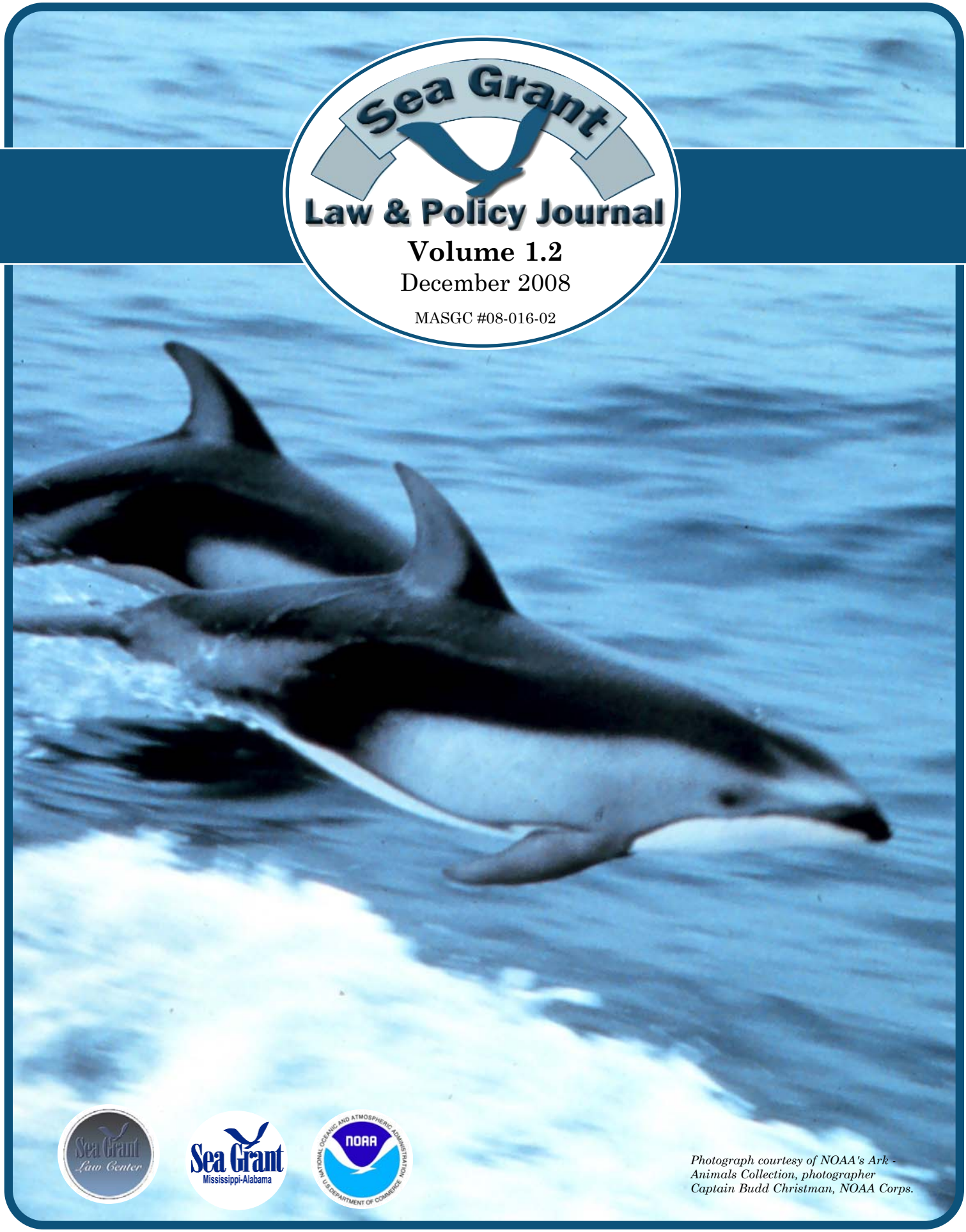

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Photograph courtesy of NOAA's Ark - Animals Collection, photographer Captain Budd Christman, NOAA Corps.

Editor's Note

The second issue of the Sea Grant Law and Policy Journal features five articles authored by law students from across the country. The Journal is proud to feature of the work of these young professionals.

Brian Shrader summarizes federal and international regulation of marine diesel engines on ocean-going vessels, such as container ships, cruise ships, and tankers, before and after the U.S. ratification of MARPOL Annex VI. EPA has regulated marine diesel engines for years, so implementation of Annex VI will not result in drastic regulatory changes. However, there will be some small changes and new opportunities for state governments that individuals involved with the shipping industry should be aware of.

Melanie King examines the failure of the international fisheries regime to protect traditional fishing communities from commercial fishing pressures. Enforcement of international treaties and regional management regimes is often quite limited and has lead to widespread illegal, unregulated, unreported (IUU) fishing. King highlights several problems with the international fishery framework and offers several possible solutions to protect traditional communities and fisheries worldwide.

Emily Brand analyzes a recent petition filed by the Center for Biological Diversity, Oceana, and Turtle Island Restoration Network asking the National Marine Fisheries Service to designate the Pacific leatherback's foraging waters in the Pacific Ocean as critical habitat under the Endangered Species Act (ESA). Brand asserts that although the critical habitat designation would provide the best overall protection for species, federal fisheries law may afford a more direct means to curtail the most serious threat to the Pacific leatherback, the incidental take of turtles by commercial fishing boats.

John-Austin Diamond examines whether the federal Fishery Management Councils (FMC) are unconstitutional. Under the Appointments Clause of the U.S. Constitution, Congress may only vest the appointment of inferior officers in the President, in the courts, or in department heads. Diamond argues that FMC members are inferior officers, which raises some concerns since approximately 25% of members are appointed by someone other than the President, the judiciary, or a federal department head.

Finally, Alicia Schaffner provides a detailed overview of the lengthy battle between the Natural Resources Defense Council and the U.S. Navy over the use of mid-frequency sonar in training exercises. The U.S. Supreme Court weighed in on the matter in November 2008 when it remanded the case to the lower courts on procedural grounds. The issues raised in this litigation are likely to reoccur as the Navy begins planning training exercises in other areas.

Stephanie Showalter, Director, National Sea Grant Law Center

Editorial Board

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U.S. Regulation of Large Marine Diesel Engines under MARPOL Annex VI

Brian Shrader[1]

I. Introduction

Balancing valuable maritime shipping interests with environmental concerns is one of the biggest challenges facing policymakers charged with regulating air pollution from large marine diesel engines in the U.S. and around the world. A fragmented, country-by-country approach raises the specter of inconsistent regulatory regimes – a highly ineffective and burdensome state of affairs.

Achieving uniform regulation of shipping is difficult because of the global movement of people and goods through many sovereign jurisdictions. U.S. participation in the effort to globalize an international standard for air pollution from ships through Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL)[2] can serve commercial and environmental interests by increasing worldwide compliance and easing the burden on regulated entities.

Marine diesel engines, used on a wide range of vessels, are significant contributors to air pollution in many coastal areas. Diesel engine exhaust emissions contain a number of substances which are potentially hazardous to human health and the environment, including nitrogen dioxide (NOx), sulphur dioxide (SOx), and particulate matter. NOx causes ground level ozone,[3] acid aerosols, acid rain, nutrient overload, and visibility impairment, and also contributes to global warming.[4] SOx contributes to respiratory illness and the formation of acid rain, and also impairs visibility.[5] Diesel exhaust is especially

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[2] The International Convention for the Prevention of Marine Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78), Nov. 2, 1973, 12 ILM 1319 (1973), as amended Feb 17, 1978, 1340 U.N.T.S. 184.
[3] "Smog" is mostly ground level ozone.
[4] *See* Environmental Protection Agency, Six Common Air Pollutants: Chief Causes for Concern - NOx, http://www.epa.gov/air/urbanair/nox/chf.html (last visited Dec. 1, 2008).
[5] *See* Environmental Protection Agency, Six Common Air Pollutants: Chief Causes for Concern – SO_2, http://www.epa.gov/air/urbanair/so2/chf1.html (last visited Dec. 1, 2008).

problematic in ports where ships, trucks, and heavy equipment often run twenty-four hours per day.

This article summarizes federal and international regulation of marine diesel engines on ocean-going vessels, such as container ships, cruise ships, and tankers. These ships propel through the water using large marine diesel engines, ranging in size from 2,500 to 70,000 kilowatts (kW).[6] In addition, these ships carry a variety of auxiliary diesel engines from small generators to large engines.

II. What is MARPOL?

MARPOL arose out of the efforts of the International Maritime Organization (IMO), a specialized agency of the United Nations, to protect the environment from operational and accidental pollution from ships.[7] The IMO utilizes conventions, codes, and guidelines to address international maritime issues.[8] Member States are encouraged to ratify these conventions and incorporate the standards into their domestic legislation.[9] The IMO believes that it can best accomplish its goals of safety, efficiency, and cleanliness by creating standards that all shipping nations adopt and adhere to.[10]

MARPOL emerged in the 1970's from a combination of two treaties. The first convention, adopted by the IMO on November 2, 1973, covered pollution from oil, chemicals, sewage, garbage, and harmful substances in packaged form but never went into effect.[11] IMO conventions must be ratified by a particular number of States representing a certain percentage of the world's shipping fleet before they will come into force.[12] The 1973 Convention required ratification by fifteen States with a combined merchant fleet representing over fifty percent of the world's shipping.[13] As of 1976, just three States representing less than one percent of the world's merchant shipping fleet had ratified the 1973 Convention.[14] In time, a 1978 protocol did eventually enter into force on October 2, 1983 and it absorbed the parent convention.[15]

MARPOL contains six Annexes addressing specific areas of concern to the international maritime pollution problem. Annex I: Regulations for the Prevention of Pollution by Oil and Annex II: Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk

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[6] DieselNet.com, Emission Standards: US: Marine Diesel Engines, http://www.dieselnet.com/standards/us/marine.php (last visited Dec. 1, 2008).
[7] *See* International Maritime Organization, Introduction to IMO, http://www.imo.org/home.asp?topic_id=3 (last visited September 1, 2008).
[8] *Id.*
[9] *Id.*
[10] *Id.*
[11] *See* International Maritime Organization, MARPOL, http://www.imo.org/Conventions/contents.asp?doc_id=678&topic_id=258#6 (last visited Sept. 1, 2008).
[12] *Id.*
[13] *Id.*
[14] *Id.*
[15] Ratifications increased following a series of oil tanker accidents in the late 1970's and a procedural change that allowed countries to become parties to MARPOL by only ratifying Annex I. *Id.*

became effective on October 2, 1983.[16] Annex III: Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form entered into force in July 1992. Annex IV: Prevention of Pollution by Sewage from Ships became effective on September 27, 2003 and Annex V: Prevention of Pollution by Garbage from Ships on December 31, 1998. Annex VI: Prevention of Air Pollution from Ships, which is the main focus of this paper, took effect on May 19, 2005.

III. MARPOL Annex VI Regulation

Annex VI regulates emissions of NOx[17] and SOx,[18] prohibits intentional emissions of ozone depleting substances, regulates onboard incinerators, and sets standards for tanker vapor emissions.[19] Annex VI does not distinguish between recreational and commercial vessels, or between international and domestic vessels.[20] A vessel is only exempt from compliance when assisting with rescue operations or if suffering from damage caused without the fault of the vessel operator.[21]

Annex VI seeks to limit emissions of NOx and SOx by establishing standards concerning emissions and fuel content. Under Annex VI, NOx standards apply to marine engines rated above 130 kW if the vessel was constructed, or the engine has undergone major conversion,[22] on or after January 1, 2000.[23] Annex VI relates NOx emissions standards to engine-rated crankshaft speed.

Engine Speed	NOx Emission Limit g/kW-h
Less than 130 rpm	17.0
130-1999 rpm	45.0 x [engine speed]$^{-0.2}$
2000 rpm and above	9.8

The NOx Technical Code[24] outlines the testing parameters for compliance with Annex VI standards. Regulated vessels can meet NOx standards by utilizing exhaust gas cleaning systems or any other equivalent method that will reduce emissions to within the specified range.[25]

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[16] Annex I and Annex II went into force with MARPOL 73/78. Annex III, IV, V, and VI were added subsequently.
[17] Annex VI, Chapter III, Reg. 13.
[18] *Id.*, Reg. 14.
[19] Regulations on these last three issues are beyond the scope of this paper, but are found in Annex VI, Reg. 12, 16 and 15 respectively.
[20] Vessels include fixed and floating platforms, except in respect to emissions directly relating to drilling, processing, or production.
[21] Annex VI, Chapter I, Reg. 3.
[22] The major conversion clause is significant because it extends the scope of the controls to engines installed on ships prior to January 1, 2000. According to Annex VI, major conversion is defined as: replacement with a new engine built on or after 1/1/2000, increasing engine output by more than ten percent, or substantial modification. Substantial modification encompasses operational or technical modifications which could increase NOx emissions.
[23] Annex VI, Chapter III, Reg. 13, paragraph 1(a).
[24] Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines adopted by Conference Resolution 2 at the 1997 Conference of Parties. *See also* Annex VI, Chapter 1, Reg. 2(5).
[25] Annex VI, Chapter III, Reg. 13, paragraph 3(b).

Sulfur content in fuel is limited to 45,000 parts per million (ppm) irrespective of fuel grade or machinery used.[26] The IMO is required to monitor the worldwide sulfur content average.[27] Suppliers must document sulfur content of the fuel in a bunker delivery note, which must be retained onboard the vessel for a period of three years along with a representative sample of the fuel that must be retained for twelve months.[28] In special SOx Emission Control Areas (SECA) the sulfur content in fuel cannot exceed 15,000 ppm.[29] Ships burning fuel with higher sulfur content may enter a SECA only if the engine has been outfitted with an exhaust cleaning system or other technology such as segregated bunker capacity and the ability to switch upon entering to lower sulfur fuel.[30] State parties can propose new SECAs which are evaluated based on the costs of reducing sulfur from ships compared to land-based control as well as the impacts on shipping and trade.[31] Amendments to Annex VI established the Baltic Sea SECA in 1997 and the North Sea SCEA in 2005.[32]

Compliance with Annex VI is the responsibility of vessel owners/operators. Enforcement of MARPOL is the responsibility of signatory States acting within their own jurisdictions. Enforcing parties conduct surveys to ensure that vessels and engines comply with the requirements of Annex VI. Survey requirements apply to vessels over 400 gross tons and to floating drilling rigs and other platforms.[33] If a vessel meets the Annex VI criteria, the surveying State issues an International Air Pollution Prevention Certificate (IAPP). If a vessel is determined to be operating with equipment not corresponding with the IAPP, the State with jurisdiction over the waters in which a vessel is operating may take action.

Vessel surveys take place throughout the life of a vessel and include:

- Initial surveys occurring before the ship enters service or before issuing an IAPP for the first time to ensure that the equipment complies with the standards;[34]
- Periodic surveys occurring at least every five years after the initial survey to ensure that no modifications have been made that would take equipment out of compliance and require the re-issuance of the IAPP;[35]
- Intermediate surveys occurring at least once during the period between issuance of an IAPP and the periodic surveys to ensure that equipment is still compliant;[36]
- Unscheduled surveys occurring periodically, unless annual periodic surveys are required, in which case unscheduled surveys are not obligatory;[37]

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[26] *Id.* Reg. 14, paragraph 1.
[27] *Id.* paragraph 2.
[28] *Id.* paragraph 5; Reg. 18, paragraph 3-6.
[29] *Id.* Reg. 14, paragraph 4(a).
[30] *Id.* paragraph 4(b), (c).
[31] Annex VI, Appendix III.
[32] U.N. Oceans Atlas, Particularly Sensitive Sea Areas, http://www.oceansatlas.org/unatlas/issues/pollutiondegradation/special_areas/sensitive_sea_areas.htm (last visited Sept. 1, 2008).
[33] Ships less than 400 gross tons may be checked by the enforcing administration by appropriate means to ensure compliance. *See* Annex VI, Chapter II, Reg. 5, paragraph 1(a), 2.
[34] Annex VI, Chapter II, Reg. 5, paragraph 1(a).
[35] *Id.* paragraph 1(b).
[36] *Id.* paragraph 1(c).

- Pre-certification surveys occurring prior to an engine installment onboard a vessel to ensure compliance with NOx limits (An engine meeting the standards will be issued an Engine International Air Pollution Prevention Certificate (EIAPP) in accordance with the NOx Technical Code.);[38]
- Re-survey/certification is required (1) if inspections and surveys are not carried out within the specified periods; (2) if significant alterations occur to the equipment, systems, fittings, arrangements or material to which Annex VI applies; or (3) upon transfer of the ship to a flag of another State;[39] and
- Cautionary inspections may be conducted if there are grounds to believe that the vessel's master or crew is not familiar with essential procedures relating to prevention of air pollution.[40]

While ships are on international voyages, they must carry their IAPP onboard, which serves as *prima facie* evidence that the ship complies with the Convention. To be IAPP-compliant, ships must possess the EIAPP or Statement of Compliance,[41] in addition to a Technical File,[42] and a Record Book of Engine Parameters.[43] If there are clear grounds for believing the ship is not compliant with Annex VI or its certificates, or if a ship does not possess a certificate, the enforcing party may detain the ship until satisfied that it can travel to sea without unreasonably harming the environment.

