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Marine Protected Areas as a Mechanism to Promote Marine Mammal Conservation: International and Comparative Law Lessons for the United States

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The world's oceans are in crisis, plagued by problems ranging from pollution to overfishing to marine mammal depletion.[1] Of all the environmental crises the international community now faces, ocean management may present the most complex and difficult regulatory challenge, yet it may be the most important to resolve to ensure the sustainability of life on the planet.

There are many reasons for the current crisis in the world's oceans, but all of them stem from one common failure—the flawed assumption that ocean resources are an indestructible and infinite bounty for humans to exploit. Many warning signs of the failing state of the oceans became evident in the past few decades, but those symptoms did not manifest themselves until the problems had reached almost irreversible proportions.[2] Ocean management presents a unique regulatory challenge because the oceans are so vast and multi-dimensional. The scope and degree of the problems now facing oceans cannot be fully resolved by traditional top-down, command-and-control responses. Consequently, innovative and flexible regulatory responses are necessary to restore the complex biodiversity of the oceans' living resources.

Marine mammal[3] depletion is a subset of the international ocean management crisis. Imperiled by poorly regulated ocean use and resource harvesting practices, several marine mammal species

1 U.S. COMM'N ON OCEAN POLICY, AN OCEAN BLUEPRINT FOR THE 21ST CENTURY: FINAL REPORT 38 (2004), *available at* http://www.oceancommission.gov/documents/full_color_rpt/000_ocean_full_report.pdf.

2 *Id.* at 38–41, 43–44.

3 For purposes of this Article, "marine mammal" refers to "any mammal which (A) is morphologically adapted to the marine environment (including sea otters and members of the orders Sirenia, Pinnipedia and Cetacea), or (B) primarily inhabits the marine environment (such as the polar bear)." Marine Mammal Protection Act of 1972, 16 U.S.C. § 1362(6) (2006).

populations have plummeted to the brink of extinction.[4] Even after the implementation of federal legislation in the United States directed in whole, or in part, at the plight of marine mammals, severe threats to marine mammals still remain. These persistent problems, such as habitat loss and bycatch,[5] are evidence of the failure to "see the forest for the trees" in the regulatory strategy.

Like the ocean crisis generally, the jeopardized status of many marine mammal species requires a regulatory response that is sensitive to the multi-dimensional nature of this problem. The scope and degree of the problems marine mammals face cannot be fully resolved by traditional, single-species responses. Consequently, a creative and flexible regulatory response—in essence, a new ocean ethic[6]—is necessary to restore the complex biodiversity of the oceans and ensure healthy ecosystems in which these valuable and beloved species can thrive once again.

Ecosystem-based management (EBM) is the driving force behind this new era of ocean management. EBM is a regulatory strategy that "recognizes that ecosystems are dynamic and inherently uncertain, yet seeks to manage . . . human interactions within ecosystems in order to protect and maintain ecological integrity and to minimize adverse impacts."[7] EBM evolved in response to the widespread failure of single-species management, especially in fisheries.[8] This regulatory strategy seeks to both respond to the reality that human intrusions, such as fishing practices and pollution, have impacts throughout the food chain[9] and protect the complex range of ecological relationships

4 *See* Office of Protected Res., Nat'l Oceanic & Atmospheric Admin., Marine Mammals, http://www.nmfs.noaa.gov/pr/species/mammals/ (last visited Sept. 28, 2009).

5 "Bycatch" is the accidental catch of non-targeted species. Donna R. Christie, *Living Marine Resources Management: A Proposal for Integration of United States Management Regimes*, 34 ENVTL. L. 107, 138 (2004). Bycatch from commercial fishing operations is one of the most significant problems in marine mammal protection. Donald C. Baur et al., *The Law of Marine Mammal Conservation*, *in* OCEAN & COASTAL L. & POL'Y 477, 488 (Donald C. Baur et al. eds., 2008).

6 Kennedy Warne, *Blue Haven*, NAT'L GEOGRAPHIC, Apr. 2007, at 70, 81.

7 ERICH HOYT, MARINE PROTECTED AREAS FOR WHALES, DOLPHINS AND PORPOISES: A WORLD HANDBOOK FOR CETACEAN HABITAT CONSERVATION, at xviii (2005).

8 *Id.* at 4.

9 Howard S. Schiffman, *Moving from Single-Species Management to Ecosystem Management in Regional Fisheries Management Organizations*, 13 ILSA J. INT'L & COMP. L. 387, 387 (2007).

that exist among organisms in a marine ecosystem.[10] To respond to these challenges, EBM must be "science-based . . . and adaptive."[11]

Designating and implementing marine protected areas (MPAs) is a form of ecosystem-based management that should be employed as an indispensable component of a comprehensive response to the international ocean crisis. Several countries, including New Zealand, Spain, Australia, and Canada, have implemented MPAs effectively throughout their respective sovereign waters.[12] The United States lags far behind these countries in its use of MPAs. The United States has only recently started to recognize the importance of MPAs and move toward implementing them as a fundamental component of U.S. ocean management policy. In May 2000, President Clinton issued Executive Order (EO) 13,158.[13] The order requires the National Oceanic and Atmospheric Administration (NOAA)[14] and other federal, state, and tribal governments to work collaboratively with the private sector to both establish new MPAs[15] and strengthen existing MPAs with a goal of promoting protection of the ocean and coastal resources of the United States.[16]

There are many different types of MPAs in the United States. MPAs involve a variety of area-based approaches to marine conservation because they are designed to fulfill different objectives. MPA classifications range from "no-take" areas[17] to small "no-

10 *Id.* at 389.

11 U.S. COMM'N ON OCEAN POLICY, *supra* note 1, at 63.

12 *See infra* Part III for a discussion of these countries' MPA programs.

13 Exec. Order No. 13,158, 65 Fed. Reg. 34,909, 34,909 (May 26, 2000).

14 NOAA is a federal agency tasked with several distinct responsibilities within the Department of Commerce. Some of NOAA's more widely known divisions include the National Weather Service, the National Hurricane Center, and the National Marine Fisheries Service. NOAA's vision is to create "[a]n informed society that uses a comprehensive understanding of the role of the oceans, coasts, and atmosphere in the global ecosystem to make the best social and economic decisions." Nat'l Oceanic & Atmospheric Admin., About NOAA, http://www.noaa.gov/about-noaa.html (last visited Sept. 28, 2009). NOAA's mission is "[t]o understand and predict changes in [the] Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs." *Id.*

15 The EO defines MPAs as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." Exec. Order No. 13,158, 65 Fed. Reg. at 34,909.

16 *Id.*

17 Also known as "marine reserves," no-take MPAs are not as restrictive as no-intrusion MPAs; however, they prohibit the removal of any species from the designated site. JON DAY & JON ROFF, PLANNING FOR REPRESENTATIVE MARINE PROTECTED AREAS: A

access" areas[18] that prohibit all consumptive human uses to large "multiple-use"[19] areas that permit a wide range of economic, social, and conservation activities.

MPAs are an outstanding regulatory mechanism to help restore decimated populations of marine mammals. MPAs have been used effectively as a tool for marine mammal protection in New Zealand and Spain, and this regulatory strategy can be equally viable in U.S. waters. MPAs, especially no-take MPAs, have the potential to conserve various species of marine mammals. No-take MPAs can promote marine mammal protection by: (1) preventing sensitive marine mammal habitats from degradation while also ensuring a sustainable fish population for the species to consume, thereby maintaining biodiversity in relevant ecosystems; (2) providing recreation and tourism opportunities to local communities from the economic benefits of marine mammal watching; and (3) enhancing existing federal regulatory programs applicable to marine mammals to ensure that marine mammal protections are fully addressed.[20] Even though no-take MPAs are known to be more efficient in preserving marine resources than multiple-use MPAs, "less than 1% of the world's oceans and less than .01% of U.S. waters" are currently designated as no-take MPAs.[21]

Part I of this Article discusses the role of MPAs as a viable strategy to enhance protection of marine mammals in U.S. waters. It examines the synergy between marine mammal conservation goals and the promotion of biodiversity protection, recreation, and tourism. Part I

FRAMEWORK FOR CANADA'S OCEANS 12 (2000), http://assets.wwfca.bluegecko.net/downloads/planning_for_representative_mpas.pdf. This means that the "modification or extraction of marine resources . . . [by] fishing, trawling, dredging, mining, [or] drilling . . . is prohibited." *Id.*

18 Humans are prohibited from entering no-access MPAs to ensure that sensitive areas, such as breeding sites for marine mammals, receive maximum protection from any potentially harmful human disturbance. Nat'l Marine Protected Areas Ctr., A Functional Classification System for Marine Protected Areas in the United States (2006), http://mpa.gov/pdf/helpful-resources/factsheets/final_class_system_1206.pdf.

19 A multiple-use MPA permits use and removal of the marine resources, "but such use is controlled to ensure that long-term conservation goals are not compromised. Multiple-use MPAs generally have a spectrum of zones within them, with some zones allowing greater use and removal of resources than other zones . . . ." *Id.*

20 James A. Bohnsack et al., *Why Have No-Take Marine Protected Areas?*, *in* AQUATIC PROTECTED AREAS AS FISHERIES MANAGEMENT TOOLS 185, 186–90 (J. Brooke Shipley ed., 2004).

21 Monterey Bay Nat'l Marine Sanctuary, Resource Management Issues: Marine Protected Areas, http://montereybay.noaa.gov/resourcepro/resmanissues/mpa.html (last visited Sept. 28, 2009) [hereinafter MBNMS Resource Management Issues].

also examines how enhanced use of MPAs for marine mammal protection can be readily harmonized with existing federal regulatory schemes that govern marine mammals to achieve a "win-win" outcome.

Part II addresses common failures of MPAs, such as the need to address flaws in MPA objectives, monitoring, and enforcement measures, and how the lack of a national system of MPAs can undermine the need to promote the objectives of MPAs in a consistent and comprehensive manner.

Part III considers how other countries, most notably New Zealand and Spain, are taking leadership roles in establishing more effective marine mammal conservation measures within their MPAs. It examines how Spain has done particularly well in its monitoring efforts, whereas New Zealand has excelled in developing and implementing an effective national system of MPAs.

Part IV addresses international law regulatory strategies in the fisheries management and carbon trading contexts to advocate for both enhanced international cooperation and regional implementation and enforcement of MPAs.

Part V identifies the shortcomings of the existing MPA system in the United States. It then offers recommendations for how MPAs in the United States can be used more effectively to promote marine mammal protection in U.S. waters and beyond, which will enable the United States to become a more significant part of the solution to this international crisis.

I

SIGNIFICANCE OF MARINE PROTECTED AREAS

MPAs offer a diverse array of benefits ranging from ecological to social and economic.[22] No-take MPAs not only eliminate the physical damage to habitats caused by fishing gear, but the fishing gear restrictions can also reduce, and even eliminate, the incidental bycatch of marine mammal species. In addition, MPAs protect biodiversity at the species level by protecting various key species of marine mammals, which helps maintain community structure. Moreover, recreational activities and tourism available in an MPA can provide direct and significant financial benefits that are important to

[22] World Wildlife Fund, Our Solutions: Marine Protected Areas, http://www.panda.org/what_we_do/how_we_work/conservation/marine/protected_areas/ (last visited Sept. 28, 2009).

local and national economies. Finally, EO 13,158 allows MPAs to enhance the effects of certain federal statutes that regulate marine mammals.[23]

A. Conserving Biodiversity

MPAs, especially those managed as no-take areas, are crucial in helping to maintain a balanced ecosystem structure. These areas achieve this objective by both eliminating the physical damage that fishing gear can cause to marine species and their habitats and preserving sustainable fish populations for marine species to consume.[24] In addition, marine mammals are highly migratory species, which makes them particularly vulnerable to the loss of biodiversity because they tend to inhabit more than one natural habitat.[25] Consequently, regulatory efforts must address the habitats and the migratory routes of these species to ensure optimal protection.[26]

Destructive fishing practices and overfishing are the primary causes for loss of marine biodiversity.[27] Overfishing has a major impact on the conservation of marine mammals because marine mammals' diets depend on fish.[28] Two destructive fishing practices—driftnet fishing and bottom trawling—likely contribute significantly to this reality.[29]

Driftnet fishing has a devastating impact on bycatch species.[30] This fishing affects a wide range of species in addition to marine mammals including sea birds, turtles, sharks, and nontarget fish species.[31] According to the World Wildlife Fund Species

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23 Exec. Order No. 13,158, 65 Fed. Reg. 34,909, 34,909 (May 26, 2000).

24 *See id.* at 34,909–11.

25 MarineBio, Habitat Conservation, http://marinebio.org/Oceans/Conservation/habitat-conservation.asp (last visited Sept. 28, 2009).

26 *Id.*

27 MARINE CONSERVATION SOC'Y, MARINE PROTECTED AREAS POSITION STATEMENT 7 (July 2006), http://www.mcsuk.org/downloads/marinereserves/MPAs_MCS_Position_Statement_July_2006.pdf.

28 *See* Alaska Fisheries Science Ctr., How Do We Determine What Marine Mammals Eat?, http://www.afsc.noaa.gov/nmml/education/science/studymm4eat.php (last visited Sept. 28, 2009).

29 Animal Welfare Inst., *Destructive Fishing*, http://www.awionline.org/ht/d/ContentDetails/id/1473/pid/721 (last visited Sept. 28, 2009).

30 Rod Fujita, Envtl. Def. Fund, *Issues in Fisheries*, Mar. 14, 2006, http://www.defyingoceansend.org/fisheries1.asp.

31 *See id.*

Conservation Program, "[a]lmost one thousand whales, dolphins, and porpoises die every day in nets and fishing gear."[32] In 2004, the U.S. Commission on Ocean Policy recognized that bycatch posed the greatest harm to cetaceans—whales, dolphins, and porpoises.[33] Once entangled in the netting or supporting ropes of driftnets, marine mammals, especially dolphins, face a high risk of drowning.[34]

Second, "[b]ottom trawls and dredges are so destructive because they effectively clear-cut everything living on the ocean floor."[35] Trawling involves dragging nets along the ocean floor by attaching the nets to large metal plates that have rubber wheels.[36] By leveling the ocean floor, the food chain is disturbed.[37] Specifically, the marine creatures that are not caught in the net will be vulnerable to predators as a result of the destruction of hiding places that would have provided protection for the species.[38] The fish and shrimp stocks targeted by the trawlers and the subsequent bycatch are important species of prey for marine mammals.[39] In fact, shrimp fisheries have the highest levels of bycatch—"over 80 percent of a catch may consist of marine species other than the shrimp being targeted."[40]

No-take MPAs can promote marine mammal conservation by ensuring sustainable fish populations in these areas. Scientific data collected from no-take MPAs has demonstrated that this type of MPA can impact marine wildlife communities both inside and outside their

32 U.S. COMM'N ON OCEAN POLICY, *supra* note 1, at 306 (The "accidental capture or entanglement in fishing gear (known as bycatch) . . . kills hundreds of thousands of [marine mammals] each year."); James Owen, *Nets Kill Nearly 1,000 Marine Mammals a Day, Group Says*, NAT'L GEOGRAPHIC NEWS, June 10, 2005, http://news.nationalgeographic.com/news/2005/06/0610_050610_dolphins.html.

