beyond national jurisdiction and through its direct reporting function to UNGA, exercises significant political influence on the issues considered by the UNGA in its annual debate on Oceans and the Law of the Sea.

4.10 Conclusions

In the three decades since the 1972 *Stockholm Declaration* a corpus of general principles has emerged which apply equally to the protection and preservation of the marine environment both beyond and within national jurisdiction. The predominant policy objective in the more recent instruments and soft law documents reviewed has been the adoption of integrated ecosystem based management of the oceans which promotes rational use of marine resources and a

⁶¹⁷ *Report on the Work of United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its Fifth Meeting*, (1 July 2004), UN Doc A/59/122, paras 56-94, <http://daccessdds.un.org/doc/UNDOC/GEN/NO4/412/21/PDF/NO441221.pdf/OpenElement> at 15 September 2005.

⁶¹⁸ *Report on the Work of United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its Sixth Meeting*, (7 July 2005), UN Doc A/60/99, paras 42-43, <http://daccessdds.un.org/doc/UNDOC/GEN/NO5/414/01/PDF/NO541401.pdf?OpenElement> at 15 September 2005.

⁶¹⁹ *Ibid*, para, 101.

precautionary approach to the protection of the marine environment.⁶²⁰ This objective has always been qualified with the prescription that marine environmental protection policies must be implemented consistently with the rights and obligations of States under the law of the sea as reflected in the provisions of the *LOSC*.⁶²¹ The implementation of an integrated approach to the protection and preservation of the marine environment endorsed in the Oceans Chapter of *Agenda 21* and the *CBD* relies on strong central coordinating authorities with the power to develop and enforce strategies to conserve and sustainably use marine biodiversity. National authorities have the necessary power to balance existing ocean uses in maritime areas within national jurisdiction with measures to protect and preserve the marine environment. Under the current divisions of ocean space established in the *LOSC*, a jurisdictional vacuum exists in relation to many aspects of marine environmental protection beyond national jurisdiction. Although some regional organisations and individual states through their flag state jurisdiction have disparate responsibilities for the protection and preservation of the marine environment beyond national jurisdiction, there is no central authority at the global level to monitor the state of the marine environment beyond national jurisdiction and implement protective measures on a holistic basis. In maritime areas within national jurisdiction, States have sufficient discretion and authority under the provisions of the *LOSC* and other international law instruments to begin implementing measures associated with an integrated ecosystem based approach to oceans management. The implementation of similar measures in the marine environment beyond national jurisdiction will require supplementation of the general provisions in instruments such as the *LOSC* and

⁶²⁰ Birnie, above n.575, 322.

⁶²¹ See *CBD*, Article 22(2); *Agenda 21*, Chapter 17, para. 17.1.

the *CBD* relating to the protection and preservation of the marine environment beyond national jurisdiction. Amplification of these provisions would then form the basis for enhanced coordination between States and global and regional organisations with responsibilities in the marine environment beyond national jurisdiction.

Chapter 5 The Exploitation of Marine Living Resources Beyond National Jurisdiction – Environmental Regulation

5.1 Introduction

Since the negotiation of the *UN Fish Stocks Agreement*⁶²² in the mid 1990s, an eclectic mixture of regional instruments has evolved to regulate the exploitation of marine living resources beyond national jurisdiction. In some cases the jurisdiction of existing single and multi species regional fisheries management instruments has been extended to high seas areas while in others completely new regional instruments have been negotiated to regulate multi species exploitation in substantial areas both within and beyond national jurisdiction. The extent to which international environmental law principles have been incorporated in these instruments and the introduction of practical environmental protection measures in areas beyond national jurisdiction is variable. This chapter will review the scope of application and the environmental protection provisions of the *UN Fish Stocks Agreement* and related instruments at the global and regional levels which address the development, conservation and management of marine living resources beyond national jurisdiction. The analysis will focus on the practical implementation of measures designed to promote sustainable development, the precautionary approach and whether any steps have been taken to implement an integrated and ecosystem based approach to the conservation and management of marine living resources and biodiversity beyond national jurisdiction. The methods used to enforce and promote compliance with these measures will also be reviewed. The policies of the European Union on conserving and managing marine living resources beyond national jurisdiction will be examined as a

⁶²² 1995 *Agreement for the Implementation of the Provisions of the UN 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*, 2167 UNTS 3 (*UN Fish Stocks Agreement*).

significant indicator of the state practice and *opinio juris* of a large group of states subject to common international law obligations and integrated policy directives and with considerable influence in relevant multilateral organisations. The extent to which the International Whaling Commission has implemented environmental protection principles in its regulation of whaling beyond national jurisdiction will also be discussed. Based on this analysis an assessment will be made of the extent of environmental protection measures currently being implemented in marine living resource exploitation regimes beyond national jurisdiction and potential areas for improving such protection.

5.2 High Seas Fisheries

Environmental commentators and marine scientists now identify overfishing and destructive fisheries practices as two of the principal threats to the marine environment beyond national jurisdiction.⁶²³ The root causes of these threats include over-capitalisation of fishing fleets, inadequate adoption and implementation of conservation and management measures in many areas of the high seas, insufficiently selective fishing gear, reflagging of fishing vessels to escape control and lack of cooperation and communication between states in addressing these issues.⁶²⁴ It is only in recent decades that the international community has begun to tackle these problems in conjunction with efforts to

⁶²³ WWF/ IUCN/WCPA, *The Status of the Natural Resources of the High Seas* (2001), 65; J. Anthony Koslow, 'Fish Stocks and Benthos of Seamounts' in Hjalmar Thiel & J. Anthony Koslow (eds.) *Managing Risks to Biodiversity and the Environment on the High Seas, Including Tools such as Marine Protected Areas – Scientific Requirements and Legal Aspects*, Proceedings of the Expert Workshop held at the International Academy for Nature Conservation, Isle of Vilm, Germany, 27 Feb – 4 March 2001, 43; Rosemary Rayfuse & Martijn Wilder, 'Sustainability, Uncertainty and Global Fisheries' in J.W. Handmer, T.W. Norton and S.R. Dovers(eds.), *Ecology, Uncertainty and Policy* (2001) 138; Ellen Hey, 'Global Fisheries Instruments Adopted in the Post UNCLOS III Period' in Ellen Hey (ed.) *Developments in International Fisheries Law* (1999) 3, 4-5.

⁶²⁴ Rayfuse and Wilder, above n.614.

improve conservation and management of marine living resources within national jurisdiction.⁶²⁵ The legal framework governing the exploitation of marine living resources beyond national jurisdiction still recognises the open access status of these resources but has progressively introduced provisions designed to induce states to cooperate in the conservation and management of such resources. The basic principle of freedom of fishing on the high seas survived in the *LOSC* but was qualified with provisions recognising the duty of states to cooperate in the conservation and management of living resources in areas of the high seas.⁶²⁶ The Oceans Chapter of *Agenda 21* amplified this duty with an array of international environmental law principles to be applied in the conservation and management of marine living resources in both coastal and open ocean areas. UNCED also provided the impetus for the international community to begin implementing this obligation for straddling and highly migratory fish stocks by agreeing to convene an intergovernmental conference which negotiated the *UN Fish Stocks Agreement*.

5.2.1 Global Instruments

5.2.1.1 *UN Fish Stocks Agreement*

Following the political consensus achieved at UNCED to convene an intergovernmental conference on straddling fish stocks and highly migratory stocks the *UN Fish Stocks Agreement* was concluded in 1995 and entered into force on 11 December 2001. It currently has 56 States Parties and 59 signatories.⁶²⁷ Although this participation level represents less than half the

⁶²⁵ Christopher J. Carr & Harry N. Scheiber 'Dealing with a Resource Crisis: Regulatory Regimes for Managing the World's Marine Fisheries' 21 *Stanford Environmental Law Journal* (2002) 45; Hey, above n. 614, 4.

⁶²⁶ *LOSC*, Arts. 117 - 119

⁶²⁷ Status of Multilateral Treaties deposited with the Secretary General Part I Chapter XXI < [http://untreaty.un.org/ENGLISH/bible/englishinternetbible/part I/chapterXXI/treaty 9.asp](http://untreaty.un.org/ENGLISH/bible/englishinternetbible/part%20I/chapterXXI/treaty%209.asp) > at 12 October 2005.

international community some of the world's major fishing states are represented among the States Parties including the European Union and the majority of its members as individual ratifying parties,⁶²⁸ Norway, the Russian Federation and the United States. Japan the Republic of Korea and China are signatories but not parties to the *UN Fish Stocks Agreement* and therefore are bound not to defeat its object and purpose.⁶²⁹ Much of the state practice related to the implementation of the *UN Fish Stocks Agreement* occurs through states' participation in regional fisheries management organisations (RFMOs).

As well as the environmental protection rationales for negotiating the *UN Fish Stocks Agreement*, there were also strong economic incentives for coastal states to establish a regime for conservation and management of straddling and highly migratory fish stocks beyond national jurisdiction which was compatible with the conservation and management regimes in their exclusive economic zones. Following the extension of coastal state jurisdiction over marine living resources to 200 nautical miles under the *LOSC*, high seas fishing fleets had been concentrating much of their effort in areas immediately adjacent to exclusive economic zones. This was one of the causes leading to over exploitation of straddling stocks and highly migratory stocks which spend part of their life cycles in these areas. Coastal states efforts to conserve and manage these stocks in the exclusive economic zones were destined to fail without compatible measures

⁶²⁸ Ibid, The members of the European Union (EU) in their declarations upon ratification of the UN Fish Stocks Agreement all adopt the declarations made by the European Union which set out the EU's competences and the competences of member states in implementing the agreement. Issues related to enforcement of flag state jurisdiction on the high seas are within the competence of member states rather than the EU.

⁶²⁹ 1969 *Vienna Convention on the Law of Treaties*, 1155 UNTS 331, (*Vienna Treaties Convention*), art. 18.

being taken in adjacent high seas areas.⁶³⁰ The *UN Fish Stocks Agreement* provided the first comprehensive blueprint for sustainable fisheries management in areas beyond national jurisdiction and a template for cooperation between coastal states and flag states with high seas fishing fleets. In addition to codifying all the relevant international environmental law principles it provides practical guidance for RFMOs charged with implementing the agreement and an enforcement system which relies on the cooperation of flag states rather than relying solely on the individual efforts of flag states to enforce compliance.⁶³¹

Objectives and Scope of Application

The objective of the UN Fish Stocks Agreement, stated in Article 2, is “to ensure the long term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks through effective implementation of the relevant provisions of the Convention” For the purpose of the agreement, the term “the Convention” is defined as the LOSC in Article 1 and Article 4 specifies that the agreement is to be interpreted and applied in the context of and in a manner consistent with the LOSC. This formulation recognises the primacy of the LOSC framework for ocean governance and the continuing applicability of the rights, jurisdiction and duties of states under that instrument. The UN Fish Stocks Agreement is designed to conserve and manage straddling and highly migratory fish stocks both within and beyond national jurisdiction. Two of its articles apply directly to conservation and management measures for such stocks within national jurisdiction⁶³² and states are enjoined to apply the general principles enumerated in Article 5 of the

⁶³⁰ Jamison E. Colburn, ‘Turbot Wars: Straddling Stocks, Regime Theory, and a New UN Agreement’ (1997) 6 *Journal Of Transnational Law*, 323, 335.

⁶³¹ Andre Tahindro ‘Conservation and Management of Transboundary Fish Stocks: Comments in Light of the Adoption of the 1995 Agreement for the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks’ (1997) 28 *Ocean Development and International Law* 1, 2.

agreement to the conservation and management of such stocks within national jurisdiction.

Incorporation of International Environmental Principles

Many of the international environmental law principles contained in the Oceans Chapter of Agenda 21 have been directly incorporated into Article 5 of the UN Fish Stocks Agreement. Reference is made to a panoply of principles including adopting measures to ensure the long term sustainability of straddling and highly migratory fish stocks,⁶³³ ensuring that such measures are based on the best scientific evidence available,⁶³⁴ applying the precautionary approach,⁶³⁵ assessing the impacts of fishing, other human activities and environmental factors on target stocks and species belonging to the same ecosystem,⁶³⁶ minimising pollution and catch of non target species,⁶³⁷ protecting biodiversity in the marine environment,⁶³⁸ promoting scientific research in support of fisheries conservation and management⁶³⁹ and implementing and enforcing conservation and management measures through effective monitoring, control and surveillance.⁶⁴⁰

The real value of the UN Fish Stocks Agreement in the implementation of international environmental law principles beyond national jurisdiction is its translation in later articles, of some of the more general principles into practical recommendations for cooperative action by States Parties either directly or through subregional or regional fisheries management organisations. Article 6

⁶³² *UN Fish Stocks Agreement*, Arts. 6 & 7.

⁶³³ *Ibid*, Art. 5(a)

⁶³⁴ *Ibid*, Art. 5(b)

⁶³⁵ *Ibid.*, Art. 5(c)

⁶³⁶ *Ibid*, Article 5(d)

⁶³⁷ *Ibid*, Article 5(f)

⁶³⁸ *Ibid*, Article 5(g)

⁶³⁹ *Ibid*, article 5(k)

contains a very comprehensive description of how the precautionary approach can be interpreted and applied in the conservation of straddling and highly migratory fish stocks. The measures prescribed, while consistent with a precautionary approach, can also be related to other environmental law principles including sustainable development, use of best scientific evidence, environmental impact assessment and ecosystem based management. The Article 6(2) formulation of the precautionary approach sets the threshold for the application of such an approach a little lower than that specified in Principle 15 of the Rio Declaration.⁶⁴¹ States are enjoined to “be more cautious when information is uncertain, unreliable or inadequate” and the article further provides that “the absence of adequate scientific information is not be used as a reason for postponing or failing to take conservation and management measures.” The remaining provisions in Article 6 specify a range of measures to implement the precautionary approach. States are required to improve decision making for fishery resource conservation and management by obtaining and sharing the best scientific information available and implementing improved techniques for dealing with risk and uncertainty.⁶⁴² On the basis of the best scientific information available, states are required to determine stock specific reference points which constrain harvesting of fish stocks within safe biological limits within which the stocks can produce maximum sustainable yield. These precautionary reference points are also to be used to develop management strategies to prevent stocks falling below sustainable levels.⁶⁴³

⁶⁴⁰ Ibid, Article 5(l)

⁶⁴¹ See Chapter 4. Principle 15 of the Rio Declaration provided that where there are threats of serious and irreversible damage to the environment, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation.

⁶⁴² *UN Fish Stocks Agreement*, Art. 6(3)(a).

⁶⁴³ Ibid, Article 6(3)(b) & Annex II

The links between straddling and highly migratory stocks and other parts of the marine ecosystem are recognised in Article 6(3)(c) and (d) of the UN Fish Stocks Agreement which requires States Parties to take into account the impact of fishing activities on non target and associated or dependent species and to develop data collection and research programs to assess the impact of fishing on non target and associated or dependent species and their environment and to adopt plans which are necessary to ensure the conservation of such species and to protect habitats of special concern.⁶⁴⁴ Cautious conservation and management measures including catch and effort limits are recommended for new or exploratory fisheries until sufficient data to allow assessment of the impact of the fisheries on the long term sustainability of the stocks is available.⁶⁴⁵ While specific in its recommendations, Article 6 still allows States Parties a degree of latitude in applying a precautionary approach to the conservation and management of straddling and highly migratory fish stocks.

The UN Fish Stocks Agreement extrapolates the fisheries enforcement powers contained in the LOSC by providing for a cooperative system of monitoring compliance and enforcement on the high seas which involves States Parties to the agreement, RFMOs and port states. In addition to providing for a cooperative enforcement system on the high seas, the agreement seeks to amplify and strengthen individual flag state responsibility on the high seas by specifying minimum standards for compliance by States Parties whose vessels fish for highly migratory and straddling stocks on the high seas. Article 18 is a primer for

⁶⁴⁴ The requirement to protect habitats of special concern in Article 6(3)(d) of the *UN Fish Stocks Agreement* extends the requirement under Article 194(5) of the *LOSC*, in the context of pollution of the marine environment, to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life, to the conservation of marine living resources.

rigorous flag state enforcement of conservation and management measures agreed at sub regional , regional or global level for highly migratory and straddling stocks. This article is a direct response to the problems highlighted in Agenda 21 of lax flag state control.⁶⁴⁶ Article 18 provides that flag states should exercise control over their flag vessels on the high seas by means of fishing licences, authorisations or permits and prohibit fishing on the high seas by vessels which are not duly authorised.⁶⁴⁷ States Parties are required to establish a national record of their flagged fishing vessels authorised to fish on the high seas and to specify requirements for marking of fishing vessels and gear which accord with internationally recognisable standards.⁶⁴⁸ They must also introduce systems for reporting vessel positions, recording catch of target and non target species and fisheries effort which accord with subregional, regional and global standards.⁶⁴⁹ The development and implementation of vessel monitoring systems including satellite transmitter systems is included in the array of measures prescribed under the article.⁶⁵⁰ Under Article 19, States Parties are required to introduce stringent systems of enforcing the control measures specified in Article 18 including immediate investigations of any alleged violation of subregional or regional conservation measures⁶⁵¹ and the imposition of sanctions adequate in severity to discourage violations and to ensure that offenders are deprived of the benefits accruing from illegal fishing.⁶⁵²

⁶⁴⁵ *UN Fish Stocks Agreement*, Art. 6(6).

⁶⁴⁶ *Agenda 21*, Chapter 17, paras 17.50, 17.51 * 17.52.

⁶⁴⁷ *UN Fish Stocks Agreement*, Art. 18(3)(a) & (b) (ii).

⁶⁴⁸ *Ibid.*, Art. 18(3)(c) & (d).

⁶⁴⁹ *Ibid.*, Art. 18(3)(e) & (f).

⁶⁵⁰ *Ibid.*, Art. 18(3)(g)(iii).

⁶⁵¹ *Ibid.*, Art. 19(1)(a)&(b).

⁶⁵² *Ibid.*, Art. 19(2).

The UN Fish Stocks Agreement provides for a qualified right of reciprocal boarding and investigation on the high seas.⁶⁵³ Article 21 of the agreement specifies the circumstances in which a flag state other than the flag state of the fishing vessel may board and investigate an alleged violation of conservation and management measures on the high seas. In any high seas area covered by an RFMO or arrangement, a State Party which is a member of the organisation or arrangement may send its duly authorised inspectors to board and inspect the fishing vessels of other flag states which are party to the agreement.⁶⁵⁴ Where there are clear grounds for believing that a vessel has engaged in any activity contrary to the conservation and management measures of the RFMO or arrangement, the inspecting state must notify the flag state promptly and the flag state is required to respond within three working days. The flag state may either fulfil its obligation to investigate the alleged violation or authorise the inspecting state to investigate.⁶⁵⁵ Where the flag state either fails to respond or take action the inspecting state may proceed with the investigation including bringing the vessel to the nearest appropriate port.⁶⁵⁶ These provisions extend the very limited circumstances under customary international law and the LOSC, in which flag vessels may be boarded by the officials of other flag states.⁶⁵⁷

The port state jurisdiction provisions of the UN Fish Stocks Agreement, while not as expansive as those contained in Article 218 of the LOSC for vessel source

⁶⁵³ E.J. Molenaar, 'Participation, Allocation and Unregulated Fishing: The Practice of Regional Fisheries Management Organizations' (2003) 18(4) *International Journal of Marine and Coastal Law* 457, 473.

⁶⁵⁴ *UN Fish Stocks Agreement*, Art. 21(1).

⁶⁵⁵ *Ibid*, Art. 21(5)&(6).

⁶⁵⁶ *Ibid*, Art. 21(8).

⁶⁵⁷ These circumstances are outlined in Article 110 of the *LOSC* which codifies customary international law on this point.

discharge restrictions,⁶⁵⁸ empower port states to inspect documents, fishing gear and catch on board fishing vessels where such vessels are voluntarily in their ports or their offshore terminals and to prohibit landings and transshipments where it has been established that the catch has been taken in a manner which undermines the effectiveness of subregional, regional or global conservation and management measures on the high seas.⁶⁵⁹ Commentators generally concur that the port state powers in the UN Fish Stocks Agreement represent an expansion of port state competence that is consistent with overarching principles of general international law such as the duty of states to cooperate in conserving the living resources of the high seas under article 118 of the LOSC.⁶⁶⁰

5.2.1.2 (FAO) High Seas Compliance Agreement

The 1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (High Seas Compliance Agreement)⁶⁶¹ was negotiated through the sponsorship of the Food and Agricultural Organization (FAO) to articulate and reinforce the responsibilities of flag states in respect of fishing vessels entitled to fly their flags and operating on the high seas and to deter the practice of flagging or reflagging fishing vessels as a means of avoiding compliance with international conservation and management measures for marine living resources.⁶⁶² The agreement

⁶⁵⁸ Francisco Orrego Vicuna, *The Changing International Law of High Seas Fisheries* (1999), 259. The provisions of Article 218 of the LOSC allow for investigation and prosecution of violations of vessel source discharge restrictions having taken place in the high seas or other areas.

⁶⁵⁹ *UN Fish Stocks Agreement*, Art. 23(2)&(3).

⁶⁶⁰ Rosemary Rayfuse, 'The Interrelationship between the Global Instruments of International Fisheries Law' in Ellen Hey (ed.), *Developments in International Fisheries Law* (1999) 107, 153; Vicuna, above n.614, 259 sees the *UN Fish Stocks Agreement* as having significantly contributed to the development of the international law of high seas fisheries in respect of port state enforcement.

⁶⁶¹ 1993 *Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas*, 33 ILM 968 (*High Seas Compliance Agreement*)

⁶⁶² *Ibid*, Preamble.

originated from calls for action contained in the Declaration of Cancun⁶⁶³ and in Agenda 21⁶⁶⁴ for States to take effective action to deter reflagging of their vessels by their nationals to flags with less stringent compliance regimes for fishing activities on the high seas.

The High Seas Compliance Agreement relies on individual flag states implementing a range of measures in respect of fishing vessels flying their flag and operating on the high seas to ensure that such vessels do not undermine the effectiveness of international conservation and management measures. These include authorising the operation of such vessels through appropriate flag state authorities,⁶⁶⁵ complying with international standards for marking and identification of such vessels,⁶⁶⁶ maintaining a record of fishing vessels entitled to fly the States Parties flag and authorised to fish on the high seas,⁶⁶⁷ providing relevant identification details for vessels to the FAO⁶⁶⁸ and exchanging information including evidentiary material relating to the activities of fishing vessels with other States Parties to the agreement.⁶⁶⁹ States Parties to the agreement are also required to be satisfied that they are able, taking into account

⁶⁶³ The Declaration of Cancun was the outcome of the International Conference on Responsible Fishing held at Cancun in May 1992 and was adopted by the Food and Agricultural Organization Council at its 102nd session in Rome in November 1992. It is reproduced in FAO, *Technical Papers presented at the Technical Consultation on High Seas Fishing*, Rome 7-15 September 1992, (Rome: FAO, 1992), Fisheries Report No. 484 Supplement, p.70. Principle 13 of the Declaration provided that: "States should take effective action, consistent with international law to deter reflagging of vessels as a means of avoiding compliance with conservation and management rules for fishing activities on the high seas."

⁶⁶⁴ *Agenda 21*, Chapter 17, paras. 17.51 & 17.52.

⁶⁶⁵ *High Seas Compliance Agreement* Art. III(2).

⁶⁶⁶ *Ibid*, Art. III(6).

⁶⁶⁷ *Ibid*, Art. IV.

⁶⁶⁸ *Ibid*, Art. VI.

⁶⁶⁹ *Ibid*, Art. V(1).

the links that exist between them and the fishing vessels concerned, to exercise their flag states responsibilities effectively.⁶⁷⁰

Although well intentioned the High Seas Compliance Agreement did not introduce many innovative measures or incentives for states to improve their levels of monitoring compliance or enforcing sanctions against fishing vessels which transgressed international conservation and management measures on the high seas.⁶⁷¹ Cooperative regimes for monitoring and surveillance of fishing vessels on the high seas are not a feature of the agreement and the onus is placed principally on individual flag states to strengthen monitoring and enforcement measures against their own flag vessels. Only 31 states have become party to the agreement⁶⁷² but these include some of the most active fishing states such as Japan, Norway, the Republic of Korea, the United States and the European Union. State practice in RFMOs has gone beyond the High Seas Compliance Agreement in some regions to encompass cooperative compliance monitoring and enforcement schemes for some species beyond national jurisdiction.

5.2.1.3 *FAO Code of Conduct for Responsible Fisheries*

The Code of Conduct for Responsible (the Code)⁶⁷³ is a non binding instrument which was designed to provide guidance to states on concepts and measures which would lead to responsible and sustained fisheries.⁶⁷⁴ It was drafted in

⁶⁷⁰ Ibid, Art. III(3).

⁶⁷¹ Art V(2) did make an incremental improvement to port state jurisdiction by requiring the port state promptly to notify the flag state when a fishing vessel is voluntarily in its port and there are reasonable grounds for believing that it has engaged in an activity undermining the effectiveness of international conservation and management measures.

⁶⁷² FAO Legal Office Treaties, <<http://www.fao.org/legal/treaties/012s-e.htm>> at 14 October 2005.

⁶⁷³ 1995 *Code of Conduct for Responsible Fisheries*, 11 International Organization and the Law of the Sea Documentary Yearbook (1995) 700 (*Code*).

⁶⁷⁴ Ibid, Preface, v.

response to the Declaration of Cancun which called on the FAO to draft an International Code of Conduct for Responsible Fishing in the light of the Declaration as whole and was adopted unanimously by the member states of FAO in 1995. It is an extensive primer on best practice in fisheries management which is largely a reference document for the wide range of actors in the fisheries process.⁶⁷⁵ This analysis will address those Articles of the Code which are most relevant to fishing activities which occur beyond national jurisdiction.

Objectives and Scope of Application

The Code is an ambitious and aspirational document which declares itself as being “global in scope and directed to all actors in the fisheries process.”⁶⁷⁶ A key objective of the Code, stated in the Introduction, is to “set out principles and international standards of behaviour for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity”.⁶⁷⁷ Under other objectives the Code seeks to influence States in establishing their national policies and legal and institutional frameworks for responsible fisheries,⁶⁷⁸ provide guidance for the formulation and implementation of international agreements,⁶⁷⁹ promote technical cooperation in conservation of fisheries resources and fisheries management,⁶⁸⁰ promote research on fisheries as well as on associated ecosystems⁶⁸¹ and provide standards of conduct for all persons

⁶⁷⁵ W.R. Edeson, ‘Soft and Hard Law Aspects of Fisheries Issues: Some Recent Global and Regional Approaches’ in M. H. Nordquist, J.N. Moore & S. Mahmoudi (eds.), *The Stockholm Declaration and Law of the Marine Environment* (2003), 165, 167.

⁶⁷⁶ Code, Art. 1.2

⁶⁷⁷ Ibid, Introduction.

⁶⁷⁸ Ibid, Art. 2(b).

⁶⁷⁹ Ibid, Article 2(d).

⁶⁸⁰ Ibid, Article 2(e).

⁶⁸¹ Ibid, Art. 2(i).

involved in the fisheries sector.⁶⁸² FAO has undertaken to monitor the implementation of the Code and its effects on fisheries and to report to its Committee on Fisheries.⁶⁸³

Incorporation of International Environmental Law Principles

There is a strong emphasis throughout the *Code* on international environmental law principles contained in Chapter 17 of *Agenda 21*. States are exhorted to prevent overfishing and excess fishing capacity and to implement management measures to ensure that fishing effort is commensurate with the productive capacity of the fishery resources and their sustainable utilisation.⁶⁸⁴ The twin objectives of long term sustainability and optimum utilisation of fisheries resources are emphasised. The *Code* recommends that conservation and management decisions for fisheries should be based on the best scientific evidence available as well as relevant environmental, economic and social factors.⁶⁸⁵ States and sub regional and regional fisheries management organisations are advised to apply a precautionary approach widely to conservation, management and exploitation of living aquatic resources taking account of the best scientific evidence available.⁶⁸⁶ The precautionary approach is expressed in similar terms to the *UN Fish Stocks Agreement* formulation providing that “the absence of adequate scientific information should not be used as a reason for postponing or failing to take measures to conserve target species, associated dependent species and non target species and their environment.”⁶⁸⁷

Throughout the General Principles article of the *Code*, the interdependence of all

⁶⁸² Ibid, Art. 2(j).

⁶⁸³ Ibid, Art. 4.2.

⁶⁸⁴ Ibid, Art. 6.3.

⁶⁸⁵ Ibid, Art. 6.4.

⁶⁸⁶ Ibid, Art. 6.5.

⁶⁸⁷ Ibid, Art. 6.5

parts of the marine ecosystem is recognised and the need for fisheries conservation and management decisions to take into account components of associated or dependent ecosystems⁶⁸⁸ and to protect critical fisheries habitats.⁶⁸⁹ States are encouraged to develop and apply selective and environmentally safe fishing gear and practices in order to maintain biodiversity, to conserve the population structure and aquatic ecosystems and to minimise catch of and impacts on non target species.⁶⁹⁰

The *Code* does not address the conservation and management of fisheries beyond national jurisdiction in any detail but it does reiterate the need for States to cooperate in ensuring the effective conservation of transboundary, straddling, highly migratory and high seas fish stocks and encourages them to establish bilateral sub regional or regional fisheries organisations for this purpose.⁶⁹¹ The need for conservation and management measures for these stocks to be compatible throughout their range both within and beyond national jurisdiction is emphasised.⁶⁹² Flag state responsibilities for monitoring, control, surveillance and enforcement of conservation and management measures for their flag vessels in waters within and beyond national jurisdiction are outlined⁶⁹³ and states are encouraged to become party to the *High Seas Compliance Agreement*.⁶⁹⁴ which has been incorporated as an integral part of the Code.⁶⁹⁵ Edeson notes that the Code has come to play a fundamental role in the formulation of fisheries policies

⁶⁸⁸ Ibid, Art. 6.6.

⁶⁸⁹ Ibid, Art. 6.8.

⁶⁹⁰ Ibid, Art. 6.6.

⁶⁹¹ Ibid, Art. 7.1.3.

⁶⁹² Ibid, Art. 7.3.2.

⁶⁹³ Ibid, Art. 8.1 and 8.2.

⁶⁹⁴ Ibid, Art. 8.2.6.

⁶⁹⁵ Ibid, Art. 1.1

at global, regional and subregional level and has been adapted to take account of the characteristics of particular regions.⁶⁹⁶

5.2.1.4 *Implementation and Enforcement*

This section will examine how states have implemented and enforced the provisions of global instruments which address the conservation and management of fish stocks beyond national jurisdiction. This review of state practice will include the instruments and policies of regional fisheries management organisations with regulatory competence in substantial high seas areas and European Union policies on fisheries beyond national jurisdiction. Agreements relating to the exploitation of marine living resources in smaller high seas enclaves are not considered.

5.2.2 *Regional Instruments*

The FAO website lists over 40 RFMOs whose areas of interest cover five broad oceanic regions.⁶⁹⁷ Not all the RFMOs listed have regulatory competence in maritime areas beyond national jurisdiction⁶⁹⁸ and some have been established to perform an advisory role for states rather than cooperative conservation and management functions. This analysis will review the practice of those RFMOs with regulatory competence in maritime areas beyond national jurisdiction under the FAO's categories of the Atlantic Ocean region, the Pacific Ocean region, the Indian Ocean region, the Mediterranean and the Global and Trans Ocean organisations. The constitutive instrument of each organisation will be reviewed

⁶⁹⁶ Edeson, above n.666, 167.

⁶⁹⁷ Regional Fisheries Bodies, <<http://www.fao.org/fi/body/rfb>> at 15 Feb 2005.

⁶⁹⁸ E.J. Molenaar, 'Unregulated Deep Sea Fisheries: A Need for a Multi-Level Approach' (2004) 19(3) *International Journal of Marine and Coastal Law* 223, 227-228.

to determine its scope of application in both geographic and species terms, the level of state participation and the extent to which states are bound to implement decisions of the RFMO, its incorporation of international environmental law principles in conservation and management measures and the introduction of compliance monitoring and enforcement systems. As Molenaar observes, measures introduced to deter unregulated fishing in RFMOs' areas of competence are critical to the sustainability of their fisheries and to the prevention of adverse effects on associated and dependent ecosystems.⁶⁹⁹ Particular initiatives related to conservation and management of fish stocks beyond national jurisdiction and links between RFMOs will also be discussed.

5.2.2.1 Atlantic Ocean Region

This section examines four of the Atlantic Ocean RFMOs which exercise regulatory competence over the conservation and management of fish stocks in areas beyond national jurisdiction. Others have confined their powers to areas within national jurisdiction, are advisory bodies only or have not yet established practical conservation and management measures for fish stocks within their areas of interest.

⁶⁹⁹ Molenaar, above n.689, 479-480.

5.2.2.1.1 North West Atlantic Fisheries Organization

The North West Atlantic Fisheries Organization (NAFO) is responsible for the conservation and management of a large proportion of the fishery resources of the Atlantic Ocean. It was established by the *Convention on Future Multilateral Cooperation in the North West Atlantic Fisheries (NAFO Convention)*⁷⁰⁰ in 1978. Twelve countries and the European Union are party to the *NAFO Convention*. While the Convention Area encompasses the 200 nautical mile exclusive economic zones of a number of states including the USA, Canada, St Pierre & Miquelon and Greenland (Figure1), NAFO's regulatory competence extends only to the areas straddling and outside the EEZs of the Contracting Parties known as the Regulatory Area. Measures adopted by the Fisheries Commission of NAFO apply to all fisheries stocks in the Regulatory Area except those managed by other regional fisheries bodies such as salmon, tuna, marlins and whales.⁷⁰¹

The principal objective of NAFO has been to contribute through consultation and cooperation among the member states to optimum utilisation, rational management and conservation of the fishery resources of the Convention Area.⁷⁰² In the Regulatory Area beyond national jurisdiction the Fishery Commission of NAFO may adopt proposals for joint action by the Contracting Parties designed to achieve optimum utilisation of the fishery resources of the Regulatory Area.⁷⁰³

The *NAFO Convention* also recognises the need to ensure that measures within the Regulatory Area are compatible with measures taken by Contracting Parties in

⁷⁰⁰ 1978 *Convention on Future Multilateral Co-operation in the Northwest Atlantic Fisheries*, 1135 UNTS 369 (*NAFO Convention*).

⁷⁰¹ NAFO, *About NAFO*, <<http://www.nafo.int/About/Frames/AbFrMand.htm/>> at 15 Feb 2005.

⁷⁰² *NAFO Convention*, Art. II(1).

⁷⁰³ *Ibid*, Art. I(3).

areas under national jurisdiction.⁷⁰⁴ A key objective for NAFO has been to accommodate the interests of the principal coastal state in the Convention Area, Canada, with the interests of distant water fishing nations, including EC members, Japan and Russia.⁷⁰⁵ Overfishing in waters under Canada's national jurisdiction and fishing by non member states of NAFO during the 1980s and 1990s presented intractable problems for sustainable management of some fisheries stocks in the NAFO Regulatory Area.⁷⁰⁶ There was also frequent dissension among the Contracting Parties and inability to agree on allocation of fisheries quotas and other conservation and management measures.⁷⁰⁷ Contracting Parties are bound by measures adopted by the Fisheries Commission of NAFO. This obligation is subject to a 60 day period following notification of a measure in which a member state can lodge an objection to the measure and a further 40 day period for other members to lodge objections following the notification of the first objection.⁷⁰⁸ During NAFO's history the objection procedure has been used frequently by the European Community, adding to the difficulties of managing fisheries in the NAFO Regulatory Area effectively.⁷⁰⁹

NAFO has been slow to implement a precautionary approach in its conservation and management decisions.⁷¹⁰ Recently however the Commission has imposed complete moratoria on fishing for some species in the Regulatory Area and long

⁷⁰⁴ Ibid, Art. I(4).

⁷⁰⁵ Robin R. Churchill, 'The EC and its Role in Some Issues of International Fisheries Law' in E. Hey (ed.), *Developments in International Fisheries Law* (1999) 533, 551.

⁷⁰⁶ Christopher C. Joyner, 'On the Borderline? Canadian Activism in the Grand Banks' in Olav Schram Stokke (ed.), *Governing High Seas Fisheries*, (2001), 207, 211.

⁷⁰⁷ Rosemary Rayfuse, *Non Flag State Enforcement in High Seas Fisheries* (2004), 228-229.

⁷⁰⁸ *NAFO Convention*, Art. XII(1).

⁷⁰⁹ Churchill, above n.696, 551; Joyner, above n.697, 211.

⁷¹⁰ Rosemary Rayfuse, 'The Challenge of Sustainable High Seas Fisheries' in Nico Schrijver & Friedl Weiss (eds.), *International Law and Sustainable Development: Principles and Practice* (2004) 467, 490 notes that methodologies for implementing the precautionary approach have been discussed in NAFO since 1998.

term protection plans for other stocks including significantly reduced quotas and a multi year rebuilding program for turbot.⁷¹¹ At its annual meeting in 2004, NAFO adopted a precautionary approach framework which will be applied to particular stocks in the Regulatory Area such as yellowtail flounder and northern shrimp in 2005 and recognised the emerging requirement in international fisheries management.⁷¹² for the design and implementation of an ecosystem approach to fisheries management.

NAFO has also faced problems in enforcing compliance with its conservation and management measures and with the activities of fisheries vessels from third states.⁷¹³ Under its Convention, NAFO may adopt proposals for international measures of control and enforcement within the Regulatory Area. Article XVIII provides for a scheme of joint international enforcement which is to include provision of reciprocal rights of boarding and inspection by the Contracting Parties and for flag state prosecution and sanctions on the basis of evidence resulting from such inspections. Although a cooperative enforcement scheme has been in place for most of NAFO's existence, there had been some resistance by Contracting Parties in the past to contributing vessels and inspectors to its operation.⁷¹⁴ Following the dispute between Canada and Spain over the arrest of the Spanish flagged vessel, *Estai*, in the NAFO Regulatory Area in 1995, a Protocol to Strengthen the NAFO Conservation and Enforcement Measures was adopted which is in some respects more stringent than the enforcement provisions

⁷¹¹ Ibid.

⁷¹² NAFO, *NAFO Media Releases*, <<http://www.nafo.int/Info/FRAMES/InFrNewspaper.html>> at 15 Feb 2005.

⁷¹³ Joyner, above n.697, 551.

⁷¹⁴ Joyner above n.697, 553.

of the *UN Fish Stocks Agreement*.⁷¹⁵ Rayfuse comments that the introduction of a Program of Observers and satellite tracking which requires 100 percent national observer coverage on all Contracting Parties vessels fishing in the NAFO Regulatory Area and 100 percent vessel monitoring coverage for these vessels is reported to have achieved significant success.⁷¹⁶

After many years of fishing activity by third state vessels in the NAFO Regulatory Area, often flying flags of convenience to avoid NAFO regulation, Contracting Parties have now established a scheme to promote compliance by non contracting parties with NAFO conservation and enforcement measures in the NAFO Regulatory Area.⁷¹⁷ Under this scheme, a list is compiled by NAFO Contracting Parties of illegal unreported and unregulated (IUU) fishing incidents in the Regulatory Area by non contracting party flagged vessels with a view to possible sanctions against these vessels.⁷¹⁸ Rayfuse notes that this scheme has significantly reduced the incidence of non party fishing in the NAFO Regulatory Area.⁷¹⁹ NAFO has also established close links with the North East Atlantic Fisheries Commission (NEAFC) which have resulted in a range of cooperative measures including harmonisation of vessel position report formats between both organisations and increased transparency and efficiency of their vessel monitoring systems.⁷²⁰

⁷¹⁵ Jose A. de Yturriaga, *The International Regime of Fisheries: From UNCLOS 1982 to the Presential Sea* (1997) 246.

⁷¹⁶ Rayfuse, above n.698, 232-233.

⁷¹⁷ Rayfuse, above n.698, 233; Jean Pierre Ple, 'Responding to Non-Member Fishing in the Atlantic: The ICCAT and NAFO Experiences', in Harry N. Scheiber (ed.), *Law of the Sea: The Common Heritage and Emerging Challenges* (2000), 197, 203.

⁷¹⁸ Ple, above n.708, 203.

⁷¹⁹ Rayfuse, above n.698, 234.

⁷²⁰ Ibid, 228-229.

In its management of fisheries beyond national jurisdiction NAFO has had to contend with significant obstacles which have subverted its efforts to sustainably manage stocks in its Regulatory Area. NAFO's Fisheries Commission is still at an early stage in operationalising the precautionary approach and ecosystem based management has only recently been discussed by the Scientific Council⁷²¹ but the monitoring and enforcement systems already in place beyond national jurisdiction are far in advance of many other regions.⁷²² As well as being influenced by the emergence of international environmental law principles which support sustainable development of marine living resources beyond national jurisdiction, NAFO member states continue to have strong economic incentives to rebuild fish stocks which had virtually disappeared as a result of overfishing.⁷²³

⁷²¹ Ibid.

⁷²² Ibid, 258 notes that notwithstanding the geopolitical problems which continue to beset NAFO the non flag at sea and port state enforcement measures do appear to be working.

⁷²³ Rosemary Rayfuse et al, 'Australia and Canada in Regional Fisheries Organizations: Implementation of the UN Fish Stocks Agreement', (2003) 26(1) *Dalhousie Law Journal* (in press).

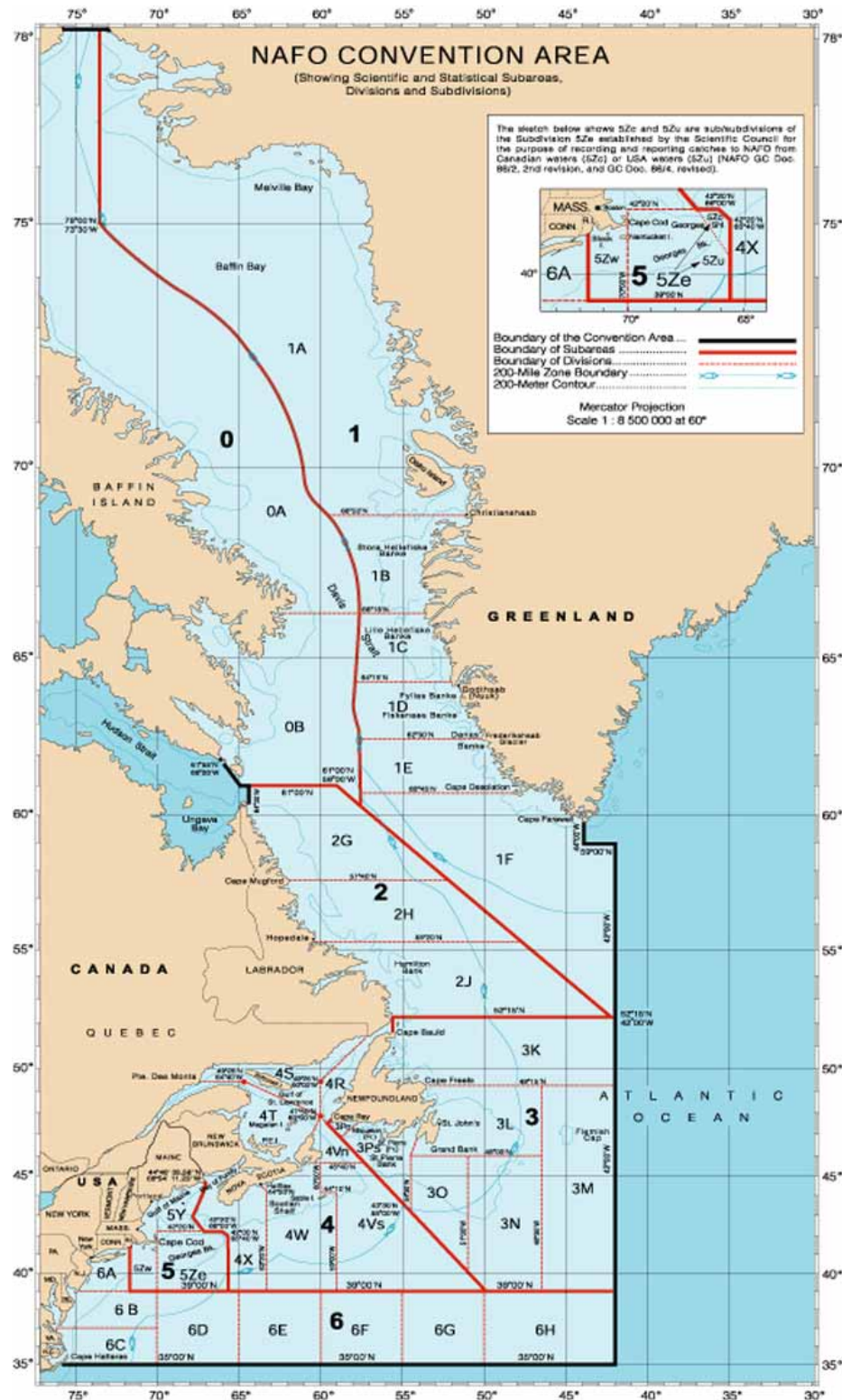


Figure 5.1: NAFO Regulatory Area (Source : NAFO,
<http://www.nafo.int/about/frames/about.html> at 15 February 2005)

5.2.2.1.2 North East Atlantic Fisheries Commission

The North East Atlantic Fisheries Commission (NEAFC) was formed to recommend measures to maintain the rational exploitation of fish stocks in the Atlantic and Arctic Oceans.⁷²⁴ Its current constitutive instrument, is the *Convention on Future Multilateral Cooperation in North East Atlantic Fisheries (NEAFC Convention)*.⁷²⁵ It has 7 contracting parties, including the EU, and strong links with NAFO.⁷²⁶ NEAFC has regulatory competence over three large maritime areas beyond national jurisdiction in the North East Atlantic⁷²⁷ (Figure 2) and may recommend conservation and management measures for all fisheries resources within its Convention Area with the exception of sea mammals and sedentary species.⁷²⁸

⁷²⁴ NEAFC Home Page, <<http://www.neafc.org>> at 16 Feb 2005.

⁷²⁵ 1980 *Convention on Future Multilateral Co-operation in North East Atlantic Fisheries*, 1285 UNTS 129 (*NEAFC Convention*).

⁷²⁶ Robin R. Churchill, 'Managing Straddling Fish Stocks in the North-East Atlantic: A Multiplicity of Instruments and Regime Linkages – but How Effective a Management?' in O. Schram Stokke (ed.), *Governing High Seas Fisheries*, (2001), 235, 238: "NEAFC is quite closely modelled on the North West Atlantic Fisheries Organization (NAFO) which was set up two years before NEAFC."

⁷²⁷ *NEAFC Convention*, Art. 1(1).

⁷²⁸ *Ibid*, Art. 1(2).

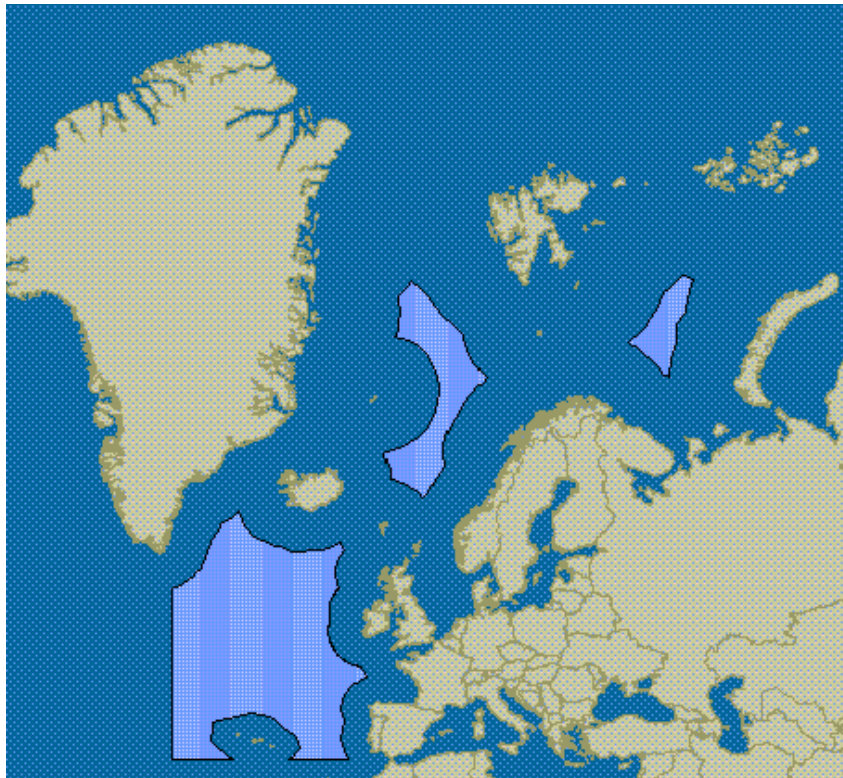


Figure 5.2: NEAFC Regulatory Area (Source: NEAFC, <http://www.neafc.org/about/map.htm> at 16 February 2005)

Its regulatory competence for fisheries resources beyond national jurisdiction includes considering measures for the regulation of fishing gear and size limits for fish, the establishment of closed seasons and closed areas, the establishment of total allowable catches and their allocation to Contracting Parties and the regulation of the amount of fishing effort and its allocation to Contracting Parties.⁷²⁹ Recommendations of the Commission are passed by a two thirds majority of Contracting Parties and become binding on Contracting Parties on a date specified by the Commission not before 30 days after the expiration of periods of objection specified in the Convention.⁷³⁰ Until 1996, NEAFC did not adopt many conservation and management measures for the high seas stocks within its regulatory competence. This dearth of activity stemmed from a variety of reasons including a lack of commercial interest and low levels of fishing

⁷²⁹ Ibid, Art. 7(a)(b)(c)(e) &(f).

⁷³⁰ Ibid, Arts. 8 & 12.

activity for the stocks within the Regulatory Area.⁷³¹ Since 1996, NEAFC has requested the International Council for the Exploration of the Sea (ICES), its scientific advisory body, when advising on conservation and management measures to take into account the precautionary approach.⁷³² At its 2004 annual meeting NEAFC reviewed a report on recent trends in the international management of marine resources including the ecosystem approach but the report does not yet discuss practical implementation of the approach.⁷³³ It also determined at that meeting that it would examine how to strengthen its role in overall ocean management in the Convention area.⁷³⁴

NEAFC introduced a very comprehensive compliance monitoring and enforcement system in 1998, which consists of two schemes.⁷³⁵ The first scheme sets out flag state responsibilities for authorising marking and identifying fishing vessels flying their flag within the Convention Area, requirements for fishing vessels to report on their catch and fishing effort to Contracting Parties and to be equipped with a vessel monitoring system.⁷³⁶ The scheme provides for reciprocal boarding and inspection rights of flag vessels of Contracting Parties which closely resemble those contained in the UN Fish Stocks Agreement.⁷³⁷ Inspectors are required to notify Contracting Parties of suspected infringements of conservation and management measures by their flag vessels which they must investigate

⁷³¹ Churchill, above n.717, 239; Rayfuse, above n.698, 210.

⁷³² Churchill, above n.717, 238; Olav Schram Stokke & Clare Coffey, 'Precaution, ICES and the Common Fisheries Policy' (2004) 28(2) *Marine Policy*, 117, 119.

⁷³³ NEAFC, *Media release on 2004 NEAFC Annual Meeting*, <http://www.neafc.org/news/docs/2004press_release_final.pdf> at 16 Feb 2005.

⁷³⁴ *Ibid.*

⁷³⁵ NEAFC, *NEAFC Compliance and Enforcement Measures*, <<http://www.neafc.org/measures/index.htm>> at 16 Feb 2005; Rayfuse, above n. 698, 212-3.

⁷³⁶ *NEAFC Compliance and Enforcement Measures*, above n.114.

⁷³⁷ Churchill, above n.717, 240.

within 72 hours of being notified.⁷³⁸ There is also provision for inspectors to bring a vessel suspected of infringement to port for further inspection.⁷³⁹ Rayfuse notes that the cooperative enforcement scheme is still in its ‘running in “ phase with some implementation problems and infringements still being revealed.⁷⁴⁰

The scheme for monitoring compliance by flag vessels of Contracting Parties is complemented by a scheme to promote compliance by fishing vessels of non contracting parties. Under this scheme, Contracting Parties are required to transmit information of sightings of non contracting party fishing vessels in the Regulatory Area to NEAFC which then passes that information to the other Contracting Parties and the flag state of the non contracting party vessel.⁷⁴¹ If the non contracting party vessel subsequently enters the port of a Contracting Party the scheme requires the Contracting Party to prohibit the landing or transshipment of the catch until it is inspected.⁷⁴² Under the scheme, NEAFC will request non contracting party flag states to ensure that their flag vessels desist from undermining the effectiveness of its conservation and management measures and that they prosecute and impose sanctions on those who do engage in IUU fishing in the NEAFC Regulatory Area.⁷⁴³ NEAFC compiles lists of non contracting party fishing vessels which engage in IUU fishing in the Regulatory Area, posts them on its website and shares the lists with other RFMOs such as NAFO.⁷⁴⁴ Non contracting party vessels which agree to adhere to NEAFC measures may obtain

⁷³⁸ Ibid, Art.13.

⁷³⁹ Ibid.

⁷⁴⁰ Rayfuse, above n.698, 218.

⁷⁴¹ NEAFC, *NEAFC Non Contracting Parties Scheme*, art.2

<<http://www.neafc.org/measures/docs/NCPScheme - 2005.pdf> > at 16 Feb 2005.

⁷⁴² Ibid, Art.5.

⁷⁴³ Ibid, Art.6.

⁷⁴⁴ Ibid, Art 8.

status to fish within the Regulatory Area.⁷⁴⁵ Contracting Parties are also encouraged to adopt multilaterally agreed and non discriminatory trade related measures, consistent with World Trade Organization rules, to prevent deter and eliminate IUU fishing.⁷⁴⁶ Rayfuse comments that the non contracting party enforcement mechanisms, although in their early stages, appear to be achieving some success.⁷⁴⁷

At its 2004 annual meeting NEAFC recognised the vulnerability of some of the deep water habitats within its Regulatory Area by closing 5 seamount areas and a section of the Reykjanes Ridge on the high seas for 3 years to bottom trawling and static fishing gear.⁷⁴⁸ It also agreed to reduce fishing pressures on a large range of vulnerable fish species in deep water habitats within the Regulatory Area by 30%.⁷⁴⁹ Although relatively dormant in its early years of operation, NEAFC's conservation and management of fisheries resources beyond national jurisdiction now appears quite progressive encompassing such environmental considerations as the protection of fragile deep sea habitats.

5.2.2.1.3 South East Atlantic Fisheries Organization

The South East Atlantic Fisheries Organization (SEAFO) is a recently formed RFMO which establishes a conservation and management regime for sustainable use of fish resources on the high seas of the South East Atlantic Ocean.⁷⁵⁰ The *Convention on the Conservation and Management of the Fishery Resources in the*

⁷⁴⁵ Ibid, Art

⁷⁴⁶ Ibid, Art 12(3).

⁷⁴⁷ Rayfuse, above n.698, 224.

⁷⁴⁸ NEAFC, *Media Release for NEAFC 2004 Annual Meeting*, http://www.neafc.org/news/docs/2004press_release_final.pdf > at 16 Feb 2005.

⁷⁴⁹ Ibid.

⁷⁵⁰ SEAFO, *Home Page*, <<http://www.mfmr.gov.na/seafo/seafo.htm> > at 15 Feb 2005.

South East Atlantic Ocean (SEAFO Convention),⁷⁵¹ which is modelled on the *UN Fish Stocks Agreement*, entered into force on 13 April 2003 but has only three parties including the European Union.⁷⁵² The geographical application of the Convention described in Article 4 covers a sizeable part of the high seas of the South East Atlantic (Figure 3).

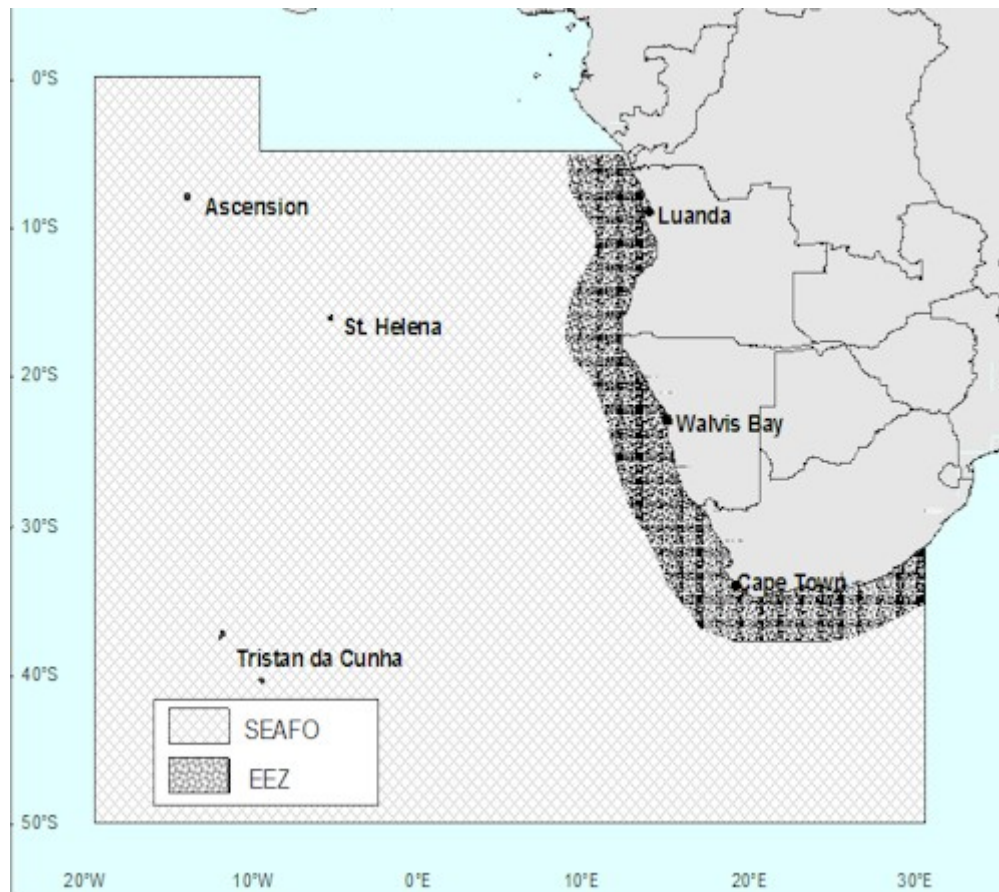


Figure 5.3: SEAFO Regulatory Area (Source: SEAFO, <http://www.seafo.org/commission/seafo-area-map.htm> at 15 February 2005)

SEAFO's regulatory competence, once operational, will address the long term conservation of straddling fish stocks and discrete high seas stocks such as alfonso, orange roughy, arrowhead, wreck fish, deep water hake and red crab in this area but not the conservation of highly migratory stocks in this area which are

⁷⁵¹ 2001 *Convention on the Conservation and Management of the Fishery Resources in the South East Atlantic Ocean*, 41(2) ILM 257 (SEAFO Convention).

subject to ICCAT jurisdiction.⁷⁵³ Under the general principles contained in Article 3 of the *SEAFO Convention* the Contracting Parties are required to adopt measures based on the best scientific evidence available for the long term conservation and sustainable use of the fisheries resources covered by the Convention and to apply the precautionary approach. The need to maintain other components of the marine ecosystems to which fisheries resources belong is also recognised in the General Principles of the Convention. Contracting Parties are required to take account of the impact of fishing on ecologically related species such as seabirds, cetaceans, seals and marine mammals, to adopt where necessary measures for species belonging to the same ecosystem, to protect biodiversity in the marine environment and to ensure that fisheries practice and management measures take account of the need to minimise harmful impacts on living marine resources as a whole.⁷⁵⁴ They also have a duty to cooperate for the purpose of achieving compatible conservation and management measures for fish stocks occurring in areas within and beyond national jurisdiction.⁷⁵⁵ Conservation and management measures become binding on Contracting Parties 60 days after their notification but they may notify SEAFO that they are unable to accept a measure within that 60 days.⁷⁵⁶ An innovative aspect of the *SEAFO Convention* is that Contracting Parties must provide an explanation of their reasons for not accepting the measures and this explanation may be accepted or rejected by the

⁷⁵² SEAFO, *Status of SEAFO Convention*, <<http://www.mfmr.gov.na/seafo/status.htm>> at 15 Feb 2005. SEAFO also has 10 signatories.

⁷⁵³ See above n.741; Andrew Jackson, 'The Convention on the Conservation and Management of Fishery Resources in the South East Atlantic Ocean' (2002), 17(1) *International Journal of Marine and Coastal Law* 33, 34. notes that the inclusion of discrete high seas stocks takes the *SEAFO Convention* beyond the scope of the UN Fish Stocks Agreement.

⁷⁵⁴ *SEAFO Convention*, Art.3.

⁷⁵⁵ *Ibid*, Art 19.

⁷⁵⁶ *Ibid*, Art. 23.

Commission.⁷⁵⁷ Jackson comments that this provision was intended to emphasise the exceptional nature of the non acceptance procedure and to discourage parties from resorting to objections.⁷⁵⁸

The compliance and enforcement provisions of the *SEAFO Convention* reflect the *UN Fish Stocks Agreement* provisions in establishing reciprocal boarding and inspection procedures between Contracting Parties for each other's flag vessels and an observer program.⁷⁵⁹ They also provide for port state measures to prohibit the landing and transshipment of the catch of non contracting parties vessels where it has been taken in a manner undermining the effectiveness of the conservation and management measures established under the Convention.⁷⁶⁰

SEAFO is in the early stages of its establishment as an RFMO and has held only one meeting in March 2004. The principal recommendations of that meeting were to identify fishery stocks within its area of regulatory competence and their status, to formulate data collection and processing standards and to examine major physical oceanic processes of influence in the area.⁷⁶¹ Although SEAFO has a sound international environmental law basis for its future conservation and management efforts, it is too early to assess implementation of its environmental protection measures.⁷⁶²

⁷⁵⁷ Ibid, Art. 23.

⁷⁵⁸ Jackson, above n.744, 41.

⁷⁵⁹ Ibid, Art 16.

⁷⁶⁰ Ibid, Art. 15.

⁷⁶¹ SEAFO, *Report of First Annual Meeting of SEAFO Contracting Parties*, <http://www.mfmr.gov.na/seafo/articles/Commission/_report/Meeting_Report_final_1.pdf> at 15 Feb 2005.

⁷⁶² Michael Lodge, 'Improving International Governance in the Deep Sea' (2004) 19(3) *International Journal of Marine and Coastal Law*, 299,304-5 sees the establishment of SEAFO and its close modelling on the *UN Fish Stocks Agreement* as an encouraging development but observes that "what is needed now is for words to be translated into action" and for the tools

5.2.3.1.4 International Commission for the Conservation of Atlantic Tunas

The mandate of the International Commission for the Conservation of Atlantic Tunas (ICCAT) is the conservation of tuna and tuna like species in the Atlantic Ocean and its adjacent seas.⁷⁶³ The 1966 *International Convention for the Conservation of Atlantic Tunas (ICCAT Convention)*⁷⁶⁴, which establishes the Commission, applies to all waters of the Atlantic Ocean including the adjacent seas and to 30 tuna species.⁷⁶⁵ The Convention has 37 parties.⁷⁶⁶ It compiles fisheries statistics from member states and all entities fishing in the Convention Area and develops scientific based management advice on maximum sustainable catch levels.⁷⁶⁷ Each recommendation of the Commission becomes effective for all member states 6 months after the date of notification from the Commission however there is provision for member states to object and not to be bound by recommendations.⁷⁶⁸ Under its regulatory powers, ICCAT has adopted a range of conservation and management measures such as catch limits to conserve and manage overfished species including Atlantic bluefin tuna and swordfish beyond national jurisdiction.⁷⁶⁹ There has been variable concurrence and compliance with these measures by members.⁷⁷⁰ The *ICCAT Convention* predates international environmental law principles such as the precautionary approach and ecosystem based management, however, ICCAT is exploring the implications of the

available in the *SEAFO Convention* and comparable instruments such as the *Western and Central Pacific Ocean Fisheries Convention* to be applied and enforced.

⁷⁶³ ICCAT, *Home Page*, <<http://www.iccat.org>> at 15 Feb 2005.

⁷⁶⁴ 1966 *International Convention for the Conservation of Atlantic Tunas*, 673 UNTS 63 (*ICCAT Convention*).

⁷⁶⁵ Ibid, Art. I. Adjacent seas include the Mediterranean Sea.

⁷⁶⁶ ICCAT, *Status of ICCAT*

Convention, <http://www.iccat.es/Documents/Commission/Convention_parties_pdf> at 15 Feb 2005.

⁷⁶⁷ *ICCAT Convention*, Art IV(2)(b).

⁷⁶⁸ Ibid, Art. VIII.

⁷⁶⁹ Ple, above n.708, 200; S.M. Garcia, 'The Precautionary Approach to Fisheries: Progress Review and Main Issues (1995-2000)' in M.H. Nordquist & J.N. Moore (eds.), *Current Fisheries Issues and the Food and Agricultural Organization of the United Nations*, (2000) 479, 496-7.

precautionary approach for tuna management.⁷⁷¹ Notwithstanding these indications of the advent of precautionary management in ICCAT, there have been some instances where total allowable catch limits have exceeded those recommended on the basis of scientific assessment.⁷⁷²

The efficacy of ICCAT conservation and management efforts has been hampered by a history of member non compliance with catch quotas and fishing for ICCAT managed species by vessels from non member states.⁷⁷³ Although Article IX(3) of the *ICCAT Convention* required the Contracting Parties to collaborate with each other to establish a system of international enforcement to be applied to the high seas area regulated by ICCAT, a cooperative system encompassing reciprocal boarding and inspection of contracting parties flag vessels has never been instituted.⁷⁷⁴ ICCAT has employed a variety of other methods to tackle these problems. Contracting Parties have agreed to adopt compliance and enforcement responsibilities similar to those contained in the *High Seas Compliance Agreement* for their own flag vessels including a requirement that their fishing vessels install vessel monitoring systems.⁷⁷⁵ In 1994 and 1995, ICCAT adopted Action Plans to Ensure the Effectiveness of its Conservation Programs for Atlantic Bluefin Tuna and Atlantic Swordfish which addressed compliance by both members and non members. An ICCAT committee reviews implementation of conservation and management measures by members and non members each year and can recommend compliance measures. These have included reducing the

⁷⁷⁰ Rayfuse, above n.701, 475.

⁷⁷¹ Ibid, 490.

⁷⁷² Ibid, 491.

⁷⁷³ Ibid, 475; Ple, above n.708, 200.

⁷⁷⁴ Rayfuse, above n.698, 163-174 details the attempts to institute an international enforcement system in the ICCAT regulatory area beyond national jurisdiction .

quota of members whose vessels exceed bluefin tuna and sword fish allocations.⁷⁷⁶ The Plans also involved identifying non members whose vessels had engaged in fishing activities which diminished the effectiveness of ICCAT measures to conserve these stocks. Identified non members were given one year to rectify their practices and if they failed to do so ICCAT could recommend that its members prohibit the importation of these products from the non member states in question. This was one of the first successful uses of trade restriction measures by an RFMO to combat fishing by non member states vessels in RFMO areas beyond national jurisdiction.⁷⁷⁷ There appears to be a disjunction between ICCAT's failure to adopt a cooperative compliance and enforcement scheme among its members and its rigorous measures against fishing by non party vessels. This discloses the basic need for ICCAT to address its internal compliance problems which would lend greater legitimacy to its third party compliance measures.⁷⁷⁸

5.2.2.2 *Mediterranean Sea Region*

5.2.2.2.1 *General Fisheries Commission for the Mediterranean*

As the littoral states around the Mediterranean have declined to claim 200 nautical mile exclusive economic zones off their coasts for political reasons, there is still a sizeable area of high seas in the Mediterranean.⁷⁷⁹ Concrete measures to regulate fisheries in the Mediterranean began with the transformation in 1997 of the General Fisheries Council for the Mediterranean from an advisory body to the General Fisheries Commission for the Mediterranean (GFCM) which had

⁷⁷⁵ ICCAT, *ICCAT Resolutions*,

<http://www.iccat.es/Documents/Recs./compendiopdf_e/2003_16_e.pdf> at 15 Feb 2005.

⁷⁷⁶ Bob Applebaum and Amos Donohue, 'The Role of Regional Fisheries Management Organizations' in E. Hey (ed.), *Developments in International Fisheries Law*, above n.84, 217, 245-6.

⁷⁷⁷ Ple, above n.708, 200-201.

⁷⁷⁸ Rayfuse, above n.698, 182.

regulatory functions.⁷⁸⁰ Both the earlier Council and the Commission were established under the *Agreement for the Establishment of the General Fisheries Commission of the Mediterranean (GFCM Agreement)*.⁷⁸¹ The GFCM currently has 24 Parties with 19 of those Parties having accepted the 1997 amendments to the agreement.⁷⁸² The jurisdictional ambit of the GFCM is broad covering all living marine resources of the Mediterranean and Black Seas.⁷⁸³ (Figure 4) Its objective is to promote the development, conservation, rational management and best utilisation of living resources in the region.⁷⁸⁴ For these purposes it has the power to recommend conservation and management measures including fishing methods and gear, minimum sizes for catch, spatial and time closures for fisheries, total catch, effort and allocation among members.⁷⁸⁵ Conservation and management decisions of the GFCM are adopted by a two thirds majority of members of the Commission present and voting.⁷⁸⁶ Members may object to a particular conservation and management recommendation within a period of 120 days from its notification and not be bound by the recommendation. Any other member has a further period of 60 days to object following the first objection.⁷⁸⁷

⁷⁷⁹ Ibid, 193.

⁷⁸⁰ Ibid, 192.

⁷⁸¹ 1949 *Agreement for the Establishment of the General Fisheries Commission of the Mediterranean*, reproduced in FAO Basic Texts Vol III section 7 (3rd, 1977), as amended by the FAO Council at its 113th session November 1997, text at <http://www.fao.org/Legal/treaties/003t-e.htm> (GFCM Agreement).

⁷⁸² GFCM, *Status of GFCM Agreement*, <<http://www.fao.org/Legal/treaties/003s-e.htm>> at 19 September 2005. The current parties to the amended *GFCM Agreement* are Albania, Algeria, Croatia, Cyprus, European Community, France, Greece, Italy, Japan, Lebanon, Libya, Malta, Monaco, Romania, Slovenia, Serbia and Montenegro, Spain, Tunisia and Turkey.

⁷⁸³ *GFCM Agreement*, Preamble.

⁷⁸⁴ Ibid, Preamble & Art III(1).

⁷⁸⁵ Ibid, Art. III(1)(b)(i).

⁷⁸⁶ Ibid, Art. V(1).

⁷⁸⁷ Ibid, Art. V(3).



