Can the Lessons Learned from Deepwater Horizon Serve as Incentive to Protect the Arctic Marine Environment?

By
Ashleigh Marie Cirilla
B.S., May 2002, Niagara University
J.D., May 2005, Villanova Law School

A Thesis submitted to

The Faculty of
The George Washington University Law School
in partial satisfaction of the requirements
for the degree of Master of Laws
May 15, 2011

Thesis Directed by
LeRoy Paddock
Associate Dean for Environmental Law Studies

Acknowledgements

The author wishes to thank her parents and her sister for their never ending encouragement and belief that this article would actually become finalized, as well as Dean Paddock for graciously lending his knowledge and expertise throughout the writing process.

Abstract

Can the Lessons Learned from Deepwater Horizon Serve as Incentive to Protect the Arctic Marine Environment?

Long before the recent Deepwater Horizon explosion in the Gulf of Mexico, there were laws in place to protect the marine environment. And yet more than 205 million gallons of oil spewed into the Gulf of Mexico as a result of that explosion, leading to comparisons with the 1989 Exxon Valdez spill which spewed "only" 250,000 barrels of oil off the coast of Alaska. In the wake of the Deepwater Horizon spill, questions arose as to what, if any, lessons were learned as a result of the environmental damage caused by the Exxon spill. In theory, these lessons should have served as an incentive for nations, especially the Arctic nations, to ensure protection of the unique Arctic environment.

This paper will address whether this theory remains true today through an examination of the characteristics that render the Arctic so unique, the effect that climate change will have on that environment and the increase in oil and gas exploration and exploitation that will result from climate change. The effects of these characteristics will be demonstrated through a comparison of the Exxon Valdez spill to the Deepwater Horizon spill. An analysis of the existing legal regimes in the Arctic concerning natural resource exploration will lead to a proposed solution involving establishing Marine Protected Areas in the Arctic.

Table of Contents

I. Introduction……..…….. 2
II. Background……...……...…….. 5
A. Oil and Gas in the Arctic……..... 6
B. Implications of Climate Change on Oil and Gas Activities in the Arctic 9
C. The Race for the Arctic …… 11
III. Existing Legal Regimes Regarding Oil and Gas in the Arctic 16
A. Arctic Council 18
B. MARPOL 23
C. OSPAR 26
D. United Nations Law of the Sea Convention 29
E. Ilulissat Declaration 42
F. OPRC 43
G. Bilateral Agreements.....45
H. OPA 47
IV. Exxon Valdez versus Deepwater Horizon 48
A. Exxon Valdez 50
B. Deepwater Horizon 53
C. A Comparison 54
D. Cleanup in the Arctic 57
V. The Proposed Solution 59
A. Marine Protected Areas..... 60
B. IMO Regulations 73
IV. Conclusion 76

List of Figures

Zones of Sovereignty pursuant to the U.N. Law of the Sea Convention…….....31

Formula lines used for defining the extended continental shelf under
Article 76 of the Law of the Sea Convention ……...33

Constraint lines used for defining the extended continental shelf under
Article 76 of the Law of the Sea Convention……34

> The Deepwater Horizon incident is a direct consequence of our global addiction to oil. Incidents like this are inevitable as we drill in deeper and deeper waters. We are playing a very dangerous game here. If this isn't a call to green power, I don't know what is.[1]

Long before the recent Deepwater Horizon explosion in the Gulf of Mexico, there were laws in place to protect the marine environment. These domestic laws, such as the National Environmental Policy Act (NEPA)[2], the Outer Continental Shelf Leasing Act (OCSLA)[3], and the Oil Pollution Act (OPA),[4] should have been expected to prevent and cope with the explosion of the Deepwater Horizon drilling rig[5] in an environment that has one of the world's largest, best equipped and most experienced oil spill containment system.[6] And yet more than 205 million gallons of oil spewed into the Gulf of Mexico.[7] While cleanup crews worked feverishly to contain the spill and limit the damage in the Gulf, governments around the world continued to plan for similar drilling operations in an environment where hurricane force winds, 30 foot seas, sub-zero temperatures, sheets of ice and winter darkness would overwhelm clean-up attempts. Laws in the Arctic region are also in place that *should* protect it. But, if the laws governing the Gulf of Mexico were not adequate to prevent the Deepwater Horizon disaster, can we expect the laws governing the pristine Arctic environment to be adequate?

---

[1] Joel K. Bourne, Jr. The Deep dilemma: The Largest U.S. Oil Discoveries in Decades Lie in the Depths of the Gulf of Mexico – One of the Most Dangerous Places to Drill on the Planet. National Geographic, Vol. 218. No. 4, at 53 (Oct. 2010).

[2] National Environmental Policy Act, 42 U.S.C. §4321 (2006).

[3] Outer Continental Shelf Lands Act, 43 U.S.C. § 1331 (2006).

[4] Oil Pollution Act of 1990, 33 U.S.C. § 2701 (2006).

[5] Oliver A. Houck, Worst Case and the Deepwater Horizon Blowout: There Ought to Be a Law, 24 Tul.Envtl. L.J. 1, 2 (2010).

[6] After the Gulf Disaster: The Center's Offshore Drilling Work, available at http://www.biologicaldiversity.org/programs/public_lands/energy/dirty_energy_development/oil_and_gas/gulf_oil_spill/index.html (last visited January 18, 2011) [hereinafter Gulf Disaster]

[7] Id.

A complete ban of oil and gas exploration and exploitation in the Arctic is not a necessary, nor practical solution to this problem, but instead Arctic nations should be responsible for creating and maintaining Marine Protected Areas within national jurisdiction that, together with the existing framework of legal regimes in the Arctic region, will strengthen and support the effective protection of this unique environment. This paper will address this issue through an examination of the characteristics that render the Arctic so unique, the effect that climate change will have on that environment and the increase in oil and gas exploration and exploitation that will result from climate change. The effects of these characteristics will be demonstrated through a comparison of the 1989 Exxon Valdez disaster in the Arctic region to that of the 2010 Deepwater Horizon disaster in the Gulf of Mexico. An analysis of the existing legal regimes in the Arctic concerning natural resource exploration will lead to a proposed solution involving establishing Marine Protected Areas in the Arctic.

I. Introduction

The Arctic surface environment is one of the most easily affected on Earth,[8] and is home to some of the last, truly undisturbed wilderness areas on Earth.[9] From the iconic polar bear to the magnificent salmon runs, the region is a haven for wildlife.[10] Numerous threatened and endangered species, including more than a dozen whales, rely on the Arctic for survival.[11] The Arctic is also home to about four million people whose traditions, art and methods of survival have developed alongside the bounty of the

[8] Arctic Monitoring and Assessment Programme (AMAP), Arctic Oil and Gas 2007 at vi (2008), available at http://www.amap.no/oga/ [hereinafter AMAP].
[9] Lessons Not Learned: 20 Years After the Exxon Valdez Disaster, at 2 (2006), available at http://www.worldwildlife.org/what/howwedoit/policy/WWFBinaryitem11907.pdf (last visited January 18, 2011) [hereinafter Lessons Not Learned].
[10] Id.
[11] Id.

region's resources.[12] Indigenous cultures have prospered here for thousands of years.[13] The waters of the Arctic and sub-Arctic are critical economic resources as well. Northern waters provide some of the most globally important commercial fisheries, supplying half the seafood consumed in the United States, and half of the fish harvested in Russia.[14] Pollock, crab, salmon and halibut are among the highly sought-after fish, providing thousands of jobs and generating billions of dollars in revenue.[15]

The Arctic is physically characterized by ice: sea ice, ice sheets, glaciers, and permafrost.[16] But it also contains considerable variation in terrain, climate, ecology, and human presence, as well as seasonal extremes of light in the summer and darkness in the winter.[17] A burst of productivity in the short spring and summer has to sustain resident plants and animals through the rest of the year.[18] As a result of these factors, Arctic ecosystems experience high variability from year to year, including large swings in population sizes.[19] Furthermore, Arctic ecosystems are delicately balanced, having adapted over the years to the extreme living conditions.

The Arctic has relatively few species, but considerable variation within species to fill various ecological roles.[20] The Arctic region of the United States alone makes up one of the world's most biologically productive and diverse environments. Overall Arctic biological diversity is characterized by widespread resident species, species with unique

---

[12] Id.
[13] Lessons Not Learned, supra note 9, at 2.
[14] Id.
[15] AMAP, supra note 8, at 1.
[16] Id. at 4.
[17] Id.
[18] Id.
[19] Id.
[20] Id.

genetic variation, and migrating species that also depend on ecosystem integrity along their migratory routes.[21] In addition to its living resources, the Arctic is a "gold mine" for natural resources, including oil and gas which are among the most valuable non-renewable resources in the Arctic today.[22] Simply put, the Arctic ecosystem is extremely complex.[23]

Today, the Arctic is undergoing radical change. Due to rising greenhouse gas emissions, the Arctic is warming at twice the rate of the rest of the planet. Terrestrial and marine life are undergoing remarkable changes at unprecedented rates.[24] This is a fragile ecosystem that is also highly stressed. Thus, the threats from offshore development and shipping – like the oil spills anticipated with these industries – are certain to exacerbate the pressures on already-stressed Arctic ecosystems.[25]

The processes of rapid climate change and increased access to the Arctic, as well as the forces of globalization, have accelerated a geopolitical race among nations to stake a claim on Arctic resources.[26] Due to the melting ice, previously un-navigable waterways are opening to shipping.[27] These factors, along with declining or uncertain sources of oil from traditional global suppliers, have lead to a push for greater oil and gas exploration in the Arctic.[28]

---

[21] Arctic Marine Strategic Plan, at 6, Arctic Council (2004), available at http://www.pame.is/images/stories/AMSP_files/AMSP-Nov-2004.pdf

[22] AMAP, supra note 8, at 1.

[23] Richard J. Ansoon, Jr., The North American Agreement on Environmental Protection and the Arctic Council Agreement: Will These Multinational Agreements Adequately Protect the Environment?, 29 Cal. W. Int'l L.J. 101, 116 (1998).

[24] Lessons Not Learned, supra note 9, at 2.

[25] Id.

[26] Id. at 2-3.

[27] Id. at 3.

[28] Id.

Given the extreme conditions of the Arctic region, the many uncharted passages, the increased volume of shipping traffic, and the continued and growing presence of oil and gas extraction activities, the risk of oil spills cannot be completely eliminated.[29] How the risk can be contained and minimized is a different issue, and one that this article addresses.

II. Characteristics of the Arctic

The Arctic region consists of the North Pole, the Arctic Ocean, and the area demarcated by the Arctic Circle - an imaginary line that marks the latitude above which the sun does not set on the day of the summer solstice and does not rise on the day of the winter solstice.[30] The Arctic region centers on the deep, ice-covered (in part permanently and in part seasonally) Arctic Ocean, nearly surrounded by the lands of North American and Eurasia.[31]

The Arctic Ocean is the world's smallest ocean.[32] Spanning only fourteen million square-kilometers, it is less than twice the size of the United States.[33] Although the Arctic Ocean is shallow, it contains over 25 percent of the world's continental shelf.[34] Geographically, the Arctic Ocean serves as a northern epicenter, bringing together the borders of the United States (via Alaska), Russia, Canada, Norway, and Denmark (via Greenland), collectively referred to as the Arctic nations. Finland, Sweden, and Iceland

---

[29] Id. at 7.

[30] See National Snow and Ice Data Center, What is the Arctic?, http://nsidc.org/arcticmet/basics/arctic_definition.html (last visited January 18, 2011).

[31] AMAP, supra note 8, at 4.

[32] Meagan P. Wilder, Who Gets the Oil? Arctic Energy Exploration in Uncertain Waters and the Need for Universal Ratification of the United Nations Convention on the law of the Sea, 32 Hous. J. Int'l L. 505 n.20 (2010).

[33] Id.

[34] Sara J. Dresser, Safeguarding the Arctic From Accidental Oil Pollution: The Need for a Binding, Region-Specific Shipping Regime, 16 Sw. J. Int'l L. 507, 512 n.20.

also surround the Arctic, but do not have a coast near the sea.[35] Currently the eight nations govern this vast expanse of ice-covered sea and land.[36]

A. Oil and Gas in the Arctic

In July 2008, the U.S. Geological Survey (USGS) released the first petroleum resource estimate of the entire Arctic region.[37] According to this study, the "area north of the Arctic circle has an estimated 90 billion barrels of undiscovered, technically recoverable oil, 1,670 trillion cubic feet of recoverable natural gas, and 44 billion barrels of recoverable natural gas liquids."[38] In updated findings released in May 2009, the USGS estimated that the Arctic holds twice the amount of oil previously thought.[39] Reports have indicated that these natural resources account for 30 percent of the world's undiscovered gas and 13 percent of the world's undiscovered oil.[40]

With regard to oil and gas exploitation in the Arctic, several aspects of the region are noteworthy.[41] Depending on where the boundary is drawn, the Arctic has between two million and four million human inhabitants, most of who live in cities or large towns.[42] Despite low numbers, Arctic residents comprise over two dozen different

---

[35] Stephanie Holmes, Comment, Breaking the Ice: Emerging Legal Issues in Arctic Sovereignty, 9 Chi. J. Int'l L. 323, 326 (2008).
[36] Lessons Not Learned, supra note 9, at 2.
[37] U.S. Dep't of Interior, U.S. Geological Survey, 90 Billion Barrels of Oil and 1,670 Trillion Cubic Feet of Natural Gas Assessed in the Arctic (2008), http://www.usgs.gov/newsroom/article.asp?ID=1980 (last visited January 19, 2011).
[38] Id.
[39] Azadeh Ansari, Survey: Arctic May Hold Twice the Oil Previously Found There, CNN News, May 28, 2009, http://www.cnn.com/2009/TECH/science/05/28/arctic.oil.gas.reserves/index.html (last visited January 19, 2011).
[40] Donald L. Gautier et al., Assessment of Undiscovered Oil and Gas in the Arctic, Science Magazine, May 2009, at 1175.
[41] AMAP, supra note 8, at 4.
[42] Id.

indigenous peoples.[43] Their subsistence hunting, fishing and gathering activities occupy extensive areas of land and sea. The influx of people needed for these oil and gas activities, as well as the industrial activity itself, has the potential to disrupt these traditional and indigenous ways of life.[44]

Further potential issues in natural resource exploration in the Arctic stem from the fact that Arctic oil and gas reserves are a long distance from major markets.[45] The Arctic's unique environmental conditions, such as the presence of ice, low temperatures, and long periods of darkness, make this long distance navigation especially difficult and dangerous.[46] Few inhabitants also means a small potential labor pool, so most workers are typically brought in from other regions, especially during the labor-intensive construction phase.[47] Therefore, conducting oil and gas operations in the region is difficult and expensive, as is transporting the products to market.[48] Furthermore, oil and gas operations must cope with large swings in temperature, light, and accessibility throughout the year.[49]

Oil spills are especially dangerous in the Arctic because its unique climate conditions – dynamic ice cover, low temperatures, reduced visibility or complete darkness, high winds, and extreme storms – impact the effectiveness of spill response and cleanup.[50] The cold temperatures also decrease rates of oil decomposition, resulting in

---

[43] Id.
[44] Id.
[45] Id.
[46] World Wildlife Fund, Oil Spill Response Challenges in Arctic Waters 1, 7 (2007), available at http://www.worldwildlife.org/what/wherewework/arctic/publications.html (last visited January 19, 2011).
[47] AMAP, supra note 8, at 4.
[48] AMAP, supra note 8, at 4.
[49] Id. at 5.
[50] Nuke Research and Planning Group, World Wildlife Fund, Oil Spill Response Challenges in Arctic Waters 7 (2008), available at

making destruction of wildlife habitats and feeding grounds affected by any spills more likely.[51] The lower temperatures and lower salinity profiles of Arctic marine waters inhibit the effectiveness of cleanup operations because oil may persist longer in those conditions as it evaporates slowly and can be trapped by sea ice.[52] The adverse effects of increased oil exploration in the Arctic are compounded by the fact that oil tankers are generally not built to withstand collisions with the sea ice.[53] These effects are further intensified by the increased mobility and unpredictability of the sea ice due to the warming Arctic.[54]

Finally, the Arctic contains some of the world's largest remaining areas of wilderness. Fragmentation of habitat may adversely affect many species, particularly highly mobile species, such as reindeer and caribou, and sparsely populated species, such as brown or grizzly bears and other large predators.[55] An even more detrimental situation – complete elimination of habitat and feeding grounds - will have a profound effect on many of these Arctic species, which rely on a short food chain that can be fatally disrupted by the loss of even a single species.[56] Even without pollution or accidents such

---

http://assets.panda.org/downloads/nuka_oil_spill_response_report_final_jan_08.pdf [hereinafter WWF, OIL SPILL RESPONSE CHALLENGES]

[51] Barry Hart Dubner, On the Basis for Creation of a New Method of defining International Jurisdiction in the Arctic Ocean, 13 Mo. Envtl. L. & Pol'y Rev. 1, 20 (2005).

[52] Id.

[53] Susan Joy Hassol, Arctic Council, Impacts of a Warming Arctic: Arctic Climate Impact Assessment 9, 83-84 (2004), available at http://amap.no/acia/

[54] Id.

[55] AMAP, supra note 8, at 5.

[56] David VanderZqaag et al., The Arctic Environmental Protection Strategy, Arctic Council and Multilateral Environmental Initiatives: Tinkering While the Arctic Marine Environment Totters, 30 Denv. J. Int'l L. & Pol'y 131, 134 (2002).

as spills, oil and gas activities can drastically reduce the wilderness character of this region.[57]

B. Implications of Climate Change on Oil and Gas Activities in the Arctic.

In addition to the potential impact of oil and gas activities on the Arctic region, another major threat looms – climate change. Changes in climate and ecosystems that are projected over the coming decades will have a significant impact oil and gas activities in the Arctic. Unfortunately, scientific research suggests that on the Arctic climate that is warming at a rapid pace.[58] In 2007, the Intergovernmental Panel on Climate Change (IPCC) found that average Arctic temperatures increased at almost twice the global average rate in the past 100 years.[59] According to the National Snow and Ice Data Center (NSIDC), in August of 2008, the Arctic Ocean lost more ice than any previous August in the satellite record.[60]

Computer projections suggest that the average temperature in the Arctic could rise between 3°C and 9°C during the next century, twice as much as the average rise in the rest of the world.[61] At that rate, according to a study sponsored by the U.S. National Science Foundation and NASA, the Arctic could have an entirely ice-free summer as early as 2037.[62]

---

[57] Id.