IV. Domestic Implementation

A. Maritime Pollution Prevention Act of 2008

The United States implemented Annex VI by passing the Maritime Pollution Prevention Act of 2008 (the Act)[44] which amended the Act to Prevent Pollution from Ships.[45] The Act passed the House and Senate in March 2007 and June 2008, respectively, and the President signed the Act into law on July 21, 2008. The Act applies to vessels flying the flag of, or under the authority of, a party to Annex VI in U.S. waters while at or in transit to or from ports, shipyards, offshore terminals, internal waters, and the U.S. Exclusive Economic Zone.[46] The Administrator of the EPA (Administrator) is responsible for issuing EIAPP

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[37] *Id.* paragraph 5.
[38] *Id.* paragraph 4. *See also* Press Release, International Maritime Organization, *IMO says ship engines should comply with NOx code from 1 January 2000*, http://www.imo.org/dynamic/mainframe.asp?topic_id=69&doc_id=560 (last visited Sept. 1, 2008).
[39] Annex VI, Chapter II, Reg. 9, paragraph 4.
[40] *Id.* Reg. 10, paragraph 1.
[41] Prior to U.S. implementation of Annex VI, U.S. manufacturers may have obtained a Statement of Voluntary Compliance from the EPA.
[42] The Technical File must be approved by the vessel's flag state, including any noted changes, and kept with the engine. Any changes to the engine, and thus to the file, must be approved by the flag state.
[43] The Record Book applies when the NOx measurements are to be done onboard, and is required by the NOx Technical Code for a record of changes to NOx critical components or setting. Unlike the Technical File, the vessel's crew can complete it.
[44] Pub. L. 110-280, 122 Stat. 2611 (July 21, 2008).
[45] 33 U.S.C. 1901 *et seq.*
[46] *Id.* § 1902.

certificates.[47] The Secretary of the Department in which the Coast Guard operates, currently the Department of Homeland Security, inspects vessels for compliance.[48] Either the Secretary or the Administrator can undertake enforcement actions if there is an indication of a violation.[49] In addition, like many other environmental laws, the Act expressly allows any adversely affected person to bring an action on his or her behalf against the Administrator for failure to perform any nondiscretionary act or duty.[50]

The United States deposited an instrument of ratification with the IMO on October 8, 2008 and Annex VI will enter into force for the United States on January 8, 2009.[51] At that time the U.S. will be able to issue IAPPs to ships entitled to fly flags of States which are parties to Annex VI.[52]

B. EPA Regulation of Air Pollution from Ships

Under the Clean Air Act, the EPA has a duty to protect air quality from all harms, including marine diesel engine emissions. Section 213(a)(3) of the Clean Air Act[53] instructs the EPA to set standards that achieve the greatest emission reductions through the use of the best technology available to the regulated industry. The EPA reviews and revises the standards periodically in light of industry developments and effectiveness.

When dealing with marine diesel engines, the EPA divides engines into three categories based on per-cylinder displacement. Category 1 engines have "a rated power greater than or equal to 37 kilowatts and a specific engine displacement less than 5.0 liters per cylinder."[54] Category 2 engines have "a specific engine displacement greater than or equal to 5.0 liters per cylinder but less than 30 liters per cylinder."[55] Category 3 includes the largest engines with per cylinder displacement greater than or equal to 30 liters.[56] Standards and regulations pertaining to marine engines get progressively stricter in intervals, called Tiers, which increase numerically starting at Tier 1. As technology improves and the EPA determines that technology warrants a stricter standard, the next Tier of standards enters into effect. Existing Tiers reflect the IMO's work under Annex VI; however, Annex VI was not binding in the U.S. when the Tiers went into effect.

1. The 1999 Rule

[47] *Id.* § 1903.
[48] *Id.* § 1907(f).
[49] *Id.*
[50] *Id.* § 1910.
[51] Protocol of 1997 to Amend the International Convention for the Prevention of Pollution from Ships, 1973, as Modified by the Protocol of 1978 relating thereto, Ratification by the United States, PMP.7/Circ.21 (Oct. 15, 2008), *available at* http://www.imo.org/includes/blastData.asp/doc_id=10431/21.pdf (last visited Dec. 1, 2008).
[52] *See* Annex VI, Reg. 7, paragraph 4.
[53] 42 U.S.C. § 7547(a)(3).
[54] 40 C.F.R. § 94.2(b).
[55] *Id.*
[56] *Id.*

In 1999, the EPA promulgated a rule entitled Control of Emissions of Air Pollution from New Compression-Ignition Engines at or above 37 kilowatts (1999 Rule).[57] The new regulations governed both propulsion and auxiliary engines.[58] Although the rule did not adopt the Annex VI standards, the EPA encouraged manufacturers, through voluntary measures referred to as Tier 1 standards, to build engines that were compliant with Annex VI. The EPA also adopted a schedule for future implementation of a set of mandatory Tier 2 standards for Category 1 and 2 engines that would be similar to the standards for land-based diesel engines.

Notably, the EPA expected Category 3 engines to meet voluntarily the Annex VI standards and did not establish a schedule for implementation of stricter standards. This resulted in the largest engines being left without finalized emission standards. In addition, the 1999 Rule included a Foreign-Trade Exception applicable to all U.S. vessels that spent less than 25% of their total operating time within 320 km of U.S. territory and to vessels not operating between two U.S. ports.[59] This exception also allowed qualifying vessels with Category 3 propulsion engines to exempt other onboard auxiliary Category 1 and 2 engines from national emission requirements. This created a loophole that allowed some vessels to operate their propulsion and auxiliary engines while in U.S. jurisdiction without regulation.

2. The 2003 Rule

A lawsuit over the EPA's decision to leave the largest engines unregulated resulted in a court settlement requiring the EPA to develop Category 3 NOx emission limits.[60] In 2003, the EPA established Tier 1 emission standards for Category 3 engines flagged or registered in the U.S. [61] Compliance was mandated by 2004. The Tier 1 NOx emission standards were equivalent to the Annex VI limits, and were to be achieved using engine-based controls without the need for exhaust treatment. The rule also committed the EPA to more stringent Tier 2 standards for Category 3 engines by April 27, 2007.[62] The 2003 rule also abolished the 1999 Rule's Foreign-Trade Exception.[63]

The 2003 Rule is applicable to owners, operators, and manufacturers of marine diesel engines. Unlike Annex VI, which targets ship owners and operators, the EPA rule focuses on manufacturers. The EPA requires ship operators to operate the engine within the certifiable parameters (including adjustable parameters) and maintain all records of

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[57] Control of Emissions of Air Pollution From New Marine Compression-Ignition Engines at or Above 37 kW, 64 Fed. Reg. 73300 (Dec. 29, 1999).
[58] Exceptions to the 1999 Rule's standards included engines in recreational vessels, certain land-based engines modified for marine applications, competition engines, military vessels, and other specific applications such as testing, displaying, and exporting.
[59] 64 Fed. Reg. 73304-05.
[60] *Earth Island Inst. v. EPA*, No. 00-1065, Settlement Agreement (D.C. Cir. 2000), *available at* http://www.epa.gov/otaq/regs/nonroad/largesi/setlemnt.pdf (last visited Dec. 1, 2008).
[61] Control of Emissions From New Marine Compression-Ignition Engines at or Above 30 Liters Per Cylinder, 68 Fed. Reg. 9746 (Feb. 28, 2003).
[62] This deadline was challenged in *Bluewater Network v. EPA*, 372 F.3d 404 (D.C. Cir. 2004) as being too low of a standard, but the court upheld the rule relying on the EPA to publish the new rule by April 27, 2007.
[63] 64 Fed. Reg. 9751.

maintenance, repair, and adjustment as it relates to emissions. The vessel owner must complete an annual compliance statement.

Most of the burden of the 2003 Rule falls on engine manufacturers. To certify their engines, manufacturers must:

- Divide engines into "engine families" with similar characteristics;
- Test the highest emitting engine configuration within the family;
- Determine deterioration rate for emissions and apply that rate to the "zero-hour" emission rate;
- Determine the emission-related maintenance that will be necessary to keep the engines in compliance;
- Submit the test data to the EPA in an "application for certification;"
- Demonstrate prior to production that engines will comply throughout their useful life;
- Warrant to purchasers that engines will comply throughout their useful life; and
- Specify how the operator should adjust the engine and testing protocols.[64]

Engine manufacturers who were already complying with the Annex VI NOx Technical Code specifically needed to examine their methods of emission testing to ensure compliance with the EPA regulatory scheme.

The EPA justified the short lead-time between announcement of the 2003 rule and the 2004 compliance date based on the fact that manufacturers were already meeting Annex VI standards and, therefore, already Category 3 Tier 1 compliant.[65] The EPA chose not to initially set standards higher than Annex VI because of possible delays in achieving greater environmental benefits including: recognition that manufacturers can achieve additional reductions with more lead time, questions pertaining to applicability of advanced technologies that existed at that time, and the hope of future pursuit of more stringent international standards.[66] The anticipated creators of the more stringent Tier 2 standards were to further assess changes in technology and consider application to engines on foreign vessels entering U.S. ports by an April 27, 2007 deadline.[67]

Interestingly, when the April 27, 2007 deadline arrived for the EPA to promulgate a new Tier of emission standards for Category 3 engines, the EPA decided instead to propose a new deadline of December 17, 2009.[68] The EPA published this decision as a direct and final rule because it did not anticipate adverse comments on what they saw as a noncontroversial issue.[69]

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[64] 68 Fed. Reg. 9769-73.
[65] *Id.* at 9749.
[66] *Id.* at 9748. *See also Bluewater Network v. EPA*, 372 F.3d 404 (D.C. Cir. 2004) (holding that EPA's failure to adopt stricter standards was not arbitrary and capricious, and finding the challenge to deferral of foreign-flagged vessel regulation to be premature).
[67] 40 C.F.R. § 94.8(a)(2)(ii).
[68] Change in Deadline for Rulemaking To Address the Control of Emissions From New Marine Compression-Ignition Engines at or Above 30 Liters per Cylinder, 72 Fed. Reg. 20977 (proposed Apr. 27, 2007).
[69] *Id.*

However, in September 2007, Friends of the Earth filed a Complaint for Declaratory and Injunctive Relief against the EPA.[70] In the complaint, Friends of the Earth argued that the EPA had violated § 213(a)(3) of the Clean Air Act by failing to meet its deadline and also violated the Administrative Procedure Act by failing to fulfill the non-discretionary duty to create a new Tier of Category 3 standards.[71] The EPA responded to the environmental group's complaint by supporting standards as reflected in its proposal to the IMO for new Annex VI rulemaking.[72]

The EPA is "considering standards for achieving large reductions in NOx and particulate matter (PM) through the use of technologies such as in-cylinder controls, aftertreatment, and low sulfur fuel, starting as early as 2011."[73] The proposed standards consist of two Tiers for NOx emissions and new performance-based SOx standards that reflect technology improvements and expectations. The standards consist of:

- New Particulate Matter and SOx limits applying in 2011/2012 to all ships operating in specific areas defined under the treaty.
- Tier 2 NOx limits for new Category 3 propulsion engines beginning in 2011 (to achieve a 15% to 25% NOx reduction).
- Tier 3 NOx limits for new Category 3 propulsion engines beginning in 2016 applying when ships operate in the Particulate Matter/SOx geographic areas requiring the use of high-efficiency catalytic aftertreatment emission control technology (to achieve NOx reductions of more than 80%).
- NOx limits for engines built before Jan. 1, 2000 that would achieve a 20% NOx reduction to phase-in beginning 2010/2012.[74]

Given U.S. ratification of Annex VI, the EPA has appropriately shifted focus from domestic rulemaking to amending the international standards set by the IMO. Amendments to Annex VI, if agreed to by a committee or conference, automatically enter into force on a specified date unless an agreed number of States object by a certain time in a process known as "tacit acceptance."[75] This acceptance procedure greatly eliminates delays associated with waiting for States to vote for approval.[76] In the past, either IMO's Marine Environment Protection Committee, or a Conference of Parties to MARPOL, has adopted amendments pending the acceptance procedure.[77]

C. Criticisms of Current Domestic Regulations

[70] *Friends of the Earth v. EPA*, 1:07-cv-01572, Complaint for Declaratory and Injunctive Relief (D. D.C. Sept. 5, 2007).
[71] *Id.*
[72] Advanced Notice of Proposed Rulemaking, Control of Emissions From New Marine Compression-Ignition Engines at or Above 30 Liters per Cylinder, 72 Fed. Reg. 69522 (Dec. 7, 2007)*; See also* EPA, IMO MARPOL Annex VI Amendments, Main U.S. Submittals to Amendment Process, http://www.epa.gov/otaq/oceanvessels.htm#imo (last visited Feb. 2, 2009).
[73] 72 Fed. Reg. 69522.
[74] *Id.*
[75] IMO, Conventions, http://www.imo.org/Conventions/mainframe.asp?topic_id=148 (last visited Feb. 2, 2009).
[76] *Id.*
[77] *Id.*

Critics identify at least five procedural and substantive shortcomings concerning the current 2003 Rule. First, the 2003 Rule does not regulate foreign-flagged vessels.[78] This lack of regulation violates the intent of the Clean Air Act[79] and is of great concern due to the high number of U.S. shipping interests avoiding the high costs of registering under a U.S. flag and more stringent U.S. environmental and labor laws by registering under the flag of another country.[80] The result is that the EPA does not regulate truly foreign vessels or any U.S. interests operating under "flags of convenience."[81]

Second, the 2003 Rule failed to set any standards that would regulate the sulfur content of marine fuel. Third, the lack of a higher standard for Category 3 engines has created controversy, especially considering that these engines burn bunker fuel which can produce much higher pollutants than other highly-regulated diesel engines.[82]

Fourth, the shipping industry has argued that any differences between the EPA and Annex VI will result in disadvantages to U.S. flagged vessels because of the need for dual certifications and compliance strategies. Finally, some critics claim the EPA has not met its burden of endorsing a "technology forcing standard" which would consider, and require, the highest technology available when determining emission limits.[83] U.S. implementation of Annex VI would resolve at least four of these issues while leaving the technology questions for resolution in the proposed rulemaking.

V. Anticipated Change in Compliance and Enforcement

The Annex VI standards should be easy to achieve for those manufacturers already achieving and certifying under the standards via the Voluntary Statement of Compliance Program.[84] Although similar, there are four major areas of difference that are important to note between the existing EPA standards and Annex VI emission requirements: 1) the EPA allows, while the Annex requires, witness testing; 2) the EPA holds the manufacturer primarily responsible, while the Annex focuses on the vessel owner/operator; 3) the EPA specifies a broader range of test temperatures in order to represent normal operations; and 4) the EPA standards are based on the date of first full assembly, while the Annex focuses

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[78] *But see, Bluewater Network v. EPA*, 372 F. 3d 404 (D.C. Cir. 2004) (holding that EPA's deferral on its decision to regulate foreign vessels was not arbitrary and capricious because the vessels were already regulated by a similar international standard).

[79] Sandra Snyder, *EPA's Category 3 Marine Emissions Standards: Mimicking MARPOL Annex VI or Mocking the Clean Air Act?*, 71 BROOK L. REV. 1065, 1081-1083 (2005).

[80] *Id.* at 1089

[81] A flag of convenience, or open registry, ship is a ship that flies a flag of a country other than the country of ownership. Given the financial advantages, many U.S. interests operate under flags of convenience. Over 90% of the vessels in U.S. ports are foreign flagged, and therefore not regulated under the EPA's rule. *Id.* at 1089-90.

[82] *Bluewater Network v. EPA*, 372 F. 3d 404, 407 (D.C. Cir. 2004).

[83] *Husqvarna AB v. EPA*, 254 F. 3d 195, 201 (D.C. Cir. 2001); *see also* Snyder, *supra* note 79, at 1084-85.

[84] Prior to the Annex going into force the EPA set up a process for manufacturers to obtain a Statement of Voluntary compliance which can be exchanged for an EIAPP. 68 Fed. Reg. 9746, 9757.

on the start date of vessel manufacturing.[85] In addition, the U.S. may set alternative standards for those vessels operating exclusively in its jurisdiction.

For foreign manufacturers complying with Annex VI, the additional work needed to comply with EPA standards would depend on their current emissions testing procedures. Manufacturers would need to show that, prior to production, engines would comply for their useful life; warrant to purchasers that engines would operate in compliance for their useful life; perform a production test after installation; install onboard measurement systems; specify how the operator should adjust and use the engine; and specify how proper adjustments should be verified through testing. In addition, manufacturers would need to supply operators with a technical file and ensure properly witnessed engine testing.

