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## The Legal Regime for the Arctic Ocean

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## The Legal Regime for the Arctic Ocean

### Cover Page Footnote

Symposium: Arctic Law in an Era of Climate Change

# THE LEGAL REGIME FOR THE ARCTIC OCEAN

CHRISTOPHER C. JOYNER\*

*With Arctic sea ice melting at rates faster than ever before, global climate change is opening up the polar region to increased navigation, exploration, and exploitation. The "Arctic eight" nations have ignited a new competition for control of the trade routes and access to the rich deposits of resources that governments speculate might lie beneath the ice. In this article, the author explores the framework for a legal regime in the Arctic, identifying and critically assessing the agreements that govern the space, with the express intent of relating how they legally impact on human activities in the Arctic Ocean. It addresses the legal implications that flow from rules in the 1982 Law of the Sea Convention that govern offshore territorial delimitation in the region as well as the many legal regulations that affect regional fisheries, nonliving resource development, and marine environmental protection.*

## TABLE OF CONTENTS

INTRODUCTION .....	196
II. THE ARCTIC OCEAN .....	201
A. <i>Geophysical Character</i> .....	201
B. <i>Ocean Law and Territorial Delimitation</i> .....	202
III. RESOURCES AND THE MARINE ENVIRONMENT .....	205
A. <i>Fisheries Management</i> .....	205
1. <i>The FAO Compliance Agreement</i> .....	206
2. <i>The Fish Stocks Agreement</i> .....	207
B. <i>Resource Conservation and Management</i> .....	209
C. <i>Non-living Marine Resources</i> .....	212
IV. GLOBAL PROCESSES .....	214
A. <i>The Arctic Council</i> .....	216
B. <i>Pollution Prevention</i> .....	218
1. <i>The 1982 LOS Convention</i> .....	218
2. <i>MARPOL and Its Protocol</i> .....	223
3. <i>Ocean Dumping</i> .....	226
C. <i>Shipping Regulation</i> .....	229

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D. Peace and Arms Control .....	238
1. Weapons of Mass Destruction.....	238
2. International Criminal Law.....	2400
CONCLUSION .....	243

## INTRODUCTION

The great Arctic ice meltdown has begun. Within the past decade, the ice covering the Arctic Ocean has been subjected to intense, pervasive melting, presumably brought on by global climate disruption. Over the last three decades, satellite data clearly indicates that the area of ice covering the Arctic Ocean has been reduced considerably, with perhaps as much as 38,000 square miles disappearing each year.<sup>1</sup> “The ice’s seasonal shrinkage in 2007 smashed records, reaching a September minimum of 2.6 million square miles—some [twenty-three] percent smaller than the previous record, set in 2005.”<sup>2</sup> In fact, computer models predicted in 2007 that “sea ice could vanish from the Arctic ocean completely as early as 2040.”<sup>3</sup> As the heat-reflecting ice that has made the Arctic the most inaccessible and uncharted part of the earth turns into water—which absorbs heat—the shrinkage is accelerating faster than climate models ever predicted. The latter factor, known as the ice-albedo effect, works like this: as ice melts in the summer, the open ocean warms up as it absorbs the solar radiation that the ice would normally reflect back to space; as global temperatures rise, more ice melts, so there is more ocean water, which absorbs more heat, and less ice re-forms the next winter, which perpetuates the cycle.<sup>4</sup> Most researchers had anticipated that the complete disappearance of the Arctic ice pack during summer months would happen after the year 2070, but present trends suggest

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1. Ian Sample, *Arctic Ocean May Lose All its Ice by 2040, Disrupting Global Weather*, THE GUARDIAN (London), Mar. 16, 2007 at 13, available at <http://www.guardian.co.uk/environment/2007/mar/16/climatechange.climatechange/print>; Sea Ice News & Analysis, Nat’l Snow & Ice Data Ctr., *Arctic Sea Ice Younger, Thinner as Melt Season Begins*, Apr. 6, 2009 [hereinafter *Arctic Sea Ice Younger*], <http://nsidc.org/arcticseaicenews/2009/040609.html>.

2. Peter N. Spotts, *Arctic Sea Ice Melting Faster than Expected*, CHRISTIAN SCI. MONITOR, June 13, 2008, at 25; see also Press Release, Nat’l Snow & Ice Data Ctr., *Arctic Sea Ice Shatters All Previous Record Lows* (Oct. 1, 2007), available at [http://nsidc.org/news/press/2007\\_seaiceminimum/20071001\\_pressrelease.html](http://nsidc.org/news/press/2007_seaiceminimum/20071001_pressrelease.html) (last visited Aug. 2, 2009); Andrea Thompson, *While U.S. in Big Chill, Arctic Runs Fever*, LIVE SCI., Feb. 5, 2009, <http://www.livescience.com/environment/090205-arctic-update.html> (last visited Aug. 2, 2009).

3. Sample, *supra* note 1.

4. See Maggie Villiger, *The Arctic—Our Global Thermostat*, SCI. AM. FRONTIERS, June 15, 2004, <http://www.pbs.org/saf/1404/features/thermostat.htm> (last visited Aug. 2, 2009); Dagmar Budikova, *Albedo*, THE ENCYCLOPEDIA OF EARTH, Mar. 19, 2008, <http://www.eoearth.org/article/Albedo; Arctic Sea Ice Younger, supra note 1>.

that loss of all summer sea ice cover in the Arctic by 2030 may well be possible.<sup>5</sup>

The implications of these developments are stark for the region. While the loss of sea ice, like the Arctic ice pack, would not contribute to sea level rise, wildlife experts say it could alter the Arctic ecology, threatening polar bears and other mammals and sea life.<sup>6</sup> Scientists add that an ice-free Arctic could also accelerate global warming, as white-colored ice tends to deflect heat, while darker-colored water would absorb more heat.<sup>7</sup> The diminishing area of sea ice is not the only problem affecting Arctic sea ice. This ice is also getting thinner. An important consideration is the age of the ice—the older the ice, the thicker it is. Newly formed ice (about one or two years old) will only be about one meter thick, whereas ice that is closer to five years old will be between two and three meters thick.<sup>8</sup> Ice thickness is key to the survival of sea ice because thinner ice vanishes much faster in the summer than thicker ice.<sup>9</sup> In addition, the warming ocean exacerbates the diminution of sea ice in another way. Sea ice is not static; rather, it is pushed around by Arctic winds. These winds push the sea ice through places where the ocean water has warmed and the sea ice simply melts away. More ice is melting quicker than ever before.<sup>10</sup>

Now that global warming has rendered the Arctic waters more accessible to commercial navigation than ever—at the same time that the marine ecosystem is more fragile—a new competition has flared up for control of the trade routes at the top of the world and the rich deposits of resources that governments speculate might lie beneath the ice. Consequently, at the start of a new millennium, a race has begun to claim what was thought to be the icy wasteland of the frozen north and touched off increased polar rivalry among the Arctic “eight,” namely Russia, the United States, Canada, Denmark, Norway, Sweden, Finland, and Iceland.

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5. David Adam, *Loss of Arctic Ice Leaves Arctic Experts Stunned*, THE GUARDIAN (London), Sept. 4, 2007, available at <http://www.guardian.co.uk/environment/2007/sep/04/climatechange/print>.

6. See Diane Cole, *Climate Change Could Harm Penguins and Polar Bears*, U.S. NEWS & WORLD REP., Mar. 23, 2009, available at <http://www.usnews.com/articles/news/energy/2009/03/23/climate-change-could-harm-penguins-and-polar-bears.html> (last visited Aug. 2, 2009); *Endangered Arctic Animals*, 50 CONNECT, available at [http://www.50connect.co.uk/entertainment/film/new\\_releases/endangered\\_arctic\\_animals](http://www.50connect.co.uk/entertainment/film/new_releases/endangered_arctic_animals) (last visited Aug. 2, 2009).

7. Budikova, *supra* note 4.

8. See NASA, *Satellites Show Arctic Literally on Thin Ice* (Apr. 6, 2009), [http://www.nasa.gov/topics/earth/features/arctic\\_thinice.html](http://www.nasa.gov/topics/earth/features/arctic_thinice.html).

9. See Paul Eccleston, *Arctic Ice Thickness Drops by Up to 19 Per Cent*, THE TELEGRAPH, Oct. 28, 2008, available at <http://www.telegraph.co.uk/earth/earth-news/3353930/Arctic-ice-thickness-drops-by-up-to-19-per-cent.html>.

10. See Mark Kinver, *Arctic Ice Thickness 'Plummets'*, BBC NEWS, Oct. 28, 2008, <http://news.bbc.co.uk/2/hi/science/nature/7692963.stm>.

In early August 2007, a Russian expedition made a symbolic territorial claim to the Arctic floor's Lomonosov Ridge, along which superabundant submerged oil and gas deposits are believed to exist.<sup>11</sup> A pair of Russian mini-submarines descended to a depth of 14,000 feet beneath the ice-covered North Pole.<sup>12</sup> The subs planted a titanium metal Russian flag on the ocean floor, left a time capsule, "collected specimens of Arctic flora and fauna and videotaped their dives."<sup>13</sup> The symbolic Arctic mission, along with geologic data gathered by expedition scientists, is intended to bolster Russia's claims to more than 460,000 square miles of the Arctic shelf.<sup>14</sup> Some commentators estimate that the Arctic shelf might hold as much as 10 billion tons of hydrocarbon reserves<sup>15</sup> Russia now asserts that it has convincing scientific evidence to support its contention that the Lomonosov Ridge, a geological formation on the Arctic Ocean floor that stretches some 2000 km (1250 miles) from offshore Siberia to Canada's Arctic Archipelago, is actually an uninterrupted extension of their Siberian platform.<sup>16</sup> Thus, Russia contends that the ridge forms a geological continuation of its continental shelf,<sup>17</sup> and as such, it is rightly susceptible to claim by Russia under the contemporary law of the sea.<sup>18</sup> In reaction to this Russian assertion, Denmark counters that the Lomonosov Ridge is not an extension offshore Russia, but actually forms a continental shelf extension offshore Greenland, a Danish territory.<sup>19</sup> The United States is eyeing the continental shelf region offshore Alaska for possible hydrocarbon exploitation.<sup>20</sup>

Given the profoundly disturbing trends of pervasive ice melt in the Arctic, coupled with tensions arising from the likely acceleration of competitive offshore hydrocarbon development in the region, serious questions arise concerning the availability of a legal

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11. Charles Digges, *Russian Arctic Underwater Oil Expedition Researches North Pole*, ENV'T NEWS SERVICE, Aug. 2, 2007, <http://www.ens-newswire.com/ens/aug2007/2007-08-02-01.asp>.

12. *Id.*; see also Adrian Blomfield, *Russia Claims North Pole with Arctic Flag Stunt*, THE TELEGRAPH, Aug. 3, 2007, available at <http://www.telegraph.co.uk/news/worldnews/1559165/Russia-claims-North-Pole-with-Arctic-flag-stunt.html>; *Both Russian Mini-sub Surface After Symbolic North Pole Dive*, RIA NOVOSTI, Aug. 2, 2007, <http://en.rian.ru/russia/20070802/70229618.html>.

13. Digges, *supra* note 11.

14. RIA NOVOSTI, *supra* note 12.

15. Digges, *supra* note 11.

16. *Id.*

17. *Id.*

18. *Id.*

19. *Id.*

20. See Stephen Power, *Bush Moves to Update U.S. Policy in Arctic Region*, WALL ST. J., Jan. 8, 2009, available at <http://online.wsj.com/article/SB123146453521166747.html>; Jeannette J. Lee, *New Seafloor Maps May Bolster U.S. Arctic Claims*, ASSOCIATED PRESS, Feb. 12, 2008.

regime to effectively manage human activities there. A misconception pervasive among laymen and diplomats is that the Arctic region in general, and the Arctic Ocean in particular, suffers from the lack of a uniform regulatory international legal regime for governing the polar north. In fact, some commentators advocate that this condition necessitates negotiation of a special legal agreement that would regulate human activities specifically in the Arctic, inclusive of ocean space.<sup>21</sup> Presumably, such an agreement would be similar to the substance and objectives set out in the 1959 Antarctic Treaty that operates for forty-seven governments conducting activities in the polar south.<sup>22</sup> Yet, conditions of geography, glaciology, oceanography, and politics among the eight littoral states in the polar north seem likely to complicate such a comprehensive legal system being created for the Arctic Ocean within the foreseeable future.

A legal regime for governing Arctic Ocean space already exists, its central instrument being the 1982 United Nations Convention on the Law of the Sea ("1982 LOS Convention").<sup>23</sup> This framework agreement has become the core instrument of contemporary ocean law, as it firms up jurisdictional questions, sets out the rights and duties of state parties, and codifies the general rules, norms, and principles that govern the use of ocean space, including the Arctic. It is mainly, but not exclusively, from the 1982 LOS Convention that the various dimensions of the contemporary law for the Arctic Ocean are crystallized and can be more fully appreciated. These

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21. See Oran R. Young, *Whither the Arctic? Conflict or Cooperation in the Circumpolar North*, 45 POLAR REC. 73, 73 (2009); Scott G. Borgerson, *Arctic Meltdown: The Economic and Security Implications of Global Warming*, FOREIGN AFF., Mar.-Apr. 2008, at 63, 71-77; see also Robert Wade, *A Warmer Arctic Ocean Needs Shipping Rules*, FIN. TIMES, Jan. 15, 2008, available at [http://www.ft.com/cms/s/0/1c415b68-c374-11dc-b083-0000779fd2ac.html?nclick\\_check=1](http://www.ft.com/cms/s/0/1c415b68-c374-11dc-b083-0000779fd2ac.html?nclick_check=1).

22. On the Antarctic Treaty Regime, see CHRISTOPHER C. JOYNER, GOVERNING THE FROZEN COMMONS: THE ANTARCTIC REGIME AND ENVIRONMENTAL PROTECTION 54 (1998). See also CHRISTOPHER C. JOYNER, ANTARCTICA AND THE LAW OF THE SEA (Shigeru Oda, ed., Publications on Ocean Development Vol. 18, 1992). On the prospects for a new treaty, see Donald R. Rothwell, *The Arctic in International Affairs: Time for a New Regime?* (ANU College of Law Research Paper No. 08-37, Dec. 10, 2008). For a recent U.S. Presidential Directive that asserts that a new Arctic treaty is not "appropriate or necessary," see The White House, National Security Presidential Directive (66) and Homeland Security Presidential Directive (25), Jan. 9, 2009, available at <http://www.fas.org/irp/offdocs/nspd/nspd-66.htm>. See also Leigh Phillips, *Commission Backs Norway's Arctic Vision: No New Treaty*, EU OBSERVER, Nov. 13, 2008, <http://euobserver.com/880/27104>.

23. United Nations Convention on the Law of the Sea, Dec. 10, 1982, 1883 U.N.T.S. 397 (entered into force Nov. 16, 1994) [hereinafter 1982 LOS Convention]. As of February 2009, 157 states are parties to the 1982 LOS Convention. Importantly, the only Arctic state not a party to this critical instrument for regulating world ocean space is the United States. See U.N., Div. for Ocean Aff. & Law of the Sea, Chronological List of Ratifications, [http://www.un.org/Depts/los/reference\\_files/chronological\\_lists\\_of\\_ratifications.htm#The](http://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm#The) United Nations Convention on the Law of the Sea.

dimensions can be cast into nine broad, but interconnected issue-areas, for which a raft of international law has been created and implemented over the last four decades. These general issue-areas include ocean-related law for dealing with: (1) territorial jurisdiction; (2) fisheries management; (3) resource conservation; (4) pollution prevention; (5) anti-dumping and control of hazardous wastes; (6) regulation of international shipping; (7) management of global processes; (8) peace and arms control; and (9) criminal activities at sea.

While the 1982 LOS Convention is central to articulating rules for using the Arctic Ocean, two key points must be realized: first, there is already in place a diverse series of international agreements pertaining to ocean space in general, which can be applied to the Arctic in particular; and second, these and other instruments actually function as parts of a larger, more multifaceted legal regime for regulating human activities in Arctic Ocean space. These realizations point to the main purposes of this article, namely to identify and critically assess these agreements, with the express intent of relating how they legally impact on human activities in the Arctic Ocean. To this end, the next section briefly describes the geophysical nature of the Arctic Ocean as an integral part of the world ocean. It also addresses the legal implications for littoral states that flow from rules in the 1982 LOS Convention that govern offshore territorial delimitation in the region. The core analysis is contained in Part III, which evaluates the specifically agreed upon legal regulations that affect regional fisheries, nonliving resource development, and marine environmental protection in ocean space in general and the Arctic in particular. Also included in this section is an assessment of the international legal subregime negotiated for regulating international shipping that sails through ice-infested waters in the polar north. In this regard, several other relevant agreements that often go unnoted within the context of the law of the sea also relate to ocean activities, including those on Arctic high seas. Accordingly, Part IV examines ocean-related law pertaining to various global processes affecting ocean space, as well as instruments relevant to peace and arms control and criminal activities in the Arctic region. Finally, Part V offers some concluding thoughts for serious reflection about how the Arctic legal maritime regime might be improved in light of the persistent impacts of global climate change and accelerated offshore hydrocarbon development in Arctic waters.