[58] Mark Jarashow et al., UNCLOS and the Arctic: The Path of Least Resistance, 30 Fordham Int'l L.J. 1587, 1590-91 (2007).

[59] R.R. CHURCHILL & A.V. LOWE, THE LAW OF THE SEA, at 137. (2d ed. 1985).

[60] Press Release, National Snow and Ice Data Center, Arctic Sea Ice Down to Second-Lowest Extent; Likely Record-Low Volume (Oct. 2, 2008), available at http://www.abc.net.au/news/stories/2008/09/17/2367161.htm

[61] Robert Wade, A Warmer Arctic Needs Shipping Rules, (January 16, 2008), http://www.marinacivil.com/noticias/noticia.asp?idn=24804

[62] See Lauren Morello, Polar Summers Could Be Ice Free in 30 Years-Study, Climate Wire (Apr. 2, 2009), http://jisao.washington.edu/print/news/eenewspm09_0402_climatepolarsummers.pdf.

The most striking change that is projected in the Arctic is the retreat of sea ice.[63] The Arctic Climate Impact Assessment (ACIA) previously stated that "reduced sea ice is very likely to increase marine transport and access to resources," as well as improve access to ports.[64] Because the changing sea ice conditions create more opportunities for oil and gas exploration and production, there is an enhanced probability of oil spills occurring from offshore platforms, pipelines, storage tanks, and shipping activities.[65] Transportation by vessel will be aided by a longer shipping season, although changes in ice patterns may create new problems such as unmapped shipping lanes and the increasing movement of ice.[66] Along those lines, an ice-free Arctic will open previously impassable shipping lanes,[67] such as the route historically known as the "Northwest Passage." This Passage connects the Atlantic and Pacific Oceans via water routes that run through the northern-most regions of the North American continent.[68] Use of the Northwest Passage would reduce the length of the voyage between the Atlantic and Pacific oceans by 5592 miles.[69] In addition, with the receding Arctic ice comes the possibility to excavate fuel sources on the sea floor.[70] Spurred by the prospects of increased offshore extraction of oil and gas, caused in part by the change in climate

---

[63] AMAP, supra note 8, at 12.

[64] ACIA, EXECUTIVE SUMMARY, IMPACTS OF A WARMING ARCTIC: ARCTIC CLIMATE IMPACT ASSESSMENT (Cambridge University Press 2004), available at http://www.amap.no/acia

[65] WWF, OIL SPILL RESPONSE CHALLENGES, supra note 50, at 7.

[66] AMAP, supra note 8, at 12.

[67] See Michael W. Lore, Preventing Disaster as the Arctic Seas Open for Business, 8 Sustainable Dev. L. & Pol'y 36 (2008).

[68] Northwest Passage: The Arctic Grail, CBC News (Toronto), Aug. 8, 2006, http://www.cbc.ca/news/background/northwest-passage

[69] Michael A. Becker, International Law of the Sea, 42 Int'l Law. 797, 802 (2008).

[70] Clifford Krauss et al., As Polar Ice Turns to Water, Dreams of Treasure Abound, N.Y. times, Oct. 10, 2005, at A1, available at http://www.nytimes.com/2005/10/10/science/10arctic.html

conditions affecting the Arctic, nations have begun to explore the region to assess what might be at stake.[71]

C. The Race for the Arctic

Now that global warming has rendered the Arctic more accessible than ever – and yet at the same time more fragile – a new frenzy has broken out for control of Arctic territory and the riches that nations hope and believe may lie beneath the ice. Russia, Canada, Denmark, Norway and the United States seek to prove that certain highs of the Arctic seafloor, such as ridges, plateaus and caps, are "natural prolongations" of their land territory under Article 76 of United Nations Law of the Sea Convention (LOS).[72] These seafloor highs extend hundreds of miles into, and some even traverse, the Arctic Ocean.[73] If a coastal State succeeds in proving that these seafloor highs are natural prolongations of its land territory, then the State can include those highs in its continental shelf.[74] Coastal States have full sovereignty over their continental shelves.[75] Therefore, if a State is allowed to include a seafloor high in its continental shelf, it will gain sovereignty over the seabed extending to the middle of the Arctic Ocean.[76] This sovereignty will, in turn, give the coastal State sovereignty over the Arctic's substantial oil and gas reserves. This is one of the ultimate goals of the Arctic states in their quest to

---

[71] Richard A. Lovett, Arctic Oil Rush Sparks Battles Over Seafloor, Arctic Oil Rush, Nat'l Geographic News, Aug. 23, 2007, available at http://news.nationalgeographic.com/news/2007/08/070823-arctic-oil.html

[72] Brent Carpenter, Warm is the New Cold: Global warming, Oil, UNCLOS Article 76, and How an Arctic Treaty Might Stop a New Cold War, 39 Envtl. L. 215, 220 n.30 (2009). See also Part III(D) herein for a further description of a nation's right to extend its continental shelf.

[73] Arthur Grantz, Treatment of Ridges and Borderlands Under Article 76 of the UNCLOS: The Example of the Arctic Ocean, in Legal and Scientific Aspects of Continental Shelf Limits 201, 203 (Myron H. Norduist et al. eds., 2004).

[74] United Nations Convention on the Law of the Sea Art. 76, Dec. 10, 1982, 1833 U.N.T.S. 397, available at http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf [hereinafter UNCLOS]

[75] UNCLOS, supra note 73, arts. 1, 76.

[76] Carpenter, supra note 72, at 220.

map the Arctic Ocean because development of these oil and gas reserves is now becoming feasible due to global warming causing Arctic ice to rapidly melt.

In 2007, Russia made the first attempt at claiming control over portions of the Arctic Ocean. Russia's attempt included placing a Russian flag in the seabed of a submarine mountain range called the Lomonosov Ridge.[77] The Russian claim to Arctic territory turned on an assertion that Russia's continental shelf was connected to the Arctic by the Lomonosov Ridge.[78] The Lomonosov Ridge, cutting across 1200 miles of the Arctic basin, is a source of an estimated 10 billion tons of gas and oil deposits, as well as significant stores of diamonds, gold, tin, and platinum.[79] However, when the decision making body regarding such claims – the United Nations Commission on the Limits of the Continental Shelf (CLCS) - rejected Russia's assertion, Russia began compiling more evidence to corroborate its continental shelf proposal. This proposal was said to be scheduled to be resubmitted in 2009, but has not yet occurred.[80]

While Russia's flag planting has little legal impact, it revealed Russia's Arctic designs to the international community in a very overt manner as the new "claim" by Russia included the North Pole itself, thus spanning 1.2 million square kilometers – an area five times the size of Britain – and containing twice the amount of oil as Saudi Arabia.[81]

---

[77] Becker, supra note 69, at 801-02.

[78] James Stuhltrager, Global Climate Change and National Security, 22 Nat. Resources & Env't 36,39 (2008).

[79] Putin's Arctic Invasion: Russia Lays Claim to the North Pole – and All Its Gas, Oil, and Diamonds, Daily Mail (London), June 2007, available at http://www.dailymail.co.uk/news/article-464921/Putins-Arctic-invasion-Russia-lays-claim-North-Pole-gas-oil-diamonds.html [hereinafter Putin's Arctic Invasion]

[80] Parker Clote, Implications of Global warming on State Sovereignty and Arctic Resources Under the United Nations Convention on the Law of the Sea: How the Arctic is No Longer Communis Ommium Naturali Jure, 8 Rich. J. Global L. & Bus. 196, 223-24 (2008).

[81] Putin's Arctic Invasion, supra note 79.

The other Arctic nations wasted little time responding. This flurry of activity and international developments in the Arctic show no signs of slowing in the immediate future as various countries attempt to stake a claim to the region in order to reap the benefits of widening access to Arctic resources. For instance, Canada and Denmark, both of whom have also made recent claims over parts of the Arctic, are currently in a dispute over Hans Island. Hans Island is an uninhabited island situated between Greenland and Canada's Ellesmere Island and may be a valuable launching point for future oil exploration.[82]

More recently, the Canadian government sent two Autonomous Underwater Vehicles (AUVs) under the Arctic ice during the spring 2010 in order to collect bathymetry data.[83] The data will be used in support of Canada's submission to define the outer limits of its extended continental shelf under LOS.[84] The purpose of the mission, virtually identical to the Russian expedition, is to gather evidence that would link Canada's northern coastline with the Alpha and Lomonosov Ridges.[85] In addition, Canada developed plans to build a military facility along the Northwest Passage in preparation for conflicts over use of the passage. [86]

Denmark also sent an expedition to the Arctic to collect evidence to bolster a claim to the North Pole, based on a link between its Arctic continental shelf and that of

---

[82] Jarashow, supra note 58, at 1593.

[83] Natural Resources Canada, Autonomous Underwater Vehicle (AUV), available at http://sst-ess.rncan-nrcan.gc.ca/scient/auv_e.php

[84] Id.

[85] Defense Research and Development Canada, Autonomous Under-Ice Surveys for Canadian Arctic Sovereignty: Project Cornerstone, available at http://www.atlantic.drdc-rddc.gc.ca/factsheets/MAP0809/MAP0809_eng.html

[86] James Graff, Fight for the Top of the world, Time, Oct. 1, 2007, at 28, available at http://www.time.com/time/world/article/0,8599,1663445,00.html.

Greenland (a Danish province).[87] Interestingly, the Danish bid is based on new geological data linking the North Pole and Greenland via the Lomonosov Ridge, the same underwater mountain range upon which Russia stakes its claim.[88] On December 2, 2010, Denmark made a partial submission to the CLCS. The submission covers only the Southern Continental Shelf of the Faroe Islands, and not Denmark's claims in the Arctic. Denmark indicated that it intends to submit separate information on areas North, North-East, and South of Greenland.[89] However, Denmark's own claim of sovereignty is inherently weakened by the semiautonomous status of Greenland, the only Danish territory geologically associated with the Arctic.[90]

Norway, although an Arctic Nation, has previously admitted that it did not possess a continental shelf sufficient to base a claim of sovereignty in the Arctic.[91] Nevertheless, it too filed a legal claim in 2006 to extend its continental shelf into the Arctic Ocean pursuant to Article 76 of LOS.[92] While Norway's submission does address the limits of its continental shelf, it is primarily concerned with sovereignty over a shallow basin in the Barents Sea. This basin is an oil field that is reported to hold more

---

[87] Holmes, supra note 35, at 324.

[88] Jason Warren Howard, Note, Don't Be Left Out in the Cold: An Argument for Advancing American Interests in the Arctic Outside the Ambits of the UNCLOS, 42 Ga. L. Rev. 833, 839 (2008).

[89] Commission on the Limits of the Continental Shelf (CLCS), Outer limits of the continental shelf beyond 200 nautical miles from the baselines: Submissions to the Commission: Submission by the Kingdom of Denmark, available at http://www.un.org/Depts/los/clcs_new/submissions_files/submission_dnk_54_2010.htm

[90] Jacqulyn Coston, Recent Development, What Lies Beneath: The CLCS and the Race to Lay Claim Over the Arctic Seabed, 3 Envt'l & Energy L. & Pol'y J. 149, 154 n.49 (2008).

[91] Holmes, supra note 35, at 323.

[92] Continental Shelf Submission of Norway in Respect of the Arctic Ocean, the Barents Sea and the Norwegian Sea, Executive Summary, http://www.un.org/Depts/los/clcs/new/submissions files/nor06/nor exec sum.pdf

than twice all of Canada's gas reserves.[93] However, Russia staked an overlapping claim to the basin, which lies 350 miles north of Russian territory in the Arctic.[94]

Since 2003, the United States has also been gathering and analyzing data north of Alaska to determine its extended continental shelf in the Arctic Ocean. [95] This active mapping of the region is conducted in anticipation of the U.S. eventually joining the LOS and submitting a claim of its own to the CLCS. [96] The U.S. Coast Guard Cutter *Healy* has been dispatched to the Arctic six times since 2003, at times on a joint mission with Canada, in order to collect data to better understand the United States' potential for claiming an extended continental shelf under LOS. [97] It is expected that the *Healy* will be dispatched to the Arctic again in the summer, 2011.[98] The U.S. is also considering building two new polar icebreakers to supplement its minimal and outdated Arctic fleet, although as of January, 2011, no official progress had been made.[99]

The impacts of global warming on the sea ice in the Arctic has Arctic nations scrambling to collect evidence in order to establish that seafloor highs are in fact a natural prolongation of their continental shelves. However, the problem in delimiting the boundaries of each nation's territory is demonstrated by the disputes over the Lomonosov Ridge and Barents Sea. The existing "dispute resolution" procedure for these claims – the

---

[93] Clote, supra note 80, at 229.
[94] Id. at 230.
[95] U.S. Extended Continental Shelf Project, http://continentalshelf.gov/
[96] See infra note 105. See also Ilulissat Declaration, Arctic Ocean Conference Ilulissat, Greenland, May 28, 2008, available at http://arctic-council.org/filearchive/Ilulissat-declaration.pdf [hereinafter Ilulissat Declaration].
[97] The US-Canada collaboration began in 2008. The U.S. Coast Guard Cutter *Healy* and the Canadian Coast Guard Ship *Louis S. St-Laurent* participated in the joint-operations, and will do so again in 2011. See http://www.state.gov/r/pa/prs/ps/2010/07/145175.htm
[98] U.S. Extended Continental Shelf Project, supra note 95.
[99] Holmes, supra note 35, at 323.

CLCS – is further discussed below. However, in short, these disputes only further exacerbate the problem of protecting the Arctic region.

III. Existing Legal Regimes Regarding Oil and Gas in the Arctic

It seems obvious, or at least logical, that the Arctic nations are actively mapping their continental shelves in order to eventually gain sovereignty over the vast amounts of oil and gas that lies within the Arctic. With increased exploration and exploitation comes the increased potential of environmental harm, whether it is via a spill like the recent Deepwater Horizon oil spill in the Gulf of Mexico, or as a result of increased shipping, infrastructure and overall access to the Arctic. Knowing just how fragile the Arctic environment is and that the potential for harm these activities may ultimately result in, the question becomes – how do we effectively protect this unique environment?

The Arctic region has to deal with environmental pollution just like every other region of the globe. However, the climate, ice-covered waters and ocean currents make the concentration of pollutants in the Arctic much greater than in other regions of the globe.[100] In contrast to the hard-law legal regime in place in the other polar regime, the Antarctic, no specific treaty controls activities in the. Currently, several treaties and various other bilateral and multilateral agreements govern certain activities in the Arctic. Although these treaties do not address all of the potential issues that are likely to arise in the Arctic,[101] viewed collectively, they provide a strong framework for protecting the Arctic region. If these treaties and agreements are utilized, together with enforcement and

[100] Melissa A. Verhaag, It is Not Too Late: The Need for a Comprehensive International Treaty to Protect the Arctic Environment, 15 Geo. Int'l Envtl. L. Rev. 555, 565 n.76. (2003).

[101] One issue that is not adequately addressed by the existing governance regimes of the Arctic is definitive procedure for establishing which country will have sovereign control over some of the central most regions of the ocean.

monitoring by the national governments, they have the potential to form an integrated and effective approach to governance of the Arctic region.

In September 1989, on the initiative of the government of Finland, officials from the eight Arctic countries met in Rovaniemi, Finland to discuss cooperative measures to protect the Arctic environment.[102] In doing so, the nations acknowledged that the vulnerability of the Arctic ecosystem necessitated protection.[103] As a result of this Conference, the Arctic nations created the Arctic Environmental Protection Strategy (AEPS). The AEPS identifies six sources of pollution and creates programs to monitor, reduce and research pollution, and to conserve wildlife.[104] The AEPS is one of the first agreements to address the importance of protecting the Arctic environment and remains the major source of non-binding law for the Arctic.[105]

However, binding laws also exist in the Arctic. The major source of binding law is the United Nations Convention on the Law of the Sea (LOS).[106] In addition, the International Convention for the Prevention of Pollution from Ships (MARPOL),[107] the Convention for the Protection of the Marine Environment of the North-East Atlantic

---

[102] Arctic Council website, http://arctic-council.org/article/about

[103] Erika Lennon, a Tale of Two Poles: A comparative Look at the Legal Regimes in the Arctic and the Antarctic, 8 sustainable Dev. L. & Pol'y 32, 34 (2008).

[104] Arctic Environmental Protection Strategy, Arctic Council, Arctic Environmental Protection Strategy, June 14, 1991, 30 I.L.M. 1624, available at http://arctic-council.org/filearchive/arctic_environment.pdf [hereinafter AEPS].

[105] Linda Nowlan, Int'l Union for Conservation of Nature (IUCN), Arctic Legal Regime for Environmental Protection 19 (IUCN 2001), available at http://data.iucn.org/dbtw-wpd/edocs/EPLP-044.pdf. Although the United States still has not ratified UNCLOS, the new administration has vowed to work towards U.S. ratification. John B. Bellinger III, U.S. Dep't of State Legal Advisor, Address at the Univ. of Cal., Berkeley School of Law's Law of the Sea Inst. Conf. (Nov. 3, 2008), available at http://ilreports.blogspot.com/2008/11/bellinger-united-states-and-law-of-sea.html.

[106] UNCLOS, supra note 73.

[107] Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973, Feb. 17, 1978, 17 I.L.M. 546, 1340 U.N.T.S. 61 [hereinafter MARPOL].

(OSPAR)[108] and the Ilulissat Declaration[109] comprise the legal regimes in the Arctic pertaining to governance of oil and gas resources. The existing laws that contain provisions for the protection of the Arctic marine environment against harm caused by oil and gas exploration and exploitation are explored in more detail below.

A. Arctic Council

Five years after creating the AEPS, the Ottawa Declaration of 1996 formally established the Arctic Council 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.[110] The Arctic Council was formed to extend the previous AEPS strategy "beyond purely environmental issues," and the Council has assumed an important role in the governance of the region.[111] For instance, the Council has overseen and drafted regional management guidelines for protected areas, data monitoring, and oil spill assessment and response actions.[112] Its six working groups have also produced highly-regarded and comprehensive documents.[113] Most importantly, the Council has served as a key link between regional concerns and actors and the broader global governance scene. It is one of the few existing operational models for international cooperation on sustainable development.