33 U.S. COMM'N ON OCEAN POLICY, *supra* note 1, at 306–07.

34 *Id.*

35 Oceana, Stop Destructive Trawling: About, http://www.oceana.org/north-america/what-we-do/stop-destructive-trawling/about/ (last visited Sept. 28, 2009).

36 Greenpeace Int'l, Bottom Trawling, http://oceans.greenpeace.org/en/our-oceans/bottom-trawling (last visited Sept. 29, 2009).

37 Bottom Trawlers Decried as Ocean Clearcutters, CNN.COM, Dec. 15, 1998, http://www.cnn.com/TECH/science/9812/15/bottomtrawlers.yoto/index.html.

38 *Id.*

39 Greenpeace Int'l, Bycatch and Discards of Unwanted Fish, http://archive.greenpeace.org/comms/fish/part6.html (last visited Sept. 29, 2009).

40 Greenpeace Int'l, Bycatch, http://oceans.greenpeace.org/en/our-oceans/bycatch (last visited Sept. 29, 2009).

area.[41] Protection inside no-take MPAs can lead to enduring and often "rapid recovery of species density, biomass, reproductive potential and diversity."[42] Ultimately, no-take MPAs provide an excellent opportunity to protect species from the deleterious effects of overfishing,[43] which is especially beneficial for the conservation of marine mammals because fish comprise a significant portion of the diet of marine mammals.[44]

B. Promoting Recreation and Tourism

No-take MPAs also provide a foundation for sustainable, nature-based recreation and tourism activities. These activities have inspired a new global industry, which provides significant benefits to local communities.[45] No-take MPAs can benefit nonconsumptive recreational users such as snorkelers and scuba divers, whereas multiple-use MPAs are intended to enable various stakeholders to have recreational use of the MPAs, while also controlling and protecting the marine resources.[46]

MPAs attract visitors to the coast in much the same way national parks attract tourists traveling on land.[47] Tourists expect the marine life to be more available in MPAs than in nonprotected areas. If there were more no-take MPAs, food supply could increase and produce a corresponding increase in marine mammal populations, which, in turn, could make it more likely for tourists to encounter marine

41 *See generally* Jane Lubchenco & Kirsten Grorud-Colvert, *Marine Protected Areas Help Safeguard Aquatic Life*, GEOTIMES, Apr. 2007, at 24, *available at* http://www.agiweb.org/geotimes/apr07/article.html?id=feature_aquatic.html.

42 *Id.* at 26. On average, biomass was six times greater and density was three times higher in no-take MPAs than in multiple-use MPAs. *Id.* Furthermore, "[b]oth organism size and species diversity were approximately 1.3 times higher in marine reserves relative to control areas." *Id.*

43 *See* CALLUM M. ROBERTS & JULIE P. HAWKINS, WORLD WILDLIFE FUND, FULLY-PROTECTED MARINE RESERVES: A GUIDE 34 (2000), *available at* http://assets.panda.org/downloads/marinereservescolor.pdf.

44 *See* Kristin Kaschner & Daniel Pauly, COMPETITION BETWEEN MARINE MAMMALS AND FISHERIES: FOOD FOR THOUGHT 3 (2004), http://www.seaaroundus.org/report/marine_mammals_fisheries.pdf.

45 ROBERTS & HAWKINS, *supra* note 43, at 65.

46 *See id.* at 63.

47 *Id*.

mammals.[48] As a result, MPAs, especially no-take MPAs, can spark an increase in tourism "and in return bring prosperity to an area."[49]

Since no-take MPAs attract tourists, they "provide economic opportunities for local communities."[50] By using their boats to take people out for diving, snorkeling, or marine mammal watching, tourism offers a career path for fishermen that is safer and usually more lucrative than fishing.[51] Once tourism starts to develop, economic benefits spread in the form of job creation, private sector revenues (e.g., hotels, dive operators, and tour guides), government revenues (e.g., income taxes, business taxes, and taxes levied on tourists), and direct revenues from park user fees.[52] To complete the circle of this "win-win" scenario, portions of this collective revenue can, in turn, be applied directly to marine mammal conservation education, monitoring, and enforcement programs.

C. Extending Protections of Existing Marine Mammal Statutes

MPAs have the potential to exceed the protections of existing marine mammal regulations. The Marine Mammal Protection Act (MMPA)[53] and the Endangered Species Act (ESA)[54] are two federal statutes that regulate certain activities that have the potential to negatively impact marine mammals.[55] The MMPA and ESA both seek to sustain viable populations of marine mammals by directly safeguarding the species themselves. These statutes typically either set minimum standards or only govern certain aspects of marine mammals' sustainability.[56] MPAs enhance the conservation of marine mammals because they exceed the regulations in place under the MMPA and ESA by focusing on both conserving habitat and

[48] *Id.* at 64 ("Tourists need not even enter the water to benefit from [the no-take MPAs]."). For example, tourists have been able to enjoy viewing marine mammals through glass-bottom boats. *Id.*

[49] *Id.* at 63.

[50] *Id.* at 64.

[51] *Id.*

[52] *See id.* at 64, 65.

[53] Marine Mammal Protection Act of 1972, 16 U.S.C. §§ 1361–1423h (2006).

[54] Endangered Species Act of 1973, 16 U.S.C. §§ 1531–1544 (2006).

[55] JEFFREY ZINN & EUGENE H. BUCK, CONG. RESEARCH SERV., MARINE PROTECTED AREAS: AN OVERVIEW 27 (2007), *available at* http://www.ncseonline.org/NLE/CRSreports/07Apr/RL32154.pdf.

[56] *Id.*

promoting the sustainability of all species within the relevant ecosystem.

In passing the MMPA in 1972, Congress recognized that "certain species and population stocks of marine mammals are, or may be, in danger of extinction or depletion as a result of man's activities."[57] Consequently, the MMPA prohibits, with certain exceptions, the taking[58] of marine mammals in U.S. waters or on the high seas by U.S. citizens.[59] In addition, the MMPA prohibits the importation of marine mammals and marine mammal products into the United States.[60]

MPAs go one step further than the MMPA by protecting not only the species themselves, but also their habitats. The protection of marine mammal habitat is essential to promoting marine mammals' sustainability because it would be counterproductive to promote species sustainability if the species' habitats are degraded.

One year after the MMPA, Congress passed the ESA, in which Congress found that "various species of fish, wildlife, and plants . . . have been rendered extinct as a consequence of economic growth and development untempered by adequate concern and conservation,"[61] while "other species of fish, wildlife, and plants have been so depleted in numbers that they are in danger of or threatened with extinction."[62] Responding to these findings, the ESA provides for the conservation of species that are endangered or threatened "throughout all or a significant portion of [their] range."[63] However, while endangered or threatened species and their habitats are protected under the ESA, nonthreatened and nonendangered species that contribute to maintaining a balanced ecosystem are not protected under the Act.

No-take MPAs exceed ESA regulations for effective marine mammal conservation by protecting all marine wildlife found within designated sites. The type of conservation that no-take MPAs offer promotes the maintenance of biodiversity and, ultimately, balanced

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57 16 U.S.C. § 1361(1).

58 The MMPA defines "take" to mean "harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal." *Id.* § 1362(13).

59 *Id.* § 1372(a)(1).

60 *Id.* § 1372(a)(2)(B).

61 16 U.S.C. § 1531(a)(1) (2006).

62 *Id.* § 1531(a)(2).

63 *Id.* § 1532(6).

ecosystems.[64] Maintaining biodiversity is essential because each marine species is interdependent with all others and a threat to one species can cause impacts throughout the ecosystem.

II
COMMON FAILURES OF MARINE PROTECTED AREAS

Approximately one hundred federal, state, territory, and tribal agencies manage MPAs throughout the United States.[65] This part of the Article discusses both the ways in which the U.S. system has mismanaged MPAs and how the lack of a national system of MPAs has limited the positive impacts that MPAs can have on marine mammal protection in the United States.

A. Improper Management

Wherever they are located, MPAs tend to displace some existing activities in the designated area, which results in resistance to the implementation of the MPA's objectives.[66] As such, determining where to place these sites has been, and remains, a significant challenge.[67] Rarely have MPAs been chosen strategically to meet a series of clearly defined objectives.[68] Even though MPAs are supposed to enhance protection of rare species and essential habitats, ecosystems and the species within them continue to be significantly impaired.[69] Therefore, MPAs could potentially be more effective in conserving marine mammals if management plans were focused on implementing more effective objectives, monitoring, and enforcement measures.

Establishing a set of clearly defined objectives will not automatically create more effective MPAs. First, objectives need to determine actual or potential causes of harm to marine mammals before an attempt can be made to mitigate or remedy the situation.

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64 *See* U.S. Agency for Int'l Dev., Promoting Marine and Coastal Protected Areas for Sound Development and Biodiversity Conservation, http://www.usaid.gov/our_work/environment/water/promoting_areas.html (last visited Sept. 29, 2009).

65 Nat'l Marine Protected Areas Ctr., All About Marine Protected Areas: The Basics, http://mpa.gov/all_about_mpa/basics_sup.html (last visited Sept. 29, 2009).

66 ROBERTS & HAWKINS, *supra* note 43, at 52. However, there is little resistance to implementation when the potential reserve sites are in areas that are rarely used. *Id.*

67 *Id.*

68 *Id.*

69 *Id.*

Second, if MPAs are to become an effective mechanism for marine mammal protection, objectives need to properly create MPAs with appropriate sizes, locations, and protection levels.

MPAs typically are established by a combination of government agencies, stakeholders, and other interested parties.[70] However, when determining the appropriate location and size of MPAs, the objectives should initially be set on the basis of scientific advice.[71] Scientists are in the best position to provide input regarding appropriate MPA location and size because they understand ocean species, habitats, and processes far better than the policymakers who ultimately adopt and implement such measures.[72]

Several factors help determine the strategic placements of MPAs. These factors include:

> [a]reas used by [marine mammals] for feeding, breeding, calving, nursing and social [behavior]; [m]igration routes and corridors and related resting areas; [a]reas where there are seasonal concentrations of [marine mammal] species; [a]reas of importance to [marine mammal] prey; [n]atural processes that support continued productivity of [marine mammal] foraging species . . . ; and [t]opographic structures [favorable to] enhancing foraging opportunities for [marine mammal] species.[73]

To ensure effective marine mammal conservation, MPAs must not only be appropriately placed, but also must be an appropriate size.[74]

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[70] 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).

[71] Craig Syms & Mark H. Carr, Marine Protected Areas: Evaluating MPA Effectiveness in an Uncertain World 3 (May 2001), http://www.piscoweb.org/files/file/popular_articles/syms_carr_MPA_scoping_paper.pdf.

[72] *See* FISHERIES & OCEANS CAN., CANADA'S FEDERAL MARINE PROTECTED AREAS STRATEGY 6 (2005), http://www.dfo-mpo.gc.ca/oceans-habitat/oceans/mpa-zpm/fedmpa-zpmfed/pdf/mpa_e.pdf; Pac. Coast Fed'n of Fishermen's Ass'ns, Principles of the Pacific Coast Federation of Fishermen's Associations Regarding Marine Protected Areas, http://www.pcffa.org/mpa3.htm (last visited Sept. 29, 2009) [hereinafter Principles of PCFFA].

[73] Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area [ACCOBAMS], *Guidelines for the Establishment and Management of Marine Protected Areas for Cetaceans*, ACCOBAMS-MOP3/2007/Doc61 at 11 (Aug. 28, 2007) [hereinafter ACCOBAMS Guidelines], *available at* www.accobams.org/file.php/894/MOP3.Doc61_Guidelines%20MPA.pdf.

[74] *See* Principles of PCFFA, *supra* note 72, at 6.

A "one-size fits all" approach is not an optimal regulatory strategy.[75] According to a recent scientific consensus, the proper size for an MPA "depends upon the goal of the MPA and the ecology of the relevant species."[76] Factors such as habitat distribution, mobility of species, and social constraints that limit options for protection are relevant in determining appropriate sizes for MPAs.

MPAs "must be large enough and numerous enough to support long-term viable populations of . . . [marine] species."[77] For some species, populations will flourish with a single MPA.[78] For mobile and widely dispersed species, as is often the case with marine mammal species, the goal is to achieve viability across the range of MPAs that make up the network.[79] To achieve this objective, sizes of MPAs must be matched to the species' "scales of mobility . . . in the habitats being considered."[80]

Protection levels vary widely between and within MPAs.[81] Scientific research has shown that carefully crafted MPAs, particularly no-take MPAs, can be an effective tool for conserving the diversity of animals and plants, protecting habitats, and increasing both numbers and individual sizes of some species.[82] Of those few MPAs designated as no-take, however, most are "small and interspersed within larger areas that allow consumptive uses."[83]

Monitoring and enforcement are also essential components of properly managed MPAs. "Monitoring . . . refers to repeated measurements taken at the same site, on the same subjects, over a

75 Nathaniel Bingham, Habitat Dir., Pac. Coast Fed'n of Fishermen's Ass'ns, California Marine Management for the 21st Century, Remarks to the Assembly Select Committee on Coastal Protection (Dec. 1, 1997), http://www.pcffa.org/mpa3.htm.

76 MICHAEL B. MASCIA, DESIGNING EFFECTIVE CORAL REEF MARINE PROTECTED AREAS: A SYNTHESIS REPORT BASED ON PRESENTATIONS AT THE 9TH INTERNATIONAL CORAL REEF SYMPOSIUM 5 (Apr. 2001), *available at* http://www.uicn.fr/IMG/pdf/Designing_Effective_Coral_Reef_MPAs.pdf.

77 CALLUM M. ROBERTS ET AL., PROTECTING NATIONALLY IMPORTANT MARINE AREAS IN THE IRISH SEA PILOT PROJECT REGION 8 (2003), *available at* http://www.jncc.gov.uk/pdf/york.pdf.

78 *See id.*

79 *Id*.