VI. Conclusion

International and federal standards on propulsion engines are not the only way to reduce shipping's environmental impacts while also considering economic concerns. Some ports have adopted pollution reduction policies aimed at changing behaviors on site, while maintaining the desired level of economic activity. The Port of Long Beach has been effectively utilizing a lease, which shipping interests must sign with the ports, to improve environmental standards. For example, in 2006, the Port entered into a lease agreement with International Transportation Service, Inc. which requires ships to use shore-side equipment while at the ITS terminal and replace cargo-handling equipment.[86] The lease agreement is expected to reduce air pollutants by 90% at the Port's third-largest cargo terminal.[87] The EPA has applauded pollution-reducing policies at the Port of Long Beach.[88] The interests of ports, both economically and environmentally, will be best served by taking an active role in regulations.

State governments enacting legislation to improve the environmental regulations pertaining to maritime air pollution have not always had the same success. A federal court recently held that federal marine diesel regulations preempted states from imposing emission standards that are different or more stringent.[89] Specifically, challenges to

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[85] See Appendix A, at page 14, for additional detail about the differences between the EPA's voluntary program and Annex VI.

[86] Press Release, The Port of Long Beach, *Board Votes for Landmark "Green Lease," available at* http://www1.polb.com/news/displaynews.asp?NewsID=62 . Other examples of port policies include switching ocean-going vessels to cleaner fuels, requesting vessels to shut off engines and use land based power while at port, speed reduction, as well as utilizing cleaner locomotives and work trucks. *See* Press Release, Port of Long Beach, *Port Releases 2006 Air Quality Study: Inventory Underscores Need for Port's Anti-Pollution Initiatives*, http://www.polb.com/news/displaynews.asp?NewsID=421&TargetID=16 (last visited September 4, 2008).

[87] *Id.*

[88] Press Release, EPA, *U.S. EPA honors Port of Long Beach for Environmental Efforts* (June 1, 2005), *available at* http://yosemite.epa.gov/opa/admpress.nsf/a4a961970f783d3a85257359003d480d/dcce9b650a0344cc852570d8005e1763!OpenDocument (last visited Sept. 4, 2008).

[89] *See Pacific Merchant Shipping Association v. Goldstene*, 2008 U.S. App. LEXIS 4171 (9th Cir. Feb. 27, 2008).

California's attempt to limit particulate matter, NOx, and SOx were successful on summary judgment and the court enjoined the state from enforcement.[90]

The Ninth Circuit Court of Appeals held that the state did not have the authority to establish such standards without EPA approval.[91] This decision shows that a state's creation of laws will probably have little or no effect on environmental standards without the EPA creating a plan granting them authority to do so.[92] In fact, the 1970 amendments to the Clean Air Act transferred authority to set air quality standards from the states to the EPA.[93]

States chiefly regulate stationary sources because Congress has preempted state regulation of emission standards of vehicles or road/non-road engines.[94] Notably, states can adopt "in-use" requirements for engines that apply to the use, operation, and movement, but not the engine itself.[95] This allows states to adopt limits on the use of engines, even though they have no authority to specifically set emission standards.

The good news for proactive states, like California, is that when the U.S. becomes a party to Annex VI, there will be opportunity to request designation of their coastal waters as a SECA. The process for setting up a SECA takes into consideration the costs of reducing SOx emissions by ships versus land-based controls, as well as the impact on international shipping.[96] Setting up a SECA requires an amendment to the Annex that will be supported if there is a need to "prevent, reduce, and control" SOx pollution from ships.[97] To begin the process, a party to the Convention must submit a proposal showing: (1) boundaries of the proposed SECA; (2) a description of the areas at risk from high SOx levels; (3) assessment of current effects of SOx from the proposed SECA area; (4) meteorological data on the area; (5) ship traffic in the area; and (6) descriptions of land-based measures to control SOx in the at-risk area.[98]

While the EPA created standards that reflect those of the global community, and seeks to set higher standards both domestically and internationally, it is imperative to understand that U.S. domestic regulation will not be enough. MARPOL's Annex VI should serve as a baseline global standard in order to facilitate global acceptance. Annex VI may not be the

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[90] *Pac. Merch. Shipping Ass'n v. Cackette*, No. S-06-2791 (E.D. Cal. Aug. 30, 2007) (order granting summary judgment).
[91] *Id.*
[92] California's Environmental Protection Agency, however, is making another attempt at similar regulations. *See* California Air Resources Board, Rulemaking to Consider the Adoption of a Proposed Regulation for Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Baseline (July 24, 2008), *available at* http://www.arb.ca.gov/regact/2008/fuelogv08/fuelogv08.htm (last visited Feb. 2, 2009).
[93] 42 U.S.C. § 7409.
[94] *See Engine Mfrs. Ass'n, v. EPA*, 88 F.3d 1075 (D.C. Cir. 1996) (referring to the spectacle of trying to regulate motor vehicles state-by-state since they easily move interstate).
[95] *Id.* (included in the Court's examples were carpool lanes, restricting cars in downtown areas, and programs to control idling of vehicles even when focused on limiting emissions).
[96] Annex VI, Appendix III, § 3.3.
[97] *Id.* § 1.1.
[98] *Id.* § 2.2.

highest standard possible, but it may be the most effective because of its worldwide application.

The EPA can best serve its MARPOL and Clean Air Act obligations by accepting the Annex VI standards, and then lobbying for further change. Implementation of Annex VI will not require drastic change in the industry; however attention to the few changes will be very important to ensure a smooth and economical transition.

Appendix A

Main differences between the EPA's voluntary program and MARPOL Annex VI[99]

Requirements	The EPA's Control Program	MARPOL Annex VI
Liability for In-Use Compliance	Engine manufacturer is responsible for designing and producing an engine that complies with emission standards for the full useful life of the engine. Ship operators must maintain their engines and keep records of maintenance and engine adjustment.	Ship operators are solely responsible for ensuring in-use compliance. Ship operators must maintain engines and keep records of maintenance and adjustments throughout life of engine. Annex VI refers to these records as the Record Book of Engine Parameters.
Durability Demonstration	Engine manufacturer must demonstrate prior to production that a properly maintained and used engine will comply with emission standards of the useful life of the engine.	Manufacturers must demonstrate that the engine meets the standards when it is installed, and there is no durability demonstration required.
Witness Testing	Allowed, but not required	Certain witness requirements.
Test Conditions	Category 3 Engines use Annex VI test procedures with certain modifications to reflect real operating parameters.	Specifies narrow ranges for air and water temperature.
Test Parameters	In order to avoid unrealistic parameter settings, judgment is used in selecting values. Engine maximum test speed is based on the way the engine will operate in-use.	Manufacturers have full discretion to adjust certain engine parameters to appropriate settings, some of which may affect emission levels. Manufacturers may also set a maximum test speed that selectively includes lower-emission operation, even if those speeds do not represent actual operations when installed.
Compliance Date for Standards	Apply on the date engine is fully assembled. This difference in MARPOL and the EPA does not matter since the Annex VI effective date has passed.	Applies standards based on the date that a vessel is manufactured. This difference with the EPA does not matter since the effective date of Annex VI limits has passed.
Parameter Adjustment	Allows manufacturers to specify in their applications for certification which engine settings comply with standards and operators are prohibited from varying beyond these settings.	Prohibits operators from adjusting engine calibrations to be different from those specified by the manufacturer.

[99] Chart information can be found at 68 Fed. Reg. 9774-75.

Coastal Communities and the International Fishery Framework

Melanie King[1]

I. Introduction

The international framework regulating nations and individual fishermen is not deterring overfishing and irresponsible practices affecting coastal communities worldwide. With the rise of the industrial fishing fleet and the exponential growth of the fishing industry, the biomass of the world's fisheries has declined by as much as 80%.[2] As a result of the insufficient international framework, 75% of the world's fish stocks are exploited, overexploited, or depleted.[3] Scientists report that 90% of the world's large ocean fish are commercially extinct and that the world will run out of seafood by 2049.[4]

Often in traditional fishing communities, fish are an important food source, and fishing is a way of life and basis for local cultures. As fish populations decline, stocks move offshore, making them inaccessible to small-scale, artisanal fishermen who do not have equipment to access offshore stocks. The loss of fishing opportunities exacerbates poverty and unravels the social fabric of these communities.

The international framework that regulates fisheries and the fishing industry has serious shortcomings that do not protect traditional fishing communities from commercial fishing pressures. This paper will highlight several deficiencies in the treaties and other agreements that govern the fishing industry.

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[1] J.D., 2008, University of Florida Levin College of Law; B.A., 2004, University of North Carolina at Chapel Hill.

[2] Ransom A. Myers and Boris Worm, *Rapid Worldwide Depletion of Predatory Fish Communities*, 423 NATURE 280, 283 (2003).

[3] UNITED NATIONS FOOD AND AGRICULTURE ORGANIZATION, THE STATE OF WORLD FISHERIES AND AQUACULTURE 2002, *available at* ftp://ftp.fao.org/docrep/fao/005/y7300e/y7300e01.pdf (last visited Feb. 1, 2009).

[4] Boris Worm et al., *Impacts of Biodiversity Loss on Ocean Ecosystem Services*, 314 SCIENCE 787 (2006).

Section II discusses the international framework that regulates States' rights and responsibilities with regard to fishery resources. Many of the relevant treaties contain antiquated fishery management provisions and enforcement is often limited, especially in developing countries. Regional management regimes lack enforcement authority and set unsustainable total allowable catch quotas, inviting overfishing to continue to the detriment of traditional fishing communities.

Section III describes bilateral fishing treaties that sell domestic fishing rights among nations. These agreements often are not negotiated at arms length and do not contain provisions that protect the rights of artisanal fishermen.

Section IV discusses the results of the deficiencies in this framework: illegal, unregulated, unreported (IUU) fishing. Without adequate enforcement mechanisms in treaties and with limited resources to police vast ocean territories, illegal fishing in developing coastal nations threatens the livelihoods of traditional fishers using sustainable methods. The European Union's (EU) irresponsible fishing practices illustrate the global shortcomings and are used as examples several times throughout this paper.

While Sections I through IV highlight several concerns with the international fishery framework, Section V describes several potential solutions that can protect traditional communities and fisheries worldwide from many of these problems. Nations should enforce existing multi-lateral treaties, employ precautionary approaches to protect their stocks, and give artisanal fishermen priority access to stocks.

II. International Framework for Fisheries Regulation

A. United Nation Convention on the Law of the Sea and Other Treaties

Modern law of the sea is governed by several international agreements, including the 1982 United Nations Convention on the Law of the Sea (UNCLOS), the 1958 Geneva Convention on the Territorial Sea and Contiguous Zone (Territorial Sea Convention), the 1958 Geneva Convention on the Continental Shelf (Continental Shelf Convention), and the 1958 Geneva Convention on the High Seas.[5]

1. Coastal Nations' Rights Over Maritime Resources

[5] Although UNCLOS is generally accepted as customary international law, the treaty did not receive the requisite sixty signatures to come into force until 1994. *See e.g. U.S. v. Alaska*, 503 U.S. 569, 588 (1992); (stating that the US has recognized the customary nature of UNCLOS despite the fact that it has not been ratified); *See e.g. U.S. v. Royal Caribbean Cruises*, 24 F.Supp.2d 155, 159 (D.P.R. 1997) (recognizing the consensus among commentators that UNCLOS reflects customary international law and is therefore binding on signatories and non-signatories alike); *See e.g. Sarei v. Rio Tinto*, 221 F.Supp.2d 1116, 1161 (C.D. Cal. 2002) (stating that UNCLOS is customary because (1) it has been ratified by a large number of countries, (2) UNCLOS was signed by the US President, (3) the Supreme Court recognized it as customary in *U.S. v. Alaska*, and (4) the Puerto Rico district court recognized it as customary in *U.S. v. Royal Caribbean Cruises*).

Under the international framework set forth in these treaties, waters within twelve nautical miles from a nation's shores are considered that nation's territorial sea.[6] A nation has the same sovereign rights over its territorial sea as it has over its land territory, such as the right to control the harvest of its resources, subject to the right of innocent passage.[7] Beyond the territorial sea is the contiguous zone, from twelve nautical miles to twenty-four nautical miles from land.[8] In the contiguous zone, nations may enforce sanitary, fiscal, customs, and immigration laws to prevent infringement of the nation's rights in its territorial sea.[9]

Beyond the contiguous zone is the exclusive economic zone (EEZ). The EEZ extends to 200 nautical miles from land, or approximately to the continental shelf.[10] A nation has the exclusive right to exploit the natural resources of the EEZ, and no other nation may exploit these resources without the express consent of the coastal state.[11] Within the EEZ, nations have sovereign rights "for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or nonliving."[12] Beyond the EEZ are the high seas, which are considered a global commons.[13] The high seas are controlled only by the law of capture and the authority of nations to assert jurisdiction over ships sailing under their flags.[14]

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[6] United Nations Convention on the Law of the Sea (UNCLOS) art. 17, Dec. 10, 1982, 21 I.L.M 1261.

[7] *Id.* The right of innocent passage is defined as follows: "Passage is innocent so long as it is not prejudicial to the peace, good order, or security of the coastal State. Such passage shall take place in conformity with these articles and with other rules of international law." Convention on the Territorial Sea and Contiguous Zone art. 14(4), Geneva, Apr. 29, 1958, 15 U.S.T. 1606, 516 U.N.T.S. 205. While foreign nations have the right to innocent passage through the territorial sea of a coastal nation, the only situation that *ipso facto* negates innocent passage is the violation of that nation's fishing laws. *Id.* at art. 14(5). UNCLOS lists several activities, including fishing, that would be considered prejudicial to peace and therefore negate innocent passage. UNCLOS, art. 19(2) *supra* note 6.

[8] *Id.* at art. 33(2).

[9] *Id.* at art. 33(1)

[10] *Id.* at art. 57. If the continental shelf extends past 200 nautical miles, the coastal country can still control the natural resources in that area. *Id.* at art. 76; *See also* Convention on the Continental Shelf art. 2, Geneva, April 29, 1958, 15 U.S.T. 471, 499 U.N.T.S. 311.

[11] UNCLOS, *supra* note 6, at art. 56, 58; *See also* Continental Shelf Convention, *supra* note 10, at art. 2.

[12] UNCLOS, *supra* note 6, at art. 56(1)(a).

[13] *Id.* at art. 87, 89; Convention on the High Seas art. 2, Geneva, April 29, 1958, 13 UST 2312, 450 U.N.T.S. 82.

[14] UNCLOS, *supra* note 6, at art. 91. U.S. Supreme Court Justice Field described the law of capture as follows:

> [I]t is a general principle of law, both natural and positibe [*sic*], that where a subject, animate or inanimate, which otherwise could not be brought under the control or use of man, is reduced to such control or use by individual labor, a right of property in it is acquired by such labor. The wild bird in the air belongs to no one, but when the fowler brings it to the earth and takes it into his possession, it is his property. He has reduced it to his control by his own labor, and the law of nature and the law of society recognize his exclusive right to it. The pearl at the bottom of the sea belongs to no one, but the diver who enters the waters and

This framework has a variety of shortcomings that indirectly affect traditional coastal communities. It creates large maritime territories, and developing nations do not have the resources to police these areas. Many provisions of the aforementioned treaties are open to interpretation or not adequately enforced. These flaws lead to a variety of problems as discussed in this article.

2. Fishing Under the International Treaties

While UNCLOS, the Territorial Sea Convention, the Continental Shelf Convention, and the Convention on the High Seas create the basic framework for control of natural resources, fishing receives special treatment in these and other international agreements. UNCLOS sets the basis for fisheries management. Nations are required to use the best available scientific information to maintain the maximum sustainable yield (MSY)[15] and are encouraged to "promote the objectives of optimum utilization."[16] In determining the MSY, UNCLOS requires nations to take relevant environmental and economic factors into consideration, "including the economic needs of coastal fishing communities and the special requirements of developing States."[17]

Requiring the use of the best scientific information available is thought to facilitate management decisions by allowing nations to regulate fishing even in the face of scientific uncertainty.[18] UNCLOS article 61(1) states, "The coastal State shall determine the allowable catch of the living resources in its [EEZ]," and nations have total discretion to determine the amount.[19] Because UNCLOS also requires that other nations have access to the surplus stocks of a coastal nation, many nations set total allowable catch at their domestic capacity in order to exclude foreign fleets.[20] Requiring nations to use MSY-based management and set total allowable catches seems to demand that nations manage their

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> brings it to light has property in the gem. He has, by his own labor, reduced it to possession, and in all communities and by all law his right to it is recognized.

Spring Valley Waterworks v. Schottler, 110 U.S. 347, 374 (1884) (Field, J., dissenting).