---

[108] See Convention for the Protection of the Marine Environment of the North-East Atlantic, Sept. 22, 1992, 32 I.L.M. 1069 (1993), available at http://www.ospar.org/content/content.asp?menu=00340108070000_000000_000000 [hereinafter OSPAR].
[109] Ilulissat Declaration, supra note 96.
[110] See Declaration of the Establishment of the Arctic Council, Sept. 19, 1996, 35 I.L.M. 1382.
[111] Linda Nowlan, IUCN Environmental Law Program, IUCN Environmental Policy and Law Paper No. 44, Arctic Legal Regime for Environmental Protection 9 (2001).
[112] Id.
[113] Id. at 16.

The Council addresses common Arctic issues, in particular issues of sustainable development and environmental protection.[114] In addition to the member states, the Arctic Council has the category of "Permanent Participants," which was created to provide for active participation of, and full consultation with, the Arctic Indigenous representatives within the Arctic Council. These participants currently consist of six indigenous peoples groups, the Aleut International Association (AIA), the Arctic Athabaskan Council (AAC), Gwich'in Council International (GCI), Inuit Circumpolar Council (ICC), the Russian Association of Indigenous Peoples of the North (Raipon), and the Saami Council.[115] However, their role is limited because the indigenous peoples groups are not voting members. The Council also allows other non-Arctic nations, inter-governmental organizations, and non-governmental organizations (NGOs) to play a role in the Arctic Council, through observer status.[116] Thus, though not fully inclusive, the Arctic Council does allow for participation by non-Arctic countries.

The Arctic Council can adopt policies, though it cannot enforce them as binding law. For example, the Arctic Council established Arctic Environmental Impact Assessments (EIA) Guidelines to help create uniform policies to promote sustainable development.[117] EIA generally can help avoid or minimize negative impacts from

---

[114] See Declaration of the Establishment of the Arctic Council, Sept. 19, 1996, 35 I.L.M. 1382. See also Arctic Council website, http://arctic-council.org/article/about

[115] Id. In addition, these six groups have further banded together to form the Indigenous Peoples' Secretariat (IPS) to support the International Indigenous Peoples' Organizations and ensure their role in the Arctic Council. IPS does not speak for the Permanent Participants. Instead, it creates opportunities for the Indigenous Peoples' Organizations to speak for themselves, and helps provide them with necessary information and materials. See Arctic Peoples: Arctic Council Indigenous Peoples' Secretariat, Arctic Peoples website, http://www.arcticpeoples.org/about

[116] Arctic Council Observers, Arctic Council website, http://arctic-council.org/section/observers (providing links to lists of countries and organizations with observer status); See also Declaration of the Establishment of the Arctic Council, supra note 110.

[117] FINNISH MINISTRY FOR THE ENVIRONMENT, ARCTIC ENVIRONMENTAL PROTECTION STRATEGY 1997, GUIDELINES FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) IN THE

resource and other developments. All Arctic states have domestic EIA statues.[118] In addition, all Arctic countries have also signed the Convention on EIA in a Trans-boundary Context (UNECE), also known as the Espoo Convention.[119] That treaty obligates states to conduct EIAs for trans-boundary impacts.[120]

The Arctic specific EIA Guidelines prepared by the Arctic Council were not designed to replace any national or international EIA guidelines, but rather to create specific guidelines for issues faced when implementing projects in the Arctic.[121] They are more stringent than the Espoo Convention, encouraging a broader range of projects for inclusion than the developments listed in Appendix I of the Espoo Convention.[122] Similar to the United States National Environmental Policy Act (NEPA), the Arctic EIA Guidelines focus on cooperation, flexibility, and inclusiveness in an effort to ensure that all countries can participate and will work to ensure Arctic protection.[123] The primary focus of these guidelines is to point out that the Arctic environment is unique, necessitating different threshold levels and sensitivity criteria.[124] Here, the Arctic Council has tried to create a uniform system for all countries to use when conducting Arctic area EIAs; however, countries are not required to follow them. Even though the Arctic states agreed to apply the Arctic EIA Guidelines in practice, no real follow-up mechanism was

---

ARCTIC 4 (1997), available at http://arcticentre.ulapland.fi/aria/procedures/eiaguide.pdf [hereinafter ARCTIC EIA GUIDELINES].

[118] Nowlan, Linda. Arctic Legal Regime for Environmental Protection. IUCN Environmental Policy and Law Paper No. 44 at 37 (IUCN 2001).

[119] Id. All of the Arctic nations have signed the Espoo Convention; however, Russia, Iceland and the United States have yet to ratify the Convention. See http://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-4&chapter=27&lang=en

[120] Id.

[121] ARCTIC EIA GUIDELINES, supra note 117, at 45.

[122] Supra note 118, at 37.

[123] See ARCTIC EIA GUIDELINES, supra note 117, at 9-10.

[124] Id. at 11.

established to oversee how these Guidelines were in effect implemented.[125] Thus, due in part to the lack of enforcement authority of the Arctic Council and its lack of power to establish internationally legally binding obligations, many Arctic countries choose to comply with the EIA requirements in the Espoo Convention and/or that of their domestic EIA statutes instead.[126]

The Arctic Council, through its working groups, has also issued regulatory guidelines pertaining to the oil and gas industry. For example, the Protection of the Arctic Marine Environment (PAME) working group, recently revised its Arctic Offshore Oil and Gas Guidelines (which were first issued in 1997).[127] The starting point of the Guidelines is that "Arctic petroleum activities will be conducted in compliance with applicable international law."[128] The Guidelines' purpose is to be of use to Arctic national authorities in conducting offshore oil and gas activities and to inform the public about environmental impacts of oil and gas development.[129] In addition, the Guidelines seek to support industry when planning activities.[130] Although the Guidelines are nonbinding, they are meant to encourage Arctic states to implement the highest standards available.

More specifically, section 1.3 of the Guidelines lays out the general principles for Arctic offshore drilling, which include the precautionary principle, the polluter pays

---

[125] Timo Koivurova. The Limits of the Arctic Council, in Proceedings of the Fourth NRF Open Meeting, pp. 186-188 at n.4. available at http://www.nrf.is/Publications/The%20Borderless%20North/Project%20Legal_Koivurova.pdf "The only follow-up was a creation of a website where information about the EIA laws and procedures, responsible agencies, etc. can be found. Although the website is an usefully tool for researchers and those who are in general interested in EIA procedures, it does not contain any connection to actual supervision of how the Guidelines are applied and implemented in the Arctic." See http://arcticcentre.ulapland.fi/aria

[126] See also supra note 118.

[127] Arctic Council website, supra note 102.

[128] ARCTIC COUNCIL, PROTECTION OF THE ARCTIC MARINE ENVIRONMENT (PAME), ARCTIC OFFSHORE OIL AND GAS GUIDELINES §1.1 (Oct. 10, 2002), available at http://old.pame.is/sidur/uploads/ArcticGuidelines.pdf [hereinafter PAME Guidelines]

[129] Id. at §1.2.

[130] Id.

principle, and sustainable development principles. The Guidelines prescribe various procedures such as the above-described environmental impact assessments (EIA).[131] They also contain measures aimed at protecting Arctic communities and indigenous peoples, promoting sustainability and conservation of flora and fauna, and providing for safety and environmental management, monitoring, operating practices, emergencies procedures, and decommissioning and site clearance.[132] In theory, the Guidelines are an all-inclusive attempt at protecting the Arctic from the dangers of oil and gas exploration. The problem in their effectiveness lies in their voluntary nature.

The Arctic Council, despite its limitations, has played an important role in protecting the region.[133] Its Working Groups have produced important documents, such as the Offshore Oil and Gas Guidelines, which build the information base that is critical for good management.[134] Regional guidelines on protected areas and biodiversity monitoring networks and the Guides to oil spills and offshore oil and gas activities are also useful.[135] The Council has conveyed regional concerns to global meetings.[136] However, upon the adoption of the AEPS in 1991, no one could foresee the extent of the melting of Arctic ice and the resulting opportunities for natural resource extraction.[137] The loose Arctic arrangement made sense at the time because the Arctic was isolated, relatively inaccessible, and its wealth of natural resources was unknown.[138]

---

[131] Id. at §2.
[132] Id. at §§ 3-8.
[133] See supra note 112 at 16-17.
[134] Id. at 17.
[135] Id.
[136] Id.
[137] Kristin Noelle Casper, Note, Oil and Gas Development in the Arctic: Softening of Ice Demands Hardening of International Law, 49 Nat. Resources J. 825, 839 (2009).
[138] Id.

As this paper explains, these factors no longer remain unknown and in fact, the exact opposite is true. And yet the AEPS continues to make sense today. Because the Arctic Council represents the collective interests of the eight Arctic states and indigenous groups, it can more effectively achieve common goals and continue in a policy-making role.[139] Moreover, the Council is uniquely positioned to make recommendations regarding Arctic polices based upon the information gained from their scientific assessments.[140] Thus, the Council may be particularly well-suited for projects requiring the communal efforts of the Arctic states, such as the collective interest in protecting the fragile Arctic environment from accidental oil spills.

B. MARPOL

The International Convention for the Prevention of Pollution from Ships (MARPOL) governs oil and gas activities in the Arctic. It seeks "the complete elimination of intentional pollution of the marine environment by oil and other harmful substances and the minimization of accidental discharge of such substances" from ships.[141] MARPOL is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes.[142]

All of the Arctic coastal states are parties to MARPOL.[143] In regulating ships' operational or accidental discharges it provides design and equipment standards for ships, requires flag states to certify ships for compliance, grants port states inspection rights,

---

[139] Dresser, supra note 34, at 546.
[140] Id.
[141] MARPOL, supra note 107.
[142] See International Convention for the Prevention of Pollution from Ships, International Maritime Organization website, http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx
[143] Casper, supra note 137, at 853.

and sets release allowances for pollution.[144] MARPOL's Annex I and II provide stringent protection for "special areas" and ban all releases of oil and noxious liquid substances.[145] Unlike MARPOL's other four annexes, Annex I and II are not optional for signatories.[146] Oil and gas exploration and exploitation are regulated by this Convention because a ship is defined as a "vessel of any type whatsoever operating in the marine environment and includes . . . fixed or floating platforms.[147] The provisions for ships of 400 tons gross tonnage or greater also apply to offshore oil and gas rights.[148]

Although MARPOL is largely considered a success, member states' failure to comply with its provisions undermines its ability to prevent accidental oil pollution. Because compliance with its construction and design provisions are expensive, some states refuse to implement certain regulations, particularly those concerning existing tankers.[149]

Moreover, MARPOL's failure to establish a mechanism to ensure compliance permits violators to ignore the conventions' regulations without fear of liability.[150] Effective enforcement depends upon compliance certificates and inspection requirements. Article V requires that all ships hold a certificate verifying compliance with MARPOL equipment and operational standards.[151] Regulation 4 imposes an extensive list of flag

---

[144] MARPOL, supra note 107.
[145] Id.
[146] Id. art. 16(f)(i-v).
[147] MARPOL, supra note 107, art. 2(4).
[148] Id. Annex I, reg. 21.
[149] Emeka Duruigbo, Reforming the International Law and Policy on Marine Oil Pollution, 31 J. Mar. L. & Com. 65, 74 (2000).
[150] Jeff B. Curtis, Vessel-Source Oil Pollution and MARPOL 73/78: An International Success Story?, 15 Envtl. L. 679, 705 (1985).
[151] MAPROL, supra note 1007 Art. V.

state obligations concerning survey and inspection requirements.[152] In addition, the validity of a ship certificate is tested more frequently than in prior legal regimes. If a port state is aware of a ship at port which fails to meet equipment standards, that port state "shall take such steps as will insure that the ship shall not sail until it can proceed ... without presenting an unreasonable threat of harm to the marine environment."[153] It remains to be seen whether a port state will use this power.[154] In addition, frequent and unscheduled inspections address the equipment and construction requirements of MARPOL, but they cannot monitor compliance with discharge standards.[155] The most imposing task is the actual detection of a ship in the act of releasing illegal oil residues. The difficulties involved in patrolling the ocean are a function of manpower versus space. Therefore, the chance of catching a ship in the act of an illegal discharge pursuant to MARPOL is minimal.[156]

Treaty obligations, like those in MARPOL, that encroach upon the customary law of freedom on the high seas are difficult to enact and enforce. In practice, verification of a ship's activity on the high seas is near impossible and compliance depends upon the integrity of the ship's operators.[157] At this time, there are no economic or legal motivations to comply with MARPOL because MARPOL lacks the ability to impose monetary sanctions or legal ramifications on potential violators. And, because MARPOL contains no Arctic-specific provisions, its ability to prevent accidental oil pollution in Arctic waters is necessarily limited.

---

[152] Id. at Regulation 4.
[153] Id. at Regulation 4(3)(d).
[154] Curtis, supra note 150, at 706-07.
[155] Id.
[156] Curtis, supra note 150, at n 138.
[157] Id. at 705.

C. OSPAR

The Convention for the Protection of the Marine Environment of the North-East Atlantic (the "OSPAR Convention") regulates international cooperation on environmental protection in the North-East Atlantic, which includes portions of the Arctic region (although not an Arctic-specific treaty).[158] OSPAR, which entered into force on March 25, 1998, is the mechanism by which fifteen Governments of the western coasts and regions of Europe cooperate to protect the marine environment of the North-East Atlantic.[159] Of the Arctic states, Canada, the United States and the Russian Federation are not parties to OSPAR.[160] Nevertheless, the OSPAR Convention specifically provides for the participation of other states, such as coastal states outside the OSPAR Maritime Areas or states whose vessels or nationals are engaged in activities in the OSPAR Maritime Area – categories under which Canada, the United States and the Russian Federation could fall.[161]

The overall objective of the OSPAR Convention is "to prevent and eliminate marine pollution and to achieve sustainable management in the region. That is, the management of human activities in such a manner that the marine ecosystem will continue to sustain the legitimate uses of the sea and will continue to meet the needs of

[158] OSPAR, supra note 108.

[159] Id. The fifteen Governments are Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom. Finland is not on the western coasts of Europe, but some of its rivers flow to the Barents Sea, and historically it was involved in the efforts to control the dumping of hazardous waste in the Atlantic and the North Sea. Luxembourg and Switzerland are contracting parties due to their location within the catchments of the River Rhine

[160] Timo Koivurova, et al. International Governance and Regulation of the Marine Arctic, WWF International Arctic Programme, Oslo, Norway, at 16. (2009)

[161] Id.

present and future generations."[162] The spatial scope of the regional OSPAR Convention extends to the "OSPAR Maritime Area," which includes areas within and beyond national jurisdiction.[163] The area roughly overlaps with the Atlantic sector of the Arctic marine area, but about half extends further south.[164]

The OSPAR Convention contains a set of basic rules and principles which are elaborated in its five Annexes and three accompanying Appendices.[165] It covers all human activities which can have an adverse effect on the ecosystems and the biodiversity in the North East Atlantic, with certain limitations for the regulation of shipping.[166] In addition, OSPAR recognizes the jurisdictional rights of states over the seas and the freedom of the high seas. Within this framework, OSPAR recognizes the application of the main principles of international environmental policy to prevent and eliminate marine pollution and to achieve sustainable management of the Maritime Area.[167]

The OSPAR Commission is permitted to adopt measures and programs in the form of legally binding decisions, non-legally binding recommendations and other agreements for the covered activities.[168] These measures and programs can apply to the entire Maritime Area or to a specific (sub)region.[169] Furthermore,[170] non-party states are permitted to be invited by the contracting parties to accede to the OSPAR Convention,

---

[162] OSPAR, supra note 108 at preamble.
[163] Id. art. 1(a).
[164] Koivurova, supra note 160, at 15.
[165] Id. at 15-16. The Annexes deal with pollution from land-based sources (Annex I), pollution by dumping or incineration (Annex II), pollution from offshore sources (Annex III), the assessment of the quality of the marine environment (Annex IV), and the Protection and Conservation of Ecosystems and Biological Diversity of the Maritime Area (Annex V). wwf. Pg 16.
[166] OSPAR, supra note 108, at art. 4 of Annex V.
[167] Id.
[168] Koivurova, supra note 160, at n.44.
[169] OSPAR, supra note 108, at art. 24.
[170] OSPAR, supra note 108, at art 27(2).

and if necessary, the spatial scope of the Maritime Area can be expanded to include these additional states.

The OSPAR Commission has seven work areas.[171] Two of the work areas are the offshore oil and gas industry and climate change.[172] In 2003, the Commission produced the Offshore Oil and Gas Industry Strategy with the objective of preventing and eliminating pollution from offshore sources and to protect the OSPAR maritime area against the effects of such activities so as to safeguard human health, conserve the marine ecosystems, and "when practical," restore marine areas that have been adversely affected.[173] The Strategy covers all phases of offshore activities. It sets out the development and implementation of programs and requires the OSPAR Commission to collect information about threats to the marine environment, establish priorities for taking action and to develop and periodically review environmental goals.[174] These voluntary guidelines are recommended for all vessels, including those of non-contracting parties to OSPAR.