80 *Id.*

81 Nat'l Marine Protected Areas Ctr., *supra* note 18.

82 *See* Bohnsack et al., *supra* note 20, at 186–87.

83 Nat'l Marine Protected Areas Ctr., Clarifying Misconceptions About Marine Protected Areas, http://mpa.gov/pdf/helpful-resources/factsheets/mpamisconceptions2.pdf (last visited Sept. 29, 2009) [hereinafter Clarifying Misconceptions].

specified period of time . . . ."[84] It is difficult to determine how effective MPAs are at protecting biodiversity as the monitoring of a single species in an MPA has proven to be insufficient to assess an MPA's performance in protecting that species.[85] It is essential, nonetheless, for biodiversity to be monitored since marine mammals and all other marine life depend on a balanced ecosystem for their survival.[86] Factors that make monitoring biodiversity challenging include: (1) the costs and time that biodiversity studies require; (2) the difficulty of measuring biodiversity, unless all species are "known and can be assessed by those conducting the study"; and (3) the shortcomings of "traditional numerical measures of species diversity[, which are] often unreliable . . . and prone to spatial error."[87] Due in part to these challenges, the United States does not yet fully understand "(1) what marine resources the nation protects, (2) how well these resources are protected, and (3) what, if any, further management may be required to make [the nation's MPAs] more effective."[88]

An essential step in promoting marine mammal conservation is monitoring target populations to ensure that the MPAs appropriately reflect the status and trends of the species.[89] Once the MPAs have been established, further monitoring provides results that are used to assess whether the measures implemented within the MPAs—"maintenance of habitat quality, species replenishment, and biodiversity conservation"—are working as expected to achieve effective marine mammal conservation.[90] Such monitoring feedback not only provides information as to any threat that does, or may,

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84 J.L. BAKER, DEP'T FOR ENV'T & HERITAGE (Austl.), GUIDE TO MARINE PROTECTED AREAS 114 (John Bridgland ed., 2000) (citation omitted), *available at* http://www.environment.sa.gov.au/coasts/pdfs/mpa1.pdf.

85 *Id.* at 115.

86 *See* Wolf & Wildlife Studies, Biodiversity, http://www.wolfandwildlifestudies.com/biodiversity.php (last visited Sept. 29, 2009).

87 BAKER, *supra* note 84, at 115.

88 Nat'l Marine Protected Areas Ctr., The Draft Framework for Developing the National System of Marine Protected Areas: Highlights (2007), http://www.mpa.gov/pdf/helpful-resources/factsheets/highlights_draft_frmwrk.pdf.

89 Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area [ACCOBAMS], *Criteria for the Selection and Format of Proposals for Marine Protected Areas for Cetaceans*, ACCOBAMS-MOP3/2007/Doc57 at 2 (Aug. 28, 2007), *available at* www.accobams.org/file.php/892/MOP3.Doc57_Criteria%20and%20format%20for%20MPAs.pdf.

90 BAKER, *supra* note 84, at 114.

interfere with the effectiveness of MPAs, but it also ensures that the changes occurring over time within MPAs are documented.[91]

MPA monitoring should stimulate new research of the marine environment that could lead to the development of new techniques for assessing marine mammal populations.[92] "[M]onitoring and enforcement will remain an important tool for the success of MPAs[, which] should be facilitated by the increasingly affordable use of transponders . . . and other vessel monitoring systems."[93]

Even though MPA designations are on the rise,[94] this trend should also raise concerns.[95] Even when MPAs have effective objectives and monitoring in place to promote marine mammal protection, enforcement measures are often lacking.[96] Therefore, MPAs are often perceived as meaningless "paper parks," and such a stigma will remain accurate without appropriate measures to enforce management plans.[97] Enforcement measures will also be ineffective in implementing management plans unless a director is empowered to undertake the task.[98] The director will need "the necessary legal authority, . . . financial resources, and . . . staff" for enforcement measures to be effective in protecting marine mammals.[99]

B. Lack of a National System of MPAs

The nation's collection of MPAs—reserves, refuges, preserves, parks, sanctuaries, natural areas, and areas of special biological significance—has created a complex and confusing assortment of

91 *Id.*

92 LAURENCE P. MADIN, WOODS HOLE OCEANOGRAPHIC INST., FISHERIES, OCEANOGRAPHY AND SOCIETY SYMPOSIUM SERIES: MARINE PROTECTED AREAS (2001), http://www.whoi.edu/page.do?pid=11342.

93 NICHOLAS V.C. POLUNIN ET AL., FISHERIES SOC'Y OF THE BRITISH ISLANDS, FSBI BRIEFING PAPER 1: MARINE PROTECTED AREAS IN THE NORTH SEA 8 (2001), http://www.fisheries.ubc.ca/students/cwabnitz/fsbi.pdf. A transponder is a device that communicates its location through a satellite to a ground-earth station. Charles Davies et al., *Moving Pictures: How Satellites, the Internet, and International Environmental Law Can Help Promote Sustainable Development*, 28 STETSON L. REV. 1091, 1120 (1999). A transponder operator can locate a transponder by taking a "position" reading or by programming a transponder to transmit its reading at a scheduled time. *Id.*

94 ZINN & BUCK, *supra* note 55, at 27.

95 *See id.* at 16.

96 *Id.*

97 *Id.*

98 ACCOBAMS Guidelines, *supra* note 73, at 21.

99 *Id.*

different MPA types and purposes that pose many challenges to policymakers and stakeholders alike.[100] Another area of confusion is the programmatic names given to MPAs (e.g., "sanctuaries," "parks," and "preserves").[101] Most of these labels "rarely reflect the area's actual conservation purpose, allowable uses, or management approach."[102] Moreover, the term "marine protected area" often is used to refer to a "no-take [MPA]," yet such MPAs are very rare.[103]

There is no federal statute in the United States that governs MPAs.[104] As of this writing, EO 13,158 is the only formal legal response from the federal government on this issue. It directs the federal government both to work collaboratively with state governments, local governments, and other partners to objectively evaluate the needs for marine habitat protection and to devise the best management approach to meet those needs on a system-wide basis.[105] The EO notwithstanding, the United States still desperately needs a mandatory and uniform regulatory framework for MPAs.

In the United States, MPAs are comparable to their terrestrial counterparts, such as the National Forest System and the National Park System; however, marine and terrestrial environments differ in several respects relating to monitoring and implementation.[106] Such differences in these contexts center on "the ability to observe change and the precision with which conditions can be measured, the ability to locate and administer precise boundaries, questions of ownership and control, and harvesting techniques and technologies."[107] "Changes in the marine environment are [also] much more difficult to observe and measure with precision . . . and more expensive to monitor."[108] The observation and monitoring challenges in the marine context mean "that much less is known about the basic

100 Nat'l Marine Protected Areas Ctr., *supra* note 18.

101 *Id.*

102 *Id.*

103 *Id.*

104 Elliot A. Norse, President, Marine Conservation Biology Inst., Responses to Admiral Watkins' Questions on Marine Protected Areas 3 (Apr. 19, 2002), http://www.oceancommission.gov/meetings/apr18_19_02/answers/norse_answers.pdf.

105 *See id.* at 3, 4.

106 *See* ZINN & BUCK, *supra* note 55, at 10–11.

107 *Id.* at 11.

108 *Id.*

components of the marine environment, especially in deeper waters, and the available information is less complete."[109]

Although many terrestrial analogies do not transfer readily to the MPA context, there are some correlations with respect to the functions that the designations serve in both contexts. First, MPAs have been compared to the terrestrial designation of national forests.[110] This comparison is grounded in the premise that national forests, and the majority of MPAs, are driven by the notion of promoting multiple-use activities.[111] Multiple-use areas in the context of land management, which traces its origins to the Multiple-Use Sustained-Yield Act of 1960 (MUSYA),[112] involve objectives based on the idea that national forests provide a wide range of uses to various groups of people.[113] Therefore, MUSYA requires "the Forest Service to give equal consideration to all [of the] benefits the public can derive from national forests."[114] MUSYA's other principal mandate is "that yields of timber and forage from national forests shall be sustained and non-declining in perpetuity."[115] This mandate ultimately ensures that the benefits the national forests provide will never be over-harvested.[116] Consequently, the public is entitled to enjoy the benefits that national forests may produce but not when forests are harvested to the point where resources are no longer being delivered.[117]

Whereas national forests and multiple-use MPAs are managed to produce a range of benefits for the public to enjoy, national parks and no-take MPAs are managed as "leave-alone" preserves to maintain the natural character of the areas.[118] The National Forest System encompasses more area than the National Park System—in much the same manner that multiple-use MPAs encompass more area than no-

109 *Id.*

110 *See id.* at 9–10.

111 *See* Black Hills Forest Res. Ass'n, What is a National Forest?, http://bhfra.org/what_is_a_national_forest.htm (last visited Sept. 30, 2009).

112 Multiple-Use Sustained-Yield Act of 1960, 16 U.S.C. §§ 528–531 (2006).

113 *Id.* § 528.

114 Black Hills Forest Res. Ass'n, *supra* note 111; *see also* §§ 529, 531(a).

115 Black Hills Forest Res. Ass'n, *supra* note 111; *see also* §§ 529, 531(b).

116 Black Hills Forest Res. Ass'n, *supra* note 111; *see also* §§ 529, 531.

117 Black Hills Forest Res. Ass'n, *supra* note 111.

118 *Id.*

take MPAs.[119] Moreover, like the smaller sizes and dispersed nature of no-take MPAs compared to multiple-use MPAs, the National Park System has more designated areas, but these areas are smaller and more dispersed compared to the designated areas under the National Forest System.[120]

Whether managed under the National Park System or the National Forest System, these land management programs share a common feature that MPAs in the United States lack—public participation.[121] The public can participate in many ways under either of these programs.[122] In fact, the National Forest Service requires agencies to solicit public involvement when developing and updating comprehensive evaluation reports, designing monitoring programs, and establishing components for plans.[123] This collaboration process plays a special role in helping to: "[(1)] [d]evelop distinctive roles and contributions of the planning unit; [(2)] [i]dentify desired conditions, which can represent stakeholders' social, economic, and ecological preferences; [(3)] [d]evelop management strategies to achieve desired conditions; and [(4)] [s]et program priorities."[124] With such input from the public, common objectives and agreements can be developed.[125]

Even if a national system of MPAs were developed in the United States, there are many influences that occur outside MPA boundaries that interfere with the effectiveness of MPAs and ultimately impede progress toward marine mammal protection.[126] For MPAs to provide

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119 *Id.* The National Forest System includes 175 national forests and grasslands covering 191 million acres (approximately the size of Texas), whereas "the National Park System includes 379 parks, refuges, and monuments covering 83.6 million acres." *Id.*

120 *See id.*

121 *See, e.g.*, Nat'l Park Serv., Criteria for Parkland, http://www.nps.gov/legacy/criteria.html (last visited Sept. 30, 2009); USDA Forest Serv., Welcome to the Eastern Region, http://www.fs.fed.us/r9/ (last visited Sept. 30, 2009).

122 *See, e.g.*, Red Lodge Clearinghouse, National Forest Management Process Essentials: Public Participation in Forest Planning, http://rich.org/content/view/256/41/pepublic (last visited Sept. 30, 2009). *See generally* Jo Ellen Force & Deborah J. Forester, *Public Involvement in National Park Service Land Management Issues*, 3 SOC. SCI. RES. REV., Summer 2002, at 1, *available at* http://www.nature.nps.gov/socialscience/pdf/SSRR_5.pdf.

123 Red Lodge Clearinghouse, *supra* note 122.

124 *Id.*

125 *Id.*

126 BILIANA CICIN-SAIN & STEFANO BELFIORE, NAT'L OCEANIC & ATMOSPHERIC ASS'N, LINKING MARINE PROTECTED AREAS TO INTEGRATED COASTAL AND OCEAN

effective protection of these species, harmful activities that occur outside designated MPAs need to be addressed.[127] Ultimately, MPAs will not be effective in preserving marine mammals if the MPAs are surrounded by uncontrolled areas where pollution, habitat destruction, and overfishing exist.

Therefore, a national system of MPAs is an important step toward ensuring the long-term viability of marine mammals, but its effectiveness is subject to external limitations. These external factors can only be controlled through high-level government commitments with the rest of the world. An example of how climate change affects the sustainability of marine mammals is evident in the impact that climate change has on the food resources of these species.[128] Some experts speculate that there could be "reduced quantity or quality and greater spatial and temporal variability [of prey species, thus] affecting the ability of marine mammals to adequately utilize [food] resource[s]."[129] Nevertheless, the effect of a strong national system of MPAs can help advance the dialogue and political will necessary to combat the larger threats to marine mammals beyond protections available through MPAs alone.

III

LEARNING FROM THE LEADERS IN MARINE PROTECTED AREA IMPLEMENTATION

New Zealand and Spain have implemented measures that make their respective MPAs more effective than other nations' efforts. New Zealand is the leading nation in marine mammal conservation.[130] New Zealand's Department of Conservation applies two basic approaches to marine mammal conservation: first, it

MANAGEMENT: A REVIEW OF THEORY AND PRACTICE 1 (2003), *available at* http://www.earthlore.ca/clients/WPC/English/grfx/sessions/PDFs/session_2/CICIN.pdf.

127 *See id.*

128 Ivan R. Lawler et al., *Vulnerability of Marine Mammals in the Great Barrier Reef to Climate Change*, *in* CLIMATE CHANGE AND THE GREAT BARRIER REEF: A VULNERABILITY ASSESSMENT 497, 506 (Johanna E. Johnson & Paul A. Marshall eds., 2007), *available at* http://www.gbrmpa.gov.au/corp_site/info_services/publications/misc_pub/climate_change_vulnerability_assessment/climate_change_vulnerability_assessment (follow "Preliminary Pages" hyperlink).

129 *Id.* at 510.

130 ROB SUISTED & DON NEALE, DEP'T OF CONSERVATION OF N.Z., DEPARTMENT OF CONSERVATION MARINE MAMMAL ACTION PLAN FOR 2005–2010, at 6 (2004), *available at* http://www.doc.govt.nz/upload/documents/conservation/native-animals/marine-mammals/the-marine-mammal-action-plan.pdf.

implements measures to protect the species themselves and, second, it regulates human interaction with and use of the marine species.[131] New Zealand recognizes the value of establishing MPAs, especially no-take MPAs, to protect marine mammals.[132] The number of MPAs in New Zealand rose to thirty-five as of October 2008, and these areas encompass nearly 8% of the nation's coastal waters.[133]

Spain is another leader in establishing MPAs for marine mammal conservation. There are nine no-take MPAs that have been declared in Spanish waters—six are located on the Mediterranean coast and three are found on the Atlantic coast.[134] Currently, Spain has established at least seventy-one MPAs.[135]

A. Objectives, Locations, and Protection Levels

One reason for the success of New Zealand and Spain in using MPAs for marine mammal conservation is an MPA's ability to both establish objectives to identify threats to marine mammals and provide proper solutions to help conserve the species. In addition, these two countries also have been able to establish appropriate locations and protection levels for their MPAs.