## II. THE ARCTIC OCEAN

A. *Geophysical Character*

Among the world's five oceans, the Arctic Ocean is the smallest.<sup>24</sup> It lies within a roughly circular basin covering an area that approximates 14.056 million square kilometers (5,427,000 square miles), which is slightly smaller than one and a half times the size of the United States.<sup>25</sup> The length of the Arctic Ocean's coastline extends 45,389 kilometers (28,200 miles), and is bounded by the landmasses of Eurasia, North America, Greenland, and several island formations.<sup>26</sup> Contained within the Arctic Ocean region are several notable bodies of water, among them Baffin Bay, Barents Sea, Beaufort Sea, Chukchi Sea, East Siberian Sea, Greenland Sea, Hudson Bay, Hudson Strait, Kara Sea, and the Laptev Sea.<sup>27</sup> Two important seasonal waterways are located in Arctic Ocean space, namely the Northwest Passage (linking northernmost Alaska in the United States and Canada) and the Northern Sea Route (running from northernmost Norway to Russia).<sup>28</sup> Also significant is that the Arctic Ocean is connected to the Pacific Ocean by the Bering Strait and to the Atlantic Ocean through the Greenland Sea and Labrador Sea.<sup>29</sup>

Throughout much of human history, the Arctic Ocean region was neglected as important ocean space, largely because the area was permanently covered by a massive ice sheet and thick sea ice. The central surface of the Arctic Ocean is still covered by a perennial drifting polar icepack that, on average, measures about three meters thick, although pressure ridges can generate three times that thickness.<sup>30</sup> This icepack is surrounded by open seas during the summer, but it more than doubles in size as it freezes over during the winter and extends to the surrounding landmasses. The Arctic ocean floor is comprised by nearly fifty percent continental shelf formations—the highest percentage of any ocean—with the remaining area being a central basin that is broken up by three submarine ridges: the Alpha Cordillera, the Nansen Cordillera, and the Lomonosov Ridge.<sup>31</sup>

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24. Cent. Intelligence Agency, World Fact Book, Arctic Ocean, <https://www.cia.gov/library/publications/the-world-factbook/geos/xq.html> (last visited Aug. 2, 2009).

25. *Id.*

26. *Id.*

27. *Id.*

28. *See id.*

29. *Id.*

30. *Id.*

31. *Id.*

### B. Ocean Law and Territorial Delimitation

The 1982 LOS Convention codifies offshore jurisdiction for coastal states through various zone delimitations with important implications for Arctic states. All eight arctic states have coastlines bordering the Arctic, and thus they are all affected by these zone delimitations<sup>32</sup> The Convention provides that a coastal state in the Arctic may claim a territorial sea out to twelve miles from the coastal baseline.<sup>33</sup> In the territorial sea, the sovereignty of the coastal state extends to the water column, the seabed, and all living and nonliving resources.<sup>34</sup> Foreign vessels may pass through this zone if the passage is deemed to be "innocent," i.e., "not prejudicial to the peace, good order or the security of the coastal State."<sup>35</sup> Fishing, polluting, testing weapons, and covert intelligence operations by foreign vessels are not considered "innocent" activities.<sup>36</sup>

The Convention creates a second offshore area, the contiguous zone.<sup>37</sup> A coastal state may claim beyond the twelve nautical mile limit an additional twelve nautical mile area of ocean space—which translates into twenty-four nautical miles from the coastal baseline of the territorial sea.<sup>38</sup> In this contiguous zone, Arctic littoral states can continue to enforce laws in the four specified areas of pollution, taxation, customs, and immigration.<sup>39</sup>

The 1982 LOS Convention also created for coastal states a special new offshore region, the exclusive economic zone (EEZ).<sup>40</sup> The EEZ extends 200 nautical miles offshore from a state's coastal baseline, or 188 miles seaward beyond a state's twelve-mile territorial sea.<sup>41</sup> Within this area, the eight Arctic coastal states retain sole exploitation rights over all living and nonliving natural resources.<sup>42</sup> Although this zone was introduced primarily to give coastal states

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32. Although the United States is the only one among the Arctic eight not to be a party to the 1982 LOS Convention, every U.S. administration since the Convention was negotiated has pledged U.S. adherence to all the Convention's provisions, save for those in Part XI dealing with the deep seabed beyond the limits of national jurisdiction. See Statement on United States Actions Concerning the Conference on the Law of the Sea, 18 WEEKLY COMP. PRES. DOC. 877 (July 9, 1982), available at [www.presidency.ucsb.edu/ws/index.php?pid=427117](http://www.presidency.ucsb.edu/ws/index.php?pid=427117).

33. 1982 LOS Convention, *supra* note 23, art. 3.

34. *Id.* art. 2.

35. *Id.* art. 19.

36. *See id.*

37. *Id.* art. 33.

38. *Id.*

39. *See id.*

40. *Id.* Part V.

41. *Id.* art. 57.

42. *Id.* art. 56.

greater control over fishing rights, the prospect of exploring and exploiting offshore hydrocarbons within the littoral states' EEZs seems likely to become increasingly salient. Beyond the territorial seas, in the EEZ, foreign states have the freedoms of navigation and overflight, subject to regulation of the coastal states.<sup>43</sup> Foreign states may also lay submarine pipes and cables in the EEZ, as well as in ocean space beyond the limits of national jurisdiction.<sup>44</sup>

The final special area of ocean space created by the 1982 LOS Convention is the continental shelf.<sup>45</sup> This submarine area on the ocean floor is defined as the natural prolongation of the land territory to the continental margin's outer edge, or 200 nautical miles from the coastal state's baseline, whichever is greater. Coastal states enjoy no unilateral right to assert claims to the outer continental shelf beyond 200 nautical miles. Even so, the Convention permits a state to extend its continental shelf beyond 200 nautical miles, out to 350 nautical miles, so long as that shelf formation is a natural prolongation of the state's continental shelf. However, the continental shelf may not exceed 350 nautical miles from the baseline. Similarly, it may never exceed 100 nautical miles beyond the 2,500 meter isobath (i.e., the line connecting the depth of 2,500 meters).<sup>46</sup> Under Article 76 of the 1982 LOS Convention, scientific

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43. *Id.* art. 58.

44. *Id.*

45. *Id.* Part VI.

46. In full, Article 76 provides the following:

1. The continental shelf of a coastal State comprises the seabed 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.

2. The continental shelf of a coastal State shall not extend beyond the limits provided for in paragraphs 4 to 6.

3. The continental margin comprises the submerged prolongation of the land mass of the coastal State, and consists of the seabed and subsoil of the shelf, the slope and the rise. It does not include the deep ocean floor with its oceanic ridges or the subsoil thereof.

4. (a) For the purposes of this Convention, the coastal State shall establish the outer edge of the continental margin wherever the margin extends beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, by either:

(i) a line delineated in accordance with paragraph 7 by reference to the outermost fixed points at each of which the thickness of sedimentary rocks is at least 1 per cent of the shortest distance from such point to the foot of the continental slope; or

(ii) a line delineated in accordance with paragraph 7 by reference to fixed points not more than 60 nautical miles from the foot of the continental slope.

(b) In the absence of evidence to the contrary, the foot of the continental slope shall be determined as the point of maximum change in the

data substantiating that extended claim must be submitted by each government to a special Convention-created mechanism called the Commission on the Limits of the Continental Shelf, which will then make a determination regarding the validity of the claim asserted by each state.<sup>47</sup>

Critically important for the Arctic littoral states is that the 1982 LOS Convention gives coastal states the right to harvest mineral and non-living material in the subsoil of its continental shelf, to the exclusion of others.<sup>48</sup> Furthermore, Arctic coastal states are permitted to assert exclusive control over living resources "attached" to the continental shelf, but not to creatures living in the water column beyond the exclusive economic zone.<sup>49</sup> It is

gradient at its base.

5. The fixed points comprising the line of the outer limits of the continental shelf on the seabed, drawn in accordance with paragraph 4 (a)(i) and (ii), either shall not exceed 350 nautical miles from the baselines from which the breadth of the territorial sea is measured or shall not exceed 100 nautical miles from the 2,500 metre isobath, which is a line connecting the depth of 2,500 metres.

6. Notwithstanding the provisions of paragraph 5, on submarine ridges, the outer limit of the continental shelf shall not exceed 350 nautical miles from the baselines from which the breadth of the territorial sea is measured. This paragraph does not apply to submarine elevations that are natural components of the continental margin, such as its plateaux, rises, caps, banks and spurs.

7. The coastal State shall delineate the outer limits of its continental shelf, where that shelf extends beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, by straight lines not exceeding 60 nautical miles in length, connecting fixed points, defined by coordinates of latitude and longitude.

8. Information on the limits of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured shall be submitted by the coastal State to the Commission on the Limits of the Continental Shelf set up under Annex II on the basis of equitable geographical representation. The Commission shall make recommendations to coastal States on matters related to the establishment of the outer limits of their continental shelf. The limits of the shelf established by a coastal State on the basis of these recommendations shall be final and binding.

9. The coastal State shall deposit with the Secretary-General of the United Nations charts and relevant information, including geodetic data, permanently describing the outer limits of its continental shelf. The Secretary-General shall give due publicity thereto.

10. The provisions of this article are without prejudice to the question of delimitation of the continental shelf between States with opposite or adjacent coasts.

*Id.* art. 76. For an insightful analysis, see Alex G. Oude Elferink, *The Outer Continental Shelf in the Arctic: The Application of Arctic 76 of the LOS Convention in a Regional Context*, in *THE LAW OF THE SEA THE SEA AND POLAR MARITIME DELIMITATION AND JURISDICTION* 139-56 (Alex G. Oude Elferink & Donald R. Rothwell, eds., 2001).

47. 1982 LOS Convention, *supra* note 23, art. 76.

48. *Id.* art. 77.

49. *See id.* art. 77(4). Beyond the 200 nautical mile exclusive economic zone lies the high seas, to which all states have access to resources. *See id.* art. 87.

important to realize that in the Arctic Ocean, Russia, Canada, and Denmark all plan to assert claims to the Lomonisov Ridge, thought to be very rich in hydrocarbon deposits, and they all plan to submit their respective scientific justifications to the Shelf Commission before 2012. No less important is that the United States is not party to the 1982 LOS Convention and hence does not have access to the Continental Shelf Commission process. That means that if the U.S. government aims to seek extension of its continental shelf claim beyond the 200 nautical miles limit, it will lack the legitimacy to do so under international law, and its claim will go unrecognized by the rest of the world. Ironically, this consideration may prove to be the greatest motivation for the United States to finally ratify the LOS Convention nearly twenty-seven years after leading its negotiation.

### III. RESOURCES AND THE MARINE ENVIRONMENT

#### A. Fisheries Management

Fisheries management in the Arctic marine ecosystem is linked to scientific research, high seas freedoms, and resource conservation by littoral governments. Contemporary ocean law thus assigns great responsibility to coastal states for the protection and conservation of living resources in offshore maritime areas, and the Arctic is no exception. As mentioned above, the 1982 LOS Convention establishes a new offshore zone, the 200-mile EEZ. In this zone, the Arctic littoral state has exclusive rights not only to offshore fisheries, but also to regulate, exploit, and manage all living and nonliving resources therein. It is through the EEZ that the Arctic littoral state is allocated the principal role in preserving and protecting the marine ecosystem for at least 200 nautical miles seaward of its coast.<sup>50</sup>

Under the contemporary ocean law for the Arctic, coastal states retain the right to regulate certain matters that impinge upon their marine ecosystem offshore. Among these matters, *inter alia*, are the rights to: license fishermen, fishing vessels and harvesting equipment; determine which species might be caught and fix quotas and catch limits; regulate seasons and areas of fishing; set the age and size of fish and other species that may be harvested; require the conduct of specified research programs in order to gain new data about fisheries in the EEZ; and punish local and foreign fishermen who violate national fishing standards and regulations

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50. See 1982 LOS Convention, *supra* note 23, arts. 55-75.

within the EEZ.<sup>51</sup> All these activities contribute to better fisheries management and greater control over the exploitation of the ocean's living resources.

Regarding access to fisheries in ocean space, a relationship exists between implementation of enforced management and compliance by governments. Encouraging adherence to regulatory fishery measures can be done by inducement or coercion. Strengthening flag state responsibilities in order to extend jurisdiction over high seas fishing operations by vessels flying their flags; establishing procedures to detain non-flag states to inspect and detain fishing vessels on the high seas; and resorting to port-state controls, including inspections and prohibitions against port entry are means suggested for enforcing compliance with fishery laws.<sup>52</sup>

### 1. The FAO Compliance Agreement

In November 1993, the Food and Agriculture Organization of the United Nations (FAO) adopted the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas.<sup>53</sup> This FAO instrument, which entered into force on April 24, 2003,<sup>54</sup> establishes minimum requirements to be applied by flag states to the registration and authorization of vessels intended for fishing on the high seas, inclusive of the Arctic. Its main objective is to prevent vessels from undermining the effectiveness of conservation and management measures by merely reflagging fishing vessels that have been caught poaching or violating international fishing laws.<sup>55</sup>

The success of the FAO Compliance Agreement remains dependent on the efficacy of states enforcing existing international conservation and management measures, which provide minimum standards that flag states must apply to their vessels on the high seas, the maximum standards that port states should apply to ves-

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51. See *id.* art. 62(4).

52. See generally Christopher C. Joyner, *Compliance and Enforcement in New International Fisheries Law*, 12 TEMP. INT'L & COMP. L.J. 271 (1998).

53. Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, Nov. 24, 1993, 33 I.L.M. 968 [hereinafter FAO Compliance Agreement], available at <http://www.fao.org/DOCREP/MEETING/003/X3130m/X3130E00.HTM>.

54. All eight Arctic states are parties to the FAO Compliance Agreement.

55. See FAO Compliance Agreement, *supra* note 53, arts. III, IV, V & VI. The Compliance Agreement relies on flag-state responsibility as the major mechanism to promote compliance by a party of its fishing vessels on the high seas. This FAO instrument asserts that no party shall allow a vessel flying its flag to fish on the high seas without its authorization and no party may authorize a vessel to fish on the high seas if that vessel, regardless of whether it is registered to a party or non-party, has taken actions that undermine international conservation and management measures. *Id.* art. III.

sels in their ports, and, ostensibly, the maximum standards to be applied by a state other than the flag state under an agreement to take high seas enforcement action.

## 2. The Fish Stocks Agreement

Conflict in the 1990s between coastal states and distant water fishing fleets regarding international over-exploitation of fish stocks was sparked by weaknesses in the available legal framework for jurisdiction over straddling stocks. To redress jurisdiction and management of these fish without departing from the general framework of the law of the sea, in 1995 the UN Agreement for the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks was adopted.<sup>56</sup> Although applicable only beyond areas of national jurisdiction, a number of general principles of law are made binding upon coastal states, including those Arctic littoral nations. Among these are the duty of states to cooperate with each other to ensure the long-term sustainability of straddling stocks, to apply the precautionary approach to fisheries, to ensure compatibility of various conservation and management measures, and to adopt measures “based on the best scientific evidence available.”<sup>57</sup>

The UN Fish Stocks Agreement calls upon coastal and flag states to develop provisional arrangements and to inform each other about their respective national regulations and legislation. It also provides that, should no agreement be achieved on compatibility of conservation and management measures, “any of the States concerned” may bring the issue to binding and compulsory dispute settlement, using procedures set out in Part VIII of the Agreement.<sup>58</sup> The Fish Stocks Agreement appears to resolve concerns over the compatibility between conservation measures for the EEZ and adjacent high seas regions in a highly satisfactory and effective way.<sup>59</sup>

The 1995 Fish Stocks Agreement bolsters and extends the roles of regional and subregional organizations in conserving and managing straddling fish stocks, and even attempts to control entry and partici-

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56. 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 the Straddling Fish Stocks and Highly Migratory Fish Stocks, U.N. GAOR, 6th Sess., U.N. Doc. A/CONF.164/37 (Sept. 8, 1995) [hereinafter *Fish Stocks Agreement*], available at <http://daccessdds.un.org/doc/UNDOC/GEN/N95/274/67/PDF/N9527467.pdf?OpenElement>. In early 2009, seventy-five states are parties to the Fish Stocks Agreement, including all eight Arctic states. See U.N., Chronological List of Ratifications, *supra* note 23.

57. Fish Stocks Agreement, *supra* note 56, art. 5.

58. *Id.* art. 7.