Overall, the work of the OSPAR Commission is guided by an ecosystem approach designed to integrate management of human activities in the marine environment. This is supported by a general obligation of the contracting parties to apply the precautionary principle, the polluter pays principle and the best available techniques (BAT) and best environmental practice (BEP), including clean technology.[175] These techniques should be valuable tools used by both the contracting, and the non-contracting

[171] Casper, supra note 137, at 850.
[172] Id.
[173] OSPAR Commission, Offshore Oil and Gas Industry, available at http://www.ospar.org/html_documents/ospar/html/Revised_OSPAR_Strategies_2003.pdf#nameddest=offshore_o_and_g
[174] Id.
[175] OSPAR, supra note 108.

parties, for protecting the Arctic marine environment. The various guidelines promulgated by OSPAR should be used as a guide in protecting the Arctic, and perhaps should be made mandatory by the States. An additional important aspect of OSPAR is its applicability to non-contracting parties. The integration of these aspects permits OSPAR a tool for cooperation between coastal states in order to develop strategies for marine protection. This integrated approach further encourages a consistency in protection policies across the Arctic nations. In addition, OSPAR encourages other authorities whose actions affect the North East Atlantic to adopt management measures and strategies that are consistent with an ecosystem approach. However, it appears questionable as to whether OSPAR is successful in implementing and enforcing its provisions. In addition, there appears to lie a gap on the regulatory competence of OSPAR with regard to the absence of mechanisms to coordinate the regulation of all maritime activities by the relevant competent global and regional organizations.[176]

D. United Nations Convention on the Law of the Sea

The United Nations Convention on the Law of the Sea (LOS) has been described as one of the most expansive international agreements and is commonly referred to as "the constitution of the oceans."[177] It governs almost all aspects of maritime law, including sovereignty limits, navigation, seabed mining and environmental protection of the world's oceans.[178] Moreover, it establishes sovereign rights to approximately 20% of the world's oceans.[179] Specifically, it created an international legal regime that governs the exploring, exploiting, preserving, conserving and managing of the natural resources in

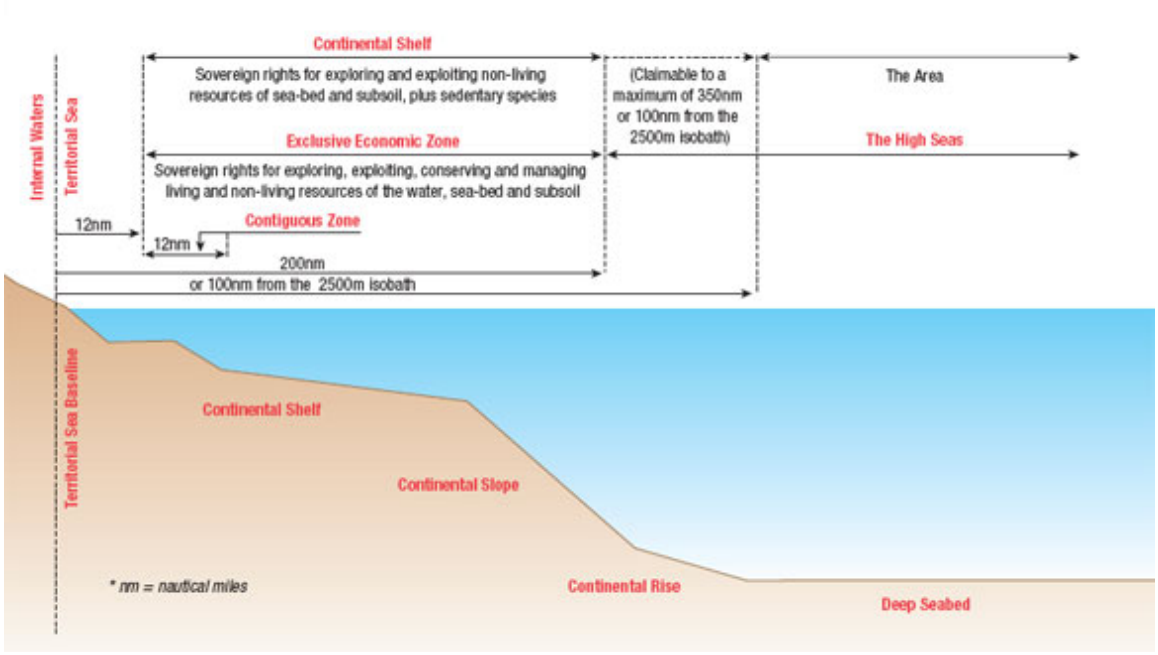
[176] Koivurova, supra note 160, at 18.
[177] Holmes, supra note 35, at 330.
[178] Id. at 330-31.
[179] Howard, supra note 88, at 844.

an exclusive economic zone (EEZ) beyond a nation's coastline.[180] As of October 5, 2010, 161 nations had ratified LOS, including all permanent members of the U.N. Security Council, except the United States.[181] Four of the five Arctic nations are thus parties to LOS.

LOS governs the global oceans, including the Arctic and provides a legal framework within which disputed claims to territory may be adjudicated.[182] Currently, no nation has exclusive jurisdiction over the Arctic.[183] Instead, LOS provides the legal paradigm for establishing and settling claims regarding navigational rights, territorial sea limits, economic jurisdiction, the legal status of resources on the seabed beyond the limits of national jurisdiction.[184] It further provides general duties applicable to all states to regulate, prevent, reduce, and control pollution.[185] In addition, it requires all signatories to settle disputes peacefully and follow certain dispute resolution methods.[186] A map further describing the zones of sovereignty pursuant to LOS is below.[187]

---

[180] Candace L. Bates, Comment, U.S. Ratification of the UNCLOS: Passive Acceptance is Not Enough to Protect U.S. Property Interests, 31 N.C. J. Int'l L. & com. Reg. 745, 752 (2006).
[181] UNCLOS website Consolidated table of ratifications/accessions, etc., available at http://www.un.org/Depts/los/reference_files/status2010.pdf
[182] Howard, supra note 88, at 845.
[183] Id.
[184] UN Division for Ocean Affairs and the Law of the Sea, UNCLOS (A Historical perspective) (1998), available at http://www.un.org/Depts/los/convention_agreements/convention_historical_perspective.htm
[185] UNCLOS, supra note 73, at art. 207-12, 196.
[186] Id. at art. 279-288
[187] Fisheries and Oceans, Canada, Maritime Zones, available at http://www.dfo-mpo.gc.ca/oceans/canadasoceans-oceansducanada/marinezones-zonesmarines-eng.htm



The Law of the Sea Convention defines a nation's "territorial sea" as the area that extends twelve nautical miles from its coastal low-water mark or baseline.[188] This twelve-mile area essentially functions as a continuation of the nation's land territory, regardless of the extension of the nation's continental shelf. Nations may exercise complete sovereignty over the water, seabed, and air space within their territorial sea.[189]

A nation's "contiguous zone" is an area adjacent to its territorial sea in which the nation may prevent and punish infringement of its customs or laws.[190] The contiguous zone may not extend beyond twenty-four nautical miles from a nation's territorial sea baseline.[191] Next, a nation's offshore exclusive economic zone (EEZ) is the area between twenty-four and up to no more than 200 nautical miles from a nation's territorial sea baseline.[192] Article 56 provides a nation with sovereign rights within its EEZ for the

[188] Id. at art 3.
[189] Id. at art 2.
[190] Id. at art. 33(1).
[191] Id. at art. 33(2).
[192] Id. at art. 57.

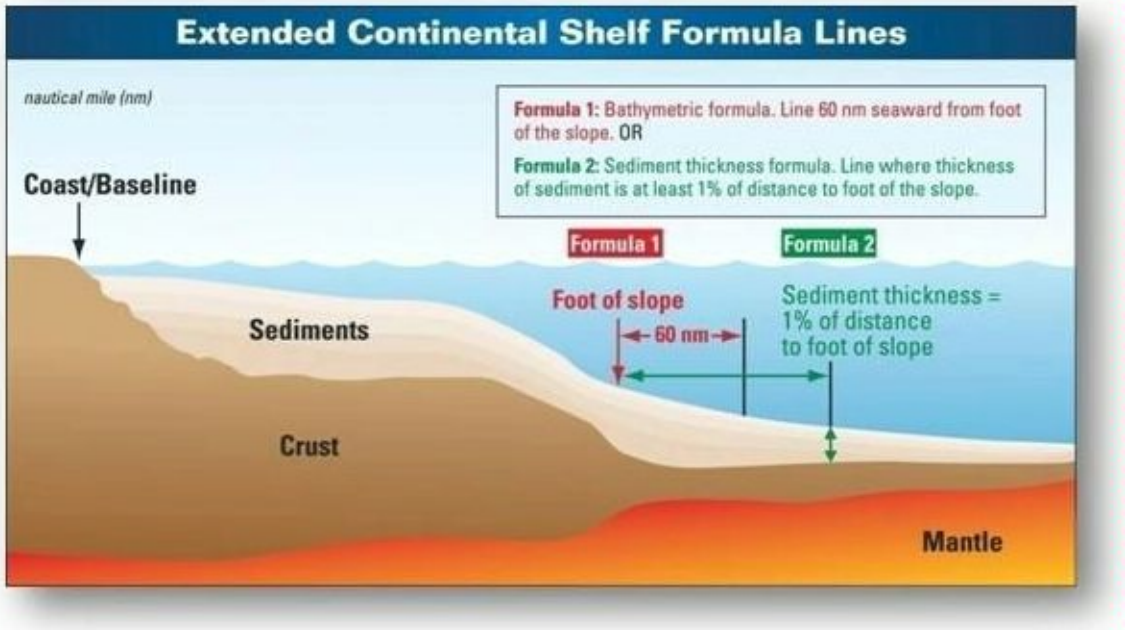
purpose of exploring, exploiting, conserving and managing the natural resources (whether living or non-living) of the waters.[193] It further provides a nation sovereignty with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds.[194]

In certain circumstances, LOS permits a nation to extend its EEZ beyond the 200 nautical mile limit. These circumstances are especially relevant in a region where natural resources are abundant, such as the Arctic, because nations seek to extend their rights to sovereignty over these resources as far as the law allows. An Arctic nation's (or any nation's) ability to extend its EEZ is limited in accordance with the extension of its continental shelf, which is the underwater line that separates a nation's exclusive jurisdiction (i.e., its territorial sea) from the common heritage of mankind.[195]

Article 76 of LOS relies on both scientific and geological determinations to legally define a continental shelf. This article, although one of the most complex LOS articles, is considered the "crucial nexus separating the extent of coastal State jurisdiction over seabed natural resources from the 'common heritage' beyond."[196] In other words, article 76 permits a nation to claim additional territory beyond the 200 nautical mile demarcation of its EEZ if it can *scientifically* prove that the landmass of its continental shelf connects below sea level to the claimed territory. Specifically, if a nation can scientifically demonstrate that its continental margin extends more than 200 nautical miles, it may claim jurisdiction up to 350 miles from the baseline or 100 miles from the

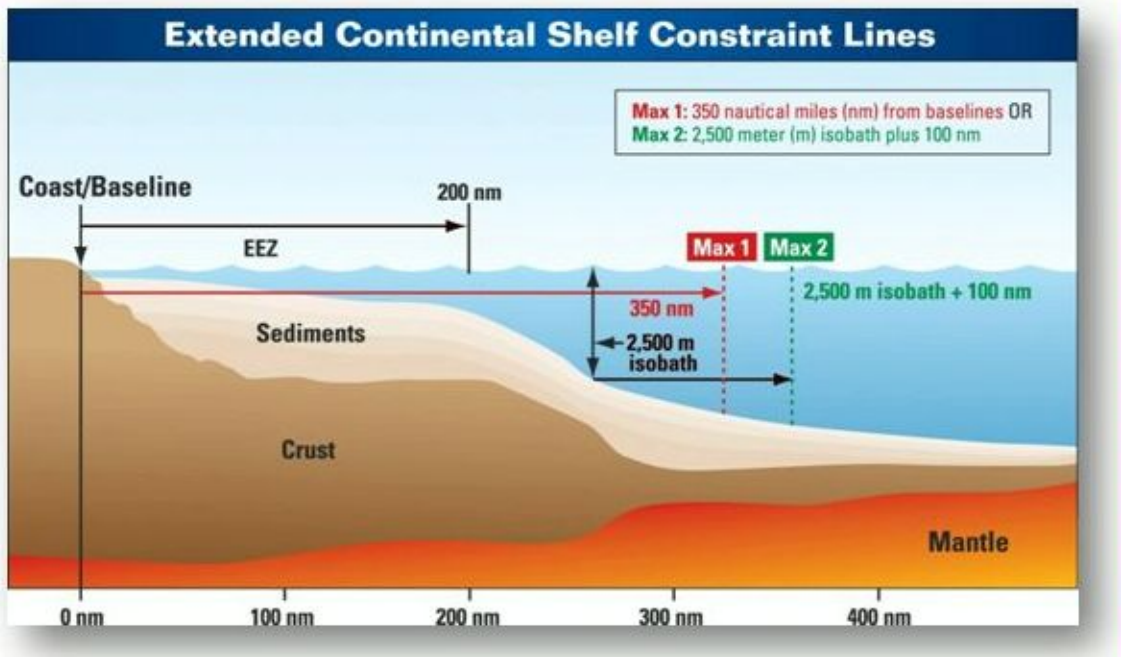
[193] Id. at art. 56(1)(a).
[194] UNCLOS, supra note 72, at art. 56-57
[195] Id. at art. 56, 76.
[196] Peter Prows, Tough Love: The dramatic Birth and Looming Demise of UNCLOS Property Law (and What is to Be Done About It), 42 Tex. Int'l L.J. 241, 247 (2007).

2,500 meter depth, depending on certain criteria.[197] Even if a nation demonstrates that its continental shelf extends further, this 350 nautical mile limit is absolute.[198] A graphical representation of the Article 76 delimitation process is below.



Formula lines used for defining the extended continental shelf under Article 76 of the Law of the Sea Convention.

[197] UNCLOS, supra note 73, art. 76(5). Note that the formula for determining the actual outer boundaries of the continental margin is complicated and "monstrously difficult." Cavnar, infra note 203, at 398-99 n.81. Further explanation of it is beyond the scope of this paper.
[198] Id. at art. 76(6).



Constraint lines used for defining the extended continental shelf under Article 76 of the Law of the Sea Convention.[199]

Articles 56 and 76 of LOS highlight why Arctic nations are rushing to establish the outer limits of their continental shelves. The Arctic nations are attempting to use these Articles in order to submit extended continental shelf claims to the United Nations Commission on the Limits of the Continental Shelf and thereafter gain sole control to the natural resources, especially the oil and gas, on the seafloor.

Russia, for example, is seeking to prove that an undersea mountain range – the Lomonosov Ridge that traverses the Arctic Ocean between Asia and North America – is connected to the Russian continental shelf. Russia claims that it has obtained enough material to demonstrate that the Ridge is geologically linked to Russia's established continental margin.[200] Article 76 of LOS permits a nation to claim territory as its own if that territory is proven to be a physical extension of the nation's continental shelf.

[199] Defining the Limits of the U.S. Continental Shelf, U.S. Department of State, available at http://www.state.gov/g/oes/continentalshelf/index.htm

[200] Howard, supra note 88, at 839.

Therefore, if a nation can gather evidence and establish that there is a "natural prolongation" of its continental shelf beyond the 200 nautical mile limit, it can gain control over that extended territory.[201] However, like with so many of the terms contained with the LOS, the meaning of the term "natural prolongation" is not straightforward in either the legal or the scientific realm. This lack of clarity contributes to a nation's issues in attempting to prove a boundary claim pursuant to LOS.

Once a coastal State has completed the scientific and geological determinations in order to define its continental shelf, it makes a submission of information about its delineation to the Commission on the Limits of the Continental Shelf (Commission).[202] The Commission evaluates and discusses the submission and then makes "recommendations" to the coastal State. These recommendations consist of technical and scientific advice to aid the coastal State in the delineation process.[203] The coastal State then establishes the limits of its shelf "on the basis of these recommendations" and those limits "shall be final and binding."[204] The Rules of Procedure of the Commission on the Limits of the Continental Shelf declare that the submitting coastal State may "classify as confidential any data and other material . . . that it submits" and that Commission meetings and deliberations regarding submissions are also confidential.[205] The composition and operations of the Commission are further described below.

Ocean experts agree that LOS creates a monstrously difficult formula for recognizing extended continental shelf (ECS) claims, one far harder to employ and verify

---

[201] UNCLOS, supra note 73, art. 76(1).
[202] Id. at art. 76(4).
[203] Id.
[204] Id. at art. 76(8).
[205] Comm'n on the Limits of the Continental Shelf (CLCS), Rules of Procedure of the CLCS, UN Doc CLCS/40/Rev.1, annex II (Apr. 17, 2008).

than any of LOS's other procedures for establishing oceanic limits.[206] Thus, the process by which the delineation of an ECS for a coastal state is made beyond its 200NM continental shelf causes significant confusion for both commentators and coastal states' representatives.[207] To gather the submarine measurements that article 76 requires, states have to take sonic images of the sea floor, identify the various parts of the article 76 formula, figure out how to measure them based on the different options permitted, and satisfy other procedural requirements.[208] Thus, article 76 relies on hard-to-obtain and even-harder-to-decipher submarine data. This data must then be inputting by the states into a complex formula that bases outer limits on undefined terms and confusing measures.[209] For example, article 76 does not adopt the standard definitions and principles that geologists use to trace the continental margin.[210] Rather, it creates a brand-new legal process for defining the shelf and marking its boundaries, which depends on sedimentary thickness and lines drawn from territorial baselines and 2,500-meter isobaths, and not on scientific precision.[211]

---

[206] Anna Cavnar, Accountability and the CLCS: deciding Who Owns the Ocean Floor, 42 Cornell Int'l L.J. 387, 397 n.81 (2009).

[207] Alan Evans, Chris Carleton, Lindsay Parson, Article 76: The Ridge Issue, available at http://www.gmat.unsw.edu.au/ablos/ABLOS03Folder/PAPER2-3.PDF

[208] Cavnar, supra note 203, at 397 n.83.

[209] Id. at 400.

[210] Cavnar, supra note 203, 398-99, n.85. See also N.M. Antunes and F.M. Pimentel, Reflecting on the Legal-Technical Interface of Article 76 of the LOSC: Tentative Thoughts on Practical Implementation (paper presented at the international conference Addressing Difficult Issues In UNCLOS, organized by ABLOS, Monaco, 28-30 October 2003), at 5, available at http://www.gmat.unsw.edu.au/ablos/ABLOS03Folder/PAPER3-1.PDF."Another matter concerns the fact that, in Article 76, there are terms that are characterized by a "legal-scientific dualism." Some scientific-technical terms incorporated in this provision have acquired a meaning that departs from their geo-scientific, ordinary meaning. This is clearly acknowledged by the CLCS, which recognizes that the LOCS "makes use of scientific terms in a legal context which at times departs significantly from accepted scientific definitions and terminology."

[211] Id. at 399.

Moreover, application of article 76 to the Arctic Ocean is challenging because of its complexity of physical geography, its geologic diversity and because the geological character of its continental shelves is imperfectly understood.[212] The complexity of this delineation, combined with the issues surrounding the UN Commission on the Limits of the Continental Shelf (described below), strengthens the theory of this paper that the future of the Arctic should not rely solely on the existence of any one legal regime.