Figure 5.4: GFCM Region (Source: GFCM, http://www.fao.org/fi/body/rfb/GFCM/gfcm_mapandmem.htm at 16 February 2005)

Article III(2) of the *GFCM Agreement* specifies that the GFCM shall apply the precautionary approach to conservation and management decisions and take into account the best scientific evidence available and the need to promote the development and proper utilisation of the marine living resources of the region. A Scientific Advisory Committee (SAC) has been set up under the Rules of the Agreement to provide independent advice on the scientific and technical bases for conservation and management decisions.⁷⁸⁸ A Sub Committee of the SAC has been established on Marine Environment and Ecosystems (SCMEE). In relation to the work of this Sub-Committee, the Report of the Seventh Session of the SAC in October 2004 notes the need to further strengthen activities on the impact of large scale driftnet fisheries on biodiversity and threatened and endangered species such as cetaceans and large scale sharks.⁷⁸⁹ It also notes the difficulties associated with implementing an ecosystem based approach to fisheries in the Mediterranean and the lack of contributions from member states on the impact of surface and long

⁷⁸⁸ Ibid, Rule X(2)(a) & (d).

⁷⁸⁹ GFCM, *Report of the Seventh Session of the SAC*, Rome 19-22 October 2004, <http://ftp.fao.org/docrep/fao/007/y5850b/y585b00.pdf>, para 39.

line fisheries on non commercial fish species and turtles.⁷⁹⁰ It is apparent from the SAC Report and the report of the GFCM's 29th Session in February 2005⁷⁹¹ that the work of this Sub-Committee is still at an early stage and not having a major influence on conservation and management decisions. The 2005 GFCM Report suggests strengthening cooperation and coordination between this Sub Committee and environment entities such as UNEP, Mediterranean Action Plan, IUCN and WWF.⁷⁹²

Under Article VIII of its agreement, the GFCM is required to cooperate closely with other international organisations in matters of mutual interest. It has formed a strong link with ICCAT which also has jurisdiction over tuna species in the Mediterranean adopting many of its conservation and management decisions. Rayfuse comments that the major instances of overfishing in high seas areas of the Mediterranean relate to highly migratory species such as tuna and swordfish where GFCM has dual conservation and management responsibilities with ICCAT.⁷⁹³ ICCAT conservation and management measures have had a strong influence on the conservation and management measures adopted by GFCM and the two organisations have formed joint working groups on the conservation and management of large pelagic fishes in the Mediterranean.⁷⁹⁴ Recent measures endorsed by GFCM have included a multi-year conservation and management

⁷⁹⁰ Ibid, paras. 37 & 40.

⁷⁹¹ GFCM, *Report of the 29th Session of the GFCM*, Rome 21-25 February 2005, <http://ftp.fao.org/FIDOCUMENT/gfcm/gfcm-29/advance-GFCM29e.pdf> at 19 September 2005.

⁷⁹² Ibid, para 37.

⁷⁹³ Rayfuse, above n.698, 197.

⁷⁹⁴ Ibid, 194-195.

plan for bluefin tuna in the Mediterranean and the reduction of juvenile catches of tuna.⁷⁹⁵

The *GFCM Agreement* is silent on enforcement of conservation and management decisions which is left to individual member states through their flag state responsibilities. The introduction of collaborative enforcement schemes for reciprocal boardings at sea and port state controls appears unlikely due to the political tensions between the littoral states of the Mediterranean.⁷⁹⁶ Some flag states have conducted patrols of their own fishing fleets but that there is still substantial IUU fishing of many species by unflagged and flags of convenience vessels.⁷⁹⁷

5.2.2.3 *Pacific Ocean Region*

The Pacific Ocean Region has a variety of intergovernmental RFMOs which perform both advisory and regulatory roles in relation to stocks within and beyond national jurisdiction. The two bodies examined in this review of state practice have established regulatory competence over particular fish stocks when they occur in waters beyond national jurisdiction.

5.2.2.3.1 *Inter American Tropical Tuna Commission*

The Inter American Tropical Tuna Commission (IATTC) was originally established in 1950 to conserve and manage fisheries for tuna and other species taken by tuna fishing vessels in the Eastern Pacific Ocean.⁷⁹⁸ Under its original

⁷⁹⁵ Ibid, 195.

⁷⁹⁶ Ibid, 197.

⁷⁹⁷ Ibid, 194 & 196.

⁷⁹⁸ IATTC, *Home Page* <http://www.iattc.org/PDFFiles/IATTC_convention_1949.pdf> at 17 Feb 2005.

Convention, the IATTC has adopted only limited conservation and management measures principally for big eye tuna and has relied on individual flag state enforcement rather than any collaborative scheme.⁷⁹⁹ In 2003 the member states of the Commission adopted a *Convention for the Strengthening of the IATTC (IATTC Convention)*⁸⁰⁰ which was designed to implement the provisions of the *UN Fish Stocks Agreement* and the *Code* for the fish stocks within the commission's area of responsibility.⁸⁰¹ The *IATTC Convention* which applies to a large area of the Eastern Pacific Ocean off the coasts of North, Central and South America (Figure 5), currently has 13 signatories and one party.⁸⁰²

⁷⁹⁹ Rayfuse, above n.698, 141&145 notes that IUU fishing in the IATTC area may have gone unnoticed in view of the limited regulation conducted by the Commission under its original convention.

⁸⁰⁰ 2003 *Convention for the Strengthening of the Inter-American Tropical Tuna Commission established by the 1949 Convention between the United States of America and the Republic of Costa Rica*, text reproduced at http://www.iattc.org/IATTC_documentation/ENG.htm at 17 Feb 2005 (*IATTC Convention*).

⁸⁰¹ IATTC, *IATTC Convention Text and Status of Convention*, <<http://www.iattc.org/IATTCdocumentation/ENG.htm>> at 17 Feb 2005.

⁸⁰² *Ibid.*



Figure 5.5: IATTC Regulatory Area (Source: IATTC, <http://www.iatc.org/EPOMapENG.htm> at 17 Feb 2005)

Under its new Convention, IATTC will have the power to adopt conservation and management measures for highly migratory species in high seas areas, based on the best scientific evidence available to ensure the long term conservation and sustainable use of the stocks and to restore the populations of harvested species to levels of abundance which can produce the maximum sustainable yield.⁸⁰³ The *IATTC Convention* specifies that the members of the Commission should apply the precautionary approach as described in the relevant provisions of the *Code* and the *UN Fish Stocks Agreement*.⁸⁰⁴ This is to be implemented by conducting enhanced monitoring of stocks where status is uncertain and the regular review of

⁸⁰³ *IATTC Convention*, Art.VII(1)(c).

⁸⁰⁴ *Ibid*, Art.IV.

conservation measures for such stocks based on new scientific information.⁸⁰⁵ Past practice in IATTC had not been encouraging with instances of failing to set any catch limits at all even where scientific advice had indicated that conservation and management were necessary.⁸⁰⁶ An ecosystem based approach is encouraged in the Convention's provisions which recommend that members adopt conservation measures for species belonging to the same ecosystem which are affected by fishing for or dependent on or associated with the fish stocks covered by the Convention.⁸⁰⁷ The Commission may also adopt measures to minimise bycatch of non target species and impacts on associated or dependent species, particularly endangered species.⁸⁰⁸

All decisions by the Commission on conservation and management measures are taken by consensus and where a party is absent when a decision is taken that party has 30 days to object. If an objection is raised in these circumstances the decision is of no effect but otherwise the decision becomes binding on all members 45 days after it is notified to members.⁸⁰⁹ The compliance and enforcement system under the Convention relies on flag states exercising their responsibilities to authorise, monitor and sanction their fishing vessels in accordance with the *Code* and internationally recognised standards.⁸¹⁰ There is no cooperative system of monitoring compliance and enforcement under the Convention but parties and the Commission are required to exchange information on the activities of non contracting party fishing vessels and notify the flag states of the activities of such

⁸⁰⁵ Rayfuse, above n.701, 491.

⁸⁰⁶ *Ibid.*

⁸⁰⁷ *IATTC Convention*, Art.VII(1)(f).

⁸⁰⁸ *Ibid.*, Art.VII(1)(g).

⁸⁰⁹ *Ibid.*, Art IX.

⁸¹⁰ *Ibid.*, Art. XVIII(1)-(3).

vessels.⁸¹¹ The new *IATTC Convention* will enter into force 15 months after 7 ratifications have been deposited. With the low level of ratification for the new Convention the process of increasing its regulatory competence in waters beyond national jurisdiction and applying international environmental law principles such as the precautionary principle and ecosystem based management is at an early stage.⁸¹²

5.2.2.3.2 Western and Central Pacific Ocean Fisheries Commission

The first comprehensive conservation and management regime for highly migratory fish stocks in waters beyond national jurisdiction in the Pacific Ocean came into being with the entry into force of the *Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean*⁸¹³ on 19 June 2004.⁸¹⁴ The region covered by the WCPFC is estimated to have 60 % of the world's tuna stocks.⁸¹⁵ The Convention has 19 parties including the European Community, Tokelau as a participating territory and Chinese Taipei as a fishing entity.⁸¹⁶ The objective of the Convention is to ensure, through effective management, the long term conservation and sustainable use of highly migratory fishing stocks in the Western and Central Pacific Ocean in accordance with the *LOSC* and the *UN Fish Stocks Agreement*.⁸¹⁷ The area of

⁸¹¹ *IATTC Convention*, Art.XVIII(6); Rayfuse, above n.698, 155 comments that the language of the new *IATTC Convention* leaves open the possibility for a range of deterrent measures being taken against non party vessels fishing in the IATTC Regulatory Area.

⁸¹² Rayfuse, above n.698, 153 notes that the provisions of the new *IATTC Convention* appear to go beyond current fisheries management agreements.

⁸¹³ 2000 *Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean*, 40(2) ILM 277(WCPFC Convention).

⁸¹⁴ Forum Fisheries Agency, *Home Page*, <<http://www.ffa.int/node/219>> at 17 Feb 2005.

⁸¹⁵ Transform Aqorau, 'Tuna Fisheries Management in the Western and Central Pacific Ocean: A Critical Analysis of the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean and Its Implications for the Pacific Island States' (2001) 16(3) *International Journal of Marine and Coastal Law*, 379, 382.

⁸¹⁶ WCPFC< *Status of WCPFC Convention*, <<http://www.ocean-affairs.com/>> at 5 March 2005.

⁸¹⁷ WCPFC Convention, Art. 2,

competence of the Commission includes a large area of high seas lying outside and between the 200 nautical mile exclusive economic zones of the Parties (Figure 6) and its regulatory competence extends to all fish stocks of the species listed in Annex I of the *LOSC*.⁸¹⁸

The Commission is empowered to adopt principles and measures for conservation and management of the highly migratory fish stocks in its area of competence which reflect the principal international environmental law principles incorporated in the *UN Fish Stocks Agreement*. These include measures based on the best scientific evidence available to ensure the long term sustainability of the highly migratory fish stocks in the Convention Area and the promotion of their optimum utilisation.⁸¹⁹ It is to apply the precautionary principle in accordance with Annex II of the *UN Fish Stocks Agreement*, determine the impact of fishing activities on non target and associated or dependent species and their environment and adopt plans where necessary to ensure the conservation of such species and protect habitats of special concern⁸²⁰.

⁸¹⁸ Ibid, Art. 3.

⁸¹⁹ *WCPFC Convention*, Art 5(a) &(b).

⁸²⁰ Ibid, Arts 5(c) & 6.

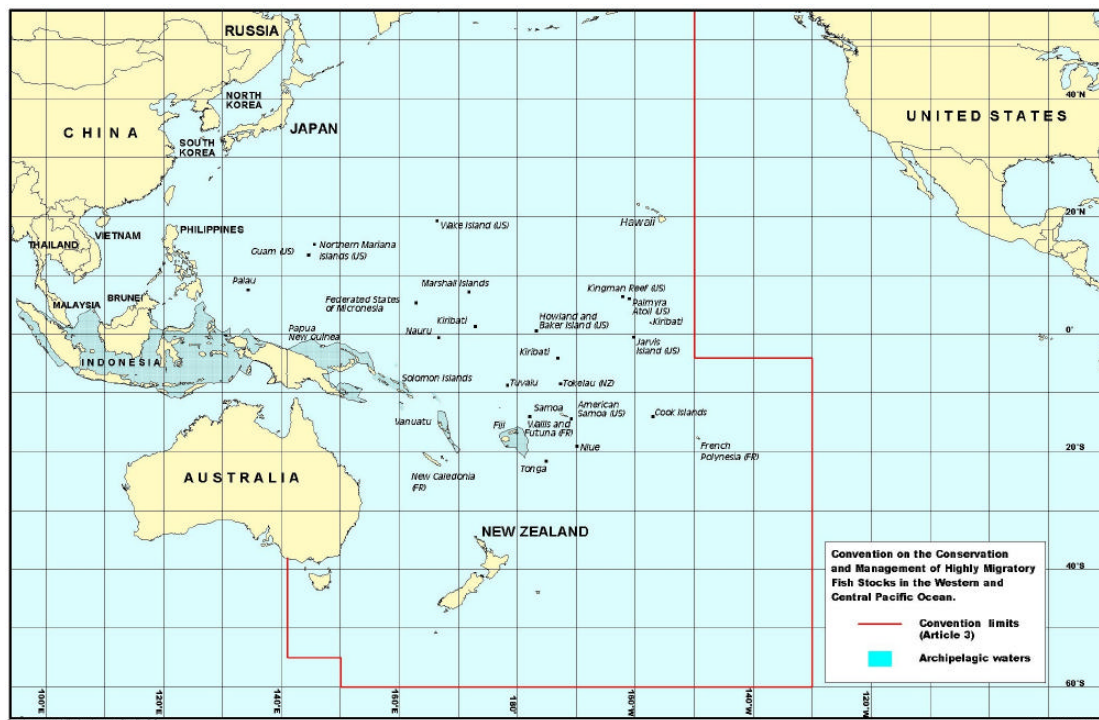


Figure 5.6: WCPFC Regulatory Area (Source: WCPFC, <<http://www.wcpfc.org/pdf/map.pdf> at 19 September 2005)⁸²¹

Protection of biodiversity in the marine environment and assessing the impact of fishing activities on other species belonging to the same ecosystem are also included in the conservation and management measures to be taken.⁸²² Parties have a duty to cooperate in order to ensure that conservation and management measures adopted for highly migratory species in areas under national jurisdiction are compatible with those adopted for the high seas.⁸²³ Decisions on conservation and management measures are to be taken by consensus but if consensus fails, decisions on matters of substance are to be taken by a three quarters majority of the members present.⁸²⁴ Decisions become binding on parties 60 days after their notification but members voting against the decision or absent may within 30 days

⁸²¹ Figure 5.6 depicts no upper boundary for the WCPFC Regulatory Area as none was decided during the Convention negotiations (Source: Email from Professor Martin Tsamenyi to Robin Warner of 17 November 2005. Professor Tsamenyi was Legal Adviser to the Forum Fisheries Agency during the negotiation of the *WCPFC Convention*)

⁸²² Ibid, Art 5(f) &(d).

⁸²³ Ibid, Art. 8.

⁸²⁴ Ibid, art. 10(4).

of their adoption seek a review of the decision.⁸²⁵ Aqorau comments that the idea of a review process is new to RFMOs and is designed to overcome the opt out clauses which are common in many RFMO Conventions and which have the potential to sabotage their conservation and management efforts.⁸²⁶

Under Article 24 of the Convention, flag states must ensure that their fishing vessels do not engage in unauthorised fishing for highly migratory fish stocks beyond national jurisdiction and that as flag states they are able to effectively exercise their responsibilities for fishing vessels operating under their flag.⁸²⁷ Flag states must maintain a record of fishing vessels authorised to fish beyond national jurisdiction and require their flag vessels fishing beyond national jurisdiction to use real time satellite position fixing transmitters so that they can participate in the vessel monitoring system to be established by the Commission.⁸²⁸ The Commission is to establish measures for parties to board and inspect each others fishing vessels on the high seas within 2 years of the Convention entering into force and if no such scheme is established within 2 years the relevant provisions of the *UN Fish Stocks Agreement* will apply.⁸²⁹ There is also provision for members to exchange information on non parties activities in the Convention Area and to take action to deter non contracting parties from fishing in the Convention Area⁸³⁰.

⁸²⁵ Ibid.

⁸²⁶ Aqorau, above n.806, 391.

⁸²⁷ *WCPFC Convention*, Art. 24(1) & (2).

⁸²⁸ Ibid, Art. 24(4) & (8).

⁸²⁹ Ibid, Art. 26.

⁸³⁰ Ibid, Art. 4(10) and (11).

The first meeting of the WCPFC was held at Pohnpei in the Federated States of Micronesia from 9 to 10 December 2004.⁸³¹ Although the WCPFC is in the early stages of its establishment and has taken no conservation and management decisions as yet, the report of the first meeting indicates that it will take advice from its Scientific Committee on a range of conservation and management issues at its second meeting in December 2005.⁸³² These include estimates of both sustainable catch and effort levels for bigeye, yellowfin and South Pacific albacore and estimates for the mortality of non target species with an initial focus on seabirds, turtles and sharks.⁸³³ The report further indicates that the Commission will be adopting conservation and management measures on the basis of this advice which may include catch and fishing effort limits, time and area closures and mitigation measures to address the mortality of non target species such as seabirds, turtles and sharks.⁸³⁴ The Report specifies that the precautionary principle will be applied in accordance with Article 6 of the *WCPFC Convention*⁸³⁵ and that the Commission will give priority consideration to regional observer and vessel monitoring programmes.⁸³⁶ The Commission's first report demonstrates its intention to implement a range of international environmental law principles in its conservation and management decisions including sustainable exploitation of highly migratory and straddling stocks within the Convention Area, the precautionary approach and ecosystem based considerations. Based on experience in the Convention negotiations and Preparatory Conferences both

⁸³¹ Preparatory Commission for the WCPFC Convention, *Home Page*, <<http://www.ocean-affairs.com/>> at 5 March 2005.

⁸³² PrepCom for the WCPFC, Summary Record of the Inaugural Session of WCPFC (WCPFC/COMM 1/8), 10 December 2004, <http://www.ocean-affairs.com/pdf/Comm_8_Summary_record.pdf> at 5 March 2005.

⁸³³ *Ibid*, Annex II, para 1(a) and (b).

⁸³⁴ *Ibid*, para 4(a), (d) and (e)

⁸³⁵ *Ibid*, para 5.

⁸³⁶ *Ibid*, para 6.

Aqorau and Rayfuse predict that tensions will arise between the Pacific Island state members of the WCPFC and distant water fishing nations such as Japan in implementing the Convention's detailed provisions.⁸³⁷

5.2.2.4 Indian Ocean Region

5.2.2.4.1 Indian Ocean Tuna Commission

The Indian Ocean Tuna Commission (IOTC) is an intergovernmental organisation established under Article XIV of the FAO Constitution to manage tuna and tuna like species in the Indian Ocean and adjacent seas.⁸³⁸ The 1993 Agreement for the Establishment of IOTC⁸³⁹ has 24 parties including Australia, the European Community, China, Republic of Korea, Japan, UK, France, India, Malaysia the Philippines and Thailand.⁸⁴⁰ IOTC's area of competence covers a large area of the Indian Ocean north of the Atlantic Convergence much of which is situated beyond national jurisdiction.⁸⁴¹

IOTC's stated objective is to promote cooperation among its members with a view to ensuring through appropriate management the conservation and optimum utilisation of stocks and encouraging sustainable development of fisheries based on such stocks⁸⁴². Its regulatory competence extends to 16 species of tuna, several

⁸³⁷ Aqorau, above n.806, 395; Rayfuse, above n.698, 307.

⁸³⁸ IOTC, *Home Page*, <<http://www.iotc.org/English/info/mission.php>> at 22 Feb 2005.

⁸³⁹ 1993 *Agreement for the Establishment of the Indian Ocean Tuna Commission*, ATS 1996 No. 20 (*IOTC Convention*).

⁸⁴⁰ IOTC, *Status of IOTC Convention*, <<http://www.iotc.org/English/info/contract.php>> at 22 February 2005.

⁸⁴¹ IOTC, *Home Page*, <http://www.iotc.org/English/info/mission.php> at 22 Feb 2005 – IOTC's area of competence is described as the Indian Ocean (defined for the purpose of this agreement as FAO statistical areas 51 and 57) and adjacent seas, north of the Atlantic Convergence, insofar as it is necessary to cover such seas for the purpose of conserving and managing stocks that migrate into or out of the Indian Ocean; Rayfuse, above n.86, 184 observes that the IOTC's area of competence overlaps with the WCPFC *Convention Area* between 141 degrees E and 150 degrees E and that cooperative measures will need to be devised for this area of overlap.

⁸⁴² *IOTC Convention*, Art.V(2)(c).

species of mackerel and marlin, swordfish and sailfish.⁸⁴³ Decisions on conservation and management measures are taken on the basis of a two thirds majority of the members present and voting and become binding on members 120 days after the Secretary's notification. Any member may object to a measure within the 120 days and will not be bound by the measure. There is then a further 60 day period in which other members may object and not be bound by the measure following the initial 120 day period. If objections to measures are made by more than one third of the members of the Commission then none of the members will be bound.⁸⁴⁴ Rayfuse observes that in practice the IOTC members have adopted a consensus approach to conservation and management decisions which has the effect of providing a veto to individual member states.⁸⁴⁵

IOTC is empowered to adopt conservation and management measures for the stocks covered by the agreement on the basis of scientific evidence⁸⁴⁶ but there is no reference to the application of the precautionary approach or ecosystem based management in its agreement or in recent resolutions passed by the Commission or reports of its Scientific Committee. Rayfuse comments that notwithstanding the existence of IOTC, conservation and sustainable use of high seas stocks in the Indian Ocean is far from certain. She cites IOTC's failure to adopt any conservation measures for big-eye tuna despite repeated advice from its Scientific Committee of the urgent need to reduce catches in this fishery.⁸⁴⁷

⁸⁴³ Ibid.

⁸⁴⁴ Ibid, Art. IX.

⁸⁴⁵ Rayfuse, above n.698, 185.

⁸⁴⁶ *IOTC Convention*, Art. V(2)(c).

⁸⁴⁷ Rayfuse, above n.701, 474.

Enforcement of conservation and management measures among the Contracting Parties to the IOTC has been largely devolved to the individual flag states of fishing vessels⁸⁴⁸ although the Contracting Parties have agreed that the implementation of an integrated control and inspection scheme should follow a phased approach.⁸⁴⁹ The Commission has taken some steps to coordinate the activities of Contracting Parties against fishing activities by non contracting parties in the Convention Area which are undermining the effectiveness of conservation and management measures.⁸⁵⁰ A resolution adopted by the IOTC in 2001 requires any observation by a Contracting Party vessel or aircraft of fishing contrary to IOTC conservation and management measures to be reported to the flag state of the observing vessel or aircraft. The information is then passed to IOTC which will inform the flag state of the observed vessel and other Contracting Parties.⁸⁵¹ If the fishing vessel subsequently enters the port of a Contracting Party the port authorities may inspect the vessel and prohibit any landing or transshipment of fish caught in contravention of IOTC conservation and management measures.⁸⁵² IOTC Contracting Parties also resolved in 2001 to identify vessels engaged in IUU fishing beyond national jurisdiction through a transparent and non discriminatory procedure and to exchange that information between themselves and other regional fisheries organisations.⁸⁵³ The lack of a cooperative compliance and enforcement scheme between IOTC members and its

⁸⁴⁸ Rayfuse, above n.698, 185 notes that the *IOTC Convention* contains no enforcement provisions but members have undertaken in Art. X to implement and enforce conservation and management measures under their national legislation.

⁸⁴⁹ IOTC, *Report of the Intersessional Meeting on an Integrated Control and Inspection Scheme*, March 2001, IOTC Doc /SS/01/R[E].

⁸⁵⁰ Rayfuse, above n.698, 187.

⁸⁵¹ IOTC Resolution 01/03, adopted in 2001, establishing a scheme to promote compliance by non-contracting party vessels with resolutions established by the IOTC, www.iotc.org/English/resolutions/reso_detail.php?reso=14 at 22 Feb 2005.

⁸⁵² Ibid.

focus to date on regulatory measures to address fishing by non party vessels invites comparison with ICCAT where internal compliance and enforcement measures need to be put in place to complement and strengthen the effectiveness of RFMO management.

5.2.2.5 *Global and Trans Ocean Organisations*

There are a number of intergovernmental organisations which exercise conservation and management functions for marine living resources beyond national jurisdiction on a global or trans-oceanic basis. The International Whaling Commission (IWC) will be considered later in this chapter. This section will consider the policy and practice of the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).

5.2.2.5.1 *Commission for the Conservation of Southern Bluefin Tuna*

The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) began as a voluntary collaboration between Australia, New Zealand and Japan to conserve and manage dwindling stocks of the fishery.⁸⁵⁴ This arrangement was formalised with the negotiation of the 1993 *Convention for the Conservation of Southern Bluefin Tuna (CCSBT Convention)*.⁸⁵⁵ The initial Convention membership has grown from the three original parties to include the Republic of Korea in 2001, Taiwan as a fishing entity in 2002 and the Philippines as a

⁸⁵³ IOTC Resolution 01/07, adopted in 2001, concerning the support of the IPOA-IUU Plan, <http://www.iotc.org.English/resolutions/reso_detail.php?reso=18> at 22 Feb 2005.

⁸⁵⁴ CCSBT, *Home Page* <<http://www.ccsbt.org/docs/about.html>> at 22 Feb 2005.

⁸⁵⁵ 1993 *Convention for the Conservation of Southern Bluefin Tuna*, ATS 1994 No.16 (*CCSBT Convention*).

cooperating non party member in 2004.⁸⁵⁶ The objective of the Convention is to ensure through appropriate management the conservation and optimum utilisation of southern bluefin tuna.⁸⁵⁷ It applies to southern bluefin tuna⁸⁵⁸ wherever it occurs and to ecologically related species (both predators and prey of southern bluefin tuna)⁸⁵⁹ and is not geographically limited. A principal function of the Commission since its inception has been to decide the total allowable catch (TAC) for southern bluefin tuna annually and its allocation to members.⁸⁶⁰ In reaching its decision on TAC levels the Commission is required to take into account relevant scientific evidence and the interest of parties through whose exclusive economic zone or fishing zone the southern bluefin tuna migrates.⁸⁶¹ Disputes over the TAC and allocations of national quotas have been common during CCSBT's history. Disagreements between Japan on the one hand and Australia and New Zealand on the other over national quotas resulted in unilateral fishing over its national quota by Japan and culminated in the unsuccessful resort to dispute resolution procedures by the parties to the dispute during 1999 and 2000.⁸⁶² These continuing disagreements vitiated the application of a precautionary approach by the CCSBT in its early years of operation.⁸⁶³ For ecosystem based management, the CCSBT has established a Working Group on Ecologically Related species and has taken measures to reduce the impact of southern bluefin tuna fishing on

⁸⁵⁶ CCSBT, *Home Page*, <http://www.ccsbt.org/docs/about.html>> at 22 Feb 2005 Discussions are also taking place with Indonesia and South Africa about their membership.

⁸⁵⁷ *CCSBT Convention*, Art.3.

⁸⁵⁸ *Ibid*, Art. 1.

⁸⁵⁹ *Ibid*, Art. 2.

⁸⁶⁰ *Ibid*, Art. 8(3).

⁸⁶¹ *Ibid*, Art. 8(4).

⁸⁶² Rayfuse, above n.701, 491-3. Japan's non compliance with its TAC quota was the subject of dispute settlement between the parties to the CCSBT and resulted in provisional measures orders by the International Tribunal for the Law of the Sea requiring Japan to cease its Experimental Fishing Program and a subsequent decision by an arbitral tribunal established under Annex VII of the *LOSC* that it did not have jurisdiction to hear the dispute.

ecologically related species and bycatch.⁸⁶⁴ Conservation and management measures adopted by the Commission are binding on its members⁸⁶⁵ and unlike many other regional fisheries management conventions there is no provision for objections to measures in the Convention.

Enforcement of conservation and management measures adopted by the CCSBT relies on individual flag state actions rather than a cooperative arrangement⁸⁶⁶ but the parties have agreed to cooperate in the exchange of information on fishing for southern bluefin tuna by the nationals, residents or vessels of any non party to the Convention.⁸⁶⁷ The provisions of the *High Seas Compliance Agreement* are reflected in Article 15(3) of the Convention which provides that each party shall take appropriate measures aimed at preventing vessels registered under its laws and regulations from transferring their registration for the purpose of avoiding compliance with the Convention's provisions or measures. The CCSBT has also introduced a trade documentation scheme requiring the parties to only accept southern bluefin tuna if it is accompanied by a CCSBT trade certificate which has achieved some success in combating IUU fishing for the species.

5.2.2.5.2 *Commission for the Conservation of Antarctic Marine Living Resources*

The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) is unique among RFMOs in several respects. It was established under the 1980 *Convention for the Conservation of Antarctic Marine Living Resources*

⁸⁶³ Rayfuse, above n.698, 200 comments that to date management measures adopted within the CCSBT have been fairly blunt tools designed to avert commercial extinction and promote recovery of the SBT fishery.

⁸⁶⁴ CCSBT, *Working Group on Ecologically Related Species*, <<http://www.ccsbt.org/docs/eco.html>> at 22 Feb 2005.

⁸⁶⁵ CCSBT *Convention*, Art. 8(7).

⁸⁶⁶ *Ibid*, Art. 5(1).

(*CCAMLR Convention*)⁸⁶⁸ as an integral element of the Antarctic Treaty System. It has a mandate to conserve and manage all marine living resources, except whales and seals,⁸⁶⁹ in the area south of 60 degrees south latitude and in the area between 60 degrees south latitude and the Antarctic Convergence.⁸⁷⁰ (Figure 7) The vast majority of this area lies beyond national jurisdiction except for offshore maritime zones adjacent to the territorial claims of some Antarctic treaty partners on the Antarctic Continent. The waters within the offshore maritime zones of some sub-Antarctic islands in the Southern Ocean claimed by Australia, New Zealand, South Africa and the United Kingdom, have been exempted from the application of CCAMLR.⁸⁷¹ CCAMLR's conservation and management responsibilities extend beyond fish species to molluscs, crustaceans and birds found south of the Antarctic Convergence.⁸⁷² The *CCAMLR Convention* was negotiated at least partially in response to a concern in the mid 1970s that krill, a small crustacean which was a fundamental component of the Antarctic ecosystem, would be over harvested.⁸⁷³ The Convention explicitly adopts a precautionary and ecosystem based approach to marine living resource management which recognises the complex interconnections between all parts of the Antarctic

⁸⁶⁷ Ibid, Art. 5(2).

⁸⁶⁸ 1980 *Convention on the Conservation of Antarctic Marine Living Resources*, 19 ILM 837 (*CCAMLR Convention*). The *CCAMLR Convention* has 32 States Parties of which 24 are members of the Commission (CCAMLR, <<http://www.ccamlr.org/pu/E/ms/contacts.htm>> at 20 September 2005.

⁸⁶⁹ Whales and seals are covered by the 1946 *International Convention for the Regulation of Whaling* and the 1972 *Convention for the Conservation of Antarctic Seals* respectively.

⁸⁷⁰ *CCAMLR Convention*, Article I(1). The Antarctic Convergence is also known as the Antarctic Polar Front which is situated at about 50 degrees south latitude and is where the colder fresher waters flowing north from the Antarctic meet the warmer saltier waters flowing south from the Atlantic and Pacific Oceans; Stuart B.Kaye, *International Fisheries Management* (2001), 369 notes that the CCAMLR boundaries reflect ecological realities.

⁸⁷¹ Rayfuse, above n.698, 261. These islands include Kerguelen and Crozet Islands belonging to France, Heard and McDonald Islands belonging to Australia, Prince Edward and Marion Islands belonging to South Africa and South Georgia, South Sandwich Islands and Shag Rocks belonging to the United Kingdom.

⁸⁷² *CCAMLR Convention*, Article I(2).

ecosystem.⁸⁷⁴ Its conservation and management objectives were ambitious portents of principles endorsed by the international community over a decade later in the Oceans Chapter of *Agenda 21*.

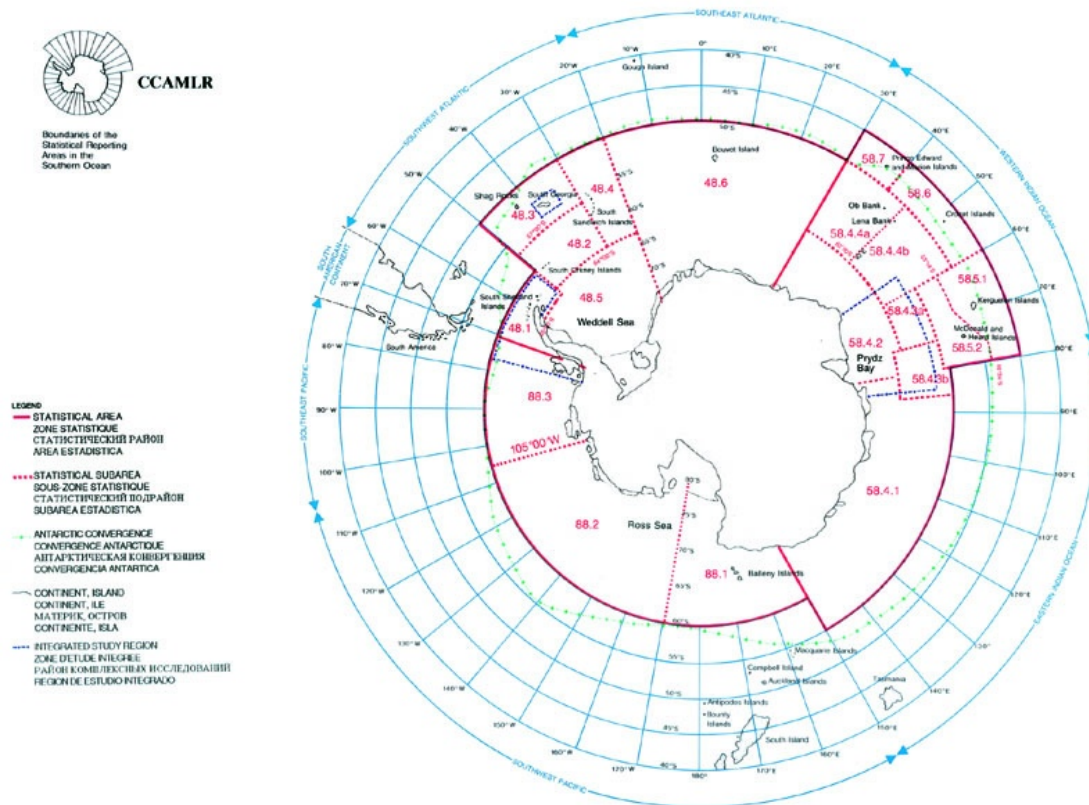


Figure 5.7: CCAMLR Convention Area (Source: CCAMLR, <http://www.ccamlr.org/pa/B/conv/map.htm> at 20 September 2005)

Article II(3) of the Convention sets out the various elements of CCAMLR's conservation and management approach which allows for rational use of marine living resources in accordance with strict conservation principles. The three key principles of conservation which apply to harvesting of marine living resources and associated activities are:

⁸⁷³ Denzil G.M. Miller, Eugene N. Sabourenkov & David C. Ramm, 'Managing Antarctic Marine Living Resources: The CCAMLR Approach' (2004) 19(3) *International Journal of Marine and Coastal Law* 317, 319.

⁸⁷⁴ CCAMLR Convention, Article II(3); Miller, Sabourenkov & Ramm, above n.864, 319; Kaye, above n.861, 368.

- (a) prevention of decrease in the size of any harvested population to levels below those which ensure its stable recruitment. For this purpose its size should not be allowed to fall below a level close to that which ensures the greatest net annual increment;
- (b) maintenance of the ecological relationships between harvested, dependent and related populations of Antarctic marine living resources and the restoration of depleted populations to the levels defined in sub-paragraph (a) above; and
- (c) prevention of changes or minimisation of the risk of changes in the marine ecosystem which are not potentially reversible over three or two decades, taking into account the state of available knowledge of the direct and indirect impact of harvesting, the effect of the introduction of alien species, the effects of associated activities on the marine ecosystem and of the effects of environmental changes, with the aim of making possible the sustained conservation of Antarctic marine living resources.

Since its inception in 1982, CCAMLR has adopted a variety of innovative measures to implement its ecosystem based approach to conservation. These include banning destructive fisheries practices such as bottom trawling for particular fish species in the CCAMLR Area, mandating measures to reduce incidental seabird mortality caused by baited hooks in long line fishing, monitoring the effects of fishing on non target species by collection of data on CCAMLR member state fishing vessels and prohibiting fishing for certain species by CCAMLR member state fishing vessels where the risk to by catch species is

thought to be too great.⁸⁷⁵ One potential weakness in the implementation of conservation measures is the requirement for consensus in decisions on matters of substance such as conservation measures.⁸⁷⁶ Conservation measures are binding on all members of the Commission 180 days after their notification except that members may notify the Commission that they cannot accept a measure within 90 days of its notification.⁸⁷⁷ There is provision for the Commission to review conservation measures where a member has notified its non acceptance of a measure and a further opportunity for members to notify their non acceptance of a measure within thirty days of a review meeting being held.⁸⁷⁸ Commentators are generally agreed that CCAMLR has had some measure of success in implementing an ecosystem based approach to conservation and management of marine living resources in areas beyond national jurisdiction.⁸⁷⁹

One of the major inhibiting factors, however, to the effectiveness of CCAMLR conservation measures has been its inability to regulate the activities of fishing vessels from non member states.⁸⁸⁰ CCAMLR adopted a fairly standard array of fisheries management measures until the mid 1990s. It relied on flag state implementation of conservation and management measures supplemented by fisheries data reporting, at sea and in port inspections by member states of fishing vessels and their catch and tracking the movement of member states fishing vessels through vessel monitoring systems and notification of vessel

⁸⁷⁵ Miller, Sabourenkov & Ramm, above n.864, 323-344 discusses these measures in detail; CCAMLR, *CCAMLR's Ecosystem Approach in Practice*, http://www.ccamlr.org/pu/E/e_pubs/am/man-ant/p4.htm at 20 September 2005.

⁸⁷⁶ CCAMLR Convention, Article XII(1).

⁸⁷⁷ Ibid, Art. IX(6)(b) & (c).

⁸⁷⁸ Ibid, Art. IX(6)(d).

⁸⁷⁹ Miller, Sabourenkov & Ramm, above n.864, 320; Kaye, above n.861, 408 assess that CCAMLR is gradually moving towards effective implementation of an ecosystem approach.

⁸⁸⁰ Rayfuse, above n.698, 267.

movements.⁸⁸¹ The higher incidence of IUU fishing in the CCAMLR Convention area particularly for Patagonian tooth fish from the mid 1990s prompted CCAMLR's resort to trade related sanctions on a global basis.⁸⁸² In 2000 CCAMLR introduced a Catch Documentation Scheme which prohibited entry into world markets of Patagonian toothfish without verified catch documents.⁸⁸³ The scheme has attracted the participation of non member states and applies to toothfish fishing by both member states vessels and non member states vessels.⁸⁸⁴ In a relatively short period the CDS has extended its coverage to more than 90% of the world's toothfish trade and reduced the profitability of this type of IUU fishing.⁸⁸⁵ It requires flag state authorisation for toothfish fishing both within and outside the Convention Area. The scheme has also assisted in establishing global estimates of toothfish catch.⁸⁸⁶

The key advantage CCAMLR has over other RFMOs in implementing international environmental law principles in marine areas beyond national jurisdiction is its conventional international law mandate to apply an integrated management approach to the conservation of marine living resources in a substantial high seas area. This advantage has been compounded by innovative approaches to monitoring and enforcing compliance with its measures by parties and non parties to the *CCAMLR Convention*. In a more globally integrated system of environmental protection for maritime areas beyond national jurisdiction, CCAMLR would be a primary example of best practice in ecosystem based

⁸⁸¹ Miller, Sabourenkov & Ramm, above n.864, 336.

⁸⁸² Kaye, above n.861, 439; Miller, Sabourenkov & Ramm, above n.864, 336-337.

⁸⁸³ Miller, Sabourenkov & Ramm, above n.864, 337. The provisions of the scheme are detailed in CCAMLR, *Schedule of Conservation Measures in Force 2003/4*, <http://www.ccamlr.org> at 20 September 2005. It entered into force on 7 May 2000.

⁸⁸⁴ Miller, Sabourenkov & Ramm, above n.864, 338.

⁸⁸⁵ *Ibid*, 337-338.

conservation and management measures for other RFMOs and regional marine environment protection bodies to follow.

5.2.3 *European Union Policies*

This section will consider the policies of the European Union (EU) on the conservation and management of fisheries and their application to maritime areas beyond national jurisdiction. EU policy statements which reflect the views of one of the largest regional groupings of states subject to integrated policy directives are an important indicator of trends in state practice. The Common Fisheries Policy of the EU has its origins in Articles 32 to 38 of the Treaty Establishing the European Community⁸⁸⁷ which deal with the establishment of a common market for agriculture including fisheries. The emphasis of these articles is on increasing productivity, ensuring a fair standard of living for fishing communities, stabilising markets, assuring the availability of supplies and ensuring that supplies reach consumers at reasonable prices. The vigorous pursuit of these policies led to subsidies being paid for the building of new fishing vessels within the EU, excess fishing capacity and dwindling fish stocks. In response to the crisis of overfishing in waters beyond and within the jurisdiction of EU members, the Common Fisheries Policy of the EU underwent a transformation in 2002 and has now incorporated new principles and measures designed to achieve the conservation and sustainable management of fishery resources and to implement a more ecosystem based approach to fisheries management.⁸⁸⁸ The further development of the Common Fisheries Policy has also become more closely linked to the

⁸⁸⁶ Ibid.

⁸⁸⁷ *Treaty Establishing the European Community*, text at <http://www.europa.eu.int/eur-lex/en/treaties/dat/C_2002325EN.003301.html> at 24 Feb 2005.

development of the EUs environmental policy.⁸⁸⁹ The EU's action plan on integrating environmental protection requirements into the common fisheries policy⁸⁹⁰ states that the it should maintain the same level of commitment to these principles at the international level where it represents EU member states in global and regional fisheries bodies.

The Integration of Environmental Considerations into the EU's Common Fisheries Policy

The EU has produced a strategy for integrating environmental considerations into its CFP in 1999 which recognises key international environmental law principles and their application to fisheries management.⁸⁹¹ This policy endorses an ecosystem based approach to the marine environment developed by all the Ministers of the North Sea Countries at a meeting in Bergen in 1997 and recommends improving the consistency and coordination of the EU CFP with the Bergen approach.⁸⁹² This approach is based on :

- Identifying processes and influences which are essential for safeguarding the structure, operation, productivity and biological diversity of ecosystems;
- Considering the interactions between the different elements of the food chain of ecosystems;

⁸⁸⁸ Activities of the European Union, Fisheries: Introduction, <<http://www.europa.eu.int/scadplus/leg/en/lvb/166003.htm>> at 24 Feb 2005.

⁸⁸⁹ Ibid.

⁸⁹⁰ European Commission Communication of 28 May 2002 setting out a Community Action Plan to integrate environmental protection requirements in the Common Fisheries Policy, para 3, <<http://www.europa.eu.int/scadplus/leg/en/lvb/128123.htm>> at 24 Feb 2005.

⁸⁹¹ European Commission Communication of 14 July 1999 setting out a Strategy for integrating environmental considerations in to the common fisheries policy, <<http://www.europa.eu.int/scadplus/leg/en/lvb/128094.htm>> at 24 Feb 2005.

⁸⁹² Ibid, para 3.

- Protecting the chemical, physical and biological environment necessary for the well being of ecosystems⁸⁹³

The Bergen approach also encompasses the precautionary principle in a formulation which reads “ measures to prevent or correct man’s impact on the environment cannot be curbed by the absence or inadequacy of scientific evidence of the existence of that impact”⁸⁹⁴. From this theoretical basis the EU strategy document details some practical measures to be taken in the fisheries sector. It advocates reducing the pressure exerted by fishing on the marine environment and its component ecosystems by promoting a better balance between the available resources and fishing capacity. The strategy envisages achieving this balance with a joint reduction in the number of fishing vessels, their operating levels and effectiveness.⁸⁹⁵ The objective of these measures is to protect non target species, benthic habitats and fauna and flora by reducing the frequency of passage and therefore the mechanical effects of towed fishing gear on seabeds. The strategy also incorporates the need to conserve biological components which are of no interest in fisheries or commercial terms. Recommended measures to achieve this objective include improving the selectivity of fishing operations so as to reduce catches of juvenile fish, crustaceans, molluscs or species of no commercial value, designating special conservation areas to protect natural habitats and introducing space and-time limits on fisheries activities. Better integration of the results of scientific research into the implementation of the CFP is also recommended.⁸⁹⁶

The strategy document reiterates that the same priorities identified at the

⁸⁹³ Ibid.

⁸⁹⁴ Ibid.

⁸⁹⁵ Ibid.

⁸⁹⁶ Ibid.

Community level for the integration of environmental considerations into fisheries policy must apply to the EU's participation in multilateral negotiations and other international activities where these issues arise.⁸⁹⁷

The strategy document was followed by an action plan for integrating environmental protection requirements into the CFP in 2002 which sets out guiding principles and specific measures for the implementation of the plan.⁸⁹⁸

The guiding principles of the action plan reflect a strong commitment to fundamental international environmental law precepts prescribing that the CFP should be based on the principles of precaution, prevention, rectification at source and polluter pays.⁸⁹⁹ The evolutionary state of scientific knowledge on ecosystem based management of the marine environment is also recognised in the guiding principles which provide that to the extent permitted by scientific knowledge the CFP should aim to implement an ecosystem based approach.⁹⁰⁰ Specific measures directed at the fishing industry include improving fishing methods with a view to reducing discards, incidental by-catch and impact on habitats, eliminating State aid with an adverse effect on the environment particularly that likely to increase fishing capacity and improving the scientific assessment of the state of fish stocks.⁹⁰¹ Complementary measures recommended include promoting a better understanding of marine ecosystems with a view to gradually introducing an ecosystem based approach to fisheries management, extending management measures to include the protection of non commercial species and habitats from the effects of fishing, studies and pilot projects by member States to collect basic

⁸⁹⁷ Ibid.

⁸⁹⁸ See above n.881.

⁸⁹⁹ Ibid, para 3.

⁹⁰⁰ Ibid.

⁹⁰¹ Ibid.

information on the relationships of fisheries with the environment, assessment of trade measures designed to promote sustainable fishing practices and investigation of the advantages of eco labels as a means to encourage environmentally sound fishing practices.⁹⁰² The European Commission is due to present a report on the progress made in integrating environmental considerations into the CFP at the end of 2005.

The EU has issued an action plan to eradicate illegal unreported and unregulated fishing by implementing measures at the Community and international level and through its participation in regional fisheries management organisations.⁹⁰³ The plan aims to discourage EU member state nationals from flagging their fishing vessels under the jurisdiction of a state which is failing to fulfil its flag state responsibilities and to work towards establishing objective legal criteria for ensuring that an authorisation to fly the flag of a state is based on the existence of a substantive link between that state and the fishing vessel concerned.⁹⁰⁴ The action plan also aims to expand the regulatory competence of regional fisheries organisations to cover deep water fish species beyond national jurisdiction and fisheries methods such as bottom trawling which have not yet been regulated at international level.⁹⁰⁵ A further objective of the plan is to secure the adoption by regional fisheries management organisations of control and inspection plans at sea and in port to combat IUU fishing and the maintenance and exchange of lists of IUU fishing vessels between regional fisheries management organisations.⁹⁰⁶

⁹⁰² Ibid.

⁹⁰³ European Commission Communication of 28 May 2002 setting out Action Plan for the eradication of illegal, unreported and unregulated fishing, <<http://www.europa.eu.int/scadplus/leg/en/lvb/166008.htm>> at 24 Feb 2005.

⁹⁰⁴ Ibid, para 3, Actions 1 and 13.

⁹⁰⁵ Ibid, para 3, Action 6.

⁹⁰⁶ Ibid, para 3, Actions 5, 11 and 12.

Other measures are endorsed including raising public awareness of IUU fishing and ensuring that importers, transshippers, buyers, consumers, equipment suppliers, banks, insurers and other service providers do not maintain business relations with vessels identified as IUU fishers.⁹⁰⁷

The EU strategy and action plans towards integrating environmental law principles into fisheries management within and beyond national jurisdiction and the emphasis in the action plans on practical measures to achieve that goal are a potent indicator that a sizeable group of states with significant economic and social interests in fishing activities now feel obligated to conduct fisheries activities in accordance with the international environmental law principles endorsed in Chapter 17 of *Agenda 21*, the *UN Fish Stocks Agreement* and the *FAO Code*. The EU Action Plan to integrate environmental considerations into the CFP also prescribes concrete steps towards operationalising ecosystem based management in fisheries. These trends in EU policy are becoming evident in the conservation and management measures taken by NEAFC to protect deep water fish species beyond national jurisdiction and to impose moratoria on all but long line fishing over five seamounts in the North East Atlantic Ocean.⁹⁰⁸ The EU action plan to eradicate IUU fishing also demonstrates the determination of member states to employ all means at their disposal to deter fishing activities beyond national jurisdiction which do not comply with sustainable fishing practices.

⁹⁰⁷ Ibid, para 3, Actions 3 and 4.

⁹⁰⁸ See above ns.739 & 740.

5.3 Cetaceans

Cetacean species, especially whales, have been subject to human exploitation for many centuries.⁹⁰⁹ Large scale commercial exploitation activities have concentrated on whales and many species were hunted to the point of extinction prior to the advent of international law regulation for their conservation and management in the early to mid-twentieth century.⁹¹⁰ Most species of whales are highly migratory crossing large areas of water which are beyond national jurisdiction to mate and calve in warmer latitudes in winter and returning to feed in colder latitudes in summer.⁹¹¹ Rapid declines in whale stocks in the early decades of the twentieth century prompted the international community to negotiate a series of global instruments to provide for their conservation culminating in the conclusion of the *International Convention for the Regulation for Whaling (ICRW)*⁹¹² in 1946. The original objective of the *ICRW* was to “provide for the proper conservation of whale stocks and thus make possible the orderly development of the whaling industry”.⁹¹³ In the almost 60 years since the *ICRW* was negotiated a schism has emerged between those of its States Parties whose flag vessels continue to engage in commercial whaling and those who oppose commercial whaling.⁹¹⁴ This division of opinion has dominated meetings of the International Whaling Commission (IWC) for many years and contributed to a rather erratic pattern of regulation for whaling activities beyond national jurisdiction. This section will examine the scope of application of the *ICRW* and

⁹⁰⁹ Patricia W. Birnie, *International Regulation of Whaling* (1985) 64-5.

⁹¹⁰ *Ibid*, 105.

⁹¹¹ *Ibid*, 18; WWF/ IUCN/WCPA, above n.614, 69.

⁹¹² 1946 *International Convention for the Regulation of Whaling*, 161 UNTS 72 (*ICRW*).

⁹¹³ *ICRW*, Preamble; Jon L. Jacobson, ‘Whales, the IWC, and the Rule of Law’ in Robert L. Friedheim(ed.) *Towards a Sustainable Whaling Regime*, (2001)1, 8: “The main crystal clear objective of the treaty was, and still is to provide for the conservation of whales for the benefit of the whaling industry and its customers.”

⁹¹⁴ Jacobson , above n.904, 3.

current conservation and management measures applicable to whales beyond national jurisdiction. Although the international environmental law principles discussed in the last two chapters have all been developed since the *ICRW* was concluded their influence on the interpretation and implementation of the Convention's provisions will also be considered.⁹¹⁵ Finally state practice in implementing and enforcing the *ICRW* beyond national jurisdiction will be reviewed.

5.3.1 *International Convention for the Regulation of Whaling*

The *ICRW* and its predecessor conventions⁹¹⁶ were among the first international agreements to recognise the finite nature of a prominent and charismatic marine living resource. When the first whaling conventions were negotiated in the 1930s, whale stocks had rapidly declined as levels of whaling effort became more intensive and killing techniques more lethal.⁹¹⁷ The low reproductive rates of whales and their easy rate of detection on the surface made them more susceptible to capture and over exploitation.⁹¹⁸ The 1931 and 1937 *International Conventions for the Regulation of Whaling* had made little impact on stock declines as not all whaling states were parties to the conventions, regulations were not based on sound scientific data and enforcement of conservation measures was poor.⁹¹⁹

⁹¹⁵ Patricia Birnie, 'Are Twentieth Century Marine Conservation Conventions Adaptable to Twenty First Century Goal and Principles?: Part II' (1997) 12(4) *International Journal of Marine and Coastal Law* 488, 509: "While interpretation of a convention in the context of inter-temporal law must respect the intention of the parties, that this intention, in the case of the Convention, includes "conservation" – a broad subjective term, interpretation of which has grown increasingly complex as scientific knowledge and theory advances – seems not to be in doubt."

⁹¹⁶ The predecessor conventions to the *ICRW* were the 1931 *International Convention for the Regulation of Whaling*, LNTS, CLV 349 and the 1937 *International Convention for the Regulation of Whaling*, LNTS, CXC 79.

⁹¹⁷ Birnie, above n.900, 70-71.

⁹¹⁸ Ibid, 25

⁹¹⁹ Ibid, 140.

After a brief reduction in exploitation rates during the Second World War⁹²⁰ an International Whaling Conference was convened in Washington in 1946 to advance international cooperation on whaling conservation.⁹²¹ The *ICRW* was adopted by the Conference on 2 December 1946 and entered into force on 10 November 1948. Its membership has steadily increased from the 15 original signatories⁹²² to its current membership of 66 states.⁹²³

Objectives and Scope of Application

The predominant theme of the Preamble to the *ICRW* is the human interest in maintaining whale stocks at optimal levels to satisfy the demands of current and future generations. The first clause of the Preamble, “Recognizing the interest of the nations of the world in safeguarding for future generations the great natural resources represented by the whale stocks”, is an early but vague articulation of the principle of intergenerational equity endorsed in subsequent hard and soft law instruments.⁹²⁴ Optimum and continuing utilisation of whale stocks for human purposes is envisaged in other preambular phrases which refer to increasing the size of whale stocks to permit increases in whale captures and the common interest in achieving the optimal level of whale stocks.⁹²⁵ The other primary purpose of the *ICRW* was to establish an international body, the IWC, to conserve, develop and utilise whale stocks on the basis of scientific findings.⁹²⁶

⁹²⁰ Ibid, 130-1.

⁹²¹ Ibid, 165.

⁹²² Ibid, 168.

⁹²³ IWC, *Status of ICRW*, <<http://www.iwcoffice.org/commission/iwcmain.htm>> at 14 October 2005. The IWC includes the major pro whaling states of Japan, Iceland and Norway as well as a large number of anti-whaling states including Australia, US, UK and NZ.

⁹²⁴ Birnie, above n. 900, 171.

⁹²⁵ Ibid.

⁹²⁶ *ICRW*, Arts. III & V.

The *ICRW* is global in scope and applies to factory ships, land stations and whale catchers under the jurisdiction of Contracting Governments and to all waters in which whaling is prosecuted by such factory ships, land stations and whale catchers.⁹²⁷ The IWC has one of the most extensive regulatory ambits of any international marine living resource organisation which applies to whaling activities in maritime areas under national jurisdiction as well as those beyond national jurisdiction at least for States Parties to the Convention.⁹²⁸ The primacy of the IWC in the regulation of whaling has not been overridden by later instruments including the *LOSC* which provides in Article 65 that States shall cooperate with a view to the conservation of marine mammals and in the case of cetaceans shall in particular work through the appropriate international organizations for their conservation, management and study. The range of whale species regulated under the *ICRW* is governed by the Schedule to the Convention⁹²⁹ which may be amended from time to time by the Contracting Governments and is the mechanism for introducing conservation and management measures.⁹³⁰

Conservation and Management Powers and Decision Mechanisms

Article V(1) of the *ICRW* prescribes a comprehensive range of conservation and management powers which are adopted as regulations amending the schedule of the *ICRW* and include the allocation of unprotected and protected species status, declaring open and closed seasons and open and closed waters including sanctuary areas, fixing size limits for each species, the time, methods and intensity of whaling effort, specifying the gear, apparatus and appliances which may be

⁹²⁷ Ibid, Art. I(2)

⁹²⁸ Birnie, above n.900, 173.

⁹²⁹ *ICRW*, Art. V(1)(a).

used and methods of measurement and inspection.⁹³¹ Decisions taken by the IWC become effective for those Contracting Governments 90 days after notification of the decision by the Commission unless a Contracting Government has objected in which case a further 90 day period or a period of 30 days from the date of the last objection received in the further 90 day period, whichever is the later, must expire before a decision becomes effective for only those Contracting Parties which have not objected.⁹³² This complex and lengthy objection clause has caused confusion and diminished the power of the IWC to make binding and effective decisions on numerous occasions during its history.⁹³³ The IWC may also make non binding recommendations to Contracting Governments on any matters which relate to whales or whaling and to the objectives and purposes of the Convention.⁹³⁴

Incorporation of International Environmental Law Considerations

The *ICRW* predates the development in international law of concepts such as sustainable development, the precautionary principle and ecosystem based management of the marine environment, however, it does reflect a commitment to conservation for the purposes of ongoing optimum utilisation of whales as a resource base for sustained human use.⁹³⁵ Phrases which presage concepts such as intergenerational equity are intermingled with requirements that the IWC take into consideration the interests of consumers of whale products and the whaling industry.⁹³⁶ The requirement to base conservation and management decisions on scientific findings is recognised in Article V(2) and the Commission's functions

⁹³⁰ Ibid, Art V.

⁹³¹ Methods of inspection were added to the permissible amendments IWC could make to the schedule by the 1956 Protocol to the *ICRW*.

⁹³² *ICRW*, Art. V(3).

⁹³³ Birnie, above n.900, 195.

⁹³⁴ *ICRW*, Art. VI.

⁹³⁵ Jacobson, above n.904, 82.

⁹³⁶ *ICRW*, Art. V(2).

include the organisation of studies and investigations relating to whales and whaling, the collection and analysis of statistical information on the current condition and trend of the whale stocks and the effects of whaling activities on them.⁹³⁷ The controversial Article VIII of the Convention allows any Contracting Government to grant to any of its nationals a special permit authorising that national to kill, take and treat whales for the purpose of scientific research with the only proviso being that the Contracting Government is required to transmit scientific information available to that Government annually on whales and whaling to a body designated by the IWC.

Monitoring Compliance and Enforcement

The enforcement of the *ICRW*'s provisions is entirely dependent on the Contracting Governments taking appropriate measures to ensure the application of the Convention's provisions and punishing infractions by persons or vessels under their jurisdiction.⁹³⁸ In the 1960s and 70s an international inspection and observer scheme was negotiated outside the *ICRW* among the Contracting Parties for each other's whaling vessels on the high seas with some difficulty.⁹³⁹ Following that, a moratorium on all commercial whaling was introduced by the IWC for the 1985/6 large scale pelagic whaling season.⁹⁴⁰ The re-introduction of commercial whaling under a Revised Management Scheme in the future has now been made dependent on the specification of a cooperative inspection and observer system between the Contracting Governments.⁹⁴¹

⁹³⁷ Ibid, Art. IV.

⁹³⁸ Ibid, Art. IX; Birnie, above n.900, 198.

⁹³⁹ Birnie, above n.900, 198-9.

⁹⁴⁰ IWC, *Commercial Whaling Moratorium Decision*

<<http://www.iwcoffice.org/commission/iwcmainhtm#nations>> at 1 Mar 2005.

⁹⁴¹ Report of IWC Annual Meeting 2004,
<<http://www.iwcoffice.org/meetings/meeting2004.htm#conservation>> at 1 Mar 2005.

IWC Practice – Environmental Considerations and Compliance Concerns

Notwithstanding the sharp division of opinion between anti whaling and pro whaling members of the IWC, conservation and management practice has continued to evolve in the IWC through amendments to the Schedule of the *ICRW* based on recommendations of the Scientific Committee. In a series of resolutions at its annual meetings, the IWC has managed to chart a finely balanced middle course between the pro and anti whaling positions of its members and while not discounting the possibility of sustainable exploitation of whales, is increasingly seeking to incorporate best international practice standards of marine living resource management into its decisions. This section will consider some of the IWC's key conservation and management decisions in recent years, their application to whaling beyond national jurisdiction and their incorporation of international environmental law principles. The progress in reaching a monitoring and compliance regime which is acceptable to the Contracting Governments of the IWC will also be discussed.

Concerned by the continuing depletion of stocks of many whale species even after years of protection and uncertainties in the scientific analyses of the status of whale stocks on which catch limits were based, the IWC passed a resolution at its 34th meeting in 1982 agreeing to a pause in all commercial whaling.⁹⁴² The amendment to the *ICRW* Schedule provided that the IWC would undertake a comprehensive assessment of the effects of this decision on whale stocks and consider modification of this provision and the establishment of other catch limits in the future. This decision is an example of a precautionary approach to the conservation and management of whales which reversed the burden of proof

requiring those wishing to resume commercial whaling to provide sound evidence that whales will not be in danger of extinction from that course of action.⁹⁴³ Since its decision on the moratorium, the IWC has continued research into improved methods for determining the status of whale stocks and has also spent eight years on developing a Revised Management Procedure (RMP) for commercial whaling which is described by the IWC as the most rigorously tested management procedure for a natural resource yet developed.⁹⁴⁴ The RMP recognises the high levels of uncertainty in the data that can be obtained on the levels of whale stocks and is very cautious in its approach to developing safe catch limits. The Scientific Committee in formulating this approach took into account that the methodology used to establish whale populations can only give a range within which the population size lies and not a precise number of whales.⁹⁴⁵ It followed three management objectives in determining its procedure for safe catch limits placing most emphasis on the second objective:

- Catch limits should be as stable as possible.
- Catches should not be allowed on stocks below 54% of the estimated carrying capacity
- The highest possible continuing yield should be obtained from the stock.⁹⁴⁶

⁹⁴²See above n.932.

⁹⁴³Andre Nollkaemper, ‘ “What You Risk Reveals What you Value”, and Other Dilemmas Encountered in the Legal Assault on Risks’ in David Freestone & Ellen Hey (eds.), *The Precautionary Principle and International Law The Challenge of Implementation* (1996) 85, 85-86.

⁹⁴⁴IWC, *Revised Management Procedure (RMP)*, <<http://www.iwc.office.org/conservation/mp.htm>> at 1 March 2005.

⁹⁴⁵Ibid.

⁹⁴⁶Ibid.

A catch limit algorithm (CLA) based on estimates of current abundance taken at regular intervals and knowledge of past and present catches is used to determine safe catch limits from particular whale populations. The CLA is constantly adjusted to reflect incoming data on whale populations and is based only on known biological stocks of whales. Catch limits are to be set for 5 year periods but catches will be phased out if new sightings estimates are not obtained at prescribed intervals.⁹⁴⁷ The provisions of the RMP reflect a scientifically based implementation of the sustainable use principle which takes into account multiple variables affecting whale populations.

Although the RMP was endorsed and accepted by the IWC at its annual meeting in 1994 the IWC is still developing an entire Revised Management Scheme (RMS) which will also establish an international inspection and observation system under the *ICRW* to ensure compliance with catch limits set under the RMP.⁹⁴⁸ Following the historical difficulties in implementing its compliance and enforcement system, prior to the moratorium on commercial whaling, the IWC views the compliance and enforcement aspects of the RMS as an essential component of any future commercial whaling operations.⁹⁴⁹ The development of a best practice compliance regime has entailed the close examination of other international compliance regimes particularly those associated with fisheries.⁹⁵⁰ While there has been general agreement on the broad governing principles of a compliance regime the details of the inspection and observation scheme, the tracking of whale products and the establishment of a Compliance Review

⁹⁴⁷ Ibid.

⁹⁴⁸ IWC, *Revised Management Scheme (RMS)*,

<<http://www.iwcoffice.org/conservation/ms.htm#moratorium>> at 1 March 2005.

⁹⁴⁹ Alexander Gillespie, 'The Search for a New Compliance Mechanism within the IWC' (2003) 34 *Ocean Development and International Law* 349, 350.

Committee have been contentious.⁹⁵¹ Debates have centred on the placement and selection of inspectors, the need for inspectors to collect animal welfare data and the role and control of catch verification schemes including the use of DNA monitoring schemes.⁹⁵² In recent intersessional meetings the broader issues of whether the moratorium on commercial whaling should be lifted and whether whaling should be confined to 200 nautical mile exclusive economic zones of the Contracting Governments have surfaced to threaten political resolution of the details of the RMS.⁹⁵³

Another issue which has preoccupied the IWC in recent decades is the declaration of whale sanctuaries which cover maritime areas both within and beyond national jurisdiction. There are currently two whale sanctuaries in the Indian Ocean and the Southern Ocean in which commercial whaling is prohibited.⁹⁵⁴ Originally these sanctuaries were declared as a result of proposals submitted by anti-whaling states with the central objective of abolishing commercial whaling in these areas but their existence has triggered some ad hoc discussion within the IWC on the broader objectives of whale sanctuaries including developing a coherent scheme for scientific research on whales in the sanctuaries and programs for habitat preservation.⁹⁵⁵ The broader environmental concerns associated with ecosystem

⁹⁵⁰ Ibid.

⁹⁵¹ Ibid, 352.

⁹⁵² Ibid.

⁹⁵³ Ibid, 362.

⁹⁵⁴ IWC, *IWC Whaling Sanctuaries*, <<http://www.iwcoffice.org/conservation/sanctuaries.htm>> at 1 March 2005.

⁹⁵⁵ Elisa Morgera, 'Whale Sanctuaries: An Evolving Concept within the IWC' (2004) 35 *Ocean Development and International Law* 319, 333-334: "The two existing whale sanctuaries created by the IWC cover an area of approximately 100 million square km, which corresponds to about 30% of the world's oceans. The IWC sanctuaries represent the major example of marine protected areas on the high seas....The IWC has addressed questions of sanctuary management only through a reactive ad hoc approach over a long time span. A series of documents constitutes the existing corpus of reference. These documents are: the 1982 guidelines provided by the Technical Committee Working Group on Whale Sanctuaries, the 1991 Norfolk Island Working Group on a

based management of whales have also been canvassed in the Environmental Concerns Sub Committee of the Scientific Committee of the IWC. Research programs have been established which examine the effects of marine pollutants on cetaceans, the impact of noise, physical and biological habitat degradation and competition between cetaceans and fisheries.⁹⁵⁶ Cooperative research is being undertaken by IWC and other intergovernmental and non governmental research and management organisations such as CCAMLR and Southern Ocean GLOBEC on ecosystem based management of marine living resources in the Southern Ocean.⁹⁵⁷

sanctuary in the Southern Ocean recommendations, the decisions taken as to the scientific catches in the sanctuaries, and the recent Instructions from the Commission to the Scientific Committee for Reviews of Sanctuaries and Sanctuary Proposals.”

⁹⁵⁶ IWC, *Environmental Concerns Sub Committee of IWC Scientific Committee*, <<http://www.iwc.office.org/conservation/environment.htm>> at 1 March 2005.

⁹⁵⁷ Ibid.

Table 5.1: Incorporation of International Environmental Law Principles into RFMO Instruments

RFMO	Species Covered	Precaution (p.a.)	Ecosystem Factors
NAFO	All fisheries stocks in the Reg. Area except those covered by other RFMOs viz. Tuna salmon, marlin and marine mammals	Has adopted a p.a. Framework for its conservation and management decisions	Recognising the emergence of ecosystem based management as a requirement for international fisheries
NEAFC	All fisheries resources within the Convention Area except marine mammals and sedentary species	Since 1996 has requested ICES its scientific advisory body to take into account p.a. in its recommendations	Recent conservation and management decisions on seamount fishing reflect some consideration of ecosystem factors
SEAFO	Straddling fish stocks and discrete stocks within the Reg. Area but not highly migratory stocks	Contracting Parties required to apply p.a. under the Convention	Convention recognises need to maintain other components of marine ecosystem
ICCAT	30 tuna species	Currently exploring the implications of p.a. for tuna management	No provisions or practice relating to ecosystem based management
GFCM	All living marine resources of the Mediterranean and the Black Seas	Contracting Parties required to apply p.a. under the Convention as amended	Sub Committee for Marine Environment and Ecosystems established but having little influence on conservation and management decisions as yet
IATTC	Tuna and other species taken by tuna vessels in the Eastern Pacific Ocean	New Convention specifies Contracting Parties to apply p.a. as described in the UN Fish Stocks Agt and FAO Code	Ecosystem based approach encouraged in new Convention provisions

Table 5.1 continued			
RFMO	Species Covered	Precaution (p.a.)	Ecosystem Factors
WCPFC	All fish stocks in the Convention Area of the species listed in Annex I to the LOSC	Members to apply the p.a. in accordance with Annex II of the UN Fish Stocks Agt	Protection of biodiversity and assessment of the impact of fishing on other species belonging to the same ecosystem required in Convention
IOTC	Tuna and tuna like species in the Indian Ocean and adjacent seas	No provision for p.a. in Convention or in recent IOTC resolutions or practice	No provision for ecosystem based management in Convention, recent resolutions or practice
CCSBT	SBT wherever it occurs and ecologically related species including SBT predators and prey	P.a. not mandated in Convention and has been difficult to apply in political climate of CCSBT	Working Group on Ecologically Related Species established and measures taken to reduce impact of SBT fishing on such species
CCAMLR	All marine living resources, except whales and seals in the area south of 60 degrees south latitude and the area between 60 degrees south latitude and the Antarctic Convergence	Convention adopts p.a. to conservation and management of marine living resources which is reflected in CCAMLR's conservation and management decisions	Convention adopts and ecosystem based approach to conservation and management of marine living resources which is reflected in CCAMLR's conservation and management decisions

5.4 Conclusions

The review of hard and soft law instruments applicable to marine living resource exploitation beyond national jurisdiction undertaken in this chapter exposes a variety of shortcomings in their environmental protection provisions and the implementation of these provisions beyond national jurisdiction. Only some

RFMOs have regulatory competence in maritime areas beyond national jurisdiction and only the IWC has global regulatory competence for a particular species. There are still many areas of the high seas where the exploitation of marine living resources such as discrete high seas fish stocks which are not highly migratory or straddling is completely unregulated. Quite a number of RFMOs have conservation and management responsibilities for single species only. While there are some examples of RFMO practice directed towards preserving vulnerable deep sea habitats such as seamounts and submarine ridges, these are very limited at present. The vast majority of endemic marine living resources in these locations beyond national jurisdiction remain unprotected. Not all RFMO conventions have incorporated recent developments in international environmental law such as the precautionary principle and ecosystem based management and a number of RFMOs are still in the early stages of their establishment. The regulatory power of RFMOs is not absolute and in most cases contracting governments have the opportunity to object to conservation and management decisions or consensus among all members is required before a decision can be adopted.