New Zealand and Spain have been able to implement viable solutions to help mitigate, if not remedy, harmful impacts to their marine species.[136] For example, tourism, bycatch, and vessel traffic continue to negatively impact the population of marine mammals in all parts of the world, yet New Zealand and Spain have responded effectively to these threats.

New Zealand has managed to secure the best of both worlds in managing its MPAs—promoting whale watching and the economic benefits that flow from it while regulating the untoward effects of tourism on marine mammals. Ever since New Zealand's transition

131 *Id.* at 5.

132 *See id.* at 71.

133 MPA Global, MPAs by Country, http://www.mpaglobal.org/index.php?action=summary_by_country (last visited Sept. 30, 2009).

134 Sylvie Guénette et al., *Marine Protected Areas with an Emphasis on Local Communities and Indigenous Peoples: A Review*, FISHERIES CENTRE RES. REP., 2000, at 1, 16, *available at* http://www.fisheries.ubc.ca/publications/reports/8-1.pdf (appears in Issue 1).

135 MPA Global, *supra* note 133.

136 *See* GREENPEACE INT'L, MARINE RESERVES FOR THE MEDITERRANEAN SEA 48–49 (2006), *available at* http://www.greenpeace.org/raw/content/international/press/reports/marine-reserves-for-the-medite.pdf; SUISTED & NEALE, *supra* note 130, at 9–10.

from whaling to whale conservation in 1964, its whale- and dolphin-watching industry has developed into a prosperous eco-tourism industry that is currently one of the fastest-growing businesses in the nation.[137] In fact, one study reported that approximately two-thirds of New Zealand's marine tourism businesses primarily utilize marine mammals and sea birds.[138] More than 425,000 New Zealanders and international visitors enjoyed whale and dolphin watching in 2004, almost double the number of visitors in 1998, which contributed almost $120 million to the economy of New Zealand that year.[139]

Tourist activities can cause a range of direct and indirect impacts on marine mammals.[140] When these species are disturbed, "changes in activity patterns, habituation, aberrant social behaviour, dietary distortions, reduced fitness and reproductive output, increased predation, altered community structures, desertion of home ranges, and habitat alterations" are likely to result.[141] Marine mammal responses to tourists can vary from slight changes in behavior patterns to "clear indicators of agitation or stress."[142] Ultimately, the impact of the marine mammal-watching industry on the observed species will depend on factors such as the frequency of encounters per day and the distance maintained between the marine mammals and the tourist vessels.[143]

Enacted in 1990, New Zealand's Marine Mammals Protection Regulations (MMPR) authorize New Zealand's Department of

137 INT'L FUND FOR ANIMAL WELFARE, THE GROWTH OF THE NEW ZEALAND WHALE WATCHING INDUSTRY 4 (2005), *available at* http://www.ecolarge.com/media/36/original/NZ_Whale_Watching_Report_2005-Final.pdf.

138 Erich Hoyt, *Sustainable Ecotourism on Atlantic Islands, with Special Reference to Whale Watching, Marine Protected Areas and Sanctuaries for Cetaceans*, 105 BIOLOGY & ENV'T: PROC. OF THE ROYAL IRISH ACAD. 141, 143 (2005), *available at* http://www.ria.ie/cgi-bin/ria/papers/100498.pdf.

139 INT'L FUND FOR ANIMAL WELFARE, *supra* note 137, at 4.

140 *See* IUCN E. AFRICAN REG'L PROGRAMME, MANAGING MARINE PROTECTED AREAS: A TOOLKIT FOR THE WESTERN INDIAN OCEAN, at H4 (2004), *available at* http://www.wiomsa.org/mpatoolkit/Themesheets/H4_Marine_mammals.pdf.

141 U.N. Atlas of the Oceans, Whales, http://www.oceansatlas.org/servletCDSServlet?status=ND0xOTAyMyY2PWVuJjMzPsomMzc9a29z (last visited Sept. 30, 2009). "Behavioural disturbance has been recorded in studies investigating the impacts of marine mammal based tourism." *Id.* One such study involved behavioral responses of humpback whales to whale watching. *Id.* The study revealed that humpback whales followed by whale-watching vessels showed greater variation in the time spent at the surface and engaging in surface-related behaviors as compared to whales that were not being pursued. *Id.*

142 *Id.*

143 *Id.*

Conservation to administer this program.[144] The goal of the MMPR program is to protect marine mammals from the day-to-day impacts of the rapidly growing marine mammal-watching industry.[145] The regulations employ two primary approaches to govern the nature and degree of activities near marine mammals: (1) a permit system for the commercial watching of marine mammals and (2) a list of operating conditions for vessel operators who may be in the vicinity of marine mammals.[146]

The permit system allows for commercial watching of marine mammals "to be controlled through restrictions on the number of operations and the amount and type of activity undertaken by each commercial operator."[147] Any commercial operator seeking to carry passengers to view marine mammals must have a permit issued by the Director-General of the Department of Conservation.[148] The Director-General must approve the proposed business's operation plan before a permit is issued.[149]

New Zealand's MMPR program also lists operating conditions for commercial operators and anyone else who may be in the vicinity of marine mammals.[150] These operating conditions apply to all encounters with marine mammals.[151] The operating conditions are divided into those that apply to all marine mammals and those that are specifically tailored to whales, dolphins, and seals.[152] Special conditions may be placed on permits based on the specific characteristics of the species and such species' reactions to human encounters.[153]

144 Andrew S. Baxter & Michael Donoghue, Management of Cetacean Watching in New Zealand: Regulations, http://www.helsinki.fi/~lauhakan/whale/newzeala/manage/regula.html (last visited Sept. 30, 2009).

145 *Id.*

146 *Id.*

147 *Id.*

148 *Id.* "[This] detailed plan of operation for the proposed business [must include] information on the type of vessel, a detailed description of the proposed operation, which species are to be viewed, and what educational material will be provided." *Id.* "The Director-General must be satisfied that [the] operation [of a business] will not unduly interfere with the behaviour of marine mammals . . . ." *Id.*

149 *Id.*

150 *Id.*

151 *Id.*

152 *Id.*

153 *Id.*

Conservation of the Hooker's sea lion is another example of New Zealand's efforts. The Hooker's sea lion is one of the world's rarest species and is found only in New Zealand.[154] The incidental bycatch of Hooker's sea lions in trawl-fishing nets, especially around the Auckland Islands, was found to be the main threat to this mammal.[155] A no-fishing zone was created within a twelve-mile radius of the islands, and the Minister of Fisheries set a bycatch limit.[156] Ultimately, the Auckland Islands Marine Mammal Sanctuary was established to afford enhanced protection to the Hooker's sea lion.[157]

Responding to the declining population of Hector's dolphins is another initiative that New Zealand has undertaken by using MPAs. Coastal gillnets,[158] primarily used by coastal fishermen, were found to be the primary threat to Hector's dolphins.[159] The government established a marine mammal sanctuary to protect this species because of the threat of bycatch.[160] Established in 1998, the Banks Peninsula Marine Mammal Sanctuary has been successfully protecting the Hector's dolphins from gillnet entanglement.[161]

Spain has also undertaken measures to address threats to its marine mammals, especially to protect its population of bottlenose dolphins. "The Alboran Sea is a transition zone between the Mediterranean Sea

154 Press Release, Ministry of Fisheries (N.Z.), Improved Environmental Performance in Southern Squid Fishery (Nov. 16, 2007), *available at* http://www.fish.govt.nz (follow "Latest News" hyperlink; then follow "June 2007" hyperlink; then follow "Improved Environmental Performance in Southern Squid Fishery" hyperlink); Ron Kenner, *Massive Die-Off of Rare Sea Lions*, ALBION MONITOR, Feb. 1998, http://www.albionmonitor.com/9802a/nzseals.html.

155 Suze Baird et al., World Wildlife Fund, Treasures of the Sea: Seals and Sea Lions, http://www.treasuresofthesea.org.nz/seals-and-sea-lions (last visited Sept. 30, 2009).

156 Dep't of Conservation (N.Z.), Doc's Role, http://www.doc.govt.nz/templates/page.aspx?id =33236 (last visited Sept. 30, 2009).

157 *Id.*

158 Gillnets are widely used in coastal waters and differ from driftnets in that gillnets are fixed by anchors or stakes to prevent them from moving with the water. Driftnets, by contrast, are not secured and drift with the water currents or the wind. SIMON P. NORTHRIDGE, DRIFTNET FISHERIES AND THEIR IMPACTS ON NON-TARGET SPECIES: A WORLDWIDE REVIEW 1–2 (FAO Fisheries Technical Paper No. 320, 1991) (on file with FAO), *available at* http://www.fao.org/dockrep/003/T0502E/T0502E01.htm.#ch1.

159 Convention of Migratory Species, Whales & Dolphins: Hector's Dolphin, http://www.cms.int/reports/small_cetaceans/data/c_hectori/c_hectori.htm (last visited Sept. 29, 2009); Dep't of Conservation (N.Z.), *supra* note 156.

160 Convention of Migratory Species, *supra* note 159.

161 Dep't of Conservation (N.Z.), *supra* note 156.

and the Atlantic Ocean."[162] This migratory corridor and large food supply comprise "essential habitat for the largest population of bottlenose dolphins in the Western Mediterranean."[163] In fact, this high allotment of prey species in the Alboran Sea "makes it one of Europe's most valuable feeding sites for dolphins."[164] Therefore, the Alboran Sea's appeal for marine mammals makes this region vitally important in restoring marine mammal populations throughout the Mediterranean Sea.[165]

The Mediterranean Sea is home to some of the world's busiest shipping routes.[166] Almost 30% of the world's maritime traffic currently passes through the Alboran Sea, and a significant number of ships will visit one or more of the 305 Mediterranean ports.[167] This maritime traffic creates several forms of pollution that impact marine mammals in this region. For example, according to Earthwatch scientist Ricardo Sagarminaga van Buiten, "[c]argo ships, often carrying dangerous substances, regularly pass through the Alboran Sea's primary dolphin feeding grounds."[168] In addition to the potential for accidental discharge of hazardous cargo, "the discharge of chemical tank washings and oily wastes including oil contaminated ballast and wash waters represent a significant source of marine pollution" that impacts marine mammals.[169] Furthermore, a ship's acoustic pollution is another serious threat, which can cause lethal and sub-lethal effects in marine mammals.[170]

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162 Television Trust for the Env't, *Hands On: Tracking the Alboran—Spain* (2004), http://www.tve.org/ho/series5/08_HighTide_reports/report1.html [hereinafter *Tracking the Alboran*].

163 *Id.*; *see also* Press Release, Earthwatch Inst., Shipping Lanes Make Way for Dolphins (Apr. 23, 2007), http://www.newswise.com/articles/view/529214/ [hereinafter Earthwatch Inst. Press Release].

164 Earthwatch Inst. Press Release, *supra* note 163.

165 *Id*.

166 GREENPEACE INT'L, *supra* note 136, at 22. "The Mediterranean is a semi-enclosed sea, [that is] open to the Atlantic Ocean only at the Strait of Gibraltar." *Tracking the Alboran*, *supra* note 162. Due to this semi-enclosed nature, threats to marine mammals are greatly increased. *Id.* Consequently, dolphins and other marine mammals in the Mediterranean Sea have been useful bio-indicators of an ecosystem facing several human-induced pressures, especially pressures caused by shipping. *Id.*

167 GREENPEACE INT'L, *supra* note 136, at 22.

168 Earthwatch Inst. Press Release, *supra* note 163.

169 GREENPEACE INT'L, *supra* note 136, at 22.

170 GIOVANNI BEARZI, REG'L ACTIVITY CTR. FOR SPECIALLY PROTECTED AREAS, ACTION PLAN FOR THE CONSERVATION OF CETACEANS IN LIBYA 7 (2006), *available at* http://www.tethys.org/download/pdf/Bearzi_2006_Libya.pdf.

MPAs in Spain have taken various forms to respond to different threats. The decline of bottlenose dolphins in the Mediterranean Sea has become an increasing concern for scientists and members of the environmental community.[171] The migratory activities of the bottlenose dolphin population have decreased throughout the Mediterranean Sea, which has caused the species to become fragmented and genetically isolated.[172] In an effort to reverse the declining numbers of bottlenose dolphins found in the Alboran Sea, shipping lanes off the southern coast of Spain have been diverted "to avoid important bottlenose dolphin foraging grounds."[173] Because of the importance of the Alboran Sea, Spain has designated it as an MPA.[174] "When passing through the Alboran Sea, merchant ships and fisherman [sic] will now be required to travel 20 miles further south . . . reduc[ing] acoustic and water pollution."[175]

Diverting the shipping routes should give the bottlenose dolphin an opportunity to recover from the sharp decline in its numbers over the last decade.[176] Since the Alboran Sea's MPA designation, the population of bottlenose dolphins in this area is currently the only healthy dolphin population in the Mediterranean Sea.[177] Dolphin groups in this area average about thirty individuals per group, whereas two to five dolphins comprise a group in other areas.[178]

The placement of MPAs in appropriate locations is another strategy that has contributed to the success of marine mammal protection in New Zealand and Spain. New Zealand employs a hybrid approach that gathers science-based and socioeconomic input to classify the many different types of marine ecosystems and habitats and create a network of effective MPAs.[179] From the science-based information, the range of habitats and ecosystems that should be represented by an

171 *Tracking the Alboran*, *supra* note 162.

172 Earthwatch Inst. Press Release, *supra* note 163.

173 *Id.*

174 *Tracking the Alboran*, *supra* note 162.

175 Earthwatch Inst. Press Release, *supra* note 163.

176 *Id.*

177 *Id.*

178 *Id.*

179 MINISTRIES OF FISHERIES (N.Z.), *Coastal and Marine Habitat and Ecosystem Classification: Mapping the Marine Environment for Implementation of the Marine Protected Areas Policy*, *in* MARINE PROTECTED AREAS: DRAFT CLASSIFICATION AND PROTECTION STANDARD pt. 1, at 4 (2007), http://www.biodiversity.govt.nz/pdfs/seas/MPA-Draft-protection-and-classification-system.pdf [hereinafter *Coastal and Marine Habitat*].