Having created this complicated and unclear delineation formula, the LOS parties sought to create an oversight mechanism to fulfill two purposes: to safeguard against excessive claims on the part of wide-margin states while ensuring that those states could fully realize their rights to the shelf; and to reduce uncertainty about limits and prevent disputes.[213] To achieve these purposes, they established the Commission on the Limits of the Continental Shelf – an independent commission composed of twenty-one experts in geology, geophysics and hydrography charged with reviewing states' Article 76 claims. However, the Commission does not instill confidence that continental shelf claims can be submitted or approved with predictability and uniformity.[214] The Commission has not yet to rule affirmatively on any continental shelf proposal and suffers from a lack of transparency.[215] Not all of the details of the claims and potential claims are available to the public, which makes it difficult to determine the basis for a state's submission and/or the Commission's recommendations. This lack of transparency leaves questions as to what criteria the Commission deem probative in ruling on a submission.

---

[212] Grantz, supra note 73, at 202.

[213] See Untied States: President's Transmittal of the UNCLOS and the Agreement Relating to the Implementation of Part XI to the US Senate with Commentary (Oct. 7, 1994), reprinted in 34 I.L.M. 1393,1427 (1995).

[214] Clote, supra note 80, at 216.

[215] Id. at 216, n.155.

Various other questions persist regarding the effectiveness of the Commission, as well as interpretations of the provisions of article 76. Initially, article 76 permits a nation to claim additional territory beyond the 200 nautical mile demarcation of its EEZ if it can scientifically prove that the landmass of its continental shelf connects below sea level to the claimed territory.[216] Thus, the outer limit of a State's continental shelf beyond 200 nautical miles is not fixed under LOS until a claim is scientifically researched, submitted to the Commission, approved (on somewhat unknown factors due to the above-referenced lack of transparency), and then officially promulgated by that State. This process of delimitation is summed up as 'submission preparation, CLCS review, and delineation deposit.[217] However, questions remain as to why a state is to set its boundaries on the basis of recommendations from the Commission instead of on the basis of the provisions of Article 76. Furthermore, the phrase "final and binding" does not provide additional guidance as to whom the boundaries are binding on – just the coastal state, or all other states? Although the Commission issued additional technical guidelines to assist in interpretation, these questions remain unanswered and the subject of much debate.[218]

The Commission's budget is provided by the home States of the respective Commission members, which may lead to questions regarding the biases of the

[216] Howard, supra note 88, at 846-48. Specifically, if a nation can scientifically demonstrate that its continental margin extends more than 200 nautical miles, it may claim jurisdiction up to 350 miles from the baseline or 100 miles from the 2,500 meter depth, depending on certain criteria. Even if a nation demonstrates that its continental shelf extends further, this 350 nautical mile limit is absolute. See UNCLOS, supra note 67, art. 76(5),(6).

[217] Clote, supra note 80, at 215 n.151, citing Peter Prows, Tough Love: The dramatic Birth and Looming Demise of UNCLOS Property Law (and What is to Be Done About It), 42 Tex. Int'l L.J. 241, 273 (2007).

[218] See Ted L. McDorman, The Role of the Commission on the Limits of the Continental Shelf: A Technical Body in a Political World, 17 INT'L J. MARINE & COASTAL L.301, 313-17 (2002), available at http://iilj.org/courses/documents/McDorman.TheRoleoftheCommission.pdf

Commission members.[219] These biases may further be questioned by the fact that the members of the Commission can provide recommendations to their respective home States and ultimately decide whether the home States' Article 76 claim is approved.[220] These factors not only distinguishes the Commission from international courts, but have also created questions about the Commission's impartiality.[221]

Furthermore, the Commission does not have authority to settle continental shelf disputes. The power of the Commission is advisory only, and its recommendations are binding only if they are incorporated into a member State's official submission.[222] However, because the Commission does represent the States collectively, States reserve their right to action regarding *other* State's continental shelf claims and the Commission's decisions concerning those claims.[223] Therefore, States retain their legal right to protest another State's delineation, even though the delineation was on the basis of the Commission's recommendations.[224] Thus, it is likely that a delineation is "final and binding" only upon the submitting State, meaning that the State cannot change its delineation after it makes it on the basis of the Commission's recommendations.[225] However, this highlights the lack of power of the Commission to stop a coastal State from developing oil and gas on the seafloor highs that it claims are natural prolongations of its land territory, but which the Commission determines are not, because the State could simply ignore the Commission's recommendations and begin developing oil and

[219] Gudmundur Eiriksson, The Case of Disagreement Between a Coastal State and the CLCS, in Legal and Scientific Aspects of continental Shelf Limits 251, 254 (Myron H. Nordquist et al. eds., 2004);
[220] Id.
[221] Ted L. McDorman, The Role of the CLCS: A Technical Body in a Political World, 17 Int'l. J. Marine & coastal L. 301, 310-12 (2002).
[222] UNCLOS, supra note 73, at art. 76(8); annex II, art. 3(1).
[223] McDorman, supra note 218, at 311.
[224] Id. at 315.
[225] Id.

gas in the disputed area.[226] The Commission has no power to enjoin that State because it is not a court. Some commentators argue that if a state establishes limits that do not conform to the Commission's recommendations, other states could challenge those limits before the International Tribunal of the Law of the Sea (ITLOS) or the International Court of Justice (ICJ).[227] This could, in theory, lead to judicial review of the Commission's recommendations and interpretations. [228] This paper does not attempt to resolve this question, but only to highlight the many issues with relying solely on one existing legal regime to govern the Arctic.

Additional problems with reliance on the Commission to protect the Arctic lie in the fact that even the submission process does not promote reliability. If the Commission finds the claim unsubstantiated, it can reject it, but the State may make as many subsequent submissions as it desires within a given time frame.[229] Moreover, the composition of the Commission, exclusively scientific-technical experts and lacking a legal component, brings into question how a legal document such as the LOS, can be effectively interrupted. There are currently 42 claims pending before the Commission, which meets only twice per year. Submissions, on average, take approximately 26 months before any type of recommendation is issued.[230] Should the Commission continue at this slow speed, the Arctic will melt faster than continental shelf boundaries will be "officially" established. In the meantime, states will or continue drill for oil and gas in

[226] Id. at 311-13, 319 (explaining the limited role of the Commission).
[227] Cavnar, supra note 203, at 406, n.145.
[228] Id.
[229] Prows, supra note 194, at 274. A nation has a period of ten years from the date of its ratification of the Convention in which to submit claims.
[230] UN Division for Ocean Affairs and the Law of the Sea, Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982, available at http://www.un.org/Depts/los/clcs_new/commission_submissions.htm

"disputed" areas. And the problem will remain – how do we protect the Arctic environment in the meantime?

Nonetheless, if nations are not able to settle a dispute, whether regarding its boundaries or otherwise, informally, Part XV of LOS provides specific dispute resolution options.[231] Articles 279 and 280 provide that parties shall settle any dispute among them concerning the interpretation or application of LOS "by any peaceful means of their own choice.[232] If parties are unable to reach an agreement on their own, LOS provides four methods of resolution: (1) the International Tribunal for the Law of the Sea (ITLOS); (2) the International Court of Justice (ICJ); (3) an arbitral tribunal for resolving disputes of a general nature constituted in accordance with Annex VII of LOS; or (4) a technical arbitral tribunal with special procedures constituted in accordance with Annex VIII of LOS.[233] When a nation ratifies LOS, it chooses a forum for settling any disputes that might arise under the Convention, and thereafter, should a dispute arise between two nations that have selected different forums (unless the parties agree otherwise) LOS requires compulsory arbitration.[234]

Although the Arctic nations have selected different forums for dispute resolution, Article 298 of LOS allows each nation to decline to accept any method of resolution for various kinds of dispute.[235] Thus a nation is permitted to opt-out of binding dispute resolution of LOS for various types of disputes, including boundary disputes among Arctic nations. Pursuant to Article 298, all Arctic nations except Norway have opted out

[231] UNCLOS, supra note 73, part XV, art 279-299.
[232] Id. arts. 279-80.
[233] Id. art. 279.
[234] Id. art. 287.
[235] Wilder, supra note 32, at n192. See also UNCLOS, supra note 73, at art. 298.

of the binding dispute resolution provisions.[236] Thus, LOS does not provide a binding forum for deciding Arctic boundary disputes. Therefore, the effectiveness of LOS in settling the race for the Arctic is questionable, unless or until, the Arctic nations are able to peacefully resolve their disputes.

E. Ilulissat Declaration

The fact that the current "international law of the sea" applies to the entire marine Arctic, however defined, is also emphasized by five of the Arctic Ocean coastal states in the Ilulissat Declaration.[237] Accordingly, as the "law of the sea" is an "extensive international legal framework," they "therefore see no need to develop a new comprehensive international legal regime to govern the Arctic Ocean."[238] Conversely, they recognize the need for appropriate measures as a consequence of developments in the Arctic Ocean. In the less than a single page text that follows, reference is made to the safety of navigation, vessel-source pollution, contingency planning and emergency response to incidents with shipping and offshore exploitation.[239] Notably, no mention is made of international fisheries instruments, fisheries management in general or the need

---

[236] Holmes, supra note 35, at 340.

[237] Iulissat Declaration, Arctic Ocean Conference Ilulissat, Greenland, May 28, 2008, available at http://arctic-council.org/filearchive/Ilulissat-declaration.pdf. Adopted by Canada, Denmark, Norway, Russia and the United States on May 28, 2008 at the Arctic Ocean Conference in Ilulissat, Greenland [hereinafter Ilulissat Declaration]. The remaining Arctic coastal states, Iceland, Finland, and Sweden, were not invited to participate. See http://www.indigenousportal.com/es/%C3%81mbito-pol%C3%ADtico/The-Ilulissat-declaration-from-the-Artic-Ocean-Conference.html

[238] E.J. Molenaar, ARCTIC MARINE SHIPPING: OVERVIEW OF THE INTERNATIONAL LEGAL FRAMEWORK, GAPS, AND OPTIONS, 18 J. Transnat'l L. & Pol'y 289, 297-98 (2009). "It is worth noting that the Ilulissat Declaration refers to the "law of the sea" but not explicitly to the LOS Convention. This is hardly surprising as the United States is not a party to the LOS Convention. It is well-known that the United States takes the view that, except for its Part XI, the LOS Convention is already part of customary international law and in that way creates rights and obligations for the United States." See also Ronald Reagan, Presidential Proclamation 5030 (Mar. 10, 1983), 48 F.R. 10605, 3 C.F.R., 1983 Comp. 22

[239] Ilulissat Declaration, supra note 96.

for holistic, integrated or cross-sectoral governance or management.[240] The five Arctic Ocean coastal states did not see a need for international cooperation in these areas. This Declaration is relied heavily upon later in this paper in suggesting that an overarching treaty system, such as that existing in the Antarctica, would not be a feasible solution for the Arctic region. In plain language, the Arctic nations are not interested in developing an additional treaty.

F. OPRC

As set forth above, a number of international legal regimes exist regarding protection of the Arctic marine environment from oil and gas activities. In addition, there also exist international and domestic regimes geared towards safety in shipping and prevention of oil spills. The International Convention on Oil Pollution Preparedness, Response, and Co-operation (OPRC) requires parties to prepare for and respond to an oil pollution incident involving ships, offshore units, seaports and oil handling facilities.[241] It provides a global framework for international co-operation in combating major oil pollution incidents or threats of marine pollution. All of the Arctic states are parties to this Convention.[242]

States have various obligations under the OPRC Convention. For example, operators of offshore units under the jurisdiction of contracting parties are required to have oil pollution emergency plans or similar documentation.[243] Pollution incidents must be reported to coastal authorities and parties agree to provide assistance to others in the

---

[240] Molenaar, supra note 233, at 298.
[241] International Convention on Oil Pollution Preparedness, Response and Cooperation, art. 1, pmbl., Nov. 30, 1990, 1891 U.N.T.S. 78 [hereinafter OPRC].
[242] See International Maritime Organization, Status of Conventions by Countries, http://www.imo.org/Conventions/mainframe.asp?topic_id=248.
[243] OPRC, supra note 236, art. 3(2).

event of an oil pollution incident.[244] Similar to LOS, the parties are responsible for ensuring compliance with the Convention's provision.[245] Also, the International Maritime Organization[246] plays a supportive role in facilitating the adoption of regulations,[247] reporting,[248] cooperation and collaboration,[249] and compliance.[250] This treaty is relevant to oil and gas exploration in the Arctic because it recognizes the need to preserve the marine environment, as well as the serious threat posed to that environment by oil pollution incidents. OPRC directly applies to ships, offshore units and oil handling facilities.[251] In addition, it takes into account the importance of precautionary measures and the polluter pays principles.[252] The importance of these principles is a common theme among legal regimes in the Arctic and must continue to be recognized by the Arctic nations in continual enforcement of these regimes.

---

[244] Id. art. 4(1)(a).

[245] Id. art. 2(6). (Providing that the Parties shall establish a national system comprising a contingency plan and shall set up, either individually or in co-operation with other Parties, arrangements comprising, in particular, response equipment and a training program), See also UNCLOS, supra note 73, at art 199 (Providing that states in the area affected (see Article 198), in accordance with their capabilities, and the competent international organizations shall cooperate, to the extent possible, in eliminating the effects of pollution and preventing or minimizing the damage. To this end, States shall jointly develop and promote contingency plans for responding to pollution incidents in the marine environment).

[246] The IMO is the United Nations' specialized agency responsible for improving maritime safety and preventing pollution from ships. International Maritime Organization, General Objectives and Policies, http://www.imo.org

[247] OPRC, supra note 236, art. 3(1)(a).

[248] Id. art. 4(2) nat.

[249] Id. art. 8(1).

[250] Id. art. 12(2).

[251] Id. pmbl.

[252] Id.

G. Bilateral agreements

Arctic states have also adopted several relevant bilateral and regional instruments on contingency planning and preparedness for spills of oil and other hazardous substances.[253] These are briefly highlighted below.

- The 1983 bilateral agreement between Canada and Denmark, which relates to the prevention, reduction and control of pollution of the marine environment resulting from activities within the area covered by the agreement, including pollution incidents resulting from shipping.[254]
- The 1988 bilateral agreement between Canada and the United States, by which, *inter alia*, the "Government of the United States pledges that all navigation by U.S. icebreakers within waters claimed by Canada to be internal will be undertaken with the consent of the Government of Canada."[255]
- The 1992 bilateral agreement between Norway and the Russian Federation pursuant to which the Joint Norwegian-Russian Commission on Environmental Protection operates and promotes cooperation and collaboration in the conservation area between the two nations. [256]
- The 1993 Agreement between Denmark, Finland, Iceland, Norway and Sweden Concerning Cooperation in Measures to Deal with Pollution of the Sea by Oil or Other Harmful Substances. The Agreement deals with a range of measures,

---

[253] Koivurova, supra note 160, at 24.

[254] Agreement for Cooperation Relating to the Marine Environment, Can.-Den., Annex B, art. VII Aug. 26, 1992, 1348 U.N.T.S. 122 (entered into force Aug. 26, 1983).

[255] Agreement between the Government of Canada and the Government of the U.S on Arctic Cooperation, 11 January 1988, Canada Treaty Series 1988, No. 29, T.I.A.S. No. 11565

[256] Agreement Between the Governments of the Kingdom of Norway and the Russian Federation on Cooperation in Environmental Matters, Oslo, 3 Sept. 1992 (Oslo, Norwegian Ministry of Foreign Affairs: 1992), pp. 1,532-1,535.

including monitoring maritime zones and abatement in case of pollution incidents.[257]

- The 1994 bilateral Agreement between Norway and the Russian Federation Concerning Cooperation on the Combating of Oil Pollution in the Barents Sea, containing requirements on notification and contingency planning.[258]
- The Joint Contingency Plan of the United States and the Russian Federation on Combating Pollution in the Bering and Chukchi Seas.[259]
- The Canada-United States Joint Marine Contingency Plan, which provides for a coordinated system for planning, preparedness and responding to harmful substance incidents in the contiguous waters of Canada and the United States.[260]
- The Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal, which provides, *inter alia*, that hazardous wastes should be dealt with as close to where they are produced as possible. In addition, there are outright bans on the export of these wastes to certain countries.[261] All Arctic nations are signatories; however, the United States has not ratified it.[262]

As seen herein, the Arctic does not suffer from a lack of legal regimes. What the Arctic needs is a clear understanding of the reality of the environmental threats it faces.

---

[257] Agreement Between Denmark, Finland, Iceland, Norway and Sweden Concerning Cooperation in Measures to deal with Pollution of the Sea by Oil or Other Harmful Substances, Copenhagen, 29 March 1993, 2084 United Nations Treaty Series, 1-36173.

[258] Moscow, 28 April 1994. (Oslo, Norwegian Ministry of Foreign Affairs, 1996), at 94-98.

[259] See U.S. National Response Plan 88 (2004), available at www.usda.gov/documents/NRPallpages.pdf

[260] Id.

[261] U.N. Env't Programme (UNEP), Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Mar. 22, 1989, UNEP/IG. 80/3, *28 I.L.M. 657* (in force May 5, 1992).

[262] See Parties to the Basel Convention, http://basel.int/ratif/convention.htm

Moreover, nation states must accept responsibility for protecting their waters and the activities of their flagged ships.

H. OPA

One example of a nation state stepping to action is evidenced by the enactment of the Oil Pollution Act of 1990 (OPA) by the U.S. Congress.[263] Unfortunately, this action was enacted as a direct result of an environmental disaster, the Exxon Valdez oil spill. Nonetheless, OPA includes numerous provisions designed to improve the United State's ability to prevent and respond to oil spills in its waters by:

- Requiring owners of oil tankers and localities where oil is extracted, stored or transported, to develop detailed contingency spill response plans.
- Requiring the phase-in by 2015 of double hulls for new and existing tankers traveling in U.S. waters, a precaution some estimate could have reduced the Exxon Valdez spill by half, had it been in place at the time. The International Maritime Organization followed suit by adopting a double-hull requirement, through the MARPOL Convention, that was agreed to by all member states.
- Requiring stockpiling of chemical dispersants and equipment for cleaning or containing spills to ensure adequate resources would be on hand to respond to emergencies.
- Creating an Oil Spill Liability Trust Fund, to compensate victims of oil spills, to provide quick, efficient cleanup and to minimize damage to fisheries, wildlife and

[263] Lessons Not Learned, supra note 9, at 6.

other natural resources. The fund serves to pay for containment and oil spill removal activities and prevent or mitigate substantial threats of oil discharge.[264] Improvements in safety have greatly reduced tanker spill rates over the past two decades in the U.S. and worldwide. Even so, no less than 1,334,000 tons of oil have accidentally spilled from oil tankers, carriers and barges around the world since 1990,[265] not including the recent BP Deepwater Horizon disaster.