59. See Olav Schram Stokke, *Conclusions, in* GOVERNING HIGH SEAS FISHERIES: THE INTERPLAY OF GLOBAL AND REGIONAL REGIMES 329 (Olav Schram Stokke, ed., 2001).

pation of states in those associations.<sup>60</sup> While the 1982 LOS Convention serves well as a framework agreement, application and enforcement of that general international law can be carried out more effectively by regional fishery organizations, as they are able to supervise and enforce regulations more strictly over localized fishing areas. To reinforce these regulations, in 1995 the FAO adopted an International Code of Conduct for Responsible Fishing.<sup>61</sup>

All states have the right for their nationals to fish on the Arctic high seas, subject to their treaty obligations and the rights and duties of coastal states.<sup>62</sup> In addition, all states have the duty to take such measures, in cooperation with other states, as may be necessary for the conservation and management of living resources of the high seas.<sup>63</sup> States are also mandated to ensure that their na-

60. See Fish Stocks Agreement, *supra* note 56, art. 8.

61. FAO Fisheries Department, *Code of Conduct for Responsible Fisheries*, FAO Doc. COFI/93/10 (Oct. 31, 1995), available at <ftp://ftp.fao.org/docrep/fao/005/v9878e/v9878e00.pdf>. While the FAO code is nonbinding and voluntary, it furnishes critical guidelines as principles and standards for state conduct to conserve, manage, and develop global fisheries. Key among the general principles in Article 6 of the Code are the following:

- The right to fish carries with it the duty to conserve and manage living marine resources. *Id.* para. 6.1.
- "Conservation and management decisions for fisheries should be based on the best scientific evidence available." *Id.* para. 6.4.
- "States and subregional and regional fisheries management organizations should apply a precautionary approach widely to conservation, management and exploitation of living aquatic resources." *Id.* para. 6.5.
- "Within their respective competences and in accordance with international law, including within the framework of subregional or regional fisheries conservation and management organizations or arrangements, States should ensure compliance with and enforcement of conservation and management measures and establish effective mechanisms, as appropriate, to monitor and control the activities of fishing vessels and fishing support vessels." *Id.* para. 6.10.
- "States authorizing fishing and fishing support vessels to fly their flags should exercise effective control over those vessels so as to ensure the proper application of this Code. They should ensure that the activities of such vessels do not undermine the effectiveness of conservation and management measures taken in accordance with international law and adopted at the national, subregional, regional, or global levels. States should also ensure that vessels flying their flags fulfill their obligations concerning the collection and provision of data relating to their fishing activities." *Id.* para. 6.11.
- "States should . . . cooperate at subregional, regional and global levels through fisheries management organizations, other international agreements or other arrangements to promote conservation and management, ensure responsible fishing and ensure effective conservation and protection of living aquatic resources throughout their range of distribution, taking into account the need for compatible measures in areas within and beyond national jurisdiction." *Id.* para. 6.12.
- And "States should cooperate in order to prevent disputes. All disputes relating to fishing activities and practices should be resolved in a timely, peaceful and cooperative manner, in accordance with applicable international agreements or as may otherwise be agreed between the parties." *Id.* para. 6.15.

62. 1982 LOS Convention, *supra* note 23, art. 116.

63. *Id.* art. 117-118.



nationals comply with these measures.<sup>64</sup> To this end, governments should cooperate in establishing regional and subregional organizations to facilitate conservation and management of those resources.

International fisheries law in the Arctic creates a framework for formulating and enforcing conservation norms. Governments establish and empower multilateral arrangements that set membership qualifications and can adopt regulations to conserve and manage resources for ocean space. Under their constitutive rules, these fishery bodies formulate conservation norms and set primary rules for regulating the conduct of governments and nationals on the high seas. The constitutional structures and powers of associations entrusted with the management of fisheries resources largely determine the ability of their member governments to formulate, implement, monitor, and enforce conservation rules effectively.

International organizations such as the FAO,<sup>65</sup> the International Maritime Organization (IMO),<sup>66</sup> and the International Council for Science's Scientific Committee on Oceanic Research (SCOR)<sup>67</sup> play important legislative functions in the development of international fisheries law, inclusive of that in the Arctic. Their executive power to enforce compliance on agreed upon rules, however, is limited.

### *B. Resource Conservation and Management*

While marine resource conservation is linked to fisheries management, global processes, and provisions in the 1982 LOS Convention, much of its implementation actually is done in multilater-

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64. *Id.* art. 117.

65. See David J. Douman, *Technical Assistance in Fisheries Monitoring Control and Surveillance: A Historical Perspective of FAO's Role*, FAO Fisheries Circular No. 882 (1994). A catalogue of contemporary FAO activities relating to fisheries is available at Food & Agriculture Org. of U.N., Fisheries & Aquaculture Dept., <http://www.fao.org/fishery/en> (last visited Aug. 9, 2009).

66. Established by the United Nations in 1948 as the Inter-Governmental Maritime Consultative Organization, the IMO provides a means for its 168 Member States to cooperate on technical matters affecting international merchant shipping, including vessel safety and prevention and control of pollution from ships. See IMO, About IMO, <http://www.imo.org/> (last visited Aug. 9, 2009). All eight Arctic states are members of the IMO. See IMO, Member States, <http://www.imo.org/> (last visited Aug. 9, 2009). Under the IMO, thirteen international conventions (and protocols) have been negotiated for maritime safety, ten for marine pollution, eight for shipping liability and compensation, and four for other ocean-related subjects. See IMO, Conventions, List of Conventions, <http://www.imo.org/> (last visited Aug. 9, 2009).

67. Founded in 1957, SCOR works to promote cooperation among its thirty-five member states in planning and conducting major projects on oceanographic research. Scientific Comm. on Oceanic Res. (SCOR), <http://www.scor-int.org/> (last visited Aug. 9, 2009). All eight Arctic states are members of SCOR. See SCOR, Member Nations, <http://www.scor-int.org/memnats.htm>.

al regional for a through special arrangements. Indeed, Article 118 of the 1982 LOS Convention calls for the cooperation of states to conserve and manage living marine resources through subregional and regional fishery organizations.<sup>68</sup> Accordingly, even before the Convention, coordination of international efforts to conserve and manage living resources in the Arctic high seas was devised by states mainly according to specific resources, located in particular ocean subregions. In the northern Atlantic Ocean, the International Commission for the Conservation of Atlantic Tunas (ICCAT) exercises jurisdiction to set compliance measures with size and weight regulations and catch limits for annual landings of tuna.<sup>69</sup> ICCAT also established a port inspection scheme with minimum standards for conducting port inspection, which is designed to ensure compliance with management measures and to facilitate monitoring of each party's fishery catch.<sup>70</sup> Also for the North Atlantic, the Northwest Atlantic Fisheries Organization (NAFO) was created to protect and conserve fishery resources in the Northwest Atlantic.<sup>71</sup> Through its Commission, NAFO negotiates among its members a quota scheme for harvesting fish and also promotes compliance by non-contracting parties vessels with its conservation and enforcement measures.<sup>72</sup> Vessels belonging to non-contracting parties are presumed to be undermining NAFO conservation and enforcement measures, and can be boarded by NAFO inspectors to examine their log books, documents, fishing gear, catch on board, and any other matter relating to fishing activities. Contracting parties are expected to report on the findings of port inspections.

Other major fishery organizations whose regional scope overlaps portions of the Arctic include the North Atlantic Salmon Conservation Organization (NASCO), established by the NASCO Convention;<sup>73</sup> and the North East Atlantic Fisheries Commission

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68. 1982 LOS Convention, *supra* note 23, art. 118.

69. See ICATT, <http://www.iccat.int/en/> (last visited Aug. 9, 2009).

70. See generally ICATT, 2008 Commission, WG Monitoring Report, Report of the 5th Meeting of the Working Group on Integrated Monitoring Measures, ICATT Doc. No. COC-302/2008 (Oct. 15, 2008), available at [http://www.iccat.int/Documents/Meetings/Docs/MONITORING\\_%2008\\_ENG.pdf#search="port inspection"](http://www.iccat.int/Documents/Meetings/Docs/MONITORING_%2008_ENG.pdf#search=).

71. Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries, Ottawa, Oct. 24, 1978, 1135 U.N.T.S. 369 (entered into force Jan. 1, 1979), available at <http://www.nafo.int/about/frames/convention.html>. Canada, Denmark, Iceland, Norway, Russia and the United States are all parties to NAFO. *Id.*

72. See generally *id.*

73. Convention for the Conservation of Salmon in the North Atlantic Ocean, Mar. 2, 1982, 1338 U.N.T.S. 33, available at [http://www.nasco.int/pdf/agreements/nasco\\_convention.pdf](http://www.nasco.int/pdf/agreements/nasco_convention.pdf). For general information on NASCO, see North Atl. Salmon Conservation Org., About NASCO, <http://www.nasco.int/> (last visited Aug. 9, 2009).

(NEAFC), established by the NEAFC Convention.<sup>74</sup> In the northern Pacific, the North Pacific Anadromous Fish Commission established by the NPAFC Convention,<sup>75</sup> coordinates national policies and regional strategies to regulate salmon fishing activities.

The 1973 Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) protects wildlife by setting up an international system for regulating trade in endangered and threatened species.<sup>76</sup> Among the marine creatures included on the CITES appendices' list of endangered creatures are species of whales, porpoises, dolphins, and seals<sup>77</sup>—all of which inhabit the Arctic high seas, but not all of which are close to extinction.

It also bears noting that a special agreement was negotiated in 1973 to protect and conserve polar bears, which often cross ice floes in search of food.<sup>78</sup> This 1973 agreement between the governments of Canada, Denmark, Norway, USSR (now Russia), and the United States “recognizes the responsibilities of the circumpolar countries for coordination of actions to protect polar bears.”<sup>79</sup> This agreement commits the parties “to manage polar bear populations in accordance with sound conservation practices.”<sup>80</sup> It also prohibits hunting, killing, and capturing bears except for limited purposes and by limited methods, and it commits all parties to protect the ecosystems of polar bears, especially denning and feeding

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74. Convention on Future Multilateral Cooperation in North-East Atlantic Fisheries, Nov. 18, 1980, 1285 U.N.T.S. 129, [http://www.nasco.int/pdf/nasco\\_convention.pdf](http://www.nasco.int/pdf/nasco_convention.pdf). Contracting parties include Denmark, Iceland, Sweden, Norway, and Russia, with Canada as a “cooperating non-contracting party.” Amendments were incorporated into the instrument in February 2007 to form a new convention that is provisionally operative until ratification. See Declaration on Interpretation and Implementation of Convention on Future Multilateral Cooperation in the North-East Atlantic Fisheries, available at [http://www.neafc.org/system/files/%252Fhome/neafc/drupal2\\_files/london-declarlation\\_and\\_new\\_convention.pdf](http://www.neafc.org/system/files/%252Fhome/neafc/drupal2_files/london-declarlation_and_new_convention.pdf) (last visited Aug. 9, 2009).

75. Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean, Feb. 11, 1992, 22 LAW OF THE SEA BULLETIN 21 (1993), available at [http://www.npafc.org/new/publications/HandBook/English%20\(page1-44\).pdf](http://www.npafc.org/new/publications/HandBook/English%20(page1-44).pdf) (last visited Aug. 9, 2009). Members of this Commission include three Arctic states—Canada, the Russian Federation, and the United States—as well as Japan and Korea. *Id.*

76. Convention on International Trade in Endangered Species of Wild Flora and Fauna, Mar. 3, 1973, 27 U.S.T. 1087, T.I.A.S. 8249, 993 U.N.T.S. 243, (entered into force July 1, 1975) [hereinafter CITES], available at <http://www.cites.org/eng/disc/text.shtml>. “Trade” is defined as “export, re-export, import and introduction from the sea,” meaning “transportation into a State of specimens of any species which were taken in the marine environment not under the jurisdiction of any State.” *Id.* art. I. All eight Arctic states are parties to CITES. See CITES Homepage, <http://www.cites.org/> (last visited Aug. 9, 2009).

77. See CITES, *supra* note 76, apps. I, II & III, available at <http://www.cites.org/eng/app/E-Jul01.pdf> (valid from July 1, 2008).

78. Agreement on the Conservation of Polar Bears, Nov. 15, 1973, 27 U.S.T. 3918, 13 I.L.M. 13, available at <http://www.animallaw.info/treaties/itpolarbears1973.htm>. Of the eight Arctic states, Canada, Denmark, Norway, Russia, and the United States are parties to this agreement. *Id.*

79. *Id.* Summary.

80. *Id.*

areas and migration corridors.<sup>81</sup>

The critical consideration regarding all of these instruments is clear. These agreements articulate international conservation standards and legal prescriptions for states whose nationals are engaged in harvesting fish in the Arctic. In so doing, they aim to preserve and protect particular fishery resources in the Arctic marine environment. These contributions are important because they signal the need to protect and conserve certain targeted living resources and provide binding legal remedies for policy action by governments to do so.

A second important intergovernmental forum for conserving marine living resources is the International Whaling Commission (IWC). Established under the 1946 International Convention for the Regulation of Whaling,<sup>82</sup> the IWC was organized to regulate the whaling industry in order to “permit increases in the number of whales which may be captured without endangering these natural resources.”<sup>83</sup> The Convention applies to all waters where whaling is conducted, and the IWC establishes quotas and catch limits (now zero) for commercial whaling. In 1985, the Commission voted to impose a total moratorium on commercial whaling, which began in 1986.<sup>84</sup> The ban continues in 2009,<sup>85</sup> and only three states continue to hunt whales, two of which are Arctic—Norway and Iceland—and the third is Japan.<sup>86</sup>

### C. *Non-living Marine Resources*

Offshore hydrocarbon activity in the Arctic is increasing. Acce-

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81. *Id.* arts. 1, 2 & 3. Significantly, in May 2008, the U.S. Department of Interior placed the polar bear as a “threatened” species under the Endangered Species Act of 1973. This decision was prompted by evidence that sea ice in the Arctic is vital for polar bear survival. This sea ice habitat has been substantially reduced in recent years, and this process is likely to continue. Estimates suggest that if conditions do not change in the Arctic to reverse this situation, the polar bear may be extinct within forty-five years. Determination of Threatened Status for the Polar Bear, 73 Fed. Reg. 28, 212 (May 15, 2008) (to be codified at 50 C.F.R. pt. 17). See also Larry Greenemeier, *U.S. Protects Polar Bears Under Endangered Species Act*, SCI. AM., May 14, 2008, available at <http://www.sciam.com/article.cfm?id=polar-bears-threatened>.

82. International Convention for the Regulation of Whaling, Dec. 2, 1946, T.I.A.S. 1849, 161 U.N.T.S. 72, available at [http://www.iwcoffice.org/\\_documents/commission/convention.pdf](http://www.iwcoffice.org/_documents/commission/convention.pdf). Save for Canada, all the other Arctic states are parties to the IWC Convention.

83. *Id.* pmb1.

84. See Revised Management Scheme of the IWC, June 19, 1985 (as an amendment to the Schedule of the IWC), available at <http://www.iwcoffice.org/conservation/rms.htm>.

85. Schedule to the International Convention for the Regulation of Whaling, June 2008 (as amended by the Commission at the 60th Annual Meeting).

86. Humane Soc’y Int’l, Pro-Whaling Nations, [http://www.hsus.org/hsi/oceans/whales/pro\\_whaling\\_nations](http://www.hsus.org/hsi/oceans/whales/pro_whaling_nations) (last visited Aug. 9, 2009).

lerated global warming brought about by increasing greenhouse gas emissions has caused dramatic melting of the Arctic Ocean ice cover, making more of the region accessible to hydrocarbon exploration.<sup>87</sup> Relatedly, new sea routes may become open for shipping for longer periods than in the past. Adding fuel to this fire, recent estimates have made incredible projections about the vast deposits of hydrocarbons in the Arctic. One estimate suggested that the Arctic seabed may hold as much as twenty-five percent of the world's undiscovered and unproven oil and natural gas reserves.<sup>88</sup> The U.S. Geological Survey concluded in 2007 that the sum of the mean estimates for each of thirty-three geological provinces "indicates that 90 billion barrels of oil, 1,669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids may remain to be found in the Arctic, of which approximately 84 percent is expected to occur in offshore areas."<sup>89</sup> Finally, another study asserts that the Chukchi Sea, located between northwest Alaska and eastern Siberia, may hold a mean volume of "15 billion barrels of recoverable oil and 77 trillion cubic feet of natural gas."<sup>90</sup> The adverse impacts of climate change on the amount, distribution, and thickness of ice in the Arctic, coupled with these superabundant estimates of potential resource deposits, strongly imply that within the next decade Arctic states will undertake accelerated offshore hydrocarbon development in the region.

If vastly increased oil and gas activities in the marine Arctic should proceed, the potential environmental consequences for the region will be profoundly disturbing. Particularly troublesome are the direct impacts of toxic pollution on fish, as well as on marine mammals (including the polar bear, seal, walrus, and sea otter). In addition, hydrocarbon pollution of the marine ecosystem can have indirect impacts, such as impeding fish migrations and poisoning indigenous mammals' food supplies.<sup>91</sup> Pollution is likely to come from oil seeps and oil spills associated with development

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87. See generally SUSAN JOY HASSOL, ARCTIC CLIMATE IMPACT ASSESSMENT: IMPACTS OF A WARMING ARCTIC (2004), available at <http://www.amap.no/acia/>.