Although some progress has been made in establishing cooperative monitoring and enforcement schemes among RFMO members there are still some RFMO conventions which do not provide for these schemes and rely on individual flag states to ensure compliance by their flag vessels. Some RFMOs are developing methods of enforcement such as trade certification schemes, DNA monitoring and eco labelling which do not rely solely on individual flag state compliance but also on the cooperation and involvement of port and market states and the fishing industry. There is still scope for extending these indirect methods of enforcement

to achieve global coverage. Extensive cross linkages and exchange of information between RFMOs is rare. Cooperative conservation and management programmes and exchange of information between RFMOs on IUU fishing could be increased beyond its current level to provide for collaborative agreements to share knowledge and experience on operationalising international environmental law principles such as the precautionary principle and ecosystem based management.

Chapter 6 Maritime Transport Beyond National Jurisdiction – Environmental Regulation

6.1 Introduction

In contrast to the regulation of marine living resource exploitation beyond national jurisdiction, there is now extensive regulation of shipping activities beyond national jurisdiction with merchant vessels of the majority of flag states obliged to follow detailed international standards concerning vessel discharges, dumping, carriage of hazardous and noxious goods and safe navigation in all areas of the sea. With such a detailed regulatory framework in place, the fundamental issue which arises in connection with the protection and preservation of the marine environment beyond national jurisdiction is the need to monitor compliance and enforce the wide array of instruments which have entered into force.⁹⁵⁸

Maritime transport, particularly sea-borne trade and passenger cruises, constitute one of the most intensive uses of maritime areas beyond national jurisdiction.⁹⁵⁹ Two major threats to the maritime environment beyond national jurisdiction from shipping activities are the intentional and accidental discharge of pollutants into the sea and the introduction of invasive aquatic species into the high seas environment.⁹⁶⁰ The impact of vessel source pollution of the oceans became a concern for the international community as early as the 1920s⁹⁶¹ but it was not

⁹⁵⁸ McGrath & Julian, above n.957, 208.

⁹⁵⁹ Steve Raaymakers 'Maritime Transport and High Seas Governance – Regulation, Risks and the IMO Regime', Paper presented at the International Workshop on Governance of High Seas Biodiversity Conservation: Cairns, Australia, 17-20 June 2003, <http://www.imo.org/includes/blastDataOnly.asp/data_id%3D8594/RaaymakersHighSeasPaper.pdf> at 28 November 2005, 1.

⁹⁶⁰ Ibid, 4.

⁹⁶¹ Ronald B. Mitchell, *Intentional Oil Pollution at Sea: Environmental Policy and Treaty Compliance* (1994) 81; P.M. McGrath and Michael Julian, 'Protection of the Marine Environment from Shipping Operations: Australian and International Responses' in Donald R. Rothwell & Sam

until the 1950s and 60s that the increased international trade in oil and the advent of major maritime disasters such as the *Torrey Canyon* incident prompted States to regulate the discharge of oil and other pollutants from ships on a global basis.⁹⁶² Additional threats to the marine environment materialised as the carriage of hazardous, noxious and nuclear material became more common at sea. A series of global instruments commencing with the 1954 *International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL)*⁹⁶³ were negotiated to address the prevention, treatment and liability aspects of oil and other forms of vessel source pollution. Simultaneously, the more general jurisdictional and enforcement aspects of vessel source pollution were being addressed in the *LOSC* negotiations. More recent instruments negotiated in the International Maritime Organization (IMO) have addressed the control of harmful anti fouling systems⁹⁶⁴ and the control and management of ships ballast water sediments.⁹⁶⁵

Bateman (eds.), *Navigational Rights and Freedoms and the New Law of the Sea* (2000) 188, 188-9.

⁹⁶² Mitchell, above n.957, 82.

⁹⁶³ 1954 *International Convention for the Prevention of Pollution of the Sea by Oil*, 327 UNTS 3 (OILPOL).

⁹⁶⁴ 2001 *International Convention on the Control of Harmful Anti Fouling Systems*, text reproduced at <http://www.imo.org/home.asp?topic_id=161> at 28 November 2005 (*Anti Fouling Convention*).

⁹⁶⁵ 2004 *International Convention on the Control and Management of Ships Ballast Water Sediments*, text reproduced at http://www.imo.org/home.asp?topic_id161 at 28 November 2005 (*Ballast Water Convention*).

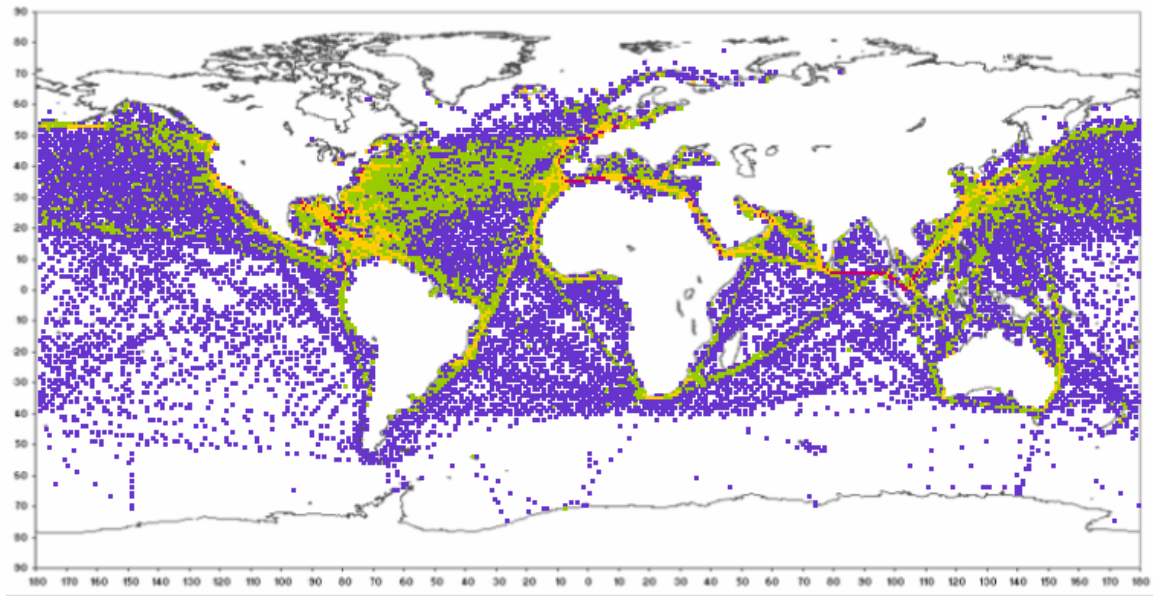


Figure 6.1: Global Shipping Densities as reported to Atlantic Merchant Vessel Reporting (AMVER) System (Source: AMVER, www.amver.com/2005February.htm at 6 March 2005)

This chapter will analyse the global and regional instruments which regulate vessel source pollution beyond national jurisdiction and the extent to which they have been implemented in state practice. The rules relating to the control and management of ballast water sediments will also be reviewed in connection with the transfer of invasive aquatic species to the high seas. A further section of the chapter will examine the introduction of ships routing measures designed to reduce the impact of shipping activities on vulnerable marine habitats in particularly sensitive sea areas and the potential to apply these measures beyond national jurisdiction. This chapter will also address the role played by non state actors in catalysing state consensus on environmental protection measures for shipping. Finally an assessment will be made of the customary international law status of international environmental law principles as they apply to shipping activities beyond national jurisdiction and any deficiencies in the environmental protection regime which applies to such activities.

6.2 Vessel Source Pollution

This section will discuss the pollution control measures and enforcement mechanisms contained in global and regional instruments which regulate vessel source pollution, their application to shipping activities beyond national jurisdiction and their consistency with international environmental law principles. The principal global instruments covering vessel source pollution are the 1973 *International Convention for the Prevention of Pollution from Ships* as amended by its 1978 *Protocol (MARPOL 73/78)*⁹⁶⁶ and the *Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (London Convention)*⁹⁶⁷ and its 1996 *Protocol*.⁹⁶⁸ Both these conventions have substantial levels of state participation (See Table 6.1), however compliance with and enforcement of these instruments by flag and port states has been variable. The practice of flag and port states in implementing and enforcing the full suite of pollution control measures for shipping activities beyond national jurisdiction and the efficacy of current compliance monitoring and enforcement mechanisms in combating vessel source pollution beyond national jurisdiction will also be discussed.

6.2.1 *International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)*

MARPOL 73/78 is an agglomeration of two treaties adopted in 1973 and 1978 and has been continuously amended to incorporate a wide range of pollutants and technical developments since its adoption in 1978. Its stated objective is to

⁹⁶⁶ 1973 *International Convention for the Prevention of Pollution from Ships* (as amended by the 1978 *Protocol*), 1340 UNTS 61 (*MARPOL 73/78*).

⁹⁶⁷ 1972 *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter*, 1046 UNTS 120 (*London Convention*).

⁹⁶⁸ 1996 *Protocol*, (1997) 36 ILM 1 (*London Protocol*).

achieve the complete elimination of intentional pollution of the marine environment by oil and other harmful substances and the minimisation of their accidental discharge.⁹⁶⁹ It has a broad scope of application which extends to all ships entitled to fly the flag of a Party to the Convention and ships not entitled to fly the flag of a Party but which operate under the authority of a Party in all parts of the sea.⁹⁷⁰ While *MARPOL 73/78* does not apply to any warship, naval auxiliary or other ship owned or operated by a Party and used only on government non commercial service, Parties are enjoined to ensure that such ships act consistently so far as is reasonable and practicable with the Convention.⁹⁷¹

Pollution Control Methods

MARPOL 73/78 operates through a series of technical annexes which prescribe methods of minimising and eliminating vessel source pollution. There are currently six annexes which apply to pollution by oil, noxious liquid substances in bulk, harmful substances carried by sea in packaged form, sewage, garbage and air pollution. All six annexes have entered into force. Various methods of pollution control have been introduced as regulations through the Annexes. This section will examine the main pollution control methods prescribed in each Annex.

Table 6.1: State Participation in *MARPOL 73/78*⁹⁷²

MARPOL Annex	Entry into Force	States Parties	% World Tonnage
Annex I/II	2 Oct 1983	134	97.55
Annex III	1 Jul 1992	118	93.52
Annex IV	27 Sep 2003	104	55.89
Annex V	31 Dec 1988	123	95.75
Annex VI	19 May 2005	27	63.52

⁹⁶⁹ *MARPOL 73/78*, Preamble.

⁹⁷⁰ *Ibid*, Art.3(1).

⁹⁷¹ *Ibid*, Art. 3(3).

⁹⁷² IMO, *Summary of Status of Conventions as at 31 August 2005*, http://www.imo.org/home.asp?topic_id=161 at 30 September 2005.

Annex I – Regulations for the Prevention of Pollution by Oil

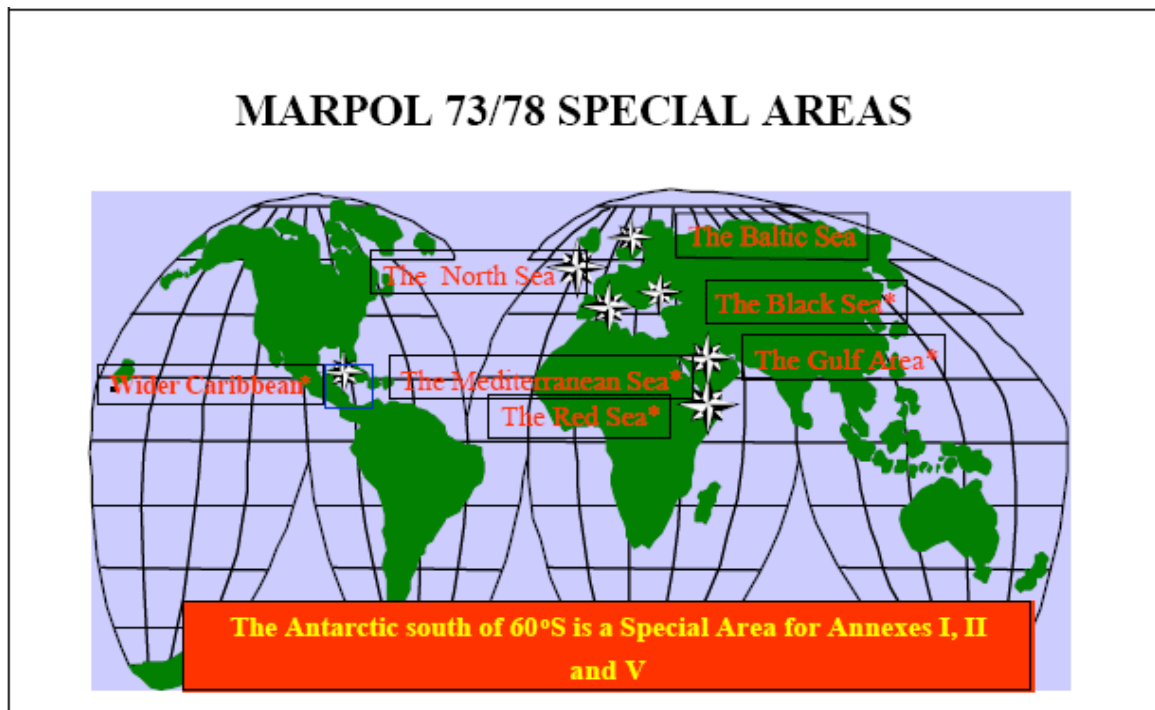
Since its entry into force on 2 October 1983, Annex I has evolved into a multi-faceted instrument which has been adapted to meet the challenges posed by the operational requirements of ships, advances in shipping construction and increasing scientific knowledge on the sensitivity of marine environments.

Acceptance of Annex I is mandatory for Parties to *MARPOL 73/78* and it applies to the merchant flag vessels of States Parties in all areas of the sea.⁹⁷³ Annex I currently has 130 States Parties which represents 97.7% of the world merchant fleet tonnage. The primary pollution control method adopted in Annex I (and subsequent Annexes for different pollutants) has been to designate distances from nearest land (Figure 6.2) and special areas (Figure 6.3) in which discharges of oil are either strictly controlled or prohibited. Standard controls are prescribed for discharges outside these zones.

Figure 6.2: Garbage Disposal Distances from Land under MARPOL (Source: IMO, reproduced in Raaymakers above n.1, 32)

⁹⁷³ *MARPOL 73/78*, Annex I, Reg. 2(1).

The concept of special areas in MARPOL 73/78 recognises the existence of oceanographical, ecological and traffic conditions in a particular area of the sea which justifies a complete prohibition on oil and other vessel discharges except in very limited circumstances.⁹⁷⁴ There are now a large number of special areas under MARPOL 73/78 which cover maritime areas both within and beyond national jurisdiction. (Figure 6.3 and Table 6.2)



* The areas marked (*) have not been enforced as Special Areas in all respects due to lack of adequate reception facilities (the Mediterranean Sea and the Black Sea have obtained the full Special Area status for Annex I).

Figure 6.3: MARPOL Special Areas - add Gulf of Aden area and North West European Waters and the Oman Sea area of the Arabian Seas (from 1 Jan 2007) for Annex I (Source: IMO reproduced in Raaymakers, above n. 1, 32)

⁹⁷⁴ Ibid, Annex I, Reg 1(10).

Table 6.2: MARPOL Special Areas Restrictions

Annex I: Strict Controls on the Discharge of Oily Wastes	Annex II: Strict Controls on Discharge of Chemicals	Annex V: Strict Controls on Disposal of Garbage	Annex VI: Stringent controls on Sulphur Emissions
Mediterranean Sea	Baltic Sea	Mediterranean Sea	Baltic Sea
Baltic Sea	Black Sea	Baltic Sea	North Sea
Black Sea	Antarctic Area	Black Sea	
Red Sea		Red Sea	
“Gulfs” Area*		“Gulfs” Area*	
Gulf of Aden		North Sea	
Antarctic Area			
North West European Waters			
Oman Sea Area of the Arabian Seas (from 1 Jan 2007)			

* “Gulfs Area” means the sea area located north west of the rhumb line between Ras al Haad (22°30 minutes N, 59°48 minutes E) and Ras al Fasteh (25 degrees 4 minutes N, 61 degrees 25 minutes E)

Although Article 211(6) of the *LOSC* also provides for the coastal State to designate special areas within its exclusive economic zone where the adoption of special mandatory measures for the prevention of pollution from vessels is required after consultation with the competent international organization, this power is confined to maritime areas within national jurisdiction and is not as widespread as the *MARPOL 73/78* system of special areas.

The current Annex I of *MARPOL 73/78* provides specific discharge restrictions for different types of vessels depending on their tonnage and date of construction. Regulation 9 of Annex I provides that an oil tanker may only discharge oil or oily mixtures when it is not in a special area and en route more than 50 nautical miles from nearest land. In addition, the instantaneous rate of discharge must not exceed 60 litres per nautical mile and the total quantity of oil discharged into the sea must not exceed, for existing tankers, 1/15,000 of the total quantity of the particular cargo of which the residue formed a part. For new tankers this discharge rate is

1/30,000 of the total quantity of the particular cargo of which the residue formed a part. A similar but less stringent combination of conditions applies to oil discharges from ships other than oil tankers.⁹⁷⁵

As well as specifying restrictions on the nature of oil discharge and the areas in which oil or oily mixtures can be discharged Annex I has been amended over time to introduce, construction, design and equipment standards which aim to reduce the amount of oil waste which is generated by ships and to lessen the risk of accidental discharge. During the 1970s, the discharge restrictions applicable in certain zones were progressively supplemented with design and equipment standards to be phased in as new tankers were built.⁹⁷⁶ The 1973 International Conference on Marine Pollution adopted regulations which required all oil tankers to be capable of retaining oily wastes on board through the load on top system or for discharge to shore facilities.⁹⁷⁷ This involved fitting oily water separators, a filtering system, slop tanks, sludge tanks, piping and pumping equipment and oil discharge monitoring and control devices which were to be on all new tankers delivered after 1979 and on existing tankers starting three years after *MARPOL* 73/78 entered into force.⁹⁷⁸ Under a further agreement reached at the 1978 International Conference on Marine Pollution, new crude tankers over 20,000 tons were required to install segregated ballast tanks (SBT) and crude oil washing systems (COW) and existing tankers over 40,000 tons were required to install either SBT or COW to reduce the amount of oil waste generated during voyages.⁹⁷⁹ The 1978 amendments also required that SBT to be positioned in such

⁹⁷⁵ Ibid, Annex I, Reg. 9(1)(b) and (2).

⁹⁷⁶ Mitchell, above n.957, 96.

⁹⁷⁷ Ibid, 94.

⁹⁷⁸ Ibid, 96.

⁹⁷⁹ Ibid, 102.

a way that they would help protect the cargo tanks in the event of a collision or grounding.⁹⁸⁰ In 1992, amendments to Annex I were adopted to require new oil tankers to be built with double hulls or equivalent spill protection construction and for all oil tankers to carry oil pollution emergency plans.⁹⁸¹ A recent revision of Annex I, expected to enter into force on 1 January 2007, introduces requirements for double bottoms on pump rooms of oil tankers of 5,000 tonnes deadweight and above constructed on or after 1 January 2007 and construction requirements to provide adequate protection against oil pollution in the event of stranding or collision for oil tankers delivered on or after 1 January 2007.⁹⁸²

Some commentators have observed that the progressive refinement of Annex I over a period of more than 20 years and its specification of construction design and equipment standards has led to a direct decrease in both intentional and accidental oil pollution entering the sea from ships.⁹⁸³ This reduction in oil pollution from ships is illustrated by the steady decline in figures compiled by the International Oil Tankers Federation (IOTF) on the number of oil spills and quantities of oil spilt annually from 1974 to 2004. (Figure 6.4). The majority of major oil spills in recent years have occurred in coastal areas where the risk of collision and grounding is higher, although there are a number which have occurred beyond national jurisdiction as Figure 6.5 illustrates.

⁹⁸⁰ IMO, *Home Page*, <http://www.imo.org/home.asp?topic_io=161> at 24 March 2005.

⁹⁸¹ *Ibid*; Mitchell, above n.957, 104.

⁹⁸² IMO, above n.977.

⁹⁸³ Mitchell, above n.957, 292; McGrath & Julian, above n.957, 197; Raaymakers, above n.955, 23.

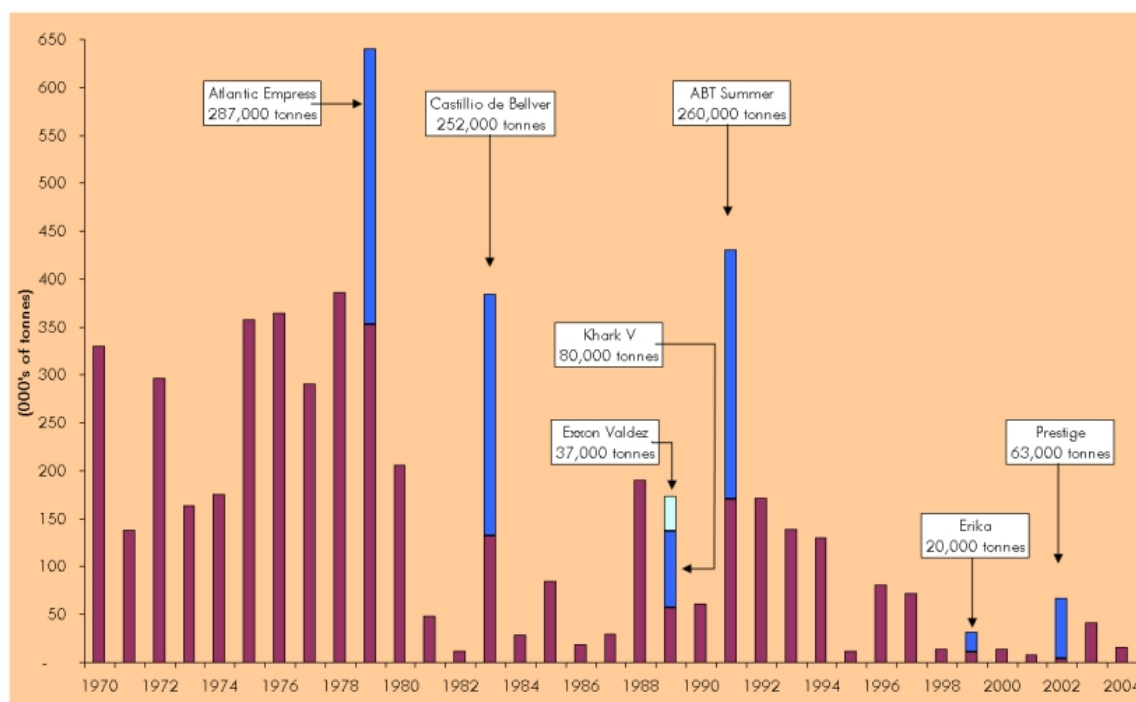


Figure 6.4: Number of Oil Spills over 700 tonnes (Source: International Tanker Owners Oil Pollution Federation Ltd. (ITOPF), <<http://www.itopf.com/stats.html>> at 18 October 2005)

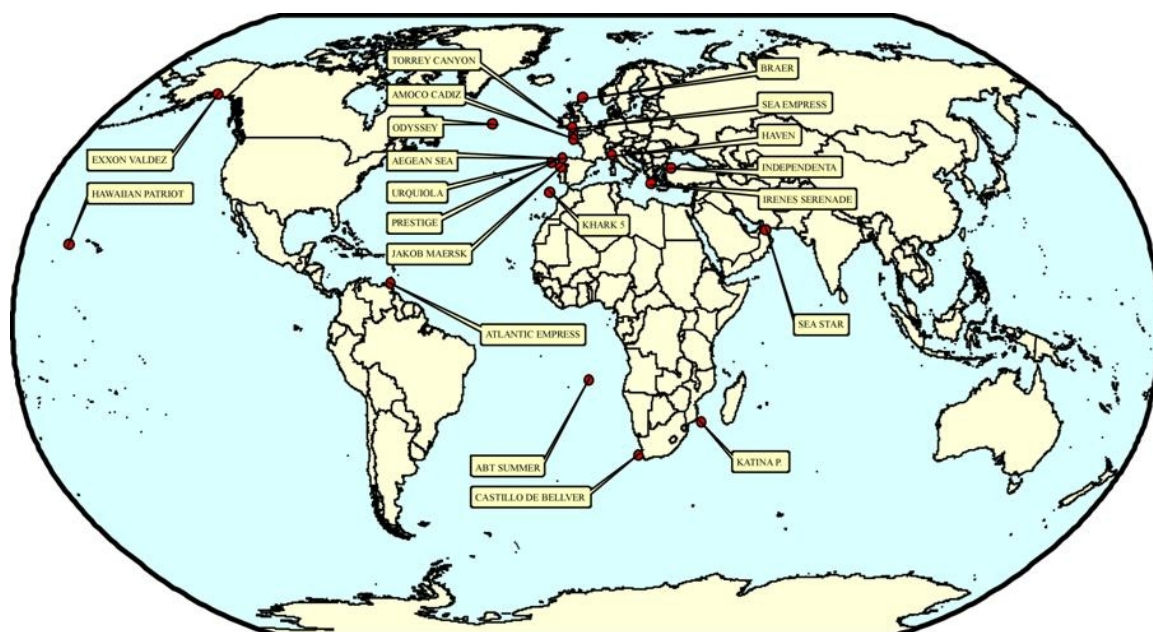


Figure 6.5: Location of Selected Oil Spills (Source: ITOPF, <http://www.itopf.com/stats.html> at 18 October 2005)

Raaymakers expresses some concern that basing discharge restrictions on distances away from land may lead to greater concentrations of oil and other

vessel source pollutants in high seas areas, ensuring that the high seas are the least protected part of the oceans.⁹⁸⁴ He comments that the highest risk for concentrated vessel source pollution on the high seas is likely to stem from accidents caused by structural failure rather than collisions which are unlikely and groundings which are impossible in high seas areas.⁹⁸⁵ Mitchell identifies the addition of equipment standards to discharge limitations in Annex I as one of the critical factors in inducing higher levels of compliance with oil discharge restrictions as the advent of more sophisticated separation and monitoring equipment has made it easier to prevent and detect violations.⁹⁸⁶ Mounting domestic political pressure to prevent catastrophic tanker accidents such as the *Exxon Valdez*, the *Amoco Cadiz* and later incidents, also played a role in achieving the international consensus required in the IMO to impose more stringent discharge restrictions and equipment, construction and design standards through Annex I regulations.⁹⁸⁷

Annex II – Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk

Annex II is a further compulsory Annex to *MARPOL 73/78* governing the discharge of noxious liquid substances in bulk. It applies to all ships carrying these substances⁹⁸⁸ and regulates the discharge of over 250 substances into the sea. Annex II has the same 130 States Parties as Annex I representing 97.7% of the world merchant fleet tonnage. (Table 6.1) The substances listed in Appendix II to Annex II are divided into four categories which range from those Category A substances which present a major hazard to either marine resources or human health justifying the application of stringent anti pollution measures, to those in

⁹⁸⁴ Raaymakers, above n.955, 24.

⁹⁸⁵ Raaymakers, above n.955, 6.

⁹⁸⁶ Mitchell, above n.957, 292.

⁹⁸⁷ Mitchell, above n.957, 104-105; McGrath & Julian, above n.957, 189.

⁹⁸⁸ *MARPOL 73/78*, Annex II, Reg.2.

Category B which present hazards justifying special anti pollution measures and those in Categories C and D which present minor and recognisable hazards justifying the application of specific operational conditions.⁹⁸⁹ The discharge of these substances is prohibited and their residues, following tank washing, may only be discharged to reception facilities on shore unless they meet certain diluted concentration levels and other stringent conditions.⁹⁹⁰ No discharge of noxious liquid substances is permitted within 12 nautical miles of the nearest land.⁹⁹¹ (Figure 6.2) Amendments to Annex II in 1985 introduced requirements to improve cargo tank stripping efficiency and reduce the amount of chemical residues for disposal.⁹⁹² Molenaar comments that there was a strong economic incentive to pursue these amendments due to the often high value of these residues.⁹⁹³ Annex II has been further revised recently to incorporate an updated four category system of noxious liquid substances which ranges from Category X substances, which present major hazards if discharged into the marine environment and justify the prohibition of discharge, to Categories Y and Z substances which present hazards and minor hazards to the marine environment and justify respectively a limitation or less stringent restrictions on discharge. A fourth category of substances is not subject to any discharge restrictions. This revision is expected to enter into force on 1 January 2007.⁹⁹⁴ In comparison to the statistics compiled over a number of years on oil spills from tankers, there is relatively little data on spills of noxious liquid substances. Raaymakers observes

⁹⁸⁹ Ibid, Annex II, Reg. 3 & Appendix II.

⁹⁹⁰ Ibid, Annex II, Reg 5

⁹⁹¹ Ibid.

⁹⁹² Ibid, Annex II, Reg 5A.

⁹⁹³ Erik Jaap Molenaar, *Coastal State Jurisdiction over Vessel Source Pollution* (1998) 66-67.

⁹⁹⁴ IMO, *Home Page*, <http://www.imo.org/home.asp?topic_id=161> at 25 March 2005.

however that the impact of a noxious liquid spill could have an equally adverse if not greater impact on the high seas marine environment than an oil spill.⁹⁹⁵

Annex III – Regulations for the Prevention of Pollution by Harmful Substances in Packaged Form

Annex III to *MARPOL 73/78* regulates the proper carriage of harmful substances in packaged form which pose a threat to the marine environment and is optional for Parties to the Convention. It has attracted wide support from IMO member states and now has 115 States Parties representing 92.99 % of the world merchant fleet tonnage. (Table 6.1) Harmful substances are those substances identified as marine pollutants in the *International Maritime Dangerous Goods Code* (IMDG).⁹⁹⁶ The provisions of Annex III require States Parties to issue detailed requirements on the proper packaging, labelling, stowage and documentation of any harmful substance on their flag vessels.⁹⁹⁷ Packages containing harmful substances must be durably marked with the correct technical name of the harmful substance and indicate that the substance is a marine pollutant.⁹⁹⁸ The information on the package is still required to be identifiable after at least three months immersion in the sea.⁹⁹⁹ Each ship carrying harmful substances in packaged form is required to have a special list or manifest setting out the harmful substances on board and their location or a detailed stowage plan for the substances.¹⁰⁰⁰

Jettisoning of the harmful substances is prohibited except where it is necessary to

⁹⁹⁵ Raaymakers, above n.955, 5: “In addition to oil. There are a variety of other cargoes carried by ships that if accidentally spilt into the sea can also cause a range of environmental impacts....They may be combustible, flammable, explosive, corrosive, reactive, asphyxiant, toxic, haemotoxic, immunotoxic, neurotoxic, carcinogenic, mutagenic and/or radioactive. These substances may also exhibit a wide range of behaviours when spilt into the sea; including sinking, floating, gasifying, dissolving, dispersing, congealing, solidifying and various combinations of these and other behaviours.”

⁹⁹⁶ *MARPOL 73/78*, Annex III, Reg 1(1).

⁹⁹⁷ *Ibid*, Annex III, Reg 1(3).

⁹⁹⁸ *Ibid*, Annex III, Reg 3(1).

⁹⁹⁹ *Ibid*, Annex III, Reg 3(2).

¹⁰⁰⁰ *Ibid*, Annex III, Reg 4(3).

secure the safety of the ship or to save life at sea.¹⁰⁰¹ The requirements of this Annex are very practical in nature and in comparison to Annexes I and II are less onerous for the shipping industry to implement as they do not involve substantial construction, design, equipment or manning alterations.

Annex IV – Regulations for the Prevention of Pollution by Sewage from Ships

The steady increase in passenger liners engaged in international voyages has renewed the interest of many states in regulating the discharge of sewage from ships and triggered the entry into force of Annex IV to *MARPOL 73/78* on 27 September 2003.¹⁰⁰² It has 100 States Parties representing 54.35% of the world merchant fleet tonnage (Table 6.1). Annex IV applies only to newly constructed ships which are 400 gross tonnage and above and engage in international voyages or those that are less than 400 gross tonnage but certified to carry more than 15 persons.¹⁰⁰³ For existing ships of the same character, Annex IV will apply 5 years after the date of entry into force of the Annex for a particular State Party.¹⁰⁰⁴

Under Regulation 9, ships are required to be equipped with either a sewage treatment plant in compliance with IMO standards, a sewage comminuting and disinfecting system or a holding tank for the treatment of sewage. Discharge of sewage from ships covered by Annex IV at sea is prohibited unless it is carried out through a sewage treatment plant, or through using a comminuting and disinfecting system provided the ship is more than three nautical miles from the nearest land or it is carried out from a holding tank provided the ship is more than

¹⁰⁰¹ Ibid, Annex III, Reg 7.

¹⁰⁰² Department of Foreign Affairs and Trade, *National Interest Analysis for Joint Standing Committee on Treaties hearing on Australia's ratification of Annex IV to MARPOL 73/78*, <<http://www.worldlii.org/cgi-worldlii/disp.pl/au/other/dfat/nia/2003/4.html?query=marpol+73%2f78>> at 17 Mar 2005.

¹⁰⁰³ *MARPOL 73/78*, Annex IV, Reg.1.

¹⁰⁰⁴ Ibid, Annex IV, Reg 2.

12 nautical miles from land.¹⁰⁰⁵ (Figure 2) Each State Party is required to ensure that adequate facilities are available at its ports and terminals for the reception of sewage.¹⁰⁰⁶

Sewage discharged from ships can contain high levels of nutrients, disease carrying micro-organisms and treatment chemicals causing algal blooms and reduced oxygen levels in the marine environment.¹⁰⁰⁷ These impacts are reduced in high seas areas due to the open and deep nature of the marine environment and the biodegradable and organic qualities of the sewage.¹⁰⁰⁸ While the risk of sewage contamination for high seas environments is less acute than coastal areas the introduction of Annex IV has at least reduced the potential for harm from this vessel source pollutant on the high seas.

Annex V – Regulations for the Prevention of Pollution by Garbage from Ships

The provisions of Annex V apply to all ships of States Parties¹⁰⁰⁹ and impose a total prohibition on the disposal into the sea of all plastics including but not limited to synthetic ropes, synthetic fishing nets and plastic garbage bags.¹⁰¹⁰ Other garbage can only be disposed at certain distances from land. (Figure 6.2) Dunnage lining and packing materials which will float can only be disposed of at 25 nautical miles or more from nearest land¹⁰¹¹ and food wastes and all other garbage at 12 nautical miles or more from nearest land unless passed through a comminuter or grinder when they can be disposed of at three nautical miles from

¹⁰⁰⁵ Ibid, Annex IV, Reg 11.

¹⁰⁰⁶ Ibid, Annex IV, Reg 12.

¹⁰⁰⁷ DFAT, above n.999.

¹⁰⁰⁸ Raaymakers, above n.955, 9.

¹⁰⁰⁹ MARPOL 73/78, Annex V, Reg 2.

¹⁰¹⁰ Ibid, Annex V, Reg. 3(1)(a).

¹⁰¹¹ Ibid, Annex V, Reg 3(1)(b)(I).

land.¹⁰¹² Discharge restrictions are more stringent in special areas where paper products, rags, glass, metal, bottles, crockery, dunnage lining and packing materials may not be disposed of and food waste may be only be disposed of 12 nautical miles or more from land.¹⁰¹³ (Figure 6.3).

Despite the stringent restrictions on garbage disposal at sea introduced by Annex V, surveys of marine litter by UNEP's Global Programme for Action and other bodies have noted steadily increasing levels of garbage accumulating at sea and on coastlines. Raaymakers notes with particular concern the mass concentrations of marine debris in high seas "sink" areas such as the equatorial convergence zone and their lethal impact on high seas marine life which ingest and become entangled in the rafts of debris.¹⁰¹⁴ These rafts of debris also act as vectors for invasive aquatic species which may have reached high seas areas in ballast water. A further obstacle to securing better compliance with Annex V by ships is the lack of adequate waste reception facilities at many ports.¹⁰¹⁵

Annex VI – Regulations for the Prevention of Air Pollution from Ships

Annex VI, which entered into force on 19 May 2005, sets limits on emissions of sulphur oxide, nitrogen oxide, ozone depleting substances and volatile organic compounds and emissions from shipboard incinerators.¹⁰¹⁶ The provisions of Annex VI will apply with some exceptions to all ships of States Parties.¹⁰¹⁷ Some construction, design and equipment standards related to the modification of diesel engines, exhaust gas cleaning systems and shipboard incinerators are also

¹⁰¹² Ibid, Annex V, Reg 3(1)(b)(ii) and (iii).

¹⁰¹³ Ibid, Annex V, Reg. 5.

¹⁰¹⁴ Raaymakers, above n.955, 8-9.

¹⁰¹⁵ Ibid, 23.

¹⁰¹⁶ IMO, *Home Page*, <<http://www.imo.org/home.asp>> at 17 March 2005.

¹⁰¹⁷ MARPOL 73/78, Annex VI, Reg. 1.

prescribed.¹⁰¹⁸ Ships covered by Annex VI are required to carry an international air pollution certificate issued by the authorities of the flag state after survey¹⁰¹⁹ which is subject to inspection by port state authorities of States Parties.¹⁰²⁰ As yet Annex VI only has 19 States Parties which represents 60.4% of the world's merchant fleet tonnage (Table 6.1).

6.2.1.1 Consistency of MARPOL 73/78 with International Environmental Law Principles

The pollution control measures adopted in the Annexes to *MARPOL 73/78* are not specifically characterised as applications of the precautionary principle. The preamble of *MARPOL 73/78* recognises the vulnerability of the marine environment to oil and other pollutants and the need to eliminate intentional pollution and minimise accidental pollution of the sea. The regulations adopted in the Annexes to *MARPOL 73/78* have provided the shipping community with practical options to achieve these objectives allowing flag states to phase in the restrictions dependent on the age of their merchant fleets. The difficulty with characterising some of the discharge restrictions in *MARPOL 73/78* as indicative of a precautionary approach for maritime areas beyond national jurisdiction is that discharge is permitted at a higher rate for some substances the further the ship is from land. In contrast, the concept of special areas under *MARPOL 73/78* in which ecological and oceanographic conditions and the nature of shipping traffic are taken into account in determining pollution control measures, accords with both a precautionary and ecosystem based approach to marine environmental protection which seeks to balance the integrity of the ecosystems and principal human uses in a particular oceans area.

¹⁰¹⁸ Ibid, Annex VI, Regs. 13, 14 & 16.

6.2.1.2 *Enforcement of MARPOL 73/78 Beyond National Jurisdiction*

MARPOL 73/78 reiterates the primary responsibility of flag states for monitoring and enforcing compliance with the pollution control measures in areas beyond national jurisdiction. Article 4 (1) of *MARPOL 73/78* provides that any violation of the Convention shall be prohibited and sanctions shall be established by a flag state wherever the violation occurs. A flag state is required to take proceedings if it is informed of a violation of the Convention and is satisfied that there is sufficient evidence to proceed. The penalties specified under the law of flag state are required to be adequate in severity to discourage violations of the Convention and to be equally severe irrespective of where the violation occurs.¹⁰²¹ This emphasis on flag state control and the retention of the flag state as prosecuting authority was directly attributable to the power of the maritime states at the time *MARPOL 73/78* was negotiated and opposition to flag vessels being interdicted at sea or detained for any longer than was strictly necessary in foreign ports.¹⁰²²

The port state provisions under *MARPOL 73/78* introduced a further layer of compliance monitoring which relies on port state inspections and notification of suspected violations to the flag state, other States Parties and the IMO. Under the various Annexes to *MARPOL 73/78*, ships of States Parties engaged in international voyages must carry valid international certificates verifying that they comply with the relevant provisions. Such ships are subject to inspection by authorised port state officers of States Parties to ascertain that the ship has valid certificates and that the condition of the ship and its equipment corresponds

¹⁰¹⁹ Ibid, Annex VI, Reg 6.

¹⁰²⁰ Ibid, Annex VI, Reg 10.

¹⁰²¹ *MARPOL 73/78*, Art. 4(4).

¹⁰²² R. Michael M'Gonigle & Mark W. Zacher, *Pollution, Politics and International Law* (1979) 229-230; George C. Kasoulides, *Port State Control and Jurisdiction* (1993) 114-5.

substantially with the particulars of the certificate.¹⁰²³ If the port state authorities have clear grounds for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of the certificate or the relevant valid certificates are not on board, they may detain the ship until it can proceed to sea without presenting an unreasonable threat of harm to the marine environment.¹⁰²⁴ Under article 5(3) of *MARPOL 73/78*, port states are also entitled to deny entry to their ports to ships which do not comply with the Convention's requirements. Port states on their own initiative or at the request of another State Party to the Convention, may also inspect a Party's flag ship to verify whether the ship has discharged any harmful substances in violation of *MARPOL 73/78*.¹⁰²⁵ Port states are required to submit any evidence that the ship has discharged harmful substances or effluents containing such substances in contravention of *MARPOL 73/78* to the flag state or the State Party requesting the inspection.¹⁰²⁶ It is then the responsibility of the flag state to further investigate the matter and initiate proceedings if there is sufficient evidence to proceed.¹⁰²⁷ In addition to the port state control measures, States Parties to *MARPOL 73/78* are required to cooperate generally in the detection of violations and the enforcement of pollution control measures using all appropriate and practicable measures of detection and environmental monitoring.¹⁰²⁸ An integral component of the *MARPOL 73/78* enforcement system is the requirement for States Parties to arrange for masters of their flag vessels to report incidents involving the discharge of harmful substances to their own flag state authorities who are required to communicate those reports

¹⁰²³ *MARPOL 73/78*, Art. 5(2).

¹⁰²⁴ *Ibid.*

¹⁰²⁵ *Ibid.*, Art. 6(2).

¹⁰²⁶ *Ibid.*, Art. 6(3).

¹⁰²⁷ *Ibid.*, Art. 6(4).

¹⁰²⁸ *Ibid.*, Art. 6(1).

to the flag states of the vessel or vessels involved, the IMO and any other affected states.¹⁰²⁹

The imposition of port state controls in *MARPOL 73/78* introduced an additional mechanism for verifying compliance with pollution control measures which has ameliorated some of the laxities of flag state control.¹⁰³⁰ The considerable costs involved in having a ship detained in or barred from a port for non compliance with *MARPOL 73/78* requirements, is a powerful incentive for ship owners to comply with pollution control measures.

6.2.1.3 *Regional Arrangements for Port State Control*

In comparison to the innovative port state jurisdiction regime envisaged in Articles 218 and 219 of the *United Nations Convention on the Law of the Sea* (LOSC).¹⁰³¹ the powers of port states under *MARPOL 73/78* are relatively limited, however, the port state control regime has been strengthened by formal and informal cooperation between port states to more effectively exercise their powers. To enhance the effectiveness of pollution control measures for ships in all areas of the sea and with the objective of eliminating substandard shipping, port states in many regions of the world have negotiated memoranda of understanding (MOUs) concerning port state control. There are now nine port state MOUs covering the world's oceans. MOUs have been signed between States Parties to *MARPOL 73/78* and other IMO conventions governing safety at sea which cover

¹⁰²⁹ Ibid, Art. 8.

¹⁰³⁰ Ronald P. Barston, 'Port State Control: Evolving Concepts' in Harry N. Scheiber (ed.) *Law of the Sea: The Common Heritage and Emerging Challenges* (2000) 87, 87.

¹⁰³¹ 1982 *United Nations Convention on the Law of the Sea*, 1833 UNTS 3 (LOSC); see also discussion in Chapter 3.

all the major oceanic regions of the world.¹⁰³² The earliest of these agreements, the 1982 *Paris Memorandum of Understanding on Port State Control* (*Paris MOU*),¹⁰³³ has influenced the development of MOUs in the Asia Pacific, Latin America, the Mediterranean, the Indian Ocean, the Caribbean, West and Central Africa, the Black Sea region and the Persian Gulf.¹⁰³⁴ The US has developed its own system of port state control implemented by the US Coast Guard.¹⁰³⁵ Originally intended as a complementary form of monitoring and control to flag state jurisdiction, port state control is increasingly becoming an essential mechanism for monitoring compliance and enforcement of *MARPOL 73/78* and other safety standards.¹⁰³⁶

Since its inception in 1982, the *Paris MOU* has expanded the scope of its operations in a number of areas. The scope of ship inspections by *Paris MOU* members now includes both documentary and operational aspects including the condition of a ship, its equipment and the skill levels of its crew.¹⁰³⁷ The number of inspections has steadily increased under the *Paris MOU*¹⁰³⁸ as well as for other regions with some positive effects on the level of compliance with *MARPOL 73/78* provisions.¹⁰³⁹ The concept of targeting particular vessels for priority

¹⁰³² IMO, *Port State Control*,

<http://www.imo.org/Safety/mainframe.asp?topic_id=159&doc_id=523> at 22 March 2005.

¹⁰³³ 1982 *Paris Memorandum of Understanding on Port State Control*, text at

<<http://www.parismou.org>> at 28 November 2005 (*Paris MOU*).

¹⁰³⁴ Barston, above n.1027.

¹⁰³⁵ Barston, above n.1027, 91.

¹⁰³⁶ Barston, above n.1027, 87; McGrath & Julian, above n.957, 199.

¹⁰³⁷ Barston, above n.1027, 90.

¹⁰³⁸ Paris MOU on Port State Control, *Home Page*, <http://www.parismou.org/> at 30 September 2005: Annually over 18000 inspections take place in Paris MOU ports. These are considered to have had a significant effect on the elimination of ‘rustbucket’ ships.

¹⁰³⁹ Tokyo MOU on Port State Control, *2004 Annual Report on Port State Control*, <http://www.tokyomou.org> at 30 Sep 2005, 12-13 notes that in 2004 21,400 inspections involving 10,922 individual ships were carried out on ships registered under 93 flags. Out of 21,400 inspections there were 14,396 which found ships with deficiencies. In 2004 1,393 ships registered under 65 flags were detained for serious deficiencies on board. Compared with 1,709 detentions in 2003 the detentions decreased 316 in number or 23%.

inspection on the basis of criteria such as prior deficiencies, casualties and age has been introduced under the *Paris MOU* and other regional port state MOUs to enhance the effectiveness of their inspections.¹⁰⁴⁰ A major tool of the port state MOUs in combating substandard shipping has been an intensive level of information exchange between the port state authorities and with the IMO on the condition of particular vessels trading within and between the regions.¹⁰⁴¹ The lists of non compliant shipping exchanged between port states are an important obstacle to the operations of substandard shipping. The ongoing standardisation of port inspection regimes is another advantage of port state control systems, although, as with regional fisheries management organisations, there is still considerable disparity between the operations of different port state control systems and a need for greater coordination and globalisation of port state procedures across regions.¹⁰⁴² In addition, there are some key non participants in port state control regimes such as Taiwan and Bermuda which control substantial merchant fleets.¹⁰⁴³ Barston also notes that port states are now effectively performing traditional flag state functions.¹⁰⁴⁴ Although flag state implementation standards have been on the IMO agenda for some years, agreement has not been reached on a binding instrument which would commit flag states to global performance evaluation of their responsibilities.¹⁰⁴⁵ For maritime areas beyond national jurisdiction, the increasing cohesion of port state control systems and

¹⁰⁴⁰ Barston, above n.1027, 91.

¹⁰⁴¹ Ibid, 98-99.

¹⁰⁴² Ibid, 100.

¹⁰⁴³ Ibid 96-7.

¹⁰⁴⁴ Ibid, 101.

¹⁰⁴⁵ McGrath & Julian, above n.957, 192-3; IMO, *Sub Committee on Flag State Implementation*, <http://www.imo.org/includes/blastDataOnly.asp/data_id%3D8587/TheWorkoftheSub-doc> at 25 March 2005. An IMO Sub Committee on Flag State Implementation has been working on a draft Code for the Implementation of Mandatory IMO Instruments due to be reviewed by the IMO Assembly in Nov 2005. The Sub Committee is also examining the interactions between flag and port states on compliance and enforcement issues.

their greater capacity to deter substandard shipping operations appears to offer more potential for the prevention of harm to the marine environment than reliance on increasing the efficacy of flag state implementation.

6.2.2 *1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention) and the 1996 Protocol (London Protocol)*

Historically and well into the latter half of the twentieth century deliberate disposal of waste materials of all kinds was common in maritime areas within and beyond national jurisdiction.¹⁰⁴⁶ Large amounts of sewage sludge, industrial wastes and dredged material were dumped at sea in completely uncontrolled conditions.¹⁰⁴⁷ In the latter half of the twentieth century, different forms of radioactive waste were dumped at sea in various locations including high seas areas (Figure 6.6) and incineration, mostly of liquid chlorinated hydrocarbons and other halogenated compounds generated in Western Europe and the United States was undertaken from vessels at sea.¹⁰⁴⁸ Mounting concern about the detrimental effects of these practices on the marine environment resulted initially in some regional control regimes such as the *1972 Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (Oslo Convention)*¹⁰⁴⁹ and at the global level in the negotiation of the *1972 London Convention*. The impetus for the adoption of the *London Convention* was also generated by preparations for the 1972 Stockholm Conference on the Environment. The *London Convention*

¹⁰⁴⁶ London Convention, *Home Page*, <http://www.londonconvention.org/London_Convention.htm> at 25 March 2005; United Nations, *Oceans Atlas*, <<http://www.oceansatlas.com/unatlas/uses/oceandumpingwastes/dumping/dumping.htm>> at 25 March 2005

¹⁰⁴⁷ Ibid.

¹⁰⁴⁸ Ibid.

¹⁰⁴⁹ *1972 Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft*, 11 ILM 262 (*Oslo Convention*).

prohibited the dumping at sea of certain black listed wastes and allowed the dumping of grey listed wastes at sea with a special permit issued by Contracting Party authorities and the dumping of all other wastes or matter at sea with a general permit from Contracting Party authorities.¹⁰⁵⁰ Since its entry into force on 30 August 1975 the Contracting Parties have reached agreement to phase out completely the dumping of radioactive waste, industrial wastes with some exceptions and sewage sludge at sea.¹⁰⁵¹ Incineration at sea has also been prohibited.¹⁰⁵² Twenty years later UNCED triggered a complete revision of the London Convention¹⁰⁵³ resulting in the *London Protocol* which adopts a precautionary approach to the dumping of wastes at sea, prohibiting all dumping with the exception of certain listed materials the dumping of which is subject to environmental impact assessment and strict control measures. The original *London Convention* regime is still in force with 80 Parties¹⁰⁵⁴ whilst the *London Protocol*, with 21 Parties, is yet to attract the 26 parties required for its entry into force.¹⁰⁵⁵ This section will examine the regulatory and enforcement provisions of the *London Convention* and the *London Protocol* and their implementation by States Parties in maritime areas beyond national jurisdiction.

¹⁰⁵⁰ *London Convention*, Article IV(1).

¹⁰⁵¹ Olave Schram Stokke, 'Beyond Dumping? The Effectiveness of the London Convention' (1998-9) *Yearbook of International Cooperation On Environment and Development* 39 & 41; Erik Jaap Molenaar, 'The 1996 Protocol to the London Convention' (1997) 12(3) *International Journal of Marine and Coastal Law* 397, 397.

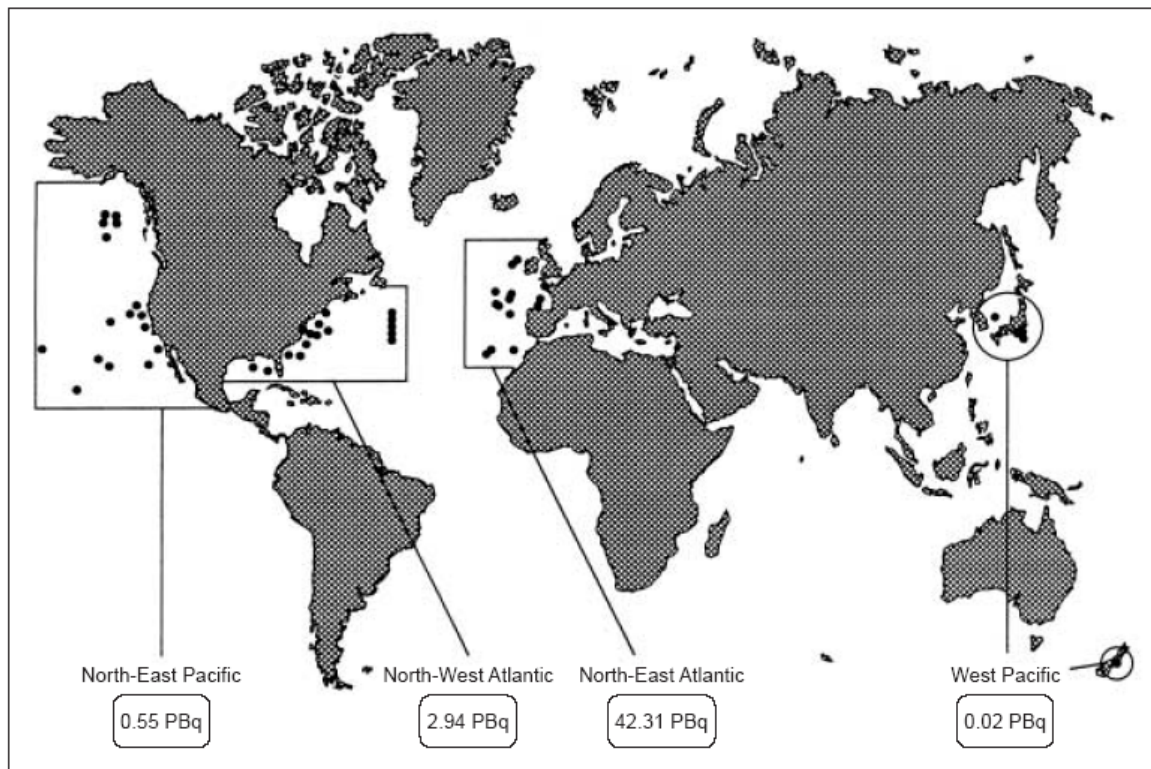
¹⁰⁵² Stokke, above n.1048, 41; Molenaar, above n.1048, 397.

¹⁰⁵³ London Convention, *Home Page*,

<http://www.londonconvention.org/London_Convention.htm> at 25 March 2005; Molenaar, above n. 1048, 397.

¹⁰⁵⁴ London Convention, *Status*, <www.londonconvention.org/main.htm> at 7 March 2005.

¹⁰⁵⁵ London Convention, *Status*, <www.londonconvention.org/London_Convention.htm> at 5 March 2005.



Legend: PBq = petabecquerel

Figure 6.6: Officially Reported Dumping of Nuclear Wastes at Sea 1946 - 1991 (Source: IAEA,

http://www.iaea.org/MTC/publications/PDF/Pub1068_web.pdf at 29 March 2005)

Regulatory Provisions

The fundamental premise of the *London Convention* is that the dumping of waste at sea which is liable to create hazards to human health, harm living resources and marine life, damage amenities or interfere with other legitimate uses of the sea should not occur.¹⁰⁵⁶ This objective is implemented through a tiered system of prohibition and control over the dumping of specified material enforced by Contracting Parties at the national level. The dumping of wastes listed in Annex I to the Convention is prohibited while the dumping of wastes listed in Annex II requires a prior special permit from the Contracting Party and the dumping of all other wastes or other matter requires a prior general permit.¹⁰⁵⁷ The criteria to be considered prior to issuing a permit for dumping are specified in Annex III and

¹⁰⁵⁶ *London Convention*, Art. I; Stokke, above n.1048, 40.

include consideration of the characteristics and composition of the material to be dumped, its likely effect on the marine environment and human health, the characteristics of the dumping site and the method of deposit and its likely effect on other uses of the sea. Contracting Parties are also required to take into account the practical availability of alternative land based methods of treatment, disposal or elimination or treatment to render the matter less harmful for dumping at sea. The geographic scope of the *London Convention* encompasses all maritime areas except the internal waters of States.¹⁰⁵⁸ The implementation of the Convention's provisions is largely devolved to Contracting Parties with a self reporting system in place obliging Contracting Parties to monitor and keep a record of the nature and quantities of matter permitted to be dumped as well as the timing, location and method of dumping and the condition of the sea where dumping takes place.¹⁰⁵⁹ Since the Convention entered into force the Contracting Parties, through the amendment procedure¹⁰⁶⁰ have progressively adopted a more restrictive dumping regime which has prohibited the dumping of radioactive waste, incineration at sea and industrial waste with a number of exceptions and which establishes a set of guidelines for the issue of permits to dump dredged spoils.¹⁰⁶¹

The *London Protocol* is a complete revision of the *London Convention* which, on its entry into force, will replace the earlier instrument for Contracting Parties that are also Parties to the Convention.¹⁰⁶² In its preamble, the *London Protocol*

¹⁰⁵⁷ *London Convention*, Art. IV(1).

¹⁰⁵⁸ *Ibid*, Art. III(3).

¹⁰⁵⁹ *Ibid*, Art. VI (1)(c) & (d)

¹⁰⁶⁰ *Ibid*, Art. XV – Under this article amendments to the Convention may be adopted by a two thirds majority of those present at consultative meetings of the Contracting Parties. Amendments enter into force for the parties which have accepted them on the sixtieth day after two thirds of the Parties have deposited an instrument of acceptance of the Amendment with the Secretariat.

¹⁰⁶¹ Stokke, above n.1048, 41.

¹⁰⁶² *London Convention*, Art. 23.

endorses a precautionary approach to the prevention and elimination of marine pollution by dumping and recognises the need to manage human impacts on the marine ecosystem to meet the needs of present and future generations. Contracting Parties must apply a precautionary approach to their decisions on dumping of waste, applying preventative measures where there is reason to believe that wastes introduced into the marine environment are likely to cause harm even where there is no conclusive evidence of the link between inputs and their effects.¹⁰⁶³ The polluter pays principle is also incorporated in Article 3(2) of the Protocol enjoining Contracting Parties to promote practices which impose the costs of dumping and incineration at sea on those who engage in these activities. A reverse listing approach is adopted in Article 4 of the Protocol which requires Contracting Parties to prohibit the dumping of any wastes or other matter at sea with the exception of those wastes listed in Annex I. A permit is required to dump wastes listed in Annex I.¹⁰⁶⁴ Before a permit is issued Contracting Parties are required to carry out an extremely detailed assessment of alternatives to sea dumping of the material including consideration of methods of waste prevention at source, land based waste management options, characterisations of the chemical physical and biological properties of the material and an assessment of its potential effects on the land and marine environments where it is proposed to be dumped.¹⁰⁶⁵ The physical, chemical and biological properties of the proposed marine dump site must also be assessed.¹⁰⁶⁶ The Protocol also prohibits incineration at sea of wastes or other matter¹⁰⁶⁷ and the export of wastes or other matter to other countries for

¹⁰⁶³ Ibid, Art. 3(1).

¹⁰⁶⁴ Ibid, Art. 4(2).

¹⁰⁶⁵ Ibid, Annex II.

¹⁰⁶⁶ Ibid.

¹⁰⁶⁷ Ibid, Art. 5.

dumping or incineration at sea.¹⁰⁶⁸ The onerous technical burden imposed on developing states by the stringent provisions of the Protocol is recognised in Article 13 which provides for a system of bilateral and multilateral support for Contracting Parties in coordination with the IMO on issues such as training of scientific and technical personnel, information and technical cooperation on waste minimisation, clean production processes, waste management and environmentally sound technologies. The Protocol also provides for a transitional period of up to five years for any State that was not a Contracting Party to the London Convention before 31 December 1996 and expresses its consent to be bound by the Protocol prior to its entry into force or within five years after its entry into force which allows that State to notify the Secretary General of IMO that it will not be able to comply with specific provisions of the Protocol.¹⁰⁶⁹ Parties who take advantage of the transitional period provision are still required to prohibit the dumping of wastes or other matter for which they have not issued a permit¹⁰⁷⁰ and to submit timetables and reports on their progress towards achieving full compliance.¹⁰⁷¹

¹⁰⁶⁸ Ibid, Art. 6.

¹⁰⁶⁹ Ibid, Art. 26(1).

¹⁰⁷⁰ Ibid, Art. 26(3); Molenaar, above n.1048, 401 comments that “this would seem to place a considerable administrative burden on a state whose legislation is not on a par with the global norm” which may indeed have been one of the reasons for developing countries not having ratified the Protocol in greater numbers.

¹⁰⁷¹ Ibid, Art 26(5) and (6).

In discussing the difficulties associated with implementing the London Convention, Stokke comments that even the regulations adopted under the Convention place severe constraints on the waste disposal practices of new member states.¹⁰⁷² He refers to a number of barriers to implementation in developing countries which were identified in a Global Waste Survey conducted by the Contracting Parties in 1991 including diffusion of authority among government agencies, limited availability of land based waste management and disposal facilities, lack of experience with elaboration of environmentally sound waste disposal programmes and lack of financial sustainability for programmes and facilities.¹⁰⁷³ In his commentary on the effectiveness of the London Convention regime, Stokke expresses the view that wider and more effective participation in the Convention and Protocol will depend on enhanced capacity building in developing countries where administrative and physical waste management capacities are inadequate.¹⁰⁷⁴ Molenaar in his summary of the Protocol provisions speculates whether the prospect of technical cooperation and assistance under the Protocol will outweigh the costs involved for States in finding alternatives for disposal at sea.¹⁰⁷⁵ The slow pace of ratification of the Protocol indicates that its best practice provisions may well be beyond the reach of the majority of developing and some industrialised states as yet. Many Contracting Parties to the *London Convention* are still struggling to comply with

¹⁰⁷² Stokke, above n.1048, 44.

¹⁰⁷³ Ibid.

¹⁰⁷⁴ Ibid, 46.

¹⁰⁷⁵ Molenaar, above n.1048, 402.

the increasingly stringent regulative provisions which have been introduced under that regime.¹⁰⁷⁶

6.2.2.1 *Compliance and Enforcement Provisions*

The responsibility for monitoring compliance and enforcement of the *London Convention* in high seas areas rests primarily with flag states. Under Article VII, Parties are required to apply measures under the Convention to their flag vessels and aircraft and vessels and aircraft loading matter for dumping in its territory or territorial seas. Parties are also to apply measures under the Convention to all vessels, aircraft, fixed and floating platforms under their jurisdiction believed to be engaged in dumping and to take in their territory appropriate measures to prevent and punish conduct in contravention of the provisions of the Convention. The Contracting Parties have agreed in Article VII (3) to cooperate in the development of procedures for the effective application of the Convention on the high seas including procedures for the reporting of vessels and aircraft observed dumping in contravention of the Convention. A reporting procedure for the observation of dumping incidents which may be in violation of international ocean dumping treaties was approved by the Consultative Meeting of the Contracting Parties in 2003 but no information on such incidents has yet been received by the London Convention Secretariat.¹⁰⁷⁷ The principal mechanism for monitoring compliance of Parties obligations under the Convention is a self reporting system under Article VI(4) which requires each Contracting Party to the London Convention to report on dumping activities and the condition of the seas in which material is dumped directly to the London Convention Secretariat or

¹⁰⁷⁶ Stokke, above n.1048, 44-45 comments on the assistance given to Russia by the *London Convention* Parties since its illegal dumping of high level radioactive waste in the Barents and Kara Seas up until 1991.

through a Secretariat established under a regional agreement on dumping activities. The Parties have agreed through their annual consultative meetings that these reports should be submitted on an annual basis. Under-reporting of dumping activities by Contracting Parties has been a characteristic feature of the London Convention regime since its entry into force in 1975.¹⁰⁷⁷ The report of the 26th Consultative Meeting of the Parties to the Convention in November 2004 notes that over the life of the Convention the percentage of reporting by Contracting Parties had remained below 50%¹⁰⁷⁸ and that only 10 Contracting Parties had reported on their field monitoring activities since 1996.¹⁰⁷⁹

Article VIII of the Convention encourages Contracting Parties with common interests in protecting the marine environment in a given geographical area to endeavour to enter into regional agreements consistent with the Convention for the prevention of pollution especially by dumping. While there were originally some specific regional dumping agreements such as the *Oslo Convention*, dumping provisions within more general regional environmental protection agreements such as the *OSPAR Convention*,¹⁰⁸⁰ the *Helsinki Agreement*,¹⁰⁸¹ the *SPREP Convention*, the *SPREP Protocol*,¹⁰⁸² the *Barcelona Convention* and the

¹⁰⁷⁷ Email communication from Mr, Rene Coenen, Head Office of the London Convention 1972 to Robin Warner of 31 March 2005

¹⁰⁷⁸ Stokke, above n.1048, 46.

¹⁰⁷⁹ London Convention, *Report of the 26th Consultative Meeting of Contracting Parties*, LC Doc LC 26/15, 17 December 2004, para. 10.10.

¹⁰⁸⁰ Ibid, Para. 10.8.

¹⁰⁸¹ 1992 *Convention for the Protection of the Marine Environment of the North- East Atlantic*, 32 ILM 1069 (*OSPAR Convention*). The Oslo Dumping Convention and the Oslo Commission have now been absorbed into the OSPAR Convention regime. The *OSPAR Convention* is discussed in more detail in Chapter 9.

¹⁰⁸² 1974 *Convention on the Protection of the Marine Environment of the Baltic Sea Area*, 13 ILM 546 (*Helsinki Agreement*). Article 9 and Annex V of the *Helsinki Agreement* deal with dumping. Douglas Brubaker, *Marine Pollution and International Law: Principles and Practice* (1993) 79 comments: "Article 9 covers specifically dumping and was modelled on the LDC. It is however much *stricter* and gives better protection than the LDC."

¹⁰⁸³ 1986 *Convention for the Protection of the Natural Resources and Environment of the South Pacific Region*, 26 ILM 41 (*SPREP Convention*) and the 1986 *Protocol for the Prevention of*

*Barcelona Protocol*¹⁰⁸⁴ are more common. Although collaboration with the Contracting Parties of the *London Convention* is encouraged under Article VIII, Brubaker¹⁰⁸⁵ and Stokke¹⁰⁸⁶ note that these regional bodies have tended to operate independently in some cases introducing stricter dumping regimes in advance of the *London Convention* regime. Stokke also observes that notwithstanding the poor reporting record of parties to the *London Convention*, the relatively transparent nature of Meetings of the Parties and the involvement of environmental non governmental organisations (NGOs) has resulted in the exposure of some egregious instances of non compliance by Contracting Parties with the Convention's provisions. He refers specifically to the circulation of a report by Greenpeace International at the 1991 meeting of the Parties exposing Soviet dumping of high level radioactive waste in the Kara and Barents Seas of the Arctic.¹⁰⁸⁷ Since that exposure the *London Convention* has continued to monitor closely Russia's handling of the disposal of radioactive waste and still plays an active role in assisting Russia to adequately treat and store radioactive waste.¹⁰⁸⁸ The 26th Meeting of the Consultative Parties in November 2004 discussed strategies for improving compliance with the *London Convention*

Pollution of the South Pacific Region by Dumping, 26 ILM 59 (*SPREP Protocol*); Brubaker, above n. 1079, 82 notes: "the South Pacific Convention prohibits the dumping of all radioactive waste including sub-seabed disposal ...the South Pacific Protocol follows the progressive LOSC jurisdictional provisions on dumping rather than the traditional rules of the LDC. Thus both agreements, rather than being more general in controlling dumping than the LDC are in fact more progressive." At least in relation to the dumping of radioactive waste the LDC regime has caught up with the prohibition on dumping of radioactive waste.

¹⁰⁸⁴ 1976 *Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution*, 15 ILM 290 (*Barcelona Convention*) and the 1976 *Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft*, 15 ILM 301 (*Barcelona Protocol*); Brubaker, above n. 1079, 82 comments that the Barcelona Protocol closely resembles the London Convention and Oslo Convention.

¹⁰⁸⁵ Brubaker, above n.1079, 82-3.

¹⁰⁸⁶ Stokke, above n.1048, 42.

¹⁰⁸⁷ *Ibid*, 43.

¹⁰⁸⁸ *Ibid*, 45.

including a long term strategy of establishing a dumping data base which would contain information submitted by Contracting Parties on dumping activities.¹⁰⁸⁹

Although the compliance and enforcement provisions of the *London Protocol* are similar in many respects to the corresponding provisions of the *London Convention* some aspects of the compliance regime have been strengthened. As well as submitting annual reports to the London Convention Secretariat on their dumping activities and the administrative and legislative measures they have taken to implement the provisions of the Protocol, Parties to the Protocol will also be required to submit a summary of the enforcement measures, their effectiveness and any problems encountered in their application annually.¹⁰⁹⁰ Reports on the administrative, legislative and enforcement measures will be evaluated by a subsidiary body determined by the Meeting of Contracting Parties which will report its conclusions to an appropriate meeting or special meeting of the Contracting Parties.¹⁰⁹¹ In an additional article on Compliance Procedures the Protocol provides that no later than two years after its entry into force, the Meeting of Contracting Parties shall establish those procedures and mechanisms necessary to assess and promote compliance with the Protocol.¹⁰⁹² In the spirit of transparency, Article 11(2) further provides that the procedures and mechanisms shall be developed with a view to allowing for the full and open exchange of information in a constructive manner. After considering any information submitted under the Protocol, the meeting of Contracting Parties may then offer advice, assistance or cooperation to Contracting Parties and non Contracting

¹⁰⁸⁹ See above n.1076, Annex 6.

¹⁰⁹⁰ *London Protocol*, Art.9 (4.2) and (4.3).

¹⁰⁹¹ *Ibid*, Art. 9(5).

¹⁰⁹² *Ibid*, Art. 11(1)

Parties. In anticipation of the possible entry into force of the Protocol in 2005, a Working Group formed by the Meeting of Consultative Parties to the *London Convention* is developing options for compliance procedures and mechanisms under Article 11 of the Protocol. The current draft text of the Working Group's report emphasises the "non confrontational, transparent and preventive" nature of the compliance mechanisms and the role of the Meeting of the Parties in providing technical cooperation and assistance to Parties facing non-compliance.¹⁰⁹³ This group is due to report to the 27th Consultative Meeting of the Parties in October 2005.

In its 30 years of operation the *London Convention* has achieved a great deal in regulating for the phasing out of dumping at sea and produced a Protocol which provides model provisions for a precautionary and environmentally sound approach to dumping at sea. Participation in the *London Protocol* is still low, however, and there is a considerable gulf between the capacities of industrialised and developing states to implement the provisions of both the *London Convention* and the *London Protocol*. There has been little factual information reported by the Contracting parties on dumping incidents in maritime areas beyond national jurisdiction. Greater collaboration between Parties to both instruments will be necessary to monitor compliance with prohibitions on dumping beyond national jurisdiction.