IV. Exxon Valdez versus Deepwater Horizon

Oil Spills in the Arctic region can have serious impacts on the environment. Although vast and largely unexplored, the Arctic ecosystem has been deemed by scientists as extremely complex.[266] Commentators on the Arctic have listed the following reasons as why the Arctic is so vulnerable to human disturbance caused by oil and gas activities:

(1) low temperatures retard the decomposition of natural and man-made substances and the breakdown of pollutants;

(2) regeneration is a protracted process because of the short growing season;

(3) large concentrations of animals heighten vulnerability to catastrophes;

(4) marine animals are particularly important in comparison to other regions of the globe;

(5) climatic conditions are likely to produce a more pronounced CO2-induced warming trend than in temperate regions;

---

[264] Id.
[265] Id.
[266] Gail Osherenko and Oran R. Young, the Age of the Arctic: Hot Conflicts and Cold Realities 45, 122 (1989).

(6) severe weather and ice dynamics make environmental protection and clean-up extremely difficult.[267]

According to these commentators, these factors make the Arctic the most fragile region in the world.[268] One commentator stated that "[t]he combination of a sensitive environment and one that is subject to such extensive environmental impact is not found elsewhere in this world."[269] In early 2009, the World Wide Fund for Nature (WWF) concluded that the Arctic remains vulnerable to large oil spills.[270] "The Exxon Valdez (disaster) has been the best-studied oil spill in history and scientists have found that even 20 years later, the damage from the spill continues," explained Margaret Williams, managing director of WWF's Alaska program.[271] Fishermen's livelihoods were destroyed, many wildlife and fish populations still haven't recovered and the Alaskan economy lost billions of dollars.[272] According to the organization, Arctic governments and regional industries lack the appropriate resources to effectively manage a sizeable spill.[273] "While new regulations are in place regarding response to oil spill disasters in the last 20 years, the Arctic itself has changed considerably and is much more vulnerable today," said Bill Eichbaum, WWF's vice president for marine and arctic policy.[274] "Sea ice is disappearing and open water seasons are lasting longer, creating a frenzy to stake claims on the Arctic's rich resources – especially oil and gas development. Thus, oil spills can be

---

[267] Id. at 111-17.
[268] See Id.
[269] Daniel R. Rothwell, International Law and the Protection of the Arctic Environment, 44 Int'l & Comp. L.Q. 280, 284 (1995).
[270] Aharon Etengoff, Arctic Remains Vulnerable to Large Oil Spills (2009), available at http://www.instantnews.net/arctic-remains-vulnerable-to-large-oil-spills.aspx
[271] Id.
[272] Id.
[273] Id.
[274] Id.

devastating to Arctic marine environments, especially given the current lack of oil spill response capabilities."[275]

A. Exxon Valdez

The world's understanding of the complexity of the Arctic ecosystem had not been noticed fully until the Exxon Valdez spill highlighted the vulnerability of the Arctic's ecosystem to human disruption.[276] On March 24, 1989, the tanker Exxon Valdez, en route from Valdez, Alaska to Los Angeles, California, ran aground on Bligh Reef in Prince William Sound, Alaska.[277] The vessel was traveling outside normal shipping lanes in an attempt to avoid ice. Within six hours of grounding, the Exxon Valdez spilled approximately 10.9 million gallons of Prudhoe Bay Crude.[278] Eight of the eleven tanks on board were damaged. The oil would eventually impact over 1,100 miles of non-continuous coastline in Alaska, making the Exxon Valdez the largest oil spill to that date in U.S. waters.[279]

The response to the Exxon Valdez involved more personnel and equipment over a longer period of time than did any other spill in U.S. history at that time.[280] Logistical problems in providing fuel, meals, bathing, response equipment, waste management and other resources were one of the largest challenges to response management.[281] At the

---

[275] Id.
[276] Osherenko, supra note 264, at 111-118.
[277] Oil Spill Case Histories: Summaries of Significant U.S. and International Spills 1967-1991, NOAA Report No. HMRAD 92-11 (1992), 80 available at http://response.restoration.noaa.gov/book_shelf/26_spilldb.pdf [hereinafter Case History].
[278] Id.
[279] Id.
[280] Id.
[281] Id.

height of the response, more than 11,000 personnel, 1,400 vessels, 85 aircrafts and a total of 100 miles of boom were involved in the cleanup.[282]

Two days after the initial spill, a storm, which generated winds of over 70 mph in Prince William Sound, weathered much of the oil, changing it into mousse and tarballs, and distributing it over a large area.[283] As dispersants are not generally able to dissipate oil in the form of mousse, it was no longer practical to use dispersants on floating oil during the response.[284] In addition to that storm, the spill occurred at a time of year when the spring tidal fluctuations were nearly 18 feet.[285] This tended to deposit the oil onto shorelines above the normal zone of wave action.

Due to the magnitude and remote location of the spill, it was necessary to bring significant additional resources (equipment and personnel) to Alaska to respond to the spill.[286] Most of the response equipment brought to Alaska early on in the spill had to be delivered by air. Since the Valdez airport could not handle certain large aircrafts, most large air cargo shipments went to Anchorage and were transferred to smaller planes.[287] In addition, many of the facilities, such as barge hotels for personnel, and equipment, such as hot water beach washing barges, were designed specifically for this spill.[288] Furthermore, most of the affected shorelines were inaccessible by land. Most of the cleanup operations were conducted by vessels. Besides other logistical problems with assembling and organizing a large work force in a short time, the majority of the

[282] Id.
[283] Id.
[284] Id.
[285] Case History, supra note 275.
[286] Id. at 84.
[287] Id.
[288] Id.

personnel involved in the cleanup effort had to be trained for their jobs as well as receive formal safety training.[289]

Cleanup operations commenced immediately; however, ceased by the end of September, 1989 because all parties involved in the response agreed that continuation of cleanup into the Alaskan winter would jeopardize the safety of cleanup crews.[290] Cleanup resumed again in April, 1990, with another break for winter in September of that year. The scope of the cleanup was reduced the following spring, and was deemed completed by July of 1991.[291]

Today, 20 years after the extensive clean-up efforts, oil can still be found on many Prince William Sound beaches and intertidal zones.[292] In 2003, scientists estimated that more than 21,000 gallons remain.[293] Additional surveys outside Prince William Sound have documented lingering oil on the Kenai Peninsula and the Katmai coast, over 450 miles away from the initial spill site.[294] It continues to harm local wildlife populations, commercial fishing activities, coastal community cultures and the recreated and tourism industries. Researchers predict the oil that seeped deep into the mussel beds and boulder beaches of Prince William Sound may continue to pollute the area for decades to come. Such subsurface oil can remain dormant for years before winter storms or foraging animals reintroduce this "unweatherd" and still-toxic oil into the environment.[295]

---

[289] Id.
[290] Id. at 83.
[291] Id. at 84.
[292] Lessons Not Learned, supra note 9, at 1.
[293] Id.
[294] Id.
[295] Id.

Despite the catastrophic, long-lasting impacts of this spill on Alaska's people and marine resources, over the past two decades oil companies and governments have made relatively little progress in quickly and efficiently responding to oil spills in the Arctic region. The recent Deepwater Horizon spill in the Gulf of Mexico provides evidence of this failure. Were it to happen again today, a spill the size of the 1989 Exxon Valdez disaster would likely provide equally as devastating.[296] Interestingly, it has, and in an environment far less harsh than that of the Arctic.

B. Deepwater Horizon

On April 20, 2010, what commentators following the Exxon Valdez spill feared, occurred. An explosion on the Deepwater Horizon MC252 drilling platform in the Gulf of Mexico caused the rig to sink and oil began leaking into the Gulf.[297] Government estimates of up to 2.6 million gallons per day put the total oil spewing into the Gulf ecosystem as high as 205.8 million.[298] This significant spill posed, and still poses, a serious threat to wildlife and the fishing community along the large coastal areas of Louisiana, Mississippi, Texas, Alabama, and Florida.[299] About 25 percent of United States' wetlands lie in the Mississippi River Delta, providing habitat for nesting seabirds and resting migratory birds.[300] The Gulf itself is home to dozens of threatened and endangered species, as well as commercially important fish, crab and shrimp that provide much of the basis of the Gulf Coast economy.[301] Although it will be months, if not years, before the full extent of the damage will be known, the spill continues to impact the Gulf

[296] Id.
[297] Gulf Disaster, supra note 6.
[298] Id.
[299] Id.
[300] Id.
[301] Id.

coastline.[302] But even in the early days of the spill, as estimates of oil volumes escalated, people began making comparisons between the new unfolding disaster in the Gulf and the infamous Exxon Valdez disaster.[303]

Cleanup in the Gulf was arguably much easier compared to the Arctic. The Gulf of Mexico has some of the world's largest, best-equipped and most experienced oil spill-containment system in the nation.[304] It has hundreds of experienced volunteer fishing boats at its disposal.[305] The water is warm year round and relatively calm except in hurricane season. Wildlife rehab and cleanup crews have access to a road system in close proximity to much of the shoreline. [306] And yet, even with all of these advantages, it took cleanup crews months to contain the oil. A recent report from the US Department of Interior and the National Oceanic Atmospheric Administration (NOAA) estimated that much of the 4.9 million barrels of oil that leaked from the Maconodo well has been removed or dispersed.[307] According to NOAA, the residual amount of just over one quarter (26 percent) has washed ashore, been collected from the shore, or is buried in sand and sediments.[308]

C. A Comparison

So how else do these two major US disasters compare? More importantly, how should they be used as incentive to act now in order to protect the Arctic?

---

[302] Deepwater Horizon oil Spill: NOAA NRDA Activities as of May 7, 2010, available at http://www.noaa.gov/deepwaterhorizon/publications_factsheets/documents/1959_deepwater-Horizon-NRDA-ORR-web-5-7-10.pdf

[303] Alan Bailey, Deepwater Horizon: Exxon Valdez again?, Petroleum News, Vol. 15, No 33 (2010), http://www.petroleumnews.com/pntruncate/329324632.shtml

[304] Gulf Disaster, supra note 6.

[305] Id.

[306] Id.

[307] Bailey, supra note 301.

[308] Id.

Obviously, in both incidents, very large volumes of crude oil were spilled in situations where ocean currents can carry oil slicks over large distances. And any spilled oil can smother animals and plants, as well as spread chemicals that are harmful to living organisms. However, there were probably more differences than similarities between the Exxon Valdez and Deepwater Horizon incidents, especially when it comes to the volumes and types of crude oil involved, and to the circumstances in which each spill occurred.[309]

The tanker Exxon Valdez spewed about 250,000 barrels of North Slope crude oil that was processed to remove water and natural gas.[310] According to information published by NOAA, this type of crude (North Slope) is generally a medium-grade oil. 15 to 20 percent of North Slope crude may evaporate within 24 hours of a spill, depending on the wind and sea conditions, with relatively little of the oil likely to disperse as droplets through the ocean water column.[311] Given the relatively cold conditions in Prince William Sound in March 1989, the oil reportedly formed a thick slick close to the stricken vessel.[312] But less than three days after the accident, when relatively little of the spilled oil had been recovered or dispersed, the storm that blew up emulsified much of the oil into a thick mousse. The storm further pushed the oil over huge distances and stranded thick, emulsified oil along shorelines. The resulting mess severely curtailed the possibility of recovering oil on water and created a shoreline cleanup nightmare.[313]

---

[309] Id.
[310] Id.
[311] Id.
[312] Id.
[313] Id.

By contrast, the material that gushed from the Macondo well in the Gulf consisted of an unprocessed mixture of water, natural gas and light Louisiana crude oil.[314] Light Louisiana crude typically contains a relatively high proportion of light, volatile components and it contains no hydrogen sulfide. The Deepwater Horizon response unified command estimated that as much as 40 percent of this oil may evaporate within 24 to 48 hours of a spillage. In addition, the Deepwater Horizon accident occurred much farther offshore than the grounding of the Exxon Valdez, and in warm water that would tend to encourage the evaporation of some oil components. Also, bacteria that devour tiny droplets of dispersed oil in the water column tend to flourish in the warm Gulf waters, where natural oil seeps occur on the seafloor.[315]

However, the Macondo well ejected a very much larger volume of oil than escaped from the Exxon Valdez — on August 2, 2010, an interagency team of scientists published an estimate that 4.9 million barrels of oil (compared with 250,000 barrels from Exxon Valdez) had flowed from the well.[316] As the oil squirted upwards from the out-of-control wellhead, some of it dispersed into the seawater as oil droplets. Much of the oil, however, floated to the sea surface and spread across a vast area of the Gulf, eventually reaching land and hitting an extensive amount of shoreline. Deepwater Horizon spill response teams removed oil from the water using skimmers, through the in-situ burning of corralled oil pools, and by the application of chemical dispersants (dispersants cause oil to spread though the water column as minute droplets for consumption by oil-eating bugs).

---

[314] Id.

[315] Id. See also Jenny Marder, Methane-Munching Bacteria Ate Potent Gas From Gulf Oil Leak at Top Speed, PBS New Hour, January 6, 2011, available at http://www.pbs.org/newshour/rundown/2011/01/methane-munching-bacteria-consumed-at-top-speed.html

[316] Id.

D. Cleanup in the Arctic

The next big Deepwater Horizon type disaster could take place in the remote Arctic seas where hurricane-force winds, 30 ft seas, sub-zero temperatures and winter darkness would overwhelm any clean-up attempts.[317] With the ban on offshore drilling lifted in the Gulf of Mexico, big oil companies such as Royal Dutch Shell are pressing hard for the Obama administration to grant final approval to Arctic drilling.[318] Shell has invested more than $2 billion to drill off Alaska's north coast and is campaigning to begin next summer.[319] But a report, by the Pew Environment Group - the Oil Spill Prevention and Response in the US Arctic Ocean - warns that oil companies are not ready to deal with a spill, despite the lessons of the BP disaster in the Gulf of Mexico.[320]

It took BP three months to bring its ruptured well under control. The former chief executive, Tony Hayward, admitted that the company had to improvise its response plan as it went along. Trying to clean up a spill in the extreme conditions of the Arctic would be on an entirely different order of magnitude. Skimming and containing, typical cleanup procedures in ice-free waters, and used heavily in the wake of the Deepwater Horizon spill, are impossible in ice-laden waters. Burning, the preferred method of clean up in ice-

---

[317] OIL SPILL PREVENTION and RESPONSE IN THE U.S. ARCTIC OCEAN: Unexamined Risks, Unacceptable Consequences, Commissioned by U.S. Arctic Program, Pew Environment Group (2010), available at http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Protecting_ocean_life/PEW-1010_ARTIC_Report.pdf [hereinafter PEW report].

[318] Id.

[319] Id. But see Press Release, Shell to Forego 2011 Drilling in Alaska, February 3, 2011, available at http://www-static.shell.com/static/usa/downloads/2010/alaska/release_020311.pdf

[320] PEW Report, supra note 316.

filled waters, is only successful under a narrow set of conditions.[321] The risks, difficulties, and unknowns of oil exploitation in the Arctic are far greater than in any other area.[322]

Despite the lessons learned from the Exxon Valdez spill, and now of the Deepwater Horizon spill, the Arctic ecosystem remains too fragile and unique to effectively and efficiently handle another clean-up. Thus, the consequences for the Arctic's environment of an oil spill could be dire wiping out populations of walrus, seal and polar bear and destroying the isolated indigenous communities that depend on hunting to survive. Getting to the scene of a spill would be a challenge. The nearest major port, Dutch Harbor, is 1,300 nautical miles away from the drilling areas in the Chukchi and Beaufort seas. Furthermore, what few air landing strips exist are not connected to any road system. There are no coast guard vessels in either sea, and the nearest coast guard station is 950 miles by air away in Kodiak, Alaska. Response teams would confront gale-force winds, massive blocks of ice and turbulent seas, total darkness for six weeks of the year, and extreme cold. Cranes would freeze and chemical dispersants, such as those used to break up the BP spill, might not work.

Then there is the ice. Left undetected, a pipeline leak could spread oil beneath the surface of sea ice. Large sheets of floating ice on the surface of a body of water, called ice floes, could carry oil hundreds of miles away from the source. At freeze-up, oil can become trapped within ice within the space of four hours, remaining there until spring. If it becomes trapped within multi-year ice, oil could stay in the environment for years, or even a decade.[323] The Oil Spill Prevention and Response Report does not call for a

[321] Elise Wolf, Oil and Water: The Arctic Seas Face Irreversible damage, Earth Island J. (2007), at 32, 37.
[322] PEW Report, supra note 316.
[323] Id.

complete ban on Arctic drilling, nor does this article recommend such a ban, but it recommends far more extensive study of the potential environmental impacts of a spill before industry is allowed to go-ahead with drilling plans. "We need to take a surgical approach and see what areas should and should not be allowed," said Heiman.[324] How we should protect those areas is discussed next.

V. The Proposed Solution

A complete ban of oil and gas exploitation in the Arctic, as some commentators have recommended[325] is not practical, nor is it necessary. As we have seen, the race to secure access to the abundance of oil and gas in the Arctic is already well underway. The primary objective of oil and gas, mining, shipping, and fisheries industries is generally to supply energy, foodstuffs, ores, and minerals and to move goods across oceans, and not necessarily to conserve wildlife or ecosystems.[326] Therefore, these industries must be regulated in order to prohibit them from operating with utter disregard for the marine environment.

In order to efficiently protect the fragile Arctic environment before another Deepwater Horizon disaster occurs in an area where the effects would be even more disastrous, Arctic nations should be responsible for creating and managing Marine Protected Areas (MPAs) within national jurisdiction. These effectively managed MPAs, together with the existing legal regimes in the Arctic will further strengthen the possibilities for protection of the region. Moreover, creating additional IMO regulations to govern shipping and industry in areas beyond national jurisdiction will create an

[324] PEW Report, supra note 316.
[325] Dresser, supra note 34, 539 n.211. See also Bailey, supra note 301.
[326] Jeanne Pagnan, Three Issues in Protecting the Arctic Ocean, MPA News, Vol 9. No. 3 (September 2007). available at http://depts.washington.edu/mpanews/MPA89.htm

integrated and efficient system of governance of the Arctic region before another Deepwater Horizon type disaster occurs – in an area where the effects would be even more disastrous.

This section further explores these proposed solutions, as well as reasons why previously proposed solutions would not be as efficient or effective.