88. Borgerson, *supra* note 21, at 67; ARCTIC MONITORING AND ASSESSMENT PROGRAMME (AMAP), ARCTIC OIL AND GAS 2007 at 17 (2008), available at <http://www.amap.no/oga/>.

89. CIRCUM-ARCTIC RES. APPRAISAL ASSESSMENT TEAM, U.S. GEOLOGICAL SURVEY, USGS ARCTIC OIL AND GAS REPORT: ESTIMATES OF UNDISCOVERED OIL AND GAS NORTH OF THE ARCTIC CIRCLE (USGS Fact Sheet 2008-3049, July 2008), available at <http://pubs.usgs.gov/fs/2008/3049/fs2008-3049.pdf>.

90. Welsey Loy, *Record Bids for Oil, Gas Leases in Chukchi Sea*, ANCHORAGE DAILY NEWS, Feb. 7, 2008, available at <http://www.adn.com/oil/story/307588.html>.

91. See generally Andrew Clarke & Colin M. Harris, *Polar Marine Ecosystems: Major Threats and Future Changes*, 30 ENVTL. CONSERVATION 1 (2003); World Wildlife Fed'n, *The Arctic: Threats*, <http://www.worldwildlife.org/what/wherework/arctic/threats.html> (last visited Aug. 9, 2009).

activities.<sup>92</sup> As oil production in the Arctic moves progressively offshore, the potential for pollution from accidental leaks or blowouts grows. Concomitantly, a greater need will arise for closer monitoring and regulation of those activities by Arctic coastal states, as well as by the IMO. This offshore production, nearly all of which will come from wells drilled in the continental shelves within 350 nautical miles of coastal states, will be regulated by the states themselves under the special rights established for resource exploitation in exclusive economic zones and offshore continental shelf extensions.<sup>93</sup>

A number of global and regional agreements have prompted national governments to designate marine protected areas. Prominent among these are the 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage, the 1971 Convention on the Conservation of Wetlands of International Importance especially as Waterfowl Habitat, the 1979 Convention on the Conservation of Migratory Species of Wild Animals, the 1992 Convention on Biological Diversity, and Chapter 17 of Agenda 21 of the United Nations Conference on Environment and Development, as well as protocols in certain UNEP regional conventions.<sup>94</sup> It seems prudent for the Arctic governments to review these principles of resource conservation and environmental protection before undertaking massive efforts to exploit prospective hydrocarbon resources off their coasts.

#### IV. GLOBAL PROCESSES

The Convention on Biological Diversity (or Biodiversity Convention)<sup>95</sup> entered into force in late 1993 to protect the genetic pool of all species, including those in the marine environment. The Convention emphasizes biodiversity in the oceans and the need to implement policies "with respect to the marine environment consistently with the rights and obligations of States under the law of

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92. AMAP, ARCTIC POLLUTION ISSUES: A STATE OF THE ARCTIC ENVIRONMENT REPORT 667-70 (1998), available at <http://www.amap.no/>.

93. See 1982 LOS Convention, *supra* note 23, art. 77.

94. See DIV. FOR OCEAN AFF. & LAW OF THE SEA, LAW OF THE SEA: MULTILATERAL TREATIES—A REFERENCE GUIDE TO MULTILATERAL TREATIES AND OTHER INTERNATIONAL INSTRUMENTS RELATED TO THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA, U.N. Sales No. E.97.V.9 (1996).

95. Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 818 [hereinafter Biodiversity Convention], available at <http://www.cbd.int/doc/legal/cbd-un-en.pdf>. The United States is not a party to this instrument. *Id.* For a critical discussion, see Lakshman Guruswamy, *The Convention on Biological Diversity: Exposing the Flawed Foundations*, 26 ENVTL. CONSERVATION 79 (1999).

the sea.”<sup>96</sup> To this end, the Convention places responsibility squarely on Arctic littoral states for protection of biological variability in areas off their coasts. Parties are obligated to implement the Biodiversity Convention in accordance with and subject to customary ocean law, as well as with the specific stipulations contained in the 1982 LOS Convention.<sup>97</sup>

More recently, serious concerns have arisen in the IMO and the Biodiversity Convention’s Conference of Parties over the management of new or alien species that threaten marine and coastal ecosystems. To help remedy this situation, a special convention on the Control and Management of Ships’ Ballast Water and Sediments was adopted in 2004.<sup>98</sup>

The 1992 UN Framework Convention on Climate Change, which promotes intergovernmental cooperation to curtail greenhouse gas emissions that contribute to global warming, also relates to ocean law.<sup>99</sup> The relevance here is unmistakable: If global warming heats the atmosphere and the oceans, the polar ice caps could melt, thereby raising sea levels and flooding low-lying coastal regions. In the Convention’s preamble, the role of marine ecosystems as sinks and reservoirs for greenhouse gases is highlighted, as is the need to protect “areas beyond the limits of national jurisdiction” and to prevent “adverse effects of sea-level rise on islands and coastal areas.”<sup>100</sup> Article 4 commits parties to “promote and cooperate in the conservation and enhancement”<sup>101</sup> of coastal and marine ecosystems as sinks and reservoirs of all greenhouse gases, and to “develop and elaborate appropriate and integrated plans for coastal zone management . . . .”<sup>102</sup> The Kyoto Protocol to the UN

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96. Biodiversity Convention, *supra* note 95, art. 22(2).

97. *Id.* art. 22.

98. IMO, International Convention for the Control and Management of Ships’ Ballast Water and Sediments, Feb. 13, 2004 (not yet in force) available at [www.imo.org/conventions/mainframe.asp?topic\\_id=867](http://www.imo.org/conventions/mainframe.asp?topic_id=867). This instrument “will enter into force 12 months after ratification by 30States, representing 35 per cent of world merchant shipping tonnage.” *Id.* The Convention stipulates that vessels using the ballast water exchange method should not discharge ballast water within 200 nautical miles of the nearest land or in waters less than 200 meters deep and must meet an efficiency of at least 95 percent volumetric exchange. *Id.* As of July 2009, only eighteen states have ratified it, accounting for only 15.36 percent of world tonnage. IMO, Status of Conventions, [http://www.imo.org/TCD/mainframe.asp?topic\\_id=247](http://www.imo.org/TCD/mainframe.asp?topic_id=247) (last visited Aug. 19, 2009).

99. United Nations Framework Convention on Climate Change, May 9, 1992, 1771 U.N.T.S. 107, U.N. Doc. A/AC.237/18 (PartII)/Add. 1 (entered into force Mar. 21, 1994) available at <http://unfccc.int/resource/docs/convkp/conveng.pdf>. As of 2009, 192 states are party to the Climate Change Convention, including all eight Arctic states. See United Nations Framework Convention on Climate Change, Parties & Observers, [http://unfccc.int/parties\\_and\\_observers/items/2704](http://unfccc.int/parties_and_observers/items/2704) (last visited Aug. 19, 2009).

100. United Nations Framework Convention on Climate Change, *supra* note 99, pmbl.

101. *Id.* art. 4.

102. *Id.*

Framework Convention on Climate Change is the instrument adopted to implement the general principles contained in the framework agreement.<sup>103</sup>

### A. The Arctic Council

Until very recently, the marine environment of the Arctic Ocean received far less international attention than any other part of the world's ocean. The first serious effort to implement an Arctic regime dealing with protection of the marine environment began in 1991 with the Arctic Environmental Protection Strategy (AEPS).<sup>104</sup> This Strategy sought to identify environmental problems in the Arctic and to propose action plans aimed at their management.<sup>105</sup> Among the more salient "problems and priorities" cited were persistent organic contaminants, oil, noise, heavy metals, radioactivity, and acidification.<sup>106</sup> To address these concerns, the AEPS formed six working program groups to propose strategies for implementing corrective and preventive actions.<sup>107</sup> These developments led to the creation of the Arctic Council in September 1996.<sup>108</sup> This intergovernmental forum, represented by Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States, meets to coordinate international consultation and cooperation on Arctic issues and to promote sustainable development and environmental protection. Specifically, the Council meets "as a high level intergovernmental forum to provide a means for promoting cooperation, coordination and interaction among the Arctic States, with the involvement of the Arctic Indigenous communities and other Arctic inhabitants on common Arctic issues, in particular issues of sustainable development and

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103. Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, 37 I.L.M. 22, available at <http://unfccc.int/resource/docs/convkp/kpeng.pdf>. As of February 2009, there were 183 parties to the Protocol, although conspicuously absent among the Arctic states was the United States. Kyoto Protocol, Status of Ratification, [http://unfccc.int/files/kyoto\\_protocol/status\\_of\\_ratification/application/pdf/kp\\_ratification.pdf](http://unfccc.int/files/kyoto_protocol/status_of_ratification/application/pdf/kp_ratification.pdf) (last visited Aug. 19, 2009).

104. See Arctic Environmental Protection Strategy, June 14, 1991, 30 I.L.M. 162. All eight Arctic states—Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States—are parties to the AEPS. *Id.*

105. *Id.* at 9-11.

106. *Id.* at 12.

107. The six programs were Arctic Contaminants Action Program (ACAP), AMAP, Conservation of Arctic Fauna and Flora (CAFF), Emergency Prevention, Preparedness and Response (EPPR), Protection of the Arctic Marine Environment (PAME), and Sustainable Development Working Group (SDWG). See Arctic Council, Working Groups, [http://arctic-council.org/section/working\\_groups](http://arctic-council.org/section/working_groups) (last visited Aug. 19, 2009).

108. See About Arctic Council, <http://arctic-council.org/article/about> (last visited Aug. 19, 2009).



environmental protection in the Arctic.”<sup>109</sup>

The Council is a promoter of soft law, i.e., nonbinding norms, and, as a consequence, no legally binding special programs or regional agreements for protecting Arctic ocean space have been adopted.<sup>110</sup> However, as the north polar marine environment clearly falls within the ambit of the Arctic Council's concerns, it has made a number of declarations and formal statements to promote an environmental protection strategy for the region.<sup>111</sup> Key among these is the work of the Protection of the Arctic Marine Environment Working Group, especially its Arctic Marine Strategic Plan and the Guidelines for Transfer of Refined Oil and Oil Products in Arctic Waters.<sup>112</sup> In addition, the Emergency Prevention, Preparedness and Response working group has produced several important nonbinding documents, among them the Arctic Guide for Emergency Prevention, Preparedness and Response (annually updated), a Field Guide for Oil Spill Response in Arctic Waters (1998), an Environmental Risk Analysis for Arctic Activities (1998), and a Circumpolar Map of Resources at Risk from Oil Spills in the Arctic (2002).<sup>113</sup>

In May 2008, representatives of Canada, Russia, Denmark, Norway, and the United States gathered in Greenland for a special Arctic Ocean Conference. This Conference was called by Denmark in reaction to rising tensions among these coastal states over still to be asserted claims to hydrocarbon deposits in the Arctic Ocean seafloor.<sup>114</sup> The product of these discussions was the Ilulissat Declaration, a statement of cooperative policy. Importantly, the Declaration noted that “the law of the sea provides for important rights and obligations concerning the delineation of the outer limits of the

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109. *Id.*

110. See generally Arctic Council, Documentation, <http://arctic-council.org/section/documentation> (last visited Aug. 19, 2009).

111. At least ten declarations have been adopted, among them the Salekhard Declaration (2006, dealing with climate change), the Inari Declaration (2002, dealing with human conditions, biodiversity conservation and sustainable use of resources, pollutants and climate change), the Rovaniemi Declaration (1991, dealing with protection of the arctic environment), the Reykjavik Declaration (2004, dealing with sustainable resources, climate change, pollutants, and biodiversity conservation, *inter alia*), and the Nuuk Declaration (1993, affirming the need for all Arctic governments to protect the Arctic environment). See *id.*

112. PAME, Guidelines for Transfer of Refined Oil and Oil Products in Arctic Waters (TROOP) (Nov. 2004), available at <http://old.pame.is/sidur/uploads/TROOP%20-%20English%202.pdf>.

113. See Arctic Council, Emergency, Prevention, Preparedness and Response, EPPR Resources, Products, available at <http://eppr.arctic-council.org/> (last visited Aug. 19, 2009). For discussion, see generally Timo Koivurova & David L. VanderZwaag, *The Arctic Council at 10 Years: Retrospect and Prospects*, 40 U. BRIT. COLUM. L. REV. 121 (2007).

114. See Arctic Economics, The Ilulissat Declaration, [http://benmuse.typepad.com/arctic\\_economics/2008/05/the-ilulissak-declaration.html](http://benmuse.typepad.com/arctic_economics/2008/05/the-ilulissak-declaration.html) (May 28, 2008, 21:39 EST).

continental shelf, the protection of the marine environment, including ice-covered areas, freedom of navigation, marine scientific research, and other uses of the sea.”<sup>115</sup> Further, it affirmed that these five Arctic states “remain committed to this legal framework and to the orderly settlement of any possible overlapping claims.”<sup>116</sup> The overarching theme of this statement seems clear: The 1982 Law of the Sea Convention, along with the International Maritime Organization and the Arctic Council, form the core features of the regime that governs the Arctic. In this regime, moreover, the five coastal states that border the Arctic Ocean retain primary responsibility for managing activities in the region, including resource development and environmental protection. In sum, the Ilulissat Declaration highlights the unique relationship of the five coastal nations to the Arctic, affirms the law of the sea treaty as central to the legal framework for development, asserts that the legal framework is best implemented through national action by the five coastal states, and asserts that no need exists to create a comprehensive new legal regime for management of the Arctic Ocean.<sup>117</sup>

### B. Pollution Prevention

#### 1. The 1982 LOS Convention

Protection of the Arctic region of the world’s ocean falls under international environmental law. The conceptual cornerstone of modern international environmental law is found in the 1972 Stockholm Declaration on the Human Environment,<sup>118</sup> in particular Principle 21 of that instrument. This Principle, which recognizes “the sovereign right [of states] to exploit their own resources pursuant to their own environmental policies,”<sup>119</sup> also asserts the correlative responsibility of states “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.”<sup>120</sup> States are accordingly obligated not to pollute ocean

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115. The Ilulissat Declaration, Arctic Ocean Governing Conference, Ilulissat, Greenland, May 27-29, 2008, available at [http://www.oceanlaw.org/downloads/arctic/Ilulissat\\_Declaration.pdf](http://www.oceanlaw.org/downloads/arctic/Ilulissat_Declaration.pdf). Presumably, Finland, Iceland, and Sweden were not invited since they had no direct claims to the hydrocarbon-bearing Arctic continental shelves in question. See also *Summit Seeks Accord on Arctic Sovereignty*, THE CITIZEN, May 28, 2008.

116. Ilulissat Declaration, *supra* note 115.

117. *Id.*

118. Declaration of the United Nations Conference on the Human Environment, June 5-16, 1972, U.N. Doc. A/CONF. 48/14.

119. *Id.* Principle 21.

120. *Id.* The international precedent often cited as the genesis for this norm is the Trail

space beyond the limits of their sovereign jurisdiction.

Article 235 of the 1982 LOS Convention asserts that states are responsible for fulfilling "their international obligations concerning the protection and preservation of the marine environment."<sup>121</sup> To this end, certain intergovernmental institutions were created to facilitate a coordinated approach for implementing ocean law designed to prevent marine pollution through the harmonization of national legislation and policy within the contemporary law of the sea.

Preeminent among these is the IMO, which provides a forum for cooperation among governments on technical matters affecting international merchant shipping. Membership in the IMO is intended to represent both traditional maritime states and states that rely on the shipping services of other countries. Though the IMO initially placed special emphasis on the safety of life at sea, in recent times its more visible focus has been the prevention and control of marine pollution from ships.<sup>122</sup> To wit, under Article 211 of the 1982 Law of the Sea Convention, the IMO is presumed to be the "competent" organization that is to authorize establishment of marine pollution standards.<sup>123</sup> Since its creation, the IMO has also assumed authority for enforcing the anti-pollution law on the high seas, as well for negotiating new international instruments designed to dissuade global marine pollution.<sup>124</sup>

The modern evolution of ocean law through the negotiation of various anti-pollution conventions has established a broad legal framework for protecting and preserving the marine environment beyond the limits of national jurisdiction, all of which inherently relate to Arctic waters. Principal concern was devoted to pollution of the seas by oil, and the 1969 International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties<sup>125</sup> and its 1973 Protocol on Substances other than Oil<sup>126</sup> codified the principle that parties may take measures on the high seas

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Smelter Arbitration between the United States and Canada. See Trail Smelter Arbitral Tribunal Decision, 35 AM. J. INT'L L. 684 (1941).

121. 1982 LOS Convention, *supra* note 23, art. 235.

122. Perusal of the chronology of conventions adopted by the IMO since 1958 clearly reveals this pattern of increasing concern over the past three decades for prevention of marine pollution and protection of the marine environment. See IMO, Status of Conventions, *supra* note 98. Nearly every major convention dealing with preventing pollution of the oceans negotiated since 1970 has been sponsored by the IMO. See *id.*

123. See 1982 LOS Convention, *supra* note 23, art. 211.

124. See IMO, Status of Conventions, *supra* note 98.

125. International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, Nov. 29, 1969, T.I.A.S. 8068. At least eighty-six states are currently parties to this Convention. See IMO, Status of Conventions, *supra* note 98.

126. Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution by Substances Other than Oil, Nov. 2, 1973, T.I.A.S. 10561.

“to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of pollution of the sea by oil [or other substances], following upon a maritime casualty . . . which may reasonably be expected to result in major harmful consequences.”<sup>127</sup> The 1969 International Convention on Civil Liability for Oil Pollution Damage<sup>128</sup> and the 1971 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage<sup>129</sup> established an international system of liability and compensation for oil pollution damage caused by ships.<sup>130</sup> Given the prospect of increased hydrocarbon exploration and exploitation activities in Arctic continental shelves areas in coming decades, these conventions undoubtedly will increase in relevance.

The 1982 LOS Convention furnishes the highest level global directives currently available for protecting and preserving the marine environment. The provisions contained in Part XII of the LOS Convention, “Protection and Preservation of the Marine Environment,”<sup>131</sup> are actually constitutional in character. They establish a comprehensive framework for the protection and preservation of the marine environment in the context of international law applicable to all ocean space.<sup>132</sup> In this respect, Part XII embodies the first serious effort to construct and codify a public international law framework that deals with the degradation of and threat to the global marine environment, inclusive of the Arctic. These provisions emphasize the need for global response to problems of marine pollution. Part XII does not merely furnish standard-setting principles. Rather, it supplies a blueprint for regionally responsive standards. As such, its provisions embody a general framework for anti-pollution measures designed to protect the world marine ecosystem.

The 1982 LOS Convention defines marine pollution in sweeping terms that hold special relevance for the preservation of marine biodiversity. As set out in Article 1, “pollution of the marine

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127. Convention on Intervention on the High Seas in Cases of Oil Pollution Casualties, *supra* note 125, art. 1.

128. International Convention on Civil Liability for Oil Pollution Damage, Nov. 29, 1969, 973 U.N.T.S. 3, 9 I.L.M. 45. For a discussion of the Convention, see IMO, International Convention on Civil Liability for Oil Pollution Damage (CLC), 1969, [http://www.imo.org/Conventions/contents.asp?doc\\_id=660&topic\\_id=256](http://www.imo.org/Conventions/contents.asp?doc_id=660&topic_id=256).

129. International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, Dec. 18, 1971, *available at* <http://www.admiraltylawguide.com/conven/oilpolfund1971.html>.

130. There are presently three intergovernmental organizations—the 1971 Fund, the 1992 Fund, and the Supplementary Fund—that provide compensation for oil pollution damage resulting from oil spills from tanker vessels. The International Oil Pollution Compensation Funds, Introduction, <http://www.iopcfund.org/intro.htm> (last visited Aug. 19, 2009).

131. 1982 LOS Convention, *supra* note 23, arts. 192-237.

132. *Id.* art. 192.

environment” means:

the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.<sup>133</sup>

The chief duty of national governments under the 1982 LOS Convention is to protect the ocean ecosystem: “States have the obligation to protect and preserve the marine environment.”<sup>134</sup> Article 194 underpins the legal duty not to pollute the oceans. The Convention is concerned with all sources that pollute the marine environment, and states are required to take, alone or in concert, “all measures . . . necessary to prevent, reduce and control pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal and in accordance with their capabilities . . .”<sup>135</sup> By the same token, states are responsible for undertaking efforts to ensure compliance with and enforcement of these obligations on their nationals.<sup>136</sup> Arctic littoral states are clearly obligated to uphold these rules.

The 1982 LOS Convention addresses the threat of high seas pollution from a source-oriented perspective. Six sources of marine pollution are treated: land-based, national seabed activities, activities in the international seabed area, dumping, vessel-source, and atmospheric.<sup>137</sup> Pollution from all these sources affects the marine ecosystem, though to varying degrees. The general thrust of these anti-pollution provisions is proactive, rather than reactive. That is, provisions are designed to prevent and dissuade manmade pollution activi-

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133. *Id.* art. 1(4).

134. *Id.* art. 192. Within the United Nations organization, the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) was constituted in 1969 as the expert scientific advisory body on marine pollution within the United System. The GESAMP is supported by other U.N. agencies, namely by the U.N. Division of Ocean Affairs and the Law of the Sea, in the Office of Legal Affairs; the United Nations Environmental Programme; the IOC under UNESCO; FAO; WHO; IMO; and IAEA. Its mission is to provide scientific advice to sponsoring agencies on the prevention, reduction, and control of the degradation of the marine environment. See U.N. Env'tl. Programme, GESAMP, <http://www.unep.ch/regionalseas/main/partners/gesamp.html> (last visited Aug. 19, 2009).

135. 1982 LOS Convention, *supra* note 23, art. 194(1).

136. *Id.* arts. 117-119. See generally Joyner, *Compliance and Enforcement in New International Fisheries Law*, *supra* note 52, at 52.

137. 1982 LOS Convention, *supra* note 23, arts. 207-212.

ties, rather than to stop or redress their harmful impacts.

The 1982 LOS Convention specifically recognizes the threat that land-based sources of pollution present for the marine environment. States are directed to take legislative action “to prevent, reduce and control pollution of the marine environment from land-based sources . . . taking into account internationally agreed rules, standards and recommended practices and procedures.”<sup>138</sup> National legislation should be “designed to minimize, to the fullest extent possible, the release of toxic, harmful or noxious substances, especially those which are persistent, into the marine environment.”<sup>139</sup> In terms of land-based sources of marine pollution, the main sources of information are reports from national governments, although a number of international organizations and nongovernmental organizations are increasingly making public assessments and reports on Arctic marine developments. For the Arctic Ocean, these reports consistently find that the potentially greatest threats are land-based pollutions that exacerbate global warming and the melting of the polar ice sheet and the prospect of increased shipping throughout the region, which could lead to more collisions between vessels and oil spills.<sup>140</sup>

The 1982 LOS Convention obligates states to establish international rules to regulate vessel-source pollution worldwide. National laws adopted by states are to be “no less effective”<sup>141</sup> than generally accepted international rules. Again, enforcement is left to coastal and port states.<sup>142</sup> The reasoning here is clear: National governments make anti-pollution law; vessels under the jurisdiction of national governments violate the law; therefore, national governments must enforce the law against those vessels—in port, in waters of national jurisdiction, or on the high seas. The chief responsibility thus falls to flag states to “adopt laws and regulations and take other measures necessary” for implementing those national laws and applicable international rules for their vessels sailing in international waters.<sup>143</sup> In this regard, flag states are expected to regulate the design, equipment, and operation of vessels, as well as to take measures for preventing

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138. *Id.* art. 207(1).

139. *Id.* art. 207(5).

140. See generally AMAP, ARCTIC OIL AND GAS, *supra* note 88; HASSOL, *supra* note 87; AMAP, ARCTIC POLLUTION ISSUES, *supra* note 92. See also, e.g., Press Release, Steve Ertel, World Wildlife Fund Says Arctic Governments and Industry Still Unprepared for Oil Spills 20 Years after Exxon Valdez (Mar. 19, 2009), available at <http://www.worldwildlife.org/who/media/press/2009/WWFPresitem11925.html>; PAME, Arctic Portal, Russian NPA-Arctic Reports, <http://arcticportal.org/pame/pame-document-library/russian-npa-arctic-reports> (last visited Aug. 20, 2009).

141. 1982 LOS Convention, *supra* note 23, art. 208(3).

142. *Id.* arts. 213-218.

143. *Id.* art. 217(1).

accidents that might pollute the marine environment and bring harm to biological diversity in the oceans.<sup>144</sup>

The 1982 LOS Convention fixes international obligations for states to protect the oceans in three main ways. First, governments are explicitly obligated to protect and preserve that marine environment.<sup>145</sup> Governments have the duty not to pollute ocean space and must not condone the actions of nationals that do.

Second, governments are obligated to cooperate on both a global and regional basis.<sup>146</sup> This involves a fundamental commitment to make rules, regulations, and standards that undergird the first duty of protecting the marine environment.<sup>147</sup> The critical ingredient here, of course, is international cooperation, which includes information exchange, technological assistance, and implementation assistance.

Third, governments are obligated to adopt, enact, and enforce at the national level internationally agreed-upon standards for protecting the marine ecosystem.<sup>148</sup> This duty underpins protection of the marine environment. Only governments can make international law for protecting the oceans work effectively. Those governments that are not willing to do so—and thus remain outliers to the regime—might gain some competitive advantage in the short term but are likely to feel repercussions over the long run as other states react negatively to their recalcitrance.

## 2. MARPOL and Its Protocol

Since the harmful effects of manmade pollution on the world marine ecosystem have only recently been realized, serious efforts to control the problem globally are relatively new. Most attention to marine pollution has focused on oil and the prevention of maritime accidents. Intense media attention given to oil tanker disasters at sea since the mid-1960s led to greater international interest in marine pollution control. One signal outcome was the promulgation in 1973 of a new international agreement especially designed to replace the outdated 1954 Convention for the Prevention of the Pollution of the Sea by Oil.<sup>149</sup>

The jurisdictional reach of the new agreement, the 1973 International Convention for the Prevention of Pollution from Ships, as

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144. *See id.* art. 217(2).

145. *Id.* art. 207(1).

146. *Id.* art. 207(4).

147. *Id.*

148. *See id.* art. 192.

149. International Convention for the Prevention of Pollution of the Sea by Oil, May 12, 1954, 12 U.S.T. 2989.

modified by its Protocol of 1978 (MARPOL 73/78),<sup>150</sup> is global, inclusive of the Arctic. MARPOL 73/78 aims to remedy the “deliberate, negligent or accidental release of . . . harmful substances from ships” as well as “to achieve the complete elimination of intentional pollution of the marine environment by . . . harmful substances.”<sup>151</sup> This composite legal instrument aims to prevent and control pollution generated from ships into the marine environment. By so doing, MARPOL 73/78 works to preserve and protect the global marine environment. The agency responsible for sponsoring, promoting and modifying MARPOL 73/78 is the IMO.<sup>152</sup>

While MARPOL 73/78 mainly deals with pollution of the seas by oil,<sup>153</sup> its regulatory authority also extends to noxious liquid substances,<sup>154</sup> harmful packaged substance and freight containers,<sup>155</sup> sewage discharge from ships,<sup>156</sup> disposal of garbage and plastics from vessels at sea,<sup>157</sup> and air pollution from ships.<sup>158</sup> That authority stems from the special annexes that contain regulations for the enforcement and administration of pollution prevention.

As of 2009, MARPOL 73/78 contains six annexes, each of which pertains to a particular type of pollutant. Annexes I and II of

150. International Convention for the Prevention of Pollution from Ships, Nov. 2, 1973, IMCO Doc. MP/CPNF.WP.35/ ; Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships, Feb. 17, 1978, IMCO Doc. TSPP/CONF/11 [combined instrument hereinafter MARPOL 73/78]. The 1973 MARPOL Convention was not intended to enter into force or be applied on its own. The regime to be used by states party to the 1978 Protocol is that contained in the 1973 Convention, as modified by the 1978 Protocol. The acronym “MARPOL” is taken from the first three letters of the words “marine pollution.”

151. *Id.*

152. See IMO, International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL), [http://www.imo.org/TCD/contents.asp?doc\\_id=678&topic\\_id=258#1](http://www.imo.org/TCD/contents.asp?doc_id=678&topic_id=258#1) (last visited Aug. 21, 2009).

153. See International Convention for the Prevention of Pollution from Ships, 1973, Annex I, Regulations for the Prevention of Pollution by Oil, IMCO Doc. MP/CONF/WP.21 (1973).

154. See *id.* Annex II, Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk. By 2009, 149 states accounting for 99.01 percent of world tonnage had contracted to this annex. IMO, Status of Conventions, *supra* note 98.

155. See MARPOL 73/78, *supra* note 150, Annex III, Regulations for the Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Forms, or in Freight Containers, Portable Tanks or Road and Rail Tank Wagons. By 2009, 132 states having a combined tonnage of 95.76 percent had contracted to this annex. IMO, Status of Conventions, *supra* note 98.

156. See *id.* Annex IV, Regulations for the Prevention of Pollution by Sewage from Ships. By 2009, 122 states having a combined world tonnage of 80.75 percent had contracted to this annex. IMO, Status of Conventions, *supra* note 98.

157. See MARPOL 73/78, *supra* note 150, Annex V, Regulations for the Prevention of Pollution of Garbage from Ships (entered into force Dec. 31, 1988). By 2009, 138 states with a combined tonnage of 96.98 tons had contracted to this Annex. IMO, Status of Conventions, *supra* note 98.

158. See MARPOL 73/78, *supra* note 150, Annex VI, Regulations for the Prevention of Air Pollution from Ships, IMO Doc. MP/CONF.3/34 and Doc. MP/CONF.3/33/Rev. 1. By 2009, this instrument had fifty-six contracting parties, accounting for 83.46 percent of world tonnage. IMO, Status of Conventions, *supra* note 98.



MARPOL, which are mandatory, deal with oil and noxious liquid substances, respectively. These two annexes contain strict regulations for ship design, and acceptance of them became essential for MARPOL's entry into force.<sup>159</sup> A state that accepts MARPOL 73/78, however, is not obliged to accept Annexes III, IV, or V, known as the Optional Annexes.<sup>160</sup> This arrangement underscores the signal importance attached to the control of oil pollution in 1973 when the MARPOL Convention was negotiated.

Annexes III, IV, and V of the MARPOL Convention are concerned with containerized substances, ship sewage discharges, and ship garbage, respectively, as they might impact Arctic waters. Annex V of the MARPOL Convention only addresses the routine disposal of wastes at sea, not the issue of maritime accidents. Unlike Annexes I and II, Annex V omits consideration of vessel design regulations in the Arctic.

Most recently, in September 1998, a new annex to MARPOL 73/78 was adopted in line with the new rules and standards that states are required to establish under Article 211 of 1982 LOS Convention. Annex VI, which contains Regulations for the Prevention of Air Pollution from Ships,<sup>161</sup> came in response to concerns about ozone depletion and climate change from the greenhouse effect. Annex VI prohibits intentional emissions of ozone depleting substances (halons and chlorofluorocarbons) and sets limits on the emission of sulphur oxide and nitrogen oxide. Annex VI also prohibits the incineration on board ships of certain substances, such as polychlorinated biphenyls, and certain areas (*e.g.*, the Baltic Sea) are designated as sulphur oxide emission control areas.<sup>162</sup> A technical code on the control of emissions of nitrogen oxides from marine diesel engines was also adopted by Conference of Parties to MARPOL in 1998.<sup>163</sup>

MARPOL 73/78 only addresses vessel-source pollution in ocean space. Each annex to the Convention addresses a different type of harmful substance or effluent intentionally or accidentally discharged from a ship, all of which can pollute Arctic waters. In this

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159. Annexes I and II were brought into force as integral parts of MARPOL when it entered into force on October 2, 1983. IMO, International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL), *supra* note 152.

160. See MARPOL 73/78, *supra* note 150, art. 14(1).

161. See MARPOL 73/78, *supra* note 150, Annex VI, Regulations for the Prevention of Air Pollution from Ships. Annex VI was added via the adoption of the Protocol of 1997 to amend MARPOL 73/78.

162. *Id.*

163. Press Release, IMO, IMO Says Ship Engines Should Comply with NOx Code from 1 January 2000, available at [http://www.imo.org/About/mainframe.asp?topic\\_id=69&doc\\_id=560](http://www.imo.org/About/mainframe.asp?topic_id=69&doc_id=560) (last visited Jan. 21, 2010).

respect, vessel discharge should not be confused with ocean dumping, which concerns the disposal of land-generated wastes at sea. In fact, the MARPOL Convention was promulgated to fill in gaps left by the 1972 London Dumping Convention.<sup>164</sup> In this way, the MARPOL 73/78 and the London Dumping Convention, both authorized by the IMO, have become mutually cohesive for banning vessel-source pollution activities that harm the marine environment.

With regard to dumping, states are obligated under current ocean law to adopt regulations and take means necessary “to prevent, reduce and control pollution.”<sup>165</sup> The 1982 LOS Convention insists that dumping into the ocean not be allowed “without the permission of competent authorities of States.”<sup>166</sup> States are directed to “endeavor to establish global and regional rules,”<sup>167</sup> and their national anti-pollution legislation “shall be no less effective . . . than the global rules and standards.”<sup>168</sup> It falls upon national governments, therefore, to ensure that dumping from their vessels is formally prohibited, not only in waters of national jurisdiction, but also on the high seas. Responsibility also accrues to national governments—in particular the coastal state whose waters may be affected or the flag state whose vessel is actually engaged in dumping—to enforce these prohibitions.