6.3 Invasive Aquatic Species

Limiting the adverse impacts on the marine environment created by the transfer of invasive aquatic species from their natural habitats to new marine habitats has

¹⁰⁹³ See above n. 122, Annex 3.

been identified in many international fora as a major threat to global biodiversity.¹⁰⁹⁴ Some global instruments on marine environmental law have also identified the problem and contain general obligations for states to prevent, reduce and control marine pollution caused by the introduction of alien species into a particular part of the marine environment.¹⁰⁹⁵ International shipping is a primary vector for the transfer of invasive aquatic species around the world.¹⁰⁹⁶ With the majority of world trade carried by shipping¹⁰⁹⁷ and the increase in ocean going recreational vessels¹⁰⁹⁸ there are multiple opportunities for the transfer of invasive species to new marine habitats where they can threaten local biodiversity, marine industries and human health.¹⁰⁹⁹ The principal methods of transfer for invasive aquatic species on ships are in ballast water and as fouling on hulls.¹¹⁰⁰ The world wide merchant fleet has steadily increased and transit periods for voyages have decreased, magnifying the risk of vectored marine species establishing themselves in diverse marine habitats.¹¹⁰¹ As the impacts of these bio invasions became more apparent to scientists and policy makers, particularly in coastal and internal waters, affected states have raised the issue at the IMO where the initial response

¹⁰⁹⁴ Nicholas Bax, Angela Williamson, Max Aguero, Exequiel Gonzalez and Warren Geeves, 'Marine invasive alien species: a threat to global biodiversity' (2003) 27(4) *Marine Policy* 117; Steve Raaymakers, 'The Ballast Water Problem: Global Ecological, Economic and Human Health Impacts', Paper presented at the RECSO/IMO Joint Seminar on Tanker Ballast Water Management & Technologies, Dubai, 16-18 Dec 2002, <http://www.imo.org/includes/blastDataOnly.asp/dataid%3D8595/RaaymakersGlobalImpactsPaper.pdf> at 29 November 2005, 8.

¹⁰⁹⁵ LOSC, Art. 196(1); 1992 *Convention on Biological Diversity*, (1992) 31 ILM 822 (CBD), Art. 8 (h).

¹⁰⁹⁶ Bax, Williamson, Aguero, Gonzalez & Geeves, above n. 1091, 118; Raaymakers, above n.955, 10.

¹⁰⁹⁷ Bax, Williamson, Aguero, Gonzalez & Geeves, above n.1091, 118: "Shipping carries more than 80% of the world trade and in the process 12 billion tonnes of ballast water per year."

¹⁰⁹⁸ See above n.999.

¹⁰⁹⁹ Bax, Williamson, Aguero, Gonzalez & Geeves, above n.1091, 118

¹¹⁰⁰ Raaymakers, above n.955, 10. Other ship-based vectors for the transfer of aquatic species include ship-borne water other than ballast water, ship-borne sediments and bio-films.

¹¹⁰¹ Bax, Williamson, Aguero, Gonzalez & Geeves, above n.1091, 118: "Over the last 30 years, world sea-borne trade has more than doubled from 2490 million tonnes in 1970 to 5330 million tonnes in 2000....the registered merchant fleet now consists of more than 45,000 vessels...the

has focused on better management of ships' ballast water. This section will examine the IMO Guidelines for the control and management of ships ballast water and the recently adopted *Ballast Water Convention* and their implications for the protection of the marine environment beyond national jurisdiction.

6.3.1 *IMO Instruments on Ballast Water Management*

To address the problems associated with transfer of invasive aquatic species, the IMO introduced voluntary Guidelines for the Control and Management of Ships' Ballast Water to Minimize the Transfer of Harmful Aquatic Organisms and Pathogens (the Guidelines)¹¹⁰² in 1997. The Guidelines recognise the need for a global approach to the minimisation of harm from the transfer of aquatic organisms and pathogens and request Governments, ship operators and other appropriate authorities to implement the Guidelines in a standard and uniform manner.¹¹⁰³ IMO Member States are encouraged to exchange information on all aspects of their ballast water management practices including copies of current domestic laws and regulations, technical and research information, education materials, location and terms of use of alternative ballast water exchange zones, contingency strategies and sediment discharge procedures.¹¹⁰⁴ As indicated in the Preamble to the Guidelines, the IMO views with some concern the unilateral actions of some states in adopting legally binding provisions designed to minimise the risks of introducing harmful aquatic organisms into their ports in view of the extreme difficulties of compliance across different jurisdictions and the associated delays and costs for international shipping.

changing nature of domestic and international shipping is altering the diversity and speed of potential vectors."

¹¹⁰² IMO Resolution A.868(20), 27 November 1997.

The *Guidelines* recommend that every ship that carries ballast water should be provided with a ballast water management plan which outlines effective procedures for ballast water management specific to that ship.¹¹⁰⁵ Port states are enjoined to make available reception and treatment facilities for the environmentally safe disposal of sediments.¹¹⁰⁶ Recording and reporting procedures for different aspects of ballast water management and treatment are provided for both ships and port states. Port states are recommended to provide ships with details of their ballast water management requirements and to advise ships of areas and situations where the uptake of ballast water should be minimised.¹¹⁰⁷ Ships are also required to keep records of ballast water management which should be made available to the port state.¹¹⁰⁸

Paragraph 9 of the *Guidelines* on ships operational procedures identifies ballast water exchange as the main strategy for minimising the harmful transfer of invasive aquatic organisms, pathogens and sediment to other marine habitats. The *Guidelines* recommend that exchange be undertaken in deep water, in open ocean and as far as possible from shore.¹¹⁰⁹ The two methods of ballast water exchange specified in the *Guidelines*, entail completely emptying and refilling the ballasting tanks or pumping water in and allowing the ballast tanks hold to overflow in which case the *Guidelines* recommend that the equivalent of at least three complete tank volumes should be pumped through the ship's tanks.¹¹¹⁰ Figure 6.7 illustrates the typical ballast water cycle of a cargo vessel which loads ballast

¹¹⁰³ Ibid, para. 4.3.

¹¹⁰⁴ Ibid, para. 5.1.

¹¹⁰⁵ Ibid, para. 7.1.

¹¹⁰⁶ Ibid, para. 7.2.1.

¹¹⁰⁷ Ibid, para 8.2.1.

¹¹⁰⁸ Ibid, para. 8.1.3.

¹¹⁰⁹ Ibid, para. 9.2.1.

water at the source port and discharges ballast water at the destination port.

Ballast water exchange, if it is utilised, would occur on the open ocean during the ship's voyage between the two ports.

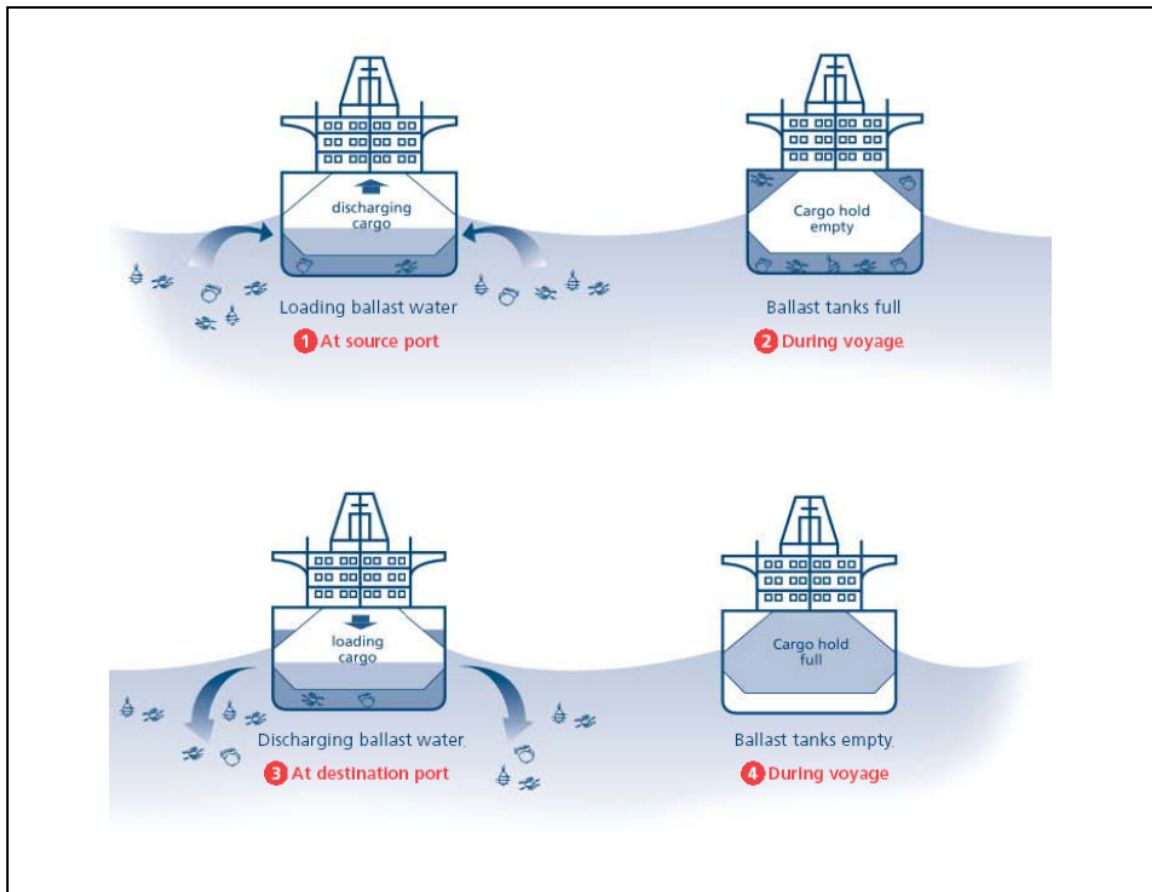


Figure 6.7: The Ballast Water Cycle (Source: IMO Globallast Programme, <http://globallast.org/problem.htm> at 18 October 2005)

The fundamental rationale for ballast water exchange is that near coastal (including port and estuarine) organisms released in mid ocean, and open ocean organisms taken up during ballast water exchange are ill adapted for survival in their new environments.¹¹¹¹ The *Ballast Water Convention*, adopted by consensus at a Diplomatic Conference convened by the IMO in February 2004, also prescribes ballast water exchange as the main method for minimising harm from

¹¹¹⁰ Ibid.

the transfer of invasive aquatic species. The Convention specifies that wherever possible, ballast water exchange should be conducted at least 200 nautical miles from the nearest land and in water at least 200 metres in depth.¹¹¹² In cases where the ship is unable to conduct ballast water exchange under these conditions, it should be conducted as far as possible from the nearest land and in all cases at least 50 nautical miles from the nearest land and in water at least 200 metres in depth.¹¹¹³

While Raaymakers, a technical expert from IMO's Globallast Programme acknowledges that ballast water exchange is currently the best available method of minimising the transfer of invasive aquatic species, he and other commentators see a number of limitations in open ocean ballast water exchange.¹¹¹⁴ Scientific studies show that many species will survive following the ballast water exchange leading to the possibility of high seas species establishing themselves in coastal waters and the threat of harmful transfers of invasive aquatic species to fragile high seas habitats.¹¹¹⁵ There are also significant safety risks associated with ballast water exchange in high seas locations including stresses to the stability and structural integrity of the ship during rough weather.¹¹¹⁶ Some ships do not yet have the plumbing, ballast tank arrangements or pumping capacity to conduct ballast water exchange and some voyages are too short or traverse shipping lanes which are too congested for ballast water exchange to be possible.¹¹¹⁷ Other methods of ballast water management and treatment which do not involve ballast

¹¹¹¹ *Guidelines*, para 9.2.1; Raaymakers, above n.955, 21.

¹¹¹² *Ballast Water Convention*, Regulation B-4.

¹¹¹³ *Ibid.*

¹¹¹⁴ Raaymakers, above n.955, 21-22; Bax, Williamson, Aguelo, Gonzalez & Geeves, above n. 1091, 122.

¹¹¹⁵ Raaymakers, above n.955, 21-22.

¹¹¹⁶ Raaymakers, above n.955, 22.

water exchange on the high seas are being investigated such as eliminating harmful organisms through thermal methods, chemical methods, ultrafiltration and ultraviolet light or discharging ballast water into reception facilities maintained by port states.¹¹¹⁸ Ballast water exchange on the high seas, however, remains the most prevalent method of dealing with the problem. The *Guidelines* acknowledge that operational measures such as ballast water exchange are an interim strategy only and encourage member states to conduct research into other methods of addressing the problem.¹¹¹⁹ A parallel can be drawn between ballast water exchange on the high seas and the distance from nearest land approach adopted in the *MARPOL 73/78* Annexes for vessel source discharges. (See Figure 6.2) In both cases, the protection of the coastal marine environment is the paramount consideration in the approach adopted while the maritime environment beyond national jurisdiction is viewed as an appropriate repository for harmful vessel source discharges and invasive aquatic species. Reliance on distance from land criteria for marine pollution prevention methods clearly has the potential to harm high seas habitats and runs counter to the interconnected nature of the global marine environment and ecosystem.

¹¹¹⁷ Ibid.

¹¹¹⁸ Bax, Williamson, Aguelo, Gonzalez & Geeves, above n.1091, 122; *Guidelines*, para. 9.2.4.1.

¹¹¹⁹ *Guidelines*, para. 9.2.4.

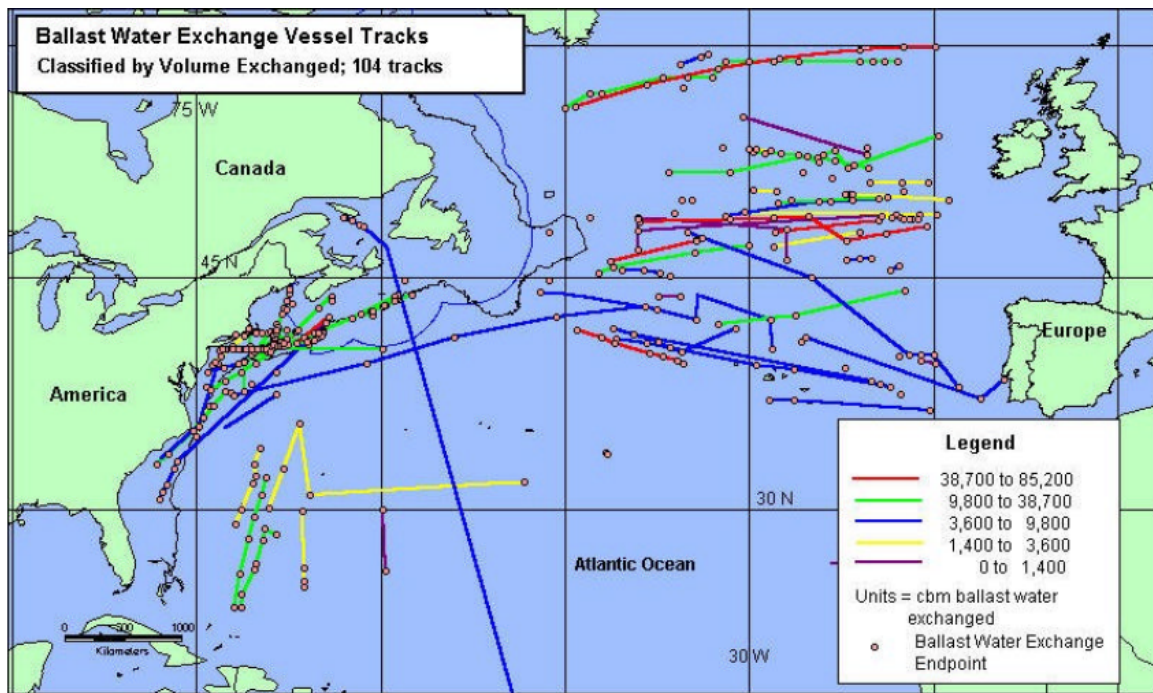


Figure 6.8: Examples of the Location of Ballast Water Exchange on the High Seas (Source: Geocentric Mapping Canada reproduced in Raaymakers, above n. 1, 30)

6.4 Particularly Sensitive Sea Areas

The concept of protecting an area of the sea from harmful shipping activities for its intrinsic environmental values has had a long gestation in the IMO and is still evolving as an environmental protection tool. The idea was first canvassed in the IMO context at the International Convention on Tanker Safety and Pollution Prevention in 1978. This Convention adopted a proposal from Sweden emphasising the need for special measures to protect particularly sensitive sea areas against pollution from ships and calling on IMCO to prepare an inventory of areas needing such special protection and the appropriate measures taking into account other legitimate uses of the sea.¹¹²⁰ The IMO did not take up this proposal until 1986 when it appeared on the agenda of the Marine Environmental Protection Committee (MEPC) as a result of a joint initiative by the International

Union for the Conservation of Nature (IUCN) and Friends of the Earth.¹¹²¹ Debate over several years in MEPC finally led to the adoption of the *Guidelines for the Designation of Special Areas and the Identification of Particularly Sensitive Sea Areas (Original PSSA Guidelines)* by the IMO Assembly on 6 November 1991.¹¹²² The *Original PSSA Guidelines* contained provisions for the establishment of both MARPOL Special Areas and particularly sensitive sea areas (PSSAs). A PSSA was defined as:

an area which needs special protection through action by IMO because of its significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable to environmental damage by maritime activities.¹¹²³

An area submitted for designation could include areas within or beyond the territorial jurisdiction of the proposing state or states.¹¹²⁴ Proposals were to be initiated by one or more states¹¹²⁵ and to fulfil at least one of the criteria listed in the *Original Guidelines* under the headings of ecological, social, cultural, economic, scientific and educational.¹¹²⁶ The scope of special protective measures under the *Original Guidelines* included special discharge standards, ships routing measures such as traffic separation schemes and areas to be avoided and other

¹¹²⁰ Gerard Peet, 'Particularly Sensitive Sea Areas – A Documentary History' (1994) 9(4) *International Journal of Marine and Coastal Law* 469, 475.

¹¹²¹ *Ibid*, 476-477.

¹¹²² IMO Assembly Resolution A.720(17), 6 November 1991 which contained the *Guidelines for the Designation of Special Areas and the Identification of Particularly Sensitive Sea Areas (Original PSSA Guidelines)*.

¹¹²³ *Original PSSA Guidelines*, para. 3.1.2.

¹¹²⁴ *Ibid*, para 3.3.3.

¹¹²⁵ *Ibid*, para. 3.2.4-5.

¹¹²⁶ *Ibid*, para 3.3.4-7.

measures such as compulsory pilotage aimed at protecting specific sea areas against environmental damage from ships.¹¹²⁷

Australia submitted the first proposal for designation of a PSSA within the exceptionally sensitive Great Barrier Reef area which had already received international recognition under the World Heritage Convention and had an iconic status as the largest continuous coral reef formation in the world.¹¹²⁸ An important aspect of the Australian proposal was its request for IMO's endorsement of a compulsory pilotage scheme in the inner channel of the Reef which straddled both the internal and territorial waters of Australia.¹¹²⁹ Following Australia's initial proposal, other states were slow to utilise the PSSA option for a variety of reasons, including reservations about the expansive nature of the *Original Guidelines* and their legal basis, their potential impact on the passage rights of merchant shipping and lack of clarity about the other measures which could be introduced in addition to special discharge standards and routing measures which were already covered in legally binding instruments such as *MARPOL 73/78* and the *Safety of Life at Sea Convention (SOLAS)*.¹¹³⁰ A decade after the inception of the original *Guidelines*, there were still only two PSSAs designated in the Great Barrier Reef¹¹³¹ and the Archipelago of Sabana Camaguey, Cuba.¹¹³² In order to clarify the purpose and scope of the PSSA concept, the MEPC decided to revise the *Original Guidelines* in 1999 and to delink the PSSA *Guidelines* from the

¹¹²⁷ Ibid, para 3.4.

¹¹²⁸ IMO Docs. MEPC 30/19/4 and 30/19/4 Add.1, 19 September 1990 submitted by Australia.

¹¹²⁹ Angelo Meriardi, 'Legal Restraints on Navigation in Marine Specially Protected Areas' in Tullio Scovazzi (ed.), *Marine Specially Protected Areas: The General Aspects and the Mediterranean Regional System* (1999) 29, 37.

¹¹³⁰ 1974 *International Convention for the Safety of Life at Sea*, 32 UST 47(*SOLAS Convention*); J. Ashley Roach, 'Particularly Sensitive Sea Areas: Current Developments' in Myron H. Nordquist, John Norton Moore & Said Mahmoudi (eds.), *The Stockholm Declaration and Law of the Marine Environment* (2003) 311, 313.

MARPOL Special Areas guidelines.¹¹³³ *New Guidelines for the Identification and Designation of PSSAs (New PSSA Guidelines)* were adopted as the second annex to IMO Assembly Resolution A.927(22) in November 2001.¹¹³⁴ Since the promulgation of the *New PSSA Guidelines*, five further PSSAs have been designated and four have been approved in principle and will be considered for designation at future meetings of the MEPC.¹¹³⁵ None of the designated PSSAs incorporate maritime areas beyond national jurisdiction. This section will review the *New PSSA Guidelines* and their potential application to maritime areas beyond national jurisdiction.

6.4.1 2001 Guidelines for the Identification and Designation of PSSAs

The *New PSSA Guidelines*¹¹³⁶ introduce a number of clarifications to provide a better understanding of the purpose and scope of the PSSA concept¹¹³⁷ and to assist states in formulating their applications for designation of PSSAs.¹¹³⁸ They place particular emphasis on the functions and competence of the IMO as an international organisation which regulates shipping activities¹¹³⁹ and distinguish the PSSA concept from marine protected areas created under other regional and

¹¹³¹ IMO Doc. MEPC Res. 44(30), 16 Nov 1990.

¹¹³² IMO Doc. MEPC Res. 74(40), 25 Sep 1997.

¹¹³³ Roach, above n.1127, 312-3.

¹¹³⁴ Ibid.

¹¹³⁵ IMO, *Marine Environment, Particularly Sensitive Sea Areas and Special Areas* <<http://www.imo.org/home.asp>> at 31 March 2005. There are currently 7 designated PSSAs: the Great Barrier Reef, Australia (1990); the Sabana Camaguey archipelago in Cuba (1997); Malpelo Island, Colombia (2002); the sea around the Florida Keys, United States (2002); the Wadden Sea, Denmark, Germany, Netherlands (2002); Paracus National Reserve (2003); and Western European Waters (2004). MEPC has also approved in principle the following PSSAs (designation to be considered at future sessions of MEPC): Torres Strait (Australia and Papua New Guinea); the Baltic Sea except Russian waters; Waters of the Canary isles, Spain; the Galapagos Archipelago, Ecuador.

¹¹³⁶ IMO Doc Assembly Res. A.22/927 of 29 Nov 2001, Annex 2.

¹¹³⁷ Ibid, para 1.1.

¹¹³⁸ Ibid, para, 1.4.

¹¹³⁹ Ibid, para 1.2.

international instruments.¹¹⁴⁰ The definition of PSSA is almost identical to that in the *Original PSSA Guidelines* but it specifies that the special protection provided through action by the IMO is because the area may be vulnerable to damage by “international shipping activities”¹¹⁴¹ rather than the broader term “maritime activities” which was used in the *Original PSSA Guidelines*. The *New PSSA Guidelines* specify that identification of a PSSA and the adoption of associated protective measures requires consideration of three integral components: the particular environmental conditions of the area to be identified, the vulnerability of such area to damage by international maritime activities and the availability of associated protective measures within the competence of the IMO to address risks from these shipping activities.¹¹⁴² An application for designation of a PSSA may only be submitted by a member Government or two or more member Governments having a common interest in a particular area.¹¹⁴³ The criteria apply to PSSAs both within and beyond the limits of the territorial sea.¹¹⁴⁴ The unlimited geographical scope of the *New PSSA Guidelines* would allow for one or more member Governments, proximate to a maritime area beyond national jurisdiction, which is vulnerable to damage by international shipping activities to apply for designation of that area.

As with the *Original PSSA Guidelines*, an application must meet at least one of the ecological, social, cultural, economic, scientific and educational criteria listed in the Guidelines.¹¹⁴⁵ Some of the criteria listed have particular applicability to maritime areas beyond national jurisdiction. The criterion of uniqueness or rarity

¹¹⁴⁰ Ibid, para 1.3.

¹¹⁴¹ Ibid, para 1.2.

¹¹⁴² Ibid, para 1.5.

¹¹⁴³ Ibid, para. 3.1.

¹¹⁴⁴ Ibid, para 4.3.

which applies to habitats of rare, threatened or endangered species that occur only in one area¹¹⁴⁶ could include the unique benthic fauna of seamounts or hydrothermal vents which occur beyond national jurisdiction. Likewise the criterion of representativeness¹¹⁴⁷ could also apply to these communities. The critical habitat criterion¹¹⁴⁸ is relevant for seamounts and hydrothermal vents which frequently include slow growing deep sea fisheries of low fecundity. Seamounts and hydrothermal vents could also fall under the scientific criterion of research which is described in the *New PSSA Guidelines* as an area of high scientific interest.¹¹⁴⁹ An application for designation must also address the risk to the area from international shipping activities.¹¹⁵⁰ Factors mentioned in the *New PSSA Guidelines* which are relevant to maritime areas beyond national jurisdiction in this context are the types and quantities of substances carried which would be harmful if released into the sea¹¹⁵¹ and the meteorological and oceanographic characteristics of particular maritime areas beyond national jurisdiction such as wind strength and ice cover¹¹⁵² which might increase the risk of structural failure in ships.

A key difference in the *New PSSA Guidelines* is the requirement to specify at least one associated protective measure within the competence of the IMO either in the original application for designation of a PSSA or within two years of the designation of the PSSA.¹¹⁵³ This requirement does not apply to PSSAs where

¹¹⁴⁵ Ibid, para. 4.4.

¹¹⁴⁶ Ibid, para 4.4.1.

¹¹⁴⁷ Ibid, para 4.4.4.

¹¹⁴⁸ Ibid, para 4.4.2.

¹¹⁴⁹ Ibid, para. 4.4.15.

¹¹⁵⁰ Ibid, para 5.1.

¹¹⁵¹ Ibid, para. 5.1.4.

¹¹⁵² Ibid, para 5.1.6 and 7.

¹¹⁵³ Ibid, para. 7.1.

IMO protective measures such as discharge restrictions are already in place but the application must show how the area is being protected.¹¹⁵⁴ Roach comments that this requirement has provided a legal basis on which to provide tailored protection to PSSAs and removed the basic concern that mere designation of a marine area worthy of protection could lead to encroachment on navigational rights and freedoms.¹¹⁵⁵ Tying the designation of a PSSA to established processes for considering ships routing measures under the *SOLAS Convention* and vessel source discharge restrictions under *MARPOL 73/78* enables the interests of the shipping industry to be considered in a binding legal framework. The *New PSSA Guidelines* do, however, leave open the possibility of the IMO developing and adopting other measures aimed at protecting specific sea areas such as compulsory pilotage and vessel traffic management schemes.¹¹⁵⁶ They also provide a very detailed primer on the content of an application for designation. With respect to implementation, the *New PSSA Guidelines* prescribe that proposing member Governments should ensure that any associated protective measures are implemented in accordance with international law as reflected in the *LOSC*¹¹⁵⁷ and that ships flying their flag comply with the associated protective measures adopted to protect the designated PSSA.¹¹⁵⁸ If they receive reports of alleged violations of the *New PSSA Guidelines* by ships flying their flag, member states are required to provide the reporting Government with details of any appropriate action taken.¹¹⁵⁹ The implementation of any PSSA designation for an area beyond national jurisdiction would rely heavily on flag state monitoring and

¹¹⁵⁴ Ibid, para 7.2.

¹¹⁵⁵ Roach, above n.1127, 313.

¹¹⁵⁶ *New PSSA Guidelines*, para. 7.4.2.1(a)(ii).

¹¹⁵⁷ Ibid, para. 9.2.

¹¹⁵⁸ Ibid, para. 9.3.

¹¹⁵⁹ Ibid.

enforcement procedures although combined patrols by proximate coastal states could be instituted to report violations to the relevant flag state Government. For PSSAs in maritime areas beyond national jurisdiction in which vessel source discharge restrictions are prescribed, enforcement procedures would resemble those under *MARPOL 73/78*.

The *New PSSA Guidelines* provide a mechanism for international endorsement of practical measures to protect the marine environment beyond national jurisdiction from harmful shipping activities. As with the designation of marine protected areas in the coastal zone management context, designation of an area for special protective measures under the *New PSSA Guidelines* provides for a holistic consideration of the human uses, economic and environmental factors relevant to the particular sea area. The non binding status of the Guidelines is a limitation which will continue to attract the criticism that they have the potential to encroach on navigational freedoms particularly freedom of navigation on the high seas guaranteed under the *LOSC*.¹¹⁶⁰ As with many high seas regimes there is no collaborative compliance monitoring or enforcement system for PSSAs in existence at present other than individual flag state enforcement. Further development of cooperative compliance monitoring and enforcement procedures among proximate and user states may be necessary if PSSAs beyond national jurisdiction are to be viable. The *New PSSA Guidelines* nevertheless constitute a template for designation of marine protected areas beyond national jurisdiction

¹¹⁶⁰ Nihan Unlu, 'Particularly Sensitive Sea Areas: Past, Present and Future', International Maritime Organization, London, 23 November 2004, paras. 4 and 5, <http://www.imo.org/includes/blastDataonly.asp/data_id%3D10678/Unlusensitiveseaareas.doc> at 31 March 2005: comments on debates during the MEPC consideration of the Western European Waters PSSA designation in which some member states objected to the exclusion of single hulled tankers from a strait used for international navigation and a 48 hour notice rule for oil tankers

which could be expanded to incorporate other uses and protective measures within the regulatory competence of a range of global and regional organisations.

6.5 The Role of Non State Actors in Shipping Activities Beyond National Jurisdiction

A variety of non state actors play a multi-dimensional role in the formulation of international standards to protect the marine environment from harmful shipping activities and their enforcement. IMO is a focal point for over 50 non government organisations with interests in international shipping and provides an arena in which organisations representing the shipping industry, maritime insurance industry and environmental protection movement can interact with and influence member state governments.¹¹⁶¹ To devise and implement the majority of safety standards and pollution control measures contained in IMO instruments, it has been essential for flag and port state governments to forge strong partnerships with the shipping industry.¹¹⁶² In negotiating these instruments states have also been influenced by domestic pressure and the campaigns of environmental NGOs on the elimination of vessel source pollution and ocean dumping. Some commentators assess, however, that the influence of environmental NGOs in this arena has been less effective in securing regulatory change than in other environmental issue areas such as marine living resource exploitation.¹¹⁶³ This section will examine some of the roles played by non state actors in establishing

transiting areas within the PSSA. The large size of the PSSA proposal also attracted adverse comment.

¹¹⁶¹ Joseph E. Vorbach, 'The Vital Role of Non Flag State Actors in the Pursuit of Safer Shipping' (2001) 32(1) *Ocean Development and International Law* 27, 31; Patricia Birnie, 'The Status of Environmental 'Soft Law': Trends and Examples with Special Focus on IMO Norms' in Henrik Ringbom(ed.), *Competing Norms in the Law of Marine Environmental Protection* (1997) 31, 39.

¹¹⁶² Vorbach, above n.1158, 31; Ronald Mitchell, Moira L. McConnell, Alexei Roginko & Ann Barrett, 'International Vessel-Source Oil Pollution' in Oran Young (ed.), *The Effectiveness of International Environmental Regimes: Causal Connections and Behavioral Mechanisms* (1999) 31, 84.

and implementing marine environmental protection measures for international shipping and the consequential effects for compliance with these measures beyond national jurisdiction.

6.5.1 Shipping Industry Organisations

In the early stages of pollution control regulation for international shipping, the basic position of shipping industry organisations, composed of ship owners and cargo owners, was to oppose measures which would increase transportation costs and impose lengthy delays on their vessels.¹¹⁶⁴ This position was the most potent influence on States' positions in shipping regulation negotiations prior to the 1970s.¹¹⁶⁵ Gradually the influence of the environmental protection movement on several key governments and the dramatic public effects of oil tanker disasters such as those involving the *Torrey Canyon*, *Amoco Cadiz* and *Exxon Valdez* introduced countervailing incentives for some elements within the shipping industry to support the phased introduction of construction, design, equipment and manning standards which facilitated safer shipping and enhanced environmental protection within and beyond national jurisdiction.¹¹⁶⁶ Shipping industry organisations also had an interest in promoting uniform global standards for pollution control and safety to avoid the cost implications and potential delays associated with multiple standards in different ports.¹¹⁶⁷ Shipping industry organisations such as the Independent Tanker Owners Association

¹¹⁶³ Mitchell, McConnell, Roginko & Barrett, above n.1158, 37; M'Gonigle & Zacher, above n. 1019, 65; Mitchell above n.957, 107-108.

¹¹⁶⁴ Mitchell, above n.957, 109-110.

¹¹⁶⁵ M'Gonigle & Zacher, above n. 1019, 41.

¹¹⁶⁶ Mitchell, above n.957, 110 notes that one of these incentives was attacks on the high visibility images of major oil companies following major oil tanker disasters.

¹¹⁶⁷ Ibid.

(INTERTANKO)¹¹⁶⁸ and the Independent Tank Owners Pollution Federation Ltd (ITOPF)¹¹⁶⁹ now perform a range of different functions in the formulation and implementation of environmental protection measures for shipping. As accredited NGOs in the IMO they provide technical expertise for member states engaged in negotiating marine pollution conventions and perform an important role in encouraging compliance among their members with IMO standards.¹¹⁷⁰ Using their access and links with the shipping industry they also compile statistics on oil pollution spills and other industry data which are useful in monitoring compliance with IMO standards. Other organisations associated with the shipping industry such as the classification societies and their representative body, the International Association of Classification Societies (IACS), contribute to the formulation of construction and design standards for shipping and through their ships survey functions, performed for over 100 flag states around the world, are effectively monitoring compliance with IMO pollution control measures and safety standards.¹¹⁷¹

6.5.2 Environmental NGOs

The influence of environmental NGOs in the IMO has not been as prominent as that of the shipping industry organisations nor as catalytic as the role played by

¹¹⁶⁸ Vorbach, above n.1158, 32 comments: "INTERTANKO.. has developed over the past two decades, particularly in the last 10 years, into a sort of industry standard bearer for self-policing and active engagement with regulators...gradually, INTERTANKO has built its reputation within its growing membership and with regulatory bodies (IMO and port and flag states) by leading industry improvement initiatives and gaining the trust of regulators."

¹¹⁶⁹ ITOPF Web Site – *About ITOPF and Historical Data*: "ITOPF is a non profit making organization involved in all aspects of preparing for and responding to ship source spills of oil and chemicals in the marine environment. It also maintains a database of oil spills from tankers, combined carriers and barges which is amongst the most comprehensive of its kind. It is used to generate statistics on numbers and sizes of spills and to identify causes of spills. Long term trends can be analyzed. This has proved particularly useful for evaluating the possible consequences of changes in tanker design and operation." <<http://www.itopf.org/about.html>> and <http://www.itopf.org/pastil.html> at 3 Apr 2005.

¹¹⁷⁰ Vorbach, above n.1158, 32; Mitchell, above n.957, 111.

environmental NGOs in the marine living resource arena.¹¹⁷² With the superior technical expertise of organisations such as INTERTANKO, ITOPF and IACS and their embedded roles in the implementation of IMO standards, member state governments in IMO have tended to rely on the advice of these industry bodies in establishing their negotiating positions and drafting instruments.¹¹⁷³ There have been some exceptions to this rule, particularly in the MEPC, where Friends of the Earth, in conjunction with IUCN, mounted a joint initiative in 1986 to get the PSSA concept on the MEPC agenda.¹¹⁷⁴ Environmental NGOs have also played a role in exposing non compliance with both IMO pollution control measures and London Convention prohibitions on ocean dumping¹¹⁷⁵ and in engendering public concern at the domestic level over vessel source pollution and other shipping activities harmful to the marine environment.¹¹⁷⁶

6.7 Conclusions

There is now a plethora of hard and soft law instruments regulating shipping activities with the potential to harm the marine environment. The establishment of the IMO as a focal point for technical expertise and stakeholder interests in the international shipping arena has generated a high level of regulatory activity to improve shipping safety and reduce vessel source pollution. The majority of instruments regulating vessel source pollution, ballast water exchange and

¹¹⁷¹ Vorbach, above n.1158, 31-32; Mitchell, above n.957, 111.

¹¹⁷² See above n.1160.

¹¹⁷³ M'Conigle & Zacher, above n.1019, 65.

¹¹⁷⁴ See above n. 1118.

¹¹⁷⁵ See above n. 1084.

¹¹⁷⁶ Molenaar, above n.988, 34 comments that: "Three public interest NGOs have, on the international level been very active in the regulation of vessel source pollution. These are the Advisory Committee on Oil Pollution of the Sea (ACOPS), Friends of the Earth International

dumping at sea have application to maritime areas both within and beyond national jurisdiction. There is some scope for applying the particularly sensitive sea areas concept to maritime areas beyond national jurisdiction but the current non binding *New PSSA Guidelines* would benefit from a more secure foundation and an enforcement mechanism which is consistent with current international law principles applicable in maritime areas beyond national jurisdiction. Some provisions in *MARPOL 73/78* and the *Ballast Water Guidelines* and Ballast Water Convention permit higher rates of discharge of pollutants and ballast water exchange in maritime areas beyond national jurisdiction with potentially adverse effects for the marine environment of these areas. At least in the case of ballast water, however, research into new technologies to prevent the transfer of invasive aquatic species to high seas and other marine environments is encouraged in the relevant instruments. More attention to establishing land based reception facilities for all forms of vessel source pollutants would also reduce these adverse effects.

Monitoring compliance and enforcement of international instruments regulating shipping activities beyond national jurisdiction is still largely the responsibility of flag states. Deficiencies in flag state implementation of *MARPOL 73/78*, the *London Convention* and other IMO instruments such as SOLAS have been the subject of investigation by the IMO for a number of years with no binding regulatory solutions. In the absence of such solutions, other non flag state methods of enforcing compliance with vessel source pollution conventions have emerged. In the case of *MARPOL 73/78*, the compliance monitoring function is now performed to a large extent by collaborative port state regimes with

(FoEI) and Greenpeace International...the activities of in particular Greenpeace International clearly show the effectiveness of campaigns in raising a high level of public awareness.”

beneficial consequences for maritime areas beyond national jurisdiction as ships that pose a risk to the marine environment may be detained in ports until they meet international standards for safety and pollution control. A weak link in the marine environmental protection framework for shipping activities beyond national jurisdiction is the lack of cooperative compliance monitoring and enforcement mechanisms for vessel source pollution instruments on the high seas. Consistent under reporting by flag states of incidents involving contraventions of these instruments makes it difficult to gauge the levels of compliance with pollution control measures beyond national jurisdiction. The *London Convention* encourages States Parties to develop a cooperative system of monitoring compliance with the Convention's provisions on the high seas but there has been no practical implementation of this article as yet. The development of cooperative mechanisms, similar to those being developed in the marine resource exploitation context, to monitor compliance with and enforce the wide array of instruments which regulate shipping activities beyond national jurisdiction would increase the effectiveness of the marine environmental protection framework for maritime transport.

Chapter 7 **Deep Seabed Mining Activities Beyond National Jurisdiction – Environmental Regulation**

7.1 **Introduction**

Earlier chapters addressed the physical extent and nature of the seabed beyond national jurisdiction and the evolution of global governance principles to regulate deep seabed mining operations in the Area. This chapter will discuss the incorporation of environmental protection provisions in global instruments governing the deep seabed beyond national jurisdiction and their implementation in the practice of pioneer investor states engaged in exploration for deep seabed resources. The potentially adverse effects of deep seabed mining operations on the surrounding marine environment have been appreciated by marine scientists and engineers from the earliest phases of the industry, but a precise understanding of these effects has been hampered by the still embryonic state of knowledge on the marine ecosystems and biodiversity of the deep seabed.¹¹⁷⁷ Research into the environmental effects of deep seabed mining has occurred simultaneously with the development of deep sea mining technology and the long gestation of the deep seabed mining industry.¹¹⁷⁸ In this climate of scientific uncertainty, detailed environmental protection measures for resource exploitation are difficult to devise.¹¹⁷⁹ Some commentators have advocated a precautionary approach which emphasises greater efficiency and more stringent environmental regulation for

¹¹⁷⁷ Jan Magne Markussen, 'Deep Seabed Mining and the Environment: Consequences, Perceptions, and Regulations' in Helge Ole Bergesen and Georg Parmann (eds.), *Green Globe Yearbook of International Co-operation on Environment and Development* (1994) 31-2; E.D. Brown, *Sea-Bed Energy and Mineral Resources and the Law of the Sea: The Area Beyond the Limits of National Jurisdiction* (1986) Vol II II.9 4; Richard A. Frank, *Deep Sea Mining and the Environment: A Report of the Working Group on Environmental Regulation of Deepsea Mining* (1976) 11-12.

¹¹⁷⁸ Ibid.

¹¹⁷⁹ Jean Pierre Lenoble, 'Les Conséquences Possibles de L'Exploitation des Nodules Polymétalliques sur L'Environnement Marin' in Jean-Pierre Beurier, Alexandre Kiss & Said Mahmoudi (eds.), *New Technologies and Law of the Marine Environment* (2000) 95,108;

land based mining before deep seabed minerals are accessed.¹¹⁸⁰ Exploration permits for seven deep seabed mining sites beyond national jurisdiction have nevertheless been issued by the International Seabed Authority (ISA)¹¹⁸¹ (Figure 7.1) and a regulatory regime encompassing environmental protection provisions for the different forms of deep seabed minerals is gradually emerging from deliberations within the ISA. There are also areas of the deep seabed reserved for activities by the ISA (Figure 7.2).

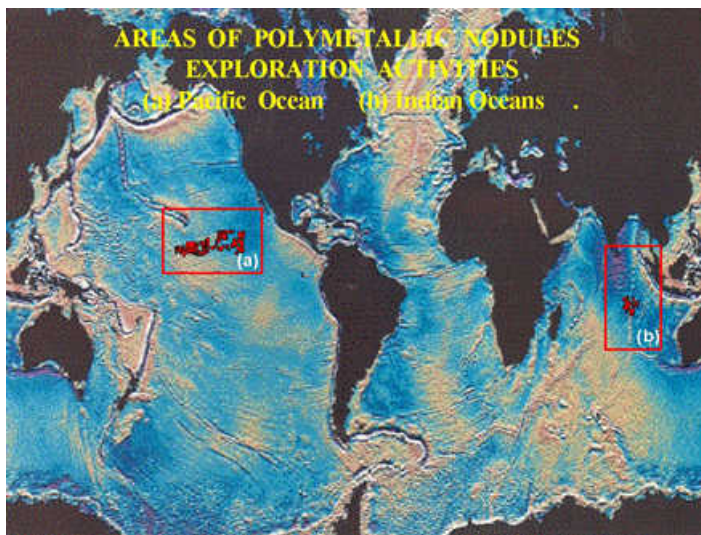


Figure 7.1: Contractor Sites for Polymetallic Nodule Exploration (Source: ISA, <[http:// www.isa.org.jm/en/default.htm](http://www.isa.org.jm/en/default.htm) at 29 April 2005)

¹¹⁸⁰ Jochen Halfar & Rodney M. Fujita, 'Precautionary Management of Deep-Sea Mining' (2002) 26(2) *Marine Policy* 103, 105.

¹¹⁸¹ International Seabed Authority, *Areas for Exploration of Polymetallic Nodules: Pioneer Investor Application Areas*, <<http://www.isa.org.jm/en/default.htm>> at 29 April 2005: Seven Governments and entities were registered as pioneer investors in 1987 by the General Committee of the Preparatory Commission of the ISA. These were the Government of India, L'Institut Francais de Recherche pour L'Exploitation de la Mer (IFREMER)/L'Association Francaise pour L'Etude de la Recherche de Nodules (AFERNOD), Deep Ocean Resources Development Co. Ltd. (DORD) of Japan, YUZHMOREGOGIYA of the Russian Federation, The China Ocean Mineral Resources Research Development Association (COMRA) of the Peoples Republic of China, the Interoceanmetal Joint Organization (IOM)(composed of the Republic of Bulgaria, the Republic of Cuba, the Czech Republic, the Republic of Poland, the Russian Federation and the Slovak Republic) and the Government of the Republic of Korea. Each contractor has an exploration area of 75,000 square metres.

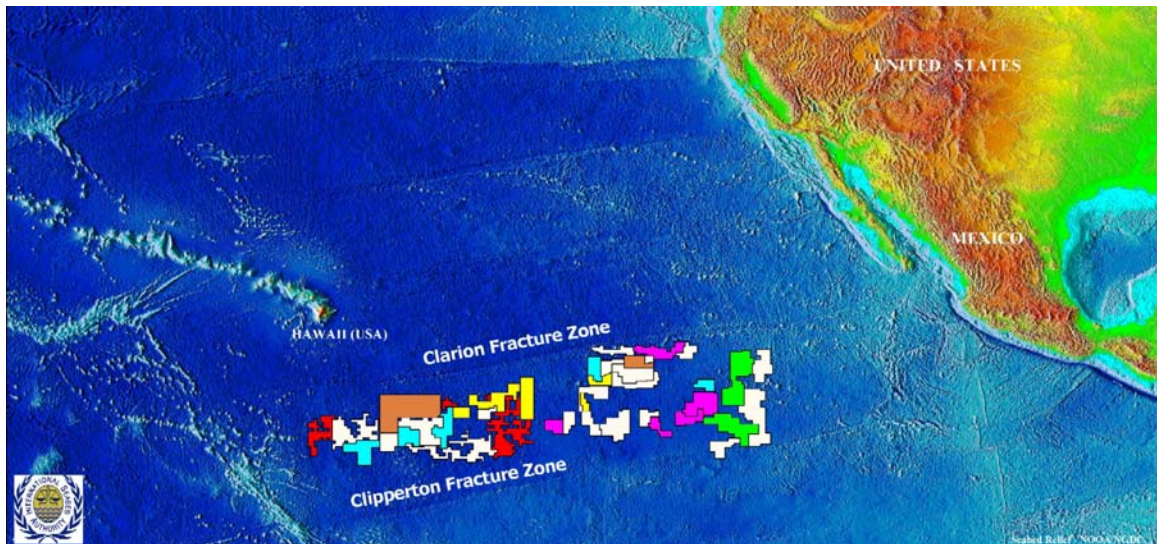


Figure 7.2: Areas reserved for Activities by the International Seabed Authority

(Source: International Seabed Authority, <http://www.isa.org.jm/en/Default.htm> at 29 April 2005)

The development of the deep seabed mining regime under Part XI of the *LOSC*¹¹⁸² and its subsequent modification in the *Part XI Implementing Agreement*¹¹⁸³ has paralleled the development of international environmental law principles in instruments such as the 1972 *Stockholm Declaration*¹¹⁸⁴, *Agenda 21*¹¹⁸⁵ and the *Convention on Biological Diversity (CBD)*¹¹⁸⁶. Environmental protection provisions have been an integral element of the Part XI deep seabed mining regime from its inception.¹¹⁸⁷ The *Declaration of Principles Governing the Seabed and the Ocean Floor, and the Subsoil Thereof, beyond the Limits of*

¹¹⁸² 1982 *United Nations Convention on the Law of the Sea*, 1833 UNTS 3 (*LOSC*).

¹¹⁸³ 1994 *Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982*, (1994) 33 ILM 1309 (*Part XI Implementing Agreement*). The *Part XI Implementing Agreement* has 122 States Parties (UN, *Status of Multilateral Treaties Deposited with the Secretary General*, <http://untreaty.un.org/ENGLISH/bible/englishinternetbible/partI/chapterXXI/treaty7.asp> at 12 October 2005)

¹¹⁸⁴ 1972 *Stockholm Declaration on the Human Environment*, (1972)11 ILM 1416 (*Stockholm Declaration*).

¹¹⁸⁵ 1992 *Agenda 21*, UN Doc. A/CONF.151/26 (*Agenda 21*).

¹¹⁸⁶ 1992 *Convention on Biological Diversity*, (1992)31 ILM 822 (*CBD*).

¹¹⁸⁷ E.D. Brown, above n.1183, II.9 35.

*National Jurisdiction (Seabed Declaration)*¹¹⁸⁸, adopted by the United Nations General Assembly on 17 December 1970, declared that States were to take appropriate measures and adopt and implement international rules and standards for prevention of pollution and other hazards to the marine environment beyond national jurisdiction. States were also to take steps to prevent interference with ecological balances and to promote the protection and conservation of the natural resources of the Area. The *Seabed Declaration* formed the basis for Part XI of the *LOSC* which charged the International Seabed Authority (ISA) with responsibility for adopting appropriate rules, regulations and procedures for the prevention of pollution and other hazards to the marine environment caused by resource exploitation activities in the Area and for the protection and conservation of the natural resources of the Area.¹¹⁸⁹

The 1994 *Part XI Implementing Agreement* added a requirement for environmental impact assessment in proposed plans of work for activities to be undertaken in the Area. This chapter will analyse the environmental protection provisions of Part XI of the *LOSC* and the *Part XI Implementing Agreement* and review their further implementation in the ISA's *Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area*¹¹⁹⁰ and in the draft ISA *Regulations on Prospecting and Exploration for Polymetallic Sulphides and Cobalt Rich Ferromanganese Crusts*.¹¹⁹¹ The environmental protection provisions in Part XI will be discussed in conjunction with the relevant provisions of the *Part*

¹¹⁸⁸ 1970 *Declaration of Principles Governing the Seabed and the Ocean Floor, and the Subsoil Thereof, Beyond the Limits of National Jurisdiction*, UN Doc. GA Res. 2749 (XXV) (*Seabed Declaration*).

¹¹⁸⁹ *LOSC*, Art. 145.

¹¹⁹⁰ UN Doc ISBA/6/C/12 (4 October 2000) (*Polymetallic Nodules Regulations*).

¹¹⁹¹ UN Doc ISBA/10/C/WP.1 (24 May 2004) (*Draft Polysulphides and Cobalt Crusts Regulations*).

XI Implementing Agreement since both are now to be read as one instrument with the *Part XI Implementing Agreement* prevailing in the event of inconsistency.¹¹⁹²

7.2 LOSC Provisions and Part XI Implementing Agreement

Part XI of the *LOSC*, together with some more general provisions in Part XII, provides the overarching framework for the protection of the marine environment from the harmful effects of activities in the Area. Under Article 192 in Part XII of the *LOSC*, States Parties have general obligations to protect and preserve the marine environment, including the Area. The related obligation in Article 194 of the *LOSC*, to take all measures necessary to prevent, reduce and control pollution of the marine environment from any source including pollution from installations and devices used in exploration or exploitation of the natural resources of the seabed and subsoil can also be interpreted as applying to deep seabed mining operations in the Area.¹¹⁹³ Likewise the duty to take all measures to prevent, reduce and control pollution resulting from the use of technologies under the jurisdiction and control of States Parties could be translated into a requirement to use technology which is least likely to cause pollution of the marine environment of the Area.¹¹⁹⁴ In view of the still embryonic nature of the deep seabed mining industry the adjuration to monitor and assess the effects of deep seabed mining activities in order to determine whether they are likely to pollute or harm the marine environment in Articles 204 and 206 of Part XII has particular relevance to activities in the Area.¹¹⁹⁵

¹¹⁹² *Part XI Implementing Agreement*, Art. 2(1).

¹¹⁹³ E.D. Brown, above n.1183, II.9 13.

¹¹⁹⁴ *Ibid.*.

¹¹⁹⁵ *Ibid.*, II.9 14 -15.

Under Article 147 of the *LOSC*, activities in the Area are to be carried out with reasonable regard for other activities in the marine environment and installations used for such activities may not be established where interference may be caused to the use of recognised sea lanes essential to international navigation or in areas of intense fishing activity. Currently the ISA has only issued seven exploration licences to pioneer investors and the issue of mining operations conflicting with other uses of maritime areas beyond national jurisdiction has not arisen. When exploitation activities become more commercially attractive and physically viable beyond national jurisdiction, the potential for clashes between users is likely to increase. An international mechanism for resolving such conflicts which would involve collaboration between international organisations with regulatory competence over the principal activities occurring in maritime areas beyond national jurisdiction such as high seas fisheries, density of shipping traffic and commercial exploitation activities for mineral and genetic resources would also assist in coordinating marine environmental protection measures for such areas.

The ISA bears the primary responsibility for formulating the relevant international standards to protect the marine environment from harmful effects of activities undertaken in the Area. Under Article 145 of the *LOSC*, the ISA is required to adopt appropriate rules, regulations and procedures for:

- (a) the prevention, reduction and control of pollution and other hazards to the marine environment, including the coastline, and of interference with the ecological balance of the marine environment, particular attention being paid to the need for protection from harmful effects of such activities as drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities.

- (b) the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment.

The ISA's responsibility is amplified and linked to operational aspects of deep seabed mining in Annex III of the *LOSC*. Article 17(1)(b)(xii) of Annex III specifies that the ISA is to adopt and apply mining standards and practices, including those relating to operational safety, conservation of resources and the protection of the marine environment. In formulating its rules, regulations and procedures on the protection of the marine environment, it is to apply the objective criteria set out in Article 17(2)(f) of Annex III. In the case of mining operations, the ISA's standards must secure effective protection from the harmful effects of drilling, dredging, coring, excavation and shipboard processing immediately above a mine site as well as dumping and discharge into the marine environment of sediments, wastes and other effluents. The Legal and Technical Commission of the ISA has functional responsibility for formulating rules, regulations and procedures on protection of the marine environment and submitting those to the Council for adoption and eventual approval by the Assembly.¹¹⁹⁶ Article 209 of the *LOSC* contains a complementary obligation for States Parties to adopt laws and regulations to prevent, reduce and control pollution of the marine environment from activities in the Area undertaken by their flag vessels, installations, structures and other devices. These laws and regulations are to be no less effective than those established by the ISA.¹¹⁹⁷

Annex III of the *LOSC* contains further conditions for prospecting, exploration and exploitation activities in the Area. Prospectors must provide the ISA with an

¹¹⁹⁶ *LOSC*, Arts. 162(2)(o) & 165(2)(f).

undertaking that they will comply with the relevant rules, regulations and procedures of the ISA on the protection of the marine environment before prospecting can commence.¹¹⁹⁸

States Parties or entities sponsored by States Parties and under their effective control must also submit plans of work to the ISA for approval before exploration and exploitation activities can commence.¹¹⁹⁹ These must conform to the ISA's rules, regulations and procedures including those relating to the protection of the marine environment.¹²⁰⁰ The principal component added to the environmental protection provisions of Part XI by the *Part XI Implementing Agreement*¹²⁰¹ is a requirement that a plan of work for exploration or exploitation activities in the Area must be accompanied by an assessment of the potential environmental impacts of the proposed activities and a description of a programme for oceanographic and baseline environmental studies in accordance with rules to be adopted by the ISA.¹²⁰²

While the principal responsibility for monitoring compliance and enforcing environmental protection standards for activities in the Area falls to States Parties through their implementing legislation, the ISA has limited sanctioning powers under Part XI and Annex 3 of the *LOSC*.¹²⁰³ A State Party, which the Sea-Bed Disputes Chamber finds has grossly and persistently violated the provisions of Part XI, may be suspended from the exercise of the rights and privileges of

¹¹⁹⁷ Ibid, Art. 209(2).

¹¹⁹⁸ Ibid, Annex III, Art. 2(1)(b).

¹¹⁹⁹ Ibid, Annex III, Art. 3(1) and (3).

¹²⁰⁰ Ibid, Annex III, Art. 3(4)(a).

¹²⁰¹ United Nations, *Status of Multilateral Treaties deposited with the Secretary General*, <[http://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm#Agreement relating to the Implementation of Part XI of the Convention](http://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm#Agreement%20relating%20to%20the%20Implementation%20of%20Part%20XI%20of%20the%20Convention)> at 12 October 2005: The *Part XI Implementing Agreement* has 122 States Parties.

membership of the Authority by the Assembly on the recommendation of the Council.¹²⁰⁴ Seabed mining contractors may also be sanctioned for serious violations of their contracts by having their contracts terminated or suspended or by the imposition of monetary penalties.¹²⁰⁵

The environmental protection provisions of Part XI and the *Part XI Implementing Agreement* provide a comprehensive framework for the further development of detailed rules and procedures for the slowly evolving deep seabed mining industry. In comparison with other aspects of Part XI, their negotiation was relatively uncontentious as the costs and ramifications of future environmental protection standards were difficult to envisage at the time they were drafted.¹²⁰⁶ Drafting of environmental protection standards, the promotion and encouragement of marine scientific research into the impacts of activities in the Area and the development of marine technology to protect the marine environment from activities in the Area all appear in the priorities set for the ISA's work programme between the entry into force of the *Part XI Implementing Agreement* and the approval of the first plan of work for exploitation.¹²⁰⁷ The next section will examine the detailed codes the ISA has so far drafted and adopted for the mining of specific resources on the deep seabed and their environmental protection content.

¹²⁰² *Part XI Implementing Agreement*, Annex, Section I, para 7.

¹²⁰³ *LOSC*, Art. 215.

¹²⁰⁴ *Ibid*, Art. 185.

¹²⁰⁵ *Ibid*, Annex III, Art. 18.

¹²⁰⁶ E.D. Brown, 'The 1994 Agreement on the Implementation of Part XI of the UN Convention on the Law of the Sea: Breakthrough to Universality?' (1995) 19(1) *Marine Policy*, 5, 16. Brown comments that in the course of the Informal Consultations for the *part XI Implementing Agreement* it was agreed that environmental considerations could be removed from the list of hard core issues, partly because they were not an obstacle to ratification and partly because it was recognised that a response to the accepted need for the provision of safeguards must await the outcome of further research; Markussen, above n. 1, 31 comments that the general attitude amongst the participants at

7.3 ISA Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area

The first oceanic mineral resources to receive concentrated attention by the scientific and engineering community were polymetallic nodules. These black nodules of several centimetres in diameter, which were first discovered by *HMS Challenger* in the 1870s,¹²⁰⁸ rest on certain parts of the ocean floor at depths of 4,000 to 5, 500 metres and contain valuable metallic elements such as nickel, cobalt, copper, manganese, molybdenum and zinc (Figure 7.3).¹²⁰⁹ In 1965 John Mero, a mining engineer, published a book entitled *The Mineral Resources of the Sea* which claimed that polymetallic nodule mining was technically and economically viable and could produce long term supplies of key minerals including nickel, copper, cobalt and manganese.¹²¹⁰ The first commercially viable deposits of polymetallic nodules were identified in the Clarion Clipperton area of the Central Eastern Pacific Ocean and in the Central Indian basin of the Central Indian Ocean.¹²¹¹

the informal consultations in August 1992 was that the environmental consequences would be manageable.

¹²⁰⁷ *Part XI Implementing Agreement*, Annex, Section 1, para. 5(g)(h) & (i).

¹²⁰⁸ Lawrence Juda, *International Law and Ocean Use Management* (1996) 187-8; Michael W. Lodge, 'International Seabed Authority's Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area' (2002) 20(3) *Journal of Energy and Natural Resources Law* 270, 271 n.3.

¹²⁰⁹ Markussen, above n.1183, 31; Lenoble, above n.1185 3, 95.

¹²¹⁰ Juda, above n.1214, 188; Lodge, above n.1214, 271.

¹²¹¹ Markussen, above n.1183, 31.



Figure 7.3: Polymetallic Nodules on the Deep Seabed of the Pacific Ocean
(Source: ISA, <<http://www.isa.org.jm/en/Default.htm>>at 29 April 2005)

Drawing on the results of comprehensive research into the effects of the current technology for mining polymetallic nodules, Markussen describes two main environmental problems associated with mining activities on the deep seabed:

- *The first relates to what happens on the seabed.* As the collector unit gathers nodules, it will seriously destroy the top few centimetres of the seabed, causing major disturbance and disruption to the flora and fauna in the mining tracks. In addition, the propulsion system of the collector unit will stir up sediments; as a result, organisms in and around the tracks will be partially or entirely buried. In the mining tracks, for instance, a mortality rate of 95-100 per cent may be expected for organisms found there.
- *The second relates to discharge from the mining ship.* After the nodules have been gathered by the collector unit, they will be washed clean by water jets. The nodules will then be crushed and brought to the surface as

slurry containing both crushed nodules and water. When the slurry reaches the surface, there will be a partial discharge of waste water containing particulate matter and trace metals. This discharge may interfere with light penetration and reduce photosynthesis in the surface layers. Furthermore the waste water will be considerably colder than the surface water.¹²¹²

The effects of one system used to retrieve polymetallic nodules from the ocean floor and some of its effects on the surrounding environment are illustrated in Figure 7.4.

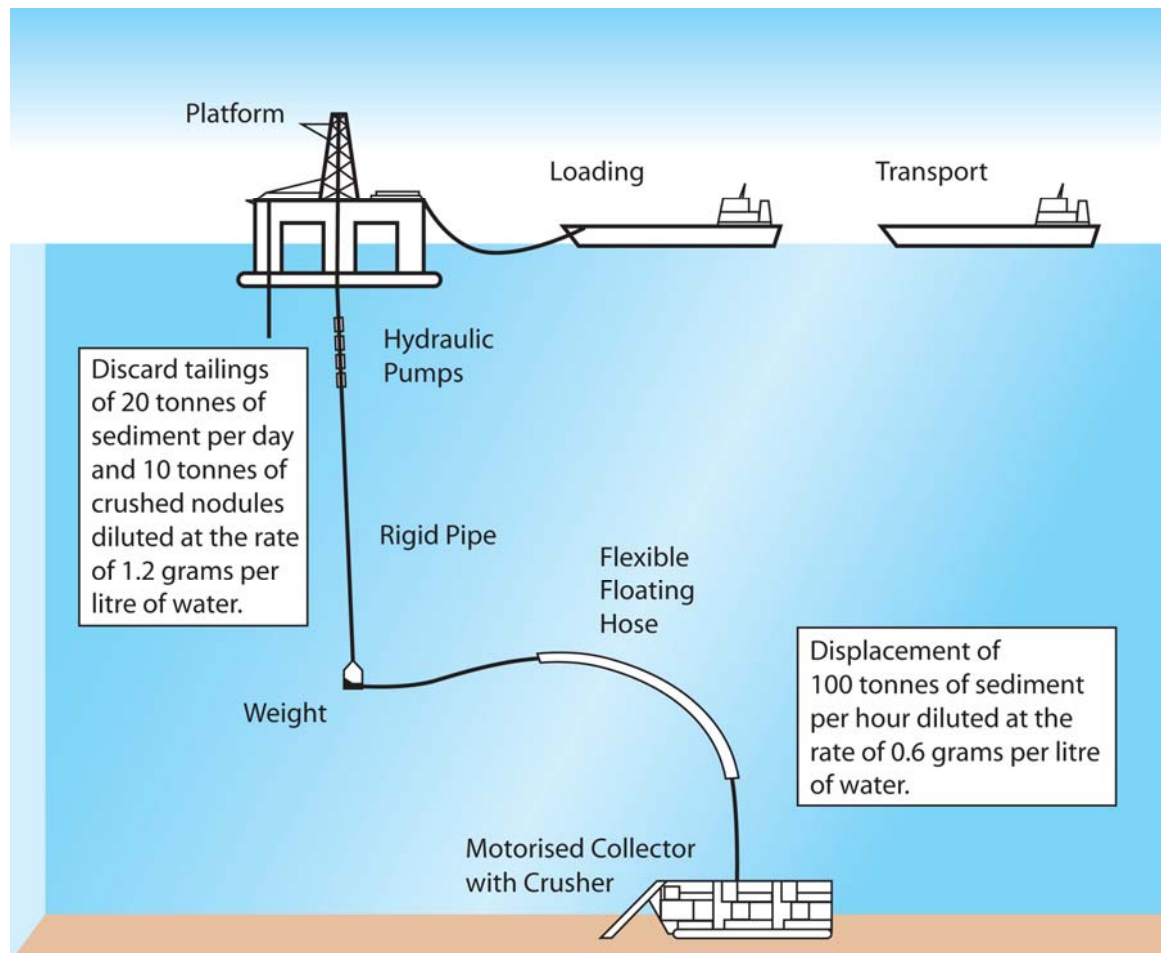


Figure 7.4: Deep Seabed Mining System and its Impact on the Marine Environment (Source: Lenoble, above n. 3, 102)

¹²¹² Ibid, 33.

Even prior to the establishment of the ISA, its Preparatory Commission had begun work on draft regulations on prospecting and exploration for polymetallic nodules.¹²¹³ The *Polymetallic Nodule Regulations*, adopted in 2000, impose stringent and comprehensive environmental protection obligations on the states and state sponsored entities involved in the prospecting and exploration phases of deep seabed mining.¹²¹⁴ Under regulation 31(2), the ISA and sponsoring States are required to apply a precautionary approach, as reflected in Principle 15 of the Rio Declaration, to their activities in the Area. This mention of the precautionary approach adds to the accumulation of hard and soft law references to precaution as a guiding precept in environmental protection regimes.¹²¹⁵ Although some commentators have used the term precautionary approach and precautionary principle interchangeably,¹²¹⁶ the different terms used in international law instruments for the concept of precaution tend to indicate that there are varying degrees of acceptance among states of the constraints implied in a precautionary framework. There is some evidence that China and other states involved in the negotiation of the *Polymetallic Nodule Regulations* preferred the softer formulation of “precautionary approach” to the harder terms ‘precautionary measures’ and “precautionary principle” because they were concerned that if the latter terms were used, substantial investment would be required in environmental protection equipment before there was any evidence of the environmental damage

¹²¹³ Donald R. Rothwell, ‘Oceans Management and the Law of the Sea in the Twenty-First Century’ in A.G. Oude Elferink & D.R. Rothwell (eds.), *Oceans Management in the 21st Century: Institutional Frameworks and Responses* (2003) 329, 342.

¹²¹⁴ Lodge, above n.1214, 287 notes that the provisions relating to the protection and preservation of the marine environment were among the most controversial to be addressed during the negotiation of the *Polymetallic Nodules Regulations* and at 289 that the environmental protection obligations imposed on exploration contractors are progressive in nature.

¹²¹⁵ Jon M. Van Dyke, ‘Giving Teeth to the Environmental Obligations in the LOS Convention’ in Elferink & Rothwell, above n.1219, 167, 177, n.44.

¹²¹⁶ *Ibid*, 176, n.42.

that mining would cause.¹²¹⁷ Under regulation 31(3), each contractor is also required to take necessary measures to prevent, reduce and control pollution and other hazards to the marine environment arising from its activities in the Area as far as reasonably possible using the best technology available to it. At the suggestion of China, the term “best available technology” which was in an earlier draft of this regulation, was replaced by the words “best technology available to it” to reduce the financial burden on contractors who would otherwise have to purchase the world’s best environmental protection technology.¹²¹⁸

At every stage of their activities in relation to the Area, prospectors and contractors have substantial responsibilities to assess and monitor the effects of their operations on the marine environment. Prospectors must include in their notification to the ISA seeking approval to search for deposits of polymetallic nodules, a satisfactory written undertaking that they will comply with the *LOSC* and the relevant rules and regulations and procedures of the ISA concerning protection and preservation of the marine environment.¹²¹⁹ Prospectors are also required to submit annual reports on the status of prospecting which contain information on their compliance with ISA regulations on the protection and preservation of the marine environment.¹²²⁰

¹²¹⁷ Zou Keyuan, ‘China’s Efforts in Deep Sea-Bed Mining: Law and Practice’ (2003) 18(4) *International Journal of Marine and Coastal Law* 481, 503.

¹²¹⁸ *Ibid.*

¹²¹⁹ *Polymetallic Nodules Regulations*, Regulation 3(4)(d)(i)(b).

¹²²⁰ *Polymetallic Nodule Regulations*, Regulation 5(1)(b); Lodge, above n.1214, 283 suggests that there is probably very little real incentive for prospectors to notify the ISA of their activities, most of which may be carried out under the cover of marine scientific research. Under *Polymetallic Nodules Regulation* 2(4), prospectors have no exclusive rights and no rights to resources but may recover a reasonable quantity of minerals for testing and not for commercial use.

States or states sponsored entities submitting plans of work for exploration in the Area must submit a description of their proposed programmes for oceanographic and environmental baseline studies that would enable an assessment of the potential environmental impact of the proposed exploration activities, a preliminary assessment of the possible impact of the proposed exploration activities on the marine environment and a description of proposed measures for the prevention, reduction and control of pollution and other hazards as well as possible impacts to the marine environment.¹²²¹ Once contracts are signed with the ISA, exploration contractors are required to gather environmental baseline data and to establish environmental baselines against which to assess the likely effects of their activities on the marine environment and devise programmes to monitor and report on such effects.¹²²² Contractors are required to report annually in writing to the Secretary General on the implementation and results of their monitoring programmes and to submit environmental baseline data.¹²²³ Annual reports from prospectors and contractors are evaluated by the Legal and Technical Commission¹²²⁴ which has developed guidelines to assist contractors in fulfilling these requirements.¹²²⁵ A more complex reporting process for contractors, involving separate reports on marine environmental variations and marine environmental monitoring in an earlier draft of the *Polymetallic Nodule Regulations*, was replaced with the current single reporting Requirement at the suggestion of Russia, China and other countries negotiating the

¹²²¹ *Polymetallic Nodules Regulations*, Regulation 18(b)(c) and (d).

¹²²² Ibid, Regulation 31(4).

¹²²³ Ibid, Regulation 31(5).

¹²²⁴ Ibid.

¹²²⁵ ISA Legal and Technical Commission, *Recommendations for the Guidance of Contractors for the Assessment of the Possible Environmental Impacts Arising from Exploration for Polymetallic Nodules in the Area*, UN Doc. ISBA/7/LTC/1 (10 April 2001) (*Polymetallic Nodule Environmental Guidelines*).

Regulations.¹²²⁶ If a contractor moves to the exploitation stage, the environmental monitoring requirements become even more stringent obligating them to propose areas to be set aside and used exclusively as impact reference zones and preservation reference zones.¹²²⁷

Lodge comments that the environmental protection provisions of the *Polymetallic Nodules Regulations* provide a firm basis for the elaboration of a comprehensive code of environmental regulation.¹²²⁸ He suggests, however that a variety of areas will need further elaboration if they are to be made effective. These include the application of the precautionary approach and the criteria for determining whether an effect from an activity in the Area represents a significant adverse change in the marine environment. He also proposes that guidelines should be developed for the description by an applicant for an exploration contract of proposed measures for the prevention, reduction and control of pollution and other hazards to the marine environment in light of reasonableness tests and best available technology and for the description of the applicant's technical capability to respond to any incident or activity that causes serious harm to the marine environment.¹²²⁹

The presence of substantial evidence indicating the risk of "serious harm to the marine environment" is the benchmark employed by the ISA for taking emergency environmental protection measures under the *Polymetallic Nodule*

¹²²⁶ Keyuan, above n.1223, 503; Lodge, above n.1214, 293 n. 136 also notes that the reporting provisions were strongly opposed during their negotiation by the pioneer investors who objected to the provision of specific technical information, especially information relating to equipment design and technology. In addressing the Council on this issue however the Secretary General noted that the contractors must provide meaningful reports to allow the Authority to make informed decisions eg to assess the potential profit of areas to be mined in order to set taxation levels once exploitation begins or to assess any potential damage to the environment.