MPA can be identified,[180] whereas the "socioeconomic panel" (i.e., the stakeholders) considers the economic implications.[181]

Spain has also sought to place its MPAs in appropriate locations to ensure successful conservation of its marine mammal populations. As part of a project to identify the best placement of its MPAs, the results of eleven years of data from surveys of Mediterranean waters indicated that MPAs that encompass the habitat preferences of marine mammals would likely be the most appropriate and effective locations.[182] Since 2002, surveyors in Spain have spent in excess of 700 days at sea to survey 10,000 miles.[183]

New Zealand's classification system and protection standard, implemented under its MMPR program, help provide the country with information for MPA planning, especially with respect to providing appropriate MPA protection levels.[184] All marine classifications in New Zealand should be based on detailed knowledge of the ecology and distribution of marine biota in a given area.[185] Therefore, the nation established a classification system that sets MPAs and potential MPAs in different categories based on habitats and ecosystems.[186]

The protection standard sets a minimum level of protection for all the MPAs regardless of the type of management regime—no-take or multiple-use.[187] The protection standard is important because it establishes the outcomes that New Zealand seeks to achieve for all of its MPA sites.[188] The country either seeks to maintain the biological

180 MINISTRIES OF FISHERIES (N.Z.), MARINE PROTECTED AREAS: A NEW APPROACH TO MARINE PROTECTION, http://www.fish.govt.nz/NR/rdonlyres/510387B4-BEAA-403C-829C-F2A3F6202CC8/0/MPAsNewapproachbrochure.pdf (last visited Sept. 30, 2009) [hereinafter A NEW APPROACH].

181 MATTHEW CAHN, LINKING SCIENCE TO DECISION MAKING IN ENVIRONMENTAL POLICY: BRIDGING THE DISCIPLINARY GAP (forthcoming), http://www.csun.edu/~cahn/rulemaking.html (last visited Sept. 30, 2009).

182 A. Cañadas et al., *Habitat Preference Modelling as a Conservation Tool: Proposals for Marine Protected Areas for Cetaceans in Southern Spanish Waters*, 15 AQUATIC CONSERVATION: MARINE & FRESHWATER ECOSYSTEMS 495, 516 (2005).

183 Earthwatch Inst. Press Release, *supra* note 163.

184 *Coastal and Marine Habitat*, *supra* note 179, at pt. 1, at 4.

185 *Id.*

186 *Id.*

187 *Id.* at pt. 1, at 3.

188 MINISTRIES OF FISHERIES (N.Z.), *Interpretation and Application of the Protection Standard*, *in* MARINE PROTECTED AREAS: DRAFT CLASSIFICATION AND PROTECTION STANDARD pt. 2, at 4 (2007), http://www.biodiversity.govt.nz/pdfs/seas/MPA-Draft-protection-and-classification-system.pdf.

diversity within its MPAs or help its MPAs recover to a healthy and functioning state at the habitat and ecosystem levels.[189]

B. Monitoring and Enforcement

Once MPAs have been properly established, continuous monitoring thereafter is essential to assess the relative attainment of the management objectives.[190] Results from monitoring can be used to assess the effectiveness of MPAs in maintaining habitat quality, biodiversity conservation, and species replenishment.[191] Long-term monitoring is the only way to verify trends in the populations of marine mammals, as well as the overall effectiveness of the conservation objectives of the MPAs.[192]

Spain has been particularly effective in monitoring marine mammal populations in its MPAs. In Spain, monitoring of marine mammals includes: "recording [of] surface water salinity and temperature, listening for [marine mammal] sounds on the towed array hydrophone, . . . analysing the depth and slope of the sea floor[, and evaluating the] presence of fish shoals."[193] For their habitat use to be studied, marine mammal groups that are encountered are tracked visually without creating any disturbance.[194] "Photo-identification is used along with skin sampling to identify populations[, and] [u]nderwater digital video is used with acoustic recording to study [the species'] behavior."[195]

Ultimately, well-defined management objectives need to be developed and implemented before monitoring can effectively contribute toward more successful MPAs.[196] Monitoring allows for the impacts of management actions to be evaluated and for the results to be fed back into the planning process for the revision of objectives and plans.[197] "It is only by . . . integrating monitoring and evaluation

189 *Id.* at pt. 2, at 5.

190 BAKER, *supra* note 84, at 114.

191 *See id.*

192 *Tracking the Alboran*, *supra* note 162.

193 *Id.*

194 *Id.*

195 *Id.*

196 Charles N. Ehler & Simon Cripps, *Foreword* to ROBERT S. POMEROY ET AL., HOW IS YOUR MPA DOING?: A GUIDEBOOK OF NATURAL AND SOCIAL INDICATORS FOR EVALUATING MARINE PROTECTED AREA MANAGEMENT EFFECTIVENESS, at vii, vii (2004), *available at* http://assets.panda.org/downloads/mpascompiled.pdf.

197 *Id.*

into the overall MPA management process that [the] benefits of adaptive management [of marine mammals in MPAs] can be fully realized."[198]

C. National Systems of MPAs

New Zealand's national MPA system is an essential component of its commitment to protecting marine biodiversity.[199] The primary objective of New Zealand's MPA policy is to "[p]rotect marine biodiversity by establishing a network of MPAs that is comprehensive and representative of New Zealand's marine habitats and ecosystems."[200]

New Zealand's MPA policy outlines processes for MPA planning that are based on a uniform classification system and protection standard approach to habitats and ecosystems.[201] Another key component of the MPA policy is the nationally uniform basis for planning and implementing new MPAs.[202] The planning of offshore MPAs is implemented at the national level, whereas the planning of nearshore MPAs is implemented at the regional level.[203] Regardless of where the planning occurs, a variety of groups have a stake in New Zealand's coastal and marine environment, and management responsibilities are ultimately shared across a range of central and local government agencies.[204]

Effective implementation of New Zealand's national system of MPAs depends on the cooperation and involvement of a wide range of organizations and individuals after appropriate MPA locations are determined.[205] In New Zealand, both nearshore and offshore MPA processes are designed to allow for constructive engagement with "a wide range of people such as [the] Māori, scientists, environmentalists, animal welfare [groups,] public health groups,

198 *Id.* (emphasis omitted).

199 DEP'T OF CONSERVATION & MINISTRY OF FISHERIES (N.Z.), MARINE PROTECTED AREAS POLICY AND IMPLEMENTATION PLAN 6 (2005), *available at* http://www.biodiversity.govt.nz/pdfs/seas/MPA-Policy-and-Implementation-Plan.pdf.

200 *Id.*

201 *Id.*

202 *Id.*

203 *Id.*

204 A NEW APPROACH, *supra* note 180.

205 SUISTED & NEALE, *supra* note 130, at 8.

government agencies, commercial interests and local communities."[206]

Involving local communities is essential to fulfill the objectives of a national system of MPAs.[207] "Fishermen['s] and resource users['] traditional ecological knowledge can provide vital information, such as species movement patterns and seasonal levels of abundance in certain areas."[208] "These local users may be the first to identify decreases in [species populations] or destruction of habitats."[209] "They [also] may have an important sense of which sites would benefit" most from MPA protection.[210] When users' input is disregarded or not included in the MPA planning process, noncompliance with the MPA's designation, monitoring, and enforcement often ensues.[211]

A national system of MPAs that is particularly well managed and has a high level of community and stakeholder support can also reduce the need for enforcement controls.[212] For example, in 1990, New Zealand's Department of Conservation promulgated regulations that specifically concern the management of marine mammal watching.[213] "The regulations[, however,] are monitored and enforced by casual observers, acting on behalf of the Department."[214] In addition, operators self-regulate by observing one another's practices and applying peer pressure in the event of perceived noncompliance.[215]

Canada has also developed a national system of MPAs through the Canada National Marine Conservation Areas Act of 2002

206 *Id.* "The Māori are the indigenous people of Aotearoa (New Zealand) . . . ." N.Z. Tourism Bd., Maori Culture, http://www.newzealand.com/travel/about-nz/culture/culture-maori-culture.cfm (last visited Sept. 30, 2009). They first arrived in New Zealand by "voyaging canoes . . . from their ancestral homeland of Hawaiki over 1000 years ago." *Id.* "Today, Māori make up over 14 percent of the population. Their language and culture [have] a major impact on all facets of New Zealand life." *Id.*

207 *See* Lubchenco & Grorud-Colvert, *supra* note 41, at 27–28.

208 *Id.* at 28.

209 *Id.*

210 *Id.*

211 *Id.*

212 BAKER, *supra* note 84, at 16.

213 VICTORIA M. EDWARDS, THE COMMONS IN AN AGE OF GLOBAL TRANSITION: CHALLENGES, RISKS AND OPPORTUNITIES 17 (2004), http://dlcvm.dlib.indiana.edu/archive/00001380/ (follow "PDF" hyperlink).

214 *Id.*

215 *Id.*

(NMCA).[216] The NMCA links the country's MPA system to its terrestrial national park system and structures. Canada's system of MPAs is focused on the application of ecosystem-based management and the precautionary principle.[217] Canada began to focus on marine protection in the late 1960s and, since then, has identified several regions that merit protection through the NMCA system.[218]

Australia has also identified the need for a national system of MPAs.[219] "Australia establishes and manages its . . . MPAs pursuant to the Environmental Protection and Biodiversity Conservation Act [of] 1999 . . . ."[220] The primary goals of the national system are "to build a system of MPAs that will be[:] (1) comprehensive, meaning that the system will 'include MPAs that sample the full range of Australia's ecosystems'"; (2) adequate enough to address the "'size and configuration to ensure the conservation of marine biodiversity and integrity of ecological processes'"; and (3) representative of the marine life and habitats of a particular area.[221]

IV
INTERNATIONAL LAW DIMENSIONS: THINK GLOBALLY, ACT REGIONALLY

Within the past two decades, there has been a growing awareness worldwide of the need for a new approach to ocean management. MPAs are an important component of this new approach to managing the world's oceans and the resources contained within them. In fact, the international community has recognized the importance of expanding the use of MPAs on a regional and international scale.[222] For example, the 1995 Jakarta Mandate on Marine and Coastal Biological Diversity identified five main areas in which the parties

216 Robin Kundis Craig, *International Marine Biodiversity and International Systems of Marine Protected Areas*, 3 INT'L ENVTL. L. COMMITTEE NEWSL. (ABA Section of Int'l Law, Chi., Ill.), Fall 2007, at 2, 5.

217 *Id.* at 5–6.

218 *Id.* at 6.

219 *Id.*

220 *Id.*

221 *Id.* For additional information on Australia's MPA system, see Jennifer L. Schorr, *The Australian National Representative System of Marine Protected Areas and the Marine Zoning System: A Model for the United States?*, 13 PAC. RIM L. & POL'Y J. 673 (2004).

222 *See* Robin Kundis Craig, *Protecting International Marine Biodiversity: International Treaties and National Systems of Marine Protected Areas*, 20 J. LAND USE & ENVTL. L. 333, 359–67 (2005) (discussing international law instruments that encourage or enable the designation of marine protected areas).

were invited to concentrate their efforts: integrated coastal area management, MPAs, sustainable use of coastal and marine living resources, mariculture, and the prevention of alien species introduction. The Jakarta Mandate is merely a plan of action and is not binding.[223]

Similarly, under the Convention on Biological Diversity (CBD), the Fourth Meeting of the Parties established operational objectives addressing marine and coastal protected areas, including establishing researching and monitoring activities and developing criteria for establishing marine and coastal protected areas.[224] The next important development occurred at the Seventh Meeting of the Parties to the CBD, which specifically addressed marine and coastal protected areas.[225] The objective of this protected areas program was to establish comprehensive, effectively managed, and ecologically representative national and regional systems of marine protected areas by 2012.[226] The Ninth Conference of the Parties to the CBD, which took place in 2008, addressed the four initial steps to be considered when developing a network of marine protected areas.[227]

[223] Approximately 178 governments adopted Agenda 21 at the United Nations Conference on Environment and Development, which addressed MPAs in chapter 17. Conference on Environment and Development, Rio de Janeiro, Brazil, June 3–14, 1992, *Agenda 21*, ch. 17, *available at* http://www.un.org/esa/dsd/agenda21/res_agenda21_17.shtml. It primarily addressed MPAs because of concerns relating to overfishing.

[224] Fourth Meeting of the Conference of the Parties to the Convention on Biological Directory, Bratislava, Slovakia, May 4–15, 1998, *Decision IV/5: Conservation and Sustainable Use of Marine and Coastal Biological Diversity, Including a Programme of Work*, UNEP/CBD/COP/DEC/IV/5, *available at* http://www.cbd.int/decision/cop/?id=7128.

[225] Seventh Meeting of the Conference of the Parties to the Convention on Biological Diversity, Kuala Lumpur, Malaysia, Feb. 9–20, 2004, *Decision VII/7: Marine and Coastal Biological Diversity*, UNEP/CBD/COP/DEC/VII/7, *available at* http://www.cbd.int/decision/cop/?id=7742.

[226] *Id.* ¶¶ 18, 19. Pursuant to this goal, a formal collaboration was formed between the UNEP-WCMC, the World Wildlife Fund (WWF), and the Sea Around Us Project at the University of British Columbia Fisheries Centre (UBC-FC), with support from the IUCN World Commission on Protected Areas (IUCN-WCPA), to update the MPA data in the World Database on Protected Areas (WDPA). *See* MPA Global, About the Project, http://www.mpaglobal.org/index.php?action=aboutus (last visited Sept. 30, 2009). This effort has resulted in MPA Global, a database developed from all of the existing marine-specific information available in the WDPA. *Id.*

[227] Ninth Meeting of the Conference of the Parties to the Convention on Biological Diversity, Bonn, Germany, May 19–30, 2008, *Decision IX/20: Marine and Coastal Biodiversity*, ¶ 16, UNEP/CBD/COP/DEC/IX/20, *available at* http://www.cbd.int/decision/cop/?id=11663.