[15] UNCLOS, *supra* note 6, at art 61(2)-(3). "Maximum sustainable yield refers to the maximum use that a renewable resource can sustain without impairing its renewability through natural growth or replenishment." OECD, *Glossary of Statistical Terms,* http://stats.oecd.org/glossary/ ((last visited Feb. 1, 2009) (*citing* United Nations *Glossary of Environment Statistics, Studies in Methods*, Series F, No. 67, (1997)). In the context of fisheries, maximum sustainable yield refers to "largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological and environmental conditions." *Id.*

[16] UNCLOS, *supra* note 6, at art 61, 62(2). Optimum utilization in this context probably refers to the harvesting of the maximum number of fish allowed under MSY estimates. *See* OECD Glossary *supra* note 15 (defining optimum yield as "the amount of fish harvested that . . . is prescribed as such on the basis of the maximum sustainable yield from the fishery").

[17] UNCLOS, *supra* note 6, at art. 61(3).

[18] Donna R. Christie, *It Don't Come EEZ: The Failure and Future of Coastal State Fisheries*, 14 J. TRANSNAT'L L. & POL'Y 1, 10 (2004).

[19] UNCLOS, *supra* note 6, at art 61(1); Christie, *supra* note 18, at 7.

[20] UNCLOS, *supra* note 6, at art 62(2); Christie, *supra* note 18, at 9.

fisheries through quotas, which some experts argue is an inefficient management method that is very difficult to enforce.[21]

3. Problems with Maximum Sustainable Yield (MSY) Based Management

Nations bear the burden of preventing overexploitation within their EEZ; however, it is clear from the language of UNCLOS that fisheries should be managed to "promote the objective of optimum utilization of the living resources."[22] The optimum use of resources refers to the highest and best use from an economic standpoint, thus the inclusion of this idea in UNCLOS encourages nations to exploit their resources to capacity.[23] This reflects the antiquated notion that the seas are inexhaustible and that governments are capable of determining the exact maximum capacity of a fishery.

Despite the fact that MSY has been criticized by fishery biologists for years, it remains in UNCLOS and persists in other fishery treaties and domestic legislation throughout the world.[24] One of the reasons that scientists roundly reject MSY-based fishery management is that estimating the size, resilience, and distribution of fish stocks is a field that is still riddled with scientific uncertainty.

Additionally, some of the key assumptions behind MSY have been disproved. One of these theories is that smaller fish populations are more productive than larger ones, and thus populations should be fished-down to maximize productivity.[25] However, smaller populations become *less* productive through the dispensation effect.[26] MSY also assumes that the number of offspring is not dependent on the number of mothers, because spawning fish such as cod produce over 7 million eggs a year.[27] However, this assumption has also proved to be untrue.[28]

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[21] For example, vessels may fail to report or misrepresent their catches, and it is difficult to police each vessel fishing in a nation's waters. *Id.* at 19.
[22] UNCLOS, *supra* note 6, at art. 62(1); *See also,* art. 61(2)-61(3).
[23] *See* BLACKS LAW DICTIONARY 1587 (8th ed. 2004).
[24] *See e.g.* Willard A. Barber, *Maximum Sustainable Yield Lives On*, N. AMER. J. OF FISHERIES MANAGEMENT, 8(2): 153 (1988) (illustrating that while the popularity of using maximum sustainable yield to forecast long term stock yield had declined significantly among scientists, its use among policy makers continues); *See e.g.* Christie, *supra* note 18, at 11-14.
[25] *See e.g.* COMMITTEE ON FISHERIES, EUROPEAN PARLIAMENT, REPORT ON THE IMPLEMENTATION OF SUSTAINABLE FISHING IN THE EU ON THE BASIS OF MAXIMUM SUSTAINABLE YIELD 8, A6-0298/2007, 2007 (Eur. Parl. Doc. (PE 378.735v03-00)).
[26] *See* Sherrylynn Rowe et al., *Depensation, probability of fertilization, and the mating system of Atlantic cod (Gadus morhua L.),* ICES JOURNAL OF MARINE SCIENCE: JOURNAL DU CONSEIL 2004 61(7):1144-1150 (2004), *available at* http://icesjms.oxfordjournals.org/cgi/content/full/61/7/1144 (last visited Feb. 2, 2009). The dispensation effect, also called the Allee effect, probably occurs because "(a) fertilization rate declines with abundance and (b) variance in fertilization rate increases as population size declines." *Id.*
[27] Robert Kunzig, *The Twighlight of Cod – Atlantic Cod in Danger of Extinction*, DISCOVER (Apr. 1995), *available at* http://discovermagazine.com/1995/apr/twilightofthecod489 (last visited Feb. 2, 2009); CHARLES CLOVER, THE END OF THE LINE: HOW OVERFISHING IS CHANGING THE WORLD AND WHAT WE EAT 108 (The New Press, 2006).
[28] *Id.*

MSY calculations also cannot take into account the various connections environmental factors and food web interactions play in affecting population size and resiliency.[29] Because MSY encourages nations to fish to the maximum capacity of the fishery, by definition, if the MSY is overestimated, stocks will be fished at a faster rate than they can reproduce.[30] Allowing management based on the best available scientific information in a field of widespread scientific uncertainty permits nations to manage stocks and set quotas based on woefully inadequate information, leading to high quotas and depleted stocks.

For example, fishery management based on MSY was to blame for the catastrophic collapse of the north Atlantic cod industry in 1992. The commercial cod fisheries off of Newfoundland and the northeastern United States began operations 500 years ago, and shaped the culture and economies of New England and Newfoundland.[31] It was not until the second half of the 20th Century that the amount of cod harvested began to outpace population growth, and catches began to decline.[32] As a result, Canada and the US extended their EEZs in the north Atlantic to the current borders in 1977.[33]

However, instead of implementing a sustainable management regime, both the US and Canada encouraged the growth of their own commercial cod industries while scientists made several crucial mistakes in the estimation of cod stocks.[34] Scientists in Canada's Department of Fisheries (DFO) estimated that future stock recruitment would be the same as the average of the 1960s and 1970s.[35] However, populations during that period were in decline due to fishing pressure.[36] In addition, the DFO assumed that catch data reflected populations across the seabed, as opposed to concentrated populations of spawning or feeding schools of fish.[37] Thus scientists estimated that cod populations had declined by 70% since the 1960s, when in reality they had declined by 90%.[38]

In the 1980s, when the DFO estimated that fishermen were bringing in 16% of adult cod populations every year, they were catching closer to 60%.[39] Catch quotas were based on these faulty numbers, and by the time DFO scientists realized their mistakes in the late 1980s, political pressures delayed reducing the catch quotas.[40] A former DFO scientist said, "[Commercial catch rate data] were not very clear, but they did show a decline. The

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[29] *See* Richard W. Zabel et al., *Ecologically Sustainable Yield,* 91 AMERICAN SCIENTIST 150, 153 (2003) (illustrating the complexity of the food web relating to cod and herring).
[30] *See,* OECD Glossary, *supra* note 15.
[31] JAKE C. RICE ET AL., INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA, RECOVERING CANADIAN ATLANTIC COD STOCKS: THE SHAPE OF THINGS TO COME? (CM 2003/U:06).
[32] ALICE CASCORBI AND MELISSA M. STEVENS, MONTEREY BAY AQUARIUM, SEAFOOD WATCH SEAFOOD REPORT: ATLANTIC COD, NORTHEAST REGION (US AND CANADA) 14 (2004), *available at* http://www.montereybayaquarium.org/cr/cr_seafoodwatch/content/media/MBA_SeafoodWatch_AtlanticCodReport.pdf (last visited Feb. 2, 2009); Kunzig, *supra* note 27.
[33] *Id.*; Clover, *supra* note 27, at 113.
[34] Kunzig, *supra* note 27; Clover, *supra* note 27, at 113.
[35] Kunzig, *supra* note 27.
[36] *Id.*
[37] Clover, *supra* note 27, at 112.
[38] *Id.*
[39] *Id.* at 113.
[40] Rice, *supra* note 31, at 3; Kunzig *supra* note 27; Clover, *supra* note 27, at 114.

analysis of them was completely botched. So you were already taking out too many fish, but because of the error you were taking out tremendously too many."[41]

With overly optimistic population estimates, large-scale bottom trawling vessels were allowed to continue operations. The vessels dragged nets across the seafloor, damaging cod habitat, and practiced high-grading, discarding smaller dead or dying fish when larger ones are caught.[42] On the other hand, most small-scale fishermen use traps and hook and line gear within the territorial sea. These practices are much less damaging to habitat because the gear does not drag along the sea floor. Hook and line fishing also has lower bycatch rates because cod can be targeted specifically, whereas trawls catch virtually all fish in their path.[43]

Although Canadian cod catches declined through the 1980s, they remained high into 1992, when the stocks suddenly collapsed.[44] With cod populations decreased by 99% of their historic abundance, Canada closed its cod fishery, resulting in 30,000 lost jobs.[45] The next year the US followed suit and closed large portions of the Grand Banks, where most US cod stocks are caught, to ground fishing.[46]

These closures caused the inshore fishermen, who caught the least, to suffer the most. In poor, rural Newfoundland communities, commercial fishing or fish processing was the only available livelihood.[47] The large-scale fishermen and processors were able to shift fishing effort to shrimp and crab, continuing profitability.[48] On the other hand, smaller-scale fishermen often did not have the resources to purchase new equipment, or vessels large enough to travel offshore where crab and shrimp stocks are located.[49]

Cod populations were expected to bounce back quickly when a moratorium was put in place in 1992, and the Canadian government spent $3.5 billion over the next three years in assistance to fishermen for vessel and license retirement, social assistance, and retraining.[50] Most participants said that they intended to return to fishing as soon as it was possible to do so.[51] When the financial program was over in 1995, contrary to the recommendations of DFO scientists, the government reopened a small-scale inshore fishery, which was closed again in 2003 after DFO scientists concluded "serious harm" had been done to stocks.[52]

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[41] Statement attributed to Ransom Myers. Kunzig, *supra* note 27.
[42] Cascorbi, *supra* note 32, at 12.
[43] *Id.* at 2, 13; Clover, *supra* note 27, at 123.
[44] Cascorbi, *supra* note 42, at 7; Kunzig, *supra* note 27; Clover, *supra* note 27, at 125.
[45] Kunzig, *supra* note 27; Clover, *supra* note 27, at 144, 122.
[46] Kunzig, *supra* note 27. The US has since reopened its cod fishery, but smaller stocks and stringent restrictions have caused catches to remain low. Cascorbi, *supra* note 32, at 7.
[47] *See, e.g.,* Clover, *supra* note 27, at 120-121.
[48] *Id.* at 125, 130-131.
[49] *Id.* at 130.
[50] Rice, *supra* note 31, at 6; Clover, *supra* note 27, at 125.
[51] Rice, *supra* note 31, at 6.
[52] Clover, *supra* note 27, at 126; Rice, *supra* note 31.

Population growth has taken place for some inshore stocks; however, the fishery is not healthy enough overall to allow commercial fishing of cod to resume.[53] As a result, local inshore fishermen set nets for other types of fish, such as lumpfish or winter flounder, and catch cod, facing a fine of $440 for keeping a single cod.[54] Many former cod fishermen fish for crab, lobster, or lumpfish part of the year, and collect unemployment for the rest.[55]

Some towns are focusing on tourism to boost their economies, but unemployment is still rampant.[56] Many fishermen hold on to the hope that the fishery will be reopened, although scientists contend that it is unlikely.[57] Climate change is compounding the problem by allowing species to move north and fill the ecological void caused by the overfishing of cod, making the recovery of cod more even doubtful.[58] Seven of nine Canadian cod stocks are in ongoing decline.[59] One scientist said, "There is no indication that recovery [of cod stocks] has begun or is even possible."[60] While damaging fishing practices, bureaucratization, and commercialization of government agencies were partially to blame for the collapse of North Atlantic cod, management based on MSY, as required under the international framework, was a major contributing factor.[61]

Instead of allowing management based on MSY and the best available science, treaties should require implementation of the precautionary principle in the face of scientific uncertainty. The precautionary principle is the notion that "[w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation," and is championed in various environmental treaties, such as the 1992 Rio Declaration.[62] Under the precautionary principle, if the status of a commercial fish stock was uncertain or unknown, catch quotas would be set low as a safeguard against accidental overfishing.

4. Subsidies

Another major flaw in the international treaty framework is that nations are not prohibited from subsidizing their fishing fleets. Subsidies are not explicitly prohibited in UNCLOS, the Territorial Sea Convention, or the Contiguous Sea Convention, and are explicitly permitted

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[53] Clover, *supra* note 27, at 124; Rice, *supra* note 31.
[54] Clover, *supra* note 27, at 123.
[55] *Id.* at 125-126.
[56] *Id.* at 120-121.
[57] *Id.* at 129; Rice, *supra* note 31; Cascorbi, *supra* note 32.
[58] *See* NOVA MIESZKOWSKA, DAVID SIMS AND STEVE HAWKINS, MARINE BIOLOGICAL ASSOCIATION OF THE UK, FISHING, CLIMATE CHANGE AND NORTH EAST ATLANTIC COD STOCKS (May 2007), *available at:* http://www.wwf.org.uk/filelibrary/pdf/cc_cod_report.pdf (last visited Feb. 2, 2009).
[59] Cascorbi, *supra* note 32, at 10.
[60] Statement attributed to Alastair O'Rielly, Fisheries Association of Newfoundland and Labrador. Clover, *supra* note 27, at 130.
[61] Peter A. Shelton, Department of Fisheries and Oceans, Canada, *Science and Sustainable Fisheries Management in DFO*, paper presented at the Strengthening Science to Protect Canadians Symposium Gatineau Quebec, 6-7 September 2007, *available at* www.hyper-media.ca/pipsc/downloads/presentations/03-shelton-e.pdf (last visited Feb. 2, 2009).
[62] Rio Declaration on Environment and Development Principle 15, June 13, 1992, 31 I.L.M 847.

by the World Trade Organization.[63] Wealthy countries such as the US, Japan, and the EU spend up to an estimated $74 billion in annual fishing subsidies.[64] A subsidy is a grant, usually made indirectly, to an industry whose promotion is thought to be in the public interest.[65] The WTO considers a subsidy to exist if a benefit is conferred by either a financial contribution by a government or any public body; a government practice involving a direct transfer of funds, potential direct transfers of funds, or liabilities; or any form of income and price support.[66] Government fishing subsidies to distant water fishermen can include "low interest loans, tax exemptions, vessel buy-back schemes, direct payments as income, and price support schemes."[67]

Allowing subsidies creates an unsustainable global capacity that causes overfishing by artificially decreasing the costs and price of fishing for producers and consumers when prices should be increasing.[68] It is estimated that the world's fishing fleet capacity is 250% larger than what the oceans can sustainably produce, and fishing subsidies play a large part in maintaining that overcapacity.[69]

In a traditional, unsubsidized fishing industry, if the catches are good for a number of years, people generally move into coastal communities and join the fishing industry. When catches decline, people migrate out of the area. Thus, the capacity of an artisanal fishing industry is dictated by the size of stocks. In a subsidized system, instead of dropping out of the industry when stocks decline, fishing fleets remain profitable through government payments and fishing capacity does not decrease with fish stocks. As stocks are overfished, fishing becomes less profitable and the only fleets that can survive in the industry are those that receive subsidies, which are generally large-scale fleets from developed nations. This money often goes to technological advances that increase the fishing capacity of vessels, allowing them to increase their catches in the face of declining stocks. This system also keeps the price of fish artificially low, when prices should be rising due to declining stocks.[70]

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[63] World Trade Organization, Uruguay Round Table Agreement on Subsidies and Countervailing Measures art 1, 1994, *available at* http://www.wto.org/english/docs_e/legal_e/24-scm_01_e.htm#ArticleI (last visited Feb. 2, 2009).

[64] COMMODITY POLICY AND PROJECTIONS SERVICE, COMMODITIES AND TRADE DIVISION, FAO, IMPROVING THE VALUE AND EFFECTIVE UTILIZATION OF AGRICULTURAL TRADE PREFERENCES: A CONCEPTUAL FRAMEWORK FOR CASE STUDIES OF THE IMPACT OF TRADE PREFERENCES IN AGRICULTURAL PRODUCTS (2003), *available at* ftp://ftp.fao.org/docrep/fao/006/y4963E/y4963E00.pdf (last visited Feb. 2, 2009).

[65] BLACKS LAW DICTIONARY 1469 (8th ed. 2004).

[66] WTO, *supra* note 63, at art 1.

[67] Roman Grynberg, *WTO Fisheries Subsidies Negotiations: Implications for Fisheries Access Arrangements and Sustainable Management*, MARINE POLICY 27(6): 499-511 (2003).

[68] Nancy Nelson, *International Concern for the Sustainability of the World's Fisheries: United Nations Efforts to Combat Over-Fishing and International Debate Over State Fishing Subsidies*, 1999 COLO. J. INT'L ENVTL. L. Y.B. 157, 158 (1999).