A. **Marine Protected Areas**

Some areas of the world like the Arctic Ocean, are simply too sensitive to put at risk. However, an overall Arctic Treaty comparable to the Antarctic Treaty System does not seem to be a plausible solution, at least not anytime in the immediate future. If the lengthy negotiations of the LOS are any indication, reaching a consensus on a multi-provision treaty seems unlikely. In addition, five of the seven Arctic nations have clearly indicated their lack of desire to develop a new comprehensive international legal regime to govern the Arctic Ocean.[327] Yet, even in light of the lack of existing hard law governing the Arctic region, nations remain eager and actively engaged in the exploration and exploitation of the abundant oil and gas that lies within the Arctic Ocean. The fact that this oil and gas is becoming more accessible is increasing such activity in the region. The experience of Marine Protected Areas (MPAs) within areas of national jurisdiction show that MPAs are one significant tool which can assist with sustainable management of the Arctic marine environment. If MPAs are managed effectively, they can contribute to ensuring that the wonders of the Arctic environment will survive for future

[327] See Ilulissat Declaration, supra note 96.

generations.[328] The key to the success of MPAs in protecting the Arctic region is the effectiveness of the management and enforcement of the types and purpose of the MPA.

Faced with widespread declines in ocean health and a growing interest in "place-based ecosystem management," many nations, including the United States, are establishing marine protected areas (MPAs) to conserve vital marine habitats and resources.[329] A marine protected area is a coastal or offshore marine area that is managed to protect natural and/or cultural resources.[330] Familiar examples of U.S. MPAs include national marine sanctuaries, national parks and wildlife refuges, many state parks and conservation areas, and a variety of fishery management closures. Over the past several decades, a variety of legal authorities and programs have been established at all levels of government resulting in a dramatic increase in the number of MPAs.[331]

This complex assortment of different MPA types and purposes poses many challenges to policy-makers and stakeholders alike. Chief among these is terminology. There is currently no universally accepted definition for the term marine protected area. However, two which are widely used are that for protected areas in general in the United Nations Convention on Biological Diversity (CBD)[332] and the IUCN definition for

---

[328] David Leary, Conservation and Management of Vulnerable Deep-water Ecosystems in Area Beyond National Jurisdiction: Are Marine Protected Areas Sufficient? Parks Vol. 15 No. 3, 64, High Seas Marine Protected Areas (2005), available at http://cmsdata.iucn.org/downloads/parks_hsmpajun06.pdf

[329] A Functional Classification System for Marine Protected Ares in the US, National Marine Protected Areas Center (2006), at 1, available at http://www.mpa.gov/pdf/helpful-resources/factsheets/final_class_system_1206.pdf [hereinafter MPA Facts].

[330] IUCN World Commission on Protected Areas (IUCN-WCPA) (2008). Establishing Marine Protected Area Networks—Making It Happen. Washington, D.C.: IUCN-WCPA, National Oceanic and Atmospheric Administration and The Nature Conservancy, at 2, available at http://www.wdpa-marine.org/MPAResources/MPAPlanningResources/Docs/Establishing%20resilient%20MPA%20networks-making%20it%20happen.pdf [hereinafter Making It Happen].

[331] MPA Facts, supra note 327, at 1.

[332] Timo Koivurova, Governance of Protected Areas in the Arctic, Vol 5, Issue 1, Utrecht L. Rev. at 45 n.4, available at http://www.utrechtlawreview.org

marine protected areas.[333] According to Article 2 of the CBD, a protected area is "a geographically defined area, which is designated or regulated and managed to achieve specific conservation objectives." The IUCN definition, adopted in 1998 by the IUCN and reaffirmed by a UN Declaration in 1994, reads as follows:

> "Any area of intertidal or subtidal terrain, together with its overlying water and associate flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part of all of the enclosed environment."[334]

The essence of these broad definitions is that MPAs have a special status compared to the surrounding area due to their more stringent regulation of one or more human activities (e.g. shipping or fishing), by one or more measures (e.g. the prohibition of anchoring or bottom trawling) and for one or more purposes (e.g. the preservation of habitats, the conservation of target species or safeguarding the area for marine scientific research).[335] It is important to note that the identification of an area as an MPA does not necessarily mean that all human activities are prohibited.[336]

MPAs are typically established by a combination of government agencies, stakeholders, and other interested parties.[337] There are a variety of different types of MPAs in the United States, depending upon the objectives they are designed to fulfill.[338] MPA classifications range from "no-take" areas to small "no-access" areas that prohibit

---

[333] Id. at 45 n.5.
[334] Id.
[335] Molenaar, supra note 233, at 6.
[336] Id.
[337] Marine Protected Areas Fed. Advisory Comm., Protecting America's Marine Environment: A Report of the Federal Advisory Committee on Establishing and Managing a National System of Marine Protected Areas 2-3 (2005), available at http://mpa.gov/pdf/fac/05mtg_may17_19/mpafac_report_v5_042705.pdf. Interested parties could be users of an MPA (e.g., for ocean transportation, tourism, national defense, or fishing) or the products of an MPA (e.g., fish that are protected in an MPA and travel outside of it).
[338] See Randall S. Abate, MPAs as a Mechanism to Promote Marine Mammal Conservation: International and Comparative Law Lessons for the US, 88 Or. L. Rev. 255, 258-59, n.17-19 (2009).

all consumptive human uses to large "multiple-use" areas that permit a wide range of economic, social, and conservation activities.[339]

Defined as above, MPAs are not a radical innovation.[340] Many regional fisheries management organizations have adopted MPAs in the form of "closed areas" where all or certain fishing activities are prohibited for all or part of the year. In addition, the International Maritime Organization (IMO) has designated "special areas" where special discharge standards apply and the International Whaling Commission (IWC) has adopted whale sanctuaries that apply in addition to the other restrictions on whaling.[341] Additionally, within the Antarctic Treaty System, relatively small, near-shore Antarctic Specially Managed Areas and Antarctic Specially Protected Areas, have been adopted.[342] Moreover, the United States, through the National Marine Protected Areas Center, developed a Classification System that provides agencies and stakeholders with a means to describe MPAs in functional terms using five objective characteristics common to most MPAs: 1) Conservation Focus, 2) Level of Protection, 3) Permanence of Protection, 4) Constancy of Protection, and 5) Ecological Scale of Protection.[343] For most MPAs in the U.S. and elsewhere, these five functional characteristics provide an accurate picture of why the site was established, what it is intended to protected, how it achieves that protection, and how it may affect local ecosystems and local human uses.[344] Taken together, these characteristics influence the site's effects on local ecosystems and human

[339] Id.
[340] Molenaar, supra note 233, at 7.
[341] Id.
[342] Id.
[343] MPA Facts, supra note 327, at 2
[344] Id.

users, and thus its role in contributing to the conservation of healthy marine ecosystems.[345]

Among these five site characteristics, the first two – the site's Conservation Focus and its Level of Protection – reflect many of the issues of greatest interest to stakeholders in local, regional, and national MPA dialogues. The Conservation Focus influences many fundamental aspects of the site, including its design, location, size, scale, management strategies and potential contribution to surrounding ecosystems. U.S. MPAs generally address one or more of the following areas of Conservation Focus: 1) Natural Heritage MPAs are established to sustain the protected area's natural biodiversity and ecosystems; the ecological and physical processes upon which the depend; and the ecological services, human uses and values the provide (ex. National wildlife refuges); 2) Cultural heritage MPAs are established in order to protect submerged cultural resources that reflect the nation's maritime history and traditional cultural connections to the sea (ex. National historic monuments); and/or 3) Sustainable Production MPAs which are established with the explicit purpose of supporting the continued extraction of renewable living resources (such as fish) that live within the MPA (ex. many federal and state fisheries areas).

The remaining characteristics only permit selection of one attribute from each of category in the following list: Level of Protection, Permanence of Protection, Constancy of Protection and Ecological Scale of Protection. MPAs in the U.S. vary widely in the level and type of protections afforded to the site's natural and cultural resources and ecological processes. Any MPA can be characterized by one of the following six levels of

[345] Id.

protection, which will directly influence its effects on the environment and human uses. Uniform Multiple-Use MPAs are among the most common types in the U.S. and contain a consistent level of protection and allowable activities across the entire protected area. Zoned Multiple-Use MPAs allow some extractive activities throughout the entire site, but they use marine zoning to allocate specific uses to compatible places or times in order to reduce user conflicts and adverse impacts. Zoned Multiple-use with non-take areas, No-Take, No Impact and No Access MPAs range from areas in which all resource extracting in prohibited, to areas in which no human access is permitted whatsoever in order to prevent potential ecological disturbance – and all are rare within the U.S.

In addition, not all MPAs in the U.S. are permanently protected and not all MPAs provide year-round protection. Many sites differ in how long their protections remain in effect, which may in turn profoundly affect their ultimate effects on ecosystems and users. Should an MPA not be legally designated to provide permanent protection, it may provide either conditional or temporary protection. Conditional MPAs are often expected to persist administratively over time; however their legal authority must be actively renewed. Temporary MPAs are designed to address relatively short-term conservation needs for a finite duration. MPAs further exhibit three degrees of constancy throughout the year in the U.S, ranging from year-round protection, to seasonal, to rotating. The last characteristic of MPA classification in the U.S. pertains to the ecological scale of protection. MPAs in the U.S. vary widely in the ecological scale of the protection they provide. MPA conservation targets range from entire ecosystems and their associated biophysical processes, to focal habitats, species, or other resources deemed to be of

economic or ecological importance.[346] Within this framework, Arctic nations should be able to adequately establish MPAs with the purpose of strengthening the Arctic ecosystem and preventing oil and gas exploration in the most fragile of areas.

Another option by which parties can seek protection of the marine environment exists pursuant to MARPOL. MARPOL provides that parties can designate an area of the marine environment that needs "special protection" due to the significance of the area for recognized ecological or socio-economic or scientific reasons and because such areas may be vulnerable to damage by international maritime activities as a Particularly Sensitive Sea Area (PSSA).[347] However, this special protection is not defined.[348] Metaphorically speaking, a PSSA is an "empty vessel" as it entails no inherent protection mechanism.[349] PSSAs have no distinct set of instruments that are available through designation by the IMO.[350] They are merely a roof under which different tools can be housed to ensure coherent compliance and enforcement.[351] PSSA designation therefore permits the IMO to adopt regulatory measures within and beyond the limits of the territorial sea.[352] In order to make a PSSA work for environmental purposes it must be

---

[346] Id. at 6.

[347] Id. Annex I, reg. 1(10). See also International Maritime Organization website, "Particularly Sensitive Sea Areas", available at http://www.imo.org/OurWork/Environment/PollutionPrevention/PSSAs/Pages/Default.aspx. The condition for the designation of MARPOL Special Areas can be found in IMO Resolution A.927(22), "Guidelines for the Designation of Special Areas under MARPOL 73/78 and Guidelines for the Identification and designation of PSSAs," adopted November 29, 2001.

[348] Markus Detjen, The Western European PSSA – Testing a Unique International Concept to Protect Imperiled Marine Ecosystems. Marine Policy 30 (2006) 442, 444.

[349] Id.

[350] Id.

[351] Id.

[352] IMO, Revised Guidelines for the Identification and Designation of Particularly Sensitive Areas, IMO Assemb. Res. A. 982(24) P 1.2 (Dec. 1, 2005), [hereinafter PSSA Guidelines]. See also UNCLOS Article 211(6)(a) which provides for States to submit to the "competent international organization" (for shipping, this is universally understood to be IMO) for its approval proposals for special mandatory measures within

accompanied by a specific associate protective measure (APM), which meets the requirements of the appropriate legal instrument establishing such measure.[353] These APMs must be approved or adopted by the IMO to prevent, reduce, or eliminate the threat or identified vulnerability.[354] Accordingly, oceanographic and environmental concerns are to be taken into account as well as vessel traffic characteristics.[355]

Therefore, within a PSSA, discharges could be completely prohibited with minor and well-defined exceptions.[356] Rigs operating in a PSSA could be prohibited from discharging oil in that area "except when the oil content of the discharge without dilution does not exceed 15 parts per million."[357] The obligations can be enforced by the flag state as well as the coastal state.[358]

Although it is clear that the Arctic is a vulnerable marine region that needs to be protected from existent threats posed, in particular, by oil spills, it is not currently listed as a PSSA. Antarctica, also a vulnerable marine region, is a listed special area under MAPROL Annex I (oil), II (noxious liquid substances) and V (garbage).[359] Nonetheless, the vulnerability of the Arctic region has a different quality than that of the Antarctic. There are pristine areas recognized for their beauty, uniqueness, and rich biodiversity. But some of the currently contentious areas mainly comprise maritime areas connected with the people working and living there who fear that their private environment could be disfigured. At the same time, countries seek the riches and resources available from

---

their exclusive economic zones which require extra protection from vessel sourced pollution for recognized technical reasons.

[353] Koivurova, supra note 160, at 444.

[354] Id. at 444-45.

[355] IMO Res. A.927(22), see also MARPOL Annex 1, 2.3.

[356] MARPOL, supra note 107, at Annex I, reg. 1(10).

[357] Id. Annex I, reg. 21(3).

[358] Detjen, supra note 346, at 445-46.

[359] See Id. at Annex I, V (as amended Mar. 17, 1992).

exploitation of the oil and gas therein. Balancing these interests, together with the fact that securing PSSA designation is difficult,[360] creates the question of whether attempting PSSA designation would be worthwhile. Furthermore, PSSA designation does not create any further rights or expand existing rights of a coastal state in whose territorial sea or EEZ the area is located.[361] Moreover, the protective measures created by a PSAA designation would have to respect the balanced order of the law of the sea as reflected in LOS, as well as MARPOL and the limits of general international law.[362]

Revisions to MARPOL that included the strengthening of provisions governing single hull tankers have lead some countries to abandon portions of their PSSA proposals.[363] Even without a PSSA designation, MARPOL still applies to oil and gas exploration and exploitation in the Arctic.[364]

Designating and implementing Marine Protected Areas is a form of ecosystem-based management that should be employed as an indispensable component of a comprehensive response to the international ocean crisis.[365] Effective area-based protection through MPAs helps maintain ecosystem health and productivity, while safeguarding social and economic development.[366] They also help maintain the full range of genetic variation, essential in securing viable populations of key species, sustaining

---

[360] See generally PSSA Guidelines, supra note 127. Member states must submit an application to the IMO demonstrating that the area satisfies certain criteria and the effectiveness of proposed protected measures. In addition, the APMS addressing the vulnerability of the area have to be approved by the IMO's Marine Environmental Protection Committee. This step can take up to two years. The proposed protective measures must also comply with either Article 211(6) of LOS or with IMO regulations. See also Dejten, supra note 342, at 448.

[361] Dejten, supra note 342, at 448.

[362] Id.

[363] Id. at 453.

[364] Casper, supra note 137, at 852.

[365] Abate, supra note 336, at 258-59.

[366] Making It Happen, supra note 328, at 3.

evolutionary processes and ensuring resilience in the face of natural disturbances and human use.[367] Several countries, including New Zealand, Spain, Australia and Canada, have implemented MPAs effectively throughout their respective sovereign waters.[368] The United States is also moving toward implementing MPAs as a fundamental component of U.S. ocean management policy. In May 2000, then-US President Clinton issued Executive Order (EO) 13,158,[369] which required NOAA and other federal, state, and tribal governments to work collaboratively with the private sector to both establish new MPAs and strengthen existing MPAs with a goal of promoting protection of the ocean and coastal resources of the United States.[370]

According to the most recent update of the protected areas in the Arctic, made by the Circumpolar Protected Areas Network (CPAN) in 2004, almost 20 percent of the Arctic land mass is judged to have protected area status in terms of IUCN categories.[371] This is greater than the global average of approximately 11.5 percent.[372] The same, however, does not apply to marine areas, since little of the Arctic marine environment has been designated as a MPA.[373] This is not to suggest that the entire Arctic Ocean should be classified as a MPA, but instead, each coastal State should create small, discrete areas, close to its shore, or within its territorial sea or contiguous zone, in which oil and gas drilling should be prohibited, or at least severely restricted.

---

[367] Id.
[368] See Abate, supra note 336, part III generally for a discussion of these countries' MPA programs. See also MPA Global, A Database of the World's Protected Areas, website, available at http://www.mpaglobal.org/index.php?action=summary_by_country
[369] Exec. Order No. 13,158, 65 Fed. Reg. 34,909, 34,909 (May 26, 2000).
[370] Id. at 258 n.14-15.
[371] Koivurova, supra note 160, at 45.
[372] Id.
[373] Id.

However, one of the more controversial issues in designing MPAs is deciding where to put them.[374] While it may be possible to achieve consensus on the need for MPAs and agreement in principle on their size and what they should be protected, when it comes to choosing discrete sites, hostilities often break out.[375] Frequently, it is the social aspects of locating reserves within MPAs that dominate arguments.[376] For example, residents of an exclusive development hotly contested plans to include an ecological reserve adjacent to Key Largo in the newly created Florida Keys National Marine Sanctuary.[377] They feared the reserve would prevent them from recreational fishing, or even landing fish, close to their homes.[378] Commercial fishers responded similarly, suggesting that reserves would exclude them from their favored fishing spots.[379] Social acceptance of a MPA plan is critical to successful implementation, but a balance between social concerns and biological function must be achieved.

In determining where a MPA should be located, various social and economic criteria can be used. These criteria can be summarized as follows:

- Economic: Number of fishers dependent on the area, value for tourism, potential contribution of protection to enhance or maintain economic value;
- Social: Ease of access, maintenance of traditional fishing methods, presence of cultural artifacts or wrecks, heritage, recreational and educational value, aesthetic appeal;

---

[374] Committee on the Evaluation, Design, and Monitoring of Marine Reserves and Protected Areas in the US, Ocean Studies Board, National Research Council, Marine Protected Areas: Tools for Sustaining Ocean Ecosystem, at 97 (2001) available at www.nap.edu/catalog/9994.html
[375] Id.
[376] Id.
[377] Id.
[378] Id.
[379] Id.