In addition, on a regional, sub-multilateral treaty level, the European Union has been a pioneer in the use of MPAs by attempting to establish a Europe-wide system of marine protected areas and reserves, which would be the first comprehensive international system of MPAs. The European Commission proposed the E.U. Marine Strategy Framework Directive in 2005. The Directive entered into effect in June 2008.[228]

According to the E.U. Marine Strategy Framework Directive, each Member State should develop a marine strategy based on its own waters while reflecting the concerns of sub-regions or marine regions.[229] Not only must a Member State take into account the concerns of the sub-regions but it also must adhere to the goals of the CBD.[230] The first step in this process is to analyze the characteristics of the region through economic and social analysis.[231] After determining the characteristics, the Member State must develop a plan to achieve "Good Environmental Status."[232] A Member State must also establish specific targets and monitoring programs to evaluate progress.[233] Once that is complete, a plan to maintain Good Environmental Status must be developed.[234]

As is true with any international regulatory initiative, two significant challenges arise. The first is whether the initiative can be enforced effectively. Ocean law regulatory initiatives are inherently difficult to enforce as compared to land-based initiatives because of the vast and remote nature of ocean areas. Nevertheless, an international network of MPAs can borrow from the success of cooperative enforcement in the United Nations Fish Stocks Agreement because there is significant overlap in objectives between these two regimes.[235]

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228 Council and Parliament Directive 2008/56, 2008 O.J. (L164) 19, 19 (EU).

229 *Id.* at 20.

230 *Id.* at 21.

231 *Id.* at 22.

232 *Id.* "Good Environmental Status" is defined as the environmental status of marine waters that provides ecologically diverse and dynamic seas, which are clean, healthy, and productive within their intrinsic conditions, "and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations." *Id.* at 25.

233 *Id.*

234 *Id.*

235 *See infra* Part IV.A.

The second issue involves the choice of regulatory model; namely, whether a bottom-up or top-down approach works best to achieve the objectives of a given regulatory regime. In the case of MPA networks, new developments involving "linking" regional carbon trading regimes between nations could serve as a valuable reference point to expand the reach of MPAs compared to a traditional, multilateral international treaty regime.

A. Lessons from the U.N. Fish Stocks Agreement

International ocean management has many facets. The United Nations Convention on the Law of the Sea (UNCLOS),[236] known as the "constitution for the oceans,"[237] embodies a comprehensive approach to international ocean management. Within its broad scope, UNCLOS regulates a wide range of ocean management issues including maritime boundaries, coastal-state management responsibilities, deep seabed mining, navigation, pollution, and marine living resource management, including fisheries. It is the last of these categories that is the focus of the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (U.N. Fish Stocks Agreement or UNFSA).[238]

UNFSA entered into force in December 2001 and currently has sixty-two parties.[239] It seeks to promote cooperation between coastal states and states fishing on the high seas to ensure the long-term sustainability of straddling fish stocks and highly migratory fish stocks.[240] To achieve this goal, UNFSA contains the following

236 United Nations Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 397 [hereinafter UNCLOS].

237 William C.G. Burns, *Potential Causes of Action for Climate Change Impacts Under the United Nations Fish Stocks Agreement*, SUSTAINABLE DEV. L. & POL'Y, Winter 2007, at 34, 35 (2007) (quoting Tommy T.B. Koh, President, Third United Nations Conference on the Law of the Sea, A Constitution for the Oceans, Remarks at the Third United Nations Conference on the Law of the Sea (Dec. 6 and 11, 1982) (transcript available at http://www.un.org/Depts/los/convention_agreements/texts/koh_english.pdf).

238 United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks, July 24–Aug. 4, 1995, *Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*, U.N. Doc. A/CONF.164/37 (Sept. 8, 1995) [hereinafter UNFSA].

239 Burns, *supra* note 237, at 36.

240 UNFSA, *supra* note 238, art. 5.

principal mechanisms: (1) establishing direct agreements and cooperation in regional fisheries management organizations (RFMOs),[241] (2) collecting and exchanging relevant data on these species,[242] and (3) engaging flag states to shoulder their share of the responsibility to ensure compliance with UNFSA's provisions.[243]

While UNFSA quickly gained widespread international acceptance among nations with significant interest in international fisheries as the governing international law for highly migratory and straddling stocks on the high seas and in neighboring exclusive economic zone (EEZ)[244] areas,[245] the enforcement provisions have generated some controversy. Specifically, Articles 21 and 22 of UNFSA authorize boarding and inspection of vessels without advance authorization from the flag state, a practice that appears to be contrary to the customary international law of exclusive flag state jurisdiction on the high seas.[246] RFMOs are the administrative bodies responsible for deciding how these boarding and inspection procedures should be undertaken. One such RFMO, the Western and Central Pacific Fisheries Commission, was the first to implement such procedures pursuant to UNFSA, and other RFMOs have done so as well.[247]

The success of RFMOs as the implementation and enforcement bodies in the regional fisheries management context could form the foundation for enforcement of a new regional MPA system. The relationship between straddling and highly migratory fish stocks on the one hand, and marine mammals on the other, is apparent when considering how to regulate these resources in a cooperative and effective regional manner. Both regulatory contexts witness resource depletion when these species get "lost in the shuffle" of shortsighted

241 *Id.* arts. 7–10.

242 *Id.* art. 14.

243 *Id.* arts. 19–23.

244 An exclusive economic zone is the area that extends "200 nautical miles from the baselines from which the breadth of the territorial sea is measured." UNCLOS, *supra* note 236, art. 57. The territorial sea of a state typically extends twelve nautical miles from its coast. *Id.* art. 3. UNCLOS grants coastal states the primary right to manage and conserve the living and nonliving marine resources located with the EEZ. *Id.* art. 56.

245 *See* David A. Balton & Holly R. Koehler, *Reviewing the United Nations Fish Stocks Treaty*, SUSTAINABLE DEV. L. & POL'Y, Fall 2006, at 5, 5–6.

246 William Gibbons-Fly, *Implementing the United Nations Fish Stocks Agreement With Respect to Boarding and Inspection: Experience Within the Western and Central Pacific Fisheries Commission*, 3 INT'L ENVTL. L. COMMITTEE NEWSL. (ABA Section of Int'l Law, Chi., Ill.), Fall 2007, at 16, 16.

247 *Id.* at 17.

domestic management. These mobile species do not recognize traditional sovereign boundaries of regulation. The win-win scenario of coordinating regional fishery management with regional marine mammal management both in international waters and in adjoining waters of nations' respective EEZs should be attained to ensure optimal protection of marine mammals.

Consequently, a new regulatory regime that acknowledges both the overlaps and synergies between regional fishery management and marine mammal protection is necessary. This new initiative could take the form of either an independent marine mammal protection agreement pursuant to UNCLOS, premised on the goals and successes of UNFSA, or a sub-agreement within the UNFSA framework that addresses marine mammal protection as a dimension of the management of these fish stocks. Such new agreements should embrace the role of no-take and no-intrusion MPAs as instrumental in achieving their objectives. These regulatory strategies represent a form of top-down regulation because they are coordinated pursuant to an international or regional agreement; however, such a command from the top may not be necessary to achieve progress in regional and, incrementally, international marine mammal protection—as discussed in Part IV, Section B of this Article.

B. Parallels with Regional Linking of Carbon Trading Regimes

Recent developments involving regional linking of carbon trading regimes between nations may serve as a valuable reference point to expand the reach of MPAs internationally. Typically, international consensus is obtained through the formal treaty-making process; however, there are other options, detailed below, to achieve progress on an international level without a formal treaty commitment in place. Moreover, when it comes to the choice of regulatory model, the options are usually limited to top-down (i.e., implementing federal government mandates) or bottom-up (i.e., market realities and non-governmental actors informing how regulation should occur). In the MPA context, however, a third option involving a combination of these two regulatory models may be the best approach.

Carbon emissions trading is an administrative mechanism designed to control emissions of carbon dioxide by offering economic incentives for reductions in the quantity of discharged carbon dioxide

by various emissions sources.[248] A government establishes a limit, or cap, on the total amount of carbon emissions allowed to be generated.[249] The total number of allowances or credits is not permitted to exceed the established total carbon dioxide emission limit. This "cap and trade" system is designed to reduce carbon emissions, which contribute to the international climate change crisis, by setting a limit on the amount of carbon emissions and dividing that amount into allowances, or credits, that are allocated to regulated entities.[250] These credits represent an entity's right to emit a specified amount of carbon dioxide.[251]

These allowances can be traded like any other good or service.[252] The transfer of these allowances is known as carbon trading.[253] If a company needs to increase its carbon dioxide emissions, it must purchase credits from another company that both pollutes less and, consequently, does not use all of its emission credits.[254] The buyer is essentially paying for the right to emit more carbon dioxide, while the seller is being rewarded financially for reducing its carbon dioxide emissions by more than the necessary amount.[255] This approach allows entities that are able to cheaply and easily reduce their emissions to do so, which ultimately achieves carbon dioxide pollution reduction without a significant financial burden on the regulated community.[256]

This carbon trading framework represents regional implementation of an international objective, which in this instance is the Kyoto Protocol.[257] Many international treaty objectives are achieved through collective efforts toward individual, domestic implementation of international law mandates. In some contexts, however, cooperative regional implementation is actually essential to the

248 *See* Jessica Daly, *Trading the Carbon Market*, CNN, Sept. 1, 2008, http://edition.cnn.com/2008/TECH/science/09/01/carbon.trading.pv/index.html.

249 *Id.*

250 *Id.*

251 *Id.*

252 *Id.*

253 *Id.*

254 *Id.*

255 *Id.*

256 *Id.*

257 Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, 37 I.L.M. 22 (entered into force Feb. 16, 2005).

success of international law objectives. Climate change and ocean management are two such contexts.

In the carbon trading context, one nation's emissions trading scheme (ETS) may be linked with another nation in a situation where the allowance under its ETS can be used, either directly or indirectly, by a participant in another country's ETS for compliance purposes.[258] With such a link established, participants in one country's ETS may purchase allowances from another country's ETS to facilitate compliance with its own domestic reduction requirements, and vice versa.[259]

In trading regimes linked via the Kyoto Protocol, a direct link is established when a participant in any linked scheme uses administrator-approved allowances of another linked scheme for compliance purposes.[260] An indirect link occurs when a scheme administrator "freely exchanges an allowance for a Kyoto unit."[261] Such indirect links do not require a negotiated linking agreement between the scheme administrators.[262] Trading schemes are effectively linked when the administrators of two or more schemes authorize such exchanges to occur.[263] A bilateral or multilateral link generally requires a mutual understanding resulting from negotiations between the affected trading schemes.[264] The most common and certain approaches to reaching such an understanding include: "(1) a purely political arrangement; (2) a binding international treaty; or (3) mutual recognition of allowances by way of reciprocal rules in the domestic law of participating jurisdictions."[265]

The formal nature and transparency of international treaties makes treaties the preferred mechanism for future linking agreements.[266] "The violation of duties under a treaty counts as a breach of

258 Michael A. Mehling, *Bridging the Transatlantic Divide: Legal Aspects of a Link Between Regional Carbon Markets in Europe and the United States*, SUSTAINABLE DEV. L. & POL'Y, Winter 2007, at 46, 46.

259 *Id.* at 46–47.

260 Erik Haites & Xueman Wang, *Ensuring the Environmental Effectiveness of Linked Emissions Trading Schemes*, MARGAREE CONSULTANTS, INC., May 2006, at 1, 9, *available at* http://www.margaree.ca/papers/Linking%20Trading%20Schemes-2006-05.pdf.

261 *Id.*

262 *Id.*

263 *Id.*

264 *Id.*

265 Mehling, *supra* note 258, at 47.

266 *Id.*

international law, incurring state responsibility and the possibility of sanctions, often defined in the treaty itself as part of a negotiated compliance mechanism."[267] However, treaty negotiation and ratification is a protracted and controversial process.[268] Moreover, these treaties "can only be concluded by formal subjects of international law," and this limitation's relevance is significant to any linking agreement between regional trading markets.[269]

Another option involves various trading markets entering "a political commitment to adopt reciprocal legislation within their respective jurisdictions, thereby ensuring the mutual recognition of emission allowances."[270] These reciprocal commitments would ultimately derive their authority from domestic law—even though they would be formed by formal or informal negotiations and meetings between states—because of the necessary adaptation of the respective registry systems.[271] In some situations, this collective solution might provide the only way to link separate markets while simultaneously offering the legal certainty and transparency of formal law.[272]

Another approach to implementing linking arrangements is through private law, specifically the laws of contracts and torts.[273] There are several plausible approaches under private law, but all of the approaches will involve a contract of some form.[274] "Even in the absence of a formal link, market participants could use private law to create a bridge between otherwise separate trading systems by establishing a system for the conversion of permits."[275] "Private transactions across trading schemes have already [happened]" in the voluntary sector.[276]

In the United States, federalism concerns may present an obstacle to forming a regional linking agreement between states, groups of states, and the European Union's ETS.[277] Article I, Section 10 of the

267 *Id*.
268 *Id*.
269 *Id*.
270 *Id*.
271 *Id*.
272 *Id*.
273 *Id*.
274 *Id*. at 47–48.
275 *Id.* at 48.
276 *Id.*
277 *Id*. at 49.

U.S. Constitution both limits the ability of states to take part in diplomatic relations and completely bars them from entering into an international treaty; thus, states are denied an "international legal personality."[278] The states, however, are "empowered to adopt a binding 'compact' or 'agreement' with the consent of Congress."[279] Since no agreement between a foreign power and a state has been successfully challenged on the basis of a state's lack of authority, it appears that there is a possible way to establish a link between regional trading schemes in the United States and the European Union's ETS.[280]

Even though the conclusion of such agreements is conditioned on approval by Congress, "individual States may, under certain circumstances, enter into an agreement with foreign powers."[281] Congressional endorsement is only required when a compact with a foreign power "tends 'to [increase] political power in the States which may encroach upon or interfere with the just supremacy of the United States.'"[282] This means that "[c]onsent to an agreement is . . . only required if the agreement tends to give the state elements of international sovereignty, interferes with the full and free exercise of federal authority, or deals locally with a matter on which there is or might be national policy."[283] Agreements regarding local transborder issues, like agreements to limit a source of pollution, have not required congressional approval.[284] Consequently, it appears that a linking agreement could be adopted through a state compact, or other agreement, without federal endorsement. Congress can, however, supersede such state agreements through legislation.[285] Nevertheless, institutional responsibilities could be allocated to a private body that the respective participants establish and fund, which would prevent the need to resort to international law.[286]

278 *Id*. at 50.

279 *Id.*

280 *Id*.

281 *Id*.

282 *Id*. (quoting Virginia v. Tennessee, 148 U.S. 503, 519 (1893)).

283 *Id*.

284 *Id*.

285 *Id*.