[69] WORLD WILDLIFE FUND, TURNING THE TIDE ON FISHING SUBSIDIES: CAN THE WORLD TRADE ORGANIZATION PLAY A POSITIVE ROLE? 4 (2002), *available at* http://assets.panda.org/downloads/turning_tide_on_fishing_subsidies.pdf (last visited Feb. 2, 2009) (*citing* GARETH PORTER, ESTIMATING OVERCAPACITY IN THE GLOBAL FISHING FLEET (WWF 1998)).

[70] *See, e.g.,* Nelson, *supra* note 68, at 160.

A prominent fishery biologist said of this scheme, "The only equilibrium in a subsidized system is zero fish. The system is set up to fail."[71]

The case of the North Atlantic cod collapse can also serve as an example of the unsustainability of a subsidized system. Some scientists attribute unemployment insurance as one of the main reasons leading to the closing of the cod fishery.[72] Acting as a subsidy, the payments allowed fishermen to stay in Newfoundland when stocks declined.[73] After the Canadian government's financial assistance program for former cod fishermen, the effective fishing capacity was 160% of what it had been prior to the stock collapse.[74] The unemployment insurance continues to ensure that there is a fully equipped fishing fleet prepared to decimate stocks again as soon as the fishery is reopened.[75] While subsidies eventually harm everyone associated with a fishery, those who feel the effects first are unsubsidized fishers in developing nations who cannot afford to compete with large-scale, subsidized Western fleets.

B. United Nations Food and Agriculture Organization

The UN's relevant regulating body is the Food and Agriculture Organization's (FAO) Fisheries and Aquaculture Department. The FAO's main functions are to "collect, analyze, interpret and disseminate information relating to nutrition, food[,] and agriculture;" provide international and national policy recommendations; and to provide technical assistance to nations.[76] The FAO is the only institution that compiles global fisheries statistics.[77] This is an important role because the organization has the ability to give an overall picture of global fish stocks and recommend methods to improve sustainability of the fishing industry.

A commonly cited shortcoming of this framework, however, is that the FAO must rely on member nations' catch reports and those nations must rely on individual vessels' reports.[78] Both the individual vessels and the reporting states have incentives to underestimate catches in order to exceed their quotas set under different regional agreements. Even if the reporting nation wishes to report honestly, its fishermen may not. This leads to systematic violations of catch quotas, both by complacent nations and dishonest fishermen.

Although it is likely that most nations underreport their catches, China has grossly overestimated its catches.[79] This compounds the difficulty of estimating total global catch.

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[71] Statements attributed to Ransom Myers, fisheries biologist, Dalhousie University, Halifax, Canada. Clover, *supra* note 27, at 133.
[72] Clover, *supra* note 27, at 133.
[73] *Id.*
[74] Rice, *supra* note 31, at 6.
[75] Clover, *supra* note 27, at 133.
[76] U.N. FOOD AND AGRICULTURE ORGANIZATION CONST. art. 1, *available at* http://www.fao.org/docrep/009/j8038e/j8038e01.htm#P8_10 (last visited Feb. 2, 2009).
[77] Reg Watson and Daniel Pauly, *Systematic Distortions in World Fisheries Catch Trends*, NATURE 414: 29 (Nov. 2001).
[78] *Id.*
[79] *Id*; FAO FISHERIES DEPARTMENT, FISHERY STATISTICS: RELIABILITY AND POLICY IMPLICATIONS (2002), *available at* http://www.fao.org/DOCREP/FIELD/006/Y3354M/Y3354M00.HTM. The

Because China's catches represent a large percentage of global catches, China's overestimations masked a general global decline of fishery catches which likely began in 1988.[80] This in turn led to higher global catch quotas.[81]

The FAO has a variety of agreements that can serve to protect fisheries. For example, the Code of Conduct for Responsible Fisheries (FAO Code of Conduct) suggests responsible fishing practices that will protect fisheries, and the International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported, and Unregulated Fishing (IPAO-IUU) addresses the IUU fishing problem.[82] The FAO Code of Conduct specifically addresses the rights of subsistence fishermen. It stipulates that "[s]tates should appropriately protect the rights of fishers and fishworkers, *particularly those engaged in subsistence, small-scale and artisanal fisheries*, to a secure and just livelihood, as well as preferential access, where appropriate, to traditional fishing grounds and resources in the waters under their national jurisdiction."[83]

The IPOA-IUU encourages developed nations to "support training and capacity building and consider providing financial, technical and other assistance to developing countries, including in particular the least developed among them and small island developing States" to help them comply with international obligations and combat illegal fishing.[84] However, without the requisite number of signatories, neither the FAO Code of Conduct nor the IPOA-IUU has entered into force; therefore, both remain voluntary. In fact, the FAO has no authority to compel action by UN member states to adopt any policies or agreements.[85] Uncertainty pervades FAO policy recommendations as well. While the organization advocates what are widely considered the best management practices, such as the precautionary approach and ecosystem management, the FAO acknowledged in a 1994 report, "[I]n practice, we do not yet know how to manage ecosystems."[86]

While the shortcomings of the international framework and FAO persist, overfishing will continue on a global scale. The Director of the FAO's Fisheries and Aquaculture Department acknowledged that currently "there are too many boats chasing too few fish."[87]

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overestimated catches in China are thought to be a result of the socialist economy: the entities in charge of monitoring the economy are staffed with people who are promoted based on production increases. Watson, *supra* note 77.

[80] *Id.*

[81] *Id.* Because the declining state of fisheries was unknown for several years, governing bodies set quotas assuming that stocks were healthy, thus overestimating the amount of fish that could be sustainably harvested.

[82] FAO, Code of Conduct for Responsible Fisheries (1995); FAO, International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported, and Unregulated Fishing (IPOA-IUU) (2001).

[83] Code of Conduct, *supra* note 82, at art. 6.18.

[84] IPOA-IUU, *supra* note 82, at art. V § 85.

[85] FAO Const., *supra* note 76, at art. 14.

[86] FAO, THE PRECAUTIONARY APPROACH TO FISHERIES WITH REFERENCE TO STRADDLING FISH STOCKS AND HIGHLY MIGRATORY FISH STOCKS 12, UN Doc. FIRM/C871, FAO Fisheries Cir. No. 871 (1994).

[87] Statement attributed to Grímur Valdimarsson, director of the FAO's fishery division. John W. Miller, *Offshore Disturbance: Global Fishing Trade Depletes African Waters,* THE WALL STREET J., July 18, 2007, *available at* http://online.wsj.com/article/SB118470420636969282.html (last visited Feb. 2, 2009).

While scientific uncertainty persists and without a mechanism to ensure member states' accurate reporting and compliance with responsible fishing practices, the FAO's efforts will not solve the problems facing the world's fisheries or ease the plight of coastal small-scale fishermen.

C. Regional Organizations

There are a variety of international regulating bodies aimed at protecting fish stocks. Regional Advisory Councils (RACs) and Regional Fishery Management Organizations (RFMOs) are charged with protecting the region's fishing industry and/or a specific commercially important species through a variety of mechanisms. RACs are advisory bodies with no authority to force nations to act. Much like the FAO, RACs provide their member governments with science-based policy information such as total allowable catch limits, appropriate fishing gear and practices, etc. Without any enforcement authority or mechanisms to encourage governments to adopt their recommendations, RACs have little control over regional fishing practices.[88]

RFMOs are much more powerful organizations in that they are treaty-based and can place binding requirements such as quotas and fishing gear restrictions on member states. Nevertheless, they do not carry the requisite authority to protect traditional coastal communities from powerful international fishing pressures. RFMOs struggle to conserve marine species by confronting highly efficient fleets that methodically decimate fish stocks.

Typically, RFMOs are organizations of vested interests: they are made up of the member states that they seek to regulate. Because signatories are often loath to forfeit sovereignty over their natural resources to RFMOs, enforcement provisions in treaties are very weak and inefficient.[89] Member states can also opt out of provisions.[90] Additionally, they have no authority over non-signatories and can rarely regulate stocks in the high seas.[91]

RFMOs set fishing quotas in the face of scientific uncertainty and in an environment of vested interests that press for high quotas. As a result, fishery quotas are often set higher than is sustainable for fish populations. For example, the International Council for the Exploration of the Sea, a research organization, recommended that the quota for blue

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[88] For example, the creation of RACs in the European Union was accompanied by much anticipation; however, in practice, the European Commission was hesitant to adopt their policies or heed their recommendations. David Gray, *Regionalisation in Fisheries Governance, an Empty Vessel or a Cornucopia of Opportunity*, 86 in REVIEWS: METHODS AND TECHNOLOGY IN FISH BIOLOGY AND FISHERIES: PARTICIPATION IN FISHERY GOVERNANCE (ed. Tim S. Gray, Springer 2005).

[89] Anna Vinson, *Deep Sea Bottom Trawling and the Eastern Tropical Pacific Seascape: A Test Case for Global Action*, 18 GEO. INT'L ENVTL. L. REV. 355 (2006).

[90] Deep Sea Conservation Coalition, Policy Paper, *A Net With Holes: The Regional Fisheries Management System* 3 (2004), *available at* http://www.savethehighseas.org/publicdocs/RFMO.pdf (last visited Feb. 2, 2009).

[91] Although fishing on the high seas rarely affects artisanal fishing communities, in the case of some highly migratory species, such as bluefin tuna, fishing on the high seas can affect their near-shore availability. *See, infra* notes 103-116 and accompanying text. Currently, the Commission for the Conservation of Antarctic Marine Living Resources is the only RFMO that has acted to protect deep-sea resources. Vinson, *supra* note 89, at 371.

whiting, one of the most heavily fished species in the world, be set at one million tons.[92] Despite this recommendation, the Northeast Atlantic Fisheries Commission, an RFMO that manages various commercially important species, set the 2007 total allowable catch at 1,847,000 tons, and agreed to a catch limit of 1,150,514 tons in 2008.[93] Once set, if quotas are violated, RFMOs usually cannot adequately punish violators or force member nations to close their fisheries.[94] Unrealistic quotas and lack of enforcement allow large commercial fleets to deplete stocks that traditional communities rely on for survival.

The state of the Atlantic bluefin tuna stock is an example of the disastrous effects on artisanal fishing that can result from high catch quotas set by RFMOs. Bluefin tuna have been the center of political controversy for decades, due to their high market value and endangered status. Despite the fact that bluefin appear on the International Union for the Conservation of Nature's (IUCN) Redlist of Threatened Species,[95] it continues to be commercially sold. This is in part due to the high prices of these fish at market. Recently in Japan, bluefin sold at $39 a kilogram, and large, fresh fish have sold for up to $89,000.[96]

The International Commission for the Conservation of Atlantic Tunas (ICCAT) is the RFMO that sets tuna quotas for member states.[97] ICCAT has been criticized by scientists and conservationists for its unrealistic catch quotas.[98] Since the ratification of the International Convention for the Conservation of Tuna establishing ICCAT in 1969, the organization has utterly failed to prevent the decimation of the bluefin tuna. In the 1990s, it was estimated that the Atlantic bluefin population had decreased to less than 10% of 1975 levels.[99] Despite declining populations, consumer demand continues to increase the value of catches. Thus, quotas remain high, representing more and more of the total

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[92] Information Center for the Icelandic Ministry of Fisheries, *Blue Whiting* (2007), *available at* http://old.fisheries.is/stocks/bluewhiting.htm (last visited Feb. 2, 2009).

[93] *Id;* Agreed Record of Conclusions of Fisheries Consultations Between Iceland, The European Community, the Faroe Islands and Norway on the Management of Bluewhiting in the North-East Atlantic in 2008, London, Oct. 23, 2007, *available at:* http://www.neafc.org/news/docs/blue_whiting_2008_agreedrecord_signed.pdf (last visited Feb. 2, 2009).

[94] Vinson, *supra* note 90.

[95] International Union for the Conservation of Nature, *2007 IUCN Red List of Threatened Species*, *available at* http://www.iucnredlist.org/ (last visited Feb. 2, 2009).

[96] Tokyo-Tsukiji Market Prices, *available at:* http://www.marunaka-net.co.jp/maruna_e/pricese.htm (last visited June 12, 2008) (giving the average price in yen per kilogram at Japan's largest fish market on a daily basis); Clover, *supra* note 33, at 28.

[97] Currently ICCAT has 45 contracting parties, including the US, Japan, Panama, France, Spain, and Italy. ICCAT, *About ICCAT,* http://www.iccat.int/en/ (last visited Feb. 2, 2009).

[98] *See, e.g.,* Clover, *supra* note 27, at 35-38; DAVID NEMERSON AND CARL SAFINA, CONSIDERATIONS FOR LIMITED ENTRY IN THE BLUEFIN TUNA FISHERY: CATCH HISTORIES FROM 1990 TO 1993 (1994).

[99] Eugene H. Buck, Congressional Research Service, *Atlantic Bluefin Tuna: International Management of a Shared Resource* (Mar. 8, 1995), available at http://www.ncseonline.org/NLE/CRSreports/Marine/mar-5.cfm (last visited Feb. 2, 2009) (*citing* Nemerson, *supra* note 98, at 229). ICCAT estimates that in the 1990s the Atlantic bluefin tuna stock was at 21% of its 1975 levels. ICCAT, REPORT OF THE 2006 ATLANTIC BLUEFIN TUNA STOCK ASSESSMENT SESSION, SCRS /2006/013 (2006), *available at* http://www.iccat.int/Documents/SCRS/DetRep/DET_bft.pdf (last visited Feb. 2, 2009).

populations of bluefin tuna each year.[100] In 2004 and 2006, the United States was unable to fill its total allowable bluefin catch, leading ICCAT to speculate "that the estimate of stock status from the 2006 assessment *may be optimistic*."[101] ICCAT set 2007 Atlantic bluefin quotas for 32,000 tons, despite the fact that its own scientists recommended a quota of 26,000 tons.[102]

The overfishing of bluefin tunas has seriously affected southern Spanish traditional communities that have fished for bluefin tuna using *almadrabas* for hundreds of years.[103] The basics of this fishing method were developed by the Phoenicians about three thousand years ago.[104] An *almadraba* is a trap made of anchored nets and floats that take two months to set up and are used for three months in the summer.[105] The nets are made of hemp and have large panels to allow juvenile bluefins to escape, and because this method is selective, fishermen can decide which tuna to let live and which to harvest.[106] In contrast, the large offshore purse seining fleets use helicopters to direct boats to spawning shoals, and can catch as many fish in one day as an *almadraba* catches all season.[107] It is doubtful that these commercial vessels respect the 22-pound minimum weight for tuna, and as a result many fish are harvested before ever having a chance to spawn.[108]

In 2007, European tuna fishermen filled the year's EU catch quotas under ICCAT and were ordered by the European Commission to stop fishing in mid-September.[109] France, Cyprus, Greece, Italy, Malta, Portugal and Spain were notified by the European Commission of their failure to report official data on catches, and France and Italy were warned of shortcomings in their controls.[110] Fearful that overfishing would lead to the collapse of the

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[100] Buck, *supra* note 99.

[101] ICCAT 2006 Bluefin Report, *supra* note 99 (*emphasis supplied*). The report stated,

> [T]he failure of [the US] fishery to take about a third of its [total allowable catch], particularly for a valuable species like bluefin tuna, is a reason for concern. The continuation of this trend in 2006, and probably 2007, and other new evidence reviewed by the committee, heightened concern that the estimate of stock status from the 2006 assessment may be optimistic. *Id.*

[102] Clover, *supra* note 27, at 35.

[103] *Id.*

[104] *Id.* at 31.

[105] *Id.* The traps are set in the summer because bluefin tuna travel into the Mediterranean Sea in the summer to spawn.

[106] *Id.* at 31-32.

[107] *Id.* at 32.

[108] *Id.*

[109] Press Release, European Commission, *Bluefin tuna fisheries: Commission opens infringement procedures against 7 Member States*, September 26, 2007, *available at* http://ec.europa.eu/fisheries/press_corner/press_releases/com07_62_en.htm (last visited Feb. 2, 2009) (announcing the closure of the bluefin tuna fisheries and the infringement proceedings brought against France, Cyprus, Greece, Italy, Malta, Portugal, and Spain); Stephen Castle, *Overfishing of Tuna Prompts Threat of Legal Action in Europe*, THE INTERNATIONAL HERALD TRIBUNE, September 27, 2007, *available at* http://www.iht.com/articles/2007/09/27/news/tuna.php (last visited Feb. 2, 2009).