- Scientific: Amount of previous scientific work, regularity of survey or monitoring work, presence of current research project, educational value; and
- Feasibility or practicality: social and political acceptability, accessibility for education and tourism, compatibility with existing uses, ease of management, enforceability.[380]

A thorough examination of a combination of the above-factors would be necessary before designation of any additional MPAs in the Arctic. However, aiming for the creation of small, discrete areas, close to the shore is a reasonable baseline by which to begin the evaluation process. The use of the phrase 'close to shore' is seemingly subjective, yet when considering the fact that the Deepwater Horizon rig was located approximately 41 miles offshore, and thus undisputedly in the U.S. EEZ, the phrase takes on additional meaning.[381] Keeping in mind that a nation's EEZ extends from 24 NM to at least 200 NM, MPAs could exist within a 50 mile zone from shore without ranging near disputed extended continental shelf areas, navigation channels, or into other areas drawing opposition from other nations. MPAs should avoid navigation channels and should not extend into the high seas, as management and regulation becomes difficult and thus lessens the effectiveness of designating it as a protected area. In addition, various types of MPAs should be utilized to prevent drilling at certain times of the year (i.e. the winter) and to limit the amounts permitted to be drilled. Different types of MPAS would also serve different purposes of regulating ship activity and other nations entering the protected area. Perhaps most importantly, the economic and social interests of the indigenous Arctic people must not be ignored. Utilizing this tool as a rebuilding method

[380] Id. at 98, Table 6-1.

[381] Press Release, BP Confirms that Transocean Ltd Issued the Following Statement Today. Apr. 21, 2010, available at http://www.bp.com/genericarticle.do?categoryId=2012968&contentId=7061443

to promote sustainability for the Arctic ecosystem should be a necessary measure to preserve and eventually strengthen at least portions of the Arctic region before another Deepwater Horizon type disaster occurs.

Some may question how this proposed solution would do anything to protect the Arctic from the effects of oil spills. The answer is simple – it would prevent drilling in areas where fishing, tourism and wildlife is high, and thus where the import of oil would be disastrous to the economy and ecosystem of the Arctic region. The creation of MPAs within a coastal states' jurisdiction would also share the costs and benefits among local communities, the private sector, regional and national governments, and other stakeholders.[382] In addition, the rights of the Arctic indigenous peoples could be, should be, and in some cases, must be, considered in the creation of these MPAs. In many Arctic states, indigenous rights are constitutionally protected.[383] Nonetheless, members of local communities have valuable traditional ecological knowledge which should be incorporated into environmental decision making. It is admitted that this is not going to prevent spilt oil from an area outside the MPA from entering the protected area and affecting the fragile ecosystem. However, if MPAs are healthier and more resilient than disturbed areas, then they may be able to recover more quickly from stresses like climate change, pollution or serve storms.[384]

Of course, the question then becomes if drilling is banned closed to shore, what would stop drilling from occurring beyond the MPA? The answer, nothing. At least not yet. It is recognized that MPAs are not the only solution for coastal and marine problems.

---

[382] Making It Happen, supra note 328, at 3.
[383] Nowlan, supra note 105, at 39.
[384] California's Marine Protected Areas, Monterey Bay Marine Protected Areas, Monterey Bay National Marine Sanctuary, available at http://montereybay.noaa.gov/resourcepro/resmanissues/mpa/mpa.html

However, combining these localized MPAs, controlled by nations within whose jurisdiction they lie, with additional guidelines for Arctic offshore activities – such as the Oil and Gas Producers Association Guidelines and continued IMO regulations – will provide the immediate protection that the Arctic needs. This immediate protection is not going to be found in the slow-moving and secretive processes of the CLCS or from any other existing treaty standing alone. Instead, an integrated form of governance is needed in the Arctic.

B. **IMO Regulations**

Now that we have seen the problem of protecting the fragile Arctic environment, and addressed one portion of the solution, the remaining piece to a successful integrated approach to governance in the Arctic lies with the International Maritime Organization (IMO).

The mandate of the IMO relates to (i) vessel-source pollution, (ii) maritime safety and (iii) maritime security.[385] IMO standards are laid down in a large number of legally binding and non-legally binding instruments.[386] Apart from the Arctic Shipping Guidelines, all IMO legally binding and non-binding instruments have a global scope of application and therefore apply in principle to the entire marine Arctic.[387] Nevertheless, in varying ways, most of the other instruments also allow for the adoption of more stringent measures in specific geographical areas.[388]

---

[385] Koivurova, supra note 160, at 22.

[386] Id. at 22-23. A list of the most important legally binding instruments are as follows: COLREG 72, MARPOL 73/78, SOLAS 74, STCW 78, BWM Convention, OPRC 90, 1969 Civil Liability Convention, 1971 Fund Convention. The non-legally binding instruments include the General Provisions on Ships' Routing, PSSA Guidelines, and the Arctic Shipping Guidelines.

[387] Id. at 22 n.116. However, not all Arctic states may be parties to all these instruments. Note, for instance, that the Russian Federation is not a party to the OPRC.

[388] Id. at 23.

The only IMO instrument that is specifically tailored to the Arctic is the non-legally binding IMO Arctic Shipping Guidelines (the "Guidelines").[389] The Guidelines supplement existing instruments, particularly the International Convention for the Safety of Life at Sea (SOLAS Convention),[390] and the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW Convention).[391] The Guidelines thus serve as a gap filler by recommending additional regulatory measures not required by existing instruments, but deemed necessary in light of the Arctic's unique climatic conditions and risks.[392]

The preamble of the Guidelines recognizes that ships operating in the Arctic environment encounter unique challenges, such as poor weather conditions, lack of communication systems, remoteness of the area causing difficult rescue or clean-up operations and costly, cold temperatures and additional loads on the hull, etc. due to the presence of ice.[393] These challenges, which are not specifically addressed by any IMO Convention, initiated the development of the IMO Guidelines. These challenges should also be used as a starting point for developing additional IMO regulations to protect the Arctic marine environment.

Because ice represents serious structural, navigational, and safety challenges to ships, many of the IMO Guidelines' provisions attempt to mitigate these risks.[394] One important aspect of the IMO Guidelines was the development of ship classes to

---

[389] Id. at 24.
[390] International Convention for the Safety of Life at Sea, Nov. 1, 1974, 32 U.S.T. 47, 1184 U.N.T.S. 2.
[391] International Convention on Standards of Training, Certification and Watchkeeping for Seafears, July 7, 1978, S. Exec. Doc. EE. 96-1, 1361 U.N.T.S. 190.
[392] IMO, Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas, IMO Assemb. Res. A. 982(24) P 1.2 (Dec 1, 2005) [hereinafter IMO Guidelines].
[393] Id. at P P-1.1.
[394] Id. at PP P 2.3-P-2.6.

distinguish between polar class ships and non-polar class ships, depending on the operational capability and strength of steel ships, and thus its ability to operate safely in Arctic ice-covered waters during different periods of the year.[395] In addition, the IMO Guidelines provide that no pollutant, such as oil, be carried against the hull in areas where the risk of ice impact is high.[396] The IMO Guidelines further aim to reduce the likelihood of tanker collisions and groundings by improving the safety of Arctic navigation and communications equipment. Finally, the IMO Guidelines include various provisions regarding the training of ice navigators and crew members because safe Arctic navigation "requires specific attention to human factors including training and operational procedures."[397]

Although the IMO Guidelines, similar to the various other guidelines discussed herein, offer important guidance, their ability to prevent accidental oil pollution is limited due to their soft law status. The IMO Guidelines are non-binding, and merely impose a weak mandate upon member governments to bring them to the attention of the parties concerned.[398] In fact, no state has yet implemented them through national regulation.[399] Furthermore, the IMO Guidelines are silent regarding the governance of shipping lands, which may be ice-free during summer months in the relatively near future. This silence greatly detracts from its ability to prevent accidental oil spills.

---

[395] International Association of Classification Societies [IACS], Requirements Concerning Polar Class, P I1.2.2, IACS Req. 2006/Rev. 1, 2007/Corr.1 (Aug. 2006) available at http://www.iacs.org.uk/document/public/Publications/Unified requirements/PDF/UR I pdf410.pdf [hereinafter IACS Unified Requirements].

[396] See David VanderZwaag et al., Governance of Arctic Marine Shipping, Dalhousie Univ.: Marine & Envtl. L. Inst., Oct. 10, 2008, at 18 [hereinafter Governance of Arctic Marine Shipping].

[397] IMO Guidelines, supra note 386, P G-3.10, P P-2.5.

[398] Id. at P 2.

[399] See Oystein Jensen, The IMO Guidelines for Ships Operating in Arctic Ice-Covered Waters: From Voluntary to Mandatory Tool for Navigation Safety and Environmental Protection 1, v (2007), available at http://www.fni.no/doc&pdf/FNI-R0207.pdf [hereinafter Jensen 2007].

VI. Conclusion

The Arctic environment poses a complex problem in relation to the inevitable increase in oil and gas exploration and exploitation in the near future. Accordingly, the solution is not a simple one, yet it is one that is within the collective grasp of the international community. As this paper has demonstrated, legal regimes, albeit not perfect, already exist in the Arctic region. Much of the groundwork has already been laid for ensuring the preservation of the Arctic, even in light of the growing issues due to the climate changes. Combining the existence of these regimes, with small additional steps, will help ensure the future productivity of the Arctic marine environment.

One step in attempting to establish protection for the Arctic marine environment was laid by the Arctic Council in the establishment of the EIA Guidelines for nations' use in implementing projects in the Arctic. The Guidelines focus on cooperation and flexibility in an attempt to ensure Arctic protection, yet without initiating additional obligations on the nations. While the EIA Guidelines prove to be good in theory, recent research has indicated that only a few people from the stakeholders in the Arctic (environmental NGO's, indigenous peoples' organizations, companies, administrative agencies) even knew that the Guidelines exist, let alone that it would have influenced any EIA's made in the Arctic.[400] These Guidelines are only one example of the various soft-law treaties and guidelines that exist with a questionable/unproven level of effectiveness in the Arctic.

Another set of guidelines relating specifically to offshore oil and gas activities in the Arctic has been promulgated by PAME. These guidelines focus on the precautionary

[400] Id. at pg 187.

principle and the polluter pays principles, thus encouraging nations to implement the highest standards available. The polluter pays principle is enacted to make the party responsible for producing pollution responsible for paying for the damage done to the natural environment. Although this principle is important to the protection of the Arctic marine environment, it is not a sufficient solution standing alone. As evidenced by the Deepwater Horizon disaster, the oil and gas industry is not deterred from the threat of paying for any damage it causes to the environment.

The hard law regimes currently in place in the Arctic are expansive on the issue of oil and gas exploration, exploitation and pollution. There are parallels within these laws to the soft-law guidelines, especially by way of the precautionary and polluter pays principle. The drafters of the environmental laws pertaining to the Arctic clearly recognized the need for special protection of this area; however, no one regime is yet sufficient. Although MARPOL is designed to eliminate intentional pollution of the marine environment, it fails to establish a significant deterrent effect for ships. Verification of a ship's activity on the high seas is nearly impossible because nations are generally not patrolling the waters in search of violators. The lack of legal or economic incentives to comply, or perhaps sanctions for not complying, question the effectiveness of MARPOL in the Arctic. OSPAR, which notably permits the adoption of legally-binding decisions and thus arguably provides more protection of the Arctic than MARPOL, also focuses on the precautionary and polluter pays principle in seeking to prevent and eliminate marine pollution. The OSPAR Commission even went as far as producing the Offshore Oil and Gas Industry Strategy. This strategy set the objectives of preventing and eliminating pollution and taking the necessary measures to protect the

maritime area against the adverse effects of offshore activities so as to safeguard human health and conserve marine ecosystems.[401] The Commission is to implement the Offshore Oil and Gas Industry Strategy progressively and, insofar as they apply, in a way consistent with the commitments made in other OSPAR Strategies. To implement this Strategy, the OSPAR Commission has adopted a number of Decisions, Recommendations and other Agreements which are discussed and agreed in the first instance by the Offshore Industry Committee (OIC). However, the OSPAR Convention cannot pass legislation and thus any of these decisions, recommendations and agreements promulgated by the OSPAR Commission must be implemented by the Contracting Parties through national legislation.

Yet another piece of the groundwork governing the Arctic marine environment is OPRC. OPRC is geared more towards the protection of the shipping industry instead of oil and gas/pollution, and also takes into account the precautionary and polluter pays principles. However, it places the responsibility for ensuring compliance with the parties, which without a "policing" mechanism, is not necessarily enforced in the best interest of the Arctic marine environment.

Perhaps the most significant of the existing regimes governing the Arctic, the United Nations Law of the Sea Convention, is also the most heavily relied upon legal regime, and should remain as such. The benefit of such a "constitution" of the seas is that it was designed to be comprehensive enough to adapt to changes by creating "institutional means for the formation of a collective will and by specifying the conditions under which the collective can claim supremacy over the individual

[401]Graham Payne and Melanie Thatcher, Environmental Pressures on the Continued Use of Chemicals in Offshore Oilfield Applications, Chemistry in the Oil Industry IX, Royal Society of Chemistry & EOSCA, Manchester (November 2005), available at http://www.eosca.com/docs/Environmental%20pressures.PDF

spheres."[402] Therefore, LOS is already prepared to address the variety of issues likely to arise from the race to claim sovereignty of the Arctic waters. Similar to the numerous other regimes in the Arctic, LOS accounts for the precautionary and polluter pays principles. Yet it also has the similar problem regarding a lack of policing mechanism as does OPRC. While the significance of LOS cannot be ignored, the future of the Arctic should not rest solely on the technicalities of continental shelf delimitation[403] or in the slow-moving hands of the CLCS.

Given the present difficulties associated with escalating claims to the Arctic, there have been calls to create a regional supplement to LOS, negotiated under the auspices of the Convention but among only the Arctic States.[404] Such a concept could be similar to the Antarctic Treaty System; however, the differences between the two Polar Regions make such a proposal in the Arctic tenuous at best.

The Antarctic Treaty System is a unique international legal regime and has developed international cooperation for almost fifty years.[405] In addition, the Antarctic, in stark contrast to the Arctic, is an expansive land-mass, and over 90% of the Antarctic is entirely inaccessible.[406] While there is extensive marine biodiversity, the mineral and hydrocarbon resources in the Antarctic, they are not available in the same commercially exploitable quantities as they are in the Arctic.[407] The most dispositive reason militating against using the Antarctic Treaty System as a basis for a new Arctic regime is simply

---

[402] Stuhltrager, supra note 78, at 36.
[403] Scott J. Shackelford, The Tragedy of the Common Heritage of Mankind, 28 Stan. Envtl. L.J. 109, 138 n.134 (2009).
[404] See generally Erika Lennon, A Tale of Two Poles: A Comparative Look at the Legal Regimes in the Arctic and the Antarctic, 8 Sustainable Dev. L. & Pol'y 32 (2008).
[405] Clote, supra note 80, at n.294.
[406] Id. at 235.
[407] Id. at n.298.

that some Arctic States are far more concerned with their own claims of sovereignty than with environmental issues.[408]

In light of the highlighted issues with the existing legal regimes in the Arctic, the IMO must continue in its important role as a United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine pollution by ships. In doing so, it should take an active role in facilitating adoption and enforcement of the aforementioned guidelines and laws. Another option would be for the IMO to adopt its previously issued IMO Arctic Shipping Guidelines as binding regulations, instead of just soft law guidelines. Binding regulations will enable the IMO to police ships that do not comply with, among others, the double hull tanker requirements. The mere threat of such enforcement may be enough to deter violations. This could also solve the failure of LOS and OPRC to address policing and enforcement mechanism. Another option would be for the IMO to actively encourage states to implement the Arctic Shipping Guidelines through national legislation. The Arctic nations have already expressed their intentions to work together with the IMO to ensure the protection and preservation of the fragile marine environment of the Arctic Ocean.[409] Thus it appears that these nations would not oppose increased participation by the IMO in protection of the Arctic.

The one weakness in existing IMO regulation is governance of shipping lanes, yet this area could be relatively easily addressed with an additional regulation focusing on the precautionary principle. This additional emphasis on the precautionary principle would align the IMO with several of the existing legal regimes such as LOS and OPRC.

[408] Jarashow, supra note 58, at 1650.
[409] Ilulissat Declaration, supra note 96.

Moreover, the Ilulissat Declaration specifically states that the Arctic nations will work together with the IMO to develop new measures to improve the safety of maritime navigation and prevent or reduce the risk of ship-based pollution in the Arctic Ocean.[410] Therefore, promulgating new regulations relating to the shipping lanes should be a politically viable way to enact additional protection of the Arctic marine environment.

Responsibility for protecting the Arctic region must also reach down to the state level. Establishing small, discrete Marine Protected Areas within national jurisdiction will disperse a level of responsibility to the states. In addition, it will enable portions of the marine environment to become more resilient and better able to handle disruption caused by an increase in oil and gas exploration and exploitation, as well as from an unfortunate oil spill. Placing responsibility for governance of these areas on the states will permit more efficient regulation of the polluter pays principle because states would be in a better position to enforce the laws against their local industries than would be a geographically distant international organization, such as the IMO.

An additional issue posed by this solution may arise with the establishment of MPAs that overlap national boundaries. Such designation would require a more complex level of coordination and cooperation among the affected nations than would MPAs established within the sovereignty of a nation. Although the Arctic nations have previously agreed upon various terms, conditions and agreements regarding governance of the Arctic, many of these agreements have only occurred after years of negotiation. Should this type of lengthy negotiation occur regarding implementation and governance of any proposed overlapping MPAs, the effectiveness of this solution would be

[410] Id.

diminished. It is for these reasons that it is suggested that MPAs be established distinctly within areas of national jurisdiction.

However, further analysis of the current governance regime of the Arctic reveals a common theme of cooperation in each of these laws, guidelines, and/or proposed solutions. Success in protection of the Arctic will depend on the joint commitment by all interested parties for responsible oversight of this, or any, proposed policy of an integrated approach to oceans governance. Even with a "race for the Arctic," underway, the Arctic nations have still indicated the willingness to cooperate.[411] What seems to be missing? The incentive and initiative to take action and encourage compliance - which should be found in the aftermath of Deepwater Horizon. If that environmental disaster does not push nations, international organizations and non-governmental organizations into action in the Arctic, the future of the unique environmental conditions of the Arctic region will indefinitely remain suspended on the brink of the unknown and dangerous – if not disastrous.

[411] News Bulletin, Five Nations Agree to Allow U.N. to Settle Arctic Claims, Vol. 14, No. 57, Petroleum News, May 29, 2008, available at http://www.petroleumnews.com/newsbulletin/520483138.html