### 3. Ocean Dumping

The 1972 London Dumping Convention contributes substantially to reinforcing the norms against marine pollution.<sup>169</sup> “Dumping” is defined in Article 3 as “any deliberate disposal at sea . . . .”<sup>170</sup> The Convention goes on to obligate contracting parties “to take all practicable steps to prevent the pollution of the sea by the dumping of waste and other matter that is 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

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164. Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, Dec. 29, 1972, 26 U.S.T. 2403, 1046 U.N.T.S. 120 [hereinafter London Dumping Convention]. In Article 3, para. 1(b)(i), the London Dumping Convention actually proclaims that dumping excludes “the disposal at sea of wastes or other matter incidental to, or derived from the normal operations of vessels. . . .” In early 2009, eighty-five states were parties to this Convention, including all eight Arctic states. IMO, Status of Conventions, *supra* note 98.

165. 1982 LOS Convention, *supra* note 23, art. 210(1).

166. *Id.* art. 210(3).

167. *Id.* art. 210(4).

168. *Id.* art. 210(6).

169. London Dumping Convention, *supra* note 164.

170. *Id.* art. 3.

sea.”<sup>171</sup> To this end, the agreement specifically prohibits or restricts certain “black” or “grey-listed substances” from being dumped into “all marine waters other than the internal waters of states.”<sup>172</sup> Contracting parties are obliged not to dump harmful substances—including toxins, plastics, and petrochemicals—into the oceans.<sup>173</sup>

This instrument provides a list of prohibited materials and sets international standards for evaluating materials not specifically listed. Important for protecting marine biodiversity, among those materials banned from disposal are plastics and other persistent synthetic materials that float or remain suspended in ocean waters such that they materially interfere with fishing, navigation and other legitimate uses of the oceans.

The 1972 London Convention is not self-implementing. It relies upon appropriate statutes passed by individual contracting parties for its enforcement. Jurisdiction of each state extends to vessels and aircraft registered in its territory, flying its flag, or which are loading matter to be dumped within that state’s territory or territorial seas, as well as to vessels and platforms under the jurisdiction of a member party believed to be engaged in acts of dumping at sea.<sup>174</sup>

The 1972 London Convention establishes international rules to regulate ocean dumping (including ocean incineration). It bans the dumping of certain substances and limits the dumping of others, with all allowed dumping to be regulated by system of permits. In 1996, a Protocol was adopted to strengthen and clarify provisions in the London Convention,<sup>175</sup> and in October 1997 contracting parties to the London Convention adopted Guidelines for the Assessment of Wastes or Other Matter that May Be Considered for Dumping. These guidelines provide guidance for national authorities in deciding what waste materials may be lawfully dumped at sea by license or otherwise. Relatedly, the problem of harmful aquatic organisms in ballast water dumped by ocean-going vessels has arisen. Estimates suggest that ten billion tons of ballast water are transferred and discharged each year, providing a prominent medium for transporting new and alien species from one region to another. These alien species can produce disastrous effects on local

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171. *Id.* art. 1.

172. *Id.* art. 1(3).

173. *See generally id.*

174. *See id.* art. 7.

175. Protocol amending the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention). *See* The Secretary-General, *Report of the Secretary-General on Oceans and the Law of the Sea*, U.N. Doc. A/52/487, paras. 288-95 (Oct. 20, 1997).

ecosystems by causing algae blooms, releasing pathogens, and infecting fish species. To minimize this threat, in 1998 IMO adopted its Guidelines for the Control and Management of Ships' Ballast Water to Minimize the Transfer of Harmful Aquatic Organisms and Pathogens,<sup>176</sup> which also contributes to objectives in the Biodiversity Convention to protect conservation and sustainable use of biological diversity in marine ecosystems, inclusive of the Arctic.

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal<sup>177</sup> relates to use of the oceans, since considerable amounts of hazardous wastes are transported by ocean-going vessels. The Basel Convention obligates parties to control and reduce international movements of hazardous waste materials, and to prevent and punish illegal traffic in them. Consent must be obtained from transit countries, environmentally sound management of wastes must be ensured, and all import and transit states must be notified of proposed waste movements. To effect these obligations, rules are set out in the Basel Convention to determine the hazardous nature of the waste materials and whether they are coming or going to final disposal or recovery.

Finally, increased exploration and exploitation for oil and gas resources have occurred worldwide, and most recently these efforts have focused prospective development of these resources in the Arctic Ocean. To accomplish hydrocarbon exploration and exploitation activities in the maritime polar north, construction of new offshore installations and structures must be undertaken. Under Articles 60 and 80 of the 1982 LOS Convention, the coastal state has the exclusive right to erect and regulate the construction, operation and use of these artificial islands, installations and structures in its exclusive economic zone.<sup>178</sup> Though the offshore industry has largely been self-regulatory under the aegis of the coastal state, the IMO's Maritime Safety Committee has sought in recent years to set out safety standards and guidelines for removal and disposal of these facilities. Thus, in 1989, the IMO adopted the Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone<sup>179</sup> to provide generally accepted standards for the removal of

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176. See IMO, *Guidelines for the Control and Management of Ships' Ballast Water to Minimize the Transfer of Harmful Aquatic Organisms and Pathogens*, IMO A 20/Res. 868 (1997).

177. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Mar. 22, 1989, U.N. Doc. UNEP/WG.190/4, UNEP/IG.80/3, available at <http://www.basel.int/text/con-e.pdf>.

178. 1982 LOS Convention, *supra* note 23, arts. 60 & 80.

179. See IMO, *Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone*, IMO Doc.A 16/Res.

offshore installations. In addition, the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic prohibits dumping of disused offshore installations within specified maritime areas.<sup>180</sup>

### C. Shipping Regulation

Current marine shipping in the polar north has been intra-Arctic, which tends to concentrate in the Canadian Arctic and around the east and west coasts of Greenland. However, reduced sea ice caused by global warming, greater access to resources and higher costs for hydrocarbons seem likely to increase marine transportation activities throughout the region. Should these developments eventuate, the environmental impacts on the region could be seriously consequential. Among these are: the greater possibility of shipping incidents, which would result in accidental discharges of pollutant substances from cargo or fuel losses and physically impact the Arctic marine ecosystem; operational discharges from fuel incineration and garbage and sewage disposal; navigation byproducts such as noise pollution and disruption of marine animal behavior; and the introduction of alien organisms from ballast water exchanges and species' attachment to hulls.<sup>181</sup> It seems increasingly obvious that a genuine need exists for new rules particular to the Arctic to regulate shipping in the region.<sup>182</sup>

The 1982 LOS Convention provides that coastal states have the right to regulate waters in ice-covered areas that are within their national jurisdiction. In this regard, Article 234 asserts that:

Coastal States have the right to adopt and enforce non-discriminatory laws and regulations for the pre-

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672 (Oct. 19, 1989), available at [http://www.imo.org/Environment/mainframe.asp?topic\\_id=1026](http://www.imo.org/Environment/mainframe.asp?topic_id=1026).

180. Convention for the Protection of the Marine Environment of the North-East Atlantic, Sept. 22, 1992 [hereinafter OSPAR Convention].

181. Erik Molenaar & Robert Corell, Background Paper: Arctic Shipping 11 (Sept. 4, 2008), available at <http://arctic-transform.org/download/ShipBP.pdf>. See also ARCTIC COUNCIL, ARCTIC MARINE STRATEGIC PLAN (Nov. 24, 2004), available at [http://arcticportal.org/uploads/vx/IW/vxIWcyCi\\_7UnSBwZDbPVug/AMSP-Nov-2004.pdf](http://arcticportal.org/uploads/vx/IW/vxIWcyCi_7UnSBwZDbPVug/AMSP-Nov-2004.pdf).

182. See Bob Weber, *U.S. Agency Joins Calls for International Rules on Arctic Shipping, Resources*, CANADIAN PRESS, Feb. 3, 2009, available at <http://www.canadaeast.com/news/article/560152>. The report by the National Oceanic and Atmospheric Administration underscores the fact that there are few international rules protecting northern ecosystems. *Id.* Accordingly, standards need to be made mandatory and northern users should contribute to a new fund to help pay for inevitable environmental accidents or search-and-rescue efforts. *Id.*; see also COASTAL RESPONSE RES. CTR., OPENING THE ARCTIC SEAS: ENVISIONING DISASTERS AND FRAMING SOLUTIONS (2009), available at [http://www.crrc.unh.edu/workshops/arctic\\_spill\\_summit/arctic\\_summit\\_report\\_final.pdf](http://www.crrc.unh.edu/workshops/arctic_spill_summit/arctic_summit_report_final.pdf).

vention, reduction and control of marine pollution from vessels in ice-covered areas within the limits of the exclusive economic zone, where particularly severe climatic conditions and the presence of ice covering such areas for most of the year create obstructions or exceptional hazards to navigation, and pollution of the marine environment could cause major harm to or irreversible disturbance of the ecological balance. Such laws and regulations shall have due regard to navigation and the protection and preservation of the marine environment based on the best available scientific evidence.<sup>183</sup>

This provision was drafted by Canada mainly to accommodate that government's national interests in the Arctic. Within waters that are considered ice-covered for most of the year, coastal states are permitted to adopt non-discriminatory laws and regulations to prevent and reduce marine pollution that might adversely impact that oceanic environment. This pattern has been adopted by the other Arctic littoral states in regulating foreign shipping activities navigating through their ice-covered territorial seas and EEZs.

Given continued ice melt in the Arctic Ocean, two main routes seem likely possibilities for vessel passage through the region, the Northwest Passage and the Northern Sea Route. The Northern Sea Route includes all routes across the Russian Arctic coastal seas from Kara Gate (located at the southern tip of Novaya Zemlya) to the Bering Strait.<sup>184</sup> The Northwest Passage refers to the marine routes between the Atlantic and Pacific Oceans that cross the straits and sounds of the Canadian Arctic archipelago along the far northern coast of North America.<sup>185</sup> Since it lies wholly within Russia's sovereign waters, little controversy surrounds the legal status of the Northern Sea Route. On the other hand, the legal status of the Northwest Passage is complicated by marked disagreement between Canada and the United States. Canada asserts that the passage lies within Canada's sovereign archipelagic waters, and thus empowers Canada with full jurisdictional rights and control over vessel passage through it. Contrariwise, the United

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183. 1982 LOS Convention, *supra* note 23, art. 234. For an insightful treatment, see also Rob Huebert, *Article 234 and Marine Pollution Jurisdiction in the Arctic*, in GOVERNING HIGH SEAS FISHERIES 249-67, *supra* note 59.

184. See Leonid Tymchenko, *The Northern Sea Route: Russian Management and Jurisdiction over Navigation in Arctic Seas*, GOVERNING HIGH SEAS FISHERIES 269, *supra* note 59.

185. On the detailed legal issues pertaining to the status of the Northwest Passage, see Donat Phrand, *The Arctic Waters and the Northwest Passage: A Final Revisit*, 38 OCEAN DEV. & INT'L L. 3 (2007).

States asserts that the Northwest Passage is in fact an international strait, and thus ships are free to pass through it as is guaranteed under the regime of transit passage.<sup>186</sup> In any event, this dispute is not likely to negatively impact international efforts to make the Northwest Passage safer for future marine navigation.

Routing systems for ships are established to improve the safety of navigation in converging areas or in areas where the density of vessel traffic is great, where freedom of vessel movement is impeded by restricted ocean space, and where there exist "obstructions to navigation, limited depths, or unfavorable meteorological conditions."<sup>187</sup> The fact remains that at present no comprehensive mandatory or even voluntary IMO routing system exists for vessels navigating through the Arctic marine area in its entirety or even in part. Thus far, because of the prevalence of sea ice frozen year round, the international shipping industry appears to have omitted the Arctic from being assigned its own scheme for shipping lanes there. In the near future, though, the impending growth of Arctic marine shipping will necessitate adopting such a strategy. One interesting proposal meriting consideration could treat possible future shipping routes through the Arctic marine region as resembling the situation of archipelagic sea lanes as established in the 1982 LOS Convention.<sup>188</sup> The procedure laid down in Article

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186. Mark Jarashow, Michael B. Runnels & Tait Swenson, *UNCLOS and the Arctic: The Path of Least Resistance*, 30 *FORDHAM INT'L. L.J.* 1587, 1592 (2007); Lee Clark, *Canada's Oversight of Arctic Shipping: The Need for Reform*, 33 *TUL. MAR. L. J.* 79, 91 (2008).

187. Transport Canada, General Provisions on Ships' Routing, Part II(1.1), in Marine Safety Directorate, Routing Standards No. TP 1802 (1991), available at <http://www.tc.gc.ca/marineSafety/TP/TP1802/part2.htm>.

188. 1982 LOS Convention, *supra* note 23, art. 53. In full, Article 53 avers that:

1. An archipelagic State may designate sea lanes and air routes thereabove, suitable for the continuous and expeditious passage of foreign ships and aircraft through or over its archipelagic waters and the adjacent territorial sea.

2. All ships and aircraft enjoy the right of archipelagic sea lanes passage in such sea lanes and air routes.

3. Archipelagic sea lanes passage means the exercise in accordance with this Convention of the rights of navigation and overflight in the normal mode solely for the purpose of continuous, expeditious and unobstructed transit between one part of the high seas or an exclusive economic zone and another part of the high seas or an exclusive economic zone.

4. Such sea lanes and air routes shall traverse the archipelagic waters and the adjacent territorial sea and shall include all normal passage routes used as routes for international navigation or overflight through or over archipelagic waters and, within such routes, so far as ships are concerned, all normal navigational channels, provided that duplication of routes of similar convenience between the same entry and exit points shall not be necessary.

5. Such sea lanes and air routes shall be defined by a series of continuous axis lines from the entry points of passage routes to the exit points. Ships and aircraft in archipelagic sea lanes passage shall not deviate more than 25 nautical miles to either side of such axis lines during passage, provided

53, implemented by the IMO General Provisions on Ships' Routing, could prove a suitable model for proposing an "Arctic Sea Lanes" scheme to IMO.<sup>189</sup>

International regulation of shipping safety standards to ensure environmental protection is primarily carried out by the International Maritime Organization, specifically by its Marine Environment Protection Committee and by the Maritime Safety Committee, especially in its Sub-Committee on Navigation and its Sub-Committee on Design and Equipment. Regarding substantive standards or legal rules, the binding international legal framework for the Arctic is generic, not regionally specific. That is, there are no special IMO discharge, emission, or ballast water exchange standards for the Arctic marine area; there is no comprehensive mandatory or voluntary IMO ships' routing system for the entire Arctic marine area or even a substantial portion of it; and there are no legally binding special construction, design, equipment, and manning standards—even for fuel composition and ballast water treatment—for the Arctic marine area.

The 1982 LOS Convention requires in articles 94 (Duties of the Flag State), 217 (Enforcement by the Flag State), and 219 (Measures relating to Seaworthiness of Vessels to Avoid Pollution) that states implement international regulations and standards govern-

that such ships and aircraft shall not navigate closer to the coasts than 10 per cent of the distance between the nearest points on islands bordering the sea lane.

6. An archipelagic State which designates sea lanes under this article may also prescribe traffic separation schemes for the safe passage of ships through narrow channels in such sea lanes.

7. An archipelagic State may, when circumstances require, after giving due publicity thereto, substitute other sea lanes or traffic separation schemes for any sea lanes or traffic separation schemes previously designated or prescribed by it.

8. Such sea lanes and traffic separation schemes shall conform to generally accepted international regulations.

9. In designating or substituting sea lanes or prescribing or substituting traffic separation schemes, an archipelagic State shall refer proposals to the competent international organization with a view to their adoption. The organization may adopt only such sea lanes and traffic separation schemes as may be agreed with the archipelagic State, after which the archipelagic State may designate, prescribe or substitute them.

10. The archipelagic State shall clearly indicate the axis of the sea lanes and the traffic separation schemes designated or prescribed by it on charts to which due publicity shall be given.

11. Ships in archipelagic sea lanes passage shall respect applicable sea lanes and traffic separation schemes established in accordance with this article.

12. If an archipelagic State does not designate sea lanes or air routes, the right of archipelagic sea lanes passage may be exercised through the routes normally used for internal navigation.

*Id.* art. 53.

189. Molenaar & Corell, *supra* note 181, at 23.



ing ship construction, equipment, and seaworthiness.<sup>190</sup> These are standards essentially contained in the Safety of Life at Sea Convention (SOLAS)<sup>191</sup> and the 1966 Load Lines Convention,<sup>192</sup> as augmented by a raft of codes, recommendations, and guidelines which, while not legally binding, have been broadly implemented by states.<sup>193</sup>

The 1974 SOLAS Convention, as modified by its 1978 and 1988 Protocols,<sup>194</sup> intends to promote safety of life at sea by ensuring that a ship is fit for international service on the oceans. In general, SOLAS sets forth minimum standards for vessels regarding construction, stability, machines, fire protection, lifesaving, communications, carriage of dangerous goods, surveys, and certification of vessels and navigation safety.<sup>195</sup> Flag states are responsible for ensuring their ships comply with SOLAS requirements, as evidenced by prescribed certification.<sup>196</sup> Contracting states may inspect vessels of other parties if reasonable grounds exist for believing a ship and its equipment are not in compliance with Convention requirements.<sup>197</sup> The 1978 Protocol, with crude oil and other product carriers in mind, added unscheduled inspections, mandatory annual surveys, and port state control requirements to the SOLAS regulations. The 1988 Protocol introduced a new system of surveys and certification that aims to bring SOLAS more in line provisions in

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190. *Id.* arts. 94, 217 & 219.