286 *Id*. For example, the Northeastern states joining in the Regional Greenhouse Gas Initiative (RGGI) have successfully operated through a Memorandum of Understanding at the preparatory stage and have used an informal arrangement to determine particular aspects and features of their future trading schemes. *Id.* In addition, "[s]tates have

A transatlantic market link also is consistent with U.S. constitutional law mandates. First, such a linking arrangement does not appear to violate the Supremacy Clause because the "federal government has not adopted legislation precluding state law in the area of GHG emissions trading."[287] Second, "a trading link to the [E.U.] ETS would not violate the Commerce Clause of the U.S. Constitution."[288] Since the notion of "commerce can also be applied to environmental markets, the Commerce Clause has raised doubts about the legality of RGGI provisions constraining energy imports from outside in order to prevent leakages."[289] The Commerce Clause only prohibits states from passing legislation that "improperly burdens transboundary commerce"; thus, the Commerce Clause will not be a problem as long as the U.S. government does not begin to regulate international trade in GHGs.[290] The U.S. Constitution "does 'not prohibit every state law or regulation that has some effect on interstate or foreign commerce.'"[291] Even if a linking arrangement could be thought of as burdening domestic or international commerce, it seems probable that its environmental and economic benefits would outweigh these effects.[292]

The combined emissions target can be reached at a lower cost by linking emissions trading schemes. Linking will both discourage emitters from relocating their polluting activities to areas with less restrictive, or no, emission reduction standards and create a more uniform standard for emissions trading schemes and offset projects. Further, linking offers incentives for nonparticipants to join, initiates international negotiations, and permits connections between countries with emissions targets and those without, which could get more

concluded past reciprocal arrangements with foreign powers . . . to overcome procedural constraints." *Id.*

If these options do not work, the United States could try changing its internal legislation to include rules on the mutual recognition of foreign allowances. Reciprocal legislation that is adopted at the same time by two or more jurisdictions is not a treaty or an agreement requiring congressional consent—neither party is legally obligated to maintain its law. *Id.* By essentially allowing a way to avoid the constraints of international and constitutional law, "reciprocal recognition could be based on an informal understanding setting out the substantive provisions required to create an operational trading link." *Id.*

287 *Id.*

288 *Id.*

289 *Id.* (footnote omitted).

290 *Id.*

291 *Id.* (quoting LOUIS HENKIN, FOREIGN AFFAIRS AND THE UNITED STATES CONSTITUTION 149–150 (2d ed. 1996)).

292 *Id.* at 51.

nonparticipants involved in the global carbon reduction scheme. Linking may provide a viable mechanism to promote the development of a future international climate regime, which can use a global carbon trading market as its foundation.

Building international consensus is time consuming, and the ocean management crisis may not have the luxury to wait for such a solution. The example of linking carbon trading regimes has demonstrated that meaningful progress toward an international goal can be achieved both at the sub-multilateral treaty level and at the regional level within a sovereign territory, with or without multilateral, international consensus.

International recognition of the need for enhanced use of MPAs is still in its formative stages. Nonbinding international agreements contain some aspirational language promoting such objectives, but the next step of requiring such an approach to establish compliance with an international treaty mandate may be many years away. In the meantime, meaningful progress can be made at the regional level. For example, California has sought to establish regional ocean management objectives with Oregon and Washington, and these agreements easily could include Canada to "link" MPA networks in a manner that would enhance protection of shared marine resources—similar to the protection of regional fishery stocks by the RFMOs.

The world's oceans are as dynamic and interconnected as the world's atmosphere, and the challenges facing the oceans are every bit as pressing as those in the climate change context. Therefore, it makes sense to apply the linking structure of carbon trading schemes to MPAs. MPAs are an available instrument to improve fishery management and marine environmental protection. Managing a carbon trading scheme or an MPA in isolation leaves it vulnerable to what occurs outside of it. Linking provides a way to connect otherwise isolated efforts, which increases the likelihood that these mechanisms will achieve their underlying goals. The benefits discussed above for linking carbon trading schemes are also true for linking MPAs.

Potential hurdles to overcome in applying the linking concept to the MPA mechanism include some of those also facing linking carbon trading schemes: federalism concerns;[293] potential concerns for the environmental effectiveness of the linked schemes over time; concerns about the lack of appropriate control; and differences

293 *Id.* at 49.

between the linked trading and allocation schemes (particularly the accuracy of reporting, integrity of allowance registries, and effectiveness of enforcement and compliance). However, including "a process for agreeing on revisions to the regulations of the linked schemes, a mechanism to provide assurance of the environmental effectiveness of each of the linked schemes, and a procedure for terminating the linking agreement" could sustain the environmental effectiveness of the linked schemes.[294]

V

SUGGESTED IMPROVEMENTS FOR THE UNITED STATES

When implemented properly, MPAs offer great promise as an ocean management tool to protect marine mammals. The United States faces three basic challenges in implementing this regulatory strategy effectively in U.S. waters. First, it must designate more MPAs, especially no-take and no-intrusion MPAs. The MPAs currently in place are a good start, but the country lags far behind other nations both in establishing MPAs generally and, more specifically, in using MPAs as a tool to promote marine mammal protection. Second, the nontraditional, bottom-up regulatory strategy in place under the Magnuson-Stevens Fishery Conservation and Management Act is a good reference point to ensure effective implementation and monitoring measures for designated MPAs. Third, a comprehensive national system of MPAs needs to be established with effective enforcement mechanisms. The United States can learn from other countries—like New Zealand and Australia—how best to establish, monitor, and enforce such a system. The national system should also be developed with an eye toward broader regional and international cooperation in the use of MPAs.

A. Extend Existing Measures

Currently, the United States has several legal mechanisms in place at the federal and state levels that authorize various government entities to establish, manage, and monitor MPAs. Most of the legal mechanisms in place are at the federal level. These mechanisms include Executive Order 13,158,[295] the National Marine Sanctuaries

294 Haites & Wang, *supra* note 260, at 10.

295 Exec. Order No. 13,158, 65 Fed. Reg. 34,909, 34,909 (May 26, 2000).

Act,[296] the Magnuson-Stevens Fishery Conservation and Management Act,[297] the Coastal Zone Management Act,[298] the Clean Water Act,[299] and the Antiquities Act.[300] Although MPAs typically are created through federal law, many states, including California[301] and Massachusetts,[302] have established their own legal mechanisms to govern MPAs within their waters.

On May 26, 2000, Executive Order 13,158 was issued to specifically address MPAs.[303] The EO seeks to achieve three goals: "[(1)] strengthen the management, protection, and conservation of existing [MPAs] and establish new or expanded MPAs; [(2)] develop a scientifically based, comprehensive national system of MPAs representing diverse U.S. marine ecosystems, and the Nation's natural and cultural resources; and [(3)] avoid causing harm to MPAs through federally conducted, approved, or funded activities."[304] The EO

296 National Marine Sanctuaries Act, 16 U.S.C. §§ 1431–1445 (2006).

297 Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§ 1801–1884 (2006).

298 Coastal Zone Management Act of 1972, 16 U.S.C. §§ 1451–1466 (2006).

299 Clean Water Act of 1977, 33 U.S.C. §§ 1251–1387 (2006).

300 Antiquities Act of 1906, 16 U.S.C. §§ 431–433 (2006).

301 California has established a system governing the state's MPAs through the California Marine Life Protection Act (MLPA) in 1999. CAL. FISH & GAME CODE §§ 2850–2863 (West 2009). Under the MLPA, the California Department of Fish and Game (CDFG) is required to create a Fish and Game Commission plan that would guide the adoption and implementation of the Marine Life Protection Program, including a statewide network of MPAs. In developing a more effective management scheme, the MLPA established the MLPA Blue Ribbon Task Force, a Master Plan Science Advisory group, and a stakeholder advisory group to oversee the initiative's objectives.

The initiative consisted of launching five regional studies: central coast, north central coast, south coast, north coast, and San Francisco Bay. The first study in the central coast region was implemented in 2004 and completed by 2007. This study resulted in the adoption of twenty-nine MPAs in September 2007. The second study in the north central region has been completed. The MLPA Blue Ribbon Task Force recently submitted its recommendations to the California Fish and Game Commission proposing that twenty-four MPAs be established. Of those twenty-four, eight MPAs prohibited any type of taking and seven prohibited the taking of living marine resources. However, the recommendations have yet to be adopted.

Even more recently, the south coast study was completed. No recommendations have been proposed to the California Fish and Game Commission. There are two studies left to be completed by the target goal of 2011. For further discussion of California's efforts to promote regional ocean management, see generally Brian E. Baird & Amber J. Mace, *Regional Ocean Governance: A Look at California*, 16 DUKE ENVTL. L. & POL'Y F. 217 (2006).

302 MASS. GEN. LAWS ch. 21A, § 2(7) (2002).

303 Exec. Order No. 13,158, 65 Fed. Reg. 34,909, 34,909 (May 26, 2000).

304 *Id.*

requires those agencies granted the authority to establish or manage MPAs to create a national system.[305] Furthermore, those agencies must provide greater protection to existing MPAs and establish or recommend new MPAs.[306] To promote accountability, the EO requires that the agencies prepare annual reports that describe the actions undertaken for and the status of the implementation of the EO.[307] Once the agencies produce these status reports, they are made available publicly.[308]

Although the EO has yet to be implemented, the latest *Revised Draft Framework for Developing the National System of Marine Protected Areas* provides a guide for how implementation will proceed. Building a national system will proceed in two steps: (1) identifying, nominating, and including "existing MPAs in the national system and on the official [l]ist of MPAs" and (2) identifying "national system conservation gaps relative to . . . conservation objectives."[309] Upon completion of these two steps, the national MPA Center will publish the next set of conservation objectives to serve as goals for the national system.

The next step proposed by the framework is to initiate implementation of the national system. The major emphasis will be on facilitating and supporting collaborative efforts with participating MPAs.[310] The framework will be built around the "large marine ecosystems"—Alaska, the California Current, the Great Lakes, the Gulf of Mexico and Caribbean, the Northeast, the Pacific Islands, and the Southeast United States.[311] To enhance collaboration and regional coordination, the federal government may provide "training and workshops; . . . direct technical assistance and tools; . . . contractual or grant funding; [and] . . . facilitation of linkages with international MPA programs and activities."[312] However, these mechanisms will depend on the availability of federal funds.[313]

305 *Id.* at 34,909–10.

306 *Id.* at 34,909.

307 *Id.* at 34,911.

308 *Id.*

309 NAT'L MARINE PROTECTED AREA CTR., REVISED DRAFT: FRAMEWORK FOR DEVELOPING THE NATIONAL SYSTEM OF MARINE PROTECTED AREAS 18 (2008), *available at* http://mpa.gov/pdf/national-system/revise_draft_frmwk_0308.pdf.

310 *Id.* at 24.

311 *Id.* at 25–26.

312 *Id.* at 28.

313 *Id.*

National collaboration will be facilitated by the MPA Center. The MPA Center will establish the System Steering Committee which will consist of one representative from: (1) each federal, state, tribal, and local government within the region; (2) the Federal Fishery Management Council within the region; and (3) the Federal Interagency MPA Working Group.[314] They will provide advice and identify management issues to conservation groups.

In addition to national collaboration, the Revised Draft Framework provides for a system of monitoring and evaluation.[315] The framework only monitors MPAs in the national system and not individual MPAs.[316] The Revised Draft Framework would monitor MPAs through data collected at MPA sites and on MPA systems. Along the same lines, a system of tracking and reporting will provide information through publicly available progress reports and the MPA website.[317]

While the EO requires government agencies to establish a national system, other federal laws create the authority to designate MPAs. The most prominent of these statutes is the National Sanctuaries Act (NSA), which establishes the National Marine Sanctuaries Program.[318] Under this Act, "[t]he Secretary [of Commerce] may designate [as a national sanctuary] any discrete area of the marine environment" having "special significance."[319] Also, authority has been delegated to the Administrator of the NOAA to promulgate sanctuary-specific regulations, including regulations concerning the taking of any marine mammal, sea turtle, or seabird.[320] However, under the National Sanctuaries Act, the designation of a national marine sanctuary is a complex and lengthy process.[321]

By contrast, the Antiquities Act authorizes the President to declare historic landmarks and historic and prehistoric structures.[322] Designation as a national monument under the Antiquities Act means that the lengthy designation process required for a national marine sanctuary under the NSA, including the requirements for an

314 *Id.* at 29.

315 *Id.* at 30.

316 *Id.*

317 *Id.* at 34.

318 16 U.S.C. § 1431(a)(4) (2006).

319 *Id.* § 1433(a).

320 *See id.* § 1436.

321 *See id.* §§ 1431–1433.

322 16 U.S.C. § 431 (2006).

environmental impact study and public comment, is not required.[323] Unlike the NSA, the Antiquities Act allows the President to only designate monuments.[324] Nevertheless, "Presidents have repeatedly used it to create marine-related national monuments that function as MPAs."[325]

Using the Antiquities Act, President George H.W. Bush established the Northwestern Hawaiian Islands Marine National Monument, now called the Papahānaumokuākea Marine National Monument.[326] This monument is the single largest conservation area in the United States.[327] While not officially an MPA, it operates as the functional equivalent of an MPA. Many activities around the monument are prohibited or heavily regulated, including removing or moving any living monument resource and recreational snorkeling and diving.[328]

Two important pieces of proposed federal legislation to implement recommendations from a U.S. Ocean Commission report have been introduced recently. The first, the National Oceans Protection Act of 2005 (NOPA),[329] would establish a Council on Ocean Stewardship[330] to ensure that "all federal agencies engaged in ocean and atmospheric activities adopt and implement the principle of ecosystem-based management and *take necessary steps to improve regional coordination and delivery of services around common eco-regional boundaries*."[331] The NOPA designates the NOAA as the agency responsible for its implementation.[332]

Introduced in 2007, the second bill is the Oceans Conservation, Education, and National Strategy for the 21st Century Act,[333] which would implement ecosystem-based management in greater depth.

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323 *See id.*

324 *Id.*

325 Robin Kundis Craig, *Are Marine National Monuments Better Than National Marine Sanctuaries?: U.S. Ocean Policy, Marine Protected Areas, and the Northwest Hawaiian Islands*, SUSTAINABLE DEV. L. & POL'Y, Fall 2006, at 27, 31.

326 Kim Connolly et al., *Marine Protected Areas*, *in* OCEAN AND COASTAL LAW AND POLICY, *supra* note 5, at 535, 545.

327 *Id.*

328 *Id.*

329 National Oceans Protection Act of 2005, S. 1224, 109th Cong. (2005).

330 *Id.* § 131. The President would appoint between three and five members to serve on the Council. *Id.* § 132(a).

331 *Id.* § 133(a)(3) (emphasis added).

332 *Id.* § 111.