[110] Failure to respond to these notices could result in a suit before the European Court of Justice. The seven countries were required to respond within 30 days. *Infringement Procedures, supra* note 109; Castle, *supra* note 109.

stock, the bluefin fishery was closed to the purse seine fleets of Cyprus, France, Greece, Italy, Malta, and Spain in June of 2008, due to "failures of implementation [that] include, but are not limited to: unreliable catch declarations, failure to respect reporting deadlines, delays in submission of fishing plans, and failure to communicate satellite data on the movements of the vessels."[111]

The Commissioner for Fisheries and Maritime Affairs specifically addressed the *almadrabas* when announcing the closure: "This decision to close the fishery . . . is not only necessary to protect the stock and to respect the Community's international obligations. It is also vital to ensure fairness with the small-scale artisanal fleet that has not yet fished its quota."[112] It should be noted that these enforcement proceedings and closures are being implemented by the European Commission under EU legislation, and not by ICCAT itself.[113] These actions do, however, reflect the emerging international realization that tuna stocks must be protected immediately and rigorously if they are to recover and remain economically viable.

Due to high quotas and the commercial sector's unsustainable fishing practices and systematic violation of catch quotas, *almadraba* catches have been steadily decreasing as tuna populations plummet. A few hundred years ago, tuna were so plentiful that *almadrabas* could be set from shore, while today, they are set up offshore.[114] The director of one *almadraba* fleet reported that while 5,000 bluefin were caught in 1999, less than 900 were landed in 2005.[115] The EU has done little to protect the *almadrabas*, who have requested tougher bluefin quotas.[116] That fishermen themselves are demanding more stringent catch controls and tougher regulations on their own industry is a reflection of the dire situation facing Atlantic bluefin populations.

III. Bilateral Fishery Agreements

Bilateral fishery agreements also tend to put artisanal fishermen at risk. These agreements are a typical way for one nation to gain fishing rights in the waters of another nation. The EU has contracted with various African nations including Senegal, Madagascar, Angola, Mauritania, and the Ivory Coast.[117] Typically, these bilateral

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[111] Press Release, European Commission, *Statement from Commissioner Borg: "Closing the Bluefin tuna fishery in order to secure its future,"* June 17, 2008, *available at* http://ec.europa.eu/fisheries/press_corner/press_releases/2008/com08_47_en.htm (last visited Feb. 2, 2009).

[112] *Id.*

[113] *Infringement Procedures, supra* note 109.

[114] Clover, *supra* note 27, at 31.

[115] *Id.* at 32.

[116] *Id.* at 37.

[117] Protocol setting out the fishing opportunities and the financial contribution provided for in the Agreement between the European Economic Community and the Government of the Republic of Senegal on fishing off the coast of Senegal for the period from 1 July 2002 to 30 June 2006, EU-Senegal, 2001, L 349/46; Protocol defining for the period 1 January 2004 to 31 December 2006 the tuna fishing opportunities and the financial contribution provided for in the Agreement between the European Economic Community and the Democratic Republic of Madagascar on fishing off Madagascar, EU-Madagascar, 2004; Agreement in the form of an exchange of letters concerning the provisional application of the Protocol setting out, for the period from 3 August 2002 to 2 August

agreements are between developing and developed nations, with the poorer nation selling fishing rights to the richer. These agreements can often be weighted against developing nations, who have less bargaining power. For example, one third of Mauritania's national budget comes from payments from the EU stemming from a bilateral fishery agreement.[118] With bilateral fishery agreements comprising such a large percentage of government resources, developing nations must rely heavily on the sale of their fishing rights and often, this results in agreements that are not negotiated at arms length. Additionally, the money exchanged through these agreements often does not benefit the coastal fishermen who are harmed by the foreign fishing fleets, but rather goes to other government projects and expenses.

Further, bilateral agreements often do not require that responsible fishing practices be used. Many non-governmental organizations (NGOs) have been encouraging the EU to require more responsible practices, such as prohibiting their distant fishing fleets from discarding unwanted catch.[119] These organizations believe that reducing discards "is particularly important in the coastal zone of tropical countries, where wasteful practices directly affect local coastal communities, who depend on fishing for their livelihoods."[120] Developing countries that allow foreign fishing vessels in their waters need "to be convinced of the necessity" of stopping the unnecessary depletion of their resources.[121] Requiring that foreign vessels use responsible fishing practices is yet another tool that developing countries fail to utilize to protect their coastal fishing communities.

The European Community has recognized the "significant positive potential" of fisheries to add "economic and social value" to developing nations and the importance of "the repatriation of this value-added between developing and developed countries."[122] Despite this knowledge, fishing subsidies and biased bilateral agreements with poor African nations continue in the EU, whose member nations account for 85,000 fishing vessels.[123] According

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2004, the fishing opportunities and the financial contribution provided for by the Agreement between the European Economic Community and the Government of the Republic of Angola on fishing off Angola, EU-Angola, 2002, L 351/91; 2001 EU-Mauritania Treaty, *infra* note 133; Protocol establishing the fishing rights and financial compensation provided for in the Agreement between the European Economic Community and the Republic of Côte d'Ivoire on fishing off the coast of Côte d'Ivoire, EU-Ivory Coast, 1994.

[118] Miller, *supra* note 87.

[119] Coalition for Fair Fisheries Arrangements, Joint NGO Position on the EU Proposed Policy to Reduce Discards (2007), *available at*: http://www.illegal-fishing.info/uploads/CFFA_discards_-_FPA_issues.pdf (last visited Feb. 2, 2009). This position has been taken by the following NGOs: Bird Life International, Greenpeace International, Coalition for Fair Fisheries Arrangements, International Collective in Support of Fishworkers, Oceana, North Sea Foundation, the EU Fisheries Secretariat, and European Bureau for Conservation & Development. Discarding is done mainly for two reasons: high-grading (discarding smaller fish to make room for larger fish) or getting rid of unwanted catch (bycatch). *Id.*

[120] *Id.*

[121] *Id.*

[122] European Commission Communication (2000) 724 to the Council and the European Parliament, Mr. Nielson in agreement with Mr. Fisher, *available at* http://www.seaaroundus.org/Dakar/scienceDocs/Doc_Gen_02-EN.pdf (last visited Feb. 2, 2009); *See also,* Council of the European Union Resolution, Brussels, Nov. 8, 2001.

[123] Miller, *supra* note 87.

to a researcher at the University of British Colombia, fish in West African waters have declined 50% in the last three decades.[124] Thousands of Africans have been put out of work as a result, and many have attempted to migrate illegally into Europe in their fishing boats.[125]

Today, 340 foreign boats are licensed to fish in Mauritania's waters, mostly from the EU and Asian nations.[126] Many of these boats target octopus, the nation's most important fishery export, accounting for about $80 million in 2004.[127] Mauritania has entered into various fishery access agreements with the European Community since 1987. [128] The standing agreement was amended in 1995 between the two nations to increase EU octopus catches in Mauritanian waters when Morocco unilaterally terminated its fishery agreement with the EU, probably due to declining catches.[129] By opening the fishery to large-scale foreign fleets, Mauritania is forcing its small-scale local fishermen to compete with huge trawlers from nations such as Spain, Russia, and China, and as a result, catches are dropping fast. One local fisherman from a small village claims, "You used to be able to fish right in the port. Now, the only thing you can catch here is water."[130] Mauritanian scientists estimate that the octopus stock has declined about 31% from historical averages.[131] These results are not surprising, considering the staggering amount of fish being removed from Mauritania's waters through large commercial operations. For example, while a local fisherman can catch about 32 pounds of octopus a day, the Spanish vessel *Segundo San Rafael*, which fishes in Mauritanian waters using a trawl, can catch 260,000 pounds of octopus on a 45-day outing.[132]

Although a 2001 agreement between Mauritania and the EU suggested that €800,000 of the €86 million annual payment go to "support to develop small-scale fishing," Mauritania has discretion to allocate this money, and it is unclear if any of it has gone to its stated purpose.[133] There is no other mention of small-scale fishing or human rights protections

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[124] *Id.*

[125] *Id.*

[126] *Id.*

[127] Eurofish, *Fish INFO Network Market Report on Octopus*, *Sept. 2004*, *available at* http://www.eurofish.dk/indexSub.php?id=1880&easysitestatid=-915739447 (last visited Feb. 2, 2009).

[128] Draft European Parliament Legislative Resolution on the proposal for a Council regulation on the conclusion of the Agreement in the form of an Exchange of Letters concerning the amendments to the Protocol setting out the fishing opportunities and the financial contribution provided for in the Agreement on cooperation in the sea fisheries sector between the European Community and the Islamic Republic of Mauritania for the period August 1, 2001 to July 31, 2006 (COM(2005)0591 – C6-0433/2005 – 2005/0229(CNS)), Eur. Parl. Doc. (PE 365.137v04-00) 6 (2006).

[129] *Id.*

[130] These statements are attributed to Sall Samba, a small-scale octopus fisherman who was forced to beach two of his three boats and fire employees due to declining stocks. Miller, *supra* note 87. In the 1990s and early 2000s, Samba's catch used to bring in over $2300 a month, and he earned $600 a month in profit. *Id.* Today, just a few short years later, he earns less than $200 a month. *Id.*

[131] *Id.* One large octopus fishing company reported a catch of 818 tons in 2006, down from 1,241 tons in 2001. *Id.*

[132] *Id.* That's about 5,780 pounds per day.

[133] Protocol Setting out the Fishing Opportunities and Financial Compensation Provided for in the Agreement on Cooperation in the Sea Fisheries Sector Between the European Community and the

within this document. The agreement set a limit of 16,500 tons of octopus per year.[134] As a result of declining stocks, Mauritanian scientists recommended opposing any deal that permitted EU boats to fish for octopus in Mauritanian waters.[135] This recommendation was not heeded, however, and in July 2006, Mauritania signed an agreement that will net a payout of $700 million over six years and increase the number of European octopus trawlers in Mauritanian waters.[136] In this agreement, the EU required Mauritania to license the 4,000 canoes used by local fishermen, with EU scientists arguing that stock declines are the result of local fishermen and that the fishery can only support a quarter of the current canoe fleet.[137] If licensing canoes is carried out and entry into the fishery is limited, it may further restrict coastal fishermen from accessing the stocks they need to survive.

IV. The Results of Deficiencies in the System: Illegal, Unregulated, Unreported (IUU) Fishing and Flags of Convenience

As a result of noncompliance and weak enforcement mechanisms in the international treaty framework and inequitable bilateral agreements, IUU fishing, also known as "pirate fishing," is on the rise. The term IUU fishing includes many forms of destructive fishing. Illegal fishing refers to fishing in the jurisdiction of a nation without permission, operating in violation of treaties to which the flag state of the vessel is bound, or fishing "in violation of national laws or international obligations."[138] Unreported fishing means "fishing activities which have not been reported, or have been misreported, to the relevant national [or international] authority."[139] Unregulated fishing includes fishing in the jurisdiction of an RFMO by a vessel who is not party to the agreement, violating the conservation and management measures of an RFMO within its jurisdiction, or fishing in an area with no management regime in a manner that is inconsistent with the flag-state's responsibilities under international law.[140] Common forms of IUU fishing include fishing legally by day and fishing in restricted areas by night, exceeding and/or underreporting catch quotas, fishing in areas not subject to RFMOs, poaching, and fishing in marine reserves.

One particularly problematic form of IUU fishing involves vessels operating under "flags of convenience." The Geneva Convention on the High Seas and UNCLOS both require a "genuine link" between the state in which a vessel is registered and the fishing vessel;[141]

Islamic Republic of Mauritania for the period 1 August 2001 to 31 July 2006, EU-Mauritania, L 341/128 (2001). There is little to suggest that payments set aside to promote small-scale fishing have gone to their stated purpose. News reports of the situation in Mauritania do not suggest that the nation has any sort of support programs for small-scale fishermen. *See, e.g.,* Miller, *supra* note 87.

[134] 2001 EU-Mauritania Treaty, *supra* note 133.

[135] Miller, *supra* note 87.

[136] Eur. Parl. Doc. (PE 365.137v04-00), *supra* note 128; Miller, *supra* note 87. While ignoring Mauritanian scientists' recommendation to halt EU octopus fishing, this agreement did call for a moderate decrease in catches. *Id;* Eurofish, *Fish Info network Market Report on Octopus, Dec. 2006*, *available at* http://www.eurofish.dk/indexSub.php?id=3392 (last visited Feb. 2, 2009).

[137] Miller, *supra* note 87.

[138] IPOA-IUU, *supra* note 82, at art III § 1.

[139] *Id.* at art III § 2.

[140] *Id.* at art III § 3.

[141] High Seas Convention, *supra* note 13, at art. 5(1); UNCLOS, *supra* note 6, at art. 91(1).

however, this link has proven to be open to interpretation. Many nations that do not oversee their fleet or enforce international agreements have open vessel registries, allowing vessels without a genuine link to fish under their flag for a nominal fee of a few hundred dollars. These vessels are said to be flying "flags of convenience" because the sole reason for registering in the flag nation is to avoid enforcement of treaties and fishing regulations of their home ports.

Globally, the IUU fishing fleet is worth about $1.2 billion, and 15% of the large-scale fishing fleets sail under flags of convenience or unknown flags.[142] In 2001, it was estimated that 80% of fishing vessels using flags of convenience flew under the flag of Belize, Honduras, Panama, and St. Vincent & the Grenadines.[143] In 2005, it was estimated that 65% of the world's merchant fleet was registered outside of the owner's domicile.[144] The amount of these vessels that engage in IUU fishing and their impacts are difficult to estimate because vessels often use shell corporations and change names, flags, and crew frequently to obscure the owners' identities.[145] It is known, however, that IUU fishing vessels can devastate fish stocks. The World Wildlife Fund estimates that IUU fishing accounts for 30% of catches in some important fisheries, and the irresponsible fishing methods often used by these vessels threatens sea birds, sea turtles, dolphins, and other non-targeted species.[146]

IUU fishing can have devastating effects on developing nations and their coastal communities. For example, in Guinea, it is estimated that up to 60% of the fishing vessels in its waters are unlicensed.[147] The total value of the IUU catch in sub-Saharan Africa is estimated to be 16% of the total catch value, or almost $1 billion.[148] A recent study found that in Africa, one of the "major infringements" that IUU fishermen commit is encroaching in the areas reserved for "vital artisanal fisheries," leading to "serious conflicts between

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[142] MATHEW GIANNI AND WALT SIMPSON, THE CHANGING NATURE OF HIGH SEAS FISHING: HOW FLAGS OF CONVENIENCE PROVIDE COVER FOR ILLEGAL, UNREGULATED, UNREPORTED FISHING 5 (Oct. 2005), *available at* http://www.wwf.org.uk/filelibrary/pdf/flagsofconvenience.pdf (last visited Feb. 2, 2009).

[143] GREENPEACE, PIRATE FISHING: PLUNDERING WEST AFRICA 5, Sept. 2001, *available at* http://iodeweb1.vliz.be/odin/bitstream/1834/649/1/Doc_NGO_04-EN.pdf (last visited Feb. 2, 2009); Gianna, *supra* note 142.

[144] This statistic measures the percentage of total tonnage of the world's fleet that is flagged out. INSTITUTE OF SHIPPING ECONOMICS AND LOGISTICS, ISL MARKET ANALYSIS 2005: OWNERSHIP PATTERNS OF THE WORLD MERCHANT FLEET (April, 2005), *available at* http://www.isl.org/products_services/publications/pdf/COMM_4-2005-short.pdf (last visited Feb. 2, 2009).

[145] Jessica K. Ferrel, *Controlling Flags of Convenience: One Measure to Stop Overfishing of Collapsing Fish Stocks*, 35 ENVTL. L. 323, 340 (2005) (*citing* BOLESLAW ADAM BOCZEK, FLAGS OF CONVENIENCE 6 (1962)).

[146] World Wildlife Fund, Fishing Problems: Illegal Fishing, *available at* http://www.panda.org/about_wwf/what_we_do/marine/problems/problems_fishing/illegal_fishing/index.cfm (last visited Feb. 2, 2009). Environmentalists estimate that up to 50% of some important species such as Patagonian toothfish catches (also known as Chilean sea bass) are illegally caught. *Id.*

[147] MARINE RESOURCES ASSESSMENT GROUP LTD., REVIEW OF IMPACTS OF ILLEGAL, UNREPORTED AND UNREGULATED FISHING ON DEVELOPING COUNTRIES, SYNTHESIS REPORT 6 (2005) (prepared for the for the United Kingdom's Department for International Development), *available at* www.dfid.gov.uk/pubs/files/illegal-fishing-mrag-report.pdf (last visited Feb. 2, 2009).

[148] *Id.* at 7.

industrial and artisanal fishermen, including loss of gear and life."[149] Apart from the obvious macro-economic impacts of decreased actual revenue in the fishing industry, IUU causes a variety of indirect impacts to developing nations and coastal communities. The fish processing industry is affected and the incomes of fishermen and anyone involved in fish processing and packaging, marketing, and transport industries are reduced, impacting the ability of fishing families to provide for themselves.[150] Additionally, IUU vessels typically use destructive practices that hinder the ecosystem's ability to recover, causing their effects to be felt well after the vessels leave the fishing grounds.