191. International Convention for the Safety of Life at Sea, 1974, Nov. 1, 1974, 32 U.S.T. 47 [hereinafter SOLAS]. In 2009, 159 states are party to this instrument. IMO, Status of Conventions, *supra* note 98.

192. International Convention on Load Lines, 1966, Apr. 5, 1966 (entered into force July 21, 1968) 18 U.S.T. 1857, 640 U.N.T.S. 133, available at <http://images.io.gov.mo/bo/s/99/50/dlar-49209-69-eng.pdf>. In 2009, 159 states are contracting parties to this instrument. IMO, Status of Conventions, *supra* note 98.

193. Some examples include: the International Safety Management Code; the Life Saving Appliance Code; the International Code for Application of Fire Test Procedures; the International Code for Construction and Equipment of Ships Carrying Liquefied Natural Gas in Bulk; the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk; and the Guidelines on the Enhanced Programme of Inspections during Surveys of Bulk Carriers on Oil Tankers (1994).

194. International Conference on Tanker Safety and Pollution Prevention, 1978. Final Act of the Conference with attachments, including the Protocol of 1978 relating to the International Convention for the Safety of Life at Sea, 1974; Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973. Feb. 16, 1978, IMO Docs. TSPP/CONF/10 and 10/Add. 1; Protocol, Mar. 2, 1978, TSPP/CONF 11 of 16 Feb. 1978; TSPP/CONF 12; Conference on the Harmonized System of Survey and Certification, Final Act of the Conference with resolution and the Protocol of 1988 relating to the International Convention for the Safety of Life at Sea, 1974. London, IMO 1989 ed. IMO Docs. HSSC/CONF/11 and Corr. 1. See IMO, Safety Conventions, [http://www.imo.org/inforesourcel/mainframe.asp?topic\\_id=829#04](http://www.imo.org/inforesourcel/mainframe.asp?topic_id=829#04) (last visited Aug. 21, 2009).

195. See SOLAS, *supra* note 191.

196. IMO, International Convention for the Safety of Life at Sea (SOLAS), 1974, [http://www.imo.org/TCD/contents.asp?topic\\_id=257&doc\\_id=647](http://www.imo.org/TCD/contents.asp?topic_id=257&doc_id=647).

197. *Id.*

the 1966 Load Lines Convention and MARPOL 73/78.<sup>198</sup> Amendments to SOLAS are made by the Maritime Safety Committee.

The 1966 International Convention on Load Lines sets standards and limits on the draught to which a ship may be loaded, principally for the vessel's safety. The Convention sets limits in the form of freeboards based on watertight integrity and damage stability calculations. The regulations also take into account hazards in special zones and seasonal areas.<sup>199</sup> In 1988, a Protocol was adopted to harmonize the Convention's survey and certification requirements with those in SOLAS and MARPOL 73 with 78. The Protocol additionally introduces the "tacit acceptance" amendment procedure into the Load Lines Convention, by which an amendment automatically enters into force by a particular date unless one-third of the parties specifically reject it.<sup>200</sup>

The 1978 IMO International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW)<sup>201</sup> constitutes the "generally accepted international regulations, procedures and practices" referred to in Article 94(5) of the 1982 LOS Convention, with which national measures are to conform.<sup>202</sup> The STCW Convention establishes basic requirements for training, certification, and watchkeeping to be used by seafarers. The technical provisions of the convention are contained in an annex, which deals with the procedures of keeping navigational watches, engineering watches, radio watchkeeping, training, and qualifications for the officers of tanker vessels, and mandatory minimum requirements for survival craft. In 1995, special amendments in the form of a STCW Code were adopted that substantially revised the 1978 convention.<sup>203</sup> Among these amendments was the requirement that detailed information had to be supplied to the IMO on the administrative measures taken to comply with the Convention, as well as enhanced procedures to allow for quicker intervention by port states in the event a vessel poses a danger to persons, property, or the environment.<sup>204</sup>

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198. *Id.*

199. See IMO, International Convention on Load Lines, Annex II, 1966, [http://www.imo.org/conventions/mainframe.asp?topic\\_id=254](http://www.imo.org/conventions/mainframe.asp?topic_id=254).

200. See *id.*

201. International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, July 7, 1978, reprinted in 6D BENEDICT ON ADMIRALTY, Doc. 14-6, at 14-483 (7th rev. ed. 1998). In 2009, 153 states are contracting parties to this convention. IMO, Status of Conventions, *supra* note 98.

202. 1982 LOS Convention, *supra* note 23, art. 94(5).

203. See IMO, International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, [http://www.imo.org/TCD/contents.asp?doc\\_id=651&topic\\_id=257](http://www.imo.org/TCD/contents.asp?doc_id=651&topic_id=257) (last visited Aug. 21, 2009).

204. *Id.*

In recent years, a problem has arisen over the abandonment of seafarers after accidents, sinkings, or bankruptcy. The applicable international instruments governing labor conditions is the 1982 LOS Convention in Article 94, paragraph 3(b), consisting of labor standards set by International Labour Organization (ILO), which includes the ILO conventions on the Repatriation of Seamen<sup>205</sup> and the Merchant Shipping Convention.<sup>206</sup> While the ILO Conventions on Repatriation and Merchant Shipping have attracted few ratifications, the latter is applied widely.<sup>207</sup>

The 1972 Convention on the International Regulations for Preventing Collisions at Sea, or COLREGS,<sup>208</sup> in line with Article 39 of the 1982 LOS Convention, sets forth detailed rules relating to the operation of vessels, including safe speeds, rights of way, actions to avoid collisions, lighting, signaling, fishing vessels, and provisions for traffic separation schemes for ocean navigation. If the Arctic were to become increasingly ice-free, and more vessel navigation were to occur, this instrument will become essential for insuring safe transit through the region. Much like "rules of the road," vessels using these schemes are required to proceed in the appropriate traffic lane, in the general direction of traffic flow for that lane, and avoid crossing traffic lanes. It is the IMO's Maritime Safety Committee (MSC) which will adopt resolutions dealing with traffic separation schemes, routing measures and designation of archipelagic sea lanes, and ship reporting systems for ocean transit through Arctic waters.<sup>209</sup>

As mandated by Article 41 of the 1982 LOS Convention, the IMO's MSC Subcommittee on the Safety of Navigation submits reports and recommendations for changes to rules on navigation through international straits. The MSC also considers proposals for the adoption, de-

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205. International Labour Organization, Repatriation of Seamen Convention of 1926, C. 23, available at <http://www.ilo.org/ilolex/cgi-lex/convde.pl?C023> (last visited Aug. 21, 2009).

206. International Labour Organization, Convention Concerning (Minimum Standards) in Merchant Ships, C. 147 (1976), 15 I.L.M. 1288.

207. While the ILO Repatriation Convention has forty-six parties, the Minimum Standards Conventions has fifty-five parties. International Labour Organization, Database of International Labour Standards, <http://www.ilo.org/ilolex/english/convdisp1.htm> (click on the name of convention, then "See the ratifications for this Convention") (last visited Jan. 21, 2010).

208. Convention on the International Regulations for Preventing Collisions at Sea, Oct. 20, 1972, 28 U.S.T. 3459. As of 2009, at least 153 states are contracting parties to this convention. IMO, Status of Conventions, *supra* note 98. For discussion of COLREGS, see also IMO, Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs), [http://www.imo.org/Conventions/contents.asp?doc\\_id=649&topic\\_id=257](http://www.imo.org/Conventions/contents.asp?doc_id=649&topic_id=257).

209. IMO, *General Principles for Ship Reporting Systems and Ship Reporting Requirements, Including Guidelines for Report Incidents Involving Dangerous Goods, Harmful Substances, and/or Marine Pollutants*, IMO Doc. A 20/Res. 851 (20) (1997), revising IMO Doc. A 16/Res. 648 (1989).

signation, and substitution of archipelagic sea lanes in the Arctic. Input is given by the International Civil Aviation Organization (ICAO) concerning any implications for overflight and the safety of international air navigation in the Arctic, and by the International Hydrographic Organization for the symbols used to depict archipelagic sea lanes on charts. Coordinates of sea lanes are published in the United Nations' *Law of the Sea Bulletin*.

With increased volume of ocean traffic in the Arctic, such traffic navigation services allow for identification and monitoring of vessels, strategic planning of vessel movements, and provides navigational information and assistance. Ship reporting is mandatory for vessels passing through straits. To facilitate more uniform coordination of these services, the IMO Assembly in 1998 revised its 1989 General Principles for Ship Reporting Systems and Ship Reporting Requirements, Including Guidelines for Reporting Incidents Involving Goods, Harmful Substances and/or Marine Pollutants,<sup>210</sup> and adopted a set of Guidelines for Vessel Traffic Services (VTS), including Guidelines on Recruitment, Qualifications and Training of VTS Operators.<sup>211</sup>

Article 98 of the 1982 LOS Convention obligates ships to render assistance to any persons in distress or in danger of being lost at sea, a critical concern in the Arctic.<sup>212</sup> To this end, the International Convention on Maritime Search and Rescue (SAR Convention) was adopted in 1979 to redress incongruities in national plans and standardized procedures.<sup>213</sup> The SAR Convention is designed to establish a global system for responding to emergencies at sea, as it develops rescue and search plans to cover thirteen areas of the world's ocean whenever accidents occur or the rescue of persons in distress is necessary. Operation of the SAR Convention is facilitated by the Global Maritime Distress and Safety System (GMDSS) that was adopted in 1988 and entered into force in 1992 to provide more efficient communications support.<sup>214</sup> All passenger ships and cargo vessels over 300 gross tons on international voyages are required to carry equipment for satellite emergency radio

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210. See Transport Canada, Guidelines for Reporting Incidents Involving Goods, Harmful Substances and/or Marine Pollutants (1995), available at <http://www.tc.gc.ca/marinesafety/tp/tp9834/TP9834E.pdf>.

211. See IMO, *Guidelines for Vessel Traffic Services*, IMO Doc. A 20/Res. 857 (1997). See also IMO, *Vessel Traffic Services*, [http://www.imo.org/Safety/mainframe.asp?topic\\_id=387](http://www.imo.org/Safety/mainframe.asp?topic_id=387) (last visited Aug. 21, 2009).

212. 1982 LOS Convention, *supra* note 23, art. 98.

213. International Convention on Maritime Search and Rescue, Apr. 27, 1979, T.I.A.S. 11093. In early 2009, the SAR Convention has 95 parties, representing 59.76 percent of the world's tonnage. IMO, *Status of Conventions*, *supra* note 98.

214. See GMDSS OVERVIEW: An Overview of the Global Maritime Distress & Safety System, <http://www.navcen.uscg.gov/marcomms/gmdss/> (last visited Aug. 21, 2009).

beacons to improve chances of rescue after an accident and radio transponders to aid in location of ships or survival craft.<sup>215</sup> These rescue efforts should be aided considerably by satellite-based communication systems such as Global Positioning System (GPS) and the Global Navigation Satellite System.<sup>216</sup>

Finally, from 1991 to 2002, the IMO sponsored negotiations for a special international polar navigation code to regulate ship traffic through the Arctic, and in December 2002, it "approved Guidelines for ships operating in Arctic ice-covered waters."<sup>217</sup> The main purpose of this Code is to unify and internationalize ship standards in order to ensure ice-strengthening for ships, proper training and certification for polar navigators, appropriate navigation and survival equipment, a unified system of classification of ice conditions, and adequate standards for vessel propulsion power and hull strength. While the Code is nonbinding, its ultimate intention is bring the complex array of national standards into an international code that can be pragmatically followed to make ice-infested ship navigation safer and consonant with the arctic environmental protection strategy being promoted by the Arctic Council.<sup>218</sup> As maritime activities in the circumpolar north increase, the need for such a comprehensive polar navigation code undoubtedly will become patently obvious.

Primary responsibility for the enforcement of international rules and standards in Arctic waters rests with the flag state. Article 94 of 1982 LOS Convention requires each state to effectively exercise its jurisdiction and control over ships flying its flag and to ensure that their flagged vessels take measures to ensure safety at sea.<sup>219</sup>

The major initiative by the IMO to improve flag state jurisdiction is the International Safety Management Code, which became mandatory on June 1, 1998, for all tankers, bulk carriers, gas carriers, passenger ships, and high speed cargo craft over 500 gross tons. This Code requires that ship-owners or operators establish a safety

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215. In 1997, the IMO Assembly adopted a Code for the Investigation of Marine Casualties and Incidents to determine causes of accidents. Shipowners and operators of ships are also encouraged in this code to install Voyage Data Recorders on vessels. IMO, *Code for the Investigation of Marine Casualties and Incidents*, IMO Doc. A 20/Res.849 (1997).

216. See General Information on GPS, <http://www.navcen.uscg.gov/gps/default.htm> (last visited Aug. 21, 2009).

217. IMO, Guidelines for Ships Operating in Arctic Ice-Covered Water, MSC/Circ.1056/MEPC/Circ.399 (Dec. 23, 2002), available at [http://www.imo.org/includes/blastDataOnly.asp/data\\_id%3D6629/1056-MEPC-Circ399.pdf](http://www.imo.org/includes/blastDataOnly.asp/data_id%3D6629/1056-MEPC-Circ399.pdf). For an analysis of this Code and its potential relevance for the south polar seas, see Christopher C. Joyner, *The Emerging Legal Regime for Navigation through Antarctic Ice-Covered Waters*, in GILLIAN TRIGGS & ANNA RIDDELL, *ANTARCTICA: LEGAL AND ENVIRONMENTAL CHALLENGES FOR THE FUTURE* 61 (2007).

218. See Arctic Environmental Protection Strategy, *supra* note 104, at 14, 20, 26.

219. 1982 LOS Convention, *supra* note 23, art. 94.

management system containing safety and environmental protection policies, instructions, and procedures for ensuring safety and environmental protection and procedures for reporting and responding to accidents and emergencies. Responsibility for verifying the implementation of the Code rests with state governments.<sup>220</sup>

Port state control has become an important consideration for ensuring that ship-owners, insurers, or flag state administrators uphold their responsibilities. Port states can resort to several enforcement measures, including inspection of vessels visiting ports to ensure that they meet ship safety and marine pollution standards, as well as detaining vessels and barring entry to ships that fail to comply with the ISM Code.<sup>221</sup>

#### *D. Peace and Arms Control*

##### 1. Weapons of Mass Destruction

To make ocean space, including the Arctic, free from violence is a principal ambition among diplomats. Accordingly, negotiation of arms control arrangements flows from the aspiration that the oceans should be used for peaceful purposes. Indeed, as stated in the preamble of the 1982 LOS Convention, a cardinal purpose is to "promote the peaceful uses of the seas and oceans."<sup>222</sup> Moreover, Article 88 of the Convention asserts that, "[t]he high seas shall be reserved for peaceful purposes."<sup>223</sup> Toward that end, a number of international agreements have been adopted in recent decades.

The 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (Test Ban Treaty)<sup>224</sup> provides that each party undertakes to prohibit any nuclear weapon test or any other nuclear explosion at any place under its control "in the atmosphere . . . or underwater, including . . . [the] high seas."<sup>225</sup> The treaty further asserts in Article II that each party undertakes "to refrain from causing, encouraging, or in any way participating in," any nuclear weapon explosion, anywhere underwater or in the atmosphere, or if it causes radioactive debris outside its territory.<sup>226</sup>

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220. IMO, International Management Code for the Safe Operation of Ships and For Pollution Prevention, A 18/Res. 741(1993) [hereinafter ISM Code 1993].

221. See 1982 LOS Convention, *supra* note 23, art. 25(2).

222. 1982 LOS Convention, *supra* note 23.

223. *Id.* art. 88.

224. Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, Aug. 5, 1963, 14 U.S.T. 1313, 43 U.N.T.S. 480.

225. *Id.* art. I, (1)(a).

226. *Id.* art. I(2).

The 1971 Treaty on the Prohibition of the Emplacement of Nuclear and other Weapons of Mass Destruction on the Seabed and the Ocean Floor and in the Subsoil Thereof clearly applies to all maritime area in the Arctic.<sup>227</sup> Pursuant to this seabed arms control agreement, parties pledge “not to emplant or emplace on the seabed and the ocean floor and in the subsoil thereof . . . any nuclear weapons or any other types of weapons of mass destruction . . . or [means] for storing, testing, or using, such weapons.<sup>228</sup> Though this agreement was limited to fixed installations, which none of the major maritime powers in the Arctic intended to deploy, it still provides for the right of state inspection to monitor and enforce compliance with its provisions.