¹²²⁷ *Polymetallic Nodule Regulations*, Regulation 31(7).

¹²²⁸ Lodge, above n.1214, 289.

¹²²⁹ Ibid.

*Regulations.*¹²³⁰ This term is defined as “any effect from activities in the Area on the marine environment which represents a significant adverse change in the marine environment determined according to the rules, regulations and procedures adopted by the ISA on the basis of internationally recognised standards and practices.”¹²³¹ Under Regulation 2, prospecting may not be undertaken if substantial evidence indicates the risk of serious harm to the marine environment. Both prospectors and contractors are required to notify the Secretary General of any incident arising from prospecting or exploration activities which causes serious harm to the marine environment.¹²³² On the basis of this notification the Secretary General advises the sponsoring state or states and reports immediately to the Legal and Technical Commission and the Council which then circulates the report to all members of the ISA, competent international organisations and to concerned subregional, regional and global organisations and bodies.¹²³³ Pending any action by the Council the Secretary General has the power to take immediate temporary measures to prevent, contain and minimise serious harm to the marine environment.¹²³⁴

The Legal and Technical Commission is responsible for recommending the final measures necessary to respond effectively to the incident to the Council which may then issue emergency orders to prevent contain and minimise serious harm to the marine environment including orders for the suspension or adjustment of operations.¹²³⁵ Where a contractor does not promptly comply with an emergency order the Council is empowered by itself or through arrangements with others on

¹²³⁰ *Polymetallic Nodules Regulations*, Regulation 32(1).

¹²³¹ *Ibid*, Regulation 1(3)(f).

¹²³² *Ibid*, Regulation 7 & Annex 4 section 6.1(b).

¹²³³ *Ibid*, Regulation 32.(1).

¹²³⁴ *Ibid*, Regulation 32(2).

its behalf to take practical measures to prevent, minimise and contain further serious harm to the marine environment.¹²³⁶

7.3.1 *State Practice in Complying with Environmental Protection Requirements under the Polymetallic Nodule Regulations*

The *Polymetallic Nodule Environmental Guidelines* issued by the Legal and Technical Commission of the ISA in 2001 describe in extensive detail the data to be collected by the contractor in establishing an environmental baseline for a particular exploration area prior to exploration activities commencing. This data encompasses information on:

- (a) the physical oceanographic conditions of the area to be explored such as the currents, temperature and turbidity regimes along the entire water column and particularly near the seafloor;
- (b) the chemical oceanographic conditions of the exploration area such as the water column chemistry, including the water overlaying the nodules;
- (c) the sediment properties of the area including measurement of soil mechanics to adequately measure the superficial sediment deposits which are the potential source of deep water plume;
- (d) the biological communities in the exploration area including the seafloor communities, pelagic communities, sightings of marine mammals in the area and the level of trace metals in dominant species.¹²³⁷

¹²³⁵ Ibid, Regulation 32(3), (4) and (5).

¹²³⁶ Ibid, Regulation 32(6).

China played a leading role in implementing a plan to collect environmental baseline data for its exploration area which was regarded as a model for other contractors and a substantial contribution to environmental research concerning deep seabed mining.¹²³⁸

As well as providing environmental baseline data on exploration areas, contractors are required to submit environmental impact assessments for particular exploration activities and the results of certain observations and measurements during and after exploration activities to the Secretary General. The *Polymetallic Nodule Environmental Guidelines* expand on the types of exploration activities which require environmental impact assessment and the observations and measurements to be made. Prior environmental impact assessments are required for:

- (a) dredging to collect nodules for on-land studies for mining and/or processing;
- (b) use of special equipment to study the reaction of the sediment to disturbances made by collecting devices or running gears; and
- (c) testing of collection systems and equipment.¹²³⁹

The observations and measurements to be reported to the Secretary General while performing exploration activities include:

¹²³⁷ *Polymetallic Nodules Environmental Guidelines*, para. 8.

¹²³⁸ Keyuan, above n.1223, 505.

¹²³⁹ *Polymetallic Nodules Environmental Guidelines*, para. 10.

- (a) width, length and pattern of the collector tracks on the seafloor;
- (b) depth of penetration in the sediment, lateral disturbance caused by the collector;
- (c) volume of sediment and nodules taken by the collector;
- (d) ratio of sediment separated from the nodule on the collector, volume of sediment rejected by the collector, size and geometry of the discharged plume and behaviour of the plume behind the collector;
- (e) area and thickness of re-sedimentation by the side of the collector tracks to the distance where re-sedimentation is negligible;
- (f) volume of overflow discharge from the surface vessel, concentration of particles in the discharged water, chemical and physical characteristics of the discharge and behaviour of the discharged plume at the surface or in mid-water.¹²⁴⁰

The observations and measurements to be reported to the Secretary General following a specific exploration activity have particular relevance to the effects of the activity on the surrounding benthic fauna. Contractors are required to report on:

- (a) thickness of re-deposited sediment on the side of the collector tracks;

¹²⁴⁰ Ibid, para. 14.

- (b) behaviour of the different types of benthic fauna subjected to re-sedimentation;
- (c) changes of the benthic fauna in the collector tracks, including possible recolonisation;
- (d) possible changes in the benthic fauna in adjacent areas apparently not perturbed by the activity;
- (e) changes in the characteristics of the water at the level of the discharge from the surface vessel during the mining test, and possible changes on the behaviour of the corresponding fauna.¹²⁴¹

Since the *Polymetallic Nodule Environmental Guidelines* were issued in 2001 the seven exploration contractors have submitted annual reports on their exploration activities for the previous year for evaluation by the Legal and Technical Commission of the ISA. There was a defined category of the annual report for environmental studies in 2002 and 2003 which was retitled environmental monitoring and assessment in 2004. The Legal and Technical Commission's evaluation of this section of the contractors' annual reports for the years 2002, 2003 and 2004 indicates that contractors are still at a preliminary stage in integrating environmental reporting requirements into their exploration activities. In its evaluation of the environmental components of the first set of annual reports in 2002, the Legal and Technical Commission commented that the contractors had presented a great diversity of material much of which was of great value to the

¹²⁴¹ Ibid, para. 15.

ISA but emphasised the need for contractors to comply with the recommendations for guidance and the standards adopted by the Authority's workshops on environmental guidelines and on standardisation.¹²⁴² In its 2003 evaluation of the annual reports submitted by contractors, the Legal and Technical Commission noted in relation to China's report on environmental studies, that while it recognised the large number of data points and sample analyses referred to by the China Ocean Mineral Resource Research and Development Association (COMRA), it regarded the results provided as less than it required for an assessment of the work undertaken and recommended that further details of operations, analyses and results be provided by the contractor.¹²⁴³ The 2004 evaluation of the contractors environmental monitoring and assessment activities discloses that more research cruises are being undertaken by contractors for environmental purposes and there is a higher degree of satisfaction by the Legal and Technical Commission with the environmental content of the reports submitted.¹²⁴⁴

The Tenth Session of the Legal and Technical Commission in 2004 also reported on the Recommendations of a Workshop held in 2001 to standardise the environmental data and information required to be submitted by prospectors and contractors.¹²⁴⁵ Among other things, the Workshop recommended that the ISA

¹²⁴² ISA Legal and Technical Commission, *Evaluation of the annual reports submitted by contractors*, UN Doc ISBA/8/LTC/2 (13 August 2002), para 83.

¹²⁴³ ISA Legal and Technical Commission, *Evaluation of the annual reports submitted by contractors*, UN Doc ISBA/9/LTC/2 (30 July 2003), para 78.

¹²⁴⁴ ISA Legal and Technical Commission, *Evaluation of the annual reports submitted by contractors*, UN Doc ISBA/10/LTC/3 (26 May 2004), paras. 20, 30, 41, 53, 63 & 73. The Legal and Technical Commission accepted six of the seven annual reports with no adverse comments on environmental monitoring and assessment.

¹²⁴⁵ ISA, *Recommendations of the Workshop to Standardize the Environmental Data and Information Required on Prospecting and Exploration for Polymetallic Nodules in the Area (ISBA/6/A/18)*, and *Recommendations for the Guidance of Contractors for the Assessment of the Possible Environmental Impact Arising from the Exploration of Polymetallic Nodules in the Area*

establish a common environmental database, that contractors collaborate with each other to coordinate taxonomic description of species, that periodic exchange of scientists from different countries take place on research cruises and that cooperative research cruises be facilitated by ISA.¹²⁴⁶ Key chemical/geological, biological/environmental and water column parameters were also adopted for the oceanographic and biological data to be submitted by contractors.¹²⁴⁷ While still at a preliminary stage in integrating environmental protection measures into their exploration programmes, it does appear from the evaluation of annual reports by the Legal and Technical Commission that the majority of exploration contractors are beginning to grapple with the technical complexity of the reporting requirements and to provide comprehensible and useful environmental data on their exploration activities.

7.4 Draft ISA Regulations for Prospecting and Exploration for Polymetallic Sulphides and Ferromanganese Cobalt Rich Crusts

Two further types of oceanic minerals were discovered in the late 1970s which exhibited different characteristics to polymetallic nodules. Polymetallic sulphide deposits were discovered in 1979 on the East Pacific Rise at 21 degrees north latitude off Baja California (Mexico).¹²⁴⁸ At water depths of up to 3, 700 metres, hydrothermal fluids having leached from the ocean into subterranean chambers where they are heated by the molten rock (magma) beneath the crust and

(ISBA/7/LTC/1), UN Doc ISBA/10/LTC/4 (15 May 2004)(*ISA Workshop on Environmental Standardization and Assessment Recommendations*).

¹²⁴⁶ *ISA Workshop on Environmental Standardization and Assessment Recommendations*, paras. 18, 20, 23 & 24; Michael W. Lodge, 'Environmental Regulation of Deep Seabed Mining' in Andree Kirchner (ed.), *International Marine Environmental Law: Institutions, Implementation and Innovations* (2003) 49, 59.

¹²⁴⁷ *ISA Workshop on Environmental Standardization and Assessment Recommendations*, paras. 27, 36 and 51.

discharged from black chimney like formations of dark rock on top of sulphide mounds.¹²⁴⁹ These chimney like formations are known as black smokers. The hydrothermal fluids spewing from the black smokers at temperatures of approximately 350 to 400 degrees centigrade mix with the surrounding seawater and continuously precipitate metal sulphide deposits onto the surrounding chimney formations and seabed.¹²⁵⁰ The metal sulphides accumulate just below the seafloor and form massive sulphide deposits which contain high concentrations of copper, zinc and lead and gold and silver (Figure 7.5).¹²⁵¹

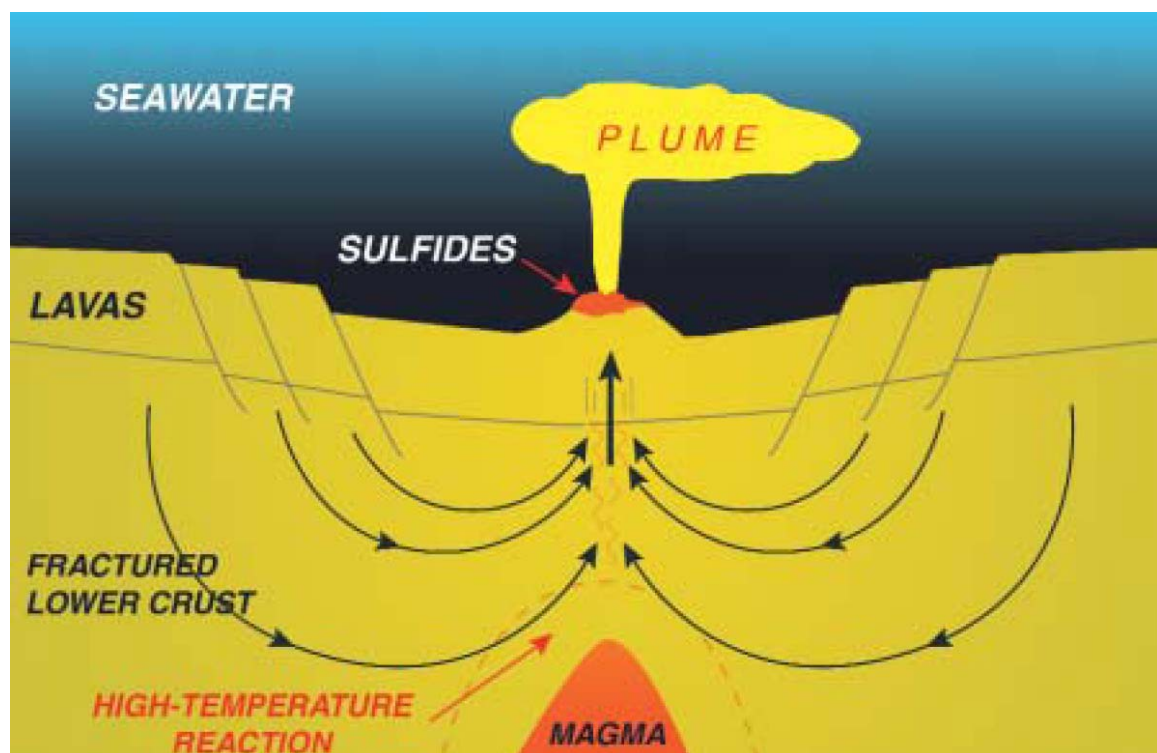


Figure 7.5: Formation of Polymetallic Sulphides (Source: ISA Brochure – Polymetallic Sulphides, <http://www.isa.org.jm/en/seabedarea/TechBrochures/ENG8.pdf> at 3 May 2005)

¹²⁴⁸ International Seabed Authority Brochure – Polymetallic Sulphides, <http://www.isa.org.jm/en/seabedarea/TechBrochures/ENG8.pdf> at 3 May 2005 (Polymetallic Sulphide Brochure).

¹²⁴⁹ Ibid.

¹²⁵⁰ Pedro Re, 'Deep-Sea Hydrothermal Vents "Oases of the Abyss"' in Beurrier, Kiss & Mahmoudi, above n 1185, 67, 69.

¹²⁵¹ Polymetallic Sulphide Brochure, above n.1254; Halfar & Fujita, above n.1186, 103.

Deep sea exploration has so far disclosed over 100 sites of hydrothermal mineralisation at water depths of up to 3,700 metres on mid oceanic ridges, back arc rifts and seamounts in waters within and beyond national jurisdiction.¹²⁵²

Figure 7.6 illustrates the locations of hydrothermal vents along mid ocean ridges in the global oceans. The high metal content of the polymetallic sulphide deposits has attracted the interest of the international mining industry but exploration activities have so far been concentrated in waters under national jurisdiction where mining can occur in shallower depths and under less rigorous environmental protection regulations.¹²⁵³

¹²⁵² P.M Herzig & M.D. Hammington, *Polymetallic Massive Sulphide Deposits at the Modern Seafloor and their Potential*, <<http://www.isa.org.jm/en/seabedarea/PolysulphRep/Part1.pdf>> at 3 May 2005; Re, above n.74, 68.

¹²⁵³ Halfar & Fujita, above n.1186 at 104; *Polymetallic Sulphide Brochure*, above n.1254.

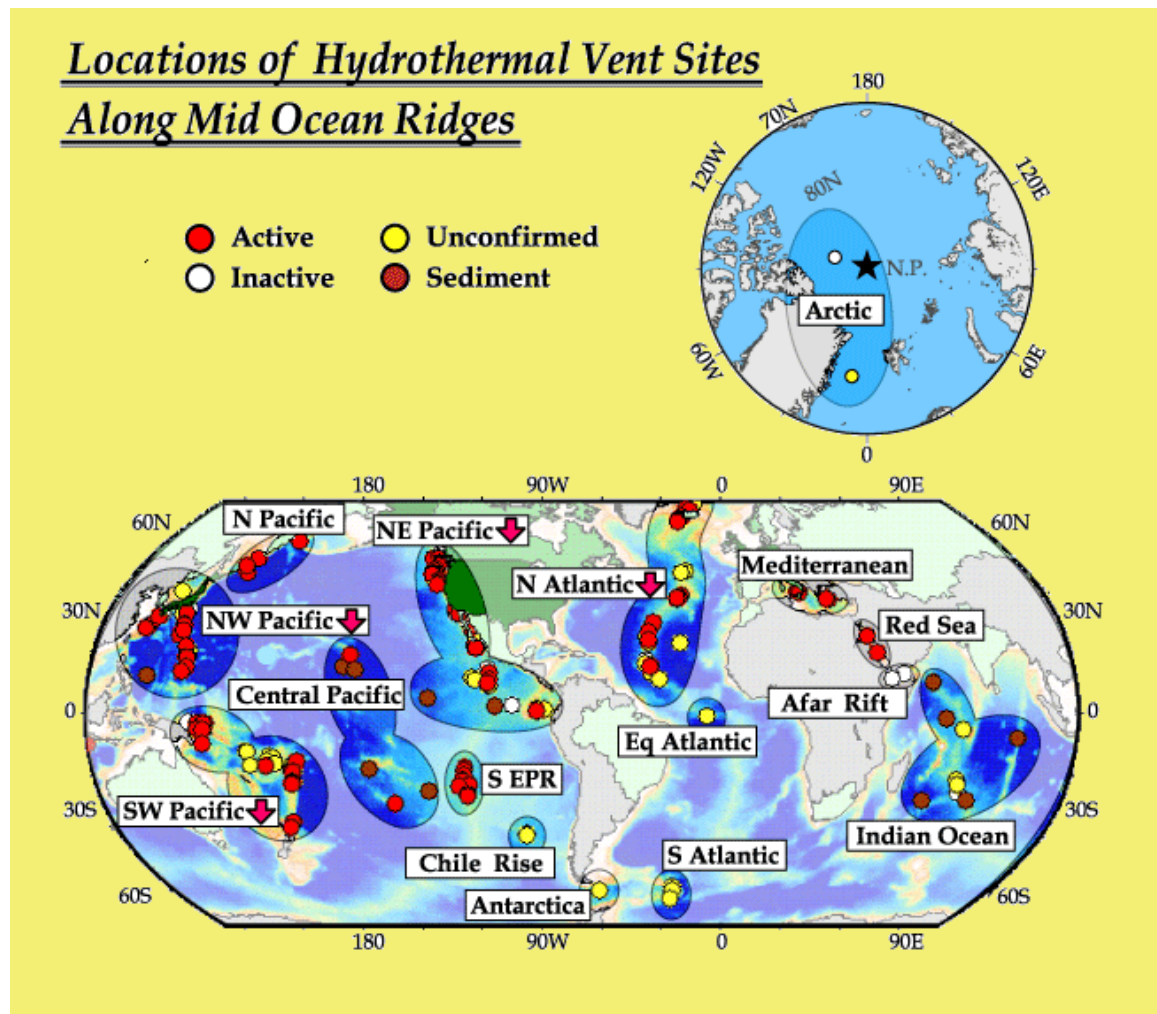


Figure 7.6 : Location of Hydrothermal Vent Sites Along Mid Ocean Ridges
(Source: ISA. <http://www.isa.org.jm/en/Default.htm> at 1 May 2005)

The discovery of hydrothermal vents in the late 1970s also revealed a rich haul of previously unknown species in associated vent communities depending directly on chemosynthetic processes rather than photosynthesis for their energy.¹²⁵⁴ These communities occupy very small and concentrated areas of the deep sea floor and many sites contain animal species found nowhere else.¹²⁵⁵ The impact of mining for polymetallic sulphides in the vicinity of these communities will be similar to polymetallic nodule mining including the destruction of surfaces where vent fauna

¹²⁵⁴ *Polymetallic Sulphide Brochure*, above n. 72.

¹²⁵⁵ S. Kim Juniper, *Impact of the Development of Polymetallic Massive Sulphides on Deep Sea Hydrothermal Vent Ecosystems*, <http://www.isa.org/en/seabedarea/PolysulphRep/Part1.pdf> at 3 May 2005, 102. The potential of hydrothermal vent communities for bioprospecting is discussed in Chapter 8.

live, their burial under disturbed sediment and chemical changes in their environment due to the suspension of a particulate plume in the bottom water.¹²⁵⁶ The high potential loss of endemic species as a result of mining operations is a factor which has influenced the stringent environmental protection measures contained in the draft *Polymetallic Sulphide and Ferromanganese Cobalt Rich Crusts Regulations* currently being considered by the ISA.¹²⁵⁷ The technology for mining polymetallic sulphides is still being developed but will need to take into account the proximity of the unique and fragile vent communities to mineral deposits and the dangers entailed in mining over potentially volcanic sites.¹²⁵⁸

Another form of mineral deposit which captured the attention of deep sea scientists in the early 1980s was the cobalt rich ferromanganese crusts found throughout the oceans on the flanks and summits of seamounts, ridges and plateaux where seafloor currents have swept the ocean floor clear of sediment for millions of years.¹²⁵⁹ (Figure 7.7) These mineral deposits contain a range of base metals including cobalt manganese and nickel which are used to add specific properties to steel such as hardness, strength and resistance to corrosion.¹²⁶⁰ Some investigation of crusts has occurred particularly in the equatorial Pacific but the development of detailed maps of crust deposits and research into their characteristics is still at an early stage.¹²⁶¹ Mining of cobalt crusts entails more

¹²⁵⁶ *Polymetallic Sulphide Brochure*, above n. 72; Halfar & Fujita, above n.1186, 104.

¹²⁵⁷ *Polymetallic Sulphide Brochure*, above n. 72.

¹²⁵⁸ Halfar & Fujita, above n.1186, 104 comment that it is envisioned that mining would be conducted using large remotely controlled hydraulic grabs or continuous mining systems with cutter heads and airlift.

¹²⁵⁹ *International Seabed Authority Brochure – Cobalt Rich Crusts*, <http://www.isa.org.jm/en/seabedarea/TechBrochures/ENG8.pdf> at 3 May 2005 (*Cobalt Rich Crusts Brochure*).

¹²⁶⁰ *Cobalt Rich Crusts Brochure*; James Hein, *Cobalt Rich Ferromanganese Crusts, Global Distribution, Composition, Origin and Research Activities*, <http://www.isa.org.jm/en/seabedarea/PolySulphRep/Part1.pdf> at 3 May 2005.

¹²⁶¹ Hein, above n.1266; *Cobalt Rich Crusts Brochure*, above n.1266.

technical difficulties than polymetallic nodule mining as crusts are attached to substrate rock rather than sitting in soft sediment.¹²⁶² Various technologies for separating the crusts from the rock are being investigated but all are in their developmental stages and will involve substantial capital investment.¹²⁶³ As cobalt crusts are also found in waters under national jurisdiction and research has been conducted on some of these deposits already, it seems likely that early exploitation will occur in these areas.¹²⁶⁴ If crust mining is undertaken on seamounts beyond national jurisdiction the high biological productivity of these communities will need to be taken into account in formulating environmental protection measures.¹²⁶⁵

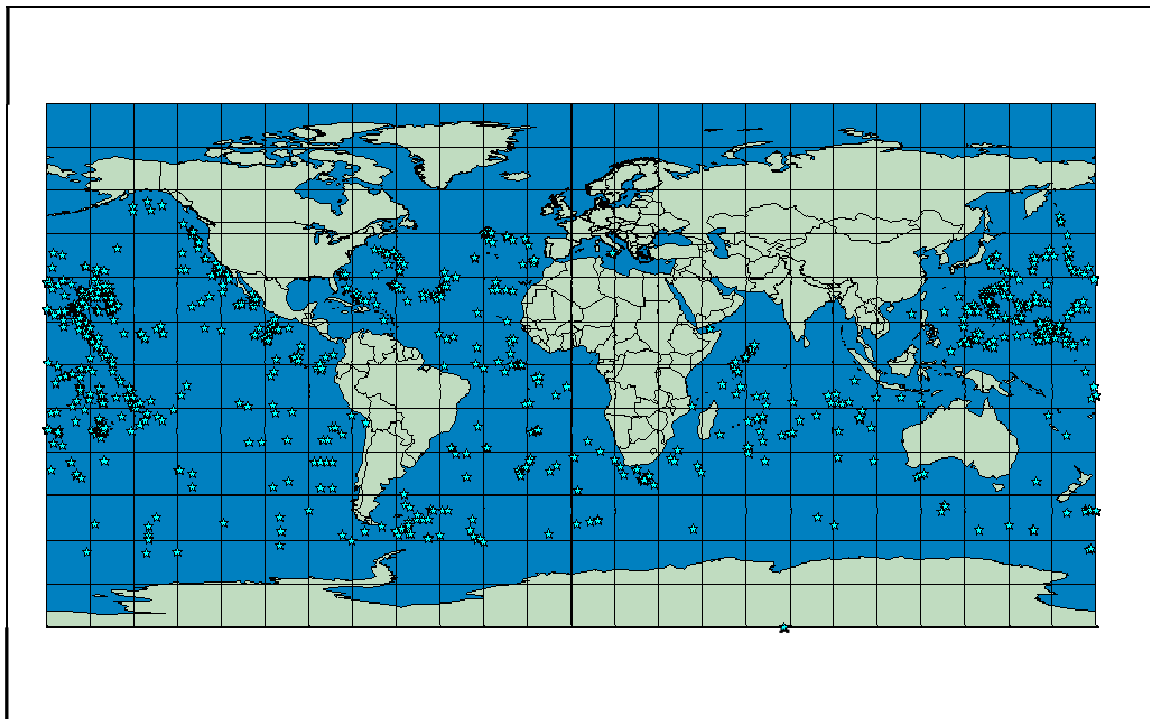
**COBALT-BEARING FERROMANGANESE CRUSTS SAMPLING POINTS**

Figure 7.7 : Location of Ferromanganese Cobalt Rich Crusts Sampling Points in the Global Oceans (Source: ISA, <http://www.isa.org.jm/en/Default.htm> at 2 May 2005)

¹²⁶² *Cobalt Rich Crusts Brochure*, above n.1266, 4.

¹²⁶³ *Ibid.*

¹²⁶⁴ *Ibid.*

¹²⁶⁵ *Ibid.*

The issue of regulating prospecting and exploration for polymetallic sulphides and cobalt rich crusts was first brought to the attention of the ISA by Russia and following a scientific workshop on the subject in 2000, draft regulations were proposed by the Legal and Technical Commission for consideration by the Council.¹²⁶⁶ The draft *Polymetallic Sulphide and Ferromanganese Cobalt Rich Crusts Regulations* were reviewed by the Council at its 2004 meeting but have not yet been adopted. Many of the draft regulations are identical to the *Polymetallic Nodule Regulations* but there are some key differences in the environmental protection provisions which will be analysed in this section.

The environmental protection responsibilities of both prospectors and contractors in the draft *Polymetallic Sulphide and Ferromanganese Cobalt Rich Crusts Regulations* are more onerous than those in the *Polymetallic Nodule Regulations*. In their notification to the ISA of intention to prospect, prospectors are required to make available to the ISA as far as practicable such data as may be relevant to the protection and preservation of the marine environment. Under the corresponding provision in the *Polymetallic Nodule Regulations*, prospectors had only been required to provide an undertaking that they would comply with the ISA's rules, regulations and procedures concerning protection and preservation of the marine environment.¹²⁶⁷ Under the draft *Polymetallic Sulphide and Ferromanganese Cobalt Rich Crust Regulations*, prospectors have positive obligations to take measures to prevent reduce and control pollution and other hazards to the marine environment arising from prospecting as far as reasonably possible using the best

¹²⁶⁶ *Polymetallic Sulphide Brochure*, above n.1254; Lodge, above n.1214, 294 n.140.

practicable means at their disposal.¹²⁶⁸ They must minimise or eliminate adverse environmental impacts from prospecting and any actual or potential conflicts or interference with existing or planned marine scientific research activities under the ISA's future guidelines on marine scientific research.¹²⁶⁹ They are also required to cooperate with the ISA in the establishment and implementation of programmes for monitoring and evaluating the potential impacts on the marine environment of exploration and exploitation of polymetallic sulphides and cobalt crusts.¹²⁷⁰ Prospectors must include information in their annual reports on compliance with any environmental protection regulations and future guidelines of the ISA. Information in this section of their annual report will not be considered confidential.¹²⁷¹ These additional obligations imposed even at the prospecting stage, recognise the heightened potential for harm to the fragile and highly productive communities which are located in the vicinity of polymetallic sulphide and cobalt crust mining sites.

The environmental protection obligations of exploration contractors have also been escalated under the draft *Polymetallic Sulphide and Ferromanganese Cobalt Rich Crusts Regulations*. Under the protection and preservation of the marine environment provision in Regulation 33, an additional requirement has been added obligating contractors, sponsoring States or entities to cooperate with the ISA in setting aside areas to be used exclusively as impact reference zones and preservation reference zones.¹²⁷² "Impact reference zones" are defined as areas to

¹²⁶⁷ *Draft Polymetallic Sulphide and Ferromanganese Cobalt Rich Crusts Regulations, Regulation 3(4)(d)(iii)*.

¹²⁶⁸ *Ibid*, Regulation 5(1).

¹²⁶⁹ *Ibid*.

¹²⁷⁰ *Ibid*, Regulation 5(2)

¹²⁷¹ *Ibid*, Regulations 6(1)(c) and 7(1).

¹²⁷² *Ibid*, Regulation 33(4).

be used for assessing the effect of activities in the Area on the marine environment and which are representative of the environmental characteristics of the Area.¹²⁷³ “Preservation reference zones” are defined as areas in which no mining shall occur to ensure representative and stable biota of the seabed in order to assess any changes in the flora and fauna of the marine environment.¹²⁷⁴ Under the *Polymetallic Nodules Regulations*, this obligation was only applicable to exploration contractors that proceeded to the exploitation stage.

Under the draft *Polymetallic Sulphide and Ferromanganese Cobalt Rich Crust Regulations*, the threshold for the taking of emergency measures to suspend or adjust exploration activities has been lowered to the reporting of an incident which poses a threat of serious harm to the marine environment rather than an incident which has actually caused or is likely to cause such harm as was the case in the *Polymetallic Nodule Regulations*.¹²⁷⁵ The term “threat of serious harm” is used consistently throughout the Emergency Orders article of the *Polymetallic Sulphide and Ferromanganese Cobalt Rich Crusts Regulations* emphasising the precautionary character of the environmental protection provisions. Contractors have an additional responsibility to take all measures necessary to ensure that their activities are conducted so as not to cause damage by pollution to the marine environment under the jurisdiction or sovereignty of other states and that pollution arising from such incidents or activities in their exploration areas does not spread beyond such areas.¹²⁷⁶

¹²⁷³ Ibid.

¹²⁷⁴ Ibid.

¹²⁷⁵ Ibid, Regulation 35(2).

¹²⁷⁶ Ibid, Regulation 36(4).

The precautionary tone of the *Polymetallic Sulphide and Ferromanganese Cobalt Rich Crusts Regulations* reflects the multiple uncertainties inherent in exploration and exploitation activities for these minerals which occur in locations of high biodiversity and fragile habitats. The stringent environmental protection framework contained in the Regulations is likely to deter investment in mining of these minerals in the Area in the short term with corresponding although inadvertent benefits for the surrounding marine environment.

7.5 Conclusions

The elaborate system of environmental monitoring and regulation which applies to prospectors and contractors for deep seabed minerals in the Area contrasts sharply with the relatively underdeveloped and fragmentary environmental protection regimes which apply to the majority of marine living resource exploitation activities in maritime areas beyond national jurisdiction. In terms of practical implementation, however, there is still a large gulf between these detailed provisions and the capacity and potentially the political will of current and future states and state sponsored entities engaged in deep seabed mining activities to comply with the provisions. A further element which is missing from the deep seabed mining environmental protection regime is a collaborative enforcement mechanism between the contractors and the ISA to monitor compliance with the environmental protection measures. If deep seabed mining activities beyond national jurisdiction intensify in areas of parallel living resource exploitation, such as seamounts and hydrothermal vents, more integrated

environmental protection regimes and prioritisation of uses may become necessary. The work which is currently being done in the ISA to build environmental profiles of particular areas beyond national jurisdiction will provide a useful basis for balancing future commercial exploitation of areas beyond national jurisdiction with the protection and preservation of the marine environment.

Chapter 8 **Unregulated Uses of Maritime Areas Beyond National Jurisdiction**

8.1 **Introduction**

As scientific knowledge of maritime areas beyond national jurisdiction increases and developments in oceans technology permit greater access to the high seas water column and the deep seabed, new and more intensive uses of these areas occur with consequential impacts on the marine environment. The discovery of hydrothermal vents in 1977 revealed communities of organisms with unique genetic and biochemical properties which can be used for a seemingly limitless catalogue of medical, pharmaceutical and industrial applications.¹²⁷⁷ Similar repositories of genetic and biochemical resources have been discovered in other deep seabed environments such as cold water seeps and it is expected that sediment communities of the deep seabed will eventually reveal comparable but more sparsely distributed diversity.¹²⁷⁸ These resources are already being sampled for scientific research and commercial purposes by state sponsored scientific research bodies in conjunction with commercial enterprises.¹²⁷⁹ The term “bioprospecting” is used for this dual purpose activity which does not fit neatly under either the rubric of marine scientific research or commercial exploitation of

¹²⁷⁷ Craig Allen, ‘Protecting the Oceanic Gardens of Eden: International Law Issues in Deep-Sea Vent Resource Conservation and Management’ (2001) 13(3) *Georgetown International Environmental Law Review* 563, 564.; Pedro Re, ‘Deep-Sea Hydrothermal Vents: “Oases of the Abyss”’ in Jean-Pierre Beurrier, Alexandre Kiss & Said Mahmoudi (eds.), *New Technologies and Law of the Marine Environment* (2000) 67; D.K Leary, ‘Bioprospecting and the Genetic Resources of Hydrothermal Vents on the High Seas: What is the Existing Legal Position, Where are we Heading and What are our Options?’ (2004) 1 *Macquarie Journal of International and Comparative Environmental Law* 137, 143-148 lists some of the biotechnology companies involved in research and/or product development in relation to hydrothermal vents, potential applications of ongoing research and products developed which are currently on the market.

¹²⁷⁸ Lyle Glowka, ‘Beyond the Deepest of Ironies: Genetic Resources, Marine Scientific Research and International Seabed Area’ in Beurrier, Kiss & Mahmoudi, above n.1285, 75, 77-78; Horst Korn, Suzanne Friedrich & Ute Feit, *Deep Sea Genetic Resources in the Context of the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea*, (2003), 17; Leary, above n.1285, 138.

¹²⁷⁹ Leary, above n.1285, 138 & 148.

marine living resources.¹²⁸⁰ Such activities were not addressed during the 1982 *United Nations Convention on the Law of the Sea (LOS)*¹²⁸¹ negotiations¹²⁸² and although the 1992 *Convention on Biological Diversity (CBD)*¹²⁸³ does address access to genetic resources its primary focus to date has been on areas within national jurisdiction.¹²⁸⁴ Spasmodic discussions have taken place in the Conference of the Parties of the *CBD* on access to the genetic resources of the deep seabed¹²⁸⁵ and the issue was also discussed in detail by the fifth meeting of the United Nations Informal Consultative Process on the Oceans (UNICPOLOS) in June 2004.¹²⁸⁶ The legal and scientific issues associated with the conservation of high seas biodiversity will be discussed in early 2006 at the first meeting of an Ad Hoc Open-ended Informal Working Group established by the United Nations General Assembly at its 59th session in 2004 to study issues relating to the

¹²⁸⁰ Although there is no internationally agreed definition of bioprospecting a note prepared by the CBD Secretariat (UNEP/CBD/SBSTTA/8/INF/3/Rev. 1, para. 68) defines bioprospecting as “the exploration of biodiversity for commercially valuable genetic and biochemical resources” and further as “the process of gathering information from the biosphere on the molecular composition of genetic resources for the development of new commercial products”; David Farrier & Linda Tucker, ‘Access to Marine Bioresources: Hitching the Conservation Cart to the Bioprospecting Horse’ (2001) 32 *Ocean Development and International Law* 213, 214 define bioprospecting as “the collection of small samples of biological material for screening in the search for commercially exploitable biologically active compounds or attributes such as genetic information”.

¹²⁸¹ 1982 *United Nations Convention on the Law of the Sea*, 1833 UNTS 3 (*LOS*).

¹²⁸² Harry N. Scheiber, ‘The Biodiversity Convention and Access to Marine Genetic Materials in Ocean Law’ in Davor Vidas & Willy Ostreng (eds.), *Order for the Oceans at the Turn of the Century* (1999) 187, 199 notes that it was far too late to introduce the subject of the marine genetic resources, still confined in its development to the realm of the laboratory and basic science, into the *LOS* deliberations

¹²⁸³ 1992 *Convention on Biological Diversity*, (1992) 31 ILM 822 (*CBD*).

¹²⁸⁴ Art 15 of the *CBD* regulates access to genetic resources within national jurisdiction.

¹²⁸⁵ The second meeting of the Conference of the Parties (COP) for the *CBD* in Jakarta 6-17 November 1995, adopted a Decision II/10 (UN Doc UNEP/CBD/COP/2/CW/L.21/Rev 1 (1995)) which requested the CBD Secretariat, “in consultation with the United Nations Office for Ocean Affairs and the Law of the Sea, to undertake, a study of the relationship between the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea with regard to the conservation and sustainable use of the genetic resources on the deep seabed.” The results of this study were not considered until the eighth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) in 2003 and the seventh meeting of the COP in 2004. The outcome of those discussions will be considered further below; Leary, above n.1285, 154

¹²⁸⁶ *Report on the Work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its Fifth Meeting*, UN Doc A/59/122 (2004). Some of the issues raised in the debate on access to deep seabed genetic resources at the fifth meeting of UNICPOLOS will be discussed below.

conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction.¹²⁸⁷ An Ad Hoc Open-ended Working Group on Protected Areas established by the COP of the *CBD* to examine options for cooperation for the establishment of marine protected areas in marine areas beyond national jurisdiction has had related discussions on the legal aspects of regulating bioprospecting in the context of marine protected areas at its first meeting in June 2005.¹²⁸⁸ As yet, however, no definitive proposals on a regime to govern bioprospecting activities beyond national jurisdiction have been adopted by the international community. It is of concern that almost three decades have now passed since the discovery of hydrothermal vents with their abundant biodiversity and biotechnological potential with no concrete steps being taken by the international community to develop a regime for their sustainable exploitation.¹²⁸⁹

Marine scientific research of the deep seabed is another largely unregulated use of maritime areas beyond national jurisdiction which is often conducted simultaneously with bioprospecting. In recent decades, marine scientific research activities in maritime areas beyond national jurisdiction have expanded to meet diverse demands related to scientific knowledge and resource exploitation. Repeated research probes on deep sea sites can introduce alien elements such as noise, light and other biological matter into the marine environment resulting in

¹²⁸⁷ *UNGA Resolution on Oceans and the Law of the Sea*, UN Doc A/RES/59/24, paras. 73-74. The Working Group is expected to convene in early 2006 following the release of the Secretary General's report to the 60th Session of the General Assembly which will address issues related to the conservation and sustainable use of marine biological diversity beyond national jurisdiction.

¹²⁸⁸ *Report of the First Meeting of the Ad Hoc Open-ended Working Group on Protected Areas*, UN Doc UNEP/CBD/WG-PA/1/6 (20 June 2005), paras 41 & 42.

¹²⁸⁹ Harry N. Scheiber, above n.1290, 199-200 notes that the deeply rooted North South divisions which characterised the debate on the *LOSC* deep seabed mining provisions will surface again in the context of appropriate regimes to govern access to the genetic resources of the deep seabed; Korn, Friedrich & Feit, above n.1286, 9.

adverse effects on fragile marine habitats not accustomed to such intrusions.¹²⁹⁰

This chapter will review the nature and extent of bioprospecting and marine scientific research activities in maritime areas beyond national jurisdiction and their impact on the marine environment. It will also examine the applicability of *LOSC* and *CBD* provisions to these activities and the options for developing a more extensive environmental protection regime to govern their conduct.

8.2 Bioprospecting

The extreme environment of the deep seabed is host to a wide array of biological communities which exhibit high biodiversity and contain genetic and biochemical resources with multiple commercial applications in fields such as medical science, pharmaceuticals, agriculture, food processing, waste treatment, mining and the cosmetics industry.¹²⁹¹ As bioprospecting activities in the deep seabed intensify so does their impact on the fauna associated with particular deep seabed features such as hydrothermal vents and cold seeps. Since their discovery in 1977, hydrothermal vents have attracted the most extensive scientific research and bioprospecting activity on the deep seabed.¹²⁹² More than 500 new species, mostly invertebrates have been discovered in hydrothermal vent communities both within

¹²⁹⁰ United Nations University/Institute for Advance Studies Report, *Bioprospecting of Genetic Resources in the Deep Seabed: Scientific Legal and Policy Aspects* (2005) para 3.3; WWF/IUCN Independent Study, *The Status of Natural Resources on the High Seas* (2001) 19; Lyle Glowka, 'Putting Marine Scientific Research on a Sustainable Footing at Hydrothermal Vents' (2003) 27(4) *Marine Policy* 303.

¹²⁹¹ Harry N. Scheiber, above n.1290, 187, 198; Glowka, above n.1286, 76-77; Montserrat Gorina-Ysem, 'Legal Issues Raised by Profitable Biotechnology Development Through Marine Scientific Research' (2003) *ASIL Insights*, <http://www.asil.org/insights/insigh116.htm> at 26 May 2005.

¹²⁹² S. Kim Juniper, 'Background Paper on Deep-sea Hydrothermal Vents' in Hjalmar Thiel and J. Anthony Koslow (eds.), *Managing Risks to Biodiversity and the Environment on the High Seas, Including Tools such as Marine Protected Areas – Scientific Requirements and Legal Aspects*, Proceedings of the Expert Workshop held at the International Academy for Nature Conservation, Isle of Vilm, Germany, 27 February – 4 March 2001, 89, 91; UNU/IAS Report, above n.1298, para 3.2 analyses the type and level of activities involving genetic resources from the deep seabed; Leary, above n.1285, 1 also provides details of the strong scientific and commercial interest in extremophiles found at hydrothermal vent sites.

and beyond national jurisdiction.¹²⁹³ These invertebrate species are dependent on chemosynthetic activity rather than photosynthesis for their existence and are surrounded by micro-organisms which oxidise sulphides and other chemicals from the hydrothermal vents such as hydrogen, iron or manganese converting them into organic matter which nourishes both the micro-organisms themselves and other vent species.¹²⁹⁴ The capacity of these species to adapt to extreme physical and chemical conditions has excited the interest of scientists who consider that the extraordinary diversity of species present in hydrothermal vent communities will contribute to a better understanding of basic life processes¹²⁹⁵ and commercial enterprises who can envisage a variety of uses for the bacteria, known as extremophiles, particularly hyperthermophiles or thermophiles, derived from such environments.¹²⁹⁶ The discovery of hydrothermal vent communities has also prompted scientists to re-examine theories of the origin of life on earth¹²⁹⁷ and to consider geothermal energy as a potential source for biosynthesis.¹²⁹⁸

Areas of the deep seabed where fluids diffuse from the seafloor, known as cold seeps, are also associated with biological communities supported by chemosynthetic processes.¹²⁹⁹ Seep fluids, including natural petroleum, natural gas and artesian water flow, are rich in methane, sometimes accompanied by the formation of gas hydrates.¹³⁰⁰ These fluids interact with bacteria to produce carbon which supports similar invertebrate species to those found in the

¹²⁹³ Korn, Friedrich & Feit, above n.1286, 9; Leary, above n.1286, 140.

¹²⁹⁴ S. Kim Juniper, above n.1300, 90; Korn, Friedrich & Feit, above n.1286, 13; Leary, above n.1285, 141; Glowka, above n.1286, 78

¹²⁹⁵ S. Kim Juniper, above n.1300, 92.

¹²⁹⁶ Korn, Friedrich & Feit, above n.1286, 16; Leary, above n.1285, 141; Glowka, above n.1286, 79.

¹²⁹⁷ UNU/IAS Report, above n.1298, para 2.2; Glowka, above n.1286, 79.

¹²⁹⁸ S Kim Juniper, above n.1300, 89.

¹²⁹⁹ S. Kim Juniper, above n.1300, 91; Glowka, above n.1286, 78.

hydrothermal vent communities.¹³⁰¹ Bacteria from cold seeps contains novel genetic material which has a wide range of commercial applications.¹³⁰² In addition to the vent and seep communities, the sediments of the deep seabed found on seamounts, and in deep sea trenches and submarine canyons also harbour a profusion of varied species including slugs, snails, crabs and a wide array of nematodes.¹³⁰³ These species are dependent for energy on descending detritus from the superjacent ocean layers where photosynthesis occurs.¹³⁰⁴ This biodiverse region may also be the subject of bioprospecting interest in the future.¹³⁰⁵

8.2.1 The Level of Bioprospecting Activity Beyond National Jurisdiction and Its Potential Impact on the Marine Environment

Exploration activities related to deep seabed ecosystems are described in a recent United Nations University/Institute of Advanced Studies (UNU/IAS) report on ‘Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects’ as “scattered, small scale, independent research activities and programmes ongoing in many universities and research institutions in the world” which while not directly commercially oriented represent the backbone of any commercial application of deep seabed genetic resources as they generate the necessary scientific information for bioprospecting.¹³⁰⁶ The report contains several examples of joint public and private ventures involved in deep seabed exploration which operate at the interface of research and development linking

¹³⁰⁰ S. Kim Juniper, above n.1300, 91; UNU/IAS Report, above n.1298, para 2.1.2.

¹³⁰¹ S. Kim Juniper, above n.1300, 91; Korn, Friedrich & Feit, above n.1286, 17; UNU/IAS Report, above n.1298, para 2.1.2.

¹³⁰² Glowka, above n.1286, 78; Korn, Friedrich & Feit, above n.1286, 18.

¹³⁰³ Glowka, above n.1286, 77.

¹³⁰⁴ Ibid.

¹³⁰⁵ Glowka, above n.1286, 78; UNU/IAS Report, above n.1298, para 2.1.4.

¹³⁰⁶ UNU/IAS Report, above n.1298, para 3.2.1.

research activities with the development of products and processes.¹³⁰⁷ The majority of research cruises to the deep sea are conducted by state sponsored operators but there are now numerous examples of the results of such cruises being shared by state research institutions with commercial enterprises under joint venture agreements.¹³⁰⁸ The list of patents involving genetic resources from the deep seabed is steadily growing¹³⁰⁹ and reveals increasing potential for sustained commercial interest and investment in this use of the deep seabed which has already eclipsed current commercial interest in mining for deep seabed minerals.¹³¹⁰

Bioprospecting while not as invasive as deep seabed mineral exploration does entail physical disturbance, alteration and introduction of alien elements to deep sea habitats.¹³¹¹ Current deep sea research projects, principally on hydrothermal vent sites, have progressed beyond simple observation of the benthic fauna from manned or remotely controlled submersible vessels to actual sampling of the fauna and faunal infrastructure and installation of scientific instruments in the deep seabed environment to record experimental observations on a regular basis.¹³¹² As well as disturbing the physical habitat, research vessels and scientific equipment also introduce light and different noise patterns into the fragile deep sea environment and may discharge marine pollutants and alien biological

¹³⁰⁷ Ibid.

¹³⁰⁸ Leary, above n.1285, 148 notes that that there is no substantiated evidence that any company has mounted their own dive to hydrothermal vents for collection purposes but there is anecdotal evidence that at least one company is planning its own series of dives independent from any research institution.

¹³⁰⁹ UNU/IAS Report, above n.1298, para 3.2.2.

¹³¹⁰ Glowka, above n.1286, 80; Scheiber, above n.1290, 198.

¹³¹¹ UNU/IAS Report, above n.1298, para 3.3.

¹³¹² S. Kim Juniper, above n.1300, 93 notes that research focus in hydrothermal vent science is shifting to time series observations which are resulting in the concentration of sampling, observation and instrumentation at a small number of fixed observatories on the deep seafloor.

material into the previously pristine environment of the deep seabed.¹³¹³ The negative impact of frequent research expeditions on particular deep seabed sites and the potential for conflicting or incompatible research activities which duplicate adverse effects on fragile deep sea sites has also been noted by scientists and other commentators.¹³¹⁴ The absence of compulsory environmental protection measures such as environmental baseline data collection, ongoing environmental impact assessment of sampling sites and impact reference zones could result in substantial loss of deep seabed biodiversity over time.¹³¹⁵ Scientists involved in deep sea research have developed some voluntary protocols to reduce the negative impacts of their research on the deep seabed environment including requests to the global scientific community to consider certain deep seabed sites as scientific reserves and voluntary codes of conduct which seek to minimise adverse effects on the environment and to coordinate deep seabed research to reduce the occurrence of simultaneous expeditions to deep seabed sites and conflicting use of these sites.¹³¹⁶ As bioprospecting activities are currently intermingled with marine scientific research, these initiatives have the dual purpose of reducing the adverse effects of both bioprospecting and marine scientific research activities on the deep sea environment.

¹³¹³ UNU/IAS Report, above n.1298, para 3.3.

¹³¹⁴ S Kim Juniper, above n.1300, 93; Glowka, above n.1298, 303

¹³¹⁵ Scheiber, above n.1290, 199; S Kim Juniper, above n.1300, 93 notes that as vent sites become the focus of intensive long term investigation, it will become essential to introduce mitigative measures to avoid significant loss of habitat or oversampling of populations.

¹³¹⁶ Hjalmar Thiel, 'Approaches to the Establishment of Protected Areas on the High Seas' in Andree Kirchner (ed.), *International Marine Environmental Law: Institutions, Implementation and Innovations* (2003) 169, 172; UNU/IAS Report, above n.1298, para 5.6.1.

8.2.2 *The Applicability of Existing International Law Principles to Bioprospecting Activities Beyond National Jurisdiction*

Much of the discussion in international bodies and among academic commentators on the genetic resources of the deep seabed and bioprospecting activities has centred around ownership and access to these resources under the law of the sea and whether research and exploitation activities related to such resources can be regulated under the existing international law framework. There has also been widespread recognition on the part of international bodies, scientists and other academic commentators that a comprehensive environmental protection regime covering the multiple uses of the deep seabed environment is essential and overdue if the abundant biodiversity of the deep seabed is to be adequately protected.¹³¹⁷

8.2.2.1 *LOSC Provisions*

The spatial system of jurisdiction under the *LOSC* has produced some anomalies for the newly discovered resources of the deep seabed. Chapters 1 and 2 discussed the divergent physical extent of the water column and deep seabed beyond national jurisdiction, the jurisdictional consequences of this bifurcated approach under the *LOSC* and the current uncertainties in relation to the outer limit of the continental shelf. In maritime areas within 200 nautical miles of the territorial sea baselines the jurisdictional situation for all marine resources is clear. Under Article 56(1)(a) of the *LOSC* the coastal state has “sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural

¹³¹⁷ Korn, Friedrich & Feit, above n.1286, 9-10; Leary, above n.1285, 166; Allen, above n.1285, 563; Glowka, above n.1298, 303; S. Kim Juniper, above n.1300, 93; Scheiber, above n.1290, 199; Thiel, above n.1324, 174; *UNGA Res. on Oceans and the Law of the Sea*, UN Doc A/RES/59/24 (2004); *Report on the Work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its Fourth Meeting*, UN Doc A/58/95, para 20.

resources, whether living or non living of the waters superjacent to the sea-bed and of the sea-bed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone.” Within its exclusive economic zone, the coastal state also has jurisdiction over marine scientific research and protection and preservation of the marine environment subject to other provisions of the *LOSC* in particular those provisions in Part XIII on Marine Scientific Research and Part XII on the Protection and Preservation of the Marine Environment. Although the term natural resources is not defined in the *LOSC*, the all encompassing description of natural resources in Article 56, which includes living or non living resources, would appear to include the living resources supported by the chemosynthetic processes of the deep sea-bed when they are located in the exclusive economic zones of coastal states.¹³¹⁸ The coastal state therefore may exercise all the rights and responsibilities prescribed under the *LOSC* and other hard and soft law instruments for the protection and preservation of the marine environment in relation to biochemical and genetic resources in its exclusive economic zone and the right to regulate commercial exploitation and marine scientific research activities for such resources.

The jurisdictional situation becomes more ambiguous beyond the outer boundary of the exclusive economic zone. Where a coastal state’s continental shelf extends beyond 200 nautical miles from its territorial sea baselines the coastal state exercises sovereign rights for the purpose of exploring and exploiting the natural resources of the shelf under article 77(1) of the *LOSC*. “Natural resources” are

¹³¹⁸ UNU/IAS Report, above n.1298, para 5.1.1 also notes that *LOSC* provisions are based on “the specific characteristics of the resources and activities known at the time of its negotiation, the language of which may need to be adapted to genetic material and related activities. The theory of the evolutive interpretation of treaties supports this observation.”

defined in Article 77(4) to include the mineral and other non living resources of the sea-bed and subsoil together with living organisms belonging to sedentary species, that is to say, organisms which, at the harvestable stage, either are immobile on or under the sea-bed or are unable to move except in constant physical contact with the sea-bed or the subsoil. Some of the species which inhabit hydrothermal vent communities, seep communities and deep sea sediment such as nematodes and molluscs will fulfil the definition of sedentary species and therefore fall under coastal state jurisdiction while others such as the micro-organisms which abound in hydrothermal plumes will not.¹³¹⁹ Where living resources on the extended continental shelf fall outside the definition of sedentary species the only relevant jurisdictional classification under the *LOSC* would appear to be those provisions in Part VII which relate to the marine living resources of the high seas.¹³²⁰ Leary notes that in any case there may be limitations on the coastal state's jurisdiction over some sedentary species on the extended continental shelf as many of the hydrothermal vent communities discovered so far are located on mid ocean ridges and Article 76(3) specifically excludes the deep ocean floor with its oceanic ridges or the subsoil thereof from the definition of the continental margin.¹³²¹

Although not originally envisaged in the *LOSC* negotiations, a flexible interpretation of Part VII of the *LOSC* which takes account of intertemporal developments since the Convention was adopted does allow for its application to the genetic resources which inhabit deep seabed environments beyond national

¹³¹⁹ Korn, Friedrich & Feit, above n.1286, 38-40; Leary, above n.1285, 150; UNU/IAS Report, above n.1298, para 5.1.1.

¹³²⁰ Korn, Friedrich & Feit, above n.1286, 40; UNU/IAS Report, above n.1298, para 5.1.1.

¹³²¹ Leary, above n.1285, 151.

jurisdiction. If the species emanating from the chemosynthetic processes of the deep seabed are regarded as having independent life, they are more logically associated with marine living resources under the current provisions of the *LOSC* than with the non living resources governed by the deep seabed regime under Part XI of the *LOSC*. The term marine living resources is not defined in the *LOSC* and could encompass the new forms of marine life recently discovered in hydrothermal vents and other deep seabed environments.¹³²² Article 87 of the *LOSC* does not limit freedoms of the high seas to those specifically enumerated in Article 87(1), presaging the addition of new components to the freedom of the high seas with the words “It comprises, *inter alia*...”. Although the articles of the *LOSC* which relate to the conservation and management of the living resources of the high seas have so far been interpreted to apply principally to high seas fisheries and marine mammals, they are broad enough in expression to include the new species discovered in deep seabed environments. Article 118 of the *LOSC* contains a general duty for States to cooperate with each other in the conservation and management of living resources in the areas of the high seas and provides that States whose nationals exploit identical living resources or different living resources in the same area shall enter into negotiations with a view to taking the measures necessary for the conservation of the living resources concerned. The establishment of regional or subregional fisheries organisations is given as the primary example of such cooperation but the article does not exclude the creation of other regional arrangements to conserve different living resources of the high seas.¹³²³ The language of Article 119 which deals with conservation measures is

¹³²²Korn, Friedrich & Feit, above n.1286, 41-42; UNU/IAS Report, above n.1298, para 5.1.1.

¹³²³*LOSC*, Art. 118 reads: “States shall co-operate with each other in the conservation and management of living resources in the areas of the high seas. States whose nationals exploit identical living resources, or different living resources in the same area, shall enter into

directed more specifically at fisheries conservation and management although a 2005 UNU/IAS report on bioprospecting activities related to the genetic resources of the deep seabed has canvassed the possibility that conservation measures such as total allowable catch could be adapted, in the genetic resources context, to setting sample quotas.¹³²⁴ The benefits and disadvantages of negotiating an Implementing Agreement under Article 118 of the *LOSC* to conserve and manage the genetic resources found in the high seas will be examined in the next section.

Part XI of the *LOSC* was identified in the Study of the Relationship between the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea with regard to the Conservation and Sustainable Use of Genetic Resources on the Deep Seabed (CBD/UNDOALOS Study)¹³²⁵ instigated by the COP of the CBD¹³²⁶ as an appropriate foundation for an international law regime which could be amended to include the regulation of access to the genetic and biochemical resources associated with deep seabed features and to provide the necessary environmental protection measures to sustainably develop such resources. Under Article 136 of the *LOSC*, the Area, which is defined in Article 1(1) of the *LOSC*, as the sea-bed and ocean floor and the subsoil thereof beyond the limits of national jurisdiction, and its resources are declared the common heritage of mankind. Currently the resources of the Area encompass “all solid, liquid or gaseous mineral resources in situ in the Area or beneath the sea-bed,

negotiations with a view to taking the measures necessary for the conservation of the living resources concerned.”

¹³²⁴ UNU/IAS Report, above n.1298, para 5.1.2.

¹³²⁵ *Study of the Relationship Between the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea with regard to the Conservation and Sustainable Use of Genetic Resources on the Deep Seabed*, UN Doc UNEP/CBD/SBSTTA/8/INF/3/Rev.1 (2003), para 72 (*CBD/UNDOALOS Study*)

¹³²⁶ See above n.1293.

including polymetallic nodules”.¹³²⁷ The jurisdictional ambit of Part XI therefore does not currently extend to living resources located in the Area although some of its provisions, discussed in Chapter 7, regulate the impact of deep sea-bed mining activities on such resources. The expansion of the jurisdictional mandate of the ISA to encompass genetic resources of the deep seabed as one of the potential methods of securing a more comprehensive environmental protection regime for these resources will be discussed below.

An analysis of the marine scientific research provisions of the *LOSC* and their applicability to bioprospecting activities in maritime areas beyond national jurisdiction reveals some ambiguities and uncertainties in application. In maritime areas beyond national jurisdiction, including both the Area and the high seas water column, all states have the right, subject to other relevant provisions of the *LOSC*, to conduct marine scientific research.¹³²⁸ Part XIII of the *LOSC* does not define marine scientific research but does specify some of the characteristics which pertain to such activities. Under Part XIII, marine scientific research shall be conducted exclusively for peaceful purposes¹³²⁹ and shall not constitute the legal basis for any claim to any part of the marine environment or its resources.¹³³⁰ States and competent international organisations are required to promote and facilitate the development and conduct of marine scientific research and to cooperate in creating favourable conditions for the conduct of marine scientific research in the marine environment.¹³³¹ They must also make available, by publication and dissemination, knowledge resulting from marine scientific

¹³²⁷ *LOSC*, Art. 133(a).

¹³²⁸ *Ibid*, Art. 238.

¹³²⁹ *Ibid*, Art. 240(a).

¹³³⁰ *Ibid*, Art. 241.

¹³³¹ *Ibid*, Arts. 242(1) & 243.

research and information on proposed major research programmes and their objectives.¹³³² There is a specific obligation under Article 244(2) of the *LOSC* for States to actively promote the flow of scientific data and information and the transfer of knowledge resulting from marine scientific research especially to developing States and to provide training programmes to developing States to strengthen their autonomous marine scientific research capabilities. Where marine scientific research is conducted in the Area whether it be in connection with living or non living resources many of the same conditions enumerated in Part XIII apply¹³³³ and States Parties must also cooperate with the ISA in disseminating the results of their research and developing training programmes for developing countries.¹³³⁴ Many of these conditions are incompatible with the concept of bioprospecting which is an exploration activity specifically directed towards commercial objectives where confidentiality of sampling results is paramount.¹³³⁵ In view of the commercial objectives of bioprospecting, it is arguable that the Part XIII provisions will only apply to those aspects of deep sea research activities which meet the criteria of pure scientific research under the *LOSC* provisions. In practice, however, this distinction is difficult to draw as the search for, sampling and testing of genetic and biochemical resources from the deep sea-bed will frequently be conducted for both pure scientific and commercial purposes. The absence of any clear distinction between the pure scientific and commercial aspects of deep sea research activities beyond national jurisdiction introduces the potential for less transparency in the exchange of scientific information and the possibility of less equitable distribution of the benefits of such research. Under

¹³³² Ibid, Art. 244(1).

¹³³³ Ibid, Art. 143(1) & (3).

¹³³⁴ Ibid, Art. 143(3)(b)(ii) & (c).

¹³³⁵ UNU/IAS Report, above n.1298, para 5.1.5.

Article 240(d) of the *LOSC*, marine scientific research must also comply with all relevant regulations adopted under the Convention for the protection and preservation of the marine environment. If the distinction between marine scientific research and bioprospecting activities is rigorously maintained, this obligation would not apply to the bioprospecting aspects of deep sea research operations. The framework principles of Part XII of the *LOSC* would nevertheless impose general environmental protection obligations on States Parties conducting bioprospecting activities in maritime areas beyond national jurisdiction.

Part XII of the *LOSC* on Protection and Preservation of the Marine Environment contains a series of broad framework principles which would apply to States Parties and their flag vessels conducting bioprospecting activities in maritime areas beyond national jurisdiction. The general obligation of States Parties to protect and preserve the marine environment in Article 192 of the *LOSC* is not limited in its geographic application and would apply to bioprospecting activities conducted by States Parties and their flag vessels for genetic resources in the deep seabed. Article 194 amplifies this general obligation by prescribing that States Parties are to take measures to prevent reduce and control pollution of the marine environment from any source, using the best practicable means at their disposal and in accordance with their capabilities. They are also encouraged to harmonise their policies in this connection. Article 194(3) has particular relevance to bioprospecting activities on the deep seabed beyond national jurisdiction as it requires States Parties to take measures which minimise to the fullest possible extent pollution from installations and devices used in exploration and exploitation of the natural resources of the seabed and subsoil. This article would apply to any scientific or extraction equipment used in the current sampling and

observation of genetic resources on the deep seabed. Article 194(5) resonates with the nature of the deep seabed ecosystems and habitats which contain genetic resources as it requires States Parties to take measures to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.

Article 196(1) echoes the concerns which have been expressed by marine scientists and other commentators on the introduction of light, noise and alien biological material into sensitive deep seabed environments such as hydrothermal vents and cold seeps. It requires States Parties to take all measures necessary to prevent reduce and control pollution of the marine environment resulting from the use of technologies under their jurisdiction or control or the intentional or accidental introduction of alien or new species to a particular part of the marine environment which may cause significant and harmful changes to that environment. Cooperation between States Parties on a global and regional basis to achieve the objectives of Part XII is clearly envisaged in Article 197 which provides that such cooperation shall occur directly or through competent international organisations to formulate and elaborate international rules, standards and recommended practices and procedures for the protection and preservation of the marine environment, taking into account characteristic regional features. This provision could form the basis for the negotiation of an Implementing Agreement which seeks to protect and preserve representative examples of deep seabed ecosystems such as hydrothermal vents, cold seeps and seamounts, independently of the access and ownership issues surrounding the genetic resources of the deep seabed. The positive and negative attributes of this

option for regulating the environmental protection of the genetic resources of the deep seabed will be discussed below.

8.2.2.2 *CBD Provisions*

The three broad objectives of the *CBD*, set out in Article 1 of the Convention, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources. While directly applicable to the subject matter of access to genetic resources and the protection of biodiversity, the *CBD* is only a framework convention containing guiding principles which are designed to be implemented by Contracting Parties.¹³³⁶ The jurisdictional scope provision in Article 4 limits the application of the *CBD* to components of biological diversity in areas within the limits of national jurisdiction and to processes and activities related to biological diversity carried out under the jurisdiction or control of Contracting Parties both within and beyond national jurisdiction. Several commentators have observed that no Contracting Party has yet legislated to control processes and activities of its nationals related to biological diversity beyond national jurisdiction such as bioprospecting.¹³³⁷ Under Article 5 of the *CBD* States Parties have a duty to cooperate with other Contracting Parties directly or through competent international organisations in respect of areas beyond national jurisdiction for the conservation and sustainable use of biodiversity. This provision is ripe for further implementation and represents an appropriate starting point for more holistic protection of the marine environment beyond national jurisdiction. An implementing agreement under this provision could facilitate the

¹³³⁶ Leary, above n.1285, 153.

¹³³⁷ Ibid, 154; UNU/IAS report, above n.1298, para 5.3.1.

advent of area based protection for deep sea habitats rich in biodiversity such as hydrothermal vents, cold seeps and seamounts and provide an opportunity to limit the adverse effects of currently unregulated uses such as bioprospecting on the marine environment beyond national jurisdiction through carefully targeted environmental protection measures.¹³³⁸ As already specified in Article 22 of the *CBD*, such an agreement would be implemented consistently with the rights and obligations of States under the *LOSC*. The feasibility of such an agreement and the need for supporting regional infrastructure will be discussed in the next section.

The remaining substantive provisions of the *CBD* relate to the conservation, sustainable use and benefit sharing of the components of biological diversity within national jurisdiction. They provide a template for establishing national programs for biodiversity conservation. These provisions contain elements which could also be useful in any program implemented collaboratively by States Parties in the future for the conservation and sustainable use of the components of biodiversity beyond national jurisdiction. Under Article 7, Contracting Parties are required to identify components of biological diversity important for its conservation and sustainable use with an indicative list of categories set down in Annex I. The process of identifying such components in maritime areas beyond national jurisdiction has already begun through the work of the Ad Hoc Open-

¹³³⁸ The concept of an implementing agreement to the *CBD* has been raised in the context of the work of the Ad Hoc Open-ended Working Group on Protected Areas established by the COP of the *CBD* in 2004. The Working Group considered this and other proposals for the development of a binding legal instrument that provides for identification and establishment of marine protected areas beyond the limits of national jurisdiction at their first meeting in Montecatini, Italy from 13 to 17 June 2005 (see Item 3.1 of the Agenda for the First Meeting of the Ad Hoc Open-ended Working Group on Protected Areas, *Options for Cooperation for the Establishment of Marine Protected Areas Beyond the Limits of National Jurisdiction*, UN Doc UNEP/CBD/WG-PA/1./2

ended Working Group on Protected Areas established by the COP of the *CBD* in 2004 which has commissioned a study of scientific information on biodiversity in marine areas beyond the limits of national jurisdiction.¹³³⁹ Contracting Parties are also required to monitor through sampling and other techniques identified components of biological diversity paying particular attention to the need for urgent conservation measures and to those components which offer the greatest potential for sustainable use.¹³⁴⁰ As part of this information gathering activity, Contracting Parties are required to identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity and to monitor their effects.¹³⁴¹ Data obtained from these identification and monitoring processes is to be maintained and organised by Contracting Parties.¹³⁴²

Two key biodiversity protection measures are set out in Articles 8 and 9 of the *CBD*. Article 8 contains a comprehensive description of the principles and measures involved in *in situ* conservation which is defined in Article 2 of the *CBD* as the “conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.” One of the principal means of achieving *in situ* conservation, is the establishment of a system of protected areas or areas where special measures need to be taken to conserve

(20 April 2005), para 37(b)). The Working Group has reached no conclusions as yet on the most appropriate option for such a binding legal instrument.

¹³³⁹ Ibid, para 6.

¹³⁴⁰ *CBD*, Art. 7(b).

¹³⁴¹ Ibid, Art. 7(c).

¹³⁴² Ibid, Art. 7(d).

biological diversity.¹³⁴³ Contracting Parties are also required to develop guidelines for the selection, establishment and management of such areas.¹³⁴⁴ In advance of a specific legal basis for declaring marine protected areas beyond national jurisdiction which has been agreed by the international community, the Ad Hoc Open-ended Working Group on Protected Areas is already engaged in gathering the scientific information necessary for the selection and establishment of such areas.¹³⁴⁵ The other objectives associated with *in situ* conservation described in Article 8, are also relevant to the conservation and sustainable use of the deep seabed resources which are the subject of bioprospecting activities. Contracting Parties are required to regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas with a view to ensuring their conservation and sustainable use.¹³⁴⁶ They must also promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings, rehabilitate and restore degraded ecosystems and promote the recovery of threatened species.¹³⁴⁷ A provision similar to that in Article 8(h) would have particular relevance to the relatively pristine deep sea environment as it requires Contracting Parties to prevent the introduction of alien species which threaten ecosystems, habitats or species into the marine environment.

Article 9 of the *CBD* sets out the measures to be implemented for *ex situ* conservation of biological diversity which is defined in Article 2 of the *CBD* as “the conservation of components of biological diversity outside their natural

¹³⁴³ Ibid, Art. 8(a).

¹³⁴⁴ Ibid, Art. 8(b).

¹³⁴⁵ See above n.1346.

¹³⁴⁶ *CBD*, Art. 8(c).

¹³⁴⁷ Ibid, Art. 8(d) & (f).

habitats.” Although this is not as critical for deep seabed environments, where the objective is to maintain viable populations of species *in situ*, it may become more relevant in the future when more organisms are removed from deep seabed environments. Under Article 9, Contracting Parties are required to establish and maintain facilities for *ex situ* conservation of research on plants, animals and micro-organisms and to adopt measures for the recovery and rehabilitation of threatened species and their reintroduction into their natural habitats.¹³⁴⁸ They are also required to regulate and manage collections of biological resources from natural habitats for *ex situ* conservation purposes so as not to threaten ecosystems and *in situ* populations of species.¹³⁴⁹ Article 14 of the *CBD* prescribes further environmental protection measures which would be relevant to regulating bioprospecting activities in maritime areas beyond national jurisdiction. Contracting Parties are required to introduce environmental impact assessment procedures for proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimising such effects.¹³⁵⁰ They are also required to promote notification, exchange of information and consultation on activities under their jurisdiction or control which are likely to have significant adverse effects on the biological diversity of areas beyond national jurisdiction by encouraging the conclusion of regional and multilateral arrangements.¹³⁵¹ This provision is relevant to any regional or global agreements which may be negotiated to protect the biodiversity of maritime areas beyond national jurisdiction and to minimise the adverse effects of activities such as bioprospecting on biodiversity.

¹³⁴⁸ Ibid, Art. 9(b) & (c).

¹³⁴⁹ Ibid, Art. 9(d).

¹³⁵⁰ Ibid, Art. 14(1)(a).

¹³⁵¹ Ibid, Art. 14(1)(c).

While the *CBD* does not at present provide any regulatory framework to minimise the adverse effects of bioprospecting activities in maritime areas beyond national jurisdiction, it contains a number of elements which would be relevant to negotiating an implementing agreement under Article 5 of the *CBD* to provide holistic protection to the biodiversity which abounds in deep seabed environments beyond national jurisdiction. The viability of this option for limiting the adverse effects of bioprospecting activities in maritime areas beyond national jurisdiction will be considered in more detail in the next section.