Ghana serves as another example. When members of Greenpeace traveled through several fishing villages and cities to assess the situation facing fishing communities, the story in each village was the same: "fish stocks are in rapid and serious decline due to a combination of [commercial] fishing in Ghanaian waters and, more recently, pirate fishing vessels."[151] Stocks have declined at a dramatic rate, and some species that were common fifty years ago are now gone from fishing nets.[152] With the rise of commercial fishing fleets, the problem of IUU fishing is increasing.

The fishing industry is important to Ghana and critical to the survival of its traditional coastal villages. While 60% of animal proteins consumed in Ghana come from fish, today West Africa is the only place in the world where fish consumption is decreasing.[153] About 5,000 Ghanans are directly involved in artisanal fishing, and about 3 million are involved in the industry as fishermen, processors, fishmongers, or other related occupations.[154] Despite technological innovations creeping into fishing villages, traditional practices still govern. Greenpeace reported that they first had to receive the blessing of the local chief before fishermen would speak to them.[155] Tuesdays are set-aside as non-fishing days to allow fish time to recover and for fishermen to repair their nets.[156] Fishing is typically done in wooden canoes called *pirogues* with hand-made nets.[157] While men fish, the women in these communities also play an important role in the fishing sector. Women, often organized into cooperatives, smoke, process, and sell the fish, and they often control the financing of new gear and fuel.[158] Because the social structure is inextricably linked to traditional fishing, the inability to survive using these traditional practices threatens the social structures of these communities.

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[149] *Id.* at 5.
[150] *Id.*
[151] Martin Freimuller, Greenpeace, Pirate Fishing Impacts: The Importance of Fishing for Traditional Life in Ghana's Coastal Villages, *available at* http://archive.greenpeace.org/oceans/stoppiratefishing/impacts/ghanaimpact.html (last visited Feb. 2, 2009).
[152] *Id;* Greenpeace, *supra* note 143, at 6.
[153] *Id*; Simon Robinson, *Greenpeace Goes Fishing*, TIME, March 30, 2006, *available at* http://www.time.com/time/world/article/0,8599,1178485,00.html (last visited Feb. 2, 2009).
[154] Freimuller, *supra* note 151.
[155] *Id.*
[156] *Id.*
[157] *Id;* Greenpeace, *supra* note 143, at 6.
[158] Freimuller, *supra* note 151.

These pirate fishing vessels not only deplete the fish stocks that they target, but they also have high bycatch rates and destroy the habitats necessary for fish to lay eggs and survive as juveniles, limiting the ability of ecosystems to recover. The effects of these injurious practices have spread beyond the fishing industry. It has been reported that declining fish stocks have forced many people in Ghana to turn to the illegal bushmeat trade to earn a living and feed their families.[159]

Concerned that IUU fishermen are destroying their livelihoods, local fishermen have participated in demonstrations in the capital city of Accra and made reports about the activities of trawlers.[160] The government's lack of response is due to the oft-cited problems of inadequate information of the state of fish stocks and limited resources for effective enforcement.[161]

Ghana's Department of Fisheries has undertaken several programs to prevent pirate fishing and support local fishing communities. They have formed a Directorate consisting of the navy, police, customs service, attorney general, and harbor authorities to monitor fishing and patrol the harbors.[162] However, the lack of resources and difficulties inherent in patrolling large areas of ocean will not likely result in major improvement to the situation. Additionally, corruption is often a problem in the governments of developing nations. One fisher reported to Greenpeace that the Ghanaian navy, which patrols Ghana's waters, often lets illegal fishing vessels go in exchange for a portion of their catch.[163] Nations such as Ghana must be offered solutions that will protect the livelihoods of small-scale fishermen and their communities.

V. Solutions that will Protect Artisanal Fishing Communities

While the future of the global fishing industry and small-scale fishing communities appears bleak, there is hope on the horizon. Nations finally show signs of acknowledging the global fishery crisis, and they are taking action to protect their stocks by enforcing treaty requirements on vessels sailing under their flag. This is evidenced by the European Commission taking legal action against its member states for violating tuna subsidies and failing to report catches.[164] The EU has been guilty of pressing for high quotas, subsidizing its fleet, and engaging in irresponsible, unsustainable fishing practices. If the EU is finally beginning to rein in its fleet and end its irresponsible fishing practices, perhaps the tide is starting to turn. Nevertheless, a wide range of changes must take place on a global scale to protect traditional fishing communities and promote sustainable fishing practices.

One obvious step toward protecting traditional fishing communities is to enforce the treaties that are already in place. Nations should ensure that national policies and fishing vessels under their jurisdiction adhere to the rules set forth in the FAO Code of Conduct

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[159] Justin S. Barshares et al., *Bushmeat Hunting, Wildlife Declines, and Fish Supply in West Africa*, 306 SCIENCE 180 (Nov. 12, 2004).
[160] Freimuller, *supra* note 151.
[161] *Id.*
[162] *Id.*
[163] *Id.*
[164] *See supra* note 109-113 and accompanying text.

and the IPOA-IUU. The fishery policies of developed nations should set sustainable catch limits and gear restrictions and enforce regulations against all vessels fishing under their flag.[165] When contracting for fishing rights within the waters of developing coastal nations, developed nations should take into account the rights and traditional practices of artisanal fishing fleets.[166] IUU fishing and the use of flags of convenience should be halted by any means necessary. The international community should put pressure on nations with open vessel registries to implement the genuine link requirement of UNCLOS.[167] Additionally, nations should take steps to discourage their own nationals from fishing under of flags of nations that do not meet their flag state responsibilities.[168] This would prevent IUU vessel owners from registering their boats in a nation solely to avoid enforcement of international requirements. Members of RFMOs should ensure their fleets adhere to fishery quotas and follow responsible fishing practices. Enforcement should be stepped up to impose domestic and international requirements on all vessels and to punish vessels that participate in IUU fishing and nations that do not meet their flag state responsibilities.

Australia is one of the leading nations in combating IUU fishing and ensuring that its fishing fleet adheres to international requirements. Australia is a party to a variety of international, regional, and subregional agreements regulating fisheries. The Minister of Agriculture, Fisheries, and Forestry established a task force aimed at combating IUU fishing on the high seas.[169] Vessels operating under the Australian flag follow a stringent management regime controlled by federal, state, and territory laws in order to ensure long-term sustainability of fisheries.[170] Australian vessels may not fish outside of Australian waters without a special permit.[171]

Australia has adopted a National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing in accordance with the IPOA-IUU.[172] This national plan states that "[s]trict fisheries surveillance and enforcement measures regulate Australian fisheries, including the mandatory use of vessel monitoring systems (VMS) in most major nationally-managed fisheries."[173] Australia has also undertaken several high profile hot pursuits of suspected IUU fishing vessels.[174] If all nations followed Australia's

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[165] *See* FAO Code of Conduct, *supra* note 82, at art. 2.
[166] *Id.* at art. 6.18.
[167] *See* IPOA-IUU, *supra* note 82, at art III, § 22.
[168] *Id.* at art. III § 18.
[169] Department of Agriculture, Fisheries, and Forestry, Australia, *Steps Australia has Taken to Address Illegal Fishing, available at* http://www.daff.gov.au/fisheries/iuu/illegal-fishing (last visited Feb. 2, 2009).
[170] *Id.*
[171] *Id.*
[172] *Id*; IPOA-IUU, *supra* note 82, at art. IV § 25.
[173] DEPARTMENT OF AGRICULTURE, FISHERIES, AND FORESTRY, AUSTRALIA, NATIONAL PLAN OF ACTION TO PREVENT, DETER AND ELIMINATE ILLEGAL, UNREPORTED AND UNREGULATED FISHING 11 (2005), *available at* http://www.daff.gov.au/__data/assets/pdf_file/0006/33963/npoa_iuu_fishing.pdf .
[174] *See, e.g.,* Australian Fishery Management Service, Fact Sheet,*Enforcement Operations in the Southern Ocean* (2006), *available at* http://www.customs.gov.au/webdata/resources/files/fs_enforcement_operations_in_the_so1.pdf . The IPOA-IUU encourages publicizing enforcement efforts in order to educate the public as to the problems of IUU fishing. IPOA-IUU, *supra* note 82, at art. IV § 32.

example in adhering to their obligations under international law and committing the resources to enforce international requirements, the state of the world's fisheries would be much improved.

However, enforcement of current treaties is not enough. The seminal law of the sea treaties must be reformed in accordance with our current knowledge of fishery management. MSY-based management should be prohibited rather than encouraged. Instead of allowing management based on the best available science, treaties should require implementation of the precautionary principle in the face of scientific uncertainty.[175]

Another crucial change that must take place is facilitating and promoting sustainable fishing practices, including the protection of artisanal fishing, both in the international treaty framework and in smaller-scale agreements. A coalition of international environmental NGOs recommends that "[f]ishing units [practicing] environmentally friendly, economically viable, and socially equitable fishing should be given priority access," recognizing that small-scale, sustainable coastal fisheries are vital to protection of the social fabric of traditional coastal communities.[176]

Traditional fishing practices are both sustainable and critical for coastal communities to thrive. By giving them priority access, their rights will be protected and other fishers will have an incentive to use responsible, sustainable practices to gain access. The international community also should prevent subsidies to ensure that the international fishing fleet capacity does not exceed the capability of the ocean to supply it. Without subsidies, when a fishery becomes overfished or unprofitable, fishermen will shift effort to different species or new areas, allowing stocks to recover from fishing pressure and allowing traditional fishermen to remain competitive in the industry.

It is also important for fishing communities to effectively participate in fishery management. Malawi, one of the many African nations whose environmental issues are driven by basic survival needs, is an example of a nation that has successfully implemented this approach. Facing dwindling near-shore fishery productivity, locals and government officials established a partnership to manage fishery resources.

In 1997, Malawi's Legislature passed the Fisheries and Conservation Management Act, which introduced the concept of co-management into Malawi's legislation for the first time.[177] Projects that brought about this legislative change focused on cooperation with local

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[175] Rio Declaration, *supra* note 62, at Principle 15.

[176] Coalition for Fair Fishery Agreements (CFFA), Position Paper, *Commission Consultation on Rights-Based Management Tools in Fisheries* 3 (2007), *available at* http://ec.europa.eu/fisheries/cfp/governance/consultations/contributions260207/development_ngo_en.pdf (last visited Feb. 2, 2009). These recommendations were written by Birdlife International, Coalition for Fair Fisheries Arrangements, International Collective in Support of Fishworkers, and Seas at Risk, which comprise the CFFA's NGO Contact Group for the Advisory Committee on Fisheries and Aquaculture.

[177] Tracy Dobson, *Human Rights and the Environment: Community Participation in Natural Resource Management in Malawi: Charting a New Course for Sustainability,* 1998 COLO. J. INT'L ENVTL. L. Y.B. 153, 165-166 (1998). Co-management refers to a participatory decision-making between representatives of stakeholder groups and government agencies. Svein Jentoft, *Co-*

communities in setting fishing gear restrictions and other management efforts.[178] Such projects enhance the involvement and enthusiasm of fishermen and personally invest them in fishery regulation enforcement. Expanding such a management regime to allow local fishers to participate in setting quotas and limiting foreign fishing fleets would incorporate the interest of local communities into bilateral agreements and protect the interests of subsistence fishing communities. Providing artisanal fishermen a say in management would also foster a diverse array of fishery management techniques that are tailored to each fishery.[179]

Often it is the artisanal fishery communities themselves that must organize to effect change in national systems. CoopeTárcoles is a fishing cooperative located in Tárcoles, Costa Rica.[180] The cooperative's original aim was distribution of tax-free gasoline, rental of fishing equipment, facilitation of equipment repair, ice supply, and support in obtaining fishing licenses.[181] CoopeTárcoles has also incorporated an environmental theme into its operating strategy. It has adopted the FAO Code of Conduct and educates its members on responsible fishing practices.[182] The FAO has said that "The maintenance and reinforcement of small-scale, artisanal fishing faces many problems [in Costa Rica] because of the lack of modern legislation permitting the structuring of fisheries, including, for example, methods of protection of the resources that sustain them."[183]

The community is lobbying the Costa Rican Government to protect their traditional fishing grounds through legal means, including a marine protected area.[184] The interests of artisanal communities like Tárcoles should be respected by their national governments. Often these communities are aware of the effect of fishing pressure on stocks long before scientists become aware of problems, and if their interests are recognized, these communities can become the first line of defense in protecting their fisheries.

RFMOs and bilateral fishing treaties must undergo reform as well. Total allowable catch quotas should be science-based and precautionary instead of the result of negotiation by vested interests. The recommendations of the FAO and RACs should not be ignored, but

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management: The Way Forward, in THE FISHERIES CO-MANAGEMENT EXPERIENCE: ACCOMPLISHMENTS, CHALLENGES, AND PROSPECTS 3 (Douglas C. Wilson et al., eds. 2003).

[178] *Id.* at 165-166.

[179] The Coalition for Fair Fishery Agreements stresses that diverse approaches to fishery management allow each nation and region to adapt their programs to the specific needs of their small-scale fisheries, emphasizing that problems do not arise from diverse management regimes, but from opaque procedures and a lack of control. *Rights-Based Management Tools, supra* note 176, at 3.

[180] A cooperative is "[a]n organization or enterprise owned by those who use its services." BLACKS LAW DICTIONARY 359 (8th ed. 2004).

[181] MARIAMALIA RODRÍGUEZ CHAVES, UNIVERSIDAD DE COSTA RICA, PESCADORES ARTESANALES EN TÁRCOLES: DIAGNÓSTICO LEGAL [ARTISANAL FISHERMEN IN TÁRCOLES: LEGAL ANALYSIS] 6, *available at* http://www.law.ufl.edu/conservation/international/pdf/pescaadores.pdf (last visited Feb. 2, 2009).

[182] *Id.* at 7, 18.

[183] FAO, *Información Sobre la Ordenación Pesquera de la Rebública De Costa Rica* [Information About the Structuring of Fisheries in the Republic of Costa Rica] (2004), *available at* http://www.fao.org/fi/oldsite/FCP/es/CRI/body.htm (last visited Feb. 2, 2009) (translated by Melanie King).

[184] Chavez, *supra* note 181, at 7.

rather should be given their due weight as leading authorities in the field of sustainable fishery management. Bilateral fishery agreements should contain a mechanism to protect artisanal fishermen and ensure that a portion of the money paid to developing nations goes to benefit communities impacted by foreign fleets.

As fish stocks decline worldwide, it seems like these drastic reforms are unlikely to be implemented in the near future. However, if nothing is done, the world will face depleted fish populations past the point that recovery is possible and the obliteration of traditional fishing communities that rely on them. To protect our oceans and the coastal communities that rely on them, the international framework that governs fishery resources must be modified to reflect modern fishery management capabilities.

Considering Open Ocean Critical Habitat Under the Endangered Species Act: Does Critical Habitat Actually Help Protect the Pacific Leatherback Sea Turtle?

Emily Brand[1]

I. Introduction

The leatherback sea turtle (*Dermochelys coriacea*) is one of the most imperiled species on earth. Thirty-eight years ago, the National Marine Fisheries Service (NMFS) listed the species as "endangered" under the Endangered Species Act (ESA or the Act),[2] and in 2000 the World Conservation Union listed it as "critically endangered."[3] The Pacific population is dramatically declining; it diminished 95% in just the last two decades.[4] If trends continue without protective measures to mitigate threats, the Pacific leatherback sea turtle may be extinct within twenty years.[5]

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[1] J.D. Candidate, University of California, Davis, 2009; Co-Editor-in-Chief *Environs Law & Policy Journal* 2007-2008. I would like to thank Professor Holly Doremus and Stephanie Showalter for their guidance and help with this article.

[2] ESA listing rule, 35 Fed. Reg. 8,491 (June 2, 1970).

[3] WORLD CONSERVATION UNION, SPECIES SURVIVAL COMMISSION RED LIST (2007), *available at* http://iucnredlist.org.

[4] James R. Spotila et al., *Pacific Leatherback Turtles Faces Extinction*, 405 NATURE 529, 530 (2000).

[5] *Id.*

The leatherback is one of the longest living species on earth and "the largest, deepest diving, and most migratory and wide ranging of all sea turtles."[6] Endemic leatherback populations can be found in both the Pacific and Atlantic Ocean. Pacific leatherbacks migrate great distances across the Pacific Ocean every year, from nesting grounds in tropical beaches to foraging grounds in open water off the North and South American west coasts.[7]

Pacific leatherbacks face significant threats in both their nesting and foraging habitats, including entanglement in fishing gear,[8] harvesting of adults and eggs,[9] destruction of habitat through coastal development and erosion,[10] ingestion of marine debris,[11] and ocean acidification.[12] While the turtle does not nest on U.S. beaches, it does forage in open waters off California and Oregon. To prevent the extinction of the Pacific leatherback, threats in foraging habitat must be mitigated.[13]

One of the most direct ways to protect the habitat of an endangered species is to designate that habitat "critical" under the ESA.[14] Only areas under U.S. jurisdiction can be designated.[15] With designation comes increased awareness and special legal consideration for federal actions that might affect the habitat. Although the value of critical habitat designation (CHD) is controversial, it may be an essential conservation tool for the Pacific leatherback.