The 1972 Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction<sup>229</sup> also is relevant to Arctic ocean law. This Convention provides that each party take all necessary measures to “prohibit and prevent the development, production, stockpiling, acquisition or retention of the [biological] agents, toxins, weapons, equipment and means of delivery . . . under its jurisdiction or under its control anywhere.”<sup>230</sup> “[A]nywhere” includes a party’s activities in Arctic ocean space, be it within or beyond that state’s territorial sea limits.

The 1977 Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD)<sup>231</sup> prohibits parties from using military or other hostile environmental

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227. Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-bed and the Ocean Floor and in the Subsoil Thereof, Feb. 11, 1971, 23 U.S.T. 701, 955 U.N.T.S. 115, available at <http://www.un-documents.net/seabed.htm> (last visited Aug. 21, 2009). All eight Arctic states are parties to this Seabed Arms Control Treaty (signatories), <http://www.state.gov/www/global/arms/treaties/seabed3.txt> (last visited Aug. 21, 2009).

228. *Id.* art. I(1).

229. Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, Apr. 10, 1972, 26 U.S.T. 583, 1015 U.N.T.S. 163 [hereinafter Biological Weapons Convention], available at <http://www.opbw.org/convention/conv.html>. All eight Arctic littoral states are parties to this instrument. U.N. Office at Geneva, Disarmament: Membership of the Biological Weapons Convention, [http://www.unog.ch/80256EE600585943/\(httpPages\)/7BE6CBBEA0477B52C12571860035FD5C?OpenDocument](http://www.unog.ch/80256EE600585943/(httpPages)/7BE6CBBEA0477B52C12571860035FD5C?OpenDocument) (click on “States Parties”) (last visited Aug. 21, 2009).

230. Biological Weapons Convention, *supra* note 229, art. VI.

231. Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, May 18, 1977, 31 U.S.T. 333 [hereinafter ENMOD], available at <http://www.un-documents.net/enmod.htm> (last visited Aug. 21 2009). All Arctic states, save for Iceland, are contracting parties to this Convention. U.N. Office for Disarmament Affairs, ENMOD (in alphabetical order), available at [http://disarmament.un.org/TreatyStatus.nsf/ENMOD%20\(in%20alphabetical%20order\)?OpenView](http://disarmament.un.org/TreatyStatus.nsf/ENMOD%20(in%20alphabetical%20order)?OpenView) (last visited Aug. 21, 2009).

techniques against another state party.<sup>232</sup> The ENMOD Convention deals with environmental changes produced by "deliberate manipulation of natural processes" in war that result in adverse impacts on the environment.<sup>233</sup> This agreement forbids manipulation of natural processes (including the biota, lithosphere, hydrosphere, or atmosphere) as an instrument of armed conflict if their effects are "widespread, long-lasting, or severe. . ."<sup>234</sup> Inclusion of the hydrosphere clearly brings within the scope of this Convention activities affecting the use of Arctic Ocean space.

Dispute settlement occupies a critical place in contemporary ocean law and in the 1982 LOS Convention. The Convention requires, in Article 279, that parties settle disputes by "peaceful means in accordance with Article 2, paragraph 3 of the Charter of the United Nations."<sup>235</sup> To this end, parties may resort to the use of negotiation, inquiry, mediation, conciliation, arbitration, judicial settlement, regional arrangements, or any other peaceful means of their choice. These provisions apply no less to disputes concerning Arctic waters.<sup>236</sup>

## 2. International Criminal Law

Related to peaceful uses and national security considerations is the universal desire to suppress and punish various crimes at sea, in particular, smuggling illicit goods such as narcotic drugs and persons from one country to another, slave traders, piracy, and armed robbery. Article 108 of the 1982 LOS Convention<sup>237</sup> and Ar-

232. ENMOD, *supra* note 231, art. 1.

233. *Id.* art. 2.

234. *Id.* art. 1(1).

235. 1982 LOS Convention, *supra* note 23, art. 279.

236. The 1982 LOS Convention actually provides for special dispute settlement mechanisms to resolve ocean-related disputes. The International Tribunal for the Law of the Sea, created by the Convention and in existence since 1996, has four standing chambers to deal with Seabeds Disputes, Summary Procedure, Fisheries Disputes, and Marine Environmental Disputes. The diplomatic complement to this judicial institution, the Agreement on the Privileges and Immunities of the International Tribunal for the Law of the Sea, was opened for signature on July 1, 1997. In addition, conflict prevention is to be enhanced by establishment of a special maritime Boundary Commission, and other dispute settlement mechanisms include resort to arbitration as set out in Annex VIII of the Convention. Alternatively, parties may opt to submit a dispute to conciliation procedures, as furnished in Annex V of the Convention. Special Arbitration procedures are even provided for in Annex VIII of Convention to deal with disputes relating to fisheries, protection and preservation of the marine environment, marine scientific research or navigation including pollution from vessels and from dumping. The modern law for the oceans, including the Arctic, aspires to create a maritime environment free from violence or conflict. Imposing limits on the reach of certain weapons systems and providing for viable means to resolve disputes offers greater opportunities for Arctic Ocean space to be used exclusively for peaceful purposes.

237. 1982 LOS Convention, *supra* note 23, art. 108. This provision asserts that:

1. All States shall cooperate in the suppression of illicit traffic in narcotic



article 17 of the 1988 United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances<sup>238</sup> furnish the legal framework for international cooperation aimed at suppressing illicit traffic of these substances at sea.

As transoceanic travel has increased, so too has concern over the safety of passengers from various forms of unlawful acts. A number of international agreements have been negotiated with the express intent of suppressing international criminal activities on or over high seas areas, beyond the limits of national jurisdiction. While these instruments clearly are intended to promote peaceful purposes as stipulated in the 1982 LOS Convention, they are more specifically directed toward certain types of conduct that threaten the safety of persons in high seas areas, even in the Arctic region.

The 1963 Convention on Offences and Certain Other Acts Committed on Board Aircraft<sup>239</sup> applies to acts that might jeopardize the safety and security of aircraft “in flight . . . or on the surface of the high seas or of any other area outside the territory of any State.”<sup>240</sup> The state of registration is obligated to establish jurisdiction over offenses committed on board its aircraft, whether in flight over national territory or the high seas,<sup>241</sup> including the Arctic Ocean.

The 1970 Hague Anti-Hijacking Convention<sup>242</sup> provides that it is an offense for any person to seize or attempt to seize an aircraft in flight, including over the high seas—i.e., beyond the limits of

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drugs and psychotropic substances engaged in by ships on the high seas contrary to international conventions.

2. Any State which has reasonable grounds for believing that a ship flying its flag is engaged in illicit traffic in narcotic drugs or psychotropic substances may request the co-operation of other States to suppress such traffic.

*Id.*

238. United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, Dec. 20, 1988, Document of the U.N. Economic and Social Council Doc. E/CONF.82/15, Corr.1 and Corr.2, available at [http://www.incb.org/pdf/e/conv/1988\\_convention\\_en.pdf](http://www.incb.org/pdf/e/conv/1988_convention_en.pdf). All eight Arctic states are party to this Convention. See Treaties Office Database, Summary of Treaty: UN Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, <http://ec.europa.eu/world/agreements/preparaCreateTreatiesWorkspace/treatiesGeneralData.do?step=0&redirect=true&treatyId=526>.

239. Convention on Offences and Certain Other Acts Committed on Board Aircraft, Sept. 14, 1963, 20 U.S.T. 2941, 704 U.N.T.S. 219, available at <http://www.un.org/chinese/terrorism/1963E.pdf>. All eight Arctic states are parties to this Convention. ICAO, Tokyo Convention Parties, <http://www.icao.int/icao/en/leb/Tokyo.pdf> (last visited Jan. 21, 2010).

240. Convention on Offences and Certain Other Acts Committed on Board Aircraft, *supra* note 239, art. 1.

241. See *id.* art. 3.

242. Convention for the Suppression of Unlawful Seizure of Aircraft, Dec. 16, 1970, 22 U.S.T. 1641, available at <http://www.privacyinternational.org/article.shtml?cmd%5B347%5D=x-347-146570>. All eight Arctic states are parties to this Convention. ICAO (Hague Convention Parties), <http://www.icao.int/icao/en/leb/Hague.pdf>.

national jurisdiction.<sup>243</sup> Each party is expected to establish jurisdiction over the offense either on grounds of the aircraft being registered in that state, or as the state in whose territory the aircraft lands with an offender on board.<sup>244</sup> There is, moreover, the duty of the landing state to either extradite or prosecute those offenders taken into custody.<sup>245</sup>

The 1971 Montreal Sabotage Convention<sup>246</sup> applies to international acts that damage or destroy aircraft in service or in flight, if the place of takeoff or landing is outside the state of registry; its provisions make no distinction between flight over land territory or the high seas.<sup>247</sup> Should an offense be committed above the Arctic high seas, beyond the limits of national jurisdiction, a party is nonetheless obligated to establish jurisdiction over the offender aboard its registered aircraft.<sup>248</sup>

The 1988 Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation,<sup>249</sup> and its Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms Located on the Continental Shelf<sup>250</sup> were promulgated as anti-terrorism measures in the aftermath of the *Achille Lauro* episode in 1985.<sup>251</sup> The principal purpose of this Convention is to en-

243. Convention for the Suppression of Unlawful Seizure of Aircraft, *supra* note 242, pmbl.

244. *Id.* art. 7.

245. *Id.* art. 8.

246. Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation, Sept. 23, 1971, 24 U.N.T.S. 564, available at <http://cns.miis.edu/inventory/pdfs/aptcivair.pdf>. All eight Arctic states are parties to this Convention. U.N. Conventions on Terrorism, App. XII: U.N. Conventions on Terrorism, <http://www.cns.miis.edu/inventory/pdfs/apmunter.pdf> (last visited Aug. 21, 2009).

247. See Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation, *supra* note 246, arts. 1, 2.

248. *Id.* art. (5)(1)(b).

249. Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation, Mar. 10, 1988, 1687 U.N.T.S. 222, available at <http://untreaty.un.org/English/Terrorism/Conv8.pdf>. All eight Arctic states are parties to this Convention.

250. Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms Located on the Continental Shelf, Mar. 10, 1988, 1678 U.N.T.S. 304, available at <http://untreaty.un.org/English/Terrorism/Conv9.pdf> (last visited Feb. 3, 2009). All eight Arctic states are parties to this Protocol.

251. On October 7, 1985, four heavily armed men representing the Palestine Liberation Front seized control of the Italian-flagged *Achille Lauro* cruise ship as it sailed from Alexandria to Port Said. The hijackers had been surprised by a crew member and acted prematurely. Holding the 400 passengers and crew hostage, they directed the vessel to sail to Tartus, Syria, and demanded the release of 50 Palestinians then in Israeli prisons. After being refused permission to dock at Tartus, the hijackers murdered a disabled American tourist, wheelchair-bound Leon Klinghoffer, and threw his body and wheelchair overboard. The vessel headed back towards Port Said and the hijackers agreed to abandon the liner in exchange for safe conduct and a flight to Tunisia aboard an Egyptian commercial airliner. Infuriated that a U.S. national had been murdered during the seizure, U.S. President Ronald Reagan ordered that the plane be intercepted by U.S. Navy F-14 fighters and forced to land in Sicily. Italian authorities took the terrorists into custody and subsequently tried

sure that persons who commit unlawful acts of violence that endanger the safe navigation of ships are either tried in the state where they are found or extradited to another state for prosecution.<sup>252</sup> The Convention also aims to provide a legal means to punish persons who commit acts of maritime terrorism on the high seas, as opposed to acts of piracy, anywhere in ocean space, including in Arctic seas.<sup>253</sup>

### CONCLUSION

The legal regime governing Arctic Ocean space is now a vast and complex network of treaty law mainly associated with the agreements comprising the contemporary law of the sea. This collection of rules, regulations, principles, and norms can regulate the activities of national governments in their uses of Arctic waters in several dimensions, ranging from freedom of the Arctic seas, the conservation of fisheries and other marine resources to prohibitions against marine pollution and dumping to regulations that ensure safe shipping, carriage and navigation and efforts to ensure peaceful uses of that ocean. What makes these developments especially impressive is that the bulk of world ocean law has been created during the last four decades, and the Arctic region is no less a beneficiary than any other ocean space.

Some general conclusions can be posited about this rapid evolution of contemporary ocean law for the Arctic. For one, marine environmental law has developed mostly on an *ad hoc* basis. International ocean law has emerged largely in reaction to accidents or to some perceived environmental crisis situation. Its relevance in the twenty-first century is highlighted by the increasing prospect of more vessels transiting Arctic waters and accelerated hydrocarbon development in offshore Arctic waters. Second, the international law for protecting and managing the global marine environment

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them in Italy, where they were convicted of murder and unlawfully endangering the passengers and crew. See MICHAEL K. BOHN, *THE ACHILLE LAURO HIJACKING: LESSONS IN THE POLITICS AND PREJUDICE OF TERRORISM* (Potomac Books, 2004). For the legal issues involved, see Christopher C. Joyner, *The 1988 IMO Convention on the Safety of Maritime Navigation: Towards a Legal Remedy for Terrorism at Sea*, 31 GERMAN Y.B. INT'L L. 230 (1989); Malvina Halberstam, *Terrorism on the High Seas: The Achille Lauro, Piracy and the IMO Convention on Maritime Safety*, 82 J. INT'L L. 269 (1988).

252. Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation, *supra* note 249, arts. 7, 8.

253. The definition of piracy under contemporary international law is provided in Article 101 of the 1982 LOS Convention. Piracy is defined as all "illegal acts of violence, detention or any act of depredation, committed for private ends by the crew or the passengers of a private ship . . ." 1982 LOS Convention, *supra* note 23, art. 101. The Convention goes on to assert that naval piracy can take place only "on the high seas" or "outside the jurisdiction of any State." *Id.*

and, hence that for the Arctic as well, has evolved piecemeal during the past three decades. The law has been created as patchwork obligations, rather than as a carefully premeditated, internationally-coordinated effort aimed at constructing a coherent legal regime for conserving and protecting biological diversity in the world's oceans. Yet, this process differs little from the manner in which a domestic system operates through its constitution, legislature, courts, bureaucracies, and sub-national governments. The facts remain that at the beginning of the new millennium the 1982 LOS Convention serves as the hub of the contemporary law of the sea regime for all ocean space, around which a corpus of international law for protecting and managing the Arctic Ocean has evolved in broad scope and is firmly in place.

In the coming decades, states must adopt a precautionary approach to ocean management in the Arctic region. That is, to manage activities affecting the Arctic Ocean, both national and international approaches must be taken in which governments anticipate, prevent, and arrest the causes of environmental degradation, even in cases where full scientific certainty is not available. The attitudes of Arctic littoral governments must be changed in order to establish more marine protected areas, conserve threatened species, ensure that fishing is carried out in a sustainable manner, reduce and eliminate marine pollution, and promote better integrated coastal management in the region. The widespread misperceptions that the world's oceans, including the Arctic, furnish unlimited resource bounty and are a global toilet into which the wastes of the world can be flushed, dissolved, or dissipated must be replaced with the view that the oceans entail a critical part of Earth's delicate life support system that must be preserved and protected, not destroyed. This is especially true in the polar north, given the fragility and relative pristine of the Arctic marine ecosystem. It is this realization that must guide the further evolution and policy implementation by governments of the legal regime for the Arctic Ocean.

Promotion of a comprehensive legal regime for protecting, conserving, and managing the Arctic Ocean must intensify throughout this century. The creation of the maritime legal agreements available to date has been *ad hoc* and difficult. Implementing, sustaining, and adjusting those rules and regulations for the Arctic in the coming decades will not be easy. Even so, the effectiveness of international ocean law in the Arctic rests on the genuine commitment by national governments to make it work. Governments make international law prohibiting pollution and over-fishing of the seas, and governments must enforce those laws against na-

tionals who violate them. In the final analysis, then, blame for possible degradation of the Arctic marine environment in the coming century will not lie in weak law. The legal regime for prudent use of Arctic Ocean space is present and plain, and most Arctic states acknowledge the application of most of these rules most of the time. Instead, the blame will fall to those governments that fail to comply with that law, or to enforce it when necessary.

In that fundamental regard, the legal regime for managing the Arctic Ocean in the coming decades will mirror the same preeminent challenges confronted by governments in the past. That said, the contemporary law of the sea will not fail in the Arctic. If failure does occur, it will lay with those governments who circumvent or undercut the law in order to exploit Arctic seas more extensively. They bear the ultimate responsibility for making good law work in the Arctic Ocean and for ensuring its compliance and enforcement. They also bear responsibility for failing to make the law work well. Nonetheless, in the wake of accelerated global warming and enormously increased hydrocarbon development, the threat of widespread degradation and living resource displacement in the Arctic marine ecosystem appear all the more likely. Given the relatively pristine nature of north polar ocean space today, that consequence seems an exorbitantly high environmental price to pay for the sake of a few Arctic governments who wish to exercise their myopic selfish national interests at the expense of disrupting living resources and indigenous people in the region.