8.2.3 *Potential Environmental Protection Regimes for Bioprospecting Beyond National Jurisdiction*

There are a range of options for regulating the impact of bioprospecting activities on the marine environment of maritime areas beyond national jurisdiction which have been raised in general terms by academic commentators¹³⁵² This section will examine the most widely canvassed of those options and analyse their legal bases, their potential advantages and disadvantages in terms of effective protection for the maritime environment beyond national jurisdiction and the political issues affecting their negotiation and implementation. Some of the options discussed have broader implications for the protection and preservation of the marine environment beyond national jurisdiction and the potential to provide regulatory oversight for a variety of uses in maritime areas beyond national jurisdiction. Their broader utility will be discussed further in the final chapter on future development of international law frameworks for the protection and preservation of maritime areas beyond national jurisdiction.

¹³⁵² Leary, above n.1285, 155; Allen, above n.1285, 563; UNU/IAS Study, above n.1298, paras 5.1.2, 5.1.3 & 5.3.2 .

8.2.3.1 *Expansion of the International Seabed Authority's Mandate*

The co-location of genetic resources with deep seabed minerals has prompted a number of commentators and the *CBD/UNDOALOS Study* to examine the option of expanding the International Seabed Authority's mandate to regulate these resources within the geographic scope of the Area.¹³⁵³ This option would entail a political decision on the part of States Parties to the *LOSC* that genetic resources of the deep seabed constitute the common heritage of mankind and an amendment to Part XI of the *LOSC* to include genetic resources in the definition of resources under Article 137. As Part XI of the *LOSC* and the Part XI Implementing Agreement are currently tailored to the regulation of deep seabed mineral resources only, extensive amendment of those provisions would also be needed, possibly through the mechanism of a further implementing agreement.

This option has the advantage of drawing on the existing institutional infrastructure of the International Seabed Authority and the scientific and technical expertise it has developed on exploration of the deep seabed and protection and preservation of the deep seabed environment.¹³⁵⁴ The extensive environmental protection framework and specific measures that have been developed in the *Polymetallic Nodules Regulations* and the draft *Polymetallic Sulphides and Ferromanganese Cobalt Rich Crusts Regulations* could be employed as a model for a similar environmental protection system governing the exploration and exploitation of genetic resources of the deep seabed.¹³⁵⁵ Measures such as the collection of environmental baseline data, environmental impact

¹³⁵³ L. Glowka, 'The Deepest of Ironies: Genetic Resources, Marine Scientific Research and the Area', (1996) 12 *Ocean Yearbook*, 171; Leary, above n.1285, 152; *CBD/UNDOALOS Study*, above n.1333, para 72.

¹³⁵⁴ Leary, above n.1285, 156; UNU/IAS Study, above n.1298, para 5.1.3.

assessment and monitoring of the environment during and after exploration and exploitation activities would be equally applicable to bioprospecting activities for genetic resources. The establishment of impact reference zones and preservation reference zones prescribed in both the *Polymetallic Nodules Regulations* for exploitation activities and in the draft *Polymetallic Sulphides and Ferromanganese Cobalt Rich Crusts Regulations* for both exploration and exploitation activities would be particularly relevant to bioprospecting activities, where dramatic loss of deep seabed species which have not yet been discovered is a real concern.

Notwithstanding these benefits, the proposal to expand the ISA's mandate would have some significant legal and political hurdles to overcome. Under the current provisions of the *LOSC* and customary international law, resources of the high seas water column and those resources of the deep seabed which are not mineral resources are subject to an open access regime. Political agreement to include these resources in the common heritage of mankind and regulate their access through a global body such as the ISA would be potentially difficult to obtain particularly as there are already substantial commercial interests involved in their exploitation.¹³⁵⁵ The political obstacles to obtaining international agreement on expansion of the Part XI regime may be even more intractable now, in an international climate where ideologies of free trade and non intervention in market forces are predominant motifs.¹³⁵⁶ The involvement of the United States in bioprospecting activities and its acknowledged reservations to the Part XI regime do not augur well for the achievement of international consensus on an expanded

¹³⁵⁵ UNU/IAS Study, above n.1298, para 5.1.4.

¹³⁵⁶ Leary, above n.1285, 157; Glowka, above n.1286, 80;

mandate for the ISA. Another complication adverted to by Leary is the difficulty of distinguishing bioprospecting activities from marine scientific research and the categorisation of marine scientific research as a freedom of the high seas under the *LOSC*.¹³⁵⁸ While the ISA has the right to carry out marine scientific research concerning the Area and its resources, States Parties and their research institutions have equal freedom to carry out marine scientific research in the Area provided that it is carried out for peaceful purposes and that they co-operate with the Authority in developing research programmes, training the personnel of developing countries and effectively disseminating the results of their research and analysis through the Authority or other international channels.¹³⁵⁹ In the absence of appropriate amendments to Parts XI and XIII of the *LOSC*, the ISA would have no regulatory powers in relation to marine scientific research activities which were also bioprospecting activities.¹³⁶⁰ In addition, Leary notes that recent statements from member states of the ISA and the Secretary General of the ISA indicate a lack of support for extension of its mandate to bioprospecting activities.¹³⁶¹

8.2.3.2 *Implementing Agreements under other LOSC Provisions*

The *LOSC* provides several further anchoring points for an implementing agreement which would regulate the environmental protection aspects of bioprospecting activities. One option foreshadowed above would be to include the genetic resources of the deep seabed under the rubric of marine living resources in common with fisheries and marine mammals. If genetic resources were classified

¹³⁵⁷ Scheiber, above n.1290, 199-200.

¹³⁵⁸ Leary, above n.1285, 152-3; UNU/IAS Study, above n.1298, para 5.1.5.

¹³⁵⁹ *LOSC*, Art 143.

in this way they would continue to be subject to an open access regime under the high seas provisions of the *LOSC*¹³⁶² subject to any qualifications contained in an implementing agreement, which could be modelled on the *United Nations Fish Stocks Agreement* and regional resource management arrangements which implement the *UN Fish Stocks Agreement*. As discussed above, an implementing agreement could be based on Article 118 of the *LOSC* which provides that States shall cooperate with each other in the conservation and management of living resources in areas of the high seas. This option has the advantage of avoiding the political disputes associated with the reclassification of genetic resources of the deep seabed as the common heritage of mankind but has other disadvantages which could make it politically and legally unpalatable. Firstly, the language of Article 118 and the surrounding articles in Section 2 of Part VII of the *LOSC*, is specifically crafted to address the conservation and management of high seas fisheries with one reference to marine mammals in Article 120. While an implementing agreement could provide supplementary language to address specific conservation and management measures for genetic resources, basing such an agreement on Article 118 may be too expansive an interpretation of this provision and may not attract the support of many states.¹³⁶³ An agreement modelled on the *UN Fish Stocks Agreement* to conserve and manage genetic resources would also be a framework agreement only and would still require a network of subsidiary regional agreements similar to the RFMO agreements for its operation.

¹³⁶⁰ Leary, above n.1285, 152; Glowka, above n.1298, 304; UNU/IAS Study, above n. 1298, para 5.1.3.

¹³⁶¹ Leary, above n.1285, 161-2.

¹³⁶² UNU/IAS Study, above n.1298, para 5.1.2. discusses the concept of creating marine protected areas under Art. 119 rather than the option posited above.

Since its adoption in 1995, the *UN Fish Stocks Agreement* has not attracted the widespread support expected.¹³⁶⁴ A further implementing agreement regulating genetic resources may not attract the necessary support from States Parties particularly if it entails establishing new regional management bodies. While it would be theoretically possible to add extra responsibilities for conserving and managing genetic resources to the mandate of existing RFMOs, these bodies would not currently possess the expertise or resources to perform such functions. In addition, the geographic regulatory areas of RFMOs do not generally correspond to the areas of interest for bioprospecting with the possible exception of seamounts. Importing all the inconsistencies and varying levels of conservation and management inherent in the RFMO system may be problematic for this new sphere of environmental regulation. Such a network of regional arrangements would require a strong global oversight mechanism to ensure that conservation and management measures in different regional areas were harmonised. The Food and Agriculture Organization is not currently equipped with the technical expertise to assume this responsibility for deep seabed resources. Finally, the conservation and management of genetic resources on the extended continental shelf which are not sedentary species under the definition in Article 77 of the *LOSC* may not be covered under this option unless an amendment recognising this lacuna in the law was incorporated in the implementing agreement.¹³⁶⁵

¹³⁶³ Glowka, above n.1298, 304 notes that “it is however unsatisfying to read into these provisions more than what they were originally intended to apply to: species targeted by fishing activities, especially since MSR activities at hydrothermal vents do not resemble fishing activities.”

¹³⁶⁴ The *UN Fish Stocks Agreement* has 56 States Parties (UN, *Status of Multilateral Treaties Deposited with the Secretary General Part I Chapter XXI*, <http://untreaty.un.org/ENGLISH/bible/englishinternetbible/part I/Chapter XXI/treaty9.asp> at 12 October 2005).

¹³⁶⁵ Leary, above n.1285, 151.

An implementing agreement to protect maritime areas beyond national jurisdiction where genetic resources of the deep seabed are located could also be based on a combination of articles in Part XII of the *LOSC*. The general obligation of States Parties to the *LOSC* to protect and preserve the marine environment under Article 192 of the *LOSC* and their duty to co-operate in formulating and elaborating international rules, standards and recommended practices and procedures for the protection and preservation of the marine environment under Article 197 of the *LOSC* would be the foundation for such an agreement. These two articles could be supplemented by Article 194(5) of the *LOSC* which provides that states shall take measures to protect and preserve rare and fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life and Article 196(1) which provides that states shall take all measures necessary to prevent, reduce and control pollution of the marine environment resulting from the use of technologies under their jurisdiction or control, or the intentional or accidental introduction of species alien or new to a particular part of the marine environment which may cause significant and harmful changes to that environment. The option of basing an implementing agreement on provisions of the *LOSC* has been canvassed by the *CBD Ad Hoc Open-ended Working Group on Protected Areas* in the context of establishing a legal basis for marine protected areas beyond national jurisdiction.¹³⁶⁶ The marine protected areas envisaged in these discussions would not relate specifically to genetic resources but would provide area based environmental protection measures for the various components of the marine ecosystems situated in selected maritime areas beyond national jurisdiction identified as requiring protection.

This option has the advantage of being founded on relevant articles of the *LOSC* which is recognised in most other international environmental law instruments as the constitutive instrument for oceans governance.¹³⁶⁷ These articles in Part XII also relate exclusively to protection and preservation of the marine environment rather than the politically contentious aspects of access to and ownership of marine resources. On the other hand, these articles in Part XII of the *LOSC* are very general in character and do not reflect more recent international environmental law concepts such as the protection of biodiversity and sustainable use or development of marine resources contained in the *CBD* and Chapter 17 of *Agenda 21*. An implementing agreement based on Part XII of the *LOSC* would also need to incorporate concepts such as the precautionary principle, environmental impact assessment and more substantial recognition of ecosystem based management than is provided in Articles 194(5) and 196(1). When they were negotiated, these articles of Part XII were an embryonic recognition of subsequent developments in international environmental law which were consummated in instruments such as Chapter 17 of *Agenda 21* and the *CBD*.¹³⁶⁸ Unlike Part XI, Part XII does not establish any particular multilateral institution which could assume responsibility for operationalising such an implementing agreement. Politically it may be difficult to garner support among States Parties for an implementing agreement based on this combination of very general articles

¹³⁶⁶ See above n.1346.

¹³⁶⁷ The *LOSC* has 149 States Parties (UN, *Status of Multilateral Treaties Deposited with the Secretary General*, <http://untreaty.un.org/ENGLISH/bible/englishinternetbible/partI/chapterXXI/treaty6.asp> at 12 October 2005).

¹³⁶⁸ David Freestone, 'The Conservation of Marine Ecosystems' in Michael Bowman & Catherine Redgwell (eds.), *International Law and the Conservation of Biological Diversity*, (1996) 91,107 "At the level of customary international law the coming into force of the 1982 Law of the Sea Convention must be seen as a most positive force in the crystallization of the general obligations of States to protect the marine environment. Nevertheless, important though the obligations of Part

in Part XII of the *LOSC* especially as the *LOSC* does not foreshadow in any detail the specific environmental protection measures that may be needed in this context.

8.2.3.3 *Implementing Agreement under the CBD*

The provisions of the *CBD* provide a more concrete foundation for an implementing agreement which would regulate the impact of bioprospecting activities on the deep seabed environments of maritime areas beyond national jurisdiction. Article 5 of the *CBD* foreshadows cooperation between the Contracting Parties directly or through competent international organisations for the conservation and sustainable use of biological diversity in areas beyond national jurisdiction. Biological diversity is defined in Article 1 of the *CBD* as “the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.” The conservation of biodiversity and the sustainable use of its components¹³⁶⁹ including genetic and other biological resources is inextricably linked in the objectives of the *CBD* expressed in Article 1 of the Convention. An implementing agreement under Article 5 of the *CBD* could draw on the full range of environmental protection measures expounded in the *CBD* including marine protected areas and the other measures prescribed in Articles 8, 9 and 14 on *in situ* and *ex situ* conservation, environmental impact assessment and minimising

XII are in this respect, they too require further substantial elaboration and implementation.”; See also discussion in Chapters 3 and 4.

¹³⁶⁹ Sam Johnston, ‘Sustainability, Biodiversity and International Law’ in Bowman & Redgwell, above n.1376, 51, 69 enumerates some of the basic features of the term “sustainable use” which are increasingly being accepted including “preservation; management on the basis of biological unity; a holistic ecosystem approach to management; rehabilitation of denuded aspects of biodiversity; integrated approach; intergenerational equity; research efforts; monitoring the effects of use; establishment of flexible management systems and the precautionary approach are all arguably corollary duties implied by the concept.”

adverse impacts on marine biodiversity to provide an environmental protection template for selected maritime areas beyond national jurisdiction which are rich in biodiversity.¹³⁷⁰

Based on advice from regional marine environmental protection organisations such as the UNEP regional seas programmes and the SBSTTA, the COP of the *CBD* could act as the competent international organisation to endorse maritime areas beyond national jurisdiction where special measures need to be taken to conserve biological diversity. It could also develop best practice guidelines for the establishment and management of protected areas or areas where special measures need to be taken to protect biodiversity. The COP's recommendations could then be implemented through global and regional organisations with regulatory competence in particular maritime areas beyond national jurisdiction. For example the marine environmental protection organisation for the North East Atlantic (OSPAR) and the North East Atlantic Fisheries Commission (NEAFC) might collaborate to implement environmental protection measures related to the conservation and sustainable use of biological diversity on a seamount in their joint areas of regulatory competence. For hydrothermal vent areas beyond national jurisdiction, the ISA might collaborate to implement environmental protection measures related to conservation and sustainable use of biological diversity with one of the UNEP Regional Seas organisations with responsibility

¹³⁷⁰ Glowka, above n.1298, 304, notes that "with respect to biodiversity conservation the *CBD* fills in some of the gaps left by UNCLOS.....Beyond the limits of national jurisdiction, as with UNCLOS, the situation again becomes less defined and depends on the proactive actions of Parties working alone or together with other Parties and States. Parties are to cooperate on processes and activities that may threaten biological diversity. This provides a basis for action in the Area." Glowka also points out that the *CBD* is more than its obligations and has an elaborate work programme which gives it 'the ability to further define and deepen the Convention's obligations directly or as they are applied in particular contexts. In contrast to UNCLOS's more static nature, this dynamic process makes the *CBD* adaptable and facilitates its evolution."

for the proximate area in which the vent occurs. Collaboration on biodiversity protection between global and regional organisations with regulatory competence beyond national jurisdiction would contribute to strengthening and integrating protection and preservation of the marine environment beyond national jurisdiction. Negotiation of such an implementing agreement would necessarily raise the issue of ownership and access to genetic resources in maritime areas beyond national jurisdiction. As discussed above, political agreement to classifying the genetic resources of the deep seabed beyond national jurisdiction as the common heritage of mankind may be an elusive goal in view of the substantial commercial interests already involved in the sampling of these resources. In the absence of political consensus on a regime for ownership of and access to such resources, it may still be politically and legally viable, in the interim, to introduce environmental protection measures to regulate the adverse environmental impacts of the current open access regime through global and regional organisations with regulatory competence in particular maritime areas beyond national jurisdiction.

8.2.3.4 *Status Quo and Self Regulation*

A fourth option to consider is leaving the open access situation which currently applies to the genetic resources of the deep seabed and bioprospecting activities undisturbed. This option would parallel the free market conditions which applied to high seas fisheries before the advent of the *UN Fish Stocks Agreement* and RFMO management and conservation of fisheries stocks beyond national jurisdiction. As one commentator has observed this may lead to some long term advantages for humankind in general as the competition engendered through

competitive exploitation of genetic resources found on the deep seabed will stimulate new inventions and research techniques.¹³⁷¹ On the other hand, commercial investors will have little incentive to introduce costly measures for the conservation and sustainable use of genetic resources and the protection of deep seabed biodiversity. Marine scientists and other commentators have predicted that the failure to implement environmental protection measures for deep seabed environments such as hydrothermal vents, cold seeps and seamounts risks rapid loss of species and general degradation of fragile habitats.¹³⁷² In addition, the primary motive for commercial investment will be the maximisation of profits rather than any commitment to the fair and equitable benefit sharing of a global commons resource for current and future generations. While bioprospecting activities continue to be predominantly conducted by state sponsored research institutions with the dual purpose of marine scientific research, voluntary codes of conduct introduced by deep sea scientists will afford some level of protection for the surrounding marine environment. The next section will examine the content of one of these codes. These measures are voluntary, however, and will not bind commercial operators who conduct bioprospecting activities in a private enterprise framework. Ultimately failure to address the regulation of bioprospecting activities could lead to rapid over exploitation of these valuable resources of the deep seabed and the loss of important genetic and biochemical material not yet discovered by marine scientists.

¹³⁷¹ Scheiber, above n.1290, 200.

¹³⁷² S. Kim Juniper above n. 1300, 95; Thiel, above n.1324, 171; Scheiber, above n 1290, 200-201; Leary, above n.1285, 166.

8.3 Marine Scientific Research

Marine scientists and environmental commentators are becoming increasingly concerned at the risks posed by the proliferation of marine scientific research activities in vulnerable areas of the deep seabed beyond national jurisdiction.¹³⁷³ Although the highly specialised and expensive technology to access the deep seabed is still the preserve of well funded research institutions in very few countries, research cruises are becoming more frequent and leaving more tangible imprints on sensitive deep seabed ecosystems.¹³⁷⁴ The conduct of marine scientific research beyond national jurisdiction is subject to very few international law norms. This has led marine scientists involved in deep sea research to formulate their own codes of conduct for such research which seek to minimise the adverse impacts of their work on the marine environment. This section will examine the applicability of international law principles to the conduct of marine scientific research beyond national jurisdiction and the content of one draft code of conduct which is being discussed among deep sea scientists. It will also review some options for further international law regulation of marine scientific research beyond national jurisdiction.

8.3.1 *The Level of Marine Scientific Research Beyond National Jurisdiction and Its Impact on the Marine Environment*

The remote nature and extreme conditions of deep seabed environments impose automatic limitations on the numbers of scientific expeditions which can reach

¹³⁷³ S Kim Juniper, above n.1300, 93; Thiel, above n.1324, 171-2; Glowka, above n.1298, 303; WWF/IUCN Independent Study, *The Status of Natural Resources on the High Seas*, (2001), 18.

¹³⁷⁴ WWF/IUCN Independent Study, above n.1381, 18; Glowka, above n.1298, 304; UNU/IAS Study, above n.1298, para 3.3.

areas deeper than 1000 metres below the ocean.¹³⁷⁵ Nevertheless there are now a wide array of independent public and private research institutions engaged in deep seabed research with definite physical impacts on the marine environment.¹³⁷⁶ Several commentators note that deep sea science has now moved from a descriptive and observational phase to a more interventionist stage which involves sampling and the installation of scientific equipment on the deep sea floor to conduct in situ experiments.¹³⁷⁷ The 2005 UNU/IAS report on Bioprospecting of Genetic Resources in the Deep Seabed describes the second American Museum of Natural History Black Smokers expedition to the Endeavour segment of the Juan de Fuca mid ocean ridge which removed four chimneys of several tons each from this hydrothermal vent area at a depth of 2,300 metres.¹³⁷⁸ Other reported impacts include the removal of benthic fauna and the introduction of alien elements such as light and noise into the deep sea environment.¹³⁷⁹ Some deep sea experiments have resulted in changes of water temperature and the disposal of biological material in areas different from the sampling area.¹³⁸⁰ Scientists are also concerned about the rising frequency of visits to hydrothermal vents and the pressure caused by concentrated observation and sampling on a few well known vent communities which have been subjected to multiple research expeditions.¹³⁸¹ The absence of restrictions on access to the deep seabed has led to different research institutions proposing duplicate and incompatible scientific experiments

¹³⁷⁵ UNU/IAS Study, above n.1298, para 3.4: "A limited number of institutions worldwide own or operate vehicles that are able to reach areas deeper than 1000 metres below the ocean's surface, and can therefore be actively involved in deep seabed research."

¹³⁷⁶ UNU/IAS Study, above n.1298, para 3.2.1; Leary, above n.1285, 137-8 & 148.

¹³⁷⁷ S. Kim Juniper, above n.1300, 93; Glowka, above n.1298, 304; WWF/IUCN Independent Study, above n.1381, 18.

¹³⁷⁸ UNU/IAS Study, above n.1298, para 3.2.1.

¹³⁷⁹ Leary, above n.1285, 167; WWF/IUCN Independent Study, above n.1381, 18; UNU/IAS Study, above n.1298, para 3.3.

¹³⁸⁰ Leary, above n.1285, 167; UNU/IAS Study, above n.1298, para 3.3.

¹³⁸¹ UNU/IAS Study, above n.1298, para 3.3; Glowka, above n.1298, 304.

for the same deep seabed area.¹³⁸² While the deep sea scientists themselves have begun to impose some constraints on their research expeditions through a research reserve system which operates by consensus between scientists,¹³⁸³ amplified research of deep seabed sites in the future may require a more systematic approach where access to certain sites is controlled to reduce adverse impacts on the marine environment.

8.3.2 *The Applicability of Existing International Law Principles to Marine Scientific Research Beyond National Jurisdiction*

The *LOSC* is the principal international law instrument governing marine scientific research both within and beyond national jurisdiction. *LOSC* provisions concerning marine scientific research beyond national jurisdiction are very liberal reflecting the continuing need to promote scientific research in this largely uncharted realm of the oceans. Scientific research is listed as one of the freedoms of the high seas in Article 87(1)(f) of the *LOSC* and Article 257 reinforces this freedom providing that all States and competent international organisations have the right to conduct marine scientific research in the water column beyond the limits of the exclusive economic zone. As discussed above in relation to bioprospecting activities, some general principles apply to the conduct of marine scientific research in the high seas water column including the requirement to conduct such research exclusively for peaceful purposes and not to unjustifiably interfere with other legitimate uses of the sea such as navigation and fisheries.¹³⁸⁴ States are also required to promote and create favourable conditions for marine

¹³⁸² Glowka, above n.1298, 304; WWF/IUCN Independent Study, above n.1381, 18.

¹³⁸³ UNU/IAS Study, above n.1298, para 3.3.

¹³⁸⁴ *LOSC*, Art. 240(a) & (b).

scientific research¹³⁸⁵ and to publish and disseminate information on proposed major research programmes as well as knowledge from marine scientific research.¹³⁸⁶ The only method of enforcement for any of these general principles beyond national jurisdiction is the system of flag state jurisdiction which would apply to state sponsored vessels conducting marine scientific research beyond national jurisdiction.

The *LOSC* also provides a permissive environment for state sponsored marine scientific research in the Area. States Parties have the right to carry out marine scientific research in the Area in parallel with the ISA, which also has a right to carry out marine scientific research concerning the Area and its resources.¹³⁸⁷

Marine scientific research in the Area must be carried out for the benefit of mankind as a whole.¹³⁸⁸ States Parties conducting marine scientific research in the Area are encouraged to collaborate with the ISA in international marine scientific research programmes, to ensure that such programmes involve training and participation by personnel of developing states and that the results of their research are disseminated when available through the Authority.¹³⁸⁹ Some commentators have noted that the ISA clearly has a mandate to implement measures to regulate marine scientific research associated with deep seabed minerals.¹³⁹⁰ The scope of the ISA's authority, however does not extend to prohibiting or controlling marine scientific research related to non living resources

¹³⁸⁵ Ibid, Art. 239.

¹³⁸⁶ Ibid, Art. 244(1).

¹³⁸⁷ Ibid, Art. 143(2) & (3).

¹³⁸⁸ Ibid, Art. 143(1).

¹³⁸⁹ Ibid, Art. 143(3).

¹³⁹⁰ R.R. Churchill & A.V. Lowe, *The Law of the Sea* (3rd ed.) (1999), 404; Leary, above n.1285, 152.

in the Area.¹³⁹¹ To date, the ISA has concentrated on the impact of deep seabed mining activities on the marine environment of the Area and generally taken a laissez faire approach to the conduct of marine scientific research and bioprospecting activities in the Area. In this context, the Secretary General of the ISA, Ambassador Satya Nandan commented in an ISA press release of 7 August 2003:

We are not looking to control or manage or regulate marine scientific research. We are not looking to licence bioprospectors or to deal with the patent rights of bioprospectors.¹³⁹²

As discussed above in relation to bioprospecting activities beyond national jurisdiction, the *CBD* merely exhorts Contracting Parties to cooperate in respect of areas beyond national jurisdiction for the conservation and sustainable use of biological diversity in Article 5. If an implementing agreement were to be negotiated based on Article 5 of the *CBD* on the conservation and sustainable use of biological diversity beyond national jurisdiction, there may be some regulatory consequences for marine scientific research conducted in areas identified as requiring special environmental protection measures. Currently however with the international law canvas devoid of any access regime or environmental protection measures applicable to marine scientific research beyond national jurisdiction, scientists have taken some steps to regulate their own marine research activities in areas beyond national jurisdiction and their impact on the marine environment.

¹³⁹¹ Leary, above n.1285, 152-3.

¹³⁹² ISA, *Press Release – Ninth Session of Seabed Authority Concludes in Kingston*, ISA Doc SB/9/13, 7 August 2003, p.2.

8.3.3 *Self Regulation by the Marine Scientific Community Beyond National Jurisdiction*

Concerned by the potential threats to the deep sea environment posed by the escalation in research expeditions and associated activities such as deep sea tourism, the marine scientific community has taken a number of initiatives to coordinate research projects and develop codes of conduct to minimise harmful impacts to deep seabed sites. InterRidge, which is a scientific research body formed to exchange information and support international research on mid ocean ridges, is developing a Code of Conduct for the Scientific Study of Marine Hydrothermal Vent Sites.¹³⁹³ The objective of the code is to minimise the impacts of scientific research on such sites and to maximise the efficiency of necessary research by reducing or avoiding potential use conflicts.¹³⁹⁴ The Code would apply to organisations and affiliated individuals undertaking marine scientific research and deep sea tourism at hydrothermal vent sites.¹³⁹⁵ Although the draft Code has not yet been finalised elements for inclusion have been discussed at recent meetings of an InterRidge Working Group on Mid Ocean Ridge Ecosystems.¹³⁹⁶ In their application to maritime areas beyond national jurisdiction, these elements include:

- (a) notifying InterRidge of intended research cruise dates, sites of activity and types of activity;
- (b) contacting other users to gather information and discuss compatible uses;

¹³⁹³ UNU/IAS Study, above n.1298, para 5.6.1; Glowka, above n.1298, 309.

¹³⁹⁴ UNU/IAS Study, above n.1298, para 5.6.1.

¹³⁹⁵ Ibid.

¹³⁹⁶ InterRidge Meetings, *Working Group Meeting Report: Mid Ocean Ridge Ecosystems*, University of Bremen, 18-19 January 2004, Discussion of Code of Conduct Project, para 6, <<http://www.interridge.org/>> at 24 May 2005.

- (c) avoiding or minimizing activities that
 - (i) cause long term decline of the resource to the detriment of future users;
 - (ii) decrease biodiversity at ecosystem, species and genetic levels;
 - (iii) interfere with other ongoing investigations; or
 - (iv) compromise the safety of underwater vehicles
- (d) maximise sampling efficiency by, for example,
 - (i) minimising waste;
 - (ii) developing microanalytical techniques and alternatives to physical sampling; and
 - (iii) making productive use of any excess materials.¹³⁹⁷

InterRidge has also been proactive in establishing a research reserve scheme which evolved from a 1995 recommendation by the InterRidge Biological Studies Ad Hoc Committee to demarcate seabed sanctuaries.¹³⁹⁸ Under this system scientists conducting deep seabed research and observations submit requests to the InterRidge website which requests other scientific researchers to avoid disturbing scientific experiments at a specific deep seabed site.¹³⁹⁹ This system appears to have fallen into disuse in recent years although there were a number of requests posted on the InterRidge website for areas beyond national jurisdiction in 1998 and 1999.¹⁴⁰⁰ In the absence of any international instrument regulating the impact of marine scientific research on the marine environment beyond national

¹³⁹⁷ Glowka, above n.1298, 309, n.15.

¹³⁹⁸ Glowka, above n.1298, 309; UNU/IAS Study, above n.1298, para 3.3.

¹³⁹⁹ Ibid.

¹⁴⁰⁰ Ibid.

jurisdiction, the InterRidge initiatives are important interim measures in the conservation and sustainable use of its biodiversity.

8.3.4 *Potential Environmental Protection Regimes for Marine Scientific Research Beyond National Jurisdiction*

The options for regulating the adverse impacts of marine scientific research on the maritime environment beyond national jurisdiction resemble those for regulating the related activity of bioprospecting. As discussed above, the two activities will frequently be intertwined. The key difference between the two activities lies in the commercial exploitation objectives associated with bioprospecting and the access and benefit sharing issues rather than the environmental protection aspects. The international law instruments which provide a basis for negotiating a regulatory framework which would capture marine scientific research activities beyond national jurisdiction are the *LOSC* and the *CBD*. This section will examine some potential options for such regulation of the adverse impacts of marine scientific research on the marine environment beyond national jurisdiction and analyse their benefits and disadvantages.

8.3.4.1 *Expansion of the ISA's Mandate*

Expansion of the ISA's mandate to incorporate genetic resources or more broadly biological resources of the deep seabed would have potential regulatory consequences for the conduct of marine scientific research on living resources of the deep seabed in the Area. If an implementing agreement were negotiated to accomplish that expansion, the ISA is likely to acquire more regulatory authority over the combined bioprospecting and marine scientific research activities currently associated with biological resources in the Area. As with the mineral

resources of the deep seabed, the ISA would then have unambiguous power to prescribe environmental protection measures to be followed by research consortia engaged in sampling and testing activities related to the biological resources of the Area.¹⁴⁰¹ Pure marine scientific research with no commercial objectives may continue to be permitted under the parallel regime prescribed in Article 143 of the *LOSC* but may be subject to more constraints associated with environmental protection and accommodation of uses. Under an expanded mandate, the ISA would have the authority to coordinate environmental protection measures for all the activities taking place in the Area and the authority to resolve any problems associated with conflicting uses and incompatible scientific experiments. The ISA is already engaged in collaborative research projects with the marine scientific community on the impact of mineral exploitation activities on deep seabed ecosystems and is developing considerable expertise in environmental protection issues associated with the Area.¹⁴⁰² The political obstacles to expanding the ISA's mandate to cover the biological resources of the Area have been discussed above and relate principally to the designation of such resources as the common heritage of mankind and some reluctance on the part of the ISA itself to assume additional responsibilities beyond its current mandate.

8.3.4.2 *Implementing Agreement under the CBD*

An implementing agreement under Article 5 of the *CBD* with the broad objective of conserving marine biodiversity beyond national jurisdiction offers some potential for limiting the adverse impacts of marine scientific research on the deep seabed environment. If marine protected areas beyond national jurisdiction are

¹⁴⁰¹ See above n.1397.

¹⁴⁰² Leary, above n.1285, 161-2.

established under such an agreement, regional organisations implementing management plans in these areas will be responsible for ensuring that activities undertaken in the areas are compatible with the conservation of marine biodiversity. Consultation and collaboration with the marine scientific community, as one of the principal users of such areas, would appear to be an essential element in that process. Regional organisations involved in such planning will inevitably need to utilise the expertise of the marine scientific research community in implementing a range of *in situ* and *ex situ* conservation measures for deep seabed areas. The array of *in situ* and *ex situ* conservation measures prescribed in Articles 8 and 9 of the *CBD* has application to and benefits for the marine scientific research community. In instances of conflict between a proposed marine scientific research use and a conservation objective the only disadvantage of an implementing agreement under the *CBD* might be that the *LOSC* provisions concerning the freedom of marine scientific research would prevail.¹⁴⁰³ In these circumstances consultation between regional conservation organisations and the marine scientific research community should achieve resolution of any disputes.

8.3.4.3 *Status Quo and Self Regulation*

Preserving the status quo in which the conduct of marine scientific research beyond national jurisdiction is largely unregulated will inevitably lead to conflicts with other uses as resource exploitation activities in these areas increase and the consequent loss of high seas biodiversity. While the initiative taken by the InterRidge organisation to develop a draft code of conduct for deep sea scientists will provide an interim shield against the adverse impacts of intrusive scientific

¹⁴⁰³ See Article 22 of the *CBD*.

experiments in deep sea environments, it focuses on reducing the effects of individual scientific experiments on the deep seabed environment and does not incorporate long term and holistic environmental protection measures such as the collection of environmental baseline data, environmental impact assessment, and monitoring of the impact of scientific experiments on particular areas of the deep seabed. It will also operate as an entirely voluntary code with no in-built enforcement mechanisms to bind scientific researchers to its strictures. The system of requesting research reserves, introduced by InterRidge to reduce the impact of multiple scientific experiments on the deep seabed, while initially popular, has failed to attract widespread support from scientific researchers. The current permissive environment for marine scientific research beyond national jurisdiction does not provide any explicit or binding mechanisms at the global or regional level for resolving disputes over uses which may conflict with marine scientific research activities in particular deep seabed areas. While the environmental protection initiatives taken by the marine scientific community are commendable, they only represent an incremental step in achieving comprehensive environmental protection for the deep seabed beyond national jurisdiction.

8.4 Conclusions

A review of the international law principles applicable to bioprospecting and marine scientific research in maritime areas beyond national jurisdiction exposes gaping fissures in the international law frameworks and institutional arrangements available to provide long term environmental protection to the remote but valuable deep seabed ecosystems and their surrounding habitats. The only

concrete environmental protection measures which are currently being implemented in relation to the deep seabed are those prescribed in the ISA's *Polymetallic Nodules Regulations* for explorers involved in the embryonic deep seabed minerals industry. Without considerable amplification and imaginative interpretation of its provisions on the protection and preservation of the marine environment, marine living resources and the Area, the *LOSC* does not currently provide a legal basis for holistic protection of the marine environment beyond national jurisdiction which can accommodate new and emerging uses of these areas. The *CBD* is a more flexible instrument which employs the unifying concept of biological diversity as the basis for its environmental protection provisions. An implementing agreement based on Article 5 of the *CBD* and modelled on the measures prescribed in that instrument for the conservation and sustainable use of biodiversity within national jurisdiction has more potential to provide comprehensive protection for the marine environment beyond national jurisdiction. A global framework instrument for marine biodiversity protection beyond national jurisdiction, implemented at the regional level, would enable better coordination of sectoral environmental protection measures and the development of management plans to reduce the adverse impacts of multiple uses on the marine environment beyond national jurisdiction. Chapter 10 will consider in more depth how such an instrument might interact with the sectoral regimes and institutions considered in earlier chapters.

Chapter 9 **Regional Arrangements for Marine Environmental Protection and their Application to Maritime Areas Beyond National Jurisdiction**

9.1 **Introduction**

Since the early 1970s a patchwork of regional arrangements have been negotiated around the globe to engage states in the collaborative protection of their offshore marine environments. Many of these arrangements have been initiated through the United Nations Environment Programme (UNEP) Regional Seas Programme while others are the result of independent agreements between regional partners.¹⁴⁰⁴ These arrangements now cover 16 maritime regions which differ markedly in their character and extent (Figure 9.1).¹⁴⁰⁵ While the geographic scope of many of the regional arrangements is limited to waters within national jurisdiction, some of them make provision for consensual environmental protection measures in high seas enclaves and high seas areas adjacent to waters under national jurisdiction. The spread of regional arrangements for marine environmental protection has paralleled the negotiation and entry into force of the *LOSC* and the development of international environmental law principles.¹⁴⁰⁶ The

¹⁴⁰⁴ Adalberto Vallega, 'The Regional Seas in the 21st Century: An Overview' (2002) 45(11) *Ocean and Coastal Management* 925, 926: "During the 1970s two leading patterns to ocean management on the regional scale were convened and experimented. After launching the Mediterranean Action Plan and after being successful in convening the first regional convention in history, UNEP convened the Kuwait Action Plan, which was supported by a convention. Hence the approach to regional sea management based on international legal tools and involving intergovernmental organizations had its debut and solidified. Meanwhile the Helsinki Agreement was adopted in the Baltic Sea by all the facing states. Hence the approach to regional sea management not based on international legal tools but on any political, contingent and experimental collaboration, had its debut."

¹⁴⁰⁵ Global Programme of Action for the Protection of the Marine Environment from Land Based Activities (GPA), *Regional Seas*, <<http://www.gpa.unep.org/seas/seas.htm>> at 13 June 2005: "The UNEP Regional Seas Programme at present includes 13 regions and has over 140 coastal states and territories participating in it. In addition there are 3 regional marine environmental protection arrangements outside the UNEP Regional Seas programme (Arctic, OSPAR for the North-East Atlantic and HELCOM for the Baltic)."

¹⁴⁰⁶ Food and Agricultural Organization of the United Nations (FAO), 'The Rise of Regional Agreements for Marine Environment Protection' in Peter H. Sand (ed.), *Transnational Environmental Law: Lessons in Global Change* (1999) 175, 184; Tullio Treves, 'Regional Approaches to the Protection of the Marine Environment' in Myron H. Nordquist, John Norton

early focus of most regional arrangements was the prevention of marine pollution but many have since incorporated more holistic objectives, including the protection and conservation of marine biodiversity.¹⁴⁰⁷ Their flexible structure has enabled them to assimilate new developments in international environmental law and policy through legal mechanisms including Protocols and non-binding documents such as programmes for action and strategic plans.¹⁴⁰⁸



Figure 9.1: Geographical Coverage of UNEP Regional Seas Arrangements and non UNEP Marine Environmental Protection Arrangements (Source: UNEP Regional Seas, <<http://www.unep.ch/regionalseas/>> at 16 June 2005)

The majority of regional arrangements are based on framework conventions which depend on implementation by States Parties in waters within national jurisdiction. These instruments have been supplemented by Protocols, ministerial level agreements and strategy documents which regulate different sources of marine pollution, allow for the protection of threatened and endangered species

Moore & Said Mahmoudi (eds.), *The Stockholm Declaration and the Law of the Marine Environment* (2003) 137-138.

¹⁴⁰⁷ FAO, above n.1414 181.

¹⁴⁰⁸ *Ibid*, 181-2.

and the establishment of marine protected areas to preserve rare or fragile ecosystems and their habitats.¹⁴⁰⁹ In most regions these binding legal instruments and soft law accords are accompanied by an array of planning documents which define regional priorities for marine environmental protection.¹⁴¹⁰ In some regions states have developed action plans for marine environmental protection in advance of framework conventions and other binding legal instruments.¹⁴¹¹ To date, most state practice in implementing these instruments and accords has concentrated on the environmental protection of waters within national jurisdiction regulating issues such as sources of marine pollution, threatened and endangered species and integrated coastal zone management.¹⁴¹² In some regions states have cooperated in implementing transboundary measures to protect marine environments which straddle areas within multiple national jurisdictions.¹⁴¹³ There is also evidence in some regional practice that states may be now turning their attention to the protection of the marine environment in proximate areas beyond national jurisdiction.

In addition to the UNEP Regional Seas Programmes and the non UNEP regional marine environmental protection arrangements, the Antarctic Treaty system provides a unique example of a marine environment managed by a coalition of states with differing views on the extent of their territorial sovereignty and claims to offshore zones in the Southern Ocean.¹⁴¹⁴ Through their negotiation of the 1991

¹⁴⁰⁹ Ibid, 178-182.

¹⁴¹⁰ Ibid, 181.

¹⁴¹¹ UNEP, *Partners in Implementing the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities: Regional Seas*, Issue 1, (September 1999), 7-8.

¹⁴¹² Ibid.

¹⁴¹³ Ibid, 11-31.

¹⁴¹⁴ Davor Vidas, 'The Polar Marine Environment in Regional Cooperation' in Davor Vidas (ed.), *Protecting the Polar Marine Environment*, (2000) 78, 81: notes that "it is difficult to regard the Antarctic Treaty System (ATS) as 'regional cooperation' *stricto sensu*, as this term is usually

*Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol)*¹⁴¹⁵ and the 1980 *Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR)*¹⁴¹⁶ which are linked in a system to the *Antarctic Treaty*¹⁴¹⁷, the Antarctic Treaty partners have established the only comprehensive environmental protection regime to cover an extensive maritime area beyond national jurisdiction.¹⁴¹⁸ While the peculiar characteristics of this region are very different from most other maritime regions in the world, state practice in protecting the marine environment of the Antarctic Treaty area provides the only precedent for international collaboration in integrated protection of a substantial marine environment beyond national jurisdiction.¹⁴¹⁹

This chapter will consider the geographic setting and political milieu of those regional instruments for marine environmental protection whose geographic scope covers areas beyond national jurisdiction together with the Antarctic Treaty environmental protection instruments.¹⁴²⁰ The focus of the chapter will be on those regional instruments which regulate maritime areas with substantial high seas components rather than semi-enclosed and enclosed seas such as the Black Sea, Red Sea and the Baltic whose waters fall mainly within national

understood in international law – not least since the countries comprising the group of twenty seven Antarctic Treaty Consultative Parties belong to all the other six inhabited continents, and various different regions. On the other hand the ATS is *regionally applicable*. Here the determining criterion for seeing that cooperation as regional is the object of cooperation not the geographical placement of the subjects involved in cooperation.”

¹⁴¹⁵ 1991 *Protocol on Environmental Protection to the Antarctic Treaty*, (1991) 30 ILM 1416 (*Madrid Protocol*).

¹⁴¹⁶ 1980 *Convention for the Conservation of Antarctic Marine Living Resources*, (1980) 19 ILM 837 (*CCAMLR Convention*).

¹⁴¹⁷ 1959 *Antarctic Treaty*, 402 UNTS 71 (*Antarctic Treaty*).

¹⁴¹⁸ Alan Boyle, ‘Globalism and Regionalism’ in Vidas, above n.1422, 19, 28.

¹⁴¹⁹ Ibid, 28-29: “the Antarctic is one of the few examples of a region where protection of the terrestrial and marine environments has been significantly integrated in the manner called for by Chapter 17 of Agenda 21....the Protocol is indeed the sole example of a single international environmental regime covering an entire continent and its surrounding ocean.”

¹⁴²⁰ See Table 9.1.

jurisdiction.¹⁴²¹ The analysis will consider aspects of the regional instruments and institutional arrangements which facilitate protection of maritime areas beyond national jurisdiction and factors which currently limit the expansion of their mandates. In particular, it will address the incorporation of integrated environmental protection concepts such as the conservation of biodiversity into regional instruments and their translation into practical measures such as the establishment of marine protected areas. Evidence of regional partners collaborating in measures to protect the marine environment beyond national jurisdiction and their links with global and regional organisations regulating sectoral uses beyond national jurisdiction will also be reviewed. Finally an assessment will be made of whether the current network of regional marine environmental protection arrangements provides a potential infrastructure for implementing a global agreement to conserve marine biodiversity beyond national jurisdiction.

9.2 UNEP Regional Seas Conventions

The UNEP Regional Seas programme began in 1974 as a global initiative to protect the marine environment through regional action.¹⁴²² An Intergovernmental Meeting on the Protection of the Mediterranean convened by UNEP in 1975 launched the first action plan for the comprehensive environmental protection of a regional sea.¹⁴²³ This was followed by the conclusion of the 1976 *Barcelona Convention on the Protection of the Mediterranean Sea against Pollution (First*

¹⁴²¹ The integrated marine environmental protection aspects of the regime regulating the Eastern African region through the *Nairobi Convention* (Table 9.1) will also be considered even though its current geographic scope only extends to waters within national jurisdiction.

¹⁴²² Vallega above n.1412, 926 ;see also above n.1413; Lawrence Juda, *International Law and Ocean Management: The Evolution of Ocean Governance* (1996) 291.

¹⁴²³ Vallega, above n.1412, 926.

Barcelona Convention)¹⁴²⁴ which was the first hard law instrument to evolve from the Regional Seas programme.¹⁴²⁵ Emulating the template provided by the Mediterranean Action Plan and the *First Barcelona Convention*, seven similar action plans and regional seas conventions were concluded in the period leading up to UNCED.¹⁴²⁶ Unlike some of the earlier marine pollution instruments such as the *London Convention* and *MARPOL 73/78*, which were stand alone instruments addressing specific pollution sources the UNEP regional seas conventions were conceived as one element of development plans for particular coastal and oceanic regions. Also included in the action plans for each region were provisions for environmental assessment of the region, environmental management encompassing cooperation in aquaculture, water resources, soils, renewable energy and tourism, institutional and financial arrangements.¹⁴²⁷

An intergovernmental meeting on the protection of the marine environment from land based marine pollution, convened as a follow up to UNCED by the UNEP Governing Council in 1995, gave further impetus to the expansion of the UNEP regional seas programmes and provided a common goal for their endeavours.¹⁴²⁸ The meeting adopted the *Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities*(GPA)¹⁴²⁹ and the *Washington Declaration on Protection of the Marine Environment from Land-based Activities*

¹⁴²⁴ 1976 *Convention on the Protection of the Mediterranean Sea Against Pollution*, (1976)15 ILM 290 (*Original Barcelona Convention*).

¹⁴²⁵ FAO, above n.1414, 175 & 177; Treves, above n.1414, 137.

¹⁴²⁶ Vallega, above n.1412, 926; see Table 9.1 for the six regional seas conventions concluded between 1978 and 1986 which covered the Kuwait region, the West and Central African region, the South-East Pacific, the Red Sea and the Gulf of Aden, the Wider Caribbean region, the Eastern African region and the South Pacific.

¹⁴²⁷ FAO, above n.1414, 181.

¹⁴²⁸ Biliana Cicin-Sain, 'Earth Summit Implementation: Progress Since Rio' (1996) 20 *Marine Policy* 123, 131; Vallega, above n.1412, 928.

¹⁴²⁹ UNEP, *Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities*, UN Doc UNEP(OCA)/LBA/IG.2/7 (5 December 1995).

(*Washington Declaration*)¹⁴³⁰ which committed 108 States to cooperate on a regional basis to implement the GPA. An intergovernmental review mechanism was established to periodically assess progress in implementing the GPA.¹⁴³¹ A further period of expansion following UNCED resulted in the 1992 *Convention on the Protection of the Black Sea against Pollution* (*Bucharest Convention*)¹⁴³² and action plans covering a further five regions.¹⁴³³ In the post UNCED period, the implementation of the Oceans Chapter of *Agenda 21* and the GPA have become focal points which have led to greater integration of the UNEP regional seas programmes and better coordination between the programmes and related global and regional organisations such as the IMO, FAO and the non UNEP regional marine environmental protection arrangements.¹⁴³⁴

The regional seas programmes now cover 13 regions which range from semi-enclosed seas such as the Black Sea to the archipelagic regions of South East Asia and the long stretches of water off the east coast of Africa and the west coast of South America.¹⁴³⁵ Nine of the regions have negotiated binding multilateral conventions for the protection of their marine and coastal environments (Table 9.1). The geographic scope of the programmes has been determined by political

¹⁴³⁰ *Washington Declaration on Protection of the Marine Environment from Land-Based Activities*, reprinted in UNEP, *Intergovernmental Conference to Adopt a Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities: Report of the Conference*, UN Doc UNEP(OCA)/LBA/IG.2/6, Annex II, (5 November 1995).

¹⁴³¹ E. Franckx, 'Regional Marine Environmental Protection Regimes in the Context of UNCLOS' (1998) 13(3) *International Journal of Marine and Coastal Law* 307, 317; Vallega, above n.1412, 928

¹⁴³² 1992 *Convention on the Protection of the Black Sea against Pollution*, (1993) 32 ILM 1110 (*Bucharest Convention*).

¹⁴³³ Vallega, above n.1412, 927.

¹⁴³⁴ Ibid, 928.

¹⁴³⁵ See above n.1413. The UNEP Regional Seas Programme currently covers the Black Sea, the East Asian Seas, the waters off Eastern Africa, the North East Pacific, the North West Pacific, the Red Sea and the Gulf of Aden, the Persian Gulf, the South Asian Seas, the South Pacific, the South East Pacific, the South West Atlantic, the Gulf of Guinea off West and Central Africa and the Wider Caribbean region. Agreements for other regional seas such as the East Central Pacific and the Caspian Sea are under discussion and development.

expediency rather than any systematic scheme to progressively encompass all the oceanic regions of the world.¹⁴³⁶ However Vallega notes that the UNEP regional seas programmes, together with the non UNEP regional marine environmental protection arrangements, now involve 149 States, approximately 95.5 % of the world States.¹⁴³⁷ The geographic areas covered by the conventions frequently abut extensive high seas areas or smaller areas of high seas which are enclosed by the exclusive economic zones (EEZs) of the surrounding island states. In some regions states have taken limited steps to protect the environment of adjacent high seas areas. In others, States have formulated a sound basis for integrated marine environmental protection of the whole region through supplementary protocols to protect endangered species and establish marine protected areas although these currently only apply to waters within national jurisdiction. This analysis will examine the state practice within the UNEP regional seas programmes which relates to the protection and preservation of the marine environment beyond national jurisdiction and integrated environmental protection measures which form the basis for future collaboration between States in maritime areas beyond national jurisdiction.

¹⁴³⁶ FAO, above n.1414, 183 & 178 which notes that the regional seas instruments introduced a new third world dimension in marine environment protection.; Boyle, above n.1426, 27 also notes the eclectic nature of the UNEP Regional Seas areas.

¹⁴³⁷ Vallega, above n.1412, 926.

Table 9.1 UNEP Regional Seas Conventions

Region	Convention	Opened For Signature	Entry Into Force
Mediterranean	<i>Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention)</i>	10 June 1995	9 July 2004
Kuwait	<i>Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Marine Pollution (Kuwait Convention)</i>	24 April 1978	1 July 1979
West and Central Africa	<i>Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (Abidjan Convention)</i>	23 March 1981	5 August 1984
South East Pacific	<i>Convention for the Protection of the Marine Environment and Coastal Areas of the South East Pacific (Lima Convention)</i>	12 November 1981	19 May 1986
Red Sea and Gulf of Aden	<i>Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment (Jeddah Convention)</i>	14 February 1982	20 August 1985

Table 9.1 continued			
Region	Convention	Opened For Signature	Entry Into Force
Wider Caribbean	<i>Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention)</i>	24 March 1983	11 October 1986
Eastern Africa	<i>Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi Convention)</i>	21 June 1985	29 May 1996
South Pacific	<i>Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea Convention)</i>	25 November 1986	22 August 1990
Black Sea	<i>Convention on the Protection of the Black Sea against Pollution (Bucharest Convention)</i>	21 April 1992	15 January 1994

9.2.1 *Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea Convention)*

A comprehensive environmental protection programme for the South Pacific began with the establishment of the South Pacific Environment Programme (SPREP) in 1978.¹⁴³⁸ The framework 1986 *Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea*

¹⁴³⁸ Ben Boer, Ross Ramsay & Donald R. Rothwell, *International Environmental Law in the Asia Pacific* (1998) 41.

Convention)¹⁴³⁹ which was negotiated in 1986 commits its parties to prevent, reduce and control pollution of the Convention Area from any source and to ensure sound environmental management of natural resources.¹⁴⁴⁰ The Convention Area is defined as the 200 nautical mile zones established off the coasts of its 21 regional parties as well as those areas of high seas which are enclosed from all sides by these 200 nautical mile zones.¹⁴⁴¹ (Figure 9.2) The region is characterised by vast tracts of ocean space dotted with land masses which range from sizeable island nations such as Australia and New Zealand to tiny dependencies such as the Pitcairn Islands.¹⁴⁴² The majority of small islands in the South Pacific region have land areas under 700 square kms and are heavily dependent on a healthy marine environment for their survival.¹⁴⁴³ The region has one of the highest quotients of biodiversity in the world with a large population of rare and endangered species such as dugongs, sea turtles and whales.¹⁴⁴⁴ This cornucopia of biodiversity is subject to multiple stress factors including population growth, natural disasters, unsustainable fisheries practices and alien species invasion.¹⁴⁴⁵

¹⁴³⁹ 1986 *Convention for the Protection of the Natural Resources and Environment of the South Pacific Region*, (1987) 26 ILM 38 (Noumea Convention).

¹⁴⁴⁰ Ibid, Art. 5(1).

¹⁴⁴¹ Ibid, Art. 2(a)(i) & (ii).

¹⁴⁴² Richard Herr, 'Environmental Protection in the South Pacific: The Effectiveness of SPREP and its Conventions' (2002/3) *Yearbook of International Co-operation on Environment and Development* 41, 41-43; South Pacific Regional Environment Programme (SPREP), *Nature Conservation*, <<http://www.sprep.org/topic/NatCons.htm>> at 8 June 2005.

¹⁴⁴³ Tamari'I Tutangata & Mary Power, 'The Regional Scale of Ocean Governance: Regional Cooperation in the Pacific Islands' (2002) 45(11) *Ocean and Coastal Management* 873, 873.

¹⁴⁴⁴ SPREP, *Biodiversity in the Pacific Islands*, <<http://www.sprep.org/topic/Biodiv.htm>> at 8 June 2005.

¹⁴⁴⁵ SPREP, *Biodiversity in the Pacific Islands*, above n. 41; GPA, *South Pacific Region*, <<http://www.gpa.unep.org/seas/workshop/southpac.htm>> at 8 June 2005; Tutangata & Power, above n. 1451, 875.



Figure 9.2: Noumea Convention Area (Source: UNEP, GPA, <<http://www.gpa.unep.org/seas/workshop/southpac.htm>> at 8 June 2005)

Many of the small island nations in the region are still in dependent associations with other states or have only attained independence in recent decades.¹⁴⁴⁶ Their capacity to manage environmental protection programmes is severely limited and much of the funding and technical expertise for SPREP projects is provided by the developed countries in the region and other sources of international aid.¹⁴⁴⁷ While the extent of ocean space under SPREP's environmental domain far outweighs the terrestrial component of its responsibilities, the underdeveloped status of many of the region's economies has directed environmental priorities towards land based projects.¹⁴⁴⁸ Herr notes that the impetus for economic development which characterises the region has generated a variety of environmental problems in the terrestrial domain. These include the clear felling of forests for timber and firewood, the mining of beaches for concrete sand and the degradation of lagoons and freshwater sources by improper waste disposal.¹⁴⁴⁹ The region also faces the

¹⁴⁴⁶ Herr, above n.1450, 43.

¹⁴⁴⁷ Ibid, 43-44; Tutangata & Power, above n.1451, 879-880.

¹⁴⁴⁸ GPA, *South Pacific Region*, above n.1453 notes that the interrelationship between island alterations and marine degradation is strong and lists priority issues for environmental management as sewage, solid waste, agricultural and industrial activities, urban runoff and indiscriminate physical alterations to coastal environments.

¹⁴⁴⁹ Herr, above n.1450, 43.

externally imposed threat of sea level rise associated with global warming.¹⁴⁵⁰ The exclusive economic zones and high seas areas of the region host some of the world's largest stocks of tuna which have been subject to exploitation by distant water fishing states.¹⁴⁵¹ The region's high seas areas have also been used for nuclear testing and toxic waste disposal although these activities have diminished in recent years.¹⁴⁵² In addition, the South Pacific contains an array of vulnerable deep sea habitats such as hydrothermal vents, the world's deepest ocean trenches and seamount environments rich in biodiversity many of which are beyond national jurisdiction.¹⁴⁵³

The *Noumea Convention* anticipates the collaboration of its Parties in protecting the marine environment of the whole Convention Area, including its high seas enclaves. Article 4 of the Convention provides that the Parties shall endeavour to conclude bilateral or multilateral agreements for the protection, development and management of the marine and coastal environment of the Convention Area. Other articles provide guidance on the range of environmental protection measures which might be included in such agreements. The majority of articles address the prevention, reduction and control of pollution from a variety of sources¹⁴⁵⁴ and waste management.¹⁴⁵⁵ Of particular relevance to high seas areas are the articles exhorting the parties to take all appropriate measures to prevent, reduce and control pollution from vessels, seabed activities and the testing of nuclear devices.¹⁴⁵⁶ The Convention also endorses a more holistic approach to

¹⁴⁵⁰ Herr, above n.1450, 43; Tutangata & Power, above n.1451, 880.

¹⁴⁵¹ Herr, above n.1450, 43.

¹⁴⁵² Ibid.

¹⁴⁵³ Herr, above n.1450, 43; SPREP, *Biodiversity in the Pacific Islands*, above n.1452.

¹⁴⁵⁴ *Noumea Convention*, Arts. 7-9.

¹⁴⁵⁵ Ibid, Arts 10-11.

¹⁴⁵⁶ Ibid, Arts. 6, 8 & 12.

environmental protection in Article 14 which provides that parties shall take all appropriate measures to protect and preserve rare and fragile ecosystems and depleted, threatened or endangered flora and fauna as well as their habitat in the Convention Area. Article 14 also recommends that Parties establish protected areas and prohibit or regulate any activities likely to have adverse effects on the species, ecosystems or biological processes of such areas. The establishment of protected areas is not to affect the rights of other Parties to the *Noumea Convention* or third states under international law. Although the *Noumea Convention* predates the *CBD* and its codification of biodiversity protection principles, Article 14 reflects some of the key concepts associated with the protection of biodiversity.¹⁴⁵⁷

In the soft law arena, 13 *Noumea Convention* Parties took further steps to protect waters within and beyond national jurisdiction in the Convention Area with the conclusion of a Strategic Action Programme for the international waters of the Pacific Islands (SAP) in 1997.¹⁴⁵⁸ The term “international waters” in this context is intended to apply to all the waters encompassed within the Pacific Island region rather than just the high seas areas which are beyond national jurisdiction.¹⁴⁵⁹ The SAP is designed to provide a blue print for the integrated management of all the waters within the *SPREP* region and to achieve cooperation towards that objective

¹⁴⁵⁷ The Preamble of the *CBD* notes that the fundamental requirement for the conservation of biological diversity is the *in-situ* conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings. Under Article 8 of the *CBD*, the establishment of protected areas is specified as the principal method for the *in-situ* conservation of biodiversity.

¹⁴⁵⁸ Philomene A. Verlaan & Gerard Miles, ‘South Pacific: New Developments in Marine Resource Management for Pacific Islands’ (1998) 13(2) *International Journal of Marine and Coastal Law* 237.

¹⁴⁵⁹ *Ibid*, 237, n.4.

between SPREP and sectorally based management regimes.¹⁴⁶⁰ Verlaan and Miles note that the *SPREP* SAP was the first example of such a plan for any oceanic region in the world although cognate programmes for the Black Sea, Red Sea and Danube River Basin were in place at the time it was concluded.¹⁴⁶¹ In the early years of the SAP's implementation, an analysis of the *SPREP* region was undertaken to identify priority concerns and imminent threats to the waters of the region, the environmental and socioeconomic effects and root causes of these threats, management issues and information gaps.¹⁴⁶² The priority concerns identified through the SAP analysis were the degradation of water quality and associated critical habitats and the unsustainable use of resources.¹⁴⁶³ The analysis also determined that the imminent threats to the regional marine environment were pollution from land-based activities, modification of critical habitats and unsustainable exploitation of resources.¹⁴⁶⁴ The ultimate root causes for these ongoing problems were to be found in management deficiencies such as poor governance and lack of understanding.¹⁴⁶⁵ This analysis has been used to develop an approach to solutions and an initial set of priority actions.¹⁴⁶⁶

Currently the transition to integrated management under the SAP for international waters comprises two strands of activity, Integrated Coastal and Watershed Management (ICWM) and Oceanic Fisheries Management (OFM).¹⁴⁶⁷ Protection

¹⁴⁶⁰ Ibid, 241.

¹⁴⁶¹ Ibid, 239.

¹⁴⁶² Ibid, 239-240.

¹⁴⁶³ Ibid, 245.

¹⁴⁶⁴ Ibid.

¹⁴⁶⁵ Ibid.

¹⁴⁶⁶ Ibid, 240.

¹⁴⁶⁷ SPREP, *International Waters Projects*, <http://www.sprep.org/iwp/index.asp> at 9 June 2005; Verlaan & Miles, above n.1466, 241.

of biodiversity is one of the key objectives under both strands of activity.¹⁴⁶⁸

These projects are primarily funded by the Global Environment Facility.¹⁴⁶⁹

Under the OFM, which has the primary relevance for high seas areas, SPREP has links with regional fisheries communities, the South Pacific Forum Fisheries Agency and the Western and Central Pacific Ocean Fisheries Commission and is monitoring their management of the extensive tuna fisheries which straddle the SPREP region.¹⁴⁷⁰ One of the objectives of the OFM component is to assess the impact of tuna fishing on the pelagic ecosystem of the region.¹⁴⁷¹

The SPREP SAP for international waters provides a strong institutional basis and an expression of political will for further integrated environmental protection across the SPREP region including waters beyond national jurisdiction. However the region continues to face a range of challenges in implementing the SAP. Tutangata and Power note the absence of implementing legislation at the national level to enforce oceans related agreements and conventions and the lack of expertise on many ocean issues within the Pacific Island States.¹⁴⁷² To advance their objectives under a range of regional environmental policies including the SPREP SAP, Pacific Island countries depend almost entirely on ongoing funding and technical support from outside the region.¹⁴⁷³ Tutangata and Power suggest that regional coordination to improve marine environmental protection outcomes could be strengthened by encouraging greater interaction between sectoral representatives responsible for areas such as fisheries, environment, trade and

¹⁴⁶⁸ Verlaan & Miles, above n.1466, 241.

¹⁴⁶⁹ Ibid.

¹⁴⁷⁰ Ibid, 243.

¹⁴⁷¹ SPREP, *The SAP of the Pacific Small Island Developing States, Quarterly Progress Report, First Quarter 2005, Oceanic Component*, http://www.sprep.org/att/publications/00387_1stQtrNarrative_2005_OFM_SPC.pdf at 9 June 2005.

¹⁴⁷² Tutangata & Power, above n.1451, 878-879.

development. They also emphasise the need for building long term conservation capacity at the national level and for innovative financing schemes such as marine investment bonds and fees for environmental services which secure greater and sustainable returns from regional ocean resources and move the region away from donor dependence.¹⁴⁷⁴

9.2.2 *Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention)*

The institutional arrangements and legal framework for the protection of the marine environment of the Mediterranean region have evolved over a period of 30 years reflecting accompanying developments in international environmental law and policy. The Mediterranean Action Plan (MAP) was agreed between the littoral states of the Mediterranean at an international conference sponsored by the UNEP Regional Seas Programme in 1975.¹⁴⁷⁵ The 1976 *First Barcelona Convention* and its associated protocols, collectively known as the Barcelona system, formed integral components of the MAP.¹⁴⁷⁶ In 1995, the *First Barcelona Convention* was revised to incorporate principles contained in the Rio Declaration and Agenda 21¹⁴⁷⁷ and an additional *Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean*¹⁴⁷⁸ was added to the Barcelona system. The 1995 *Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona*

¹⁴⁷³ Ibid, 879.

¹⁴⁷⁴ Ibid, 881.

¹⁴⁷⁵ Tullio Scovazzi, 'Regional Cooperation in the Field of the Environment', in Tullio Scovazzi (ed.), *Marine Specially Protected Areas: The General Aspects and the Mediterranean Regional System* (1999), 81, 82.

¹⁴⁷⁶ Ibid.

¹⁴⁷⁷ Scovazzi, above n. 1483, 82; Patricia Birnie & Alan E. Boyle, *International Law and the Environment* (2nd ed) (2002), 357.

¹⁴⁷⁸ 1995 *Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean*, UN Doc UNEP(OCA)MED/IG.6/7, text at <<http://www.unep.org/med/IG.6/7/>>.

Convention)¹⁴⁷⁹ applies to “the maritime waters of the Mediterranean Sea proper, including its gulfs and seas, bounded to the west by the meridian passing through the Cape Spartel lighthouse, at the entrance of the Straits of Gibraltar, and to the east by the southern limits of the Straits of the Dardanelles between Mehmetcik and Kumkale lighthouses”.¹⁴⁸⁰ Each Contracting Party may extend the application of the Convention to coastal areas within its own territory.¹⁴⁸¹ The area covered by the MAP (Figure 9.3) includes high seas areas which still cover a large proportion of the Mediterranean Sea as many of the littoral states have not declared EEZs and remain in dispute with their neighbours over maritime boundary delimitations.¹⁴⁸² There are no areas of seabed or subsoil not already within claimed zones of national jurisdiction that would come within the definition of the Area under the *LOSC*.¹⁴⁸³

unepmap.org/Archivio/All_Languages/WebDocs/BC&Protocols/SPA95_eng.pdf> (*SPAMI Protocol*).

¹⁴⁷⁹ 1995 *Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean*, text at <http://www.unep.ch/regional_seas/regions/med/t_barcel.htm> (*Barcelona Convention*).

¹⁴⁸⁰ *Barcelona Convention*, Art. 1(1). This definition includes the internal waters of the Contracting Parties.

¹⁴⁸¹ *Ibid*, Art. 1(2).

¹⁴⁸² Juan L. Suarez de Vivero & Juan C. Rodriguez Mateos, ‘The Mediterranean and Black Sea: Regional Integration and Maritime Nationalism’, (2002) 26(5) *Marine Policy*, 383, 390 note that the complexity and political cost of the delimitation process explains the low number of boundary agreements that have been signed to date and estimates the number of maritime boundaries in the Mediterranean as approximately 45 although this number may be higher as there may be more than one jurisdictional boundary between the same two countries.

¹⁴⁸³ *Ibid*, 389.



Figure 9.3: Barcelona Convention Area (Source: GPA, *Mediterranean Region*, (<<http://www.gpa.unep.org/seas/workshop/medu.htm>> at 10 June 2005))

The revised *Barcelona Convention* has 22 parties including the European Commission and entered into force on 9 July 2004.¹⁴⁸⁴

The predominant political influence in the Mediterranean region is the growing cluster of European Union states on the northern shore of the Mediterranean.¹⁴⁸⁵

By contrast the African and Arab states on the southern shores of the Mediterranean are less developed and dependent to a large extent on the European Union for resources to protect their shared marine environment.¹⁴⁸⁶ The principal threats to the marine environment of the Mediterranean are pollution from land based sources and oil from heavy tanker traffic.¹⁴⁸⁷ These problems are exacerbated by the semi-enclosed status of the Mediterranean and the high pollution retention time for marine pollutants.¹⁴⁸⁸ Many of the fisheries are over exploited but the Mediterranean unlike other oceanic regions has not been the subject of intensive fishing by vessels of distant water fishing nations.¹⁴⁸⁹ A recent

¹⁴⁸⁴ MAP, *Status of Signatures and Ratifications*, < <http://www.unepmap.org> > at 8 October 2005.

¹⁴⁸⁵ De Vivero & Mateos, above n.1490, 384.

¹⁴⁸⁶ Ibid.

¹⁴⁸⁷ GPA, *Mediterranean Region*, < <http://www.gpa.unep.org/seas/workshop/medu.htm> > at 10 June 2005.

¹⁴⁸⁸ De Vivero & Mateos, above n.1490, 400 note that the pollution retention time for the Mediterranean is 80 years.

¹⁴⁸⁹ UNEP MAP, *Information Note about the Strategic Action Plan for the Conservation of Marine and Coastal Biodiversity in the Mediterranean (SAPBIO Information Note)*, (2003), 3: "A feature

survey of threats to the biodiversity of the Mediterranean estimated that there were 400 alien species in the region which have the potential to compete with and replace native species, introduce pathogens, and cause loss of habitats.¹⁴⁹⁰ The growing number of tourists in the region also creates pressures for the marine environment.¹⁴⁹¹ As high seas areas are quite close to land in the Mediterranean, all these threats have adverse impacts on the marine environment beyond national jurisdiction.

The *Barcelona Convention* which was the template for the UNEP regional seas conventions which followed, is a framework convention which is amplified by Protocols concluded between its parties.¹⁴⁹² Its general obligations under Article 4 represent a regional articulation of many of the international environmental law principles agreed at UNCED. The balance of environmental protection and economic development is captured in Article 4(1) which commits the Contracting Parties to prevent, combat and eliminate to the fullest possible extent, pollution of the Mediterranean Sea area and to protect and enhance the marine environment of the Area so as to contribute to its sustainable development. The principle of intergenerational equity is recognised in Article 4(2) where Contracting Parties pledge themselves to pursue the protection of the marine environment and the natural resources of the Mediterranean Sea Area as an integral part of the development process, meeting the needs of present and future generations in an equitable manner. In their pursuit of environmental protection and sustainable development of the Mediterranean Sea area, the Contracting Parties are obligated

of Mediterranean fisheries is their high level of exploitation, that often places resources in a state of over-exploitation, and in the best of cases optimum exploitation, particularly in the three European countries which total 60% of fisheries production (Spain, France and Italy)."

¹⁴⁹⁰ Ibid, 5.

¹⁴⁹¹ Ibid.

to apply the precautionary principle and the polluter pays principle.¹⁴⁹³

Environmental impact assessment is mandated for activities that are likely to cause a significant adverse impact on the marine environment¹⁴⁹⁴ and the Contracting Parties are encouraged to cooperate amongst themselves in environmental impact assessment procedures for activities under their jurisdiction or control which are likely to have a significant adverse effect on the marine environment of other States or areas beyond the limits of national jurisdiction.¹⁴⁹⁵

The Convention repeats the model of the other UNEP regional seas conventions with a series of articles obligating the parties to take all appropriate measures to prevent, abate and eliminate pollution of the Mediterranean Sea from a range of sources.¹⁴⁹⁶ These provisions have been implemented through five protocols committing the parties to cooperate in combating pollution of the Mediterranean Sea by oil and other harmful substances, land based sources, dumping from ships and aircraft, exploration and exploitation of the continental shelf and the seabed and its subsoil and transboundary movement of hazardous wastes and their disposal.¹⁴⁹⁷

¹⁴⁹² Birnie & Boyle, above n.1485, 357.