333 Oceans Conservation, Education, and National Strategy for the 21st Century Act, H.R. 21, 110th Cong. (2007).

With NOAA again as the designated implementing agency,[334] the bill would promote ecosystem-based management by creating Regional Ocean Partnerships and preparing Regional Ocean Strategic Plans.[335] The partnerships and strategic plans would build on existing regional regulatory entities' governance of the EEZ regions and would not supplant the role of such entities.

These initiatives are steps in the right direction to promote ecosystem-based management on a regional level. Just as MPAs without proper monitoring and enforcement can become "paper parks" with little value, the good intentions underlying these recent federal legislative initiatives will not advance U.S. ocean management and MPA implementation unless they are enacted. Another creative and much-needed example of proposed legislation in the marine context, the Clean Cruise Ship Act of 2005,[336] likewise has not yet been enacted.

B. Implement Effective Management

Despite the opportunities and benefits that MPAs provide for marine mammal protection, improper management has prevented MPAs in the United States from being more effective. As a result of improper management, MPAs in the United States fail to provide uniform objectives for marine mammal conservation. Such objectives must both address marine mammal threats and potential remedies to mitigate negative impacts and provide for appropriate locations and protection levels for MPAs. In addition, improper management has led to a lack of monitoring and a corresponding lack of evaluations, which are necessary to determine the effectiveness of the MPAs. Furthermore, an established national system of MPAs continues to be absent because the range of people that should be involved in the MPA planning process—planners, managers, other stakeholders, and the public at large—have not been effectively involved.[337]

Public involvement is crucial in the process of establishing MPAs.[338] The United States lacks a coordinated strategy to address

334 *Id.* § 201.

335 *Id.* §§ 402(a), (c)(2)(B).

336 Clean Cruise Ship Act of 2005, H.R. 1636, 109th Cong. (2005).

337 *See* TIM STEVENS ET AL., METHODS FOR MANAGING MARINE PROTECTED AREAS: OPTIONS FOR ESTABLISHING AND MANAGING A MARINE PROTECTED AREA SYSTEM IN THE UK 5 (2006), *available at* http://www.homepages.ucl.ac.uk/~ucfwpej/pdf/MPAmethods.pdf.

338 Nat'l Marine Protected Areas Ctr., *supra* note 65.

the "public's role in managing the diverse range of MPAs" in the nation.[339] When the concerns of relevant stakeholders are on the table and addressed, potential conflicts among users can be avoided and the objectives of MPAs can be effectively advanced.[340]

Input from "federal agencies, states and territories, tribes, fishery management councils, advisory committees, non-governmental organizations and associations, industry, coastal communities, and other members of the public is essential" before designating a site as an MPA.[341] The involvement of all interested parties can provide helpful insight as to both what sites should be designated and how such sites should be managed.[342] The participation of all interested parties is important because, if the gap between what it takes to implement successful MPAs and the measures necessary to achieve such success becomes too great, users are likely to disregard the MPA's regulations.[343]

The Magnuson-Stevens Act (MSA) mentioned above offers a blend of top-down and bottom-up regulation.[344] In a top-down management approach under the MSA, the government can protect certain spawning and rearing habitats of fish from the effects of overfishing during certain times of the year. Not only does this allow for food to be plentiful for the marine mammals, but it reduces the

339 *Id.*

340 *See* Introduction to Using Social Science for MPA Management, http://www.csc.noaa.gov/mpass/intro.html (last visited Oct. 16, 2009).

341 Nat'l Marine Protected Areas Ctr., *supra* note 65.

342 Clarifying Misconceptions, *supra* note 83.

343 ZINN & BUCK, *supra* note 55, at 16.

344 The "top-down" approach to marine conservation, where a government agency uses its authority to impose rules, is unlikely to succeed where knowledge is uncertain or contested, and where monitoring and enforcement promise to be difficult. It is also problematic where there are complicated jurisdictional issues, such as many inshore and near-shore areas, and at the boundaries of States and nations. The "bottom-up" approach is frequently effective because those individuals closest to the marine resource or area have customary or local knowledge to contribute to planning and management. These individuals often depend on the marine environment and this brings interest and commitment. The bottom-up approach creates opportunities for full participation and a sense of ownership and stewardship on the part of local people or dedicated resource users.

NAT'L MARINE PROTECTED AREAS CTR., PROTECTING AMERICA'S MARINE ENVIRONMENT: A REPORT TO THE MARINE PROTECTED AREAS FEDERAL ADVISORY COMMITTEE ON ESTABLISHING AND MAINTAINING A NATIONAL SYSTEM OF MARINE PROTECTED AREAS 13 (2005), *available at* http://mpa.gov/pdf/fac/mpafac_report_06_05.pdf.

chances that these species will be caught as bycatch. The MSA also employs bottom-up management techniques. It promotes stakeholder buy-in through its "alternative" to command-and-control regulation by enabling stakeholders to participate actively in setting the parameters of regulations governing their local fisheries.[345] While appearing to promote a regulatory model that resembles "the fox guarding the hen house," this bottom-up regulatory strategy makes more sense in the marine context because traditional top-down regulation and enforcement is much more difficult to implement and enforce.

While the MSA promotes marine mammal conservation through its regulatory strategies designed to promote sustainable fish stocks, it does not provide the degree of protection to marine mammals that MPAs could.

No-take MPAs could also provide protection to essential fishing grounds in much the same way as the MSA; however, no-take MPAs can be a more effective management strategy as they provide more permanent protection for the species within their boundaries and embrace the benefits of bottom-up management.

C. Establish a National System

A firmly entrenched national commitment to the use of MPAs as a domestic regulatory tool would enable the United States to take the next step and be a part of a larger regional and international marine mammal protection initiative. It remains to be seen whether marine mammal protection through MPAs will be advanced through either: a top-down, traditional international treaty approach; a bottom-up, incremental regional approach; or a combination of the two approaches. Whatever approach is ultimately employed is far less important than the progress that can be achieved in marine mammal protection through some type of MPA-focused response.

To achieve this goal, three initial steps are necessary. First, rather than being a mere regulatory policy ambition in the form of an executive order,[346] the mandate for no-take MPAs should be fully implemented as either its own statutory framework, like the national

345 *See* 16 U.S.C. § 1801(b)(5) (2006).

346 Because executive orders do not require congressional approval, they "have no binding legal effect outside of the Executive Branch." Craig, *supra* note 216, at 5. Consequently, they can be easily adapted or disregarded in the transition from one administration to the next. *Id.*

park and national forest systems in the United States, or as part of an existing statutory framework, like the Magnuson-Stevens Act. Existing statutory protections such as the Marine Mammal Protection Act and the Endangered Species Act have failed to adequately protect marine mammals because of their misplaced focus on individual species instead of ecosystem-based protection. The existing Executive Order framework has failed to enter into full effect after its issuance in 2000. A statutory framework could take a long time to create also but, once passed, it will have more of an impact on implementation and enforcement of the protections it seeks to establish.

Second, MPAs should be integrated into fishery management programs because these two regulatory mechanisms are mutually supportive. Enhanced protections for fisheries through no-take MPAs both help marine mammals and increase attention to the need for protection of marine mammals, which would help fisheries thrive. An amendment to the Magnuson-Stevens Act to enable an agency to designate no-take or no-intrusion MPAs could help achieve this objective. The United States can also learn from New Zealand and Spain by designating no-take or no-intrusion MPAs outside the fisheries management context to respond to particularly pressing, species-specific crises among certain marine mammals—as New Zealand did with the Hector's dolphin and Hooker's sea lion.

Third, the U.S. approach to designation of no-take and no-intrusion MPAs needs to be coordinated within and outside the United States to ensure that the designated locations of the MPAs do not amount to "winning the battle, but losing the war." Marine mammal protection is an international crisis that requires a cooperative, international response. Therefore, increasing the number of MPA designations in the United States to afford greater protection to marine mammals must be managed in a way that acknowledges the regional and international nature of these species' habitats.[347] Consequently, regional arrangements such as those involved in the linking of carbon trading regimes, in which two or more nations cooperatively shoulder a common burden and respond to a common international crisis, need to be undertaken for marine mammal populations worldwide. This type of cooperative regional response can be undertaken with or

[347] The EO expressly recognizes this objective. *See supra* notes 303–08 and accompanying text.

without an overarching international treaty regime directing such action.

An international system of MPAs would need to be fully integrated with other ocean and fisheries management initiatives. Unlike the Ramsar Convention for Wetlands of International Significance[348] and the World Heritage Convention,[349] mere designation of MPAs through an international treaty process would not be adequate because the significance of MPAs is so widespread and interrelated with other aspects of ocean management. An MPA designation has impacts on fishing, navigation, recreation, tourism, water quality protection, and the protection of other water resources, such as coral reefs and marine mammals. An appropriate first step, as noted above in the domestic context with an MPA amendment to the Magnuson-Stevens Act, would be to include an MPA dimension to the U.N. Fish Stocks Agreement. The only way the use of MPAs can be successful on the international level is through stakeholder buy-in on an incremental, regional basis. Therefore, tying marine mammal protection together through the management of MPAs by RFMOs at the regional level would benefit the fisheries and the marine mammals.

There are two important reasons why the time is right for the United States to move in this direction with MPAs, regardless of the choice of regulatory format. First, the United States is a party to the U.N. Fish Stocks Agreement, which has arguably been a model of success in the context of regional management of highly migratory and straddling fish stocks.[350] Second, the country is moving toward UNCLOS accession,[351] which would enable the United States to engage in broader international consensus-building in developing an international system of MPAs.[352]

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348 Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Feb. 2, 1971, 996 U.N.T.S. 243, *available at* http://sedac.ciesin.org/entri/texts/ramsar.wetlands.waterfowl.habitat.1971.html (entered into force Dec. 21, 1975).

349 Convention Concerning the Protection of the World Cultural and Natural Heritage, Nov. 16, 1972, 1037 U.N.T.S. 151, *available at* http://whc.unesco.org/archive/convention-en.pdf.

350 *See generally* David A. Balton & Holly R. Koehler, *Reviewing the United Nations Fish Stocks Treaty*, 7 SUSTAINABLE DEV. L. & POL'Y 5 (2006).

351 *See* Jeremy Rabkin & Ben Lerner, *Message from the Dolphins?*, WASH. TIMES, June 29, 2008, at B03.

352 David J. Bederman, *The Old Isolationism and the New Law of the Sea: Reflections on Advice and Consent for UNCLOS*, 49 HARV. INT'L L.J. ONLINE 21, 23 (2008), http://www.harvardilj.org/attach.php?id=133.

CONCLUSION

The era of "out of sight, out of mind" mismanagement of ocean resources is coming to a slow and welcome end. The new ecosystem-based era of ocean conservation efforts gives reason for hope that the status of marine mammal protection will improve in the United States and internationally. The United States needs to embrace some of the regulatory strategies of leading countries with respect to the use of MPAs to protect marine mammals and become part of an international effort for enhanced use of MPAs.

MPAs, especially no-take MPAs, are an essential and underutilized tool to protect marine mammals in the United States. These areas serve functions that go beyond promoting the sustainability of marine mammal populations. No-take MPAs protect marine biodiversity by restricting certain fishing gear and promoting sustainability of fish stocks that are easily over harvested. No-take MPAs also promote recreation and tourism opportunities as a result of the richness of marine mammal species found within the area. In addition, MPAs can enhance the applicability of existing federal statutory schemes, such as the Marine Mammal Protection Act and the Endangered Species Act.

Several failures in existing MPAs have impeded these mechanisms from achieving more coverage in U.S. waters and more protection of marine mammals. First, there is a lack of proper management in setting objectives for, monitoring, and enforcing regulations. Another major flaw has been the lack of a national system of MPAs. This deficiency has resulted in a wide range of types of and purposes for MPAs, a lack of public involvement in the implementation and management of MPAs, and other consequences outside the boundaries of MPAs that have the potential to impact the conservation of marine mammals.

These common pitfalls notwithstanding, New Zealand and Spain have taken leadership roles in using MPAs effectively to promote marine mammal conservation. First, New Zealand and Spain have managed to address marine mammal threats and have been able to implement solutions that have helped increase the populations of decimated species. In addition, both countries have established their MPAs in effective locations and with appropriate protection levels. Moreover, Spain has been exceptionally successful with monitoring its existing and potential future MPAs, whereas New Zealand has excelled in implementing a highly effective national system of MPAs.

Extensive MPA networks throughout the world will have an impact on navigation, commerce, and fishing. But the crisis facing the world's oceans has reached the point where the time has come for a new ocean ethic. A similar turning point occurred in the United States in the 1970s when industrial pollution practices were reeled in through an arsenal of federal environmental statutes enacted at that time. When these laws became effective, they had a profound effect on business, which prompted the development of environmentally sensitive business practices.

Similarly, in the ocean context, countries with some of the largest EEZs in the world—New Zealand, Australia, and Canada—have taken leadership roles in this new era of ocean management through the use of MPAs and the notion of ecosystem-based management. This ambitious strategy was not always popular with the affected stakeholders—often causing uproars among them. Ultimately, however, ocean management adjustments had to be made to ensure the sustainability of the ocean resources at stake, and these new approaches are the most effective means of addressing this crisis. The United States also has one of the world's largest EEZs and it needs to join these nations in a leadership role to advance this effort.

Marine mammals stand to gain tremendously with the increased use of no-take MPAs and the corresponding increased focus on regional ecosystem-based management. No-take MPAs can be thought of as the antidote to the world's collective amnesia about baseline biodiversity in the oceans. These areas are a scientific benchmark of "normal" conditions against which change can be measured in the larger—and more exploited—areas of the oceans at large. It is comparable to the practice of setting aside wilderness areas on land—if nothing is left intact, it is very difficult to detect when significant degradation has occurred.[353] Unfortunately, MPAs lag significantly behind their terrestrial counterparts in the United States—4.6% of U.S. land is designated as wilderness areas,[354] whereas less than 0.1% of U.S. waters is currently classified as some form of MPA.[355]

A new regulatory regionalism has become a viable force in ocean management, driven largely by the context of ecosystem-based

[353] Warne, *supra* note 6, at 81.

[354] PEW OCEANS COMM'N, AMERICA'S LIVING OCEANS: CHARTING A COURSE FOR SEA CHANGE, 15 (2003), *available at* http://www.sml.cornell.edu/forms/oceans_summary.pdf.

[355] *See* MBNMS Resource Management Issues, *supra* note 21.

regulation. Marine mammals will enjoy optimum protection in U.S. waters, and beyond, from a coordinated and enhanced use of national networks of MPAs, which will trigger a greater need for cooperative, regional, and ecosystem-based regulation. Marine mammals will once again thrive when they are protected by a regulatory system that acknowledges and supports these species' relationships with their ecosystems.