¹⁴⁹³ *Barcelona Convention*, Art. 3(a) & (b).

¹⁴⁹⁴ *Ibid*, Art. 3 (c).

¹⁴⁹⁵ *Ibid*, Art. 3(d).

¹⁴⁹⁶ *Ibid*, Arts. 5, 6, 7 & 8 deal with pollution from dumping by ships and aircraft, pollution from ships, pollution from exploration and exploitation of the continental shelf and the seabed and its subsoil and pollution from land based sources.

¹⁴⁹⁷ 1976 *Protocol concerning Co-operation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergency*, (1976) 15 ILM 306, (*Oil Pollution Emergency Response Protocol*); 1995 *Protocol for the Prevention and Elimination of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft or Incineration at Sea*, text at <http://www.unepmap.org/Archivio/All_Languages/WebDocs/BC&Protocols/Dumping95_eng.pdf> (*Anti Dumping Protocol*) ; 1994 *Protocol for the Protection of the Mediterranean Sea against Pollution resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil*, text at <http://www.unepmap.org/Archivio/All_Languages/WebDocs/BC&Protocols/Offshore94_eng.pdf> (*Seabed Pollution Protocol*); 1980 *Protocol for the Protection of the Mediterranean Sea against Pollution from Land Based Sources*, (1980) 19 ILM 869, (*Land Based Sources Pollution Protocol*); 1996 *Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal*, UN Doc UNEP(OCA)/MED/IG.9/4, text at

The most innovative aspect of the Barcelona system is its treatment of biodiversity protection and the establishment of specially protected areas. Article 10 of the *Barcelona Convention* contains a general obligation for 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. This provision has been implemented through the *SPAMI Protocol* which has the same geographical scope as the *Barcelona Convention* covering all the waters of the Mediterranean Sea including high seas areas, the internal waters of its Parties and any terrestrial coastal areas designated by the Parties.¹⁴⁹⁸ The Protocol provides for the establishment of two different levels of protected area. In waters within national jurisdiction the Parties may establish specially protected areas and apply a variety of protection measures including the regulation of the passage of ships and stopping or anchoring, the exclusion of non indigenous species from the area, the regulation of marine scientific research and exploitation of living and non living resources.¹⁴⁹⁹ The second category of specially protected areas of Mediterranean importance (SPAMIs), may be established in the marine and coastal zones within the national jurisdiction of the Parties or in maritime areas wholly or partly on the high seas.¹⁵⁰⁰ SPAMIs may include sites which are important for conserving the components of biological diversity in the Mediterranean, contain ecosystems specific to the Mediterranean area or be of

<http://www.unepmap.org/Archivio/All_Languages/WebDocs/BC&Protocols/HazW96_eng.pdf> (*Transboundary Movement of Hazardous Wastes Protocol*); 2002 *Protocol Concerning Co-operation in preventing Pollution from Ships and, in cases of Emergency Combating Pollution of the Mediterranean Sea*, text at http://www.unepmap.org/Archivio/All_Languages/WebDocs/BC&Protocols/Emergency02_eng.pdf (*Ships Pollution and Emergency Response Protocol*).

¹⁴⁹⁸ *SPAMI Protocol*, Art. 2(1).

¹⁴⁹⁹ *Ibid*, Art. 5(1) & Art. 6.

¹⁵⁰⁰ *Ibid*, Art. 9(1).

special interest at the scientific, aesthetic, cultural or educational levels.¹⁵⁰¹ The Protocol commits the Parties to drawing up a list of SPAMIs,¹⁵⁰² to comply with the measures applicable to SPAMIs and not to authorise activities which might be contrary to the objectives for which the SPAMIs are established.¹⁵⁰³ Two or more neighbouring parties may propose a SPAMI which is situated partly or wholly on the high seas or in an area where the limits of national sovereignty have not yet been defined.¹⁵⁰⁴ In these cases the neighbouring parties must consult on proposed protection and management measures¹⁵⁰⁵ and the Contracting Parties must agree on the inclusion of the areas in the SPAMI list and the proposed protection and management measures.¹⁵⁰⁶

The SPAMI provisions are one of the few global precedents for marine protected areas beyond national jurisdiction. The provisions providing for their establishment are accompanied by other articles which are designed to transcend any problems which arise from the location of marine protected areas beyond national jurisdiction or in areas of disputed sovereignty. The Protocol adopts a device similar to that employed in Article 4 of the 1980 *CCAMLR Convention* declaring in Article 2(2) and (3) that nothing in the Protocol or any act based on the Protocol shall prejudice the rights, claims or views of any State relating to the law of the sea or constitute grounds for claiming, contending or disputing any claim to national sovereignty or jurisdiction.¹⁵⁰⁷ This disclaimer is bolstered with

¹⁵⁰¹ Ibid, Art. 8(2).

¹⁵⁰² Ibid, Art. 8(1).

¹⁵⁰³ Ibid, Art. 8(3)(b).

¹⁵⁰⁴ Ibid, Art. 9(2)(b) &(c).

¹⁵⁰⁵ Ibid, Art. 9(3)(a).

¹⁵⁰⁶ Ibid, Art. 9(4)(c).

¹⁵⁰⁷ Tullio Scovazzi, 'The Recent Developments in the "Barcelona System" for the Protection of the Mediterranean against Pollution', (1996) 11 (1) *International Journal for Marine and Coastal Law* 95, 98-99.

a commitment by the Parties in Article 28 to invite non parties to the Protocol and international organisations to cooperate in the implementation of the Protocol and to adopt appropriate measures consistent with international law to ensure that no one engages in activity contrary to the principles or purposes of the Protocol.

The member states of the MAP have recently begun the process specified in Article 7 of the *CBD* of identifying the components of biodiversity in the Mediterranean and processes and activities likely to have significant adverse impacts on the conservation and sustainable use of biodiversity. The Strategic Action Plan for the Conservation of Marine and Coastal Biodiversity (SAPBIO)¹⁵⁰⁸ was adopted by MAP members in 2003. The official information note introducing SAPBIO observes that one of the main strategies for conserving marine and coastal biodiversity is the establishment of marine protected areas.¹⁵⁰⁹ The Contracting Parties to the *Barcelona Convention* approved the inclusion of the first 12 marine protected areas in the SPAMI list in November 2001.¹⁵¹⁰ Only one of these, the French-Italian-Monacan Sanctuary for Marine Mammals, is partially located in a high seas area. This sanctuary includes the internal and territorial waters of the three proponent states as well as adjacent high seas areas.¹⁵¹¹ The Agreement between the three states establishing the Sanctuary commits the parties to protecting eight marine mammal species from negative

¹⁵⁰⁸ UNEP, *Strategic Action Plan for the Conservation of Marine and Coastal Biodiversity in the Mediterranean (SAPBIO)*, UN Doc UNEP(DEC)/MED WG.228/17 (2003).

¹⁵⁰⁹ SAPBIO Information Note, above n.1497, 8.

¹⁵¹⁰ Ibid ; Treves ,above n.1414, 143.

¹⁵¹¹ Treves, above n.1414, 143; IUCN/World Commission on Protected Areas (WCPA)/WWF, *Towards a Strategy for High Seas Marine Protected Areas: Proceedings of the IUCN, WCPA and WWF Experts Workshop on High Seas Marine Protected Areas*, 15-17 January 2003, Malaga, Spain, 28: "The sanctuary is a large protected area (almost 90000 square kilometres) including shallow, coastal and deep pelagic habitats, comprising the territorial waters of France, Italy and Monaco and the Mediterranean high seas. The impetus for the sanctuary came from findings in the 1980s of rich pelagic mammal fauna in the area (eight species) attracted by rich primary

impacts both direct and indirect.¹⁵¹² It prohibits the deliberate killing or harassment of the species in the sanctuary, other than for urgent situations or for *in situ* scientific research.¹⁵¹³ A management plan is being developed for the Sanctuary and the Parties have expressed interest in applying an ecosystem based approach to its management.¹⁵¹⁴ While not enforceable against flag vessels of states outside the *Barcelona Convention*, the establishment of the Sanctuary performs a deterrent function in an area of high seas for potentially delinquent third party states¹⁵¹⁵ and has the substantial participation of the 22 Contracting Parties to the *Barcelona Convention*.

The Mediterranean region has a strong institutional and legal framework for marine environmental protection which has survived significant shifts in political alignment and economic circumstances among its member countries over three decades. Although there is less capacity to participate in marine environmental protection programmes in some of the non-European Union members, arrangements are in place for technology transfer and capacity building to assist these countries.¹⁵¹⁶ The SAPBIO identifies the need for integrated marine environmental protection in the coastal zone and the promotion of transboundary marine environmental protection initiatives¹⁵¹⁷ and limited steps have been taken to implement protection measures for endangered species beyond national

productivity , and that the area was suffering from serious conservation problems from fishing (e.g. driftnets), pollution, collisions, disturbance and, in perspective, global change.”

¹⁵¹² IUCN/WCPA/WWF High Seas Marine Protected Areas Proceedings, above n.1519, 29. The Agreement is linked to the SPAMI Protocol and entered into force on 21 February 2002.

¹⁵¹³ Ibid.

¹⁵¹⁴ Ibid.

¹⁵¹⁵ Treves, above n.1414, 143 notes the principal difficulty encountered by marine protected areas in high seas is to find ways to become opposable to States different to those that establish them. The SPAMI Protocol has gone some way to alleviating this difficulty by making a SPAMI listing binding on all Contracting Parties to the Protocol.

¹⁵¹⁶ SAPBIO Information Note, above n.1497, 7.

¹⁵¹⁷ Ibid, 7& viii.

jurisdiction. The French-Italian-Monacan Sanctuary for Marine Mammals could be interpreted as a regional implementation of Article 5 of the *CBD* which exhorts States to cooperate in respect of areas beyond national jurisdiction for the conservation and sustainable use of biological diversity. A legal mechanism such as an implementing agreement under Article 5 of the *CBD* to bind third states to marine environmental protection measures implemented by MAP members at the regional level would potentially strengthen and add legitimacy to the marine environmental protection measures which have already been put in place beyond national jurisdiction.

9.2.3 *Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention)*

In common with the South Pacific region, the waters of the Wider Caribbean are rich in biodiversity and host an abundant array of marine ecosystems and their supporting habitats.¹⁵¹⁸ There are wide disparities between the levels of economic development, population and resources of the island states and the larger political powers with interests in the region.¹⁵¹⁹ The 1983 *Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention)*¹⁵²⁰, which entered into force on 11 October 1986 and

¹⁵¹⁸ GPA, *Wider Caribbean Region*, < <http://www.gpa.unep.org/seas/workshop/carib.htm> > at 13 June 2005; Alessandra Vanzella-Khoury, 'The Protocol on Specially Protected Areas and Wildlife in the Wider Caribbean: A Regional Approach to Biodiversity Conservation', http://www.earthlore.ca/clients/WPC/English/gifx/sessions/PDFs/session_3/Vanzella.pdf at 6 October 2005, 2.

¹⁵¹⁹ GPA, *Wider Caribbean Region*, above n. 1526: "The Wider Caribbean includes the coastal and marine waters of Anguilla, Antigua and Barbuda, Aruba, Bahamas, Belize, British Virgin Islands, Cayman Islands, Colombia, Costa Rica, Cuban Republic, Dominica, Dominican Republic, France, Grenada, Guadeloupe, Guatemala, Guyana, Haiti, Honduras, Jamaica, Martinique, Mexico, Montserrat, Netherlands Antilles Federation, Nicaragua, Panama, St Kitts and Nevis, St. Lucia, St Vincent and the Grenadines, Suriname, Trinidad and Tobago, Turks and Caicos Islands, United States of America, US Virgin Islands and Venezuela."; Vanzella-Khoury above n.1526, 1-2.

¹⁵²⁰ 1983 *Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region*, 22 ILM 221 (*Cartagena Convention*).

now has 21 States Parties¹⁵²¹, is a comprehensive marine environmental protection instrument modelled on earlier regional seas agreements such as the *Barcelona Convention*.¹⁵²² It has an extensive geographical scope covering the marine environment of the Gulf of Mexico, the Caribbean Sea and the adjacent areas of the Atlantic Ocean south of 30 degrees north latitude and within 200 nautical miles of the Atlantic coasts of States Parties to the Convention (Figure 9.4).¹⁵²³ The Convention contains similar enabling articles to the *Barcelona Convention* requiring the Contracting Parties to take all appropriate measures to prevent, reduce and control pollution from ships, dumping, land based sources, seabed activities and atmospheric discharges.¹⁵²⁴ It also contains in Article 10, the specially protected areas article found in the majority of the UNEP regional seas conventions requiring Contracting Parties to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species through the establishment of protected areas.

¹⁵²¹ Caribbean Environment Program, *Status of Cartagena Convention and Protocols*, <<http://www.cep.unep.org/law/cartstatus.html#spaw>> at 8 October 2005; Vanzella-Khoury, above n.1526, 10 notes that the *Cartagena Convention* has 21 parties out of a possible 28.

¹⁵²² Treves, above n.1414, 145 notes that “the influence of one regional convention on other regional conventions concluded later in different regions is particularly evident as regards the conventions for the protection of the marine environment concluded within the UNEP Regional Seas Program.”

¹⁵²³ *Cartagena Convention*, Art. 2(1).

¹⁵²⁴ *Ibid*, Arts. 5-9.



Figure 9.4: Cartagena Convention Area (Source: UNEP, GPA, Wider Caribbean Region, <http://www.gpa.unep.org/seas/workshop/carib.htm> at 20 June 2005)

The Contracting Parties have implemented Article 10 of the *Cartagena Convention* in the 1990 *Protocol Concerning Specially Protected Areas and Wildlife (SPAW Protocol)*.¹⁵²⁵ The geographical ambit of the *SPAW Protocol* is not limited to waters within national jurisdiction adopting the Convention Area definition in Article 2(1) of the *Cartagena Convention* and adding the internal waters of Parties and such terrestrial areas as they designate.¹⁵²⁶ It recognises the interconnected nature of marine ecosystems across the whole region¹⁵²⁷ and contains provisions for cooperation between the Contracting Parties in formulating a region wide list of protected areas¹⁵²⁸ and providing each other with mutual assistance in selecting, establishing and managing such areas.¹⁵²⁹ The criteria for establishment of protected areas and the prescribed environmental

¹⁵²⁵ 1990 *Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and development of the Marine Environment of the Wider Caribbean Region*, text at <http://www.cep.unep.org/pubs/legislation/spaw.htm> (SPAW Protocol). The SPAW Protocol has 12 parties (<http://www.cep.unep.org/law/cartstatus.htm#spaw> at 8 October 2005).

¹⁵²⁶ SPAW Protocol, Art.1(3); David Freestone, 'Specially Protected Areas and Wildlife in the Caribbean – The 1990 Kingston Protocol to the Cartagena Convention' (1990) 5 *International Journal of Estuarine and Coastal Law* 362, 367.

¹⁵²⁷ SPAW Protocol, Preamble.

¹⁵²⁸ Ibid, Art. 7(2).

¹⁵²⁹ Ibid, Art. 18(1).

protection measures are more comprehensive than those contained in the *SPAMI Protocol*, extending to the regulation of archaeological activities, tourist and industrial activities which might endanger the ecosystems of protected areas and the survival of threatened and endangered species of flora and fauna.¹⁵³⁰ Under Article 5(1) and 3(2) of the *SPAW Protocol* protection measures and enforcement of such measures must be in conformity with international law. Article 5(2)(3) recognises the right of the Parties to regulate the passage of ships, any stopping or anchoring and other ship activities that would have significant adverse environmental effects on the protected area. This article is without prejudice to the rights of innocent passage, transit passage, archipelagic sea lanes passage and freedom of navigation. These provisions, while leaving intact the *LOSC* navigational regimes applicable in the maritime zones where protected areas are established, can also be interpreted as providing endorsement for the establishment of protected areas both within and beyond national jurisdiction.¹⁵³¹ The *SPAW Protocol* provides for the establishment of buffer zones around protected areas in which activities may be less restricted than in the protected area while still remaining compatible with achieving its purposes.¹⁵³² The requirements for cooperation between Contracting Parties are amplified where a protected area or buffer zone is contiguous to the frontier or to the limits of other Parties' maritime jurisdiction. In these circumstances Parties are required to consult on environmental protection measures and to examine the possibility of establishing a corresponding contiguous protected area in the jurisdiction of the Party not

¹⁵³⁰ Ibid, Arts. 4(2) & 5(2).

¹⁵³¹ Freestone, above n.1534, 368 notes that the US was concerned about this provision during the negotiations on the basis that freedom of navigation could be compromised by the imposition of measures regulating ships passage in protected areas.

¹⁵³² *SPAW Protocol*, Art. 8.

establishing the protected area or a cooperative management programme.¹⁵³³

Contracting Parties are also exhorted to cooperate with non parties in a similar manner where they establish protected areas contiguous to the boundary of a non party and to seek reciprocal cooperation where a non party establishes a protected area contiguous to the boundary of a Contracting Party.¹⁵³⁴ As with the *SPAMI Protocol*, the *SPAW Protocol* specifies that Contracting Parties should cooperate in identifying, managing and conserving endangered or threatened species of flora and fauna within areas under national jurisdiction.¹⁵³⁵

The *Cartagena Convention* and the *SPAW Protocol* are implemented through the Caribbean Environment Programme (CEP) which has well established institutional components including regular intergovernmental and Contracting Parties meetings, national focal points for marine environmental cooperation, a Caribbean Trust Fund for environmental protection programmes and a regional coordinating unit for implementation of the CAP.¹⁵³⁶ The SPAW programme under the CEP is designed to assist Contracting Parties in the research, assessment and management of protected areas and wildlife within their national jurisdictions through the maintenance of strong regional capacities for information exchange, training and technical assistance. Regional management plans have been established for some threatened species such as sea turtles, the West Indian manatee and the black coral.¹⁵³⁷

¹⁵³³ Ibid, Art. 9.

¹⁵³⁴ Ibid.

¹⁵³⁵ Ibid, Art. 7.

¹⁵³⁶ Marian L. Miller, 'Protecting the Marine Environment of the Wider Caribbean Region: The Challenge of Institution-Building' in (1996) *Green Globe Yearbook* 37, 39.

¹⁵³⁷ Ibid, 41; Vanzella-Khouri, above n.1526, 15.

Less progress has been made with SPAW assistance in the establishment and management of protected areas. Although there are over 300 marine protected areas within national jurisdiction in the insular Caribbean alone, these have not been established under the *SPAW Protocol* and many of them still have no management arrangements.¹⁵³⁸ Guidelines are still being developed for the listing of protected areas under the *SPAW Protocol*. *Draft Guidelines and Criteria for the Evaluation of Protected Areas to be listed under the SPAW Protocol (Draft SPAW Protected Areas Guidelines)* were considered at the third meeting of the Conference of Parties to the *SPAW Protocol* in September 2004.¹⁵³⁹ They were presented to the Scientific and Technical Advisory Committee meeting of the *Cartagena Convention* in September 2005 and are expected to be adopted by the Intergovernmental Meeting of the *Cartagena Convention* parties in 2006.¹⁵⁴⁰ The *Draft SPAW Protected Areas Guidelines* specify that the network of protected areas under the *SPAW Protocol* should facilitate the creation of a comprehensive and representative system of protected areas in the Wider Caribbean region across all bioregions and across a range of ecosystems within bioregions.¹⁵⁴¹ It also recognises the need for the Guidelines to be consonant with global instruments such as the *CBD*.¹⁵⁴² The Legal Criteria framework contained in the *Draft SPAW Protected Areas Guidelines* envisages that some protected areas may be situated

¹⁵³⁸ Vanzella-Khouri, above n.1526, 7 notes: “Regarding ecosystem protection in the region, the lack of declared protected areas is not the greatest issue but rather the lack of their adequate management...a recent survey found that of 285 MPAs in the region only 6 per cent were rated effectively managed and 13 per cent as having partially effective management”; Miller, above n.1544, 41.

¹⁵³⁹ UNEP, *Report of the Third Meeting of the Conference of the Parties to the Protocol Concerning Specially Protected Areas and Wildlife (SPAW) in the Wider Caribbean Region*, UN Doc UNEP(DEC)CAR IG.23/4 (27 September 2004) (*SPAW COP III*), 8.

¹⁵⁴⁰ Email communication from Heidi Savelli Soderberg, Regional Coordinating Unit, Caribbean Environment Programme of 17 June 2005,

¹⁵⁴¹ UNEP, *Revised Draft Guidelines and Criteria for the Evaluation of Protected Areas to be listed under the SPAW Protocol*, UN Doc UNEP(DEC)CAR IG 23/3 (27 September 2004), (*Draft SPAW Protected Areas Guidelines*), 2, para A VIII.

¹⁵⁴² *Ibid*, 1, para I, 8.

partly or wholly on the high seas or in a zone where the limits of national sovereignty or jurisdiction have not yet been defined. In these cases it specifies that the legal status of such areas, the management plan, the applicable measures and the other elements provided for in Article 9 of the *SPAW Protocol* will be provided in accordance with the *LOSC* by the neighbouring parties concerned in the proposal.¹⁵⁴³ This section of the Legal Criteria Framework was left to be discussed at a later date in the finalisation process for the *Draft Guidelines* at the 2004 *SPAW Protocol* Conference of the Parties meeting.¹⁵⁴⁴ The text as currently drafted builds on the practice already established in the Mediterranean with the high seas provisions of the *SPAMI Protocol* and the establishment of the French-Italian-Monacan marine mammal sanctuary in waters which are partially high seas.

At the time of its negotiation, the *SPAW Protocol* was seen as a regional precursor to the concepts of biodiversity and ecosystem based management for the marine environment subsequently endorsed at the global level in the Oceans Chapter of *Agenda 21* and the *CBD*.¹⁵⁴⁵ Notwithstanding the ongoing resource and political challenges associated with its implementation, the *SPAW Protocol* represents a strong foundation for future regional cooperation in protecting proximate areas beyond national jurisdiction. The inclusion in the *draft SPAW Protected Areas Guidelines* of provisions allowing for the establishment of marine protected areas in maritime areas beyond national jurisdiction is a further instance of regional implementation of Article 5 of the *CBD* which would benefit from legitimisation at the global level through an Implementing Agreement based on that article.

¹⁵⁴³ Ibid, 4, para C II.

9.2.4 *Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi Convention)*

The 1985 Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi Convention)¹⁵⁴⁶ applies to the waters under the national jurisdiction of five mainland states (Somalia, Kenya, Tanzania, Mozambique and South Africa) and five island states (Seychelles, Comoros, Madagascar, Mauritius and Reunion [France]) in the Western Indian Ocean Region (WIOR) (Figure 9.5).¹⁵⁴⁷ The diverse habitats of the Convention Area support more than 11,000 species of plants and animals endemic to the region.¹⁵⁴⁸ Low levels of economic development, rapid population growth and poor resource management all exert pressures on the marine environment.¹⁵⁴⁹ The Nairobi Convention and its Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region (Eastern African Protocol)¹⁵⁵⁰ were both signed in 1985 together with the Protocol Concerning Cooperation in Combating Marine Pollution in Cases of Emergency in the Eastern African Region (Marine Pollution Emergency Protocol)¹⁵⁵¹ to provide a legal framework for marine environmental protection in

¹⁵⁴⁴ SPAW COP III, 9, para 47.

¹⁵⁴⁵ Vanzella-Khoury, above n.1526, 14; Freestone, above n.1534, 368.

¹⁵⁴⁶ 1985 *Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region*, Official Journal of the European Community (1986) No. C253/10-32 (*Nairobi Convention*). The *Nairobi Convention* has 8 Parties, Comoros, Kenya, Madagascar, Mauritius, Mozambique, Reunion, Seychelles and Tanzania. South Africa has been invited to join. (http://www.unep.org/eaf/Leg_doc.htm at 8 October 2005).

¹⁵⁴⁷ UNEP, Regional Seas Programme, *Eastern Africa: An Introduction*, <http://www.unep.ch/regionalseas/regions/eaf/eafint.htm> at 14 June 2005.

¹⁵⁴⁸ Ibid.

¹⁵⁴⁹ Ibid; GPA, *East African Region*, <http://www.gpa.unep.org/seas/workshop/eafrican.htm> at 14 June 2005.

¹⁵⁵⁰ 1985 *Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region*, Official Journal of the European Community (1986) No. C 253/10-452 (*Eastern African Protocol*).

¹⁵⁵¹ 1985 *Protocol Concerning Co-operation in Combating Marine Pollution in Cases of Emergency in the Eastern African Region*, Official Journal of the European Community (1986) No. C 253/10- 58 (*Marine Pollution Emergency Protocol*).

the region. The Nairobi Convention replicates the provisions of the Barcelona Convention and the other UNEP Regional Seas Conventions containing the standard provisions on prevention, reduction and control of pollution and specially protected areas.¹⁵⁵²



Figure 9.5: Nairobi Convention Area (Source: UNEP, Regional Seas Programme, Eastern Africa, <http://dinrac.nowpap.org/3-sea-eastern-Africa.htm> at 13 June 2005)

The *Eastern African Protocol*, which implements the specially protected areas article of the *Nairobi Convention*, is co-extensive in geographic scope to the *Nairobi Convention* other than its explicit inclusion of the coastal areas and internal waters related to the marine and coastal environment of the Contracting Parties.¹⁵⁵³ Article 2(1) of the Protocol contains an early recognition of the importance of preserving genetic diversity, maintaining essential ecological processes and life support systems and sustainable use of harvested natural resources. The *Eastern African Protocol* differs from the *SPAW Protocol* in its advance listing of wild flora and fauna for various levels of protection in Annexes

¹⁵⁵² *Nairobi Convention*, Arts. 5-9 & 10.

¹⁵⁵³ *Eastern African Protocol*, Art. 1(a).

to the Protocol.¹⁵⁵⁴ Migratory species are also specifically protected under Article 6 of the Protocol. The criteria for establishing protected areas are similar to those under the *SPAW Protocol* and also require Contracting Parties to take into account the importance of areas as migration routes or as wintering, staging, feeding or moulting sites for migratory species.¹⁵⁵⁵ The protection measures recommended encompass a similar range of subject matter to the *SPAW Protocol* although the only vessel activities mentioned for regulation are those of pleasure craft.¹⁵⁵⁶ As with the *SPAMI* and *SPAW Protocols*, the *Eastern African Protocol* protection measures are required to be in conformity with international law which would include the *LOSC* navigational regimes applicable in the maritime zones where protected areas are declared.¹⁵⁵⁷ The *Eastern African Protocol* was the earliest of the UNEP Regional Seas Protected Areas Protocols to introduce the concept of a buffer zone around a protected area in which activities are less severely restricted while remaining compatible with the purposes of the protected area.¹⁵⁵⁸ The Protocol also contains an almost identical article to the *SPAW Protocol* requiring Contracting Parties to cooperate on measures to be taken where a protected area is established contiguous to the frontier or limits of the national jurisdiction of another Contracting Party.¹⁵⁵⁹ Article 13 (2) and (3) exhorts Contracting Parties to work together with non parties to achieve reciprocal cooperation where a protected area is established in an area contiguous to a common boundary. Across

¹⁵⁵⁴ Ibid, Arts. 3,4 & 5 and Annexes I, II & III.

¹⁵⁵⁵ Ibid, Art 8(2) & (3).

¹⁵⁵⁶ Ibid, Art. 10 (c)

¹⁵⁵⁷ *Eastern African Protocol*, Art. 10 chapeau. Erik Jaap Molenaar, *Coastal State Jurisdiction over Vessel Source Pollution* (1998) 453 notes that “the criteria for the establishment of specially protected areas under UNEP instruments are considerably broader than under the global instruments... that the measures applicable therein would still have to conform to international law and depending on the measures involved might require IMO involvement through MARPOL 73/78, Article 211(6) of the *LOSC* or the PSSA Guidelines. This of course does not prejudice the possibility that coastal states mutually agree on more stringent standards in an *inter se* fashion.”

¹⁵⁵⁸ *Eastern African Protocol*, Art. 11.

the region, Contracting Parties are required to formulate common guidelines for the identification, selection, establishment and management of protected areas.¹⁵⁶⁰

The *Nairobi Convention* and the *Eastern Africa Protocol* are implemented through the Eastern African Action Plan, adopted in June 1985.¹⁵⁶¹ The dearth of technical expertise and resources to implement marine environmental protection measures in the Eastern African region resulted in a slow start to the implementation of the *Nairobi Convention* and the *Eastern African Protocol*.¹⁵⁶²

To alleviate these deficiencies, the *Nairobi Convention* parties signed a partnering agreement with the Baltic Marine Environmental Protection Commission in May 2000 and is drawing on that organisation's repository of technical expertise to build capacity in the Eastern African region for marine environmental protection programmes.¹⁵⁶³ The *Nairobi* and *Abidjan Conventions* established a joint bureau in 1999 to share expertise and cooperate on joint marine environmental protection projects for the African continent.¹⁵⁶⁴ The Contracting Parties of the *Nairobi Convention* have also signed memoranda of understanding with regional and global organisations with marine environmental protection expertise such as WWF, IUCN and the Western Indian Marine Science Association.¹⁵⁶⁵ As yet no marine protected areas have been established under the *Eastern African Protocol*, but at the fourth meeting of the *Nairobi Convention* Conference of Parties in July 2004, a four year work programme was agreed which included regional training

¹⁵⁵⁹ Ibid, Art. 13(1).

¹⁵⁶⁰ Ibid, Art. 16.

¹⁵⁶¹ UNEP, Regional Seas, Eastern Africa, < <http://dinrac.nowpap.org/3-sea-eastern-Africa.htm> > at 13 June 2005.

¹⁵⁶² Ibid..

¹⁵⁶³ Ibid.

¹⁵⁶⁴ Ibid.

courses on marine protected areas management in collaboration with the Netherlands.¹⁵⁶⁶ At present the scope of the *Nairobi Convention* and the *Eastern African Protocol* is limited to areas within national jurisdiction. The strong links already established, however, between the *Nairobi Convention* and more advanced global and regional organisations with expertise in marine environmental protection augur well for the future implementation of concrete environmental protection measures to protect the marine biodiversity of the whole region including areas beyond national jurisdiction.

9.2.5 *Convention for the Protection of the Marine Environment and Coastal Area of the South East Pacific (Lima Convention)*

The South East Pacific Region extends the full length of the Pacific coast of South America from Panama to Cape Horn off the coasts of Chile, Peru, Ecuador, Colombia and Panama (Figure 9.6).¹⁵⁶⁷ The region supports one of the world's most productive fisheries with the potential sustainable fisheries yield estimated to be 12.6 million tons annually.¹⁵⁶⁸ In addition to its high fisheries quotient, the region also hosts multiple species of shellfish, birds, marine mammals, algae and reptiles.¹⁵⁶⁹ There are two deep sea trenches off the coast of Peru, Chile, and Central America, and the Galapagos and Malpelo Islands off the coasts of Ecuador and Colombia respectively host some of the world's most unique flora and fauna.¹⁵⁷⁰ The South East Pacific Action Plan together with the *Convention for the Protection of the Marine Environment of the South East Pacific (Lima*

¹⁵⁶⁵ UNEP, *Report of Fourth Meeting of Contracting Parties to the Nairobi Convention and Seventh Meeting of the Contracting Parties to the Abidjan Convention*, (14 Feb 2005), UN Doc. UNEP (DEC)/WAF/CP.7/INFO/5.

¹⁵⁶⁶ Ibid.

¹⁵⁶⁷ UNEP, *Regional Seas, South East Pacific Region, Regional Profile*, para 1.1, <http://www.unep.ch/regional_seas/pubs/profiles/sep.doc> at 20 June 2005.

¹⁵⁶⁸ Ibid, para 1.3.4.3.

¹⁵⁶⁹ Ibid, paras 1.3.4.1, 1.3.4.2, 1.3.4.4, 1.3.4.5, 1.3.4.6 and 1.3.4.7.

Convention)¹⁵⁷¹ and the *Agreement on Regional Cooperation in Combating Pollution of the South East Pacific by Hydrocarbons or other Harmful Substances in Cases of Emergency*¹⁵⁷² were adopted by Chile, Ecuador, Colombia and Peru in 1981 to provide a legal and institutional framework for the marine environmental protection of the region.¹⁵⁷³ These instruments were amplified in 1989 with the adoption of the *Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific (Paipa Protocol)*¹⁵⁷⁴ which recognises the need to protect and preserve rare and fragile ecosystems and threatened flora and fauna through the establishment of marine protected areas.¹⁵⁷⁵ The *Paipa Protocol* applies to the maritime area of the South East Pacific within the 200 mile maritime zones over which the Contracting Parties exercise sovereignty and jurisdiction as well as the entire continental shelf where Contracting Parties claim a continental shelf beyond 200 nautical miles.¹⁵⁷⁶ This leaves open the theoretical possibility that the Contracting Parties could declare protected areas in parts of their extended continental shelf where the superjacent water column is high seas.

¹⁵⁷⁰ Ibid, paras 1.3.3.3 and 1.3.3.7.

¹⁵⁷¹ 1981 *Convention for the Protection of the Marine Environment and Coastal Area of the South East Pacific*, (1982) 33 International Digest of Health Legislation 96, (*Lima Convention*)..

¹⁵⁷² 1981 *Agreement on Regional Co-operation in Combating Pollution of the South-East Pacific by Hydrocarbons or Other Harmful Substances in Cases of Emergency*, International Environmental Legal Materials and Treaties (I.E.L.M.T.) 981:85 (*South East Pacific Emergency Response Convention*).

¹⁵⁷³ UNEP, Regional Seas, South East Pacific Region, *A Brief History of the South East Pacific*, http://www.unep.ch/regional_seas/regions/sep/sephist.htm at 20 June 2005.

¹⁵⁷⁴ 1989 *Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific*, text at Internet Guide to International Fisheries Law <http://www.intfish.net/treaties/sepac1989.htm> at 14 June 2005 (*Paipa Protocol*).

¹⁵⁷⁵ Ibid, Preamble.

¹⁵⁷⁶ Ibid, Art. I.



Figure 9.6: Lima Convention Area (Source: UNEP Regional Seas Programme, <http://www.gpa.unep.org/seas/workshop/sepac.htm> at 20 June 2005)

The Protocol anticipates processes associated with biodiversity protection by specifying that the Contracting Parties should study and inventory the resources in areas under their protection and implement integrated environmental management in such protected areas to ensure the sustainable development of their resources.¹⁵⁷⁷ The factors to be taken into account in establishing protected areas and the protection measures to be taken in such areas are similar to those contained in the other UNEP Regional Seas Protected Areas Protocols although they are expressed in more general terms.¹⁵⁷⁸ The establishment of buffer zones is also specified but there is no requirement that protection measures in such zones be any less stringent than those in the protected areas.¹⁵⁷⁹ As with the other protocols there is no particular radius prescribed for such buffer zones. In terms of conformity with international law the *Paipa Protocol* is the least circumscribed of the UNEP Regional Seas Protected Areas Protocols as it does not provide that

¹⁵⁷⁷ Ibid, Art. II.

¹⁵⁷⁸ Ibid, Arts. III and V.

¹⁵⁷⁹ Ibid, Art. VI.

protected areas and protection measures should be in conformity with international law. Under Articles IV and X of the *Paipa Protocol*, the Contracting Parties are required to develop common criteria for the establishment of protected areas and to cooperate in their management and conservation. Unlike the *SPAW* and *Eastern African Protocols*, the *Paipa Protocol* does not make explicit provision for cooperation between the Contracting Parties and with non parties where protected areas are contiguous to the limits of other States jurisdiction.

A regional network of marine and coastal areas was approved by the *Lima Convention* Contracting Parties in 1992 and an Ad Hoc Group of Experts on Marine and Coastal Protected Areas has met periodically since 1995 to discuss progress in implementing the *Paipa Protocol* particularly as it relates to the *Jakarta Mandate on Marine and Coastal Biodiversity (Jakarta Mandate)*¹⁵⁸⁰ under the *CBD*.¹⁵⁸¹ The marine protected areas established under the *Paipa Protocol* to date have all been within national jurisdiction.¹⁵⁸² The South East Pacific Action Plan (CPPS) has forged strong links with other global and regional organisations dealing with marine environmental protection in their region and beyond. In 2001 the region signed a memorandum of understanding with SPREP to cooperate in the protection of a more extensive area of the Pacific.¹⁵⁸³ CPPS and SPREP have agreed to cooperate in multiple areas including the research and monitoring of marine pollution, integrated coastal zone management, coastal and marine protected areas, climate change and biodiversity and natural resource

¹⁵⁸⁰ 1995 *Jakarta Mandate on Marine and Coastal Biodiversity* is reproduced in Annex 5 to Decision II/10 of the Conference of the Parties of the *CBD*, Jakarta 6-17 November 1995, UN Doc UNEP/CBD/COP/2/19 (*Jakarta Mandate*).

¹⁵⁸¹ UNEP, *South East Pacific Region, Regional Profile*, above n. 163, para 2.5.3.

¹⁵⁸² *Ibid.*

¹⁵⁸³ *Ibid.*, para 1.5.

conservation.¹⁵⁸⁴ CPPS has also signed a memorandum of understanding with the CBD Secretariat to promote and facilitate the regional implementation of the *Jakarta Mandate on Marine and Coastal Biodiversity*.¹⁵⁸⁵ Joint workshops have been held with the CBD on alien species, mariculture, protected areas and ballast water management.¹⁵⁸⁶ In addition, CPPS has links with sectoral organisations in the region including the Inter American Tropical Tuna Commission (IATTC) and the Eastern Pacific Ocean Tuna Fishing Agreement.¹⁵⁸⁷ This extensive network of cross sectoral linkages in the marine environmental protection sphere places the CPPS and the *Lima Convention* parties in a strong position to collaborate regionally in the protection of proximate maritime areas beyond national jurisdiction in the future.

9.3 Non UNEP Regional Marine Environmental Protection Regimes

There are a number of regional marine environmental protection regimes which have developed separately from the UNEP network. These regimes cover the North East Atlantic region, the polar regions and the Baltic Sea.¹⁵⁸⁸ This section will review the marine environmental protection regimes which apply to the North East Atlantic and the Antarctic as each of these geographic regions encompass substantial maritime areas beyond national jurisdiction and are governed by

¹⁵⁸⁴ Ibid.

¹⁵⁸⁵ Ibid.

¹⁵⁸⁶ Ibid.

¹⁵⁸⁷ Ibid.

¹⁵⁸⁸ Marine environmental protection of the North East Atlantic region is governed by the 1992 *Convention for the Protection of the Marine Environment of the Northeast Atlantic (OSPAR Convention)* (see below n.1600); the Arctic states have agreed on an Arctic Environmental Protection Strategy but have not concluded a binding legal instrument; the Antarctic Treaty parties have concluded the 1991 *Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol)* (see above n.1422) and the 1980 *Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)* (see above n.1423); marine environmental protection of the Baltic Sea is governed by the 1992 *Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention)* but is not considered here as the Baltic Sea does not include substantial areas beyond national jurisdiction.

legally binding instruments. This analysis will examine the incorporation of integrated environmental protection measures into the regimes and their current and potential application to areas beyond national jurisdiction.

9.3.1 *Convention for the Protection of the Marine Environment of the Northeast Atlantic (OSPAR Convention)*

Prior to the inception of the UNEP Regional Seas Programme in 1974, coastal states in Northern Europe had negotiated two separate regimes for the protection of the marine environment from pollution. The 1972 *Oslo Convention for the Prevention of Pollution by Dumping from Ships and Aircraft (Oslo Dumping Convention)*¹⁵⁸⁹ and the 1974 *Paris Convention for the Prevention of Marine Pollution from Land Based Sources (Paris Convention)*¹⁵⁹⁰ resulted in the establishment of the Oslo and Paris Commissions which over a period of ten years developed and implemented policies to mitigate the effects of marine pollution in the North East Atlantic.¹⁵⁹¹ The two commissions eventually merged in 1992 when a joint meeting of environment ministers of the parties adopted the 1992 *Convention for the Protection of the Marine Environment of the Northeast Atlantic (OSPAR Convention)*.¹⁵⁹² The *OSPAR Convention* ushered in a new era of integrated environmental protection for the North East Atlantic which, in addition to the prevention and elimination of marine pollution, sought to regulate a wide spectrum of human activities which might have an adverse effect on the

¹⁵⁸⁹ 1972 *Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft*, (1972) 11 ILM 262 (Oslo Dumping Convention).

¹⁵⁹⁰ 1974 *Convention for the Prevention of Marine Pollution from Land Based Sources*, (1974) 13 ILM 352 (Paris Convention).

¹⁵⁹¹ Rainer Lagoni, 'Regional Protection of the Marine Environment in the Northeast Atlantic under the OSPAR Convention of 1992', in Nordquist, Moore & Mahmoudi, above n 1414, 183, 184.

¹⁵⁹² 1992 *Convention for the Protection of the Marine Environment of the Northeast Atlantic*, (1993) 32 ILM 1069 (OSPAR Convention).

protection and conservation of the ecosystems and the biological diversity of the North East Atlantic.¹⁵⁹³

The *OSPAR Convention* applies in a “maritime area” of the North East Atlantic defined in Article 1(a) of the Convention to include all the maritime zones within the jurisdiction of the Contracting Parties and maritime areas beyond national jurisdiction. This area extends from the latitude of the Strait of Gibraltar (36 degrees north) northward to the North Pole, then east west from 51 degrees east longitude and the coastline of the European Continent towards 42 degrees west longitude and the coast of Greenland including the Atlantic Ocean north of 59 degrees north latitude between 44 degrees and 42 degrees west longitude (Figure 9.7).¹⁵⁹⁴ The Baltic Sea and Mediterranean Sea are specifically excluded from the geographic scope of the Convention.¹⁵⁹⁵



Figure 9.7: OSPAR Convention Maritime Area (Source: <http://www.gpa.unep.org/seas/workshop/ospar.htm> at 19 June 2005)

¹⁵⁹³ Ibid, Art. 2(1)(a).

¹⁵⁹⁴ Ibid, Art 1(a)(i) & (ii).

¹⁵⁹⁵ Ibid, Art. 1(a)(i)(1) &(2).

The *OSPAR Convention* has 16 Contracting Parties including the European Community.¹⁵⁹⁶ Most of its parties are developed state members of the European Union and its decisions are heavily influenced by European Union legislation and policy directives on the environment.¹⁵⁹⁷ The preamble of the Convention reflects the common objective of the Contracting Parties of providing coordinated protection and sustainable management for the whole maritime environment of the North-East Atlantic so that the marine ecosystem will continue to sustain the legitimate uses of the sea and meet the needs of present and future generations. To achieve this objective the Contracting Parties are obligated under the two limbs of Article 2(1)(a) of the Convention to take all possible steps to prevent and eliminate pollution from the maritime area and to protect the maritime area against the adverse effects of human activities so as to safeguard human health and to conserve marine ecosystems. In implementing programmes and measures under the Convention the Contracting Parties must apply the precautionary principle, the polluter pays principle and ensure the application of best available techniques and best environmental practice.¹⁵⁹⁸

In one dimension, the Convention resembles many of the UNEP regional seas conventions, containing further provisions which commit the parties to prevent and eliminate pollution from land-based sources, dumping or incineration and

¹⁵⁹⁶ UNEP, GPA, *North East Atlantic(OSPAR)*, <<http://www.gpa.unep.org/seas/workshop/ospar.htm>> at 9 October 2005. The *OSPAR Convention* Contracting Parties are Belgium, Denmark, the Commission of the European Communities, Finland, France, Germany, Iceland, Ireland, the Netherlands, Norway, Portugal, Spain, Sweden, United Kingdom, Luxembourg and Switzerland.

¹⁵⁹⁷ Lagoni, above n.1599, 185 notes that the European Union shares with its member states the competence for the protection of the environment; Greenpeace, *The OSPAR Convention, Greenpeace and Iceland: Past Present and Future*, <<http://weblog.greenpeace.org/island/archives/OsparFinal.pdf>> at 24 June 2005, 2 notes that OSPAR has had to rely on the institutions of the European Union and national governments to implement its programmes and measures and this has sometimes been a slow and difficult process.

¹⁵⁹⁸ *OSPAR Convention*, Art. 2(2)(a) & (b) and 2(3)(b).

offshore sources.¹⁵⁹⁹ Annexes I to III expand on the Contracting Parties obligations to adopt programmes and measures to prevent and eliminate pollution from these three sources. The OSPAR Commission, established under Article 10 and made up of representatives of each of the Contracting Parties, is responsible for the implementation of the Convention. It has adopted four strategies to combat marine pollution from eutrophication, hazardous substances, the offshore oil and gas industry and radioactive substances.¹⁶⁰⁰ The development of OSPAR's programmes and measures to combat marine pollution across the whole of its maritime area is well advanced. The Hazardous Substances and Radioactive Substances strategies set objectives for continuously reducing discharges, emissions and losses of these substances in the maritime area with the ultimate aim of achieving concentrations in the marine environment near background values for naturally occurring forms of these substances and close to zero for artificial forms by the year 2020.¹⁶⁰¹ Similarly, the eutrophication and offshore oil and gas strategies set objectives of progressively eliminating pollution from land based and offshore industrial sources in the maritime area but without specifying target dates.¹⁶⁰² Implementation of the programmes and measures under each of the strategies has been less progressive. A Greenpeace report on implementation of the OSPAR marine pollution strategies notes some difficulties in implementing the radioactive and hazardous substances strategies and the decelerating effect of

¹⁵⁹⁹ Ibid, Arts 3, 4 & 5. Offshore sources is defined in Art. 1 of the *OSPAR Convention* as "Offshore installations and offshore pipelines from which substances or energy reach the maritime area."

¹⁶⁰⁰ OSPAR Commission Home Page, <http://www.ospar.org/eng/html/content.htm> at 20 June 2005.

¹⁶⁰¹ OSPAR Commission, <<http://www.ospar.org/eng/html/strategies/strategy-03.htm>> at 20 June 2005 and <http://www.ospar.org/eng/html/strategies/strategy-05.htm> at 20 June 2005.

¹⁶⁰² OSPAR Commission, <http://www.ospar.org/eng/html/strategies/strategy-02.htm> at 20 June 2005 and <http://www.ospar.org/eng/html/strategies/strategy-04.htm> at 20 June 2005.

European Union policy processes on momentum.¹⁶⁰³ Enforcement of programmes and measures under the OSPAR strategies is left to the Contracting Parties in their roles as coastal, flag and port states and at this stage there is no collaborative enforcement mechanism.

An integrated approach to the management of the OSPAR marine environment is evident in Article 6 of the Convention which requires the Contracting Parties to undertake and publish at regular intervals joint assessments of the quality status of the marine environment for the maritime area including an evaluation of the effectiveness of the environmental protection measures and the priorities for action. For this purpose, the OSPAR Commission has divided the maritime area into five sub-regions: Arctic Waters(I), the Greater North Sea(II), the Celtic Seas(III), the Bay of Biscay and Iberian Coast(IV) and the Wider Atlantic(V).¹⁶⁰⁴ The Commission published the first comprehensive Quality Status Report on the marine environment of the maritime area in 2000.¹⁶⁰⁵ This report surveyed topics such as the geography, hydrography, climate, human activities and species of the maritime area.¹⁶⁰⁶ In addition to the Quality Status Report, the Contracting Parties are required to report to the OSPAR Commission on the legal and regulatory measures they have taken to implement the Convention.¹⁶⁰⁷ The Commission must assess such reports and may call for steps to bring about full compliance with the Convention including measures to assist a Contracting Party to fulfil its obligations under the Convention.¹⁶⁰⁸ The compliance powers of the Commission are framed in co-operative rather than punitive terms although there may be

¹⁶⁰³ Greenpeace above n.1605, 2.

¹⁶⁰⁴ Lagoni, above n.1599, 186.

¹⁶⁰⁵ Ibid, 195.

¹⁶⁰⁶ Ibid.

¹⁶⁰⁷ OSPAR Convention, Art. 22.

sanctions available to the Commission under general international law principles of state responsibility and breach of treaty obligations for persistent transgressors.¹⁶⁰⁹ The monitoring, reporting and assessment provisions of the *OSPAR Convention*, which are not found in the UNEP Regional Seas marine environmental protection conventions, together form the basis for a more rigorous environmental management regime.

The *OSPAR Convention* parties took a further step towards implementing an integrated environmental protection system for the North East Atlantic region in 1998 with the adoption of Annex V to the Convention which deals with the Protection and Conservation of the Ecosystems and Biological Diversity of the Maritime Area.¹⁶¹⁰ Under Article 2 of Annex V the Contracting Parties commit themselves to taking the necessary measures to protect and conserve the ecosystems and biological diversity of the maritime area, to restore marine areas which have been adversely affected and to cooperate in adopting programmes and measures for those purposes for the control of human activities. These commitments are linked back to the Contracting Parties obligations under the *OSPAR Convention* and the *CBD* to protect the maritime area against the adverse effects of human activities, to conserve marine ecosystems and to develop strategies, plans or programmes for the conservation and sustainable use of biological diversity.¹⁶¹¹ In developing programmes and measures under Annex V,

¹⁶⁰⁸ Ibid, Art. 23.

¹⁶⁰⁹ Lagoni, above n.1599, 196.

¹⁶¹⁰ Annex V to the *OSPAR Convention* entered into force on 30 August 2000 and has 14 parties, http://www.ospar.org/eng/html/convention/ospar_conv10.htm at 9 October 2005; Birnie & Boyle, above n.1485, 357.

¹⁶¹¹ Ibid, Art. 2.

the OSPAR Commission must aim for the application of an integrated ecosystem approach.¹⁶¹²

Under Article 3(b) of the Annex, this entails:

- the collection and review of information on human activities and their effects on ecosystems and biological diversity;
- the development of protection, conservation restoration or precautionary measures consistent with international law related to specific areas or sites or to particular species or habitats; and
- a review of national strategies and guidelines on the sustainable use of components of biological diversity of the maritime area.

Programmes and measures concerning fisheries management or maritime transport are specifically excluded from the Commission' responsibilities but where it considers that action is desirable within the maritime area on these matters it must draw that question to the attention of the responsible fisheries management organisation or the IMO.¹⁶¹³ In cases where a question of maritime transport is referred to the IMO, Contracting Parties who are members of the IMO are required to cooperate with the IMO to achieve an appropriate response including the IMO's approval to regional or local action taking into account the IMO's particularly sensitive sea area guidelines and MARPOL special areas

¹⁶¹² Ibid, Art. 3(1)(b)(iv).

¹⁶¹³ Ibid, Art. 4.

guidelines.¹⁶¹⁴ These provisions requiring consultation with other global and regional organisations with sectoral regulatory competence in areas beyond national jurisdiction are not replicated in any of the UNEP regional seas programmes. They set a precedent for future collaboration between global and regional organisations with sectoral and integrated environmental protection responsibilities and have already influenced decisions on fisheries management in the North East Atlantic Fisheries Commission.¹⁶¹⁵

In the five years since Annex V entered into force, OSPAR has conducted extensive preparatory work to implement the Annex through its biological diversity and ecosystems strategy adopted in 1998.¹⁶¹⁶ The strategy is based on four elements:

- The development of ecological quality objectives in support of the Commission's declared ecosystem approach to the management of human activities
- The assessment of species and habitats that are threatened or in decline and the development of protection measures and programmes
- The creation of an ecologically coherent network of well managed marine protected areas

¹⁶¹⁴ Ibid, Art 4(2).

¹⁶¹⁵ See above Chapter 5, ns.739 & 740.

¹⁶¹⁶ OSPAR Commission, *OSPAR Biological Diversity and Ecosystems Strategy*, <http://www.ospar.org/eng/html/strategies/strategy-01.htm> at 19 June 2005.

- The assessment of human activities which may adversely affect the marine environment of the OSPAR maritime area and the development of programmes and measures to safeguard against such harm.

The entry into force of Annex V provides a consensual basis for the *OSPAR Convention* parties to adopt a full suite of mutually binding environmental protection measures which cover the entire maritime area including areas beyond national jurisdiction. Under the first element of the strategy, a pilot project has been conducted in the North Sea which has resulted in the identification of 10 ecological quality objectives to guide the development of environmental protection programmes and measures.¹⁶¹⁷ Under the second element of the strategy, criteria have been adopted for the selection of threatened and declining species and habitats and an initial OSPAR list of threatened and/or declining species was adopted in January 2003.¹⁶¹⁸ Work is continuing on the classification and mapping of OSPAR habitats by each of the coastal states.¹⁶¹⁹

Under the third element of the strategy, guidelines have been developed for the identification, selection and management of marine protected areas with the aim of achieving, by 2010, an ecologically coherent network of well managed marine protected areas across the whole of the OSPAR maritime area.¹⁶²⁰ The initial OSPAR list of marine protected areas in the maritime area is still being prepared.¹⁶²¹ The OSPAR Commission confirmed its general intention to consider

¹⁶¹⁷ Annual Report of the OSPAR Commission, (2002-3), Vol. 1, Chapter 2, para 21, [http://www.ospar.org/eng/doc/Chapter%202%20\(BDC\)%20Annual%20Report%202002-3.doc](http://www.ospar.org/eng/doc/Chapter%202%20(BDC)%20Annual%20Report%202002-3.doc) at 16 June 2005.

¹⁶¹⁸ Ibid, Chapter 2, paras 24 & 25.

¹⁶¹⁹ Ibid, Chapter 2, para 26.

¹⁶²⁰ Ibid, Chapter 2, para 38.

¹⁶²¹ See above n.1625.

the declaration of marine protected areas beyond national jurisdiction in OSPAR Recommendation 2003/3 adopted in June 2003 which defined the OSPAR Network of marine protected areas as “those areas which have been, and remain, reported by a Contracting Party together with any other area in the maritime area outside the jurisdiction of the Contracting Parties which has been included as a component of the network by the OSPAR Commission.”¹⁶²² At the 2004 meeting of the Parties to Annex V, the Chairman invited the parties to consider which areas in the high seas should be proposed to the OSPAR Commission for inclusion in the OSPAR network of marine protected areas and recommended that the support of all Contracting Parties be obtained for such proposals.¹⁶²³

Under the final element of the strategy a list of eight human activities which may adversely affect the marine environment have been assessed.¹⁶²⁴ The OSPAR Commission has also assessed the effects of fisheries activities within the maritime area on ecosystems and biological diversity and drawn this to the attention of the relevant regional fisheries management organisations suggesting that action be taken on a range of issues.¹⁶²⁵

Annex V to the *OSPAR Convention* and the Biological Diversity and Ecosystems Strategy represent the most detailed and comprehensive implementation plan for integrated environmental protection of a substantial maritime area beyond national jurisdiction at the regional level. The plan is poised to take effect but will

¹⁶²² OSPAR, *Summary Record of Ministerial Meeting*, Bremen, Germany, 23-27 June 2003, OSPAR Doc. OSPAR 03/17/1-E, Annex 9.

¹⁶²³ OSPAR, *Summary Record of BDC-MASH Meeting*, Tromsø, Norway, 5-8 October 2004, OSPAR Doc. MASH 04/9/1-E, para 5.5 and 5.6.

¹⁶²⁴ *Annual Report of the OSPAR Commission 2002-3*, above n.1604, paras 27-36.

¹⁶²⁵ *Ibid*, para 41.

require substantial resources to implement¹⁶²⁶ and still faces some legal uncertainties relating to its implementation.¹⁶²⁷ Key elements missing in the OSPAR strategy for protection of biodiversity beyond national jurisdiction are global guidelines and a mechanism for international endorsement of environmental protection measures beyond national jurisdiction such as marine protected areas. A global agreement implementing relevant provisions of the *CBD*, which was also subject to the *LOSC*, would resolve some of these uncertainties at the regional level by specifying the parameters of environmental protection measures beyond national jurisdiction, their applicability to third states and permissible enforcement mechanisms.

9.3.2 Integrated Protection of the Antarctic Marine Environment

Although relatively low in species diversity, Antarctic maritime areas support high populations of marine living resources such as plant plankton, krill and baleen whales.¹⁶²⁸ The close interdependence of these species reduces their resilience to over exploitation and highlights the fragile nature of Antarctic marine ecosystems.¹⁶²⁹ As a relatively pristine marine environment, Antarctica is also an important global reference point for scientific research on the effects of pollution on the atmosphere and marine and land ecosystems.¹⁶³⁰ The protection of the

¹⁶²⁶ Ibid, paras 43-47.

¹⁶²⁷ OSPAR, Paper presented by Germany to the Intergovernmental Consulting Group Meeting on Marine Protected Areas, Isle of Vilm, 4-8 April 2005, OSPAR Doc. ICG-MPA 05/8/1-E, 3.

¹⁶²⁸ Catherine Redgwell, 'The Protection of the Antarctic Environment and the Ecosystem Approach' in C. Redgwell & M. Bowman (eds.), *International Law and the Conservation of Biological Diversity*, (1995) 109, 109-10; Beth Marks Clark & Karen Perry, 'The Protection of Special Areas in Antarctica' in Francesco Francioni & Tullio Scovazzi (eds.) *International Law for Antarctica* (2nd ed.), (1996) 293, 295.

¹⁶²⁹ Redgwell, above n.1636, 110; Davor Vidas, 'Protecting the Polar Marine Environment: Interplay of Regulatory Frameworks' in Davor Vidas (ed.), *Protecting the Polar Marine Environment*, (2000) 3,11; Jacques Yves Cousteau & Bertrand Charrier, 'Introduction: The Antarctic, A Challenge to Global Environment Policy' in Joe Verhoeven, Philippe Sands & Maxwell Bruce (eds.), *The Antarctic Environment and International Law*, (1992) 5, 5-6.

¹⁶³⁰ Redgwell, above n.1636, 110; Cousteau & Charrier above n.1637, 6.

Antarctic environment has been a prominent feature in the evolution of the Antarctic treaty system.¹⁶³¹ Notwithstanding the ambiguities inherent in the political and legal status of Antarctica the treaty partners have cooperated in the development of a comprehensive marine environmental protection regime.

At the apex of the Antarctic treaty system is the 1959 *Antarctic Treaty* which establishes the geographical boundaries and political conditions in which Antarctic treaty partners operate. Article VI of the Treaty specifies that its provisions shall apply to the area south of 60 degrees south latitude including all ice shelves (Figure 9.8). This geographic boundary is approximately 10 degrees to the south of the Antarctic convergence where warmer northern surface waters meet the colder southern waters.¹⁶³² The area below this boundary is reserved for peaceful purposes and cooperative scientific investigation.¹⁶³³ The territorial claims of the Contracting Parties are frozen under Article IV of the Treaty with the provision that no acts or activities taking place while the Treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica. Article IV provides further, that no new claims or enlargements of existing claims to territorial sovereignty are to be asserted while the treaty is in force. The Treaty explicitly recognises the existence of high seas in the Antarctic Treaty Area in Article VI, by providing that nothing in the Treaty shall prejudice or in any way affect the rights of any States under international law with regard to the high seas within the Antarctic Area.¹⁶³⁴ The precise limits of the maritime area beyond national jurisdiction in the Antarctic Treaty area are

¹⁶³¹ Donald R. Rothwell, 'Southern Ocean Bioprospecting and International Law' in Alan D. Hemmings & Michelle Rogan-Finnemore (eds.), *Antarctic Bioprospecting*, (2005), 209.

¹⁶³² Boyle, above n.1422, 28.

¹⁶³³ *Antarctic Treaty*, Articles I & II.

difficult to define, however, as the Parties views differ on territorial sovereignty and the associated maritime claims to territorial seas, exclusive economic zones and continental shelves.¹⁶³⁵

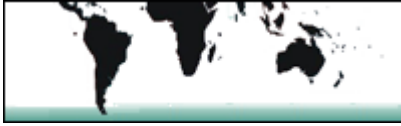


Figure 9.8: Antarctic Treaty Area (Source: UNEP Regional Seas Programme, <http://www.gpa.unep.org/seas/workshop/antarctic.htm> at 26 June 2005)

Initial measures to protect the marine environment of the Antarctic addressed the conservation of a single species, the Antarctic seals. The 1972 *Convention for the Conservation of Antarctic Seals*¹⁶³⁶ promotes the objectives of protection, scientific study and rational use of Antarctic seals. Although in practice there is no commercial sealing in Antarctica, the exploitation of Antarctic seals is permitted under the Convention subject to set quotas and monitoring of its effects on the total seal stocks and Antarctic ecological system.¹⁶³⁷ The 1980 *CCAMLR Convention*, discussed in Chapter 5, is broader in compass adopting an ecosystem approach to the conservation of all Antarctic marine living resources except seals and whales which are already covered by other conventional regimes.¹⁶³⁸ In the context of integrated environmental protection, the most striking feature of the *CCAMLR Convention* is its endorsement of conservation principles in Article II

¹⁶³⁴ Boyle, above n.1422, 28 n.46 notes that the application of the Treaty to the high seas was a controversial question during the negotiations.

¹⁶³⁵ Donald R. Rothwell & Christopher C. Joyner, 'Domestic Regulation of the Polar Marine Environment' in Vidas, above n.1422, 149, 162-3.

¹⁶³⁶ 1972 *Convention for the Conservation of Antarctic Seals*, (1972) 11 ILM 251(*Antarctic Seals Convention*).

¹⁶³⁷ Redgwell, above n.1636, 116-7.

¹⁶³⁸ Ibid, 118; Laurence Cordonnery, 'Environmental Protection in Antarctica: Drawing Lessons from the CCAMLR Model for the Implementation of the Madrid Protocol' (1998) 29 *Ocean Development and International Law*, 125, 126 notes that the dependence on krill by other marine living resources in the Antarctic marine environment was the reason for adopting an ecosystem

which recognise the interdependent nature of Antarctic marine ecosystems and the need to maintain the ecological relationships between harvested, dependent and related populations at a level which ensures sustained conservation of these resources.

The disappearance of support for the *Convention on the Regulation of Antarctic Mineral Resources Activities (CRAMRA)*¹⁶³⁹ in 1989 precipitated the negotiation of the 1991 *Madrid Protocol* to the *Antarctic Treaty* which was the first comprehensive environmental protection instrument for the Antarctic.¹⁶⁴⁰ The *Madrid Protocol* is a multi-dimensional instrument which applies to the Antarctic Treaty area and tackles the protection of the whole of the Antarctic including land and sea areas.¹⁶⁴¹ The Preamble, Objective and Environmental Principles, in Articles 2 and 3 of the Protocol, reflect the fundamental approach of the Antarctic Treaty partners as one of stewardship and conservation of the Antarctic environment for current and future generations. Although the Protocol was adopted prior to the negotiation of the *CBD* it does contain elements which reflect a similar integrated approach to the protection of the Antarctic environment.¹⁶⁴² The interdependence of Antarctic ecosystems is recognised in Article 2 which

approach in CCAMLR rather than the single species approach inherent to most fisheries agreements.

¹⁶³⁹ 1988 *Convention for the Regulation of Antarctic Mineral Resource Activities*, (1988) 27 ILM 868 (*CRAMRA Convention*).

¹⁶⁴⁰ Davor Vidas, 'The Protocol on Environmental Protection to the Antarctic Treaty: A Ten-Year Review' (2002/3) *Yearbook of International Co-operation on Environment and Development*, 51, 52 identifies the key factors behind the vanishing of support for *CRAMRA* among the Antarctic treaty partners as being:

- 1) Fears that *CRAMRA* would disturb the sensitive balance on sovereignty positions in the Antarctic;
- 2) The political ideological critique of Antarctic treaty states from a group of developing countries in the UN General Assembly;
- 3) Pressures from environmental NGOs; and
- 4) Domestic policy considerations which related to some of the above factors.

¹⁶⁴¹ *Madrid Protocol*, Art.2.

¹⁶⁴² Redgwell, above n.1636, 128.

commits the parties to the comprehensive protection of the Antarctic environment and dependent and associated ecosystems. The requirement for environmental impact assessment of activities undertaken in Antarctica is also firmly embedded in Article 8 of the Protocol. Under this Article, Parties are required to apply the environmental impact assessment procedures contained in Annex I to the Protocol to scientific research programs, tourism and all other governmental and non governmental activities in the Antarctic Treaty area for which notice is required under Article VII(5) of the *Antarctic Treaty*.¹⁶⁴³

A Committee for Environmental Protection (CEP) is created under the Protocol.¹⁶⁴⁴ It provides advice to the Parties on implementation of the Protocol¹⁶⁴⁵ but key decisions on environmental protection are still the province of the Antarctic Treaty Consultative Meeting (ATCM) annual meetings.¹⁶⁴⁶ Parties are required to undertake regular and effective monitoring of the impact of ongoing activities on the Antarctic marine environment and dependent and associated ecosystems.¹⁶⁴⁷ They are also required to submit annual reports on their implementation of the Protocol to the CEP.¹⁶⁴⁸ The collaborative nature of activities in the Antarctic Treaty area is emphasised in Article 6 of the Protocol which obligates Parties:

- to cooperate in programs to protect the marine environment;

¹⁶⁴³ *Madrid Protocol*, Art.8(2). Annex I to the Protocol contains very detailed requirements for Initial Environmental Evaluation and Comprehensive Environmental Evaluations which are considered by the Antarctic Treaty Consultative Parties (ATCM) meetings.

¹⁶⁴⁴ *Ibid*, Art. 11.

¹⁶⁴⁵ *Ibid*, Art. 12.

¹⁶⁴⁶ Cordonnery, above n.1646, 139 analyses the weaknesses in the CEP's advisory role and advocates a stronger monitoring function for the CEP.

¹⁶⁴⁷ *Madrid Protocol*, Art. 3(2)(d).

- to undertake joint expeditions and share facilities to avoid the cumulative effect of multiple human activities in any location; and
- to assist each other with environmental impact assessments of proposed activities.

The *Madrid Protocol* has five Annexes on Environmental Impact Assessment (Annex I), the Conservation of Antarctic Flora and Fauna (Annex II), Waste Disposal and Waste Management (Annex III), the Prevention of Marine Pollution (Annex IV) and Area Protection and Management (Annex V). Annexes II and V most closely parallel the integrated environmental protection measures contained in the Protected Species programmes and Protected Areas protocols of the other regional seas programmes. These two annexes expand, in a binding instrument, on the earlier 1964 *Agreed Measures on Antarctic Fauna and Flora*¹⁶⁴⁹ which introduced the concept of protected species and specially protected areas to Antarctica.¹⁶⁵⁰

Under Annex II, the taking of or harmful interference with native birds, mammals and plants in the Antarctic Treaty area without a permit is prohibited.¹⁶⁵¹ Annex II also makes provision for specially protected species.¹⁶⁵² The Annex has only limited application to marine living resources in the Antarctic Treaty area. Most of these resources are governed by the *CCAMLR Convention* and whales are

¹⁶⁴⁸ *Madrid Protocol*, Art. 17; Vidas above, n.1647, 55 notes that since the inception of annual reports to the CEP under the Protocol transparency on national implementation practices has increased.

¹⁶⁴⁹ ATCM Recommendation III-VIII, (1964).

¹⁶⁵⁰ Redgwell, above n.1636, 114.

¹⁶⁵¹ *Madrid Protocol*, Art. 3(1).

¹⁶⁵² *Ibid*, Annex II, art. 3(4).

effectively excluded from the operation of Annex II by Article 7 which provides that nothing in the Annex shall derogate from the rights and obligations of Parties under the 1946 *International Convention for the Regulation of Whaling* (ICRW)¹⁶⁵³. Annex II does, however, provide protection for marine mammals such as seals and native birds in the Antarctic Treaty area. An open-ended contact group established by the CEP is considering the extension of the specially protected species status to Antarctic organisms other than birds, mammals and flora. The work of this group is potentially applicable to the protection of unregulated living resources such as the chemosynthetic organisms which are targeted by bioprospectors.¹⁶⁵⁴

Annex V complements Annex II by providing for the establishment of a two tiered system of Antarctic Specially Protected Areas (ASPAs) and Antarctic Specially Managed Areas (ASMAs).¹⁶⁵⁵ Under Article 3(1) of Annex V, any area including marine areas may be designated as an ASPA to protect outstanding environmental, scientific, historic, aesthetic or wilderness values, any combination of those values or ongoing or planned scientific research. Criteria for inclusion in the series of ASPAs reflect biodiversity concepts such as the conservation of representative examples of marine ecosystems and the type, locality or only known habitat of any species.¹⁶⁵⁶ Entry to an ASPA is prohibited except in accordance with a permit.¹⁶⁵⁷ The second type of area regulated by Annex V is the ASMA which includes both land and marine areas.¹⁶⁵⁸ The designation of an

¹⁶⁵³ 1946 *International Convention for the Regulation of Whaling*, 161 UNTS 72 (ICRW).

¹⁶⁵⁴ CEP, *Activities Related to Conservation of Antarctic Flora and Fauna*(Annex II of the Protocol), <<http://www.cep.aq/default.asp?casid=5084>> at 26 June 2005.

¹⁶⁵⁵ Madrid Protocol Annex V, Arts. 3 & 4.

¹⁶⁵⁶ Ibid, Annex V, Art. 3(2)(b)(c) & (d).

¹⁶⁵⁷ Ibid, Annex V, Art. 3(4).

¹⁶⁵⁸ Ibid, Annex V, Art. 4(1).

ASMA is designed to assist in the planning and coordination of activities in the area, avoid possible conflicts, improve cooperation between the Parties and minimise environmental impacts.¹⁶⁵⁹ These areas may be designated where activities pose risks of mutual interference or cumulative environmental impacts and where there are sites or monuments of recognised historic value.¹⁶⁶⁰ Entry into ASMAs does not require a permit but these areas may contain one or more ASPAs within them where entry is prohibited without a permit.¹⁶⁶¹ Any Party, the CEP, CCAMLR or the Scientific Committee for Antarctic Research (SCAR) may propose an area for designation as an ASPA or ASMA to the Antarctic Treaty Consultative Meeting (ATCM).¹⁶⁶² The proposal for designation must be accompanied by a comprehensive management plan which includes conditions under which permits may be granted to enter ASPAs and a code of conduct for ASMAs.¹⁶⁶³ The areas which have been designated as ASPAs and ASMAs under the Annex V system cluster around the coast of the Antarctic continent with a few areas surrounding offshore islands (Figures 9.9 and 9.10).¹⁶⁶⁴

¹⁶⁵⁹ Ibid.

¹⁶⁶⁰ Ibid, Annex V, Art. 4(2).

¹⁶⁶¹ Ibid, Annex V, Art. 4(3) & (4).

¹⁶⁶² Ibid, Annex V, Art. 5(1).

¹⁶⁶³ Ibid, Annex V, Art. 5(3).

¹⁶⁶⁴ CEP, *List of Antarctic Protected Areas and List of Historic Sites and Monuments*, <http://www.cep.aq/apa/aspa/index.html> at 29 June 2005 and <http://www.cep.aq/apa/asma/index.html> at 29 June 2005.

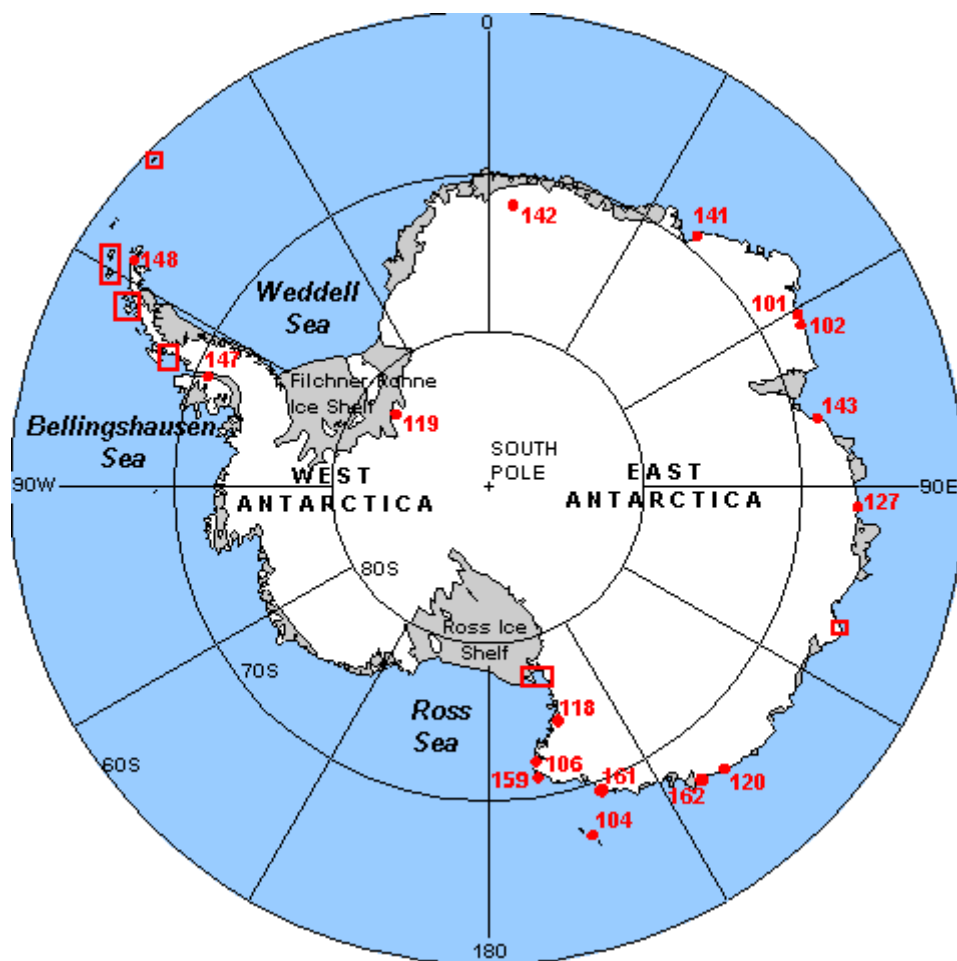


Figure 9.9: Antarctic Specially Protected Areas (Source: CEP, *List of Antarctic Protected Areas*, <http://www.cep.aq/apaspa/index.html> at 29 June 2005)

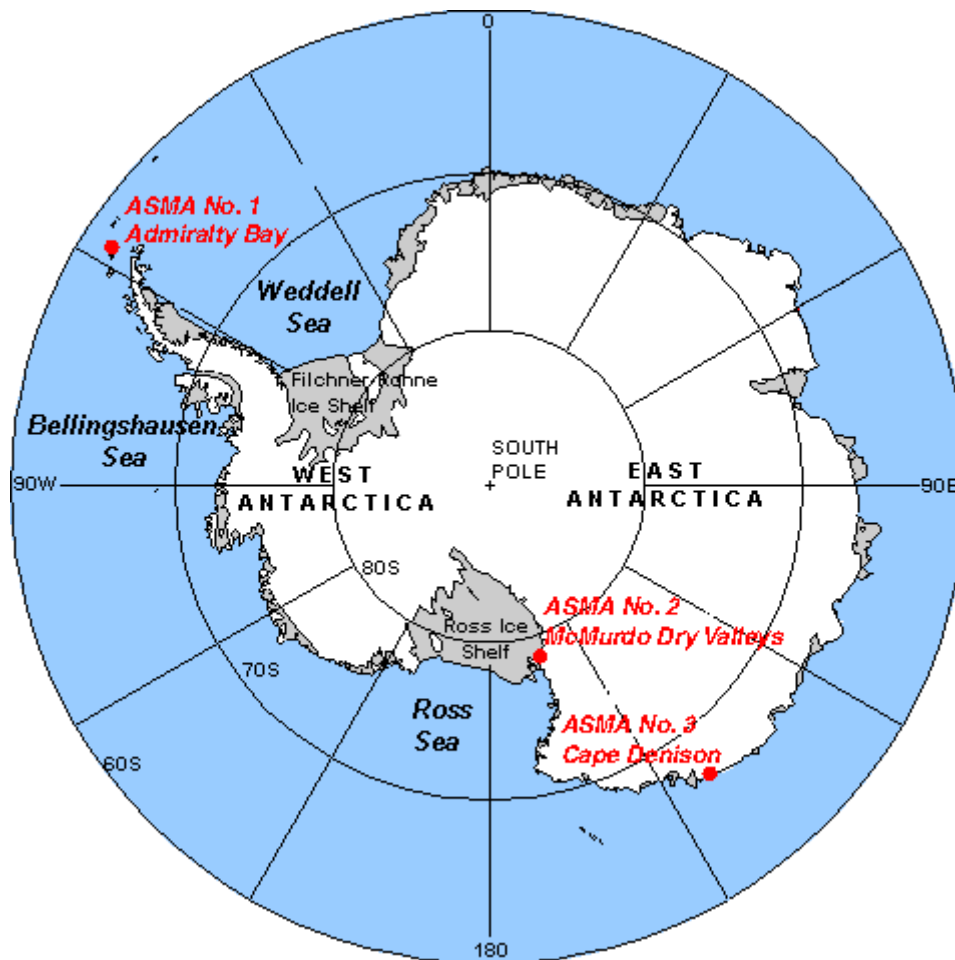


Figure 9.10: Antarctic Specially Managed Areas (Source: CEP, *List of Antarctic Protected Areas and List of Historic Sites and Monuments*, <http://www.cep.aq/apasma/index.html> at 29 June 2005)

While the highly regulated system of ASPAs and ASMAs provides an example of multilateral collaboration in marine environmental protection which is well adapted to coastal areas, it may have to be managed differently in high seas areas where long established resource exploitation and maritime transport interests will need to be balanced with environmental protection concerns. As there are currently no ASPAs in the high seas areas of the Antarctic Treaty area the issue of freedom of navigation through such areas for vessels of third party states without the relevant permits has not yet arisen. A key weakness shared by the Antarctic Treaty marine environmental protection regime with the other regional seas arrangements is the inability to enforce its provisions against third party nationals

in maritime areas beyond national jurisdiction. Even between parties, enforcement of the *Madrid Protocol* and its Annexes is principally dependent on national measures.¹⁶⁶⁵ There is a reciprocal system of inspection by Parties' observers of ships and aircraft operating in the Antarctic Treaty area which reports to the ATCM but the only sanction for non compliance is publication of any transgressions by the meetings.¹⁶⁶⁶ Effective implementation of future integrated environmental protection measures in maritime areas beyond national jurisdiction under the *Madrid Protocol*, would require the introduction of more collaborative and innovative enforcement measures similar to those which have been adopted by some of the regional fisheries management organisations.¹⁶⁶⁷

9.4 Conclusions

Extending the scope of regional seas agreements to cover the protection of vulnerable marine species and their habitats in proximate high seas areas would seem to be a natural extrapolation of their environmental protection mandates. Many of the agreements have been instrumental in the more effective implementation of international environmental law principles in waters within national jurisdiction.¹⁶⁶⁸ The geographical scope of some agreements already extends to maritime areas beyond national jurisdiction and in some instances there are strategies and programmes in place to protect species and marine biodiversity beyond national jurisdiction. These activities reveal the coalescence of political will which is beginning to develop in some regions to provide integrated protection to the marine environment beyond national jurisdiction. The multiple

¹⁶⁶⁵ *Madrid Protocol*, Art. 13(1).

¹⁶⁶⁶ Ibid, Annex V, art. 14; Redgwell, above n.1636, 125 notes the weak nature of the inspection system under the *Madrid Protocol* which parallels the inspection system under the *Antarctic Treaty* and *CCAMLR*.

vertical and horizontal linkages which already exist between the regional seas marine environmental programmes and global and regional organisations with regulatory competence in areas beyond national jurisdiction would also support such an extension of the regional seas scope to proximate areas of beyond national jurisdiction. Missing however is an overarching agreement which provides a template for best practice in integrated marine environmental protection beyond national jurisdiction and legitimises collective action to protect the marine environment beyond national jurisdiction. Such an instrument would assist in validating and extending the limited practice in providing this protection at the regional level. An agreement which is consistent with the global parameters of the *LOSC* and the *CBD* would provide an imprimatur for the tentative regional practice which is developing for marine environmental protection beyond national jurisdiction. A global instrument which amplifies the general provisions of the *LOSC and CBD* on protection and preservation of the marine environment and marine biodiversity could also secure more widespread adherence for regional protection measures introduced beyond national jurisdiction. The attainment of this goal will require further coalescence of political will and the development of a best practice model for multilateral collaboration in integrated environmental protection beyond national jurisdiction. The collection of regional marine environmental protection agreements reviewed in this chapter provides substantial guidance for developing such a model and also provides some established regional infrastructure for implementing its provisions.

¹⁶⁶⁷ See discussion in Chapter 5 of RFMO enforcement measures

¹⁶⁶⁸ Birnie & Boyle, above n.1485, 359.

Chapter 10 The Future Development of Legal and Institutional Frameworks to Protect the Marine Environment Beyond National Jurisdiction

10.1 Introduction

The unique qualities of the open ocean and the sea bed beyond national jurisdiction have only become apparent in recent decades as advances in technology support more deep sea research probes. Past ignorance of the special characteristics of the deep sea and its full resource potential has contributed to a situation of environmental neglect which is only now being addressed in global and regional fora.¹⁶⁶⁹ A cohesive international law framework is an essential prerequisite to addressing the adverse impacts of intensifying human activities in maritime areas beyond national jurisdiction. The groundwork for such a framework was laid in the 1982 *United Nations Convention on the Law of the Sea* (LOSC)¹⁶⁷⁰ which provides a general obligation to protect the whole marine environment. The nature of this obligation was further developed in the Oceans Chapter of *Agenda 21*¹⁶⁷¹ and the 1992 *Convention on Biological Diversity* (CBD)¹⁶⁷² which introduced the unifying concept of biodiversity and the obligation to protect marine biodiversity and its component ecosystems. The initial priority of these instruments was the protection of the marine environment within national jurisdiction. Protection for the marine environment beyond national jurisdiction was largely aspirational and devoid of specific objectives.

¹⁶⁶⁹ IUCN, *Towards a Strategy for High Seas Marine Protected Areas*, Proceedings of the IUCN, WCPA and WWF Experts Workshop on High Seas Marine Protected Areas, Malaga, Spain, 15-17 January 2003, 5.

¹⁶⁷⁰ 1982 *United Nations Convention on the Law of the Sea*, 1833 UNTS 3 (LOSC).

¹⁶⁷¹ United Nations Conference on Environment and Development, UN Doc A/CONF 151/26 (1992) (*Agenda 21*).

¹⁶⁷² 1992 *Convention on Biological Diversity*, (1992)31 ILM 822 (CBD).

More than a decade after UNCED and its seminal instruments, States are beginning to turn their attention to the further legal modalities needed for protection of the marine environment beyond national jurisdiction. Ad hoc state practice on environmental protection is now occurring in global and regional organisations with sectoral responsibility for activities in maritime areas beyond national jurisdiction. Parallel developments are taking place in some regional marine environmental protection organisations to assess the need for integrated environmental protection in maritime areas beyond national jurisdiction that are within their jurisdictional scope. These two strands of activity have a critical role to play in the protection of the marine environment beyond national jurisdiction. Both strands of state practice would benefit from a global implementing agreement which legitimises collective action to protect the marine environment beyond national jurisdiction and subsidiary agreements at the regional level to achieve that objective. To provide optimum levels of environmental protection for the marine environment beyond national jurisdiction, a global mechanism with legal and institutional elements could be developed to coordinate the parallel strands of sectoral and integrated marine environmental protection activity considered in this thesis. Based on the analysis conducted in earlier chapters, this chapter will consider a model for strengthening and integrating the current international law framework for protection of the marine environment beyond national jurisdiction.

10.2 Modelling an Integrated Regime to Protect the Marine Environment Beyond National Jurisdiction

The current international law framework for protecting the marine environment beyond national jurisdiction is an inchoate jigsaw puzzle with many pieces still to

be added before the pattern is complete. Responsibility for protection of the marine environment beyond national jurisdiction is dispersed among a variety of global and regional organisations with no global oversight mechanism in place. The only aspect of marine environmental protection regulation which covers the entire maritime area beyond national jurisdiction is the collection of global instruments dealing with vessel source pollution. The further development of a regime to provide integrated protection for the marine environment beyond national jurisdiction will depend on the creation of a strong legal and institutional framework to guide and coordinate the environmental protection practice of state and non state actors. Consistency with the law of the sea and a methodology which assesses and remediates the adverse impact of human activities on the various components of the marine environment beyond national jurisdiction will be indispensable elements in such a regime. An institutional focal point designed to provide best practice guidance and global endorsement for regional marine environmental protection measures will also be vital. This section will examine the potential legal and institutional elements of a model regime to provide integrated environmental protection to maritime areas beyond national jurisdiction. The content of a model implementing agreement based on Articles 4(b) and 5 of the *CBD* will be discussed and a draft agreement included in Appendix 1. The global and regional cooperative mechanisms which evolve from the model will also be discussed. Finally some of the legal and political obstacles to be surmounted in establishing and implementing such a model regime will be addressed.

10.2.1 *The International Law Basis*

As discussed in Chapter 8, Article 192 of the *LOSC* contains a general obligation to protect and preserve the whole marine environment but does not specify a comprehensive methodology for achieving that objective. The main emphasis of Part XII of the *LOSC* is on control of marine pollution although it does recognise the need to protect and preserve rare and fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life in an article which relates to control measures for marine pollution.¹⁶⁷³ The *LOSC* also provides for a general duty of States to protect and preserve the marine environment under Article 192 and to cooperate on a global and regional basis to formulate and elaborate international rules, standards and recommended practices and procedures for the protection of the marine environment under Article 197.¹⁶⁷⁴ Although Articles 192 and 197 of the *LOSC* could form the basis for an implementing agreement to protect the marine environment beyond national jurisdiction, the *CBD* provides a more appropriate basis for such an agreement as it introduces the unifying concept of biodiversity which involves protecting and conserving the variability among living organisms from all sources within the marine and terrestrial environment.¹⁶⁷⁵ The *CBD* is also based on and reaffirms some key international environmental law principles enunciated in the *Rio Declaration*¹⁶⁷⁶ which are not recognised in the *LOSC*. The principles of intergenerational equity, the sustainable use of the components of biodiversity, the precautionary principle as it relates to biodiversity and the recognition that the

¹⁶⁷³ *LOSC*, Art. 194(5).

¹⁶⁷⁴ *Ibid*, Art. 197.

¹⁶⁷⁵ *CBD*, Art. 2.

¹⁶⁷⁶ UN Doc A/CONF.151/PC/WG.III/L.33/Rev.1(*Rio Declaration*)

conservation of biological diversity is a common concern of humankind are all reflected in the provisions of the *CBD*.

The *CBD* specifically mentions, in Article 5, the duty of Contracting Parties to cooperate in respect of areas beyond national jurisdiction for the conservation and sustainable use of biological diversity. Part XII of the *LOSC* *does not specifically address the protection of the marine environment beyond national jurisdiction*.

Under Article 4 (a), the jurisdictional scope of the *CBD* only extends to components of biodiversity within national jurisdiction, which in the case of marine biodiversity refers to such components within the territorial seas, exclusive economic zones (EEZs) and continental shelves of coastal states. Under Article 4(b), however, the jurisdictional scope of the *CBD* does extend to processes and activities carried out under the jurisdiction or control of Contracting Parties beyond the limits of national jurisdiction. Article 4 of the *CBD* provides a limited jurisdictional basis for the Contracting Parties to negotiate an implementing agreement designed to minimise the adverse impacts of human processes and activities on components of biodiversity beyond national jurisdiction. Using Articles 4(b) and 5 as a jurisdictional basis, the Contracting Parties of the *CBD* could agree amongst themselves to adopt measures which minimise the adverse impacts of processes and activities under their control on the components of biodiversity beyond national jurisdiction.

A proposal to negotiate such an implementing agreement to the *CBD* is a potential outcome of the deliberations of the ad hoc open-ended informal working group established by the UN General Assembly to study issues relating to the conservation and sustainable use of marine biodiversity in areas beyond national

jurisdiction.¹⁶⁷⁷ The Working Group could propose a draft UN General Assembly Resolution which expresses the political will of all UN member states to protect and preserve marine biodiversity beyond national jurisdiction and recommends that the Contracting Parties of the *CBD* convene a diplomatic conference to negotiate an agreement implementing Articles 4(b) and 5 of the *CBD*. Such a resolution would give greater political impetus and legitimacy to the implementing agreement proposal and may even attract the support of non parties to the *CBD* for the negotiations.. In the longer term, the attainment of fully effective protection for the components of biodiversity beyond national jurisdiction may entail altering the status of the marine biodiversity composite beyond national jurisdiction to a “common heritage of mankind” character and vesting of jurisdiction and control over the composite in an international authority with a range of competencies in the area beyond national jurisdiction.¹⁶⁷⁸ This would involve major revisions to the *LOSC* and the *CBD* and political coalescence around altering the common property status of marine living resources beyond national jurisdiction. An implementing agreement based on Articles 4(b) and 5 of the *CBD*, underpinned by a network of subsidiary regional agreements, with the more limited objective of regional compacts of states taking collective measures to conserve marine biodiversity beyond national jurisdiction in proximate marine areas beyond national jurisdiction and which leaves aside questions of ownership in the interim, offers the possibility of protection measures for these components

¹⁶⁷⁷ See above n. 609

¹⁶⁷⁸ See Chapter 4, Section 4.6; Garry R. Russ & Dirk C. Zeller, ‘From Mare Liberum to Mare Reservarum’ (2003) 27(1) *Marine Policy*, 75, 78, advocate a change in attitudes and behaviour towards the oceans away from “free and open” towards “common heritage of mankind” and a multiple use zoning approach on a global scale giving specific responsibility and international accountability for resource management to individual entities, International Groupings or Global organisations. They propose that the first stage in achieving such zoning would be a series of international UNCLOS style conferences to discuss the steps toward some degree of global *Mare Reservarum*.

of biodiversity in the shorter term. These measures would only bind Contracting Parties own nationals and vessels but may in time come to attract the support of third states. Many of the potential conservation measures which could be introduced, such as marine protected areas and the prohibition of fisheries practices with adverse impacts on the marine ecosystems, could still accommodate the freedoms of the high seas codified in the *LOSC* such as the freedom of navigation, the freedom to lay submarine cables and pipelines, the freedom of marine scientific research and a qualified freedom of fishing subject to the regional fisheries management measures discussed in Chapter 5. Any conservation measures introduced would need to take into account existing international agreements which affect sectoral activities in maritime areas beyond national jurisdiction such as 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 (UN Fish Stocks Agreement)*¹⁶⁷⁹, the *International Convention for the Prevention of Pollution from Ships* as amended by its 1978 Protocol (*MARPOL 73/78*)¹⁶⁸⁰, the *Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (London Convention)*¹⁶⁸¹ and its 1996 Protocol¹⁶⁸² and the *Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the*

¹⁶⁷⁹ 1995 *Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982, Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*, 2167 UNTS 3 (*UN Fish Stocks Agreement*).

¹⁶⁸⁰ 1973 *International Convention for the Prevention of Pollution from Ships* (as amended by the 1978 Protocol), 1340 UNTS 61 (*MARPOL 73/78*).

¹⁶⁸¹ 1972 *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter*, 1046 UNTS 120 (*London Convention*).

¹⁶⁸² 1996 Protocol, (1997) 36 ILM 1 (*London Protocol*).

*Sea (Part XI Implementing Agreement)*¹⁶⁸³ and the regional compacts of states implementing biodiversity conservation measures would need to collaborate with and work through existing global and regional organizations with jurisdictional competence in maritime areas beyond national jurisdiction. The establishment of regional compacts of states to perform a biodiversity conservation role in maritime areas beyond national jurisdiction may attract the criticism that it is just another example of proliferation of international organizations, however this function could be added to the responsibilities of the regional seas programmes established by UNEP which were discussed in Chapter 9.

Many of the current provisions of the *CBD* provide a template for the development of an implementing agreement to protect marine biodiversity beyond national jurisdiction. Article 7 provides a methodology to identify components of biodiversity important for conservation and sustainable use and Articles 8 and 9 provide measures for their *in situ* and *ex situ* conservation. For activities within national jurisdiction, Article 14 of the *CBD* introduces the requirement for environmental impact assessment with a view to minimising the adverse effects of such activities on the marine environment. These provisions of the *CBD*, if interpreted and implemented consistently with the *LOSC*, provide a suitable starting point to further develop the international law framework for protection of the marine environment beyond national jurisdiction.¹⁶⁸⁴ Under Article 22(2) of the *CBD*, Contracting Parties are already obligated to implement the Convention consistently with the rights and obligations of States under the law of the sea. An

¹⁶⁸³ 1994 *Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982*, (1994) 33 ILM 1309 (*Part XI Implementing Agreement*).

implementing agreement based on the duty to cooperate in the conservation of biodiversity beyond national jurisdiction and drawing on the methodology for biodiversity conservation contained in the *CBD* would provide an additional dimension and incremental improvements to the framework for protection and preservation of the marine environment sketched in Part XII of the *LOSC*.

10.2.2 The Objectives, Jurisdictional Scope and Mechanisms for International Cooperation

The objectives of the proposed implementing agreement (Article 1, Appendix 1) would be confined to the long term conservation of biological diversity in maritime areas beyond national jurisdiction and the promotion of its sustainable use. The primary function of the regional organisations charged with biodiversity conservation in proximate maritime areas beyond national jurisdiction would be to provide a source of integrated advice on biodiversity conservation measures for their particular areas of responsibility. This would entail these organizations identifying components of biodiversity in the relevant maritime areas beyond national jurisdiction and the human activities likely to have significant adverse effects on those biodiversity components. On the basis of this data and monitoring of the adverse effects of such activities, the regional organisations would make recommendations on biodiversity conservation measures to be adopted in particular areas. The process for implementing these conservation measures is considered in more detail in the next section.

¹⁶⁸⁴ See Chapter 8, Section 8.2.3.3 for a more detailed discussion of these articles of the *CBD* as the basis for an implementing agreement to protect marine biodiversity beyond national jurisdiction.

The second limb of the objectives in Article 1 of the model implementing agreement in Appendix 1 recognises that the function of the agreement is also to promote the sustainable use of biodiversity through the effective implementation of the *CBD*'s provisions. Other agreements including the *LOSC*, the *UN Fish Stocks Agreement*, regional fisheries conventions and the *International Convention for the Regulation of Whaling (ICRW)*¹⁶⁸⁵ already govern the sustainable use, access and distribution of many of the components of marine biodiversity in these areas. The essential function of a system of regional biodiversity conservation organisations for maritime areas beyond national jurisdiction is to provide a source of advice on the holistic condition of particular marine environments and to work in conjunction with global and regional organizations with responsibility for sectoral activities beyond national jurisdiction rather than to supplant or override their activities.

The jurisdictional scope of the implementing agreement would relate specifically to processes and activities carried out under the jurisdiction or control of Contracting Parties in maritime areas beyond the limits of national jurisdiction and their impact on the marine biodiversity of these areas (Article 3, Appendix 1). The specific article underpinning the jurisdictional scope of the agreement is Article 4(b) of the *CBD* which recognises that Contracting Parties have existing jurisdiction and control over many processes and activities beyond national jurisdiction through the principle of flag state jurisdiction, registration of corporate entities nationally, international law principles relating to nationality and the national affiliation and funding of research institutions. The ambit of the agreement would therefore extend to regulating the activities of flag vessels of

¹⁶⁸⁵ 1946 *International Convention for the Regulation of Whaling*, 161 UNTS 72 (*ICRW*).

Contracting Parties carried out in these areas, nationals on board these flag vessels and flag vessels of other states where national legislation provides for a nationality jurisdiction link, companies registered in Contracting Parties and research institutions funded and controlled by Contracting Parties through the mechanism of national legislation or regulations implementing the agreement. The system of biodiversity conservation measures prescribed under the regional subsidiary agreements would rely on the Contracting States passing national implementing legislation and introducing national sanctions for non compliance. This jurisdictional basis for controlling the activities of nationals, companies, flag vessels and institutions of Contracting Parties to the subsidiary regional agreements has obvious limitations. Nationals, flag vessels, companies and institutions of third states operating in the relevant maritime areas beyond national jurisdiction would not be bound by the biodiversity conservation measures introduced by the regional seas organisations unless they were bound through other sectoral agreements applicable to that area such as regional fisheries agreements. Using the model followed by some regional fisheries management organisations, however, the regional seas organizations may invite third states to be cooperative parties to their subsidiary agreements on biodiversity conservation. This could result in third states passing legislation on biodiversity conservation which applies to their nations, flag vessels, companies and research institutions operating in the relevant maritime areas beyond national jurisdiction.

In a similar manner to the *UN Fish Stocks Agreement*,¹⁶⁸⁶ the implementing agreement would be carried out at the regional level with regional seas organizations responsible for recommending biodiversity conservation measures

for the marine environment of particular oceanic regions beyond national jurisdiction which are proximate to their existing areas of responsibility. The regional seas organizations would be the principal agents for developing strategies, plans and programmes for the conservation of biological diversity in maritime areas beyond national jurisdiction or adapting existing strategies plans and programmes for this purpose. The existing network of regional seas organizations would provide a strong foundation for the development of strategies, plans and programmes which are compatible with the objectives of the implementing agreement and similar programmes that have already been developed for waters within national jurisdiction.¹⁶⁸⁷ Where the geographic scope of existing regional seas conventions does not extend to areas beyond national jurisdiction, ratification of the implementing agreement may require amendment of the regional convention to extend its scope. In oceanic regions where there is no regional marine environmental protection agreement, the implementing agreement would encourage the relevant Contracting Parties to cooperate in establishing such an arrangement which would include the proximate maritime areas beyond national jurisdiction within its geographic scope (Article 6(3), Appendix 1) . The conclusion of the proposed implementing agreement may also provide further impetus for some regional seas organizations to conclude binding regional marine environmental protection agreements where their current instruments are in soft law form.

In developing strategies, plans and programmes for conserving biodiversity of maritime areas beyond national jurisdiction, regional seas organizations would be

¹⁶⁸⁶ See *UN Fish Stocks Agreement*, Art. 8.

required to consult with other global and regional organisations with regulatory competence in the relevant maritime areas beyond national jurisdiction. These bodies would include the relevant regional fisheries management organisations (RFMOs), the International Maritime Organization (IMO), the International Seabed Authority (ISA) and the International Whaling Commission (IWC) where activities regulated by these organisations occur in the area of responsibility covered by the regional seas arrangement. This consultation process would be incorporated as a mandatory provision in the implementing agreement (Article 10, Appendix 1) and regional seas arrangements would be encouraged to institutionalise such consultation in their own agreements by including provisions such as those contained in Annex V to the OSPAR Convention¹⁶⁸⁸ on consultation with RFMOs and IMO. The implementing agreement would also include provisions for consultation with non parties to the agreement seeking their cooperation in conducting activities in the relevant oceanic region beyond national jurisdiction in accordance with the agreement (Article 11, Appendix 1).¹⁶⁸⁹

The implementing agreement would include a mechanism for global endorsement of environmental protection measures developed under a regional seas biodiversity programme. Once particular measures had been developed under such a programme they would be submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of the *CBD* which would then report to the Conference of the Parties (COP) of the *CBD* with a recommendation as to whether the particular biodiversity protection measure should be endorsed at

¹⁶⁸⁷ See discussion on existing environmental protection programmes of regional seas organizations in Chapter 9.

¹⁶⁸⁸ 1992 *Convention for the Protection of the Marine Environment of the North East Atlantic*, (1993) 32 ILM 1069 (*OSPAR Convention*), Annex V Art. 4.

¹⁶⁸⁹ *UN Fish Stocks Agreement*, Art. 17(4) provides a precedent for this type of article.

the global level (Article 9(1) and (2), Appendix 1). If endorsed, Contracting Parties to the Implementing Agreement would be bound by the measures. This system of global endorsement for biodiversity protection measures is designed to secure a broader coalition of support for such measures beyond national jurisdiction depending on the level of state participation in the proposed implementing agreement.¹⁶⁹⁰ To maximise the effectiveness of particular conservation measures the provisions of the implementing agreement could specify that a two thirds majority of Contracting Parties of the COP of the *CBD* be required for adoption rather than requiring consensus among all members before a measure is endorsed (Article 9(2), Appendix 1). A decision would become binding on all those members who voted for it 60 days after its adoption by the Conference of Parties and for all those who didn't vote for it from the date of their notification that they agree to be bound by it or after a further period of 60 days whichever is the earlier (Article 9(3), Appendix 1)¹⁶⁹¹ The subsidiary agreements at regional level could also specify that agreement by only a two thirds majority of Contracting Parties to the proposal is required for a biodiversity conservation measure to be submitted to the COP of the *CBD* for endorsement. These decisionmaking provisions would avoid the situation of many regional fisheries management organizations, discussed in Chapter 5, whose agreements allow member states to opt out of conservation measures decided by a majority of members

¹⁶⁹⁰ If the model implementing agreement attracted a similar level of participation to the *CBD* itself this would include the majority of states in the international community as the *CBD* currently has 188 States Parties (United Nations, *Status of Multilateral Treaties Deposited with the Secretary General*, <http://untreaty.un.org/ENGLISH/bible/englishinternetbible/partI/ChapterXXVII/treaty35.asp> at 12 October 2005). As with the *LOSC* a notable exception would be the USA.

¹⁶⁹¹ As discussed in Chapter 5 the requirement for consensus voting on conservation and management measures is a weakness of some of the RFMO agreements.

Figure 10.1 illustrates the proposed cooperation mechanisms for the model implementing agreement including the consultation links between global and regional bodies with regulatory competence in maritime areas beyond national jurisdiction. Four examples of existing connections between regional seas arrangements and multi species RFMOs with regulatory competence in maritime areas beyond national jurisdiction are included in the illustration. The relationships between the independent global and regional organizations shown in Figure 10.1 are consultative only and not intended to create any hierarchical relationship between these organizations.

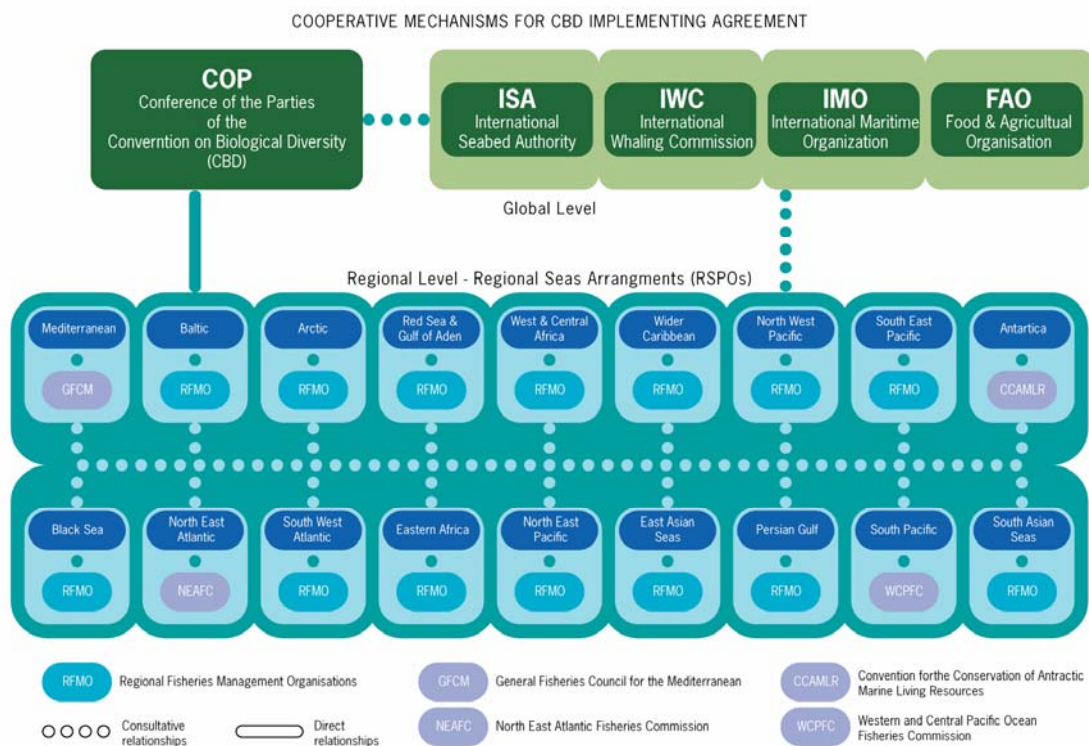


Figure 10.1: Cooperation Mechanisms for Model Implementing Agreement under the Convention on Biological Diversity

10.2.3 Identification, Monitoring and Conservation Measures

Under the proposed implementing agreement and subsidiary regional agreements the regional seas organisations, responsible for the biodiversity of particular oceanic regions beyond national jurisdiction, would be required to identify and monitor the condition of the components of biodiversity important for conservation and sustainable use in their areas (Article 7(1)(a), Appendix 1). They would also be responsible for identifying and monitoring the human activities which already have or are likely to have adverse impacts on these components (Article 7(1)(c), Appendix 1). From this information, a suite of conservation measures for biodiversity beyond national jurisdiction would be developed in conjunction with global and regional organisations with regulatory competence over sectoral activities occurring in these areas (Article 7(1)(f), Article 10, Appendix 1). The process of developing conservation measures would involve a detailed analysis of biodiversity components in particular oceanic regions beyond national jurisdiction including compiling lists of threatened or declining species and threatened habitats which require urgent conservation measures (Article 7(1)(f), Appendix 1). Conservation measures could include the establishment of protected areas or areas beyond national jurisdiction where special measures need to be taken to conserve marine biological diversity (Article 7(1)(h), Appendix 1). This type of conservation measure is analogous to the particularly sensitive sea areas designated under International Maritime Organization guidelines and discussed in Chapter 6, section 6.4. The implementing agreement emphasizes in its definition of “protected area” that the designation of such an area in the ocean beyond national jurisdiction does not confer sovereignty or sovereign rights over that area on any State. Freedom of navigation for all vessels would be preserved

in such protected areas (Article 2, Appendix 1). Other conservation measures envisaged in the implementing agreement include rehabilitating and restoring degraded ecosystems and promoting the recovery of threatened species (Article 7(1)(k), Appendix 1) preventing the introduction of controlling or eradicating those alien species which threaten ecosystems, habitats or species in maritime areas beyond national jurisdiction (Article 7(1)(l), Appendix 1) and promoting environmentally sound and sustainable development in areas adjacent to marine protected areas beyond national jurisdiction (Article 7(1)(j), Appendix 1). The need to preserve compatible conditions for existing uses of maritime areas beyond national jurisdiction is also recognized in the implementing agreement (Article 7(1)(m), Appendix 1).

In developing conservation measures for maritime areas beyond national jurisdiction, the implementing agreement provides for mandatory consultation with existing global and regional organizations with regulatory competence in these areas and a requirement to consider whether such measures would duplicate action which is already being taken by such organizations or would more appropriately be taken under some other international convention or arrangement (Article 10(1), Appendix 1). Consultation with global and regional fisheries organizations on fisheries questions, the International Maritime Organization on questions relating to maritime transport, the International Whaling Commission on questions relating to whaling and the International Seabed Authority on questions of deep seabed mining, is mandatory under Article 10(2), (3), (4) and (5) of the implementing agreement at Appendix 1.

The regional environmental protection organization for the Northeast Atlantic, (OSPAR), discussed in section 9.3.1 of Chapter 9, has taken some early steps in developing a conservation plan for marine biodiversity beyond national jurisdiction in its area of responsibility. The *OSPAR Biological Diversity and Ecosystem Strategy (OSPAR Biodiversity Strategy)*¹⁶⁹² developed under Annex V to the *OSPAR Convention* provides a comprehensive methodology for identifying the components of marine biodiversity in specific oceanic regions and assessing the human activities which may adversely affect these components. The elements of this strategy might be adapted as an annex to the model implementing agreement or as a separate model strategy for marine biodiversity conservation beyond national jurisdiction by the *CBD*. The *OSPAR Biodiversity Strategy* is based on dividing the region into subregions which include waters both within and beyond national jurisdiction. Under the Strategy, work has already commenced on assessing the species and habitats that need to be protected both within and beyond national jurisdiction and on assessing the human activities that are likely to have an actual or potential adverse impact on those species and habitats. The information gathered will form the basis for developing conservation measures such as protection programmes for threatened and declining species and habitats and marine protected areas. This work is also being guided by the development of ecological quality objectives for waters within and beyond national jurisdiction. Consultation with regional fisheries management authorities on the effects of fishing activity on the biodiversity of the region has been an integral element in this process. Many of the recommendations made by OSPAR to regional fisheries authorities have related directly to the conservation of species and habitats beyond

¹⁶⁹² See discussion on the *OSPAR Biological Diversity and Ecosystems Strategy* in Chapter 9, Section 9.3.1.

national jurisdiction. OSPAR has recommended that action be taken by regional fisheries authorities to address:

- the particular vulnerability of deep seas species;
- the risks posed by fishing activities to ecosystems and habitats such as seamounts, hydrothermal vents, sponge associations and deep water coral communities;
- the adverse environmental impacts of certain fishing gear on non target organisms and habitats; and
- the benefits for both fisheries and the marine environment of the temporary or permanent closure of particular high seas areas to fishing.¹⁶⁹³

The close working relationship between OSPAR and NEAFC is at the root of a NEAFC decision in November 2004 to close 5 seamount areas and a section of the Reykjanes Ridge on the high seas for 3 years to bottom trawling and static fishing gear.¹⁶⁹⁴ NEAFC also agreed to reduce fishing pressures on a range of vulnerable fish species in deep water habitats within its regulatory area by 30%. Institutionalising these working linkages between regional sea programmes and organisations managing sectoral activities beyond national jurisdiction is a critical factor in achieving more effective protection of marine biodiversity beyond national jurisdiction. As discussed above, the implementing agreement would provide for cooperative mechanisms between the regional seas organisations and

¹⁶⁹³ See Chapter 9, Section 9.3.1, n.1632.

global and regional organisations regulating sectoral activities beyond national jurisdiction to develop and implement biodiversity conservation measures in these areas.

10.2.4 Compliance and Enforcement Mechanisms

Engaging the cooperation of global and regional organisations with regulatory competence over sectoral activities in maritime areas beyond national jurisdiction will be essential in enforcing biodiversity protection measures. Proposed measures would normally involve some constraints on high intensity activities such as fisheries or maritime transport to protect vulnerable species or habitats beyond national jurisdiction. The NEAFC decision imposing temporary restrictions on fishing effort or mode of fishing in a particular high seas areas containing seamounts is a typical example of a biodiversity protection measure which is needed in the short term. These types of restrictions would be enforced through the existing system within RFMOs of flag state jurisdiction, cooperative enforcement mechanisms between member states and non flag state measures such as port state controls on transshipment and landing of illegal catches.¹⁶⁹⁵

Multilaterally agreed and non discriminatory trade related measures, consistent with World Trade Organization rules, may also be employed to restrict trade in fish caught in contravention of the biodiversity protection measures. A comparable example in the maritime transport sphere is the existing system of flag

¹⁶⁹⁴ See Chapter 9, Section 9.3.1 and Chapter 5, ns.739 & 740.

¹⁶⁹⁵ See Chapter 5 for discussion of RFMO compliance and enforcement measures.

state jurisdiction and port state control memoranda of understanding to enforce vessel discharge restrictions beyond national jurisdiction.¹⁶⁹⁶

Both flag state and non flag state enforcement methods are incorporated in the implementing agreement. Article 13(1) of the implementing agreement requires Contracting Parties to establish national regulations prohibiting the contravention of conservation measures for biological diversity in maritime areas beyond national jurisdiction adopted by regional seas arrangements and endorsed by the Conference of the Parties. Contracting Parties are also required to investigate immediately any alleged violation of such conservation measures and if sufficient evidence is available to refer the case to their authorities with a view to instituting proceedings and where appropriate to detain the vessel concerned (Article 13 (1)(b) and (c), Appendix 1). The global endorsement function performed by the COP of the *CBD* may assist in increasing extra regional compliance with high seas biodiversity protection measures. Where a high seas biodiversity protection measure has been approved by the COP of the *CBD* under the implementing agreement, member states would be responsible for ensuring that their nationals and flag vessels comply with that measure. If the implementing agreement attracted a high level of participation among states, the obligation to comply with a high seas biodiversity protection measure related to fisheries activities in a particular region would then extend to a wider group of states..

Initially, enforcement of high seas biodiversity protection measures under the implementing agreement would depend to a large extent on the efficacy of

¹⁶⁹⁶ See the discussion of regional arrangements for port state control for implementation of the *International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)* in Chapter

existing regulatory regimes for sectoral activities in maritime areas beyond national jurisdiction. State practice in the enforcement of regional fisheries management measures and vessel discharge restrictions has highlighted the deficiencies inherent in relying on flag state jurisdiction where individual flag states are not committed to enforcing compliance with fisheries and vessel discharge restrictions which occur beyond national jurisdiction. The trend towards developing non flag state enforcement alternatives in the marine living resources and maritime transport sectors was discussed in Chapters 5 and 6. The implementing agreement reflects those developments, providing for a reciprocal system of boarding and inspection between Contracting Parties of each others vessels in any high seas area covered by a regional seas arrangement for alleged violations of biodiversity conservation measures (Article 15(1), Appendix 1). This boarding and inspection regime would extend to the flag vessels of all Contracting Parties in the implementing agreement whether or not such Parties are participants in the particular regional seas arrangement covering that area. Under the implementing agreement boarding and inspection can be carried out by inspectors duly authorized to board and inspect fishing vessels in the same high seas area by a regional fisheries management organization (Article 15(1), Appendix 1). This provision would allow regional seas arrangements to build on existing cooperative enforcement schemes such as those established by the RFMOs under Article 20 of the *UN Fish Stocks Agreement*, and to strengthen their links with RFMOs.

The implementing agreement also recognizes an obligation on the part of port states to take measures in accordance with international law, to promote the

effectiveness of conservation measures for biological diversity in maritime areas beyond national jurisdiction (Article 16(1), Appendix 1). A port State may inspect documents, gear, equipment and catch or take of species or microorganisms other than fish on board flag vessels when such vessels are voluntarily in its ports or at its offshore terminals (Article 16(2), Appendix 1). These provisions could be supplemented at the regional level by port state control memoranda of understanding which provide for the exchange of information between ports in the same region on vessels suspected of having violated biodiversity conservation measures on the high seas. Where evidence is sufficient, suspect vessels could be detained in any of the cooperating ports and subsequently prosecuted by the flag state.

In addition to the hard enforcement measures contained in the implementing agreement, regional seas organizations could also establish stronger links with non state actors such as the commercial bioprospecting industry and the international marine scientific community to advocate the compliance of their members with high seas biodiversity protection measures. As human activities intensify in maritime areas beyond national jurisdiction, regional seas arrangements may also act as arbiters between sectoral users to ensure that adverse impacts to high seas biodiversity are minimised.¹⁶⁹⁷ Initially the real value of the regional seas organizations as environmental protectors for particular oceanic regions beyond national jurisdiction will be in providing an oversight and advisory function for global and regional organisations with established regulatory responsibilities in these areas.

10.2.5 Surmounting Legal and Political Obstacles to Integrated Protection of the Marine Environment Beyond National Jurisdiction

Discussion of the legal and political issues surrounding integrated protection of the marine environment beyond national jurisdiction in UNICPOLOS and other fora has generated a range of objections to further development of the international law regime governing such protection.¹⁶⁹⁷ Advocates for integrated protection of the marine environment beyond national jurisdiction have frequently approached the issue from the perspective of establishing marine protected areas on the high seas.¹⁶⁹⁸ This approach has engendered opposition on the basis that it would encroach on the principle of freedom of navigation on the high seas enshrined in Part VII of the *LOSC* and that it would constitute an assertion of sovereignty or sovereign rights over high seas areas by particular groups of states. These objections to a specific marine environmental protection measure have tended to obscure the broader objective of protection and preservation of the marine environment beyond national jurisdiction which is recognized in general terms in Articles 192 and 197 of the *LOSC* as a duty of States Parties. The coexistence of Parts VII and XII of the *LOSC* presupposes that measures to

¹⁶⁹⁷ See Chapter 8, Section 8.3.3 for a discussion of how deep sea scientists are regulating amongst themselves the frequency of their research probes on deep sea sites to reduce cumulative adverse environmental impacts on these areas.

¹⁶⁹⁸ *Report on the Work of the United Nations Open-ended Informal Consultative Process on Oceans, Co-Chairpersons Summary of Discussions*, (2005) (http://www.un.org/Depts/los/consultative_process/documents6_report.pdf at 10 October 2005, para. 44: “Some delegations pointed out that since measures such as MPAs may restrict the freedoms of the high seas their implementation should be subject to the consent of the States concerned”; *Report of the First Meeting of the Ad Hoc Open-ended Working Group on Protected Areas*, UN Doc. UNEP/CBD/WG-PA/1/6 (20 June 2005), para. 76: “The representative of Norway stated that there was no provision in the current international law framework that would allow for particularly sensitive sea areas in the high seas.”

¹⁶⁹⁹ This was the approach taken at two experts group meetings held at the International Academy for Nature Conservation, Isle of Vilm, Germany in 2001 (Legal and Scientific Experts Workshop on Managing Risks to Biodiversity and the Environment of the High Seas, 27 February-4 March 2001) and at Malaga, Spain in January 2003 (IUCN, WCPA and WWF Experts Workshop on High Seas Marine Protected Areas, 15-17 January 2003).

protect the marine environment beyond national jurisdiction must work in conjunction with other international law principles governing the high seas. As discussed in the previous section and reflected in Appendix 1, a model implementing agreement could be made expressly subject to the provisions of the *LOSC* preserving the freedom of navigation for all vessels on the high seas. Surface navigation conducted with due regard to vessel source discharge restrictions has not been identified as a threat to the marine environment beyond national jurisdiction.¹⁷⁰⁰ Under a regime for integrated environmental protection of the high seas such navigation could continue unhindered.

The spectre of further ocean enclosure and assertion of sovereignty by groups of states over maritime areas beyond national jurisdiction may also be dispelled by considering regional states as collective environmental protection bodies rather than owners of areas beyond national jurisdiction. A scheme for integrated environmental protection of the marine environment which extends to maritime areas beyond national jurisdiction could operate without violating the traditional divisions of ocean space contained in the *LOSC*.¹⁷⁰¹ There are already examples of ocean zoning for particular purposes which coexist with the *LOSC* scheme of offshore maritime zones that do not involve the attribution of sovereignty or sovereign rights to states. Ocean areas within and beyond national jurisdiction are zoned for common purposes such as sea and air rescue and naval control of shipping during time of armed conflict. The model implementing agreement

¹⁷⁰⁰ See the discussion of threats to the marine environment beyond national jurisdiction in Chapter 1.

¹⁷⁰¹ Yoshifumi Tanaka, 'Zonal and Integrated Management Approaches to Ocean Governance: Reflections on a Dual Approach in International Law of the Sea' (2004) 19(4) *International Journal of Marine and Coastal Law*, 483, 514: explores a dual approach to ocean governance based on a dialectic legal system in which the traditional zonal and emerging integrated management approaches to the law of the sea interact.

discussed in this chapter and reflected in Appendix 1 would not govern issues such as access and ownership of resources beyond national jurisdiction. Severing these issues from environmental protection avoids the political contention associated with the legal status of high seas resources and the vexed question of whether such resources should be declared the common heritage of mankind. Introducing a system of global endorsement for high seas biodiversity protection measures through an implementing agreement under the *CBD*, would involve the majority of states in the international community in the environmental governance of the ocean beyond national jurisdiction.¹⁷⁰² As discussed in the previous section, regional seas organizations would also be implementing marine environmental protection measures through allied global and regional organisations with existing regulatory competence in high seas areas.

The challenges associated with establishing effective compliance and enforcement mechanisms for marine environmental protection measures beyond national jurisdiction have often been raised by commentators in connection with marine protected areas.¹⁷⁰³ Measures to protect high seas biodiversity will inevitably involve restrictions on a range of previously untrammelled human activities beyond national jurisdiction. Successful implementation of such measures involves many of the same problems that are currently being confronted by RFMOs in the enforcement of conservation and management measures for high seas marine living resources.¹⁷⁰⁴ Diversification of enforcement methods beyond

¹⁷⁰² Ibid, 513 notes the critical importance of bringing members of the international community together to consider questions of ocean governance such as the protection of marine ecosystems.

¹⁷⁰³ Stuart Kaye, 'Implementing High Seas Biodiversity Conservation : Global Geopolitical Considerations' (2004) 28 *Marine Policy*, 221, 226 ; Joanna Mossop, 'Legal Challenges to the Establishment of High Seas Marine Protected Areas' (Unpublished paper presented at the New Horizons in the Law of the Sea Seminar, Wellington, 6 September 2004).

¹⁷⁰⁴ See discussion in Chapter 5, Section 5.2.2; Mossop, above n.1705, 10.

the traditional model of individual flag state jurisdiction appears to offer the most promising results in this context. The pooling of regional resources in cooperative boarding and inspection schemes can assist in monitoring expansive high seas areas and effecting apprehensions of delinquent vessels. Port state exchange of information to facilitate prosecution of delinquent vessels and controls on the movements of recidivist vessels and globally endorsed trade sanctions are additional incentives for compliance in a fully fledged enforcement matrix.

Finally, marshalling the human and financial resources necessary to implement integrated environmental protection measures beyond national jurisdiction will be an ongoing challenge for the international community. Partnering of developing regional seas programmes with more technically advanced regional seas programmes is already occurring¹⁷⁰⁵ and will support the future implementation of high seas biodiversity protection measures. The Global Environment Facility through its international waters project is already contributing to more holistic protection of the marine environment through the regional seas programmes.¹⁷⁰⁶ Reliance on the existing array of enforcement schemes utilised by global and regional organisations regulating sectoral activities beyond national jurisdiction will also reduce the additional costs associated with high seas biodiversity protection. Achievement of biodiversity protection in maritime areas beyond national jurisdiction is a long term objective which will confront significant obstacles including competition for monitoring and surveillance resources which will be devoted initially to marine environmental protection objectives in

¹⁷⁰⁵ See discussion in Chapter 9, section 9.2.4 on the partnering agreement between the Nairobi Convention regional seas arrangement and the Baltic Marine Environmental Protection Commission.

¹⁷⁰⁶ See discussion in Chapter 9, Section 9.2.1 of the Strategic Action Plan for International Waters being implemented by SPREP with funding from the Global Environment Facility.

maritime zones under national jurisdiction. The establishment of an implementing agreement to the *CBD* which recognizes the need for biodiversity protection in maritime areas beyond national jurisdiction and provides a legal and institutional framework to achieve that end is an incremental step towards greater protection for such areas.

10.3 Conclusions

As yet there has been no global instrument which extrapolates the general obligations found in the *LOSC* and the *CBD* to provide a comprehensive governance system for protection of the marine environment beyond national jurisdiction. The current ad hoc system for protection of the marine environment beyond national jurisdiction is clearly inadequate to prevent the adverse impacts of intensifying human activities on the biodiversity of this immense marine domain and its rich repository of resources. One option for enhanced protection of the marine environment beyond national jurisdiction would be an implementing agreement or protocol based on Articles 4(b) and 5 of the *CBD*. Such an instrument would perform a range of functions. For maritime areas beyond national jurisdiction, it would link the obligation to protect the marine environment with the unifying concept of biodiversity protection. Based on the provisions of the *CBD*, it would provide a template for protecting marine biodiversity beyond national jurisdiction through measures similar to those which apply to waters within national jurisdiction. It would also establish mechanisms for consultation and cooperation between the myriad global and regional organisations with sectoral and integrated responsibilities for the protection of the marine environment beyond national jurisdiction. As collective protectors of

particular oceanic regions, Contracting Parties to the implementing agreement and subsidiary regional agreements would collaborate in the development and implementation of biodiversity protection measures for maritime areas beyond national jurisdiction. The COP of the *CBD* would be the focal point of a global endorsement system for biodiversity protection measures engaging the support of the wider international community for measures implemented at the regional level. Global and regional organisations with regulatory competence beyond national jurisdiction would assist in implementing biodiversity protection measures through their existing systems of compliance and enforcement. The development of such an implementing agreement and a network of subsidiary agreements at the regional level is a potential route for developing a coherent global regime for protection of the marine environment beyond national jurisdiction. Enhanced protection for this vast oceanic domain will depend on the development of such a system of legal and institutional governance which directs the conservation efforts of global and regional actors towards common objectives.

Appendix 1

Model Agreement for the Implementation of the Provisions of the Convention on Biological Diversity of 5 June 1992 relating to the Conservation of Biological Diversity in Maritime Areas Beyond National Jurisdiction

THE STATES PARTIES TO THIS AGREEMENT

RECALLING the Convention on Biological Diversity of 5 June 1992 in particular Article 4(b) which provides that the provisions of the Convention on Biological Diversity apply to processes and activities carried out under the jurisdiction and control of Contracting Parties which occur beyond the limits of national jurisdiction and Article 5 which calls on Contracting Parties to cooperate directly or through competent international organizations in respect of areas beyond national jurisdiction for the conservation and sustainable use of biological diversity,

RECALLING the United Nations Convention on the Law of the Sea, in Particular Article 192 which obligates States Parties to protect and preserve the marine environment and Article 197 which calls on States Parties to cooperate on a global basis and as appropriate on a regional basis in formulating and elaborating international rules, standards and recommended practice and procedures for the protection and preservation of the marine environment,

DETERMINED to conserve and sustainably use biological diversity in maritime areas beyond national jurisdiction for the benefit of present and future generations,

REAFFIRMING the intrinsic value of biological diversity and of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components,

REAFFIRMING also the importance of biological diversity for evolution and for maintaining life sustaining systems of the biosphere,

REAFFIRMING that the conservation of biological diversity is a common concern of humankind,

CONCERNED that biological diversity in maritime areas beyond national Jurisdiction is being significantly reduced by certain human activities,

AWARE of the general lack of information and knowledge regarding biological diversity in maritime areas beyond national jurisdiction and of the urgent need to develop scientific, technical and institutional capacities to provide the basic understanding upon which to plan and implement appropriate measures,

NOTING that it is vital to anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at source,

NOTING also that where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat,

EMPHASIZING the importance of, and the need to promote, international, regional and global cooperation among States and intergovernmental organizations and the non-governmental sector for the conservation of biological diversity in maritime areas beyond national jurisdiction and the sustainable use of its components,

ACKNOWLEDGING that substantial investments are required to conserve biological diversity in maritime areas beyond national jurisdiction and that there is the expectation of a broad range of environmental, economic and social benefits from those investments,

DESIRING to strengthen and integrate existing international arrangements for the conservation of biological diversity in maritime areas beyond national jurisdiction and the sustainable use of its components,

CONVINCED that an agreement for the implementation of the relevant provisions of the Convention would best serve these purposes,

AFFIRMING that matters not regulated by the Convention or by this Agreement continue to be governed by the rules and principles of general international law,

HAVE AGREED AS FOLLOWS:

Part I General Provisions

Article 1 Objectives

The objectives of this agreement are to ensure the long term conservation of biodiversity in maritime areas beyond national jurisdiction and to promote its sustainable use through effective implementation of the relevant provisions of the Convention.

Article 2 Use of Terms

For the purposes of this Agreement:

“Convention” means the Convention on Biological Diversity of 5 June 1992;

“Biological diversity” means the variability among marine living organisms including, inter alia, marine ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

“Biological resources” includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.

“Conference of the Parties” means the Conference of the Parties of the Convention.

“Conservation measures” means measures to conserve biodiversity in maritime areas beyond national jurisdiction that are adopted and applied consistent with the relevant rules of international law as reflected in the Convention and this Agreement.

“Ecosystem” means a dynamic complex of plant animal and micro-organism communities and their non-living environment interacting as a functional unit.

“Habitat” means the place or type of site where an organism or population naturally occurs.

“Protected area” means a geographically defined area of the ocean beyond national jurisdiction which is designated by the Conference of the Parties of the Convention and regulated and managed by a regional arrangement to achieve specific conservation objectives. The designation of a protected area in the ocean beyond national jurisdiction under this agreement does not confer sovereignty or sovereign rights over that area on any State. Freedom of navigation on the high seas for all vessels is preserved in protected areas beyond national jurisdiction in accordance with this Agreement and the 1982 United Nations Convention on the Law of the Sea.

“Regional seas arrangement” means a cooperative mechanism established in accordance with the Convention and this Agreement by two or more states for the purpose inter alia of establishing conservation measures for marine biodiversity in a subregion or region of the ocean beyond national jurisdiction.

“Sustainable use” means the use of components of biological diversity in a way and at a rate that does not lead to the long term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

Article 3 Jurisdictional Scope

Subject to the rights of other States, and except as otherwise expressly provided in the Convention and this Agreement, the provisions of this Agreement apply, in relation to each Contracting Party, to processes and activities carried out under its jurisdiction or control in maritime areas beyond the limits of national jurisdiction.

Article 4 Relationship between this Agreement and the Convention

Noting in this Agreement shall prejudice the rights, jurisdiction and duties of States under the Convention. This Agreement shall be interpreted and applied in the context of and in a manner consistent with the Convention.

Article 5 Relationship between this Agreement and other Conventions

1. The provisions of this Agreement shall not affect the rights and obligations of any Contracting Party under any existing international agreement, except where the exercise of those rights and obligations would cause serious damage or a threat to biological diversity in maritime areas beyond national jurisdiction.
2. Contracting Parties shall implement this Agreement consistently with the rights and obligations of States under the law of the sea.

Part II Conservation Measures and Sustainable Use of Biological Diversity in Maritime Areas Beyond National Jurisdiction**Article 6 Duty to Cooperate**

1. In order to conserve and promote the sustainable use of biological diversity in maritime areas beyond national jurisdiction, each Contracting Party shall, as far as possible and as appropriate, cooperate with other Contracting Parties, through regional seas arrangements and other global and regional organizations with regulatory competence in maritime areas beyond national jurisdiction.
2. Where a regional seas arrangement has the competence to establish conservation measures for biological diversity in maritime areas beyond national jurisdiction, Contracting Parties shall give effect to their duty to cooperate by becoming participants in such an arrangement, or by agreeing to apply the conservation measures established by such an arrangement.
3. Where there is no regional seas arrangement with a geographical scope which extends to a particular maritime region beyond national jurisdiction, proximate coastal states and land locked states whose nationals and flag vessels conduct activities in the region shall cooperate to establish a regional seas arrangement for that region or extend the geographical scope of an existing regional seas arrangement to maritime areas beyond national jurisdiction in that region and participate in the work of that arrangement.
4. Contracting Parties shall enter into consultations in good faith and without delay, particularly where there is evidence that components of biodiversity in maritime areas beyond national jurisdiction are under threat of reduction from human activities. Pending agreement on such arrangements, Contracting Parties shall observe the provisions of this Agreement and shall act in good faith and with due regard to the rights interests and duties of other States.

Article 7 Functions of Regional Seas Arrangements

1. In fulfilling their obligation to cooperate through regional seas arrangements Contracting Parties shall:

- (a) Identify components of biological diversity in maritime areas beyond national jurisdiction important for its conservation and sustainable use having regard to the indicative list of categories in Annex I;
- (b) Monitor, through sampling and other techniques, the components of biological diversity identified pursuant to subparagraph (a) above, paying particular attention to those requiring urgent conservation measures and those which offer the greatest potential for sustainable use;
- (c) Identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity and monitor their effects through sampling and other techniques: and
- (d) Maintain and organize, by any mechanism data, derived from identification and monitoring activities pursuant to subparagraphs (a), (b) and (c) above;
- (e) Develop criteria for the selection of species, habitats and ecological processes that need to be protected;
- (f) On the basis of the criteria developed pursuant to subparagraph (e) above, compile lists of threatened or declining species and threatened habitats which require urgent conservation measures;
- (g) Develop where necessary guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve marine biological diversity beyond national jurisdiction;
- (h) Establish a system of protected areas or areas beyond national jurisdiction where special measures need to be taken to conserve marine biological diversity;
- (i) Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings in maritime areas beyond national jurisdiction;
- (j) Promote environmentally sound and sustainable development in areas adjacent to marine protected areas beyond national jurisdiction with a view to furthering protection of these areas;
- (k) Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species in maritime areas beyond national jurisdiction, inter alia, through the development and implementation of plans or other management strategies;

- (l) Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species in maritime areas beyond national jurisdiction;
- (m) Endeavour to provide the conditions needed for compatibility between present uses and the conservation of biological diversity in maritime areas beyond national jurisdiction.

Article 8 Application of the Precautionary Approach

1. In fulfilling their obligations under this Agreement, Contracting Parties shall apply the precautionary approach widely to the conservation of biological diversity in maritime areas beyond national jurisdiction.
2. Contracting Parties shall be more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation measures.

Article 9 Adoption of Conservation Measures by the Conference of the Parties

1. In fulfilling their functions under this Agreement, regional seas arrangements shall adopt conservation measures and programmes and seek endorsement for such programmes and measures from the Conference of the Parties.
2. Following advice from the Subsidiary Body on Scientific, Technical and Technological Advice on conservation measures and programmes proposed for endorsement by regional seas arrangements under this Agreement, the Conference of the Parties shall decide whether to endorse such measures and programmes. Decisions to endorse such measures and programmes shall be adopted by a two thirds majority vote of the Conference of the Parties.
3. A decision shall be binding on the expiry of a period of 60 days after its adoption for those Contracting Parties which voted for it. Such a decision shall become binding on any other Contracting Party if it has notified the secretariat in writing that it is able to accept the decision from the moment of that notification or if there is no notification, after the expiry of a further period of 60 days, whichever is the earlier.

Article 10 Consultation with Global and Regional Organizations with Regulatory Competence in Maritime Areas beyond National Jurisdiction

1. Conservation programmes and measures proposed by a regional seas arrangement and adopted by the Conference of the Parties under this Agreement shall avoid duplicating action which is already prescribed by other international conventions and the subject of appropriate measures agreed by other global and regional organizations. Before a programme or measure is adopted by

the Conference of Parties consideration shall be given to whether action could be taken more appropriately under some other international convention or arrangement.

2. Where a regional seas arrangement considers that action is desirable on a question relating to the management of fisheries in maritime areas beyond national jurisdiction for the purpose of conserving biological diversity it shall draw that question to the attention of the global or regional organization competent for that question. Where action within the competence of the regional seas arrangement is desirable to complement or support action by those organizations, the regional seas arrangement shall endeavour to cooperate with them.

3. Where a regional seas arrangement considers that action is desirable on a question relating to maritime transport in maritime areas beyond national jurisdiction for the purpose of conserving biological diversity, it shall draw that question to the attention of the International Maritime Organization. The Contracting parties who are members of the International Maritime Organization shall endeavour to cooperate within that organization in order to achieve an appropriate response, including in relevant cases that Organization's agreement to regional action, taking into account any guidelines developed by that Organization on the designation of special areas, the identification of particularly sensitive sea areas or other matters.

4. Where a regional seas arrangement considers that action is desirable on a question relating to whaling in maritime areas beyond national jurisdiction for the purpose of conserving biological diversity, it shall draw that question to the attention of the International Whaling Commission. Where action within the competence of the regional seas arrangement is desirable to complement or support action by the International Whaling Commission, the regional seas arrangement shall endeavour to cooperate with the International Whaling Commission.

5. Where a regional seas arrangement considers that action is desirable on a question relating to deep seabed mining in maritime areas beyond national jurisdiction for the purpose of conserving biological diversity, it shall draw that question to the attention of the International Seabed Authority. Where action within the competence of the regional seas arrangement is desirable to complement or support action by the International Seabed Authority, the regional seas arrangement shall endeavour to cooperate with the International Seabed Authority.

Article 11 Non Parties to this Agreement

1. Contracting Parties shall encourage non-parties to this Agreement to become parties thereto and to adopt laws and regulations consistent with its provisions.

Contracting parties shall take measures consistent with this

2. Agreement and international law to deter the activities of vessels flying the flag of non-parties which undermine the effective implementation of this Agreement.

Article 12 Sustainable Use of Components of Biological Diversity in Maritime Areas Beyond National Jurisdiction

Each Contracting Party shall, as far as possible and as appropriate;

- (a) Promote the consideration of the conservation and sustainable use of biological resources found in maritime areas beyond national jurisdiction into national decision-making;
- (b) Adopt measures relating to the use of biological resources found in maritime areas beyond national jurisdiction to avoid or minimize adverse impacts on biological diversity
- (c) Encourage cooperation between its governmental authorities and its private sector in developing methods for sustainable use of biological resources found in maritime areas beyond national jurisdiction.

Part III Compliance and Enforcement

Article 13 Duties of the Flag State

1. Contracting Parties shall ensure compliance by vessels flying their flag with conservation measures for biological diversity in maritime areas beyond national jurisdiction. To this end, Contracting Parties shall:
 - (a) establish national regulations prohibiting the contravention of conservation measures for biological diversity in maritime areas beyond national jurisdiction adopted by regional seas arrangements and endorsed by the Conference of the Parties;
 - (b) investigate immediately and fully any alleged violation of such conservation measures and report promptly to the State alleging the violation and the relevant regional seas arrangement on the progress and outcome of the investigation;
 - (c) if satisfied that sufficient evidence is available in respect of an alleged violation, refer the case to its authorities with a view to instituting proceedings without delay in accordance with its laws and where appropriate detain the vessel concerned.
2. All investigations and judicial proceedings shall be carried out expeditiously. Sanctions for violations shall be adequate in severity to be

effective in securing compliance and to discourage violations wherever they occur and shall deprive offenders of the benefits accruing from their illegal activities.

Article 14 International Cooperation in Enforcement

1. Contracting Parties shall cooperate, either directly or through regional seas arrangements to ensure compliance with and enforcement of conservation measures for biological diversity in maritime areas beyond national jurisdiction adopted by regional seas arrangements and endorsed by the Conference of the Parties.
2. A flag State conducting an investigation of an alleged violation of conservation measures for biological diversity in maritime areas beyond national jurisdiction may request the assistance of any other State whose cooperation may be useful in the conduct of that investigation. All States shall endeavour to meet reasonable requests made by a flag State in connection with such an investigation.
3. A flag State may undertake such investigations directly, in Cooperation with other interested States or through the relevant regional seas arrangement. Information on the progress and outcome of the investigations shall be provided to all States having an interest in, or affected by, the alleged violation.
4. Contracting Parties shall assist each other in identifying vessels reported to have engaged in activities undermining the effectiveness of conservation measures for biological diversity in maritime areas beyond national jurisdiction adopted by regional seas arrangements and endorsed by the Conference of the Parties.
5. Contracting Parties shall, to the extent permitted by national law and regulations, establish arrangements for making available to prosecuting authorities in other States evidence relating to alleged violations of such measures.

Article 15 Regional Cooperation in Enforcement

1. In any high seas area covered by a regional seas arrangement, a Contracting Party which is a participant in such an arrangement may, through its duly authorized inspectors, board and inspect, in accordance with paragraph 2, vessels flying the flag of another Contracting Party to this Agreement, whether or not such State Party is also a participant in the arrangement, for the purpose of ensuring compliance with conservation measures for biological diversity in maritime areas beyond national jurisdiction adopted by the arrangement and endorsed by the Conference of the Parties.
2. Contracting Parties shall establish, through regional seas arrangements and regional fisheries management organizations or arrangements covering the same high seas areas, procedures for boarding and inspection pursuant to paragraph 1. Boardings and inspections as well as any subsequent enforcement action shall be conducted in accordance with such procedures.

3. The provisions of Article 21(4),(5),(6),(7),(8),(9),(13),(16),(17) and (18) of the *UN Fish Stocks Agreement* apply *mutatis mutandis* to boardings and inspections pursuant to paragraph 1.
4. The provisions of Article 22(1) and (3) of the *UN Fish Stocks Agreement* apply *mutatis mutandis* to boardings and inspections pursuant to paragraph 1.
5. The duly authorized inspectors of a Contracting Party shall have the authority to inspect the vessel, its gear, equipment, records, facilities and any relevant documents necessary to verify compliance with the relevant conservation measures.
6. In the event that the master of a vessel refuses to accept boarding and inspection in accordance with this Article, the flag State shall, except in circumstances where, in accordance with generally accepted international regulations, procedures and practices relating to safety at sea, it is necessary to delay the boarding and inspection, direct the master of the vessel to submit immediately to boarding and inspection, and if the master does not comply with such direction, shall order the vessel to return immediately to port. The flag State shall advise the inspecting State of the action it has taken when the circumstances referred to in this paragraph arise.

Article 16 Measures taken by a Port State

1. A port State has the right and the duty to take measures, in accordance with international law, to promote the effectiveness of conservation measures for biological diversity in maritime areas beyond national jurisdiction. When taking such measures a port State shall not discriminate in form or fact against the vessels of any State.
2. A port State may, *inter alia*, inspect documents, gear, equipment and catch or take of species or microorganisms other than fish on board flag vessels of Contracting Parties when such vessels are voluntarily in its ports or at its offshore terminals.
3. Nothing in this Article affects the exercise by States of their sovereignty over ports in their territory in accordance with international law.

Article 17 Provisions of the Convention Applied *Mutatis Mutandis*

Articles 11, 12, 13, 14, 17, 18, 21, 26, 27, 28, 29, 30 and 31 of the Convention apply *mutatis mutandis* to the Contracting parties of this Agreement.

Machinery provisions dealing with matters such as ratification, accession, entry into force and withdrawal have not been included in this model Implementing Agreement.

Annex I

Identification and Monitoring of Biological Diversity in Maritime Areas Beyond National Jurisdiction

1. Ecosystems and habitats: containing high diversity, large numbers of endemic or threatened species; required by migratory species; of social, economic or scientific importance; or which are representative, unique or associated with key evolutionary or other biological processes;
2. Species and communities which are: threatened; of medicinal, agricultural or other economic value; or social or scientific importance; or importance for research into the conservation and sustainable use of biological diversity, such as indicator species; and
3. Described genomes and genes of social, scientific or economic importance.

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