Conservation organizations, the Center for Biological Diversity, Oceana, and Turtle Island Restoration Network (collectively "petitioners"), contend it is NMFS's duty under the ESA

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[6] U.S. Fish & Wildlife Serv., Species Profile: Leatherback Sea turtle *(Dermochelys coriacea)*, http://ecos.fws.gov/speciesProfile/SpeciesReport.do?spcode=C00F (last visited Feb. 2, 2009).
[7] Scott R. Benson et al., *Abundance, distribution, and habitat of leatherback turtles (Dermochelys coriacea) off California, 1990-2003*, 105(3) FISHERY BULLETIN 337, 337-38 (2007).
[8] NAT'L MARINE FISHERIES SERV., BIOLOGICAL OPINION: ENDANGERED SPECIES ACT SECTION 7 CONSULTATION ON AUTHORIZATION TO TAKE LISTED MARINE MAMMALS INCIDENTAL TO COMMERCIAL FISHING OPERATIONS UNDER SECTION 101(A)(5)(E) OF THE MARINE MAMMAL PROTECTION ACT FOR THE CALIFORNIA/OREGON DRIFT GILLNET FISHERY 102 (2000) [hereinafter DRIFT GILLNET BIOP]. Sea turtles are very susceptible to entanglement in fishing gear because of their large fins and active movement. The species usually drowns once entangled either due to prolonged submersion or exhaustion from trying to free itself, regardless of whether it eventually escapes. *Id.* at 73.
[9] NAT'L MARINE FISHERIES SERV. & U.S. FISH & WILDLIFE SERV., RECOVERY PLAN FOR U.S. PACIFIC POPULATIONS OF THE LEATHERBACK TURTLE (DERMOCHELYS CORIACEA) 21 (1998) [hereinafter RECOVERY PLAN].
[10] Creusa Hitipeuw et al., *Population Status and Interesting Movement of Leatherback Turtles, Dermochelys coriacea, Nesting on the Northwest Coast of Papua, Indonesia*, 6 CHELONIAN CONSERVATION & BIOLOGY 30 (2007).
[11] For ingestion of debris, *see* RECOVERY PLAN, *supra* note 9, at 24.
[12] For ocean acidification, *see* GERMAN ADVISORY COUNCIL ON GLOBAL CLIMATE CHANGE (WBGU), SPECIAL REPORT: THE FUTURE OF OCEANS – EARMING UP, RISING HIGH, TURNING SOUR 69 (2006), *available at* http://www.wbgu.de/wbgu_sn2006_en.html (last visited Feb. 2, 2009).
[13] While the ESA allows listing of foreign species, it only permits critical habitat designation and protection in U.S. jurisdiction. *See* Endangered Species Act of 1973 (ESA) § 4, 16 U.S.C. § 1533 (2005).
[14] *See id.* § 1532(5)(A) (definition of "critical habitat").
[15] 50 C.F.R. § 424.12(h)(2008).

to designate the Pacific leatherback's foraging waters as critical habitat and petitioned NMFS to do so in 2007 (Petition).[16]

The Petition requests NMFS revise existing leatherback critical habitat to include a 200,000 square-mile area of open water off Oregon and California extending to the boundary of the Exclusive Economic Zone (EEZ). The leatherback has critical habitat in the U.S., but it encompasses a beach in the Virgin Islands and the coastal waters just off that beach, so it does not help the Pacific population. Scientific data demonstrates that the imperiled Pacific leatherback depends on the proposed Pacific habitat. The Petition presents a special challenge because it requests the designation of open ocean as critical habitat, something NMFS has not done before.[17] Petitioners believe the value of formal designation outweighs its costs, like weakening the fishing industry, the prohibitive expenditures the designation would require to meet water quality standards, and national security impediments.[18] However, regardless of costs, it is unclear what benefits open ocean designation would actually provide the leatherback.

Part II of this paper explains the role of critical habitat in ESA implementation and the debate over the conservation value of critical habitat. Part III discusses Pacific leatherback biology, the species' ESA management history, and the details of the Petition. In Part IV, the paper analyzes the extent to which ESA critical habitat designation could benefit the Pacific leatherback and considers how other protection measures benefit the species as well, such as those adopted under the Magnuson-Stevens Fishery Conservation and Management Act (MSA),[19] the Marine Mammal Protection Act (MMPA),[20] and the Clean Water Act (CWA).[21] This article asserts that the ESA provides the best overall protection for the species, though the MSA may afford the most direct means to curtail the most serious threat to the Pacific leatherback, the incidental take of turtles by commercial fishing boats.

Although the Pacific leatherback might greatly benefit from ESA critical habitat designation of its foraging grounds off the U.S. West Coast, NMFS is likely to determine that the costs of designation outweigh the benefits. The threats interfering with Pacific leatherback survival may be simply too vague and difficult to control in the open ocean. It is unreasonable for NMFS to designate open ocean habitat without assured mitigation benefits, which research cannot demonstrate at this time. The Pacific leatherback sea turtle

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[16] *See* CENTER FOR BIOLOGICAL DIVERSITY & TURTLE ISLAND RESTORATION NETWORK, PETITION TO REVISE THE CRITICAL HABITAT DESIGNATION FOR THE LEATHERBACK SEA TURTLE (*DERMOCHELYS CORIACEA*) UNDER THE ENDANGERED SPECIES ACT, *available at* http://www.nmfs.noaa.gov/pr/pdfs/species/petition_leatherback_critical_habitat_pacific.pdf [hereinafter PETITION].

[17] Of the few listed marine species for which NMFS designated critical habitat, the habitat is mostly for breeding and all of it is on or near shore. *See generally* NMFS Office of Protected Resources, http://www.nmfs.noaa.gov/pr/species/ (last visited Feb. 2, 2009).

[18] In order to designate critical habitat for a species under the ESA, NMFS must make the determination that the benefits of designation outweigh the cost of designation. *See* generally ESA § 4, 16 U.S.C. §§ 1532 *et seq.* (2005). Detailed description of this process will follow in Part II.

[19] 16 U.S.C. § 1801 *et seq.* (2008).

[20] *Id.* § 1361 *et seq.*

[21] 33 U.S.C. § 1251 *et seq.* (2008).

deserves prudent protective measures, but it does not seem that CHD is a measure that will provide the necessary protections.

II. The Law and Practice of Critical Habitat

There is significant debate over the purpose and language of species and habitat protection provisions in the ESA, including debate over the value of critical habitat. Although the ESA identifies the importance of habitat protection, the language directing the designation of critical habitat is ambiguous, leaving room to question the value of designation and provides exceptions that enable the regulating agencies, NMFS and the U.S. Fish & Wildlife Service (FWS), to preclude designation.

Congress passed the ESA in 1973 to protect at-risk species and their habitat. The Act is a "comprehensive suit of affirmative mandates, strict prohibitions, strong recommendations, and limited exceptions"[22] and is "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation."[23] The ESA has "three fundamental goals: to prevent the extinction of imperiled species, to secure their eventual recovery, and to protect the ecosystems upon which those species depend."[24] The Act explicitly mandates that all federal agencies conserve species.[25] It plainly and boldly defines "conservation" as using all methods necessary to bring a species back from threatened or endangered status.[26]

The ESA provides many protections for listed species. Key protections include: listing and designation (§ 4) and prohibitions against any activity that would "take" a listed species (§ 9) and any federal agency activity that might jeopardize a listed species or adversely modify its habitat (§ 7).[27] It also has a citizen suit provision to enable "any person"[28] to bring suit to enforce the Act (§ 11(g)).[29] Nonetheless, the ESA does provide exceptions to prohibitions and listing requirements.

A. Critical Habitat in the ESA

The plain language of the ESA identifies the importance of protecting habitat.[30] Congress recognized the inseparable dynamic between species and their habitat, and designed the

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[22] TONY A. SULLINS, BASIC PRACTICE SERIES: ENDANGERED SPECIES ACT 2 (American Bar Association Section of Environment, Energy, and Resources 2001) (1966).
[23] *TVA v. Hill*, 437 U.S. 153, 180 (1978).
[24] Kieran F. Suckling and Martin Taylor, *Critical Habitat and Recovery*, in THE ENDANGERED SPECIES ACT AT THIRTY: RENEWING THE CONSERVATION COMMITMENT 75, 75 (D. Goble et al., eds. 2006).
[25] ESA § 2(c)(1), 16 U.S.C. § 1531(c)(1) (2005).
[26] *Id.* § 1532(3).
[27] *See id.* §§ 1538, 1540; *See generally* SULLINS, *supra* note 22, at 39-58.
[28] 16 U.S.C. § 1531(13) (2008).
[29] *Id.* § 1540(g). A recent case may partly eviscerate this power. *Center for Biological Diversity v. Hamilton*, 453 F.3d 1331 (11th Cir. 2006). *See* Stephen Butler, *In Brief:* Center for Biodiversity v. Hamilton*: Eviscerating the Citizen Suit Provision of the Endangered Species Act?*, 34 ECOLOGY L.Q. 1137 (2007).
[30] *See* ESA, § 2(b) "the purposes of this Act are to provide a means whereby the ecosystem upon which endangered species and threatened species depend may be conserved." 16 U.S.C. § 1531(b) (2005).

ESA to enable designation, not hinder it. In fact, Congress acknowledged, "[T]he ultimate effectiveness of ESA will depend on designation of critical habitat."[31] The Act requires critical habitat identification, designation, and protection for every listed species.[32] However, because of the resulting difficulties with implementation, the regulating agencies, NMFS and FWS (collectively, "the Services"), and presidential administrations since President Reagan have manipulated statutory language to weaken the value of critical habitat and preclude designation.[33]

Two sections of the ESA pertain most directly to CHD: §§ 4 and 7. Section 4 defines the species listing and CHD process. Section 7 identifies the consultation process federal agencies must adhere to when conducting an action that may jeopardize a species or adversely modify that species' habitat. These sections include many important terms and processes imperative to the ESA goals of species and habitat protection. However, Congress did not clearly define many of them in the original statute, and left the door open to amended definitions subject to political agendas, disagreement, and confusion over implementation.

Despite Congress's intent that the decision "not to designate" be the exception and not the rule, the opposite seems true in practice.[34] In 2001, approximately only 10% of total listed species had designated critical habitat.[35] In 2007, after many years of lawsuits and court ordered designations, the FWS estimates this number has increased to 36%.[36] Marine species fall below the average, with approximately 21% of species having designated critical habitat.[37]

1. Section 4: Listing Determination and Critical Habitat Designation

Section 4 defines the listing process.[38] A species must be listed under the ESA to be substantially protected by it. The Secretary of Commerce is responsible for listing marine species, which the Secretary has delegated to NMFS, and the Secretary of the Interior is

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[31] H.R. Rep. No. 887 at 3 (1976).
[32] The Act requires investigation into designation, but critical habitat does not always have to be designated. The exceptions for designation are discussed below.
[33] *See* D. Noah Greenwald, Kieran F. Suckling, and Martin Taylor, *The Listing Record*, in THE ENDANGERED SPECIES ACT AT THIRTY: RENEWING THE CONSERVATION COMMITMENT 51, 56-67 (D. Goble et al, eds. 2006).
[34] J.M. Hoekstra et al., *A Critical Role for Critical Habitat in the Recovery Planning Process? Not Yet*, 12 ECOLOGICAL APPLICATIONS 701, 701-707 (2002).
[35] J.M. Patlis, *Paying Tribute to Joseph Heller with the Endangered Species Act: When Critical Habitat Isn't*, 20 STAN. ENVTL. L.J., 133, 133-217 (2001); A. Armstrong, *Critical Habitat Designations Under the Endangered Species Act: Giving Meaning to the Requirements for Habitat Protection*, 10 S.C. ENVTL. L.J., 53, 53-86 (2002); Amy N. Hagen and Karen E. Hodges, *Resolving Critical Habitat Designation Failures: Reconciling Law, Policy, and Biology*, 20 CONSERVATION BIOLOGY 399, 399-407 (2006).
[36] U.S Fish & Wildlife Serv., Fact Sheet, *Endangered Species Program: Critical Habitat: What is it?*, 1 (2007), *available at* www.fws.gov/endangered/factsheets/Critical_Habitat_12_05.pdf (last visited Feb. 2, 2009).
[37] NMFS Office of Protected Resources, Critical Habitat, http://www.nmfs.noaa.gov/pr/species/criticalhabitat.htm (last visited Feb. 2, 2009).
[38] 16 U.S.C. § 1533 (2005). For a more in-depth explanation, *see* SULLINS, *supra* note 22, at 5-25.

responsible for all other species, which the Secretary has delegated to the FWS.[39] Listing is initiated either by the Secretary or by a petition to the Secretary. To be listed, a species must be at risk of extinction in all or most of its range, or likely to become so within the foreseeable future.[40] The Secretary must list all qualified species.

The ESA requires the Secretaries to consider five criteria when determining listing, including "the present or threatened destruction, modification, or curtailment of the species' habitat or range."[41] The five considerations must be assessed "solely on the basis of the best scientific and commercial data available."[42] Economic criteria are prohibited from consideration.[43] The courts and the Services support thorough deliberation of these considerations and require reliance on current realistic conservation efforts.[44]

Section 4 also requires designation of critical habitat at the time of listing and allows for later revision.[45] It defines critical habitat as a specific area that has the physical and biological features "essential to the conservation of the species and which may require special management considerations or protection."[46] A species' entire range should not be designated.[47] The original Act did not include the above requirement or definition. Congress added them in 1978, along with habitat designation procedures allowing consideration of economic impact.[48] Although these amendments provided clearer definitions and specified a process, they also gave the Secretary "greater latitude rather than a stronger mandate."[49]

In 1982, the Services promulgated a regulation to specify what the Secretary may consider and should focus on when determining critical habitat identification.[50] The regulation states the Secretary should consider requirements like space for normal behavior and nutritional and physiological requirements. This rule limits the search to "primary constituent elements" (PCEs), which are "principle biological or physical constituent elements within the defined area that are essential to the conservation of the species," including feeding, spawning and nesting sites, and water quality.[51]

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[39] Throughout this paper, the term "Secretary" refers to both the Secretary of Commerce and Interior, unless noted otherwise. The term "the Services" or "the Agencies" refers to both NFMS and FWS.
[40] 16 U.S.C. §§ 1522(6), (20) (2005).
[41] *Id.* § 1533(a)(1)(A).
[42] *Id.* § 1533(b)(1)(A).
[43] 50 C.F.R. § 424.11(b) (2007).
[44] *See* Draft Policy for Evaluation of Conservation Efforts When Making Listing Decisions, 65 Fed. Reg. 37,102 (2000); *See Biodiversity Legal Foundation v. Babbitt*, 943 F. Supp. 23, 26 (D. D.C. 1996).
[45] 16 U.S.C. § 1533(a)(3)(A) (2005).
[46] *Id.* § 1532(5)(A).
[47] 50 CFR § 424.12(b).
[48] Patlis, *supra* note 35, at 136.
[49] *Id.* at 153.
[50] 50 C.F.R. § 424.12(b).
[51] 50 C.F.R. § 424.12(b). In assessing the requirement that the "features are essential to the conservation of the species," NMFS must consider the needs of the species. Regulations define these as including, but not limited to (1) space for individual and population growth, and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing of offspring; and (5) habitats that are

Although the Services themselves created the PCEs concept, courts have found they have not always follow their own regulations. In 2000, the U.S. District Court for New Mexico ruled that the Agencies must define PCEs with enough specificity to be meaningful under the purposes of the ESA.[52] In 2003, the U.S. District Court for the Eastern District of California ruled that the Agencies must clearly identify the PCEs and if no PCEs are known, the Agencies cannot designate critical habitat.[53]

Although the ESA mandates the Services designate critical habitat, the language allows for exclusions. The breadth and boundaries of these exclusions creates much uncertainty and debate. The Act requires that the Secretary "shall" designate critical habitat at the time of listing "to the maximum extent prudent and determinable."[54] Critical habitat must be determined based on the best scientific data available and after taking into consideration economic and other relevant impacts.[55] A species' need for critical habitat can be excluded if the benefits of exclusion outweigh the benefits of designation, provided that exclusion will not result in the extinction of the species.[56]

Proper discretion to designate rests on the terms "prudent" and "determinable," which the Services defined in 1982.[57] Designation is not prudent if either the identification of habitat increases the threat to the species or designation would not be beneficial. If a Service determines the designation is not prudent, then it is not required to designate critical habitat.[58] If critical habitat is not determinable, because information is lacking or the needs of the species are not understood, the Agencies can take an additional year to decide whether to designate it.[59] The courts have been clear that this exception is not automatic and the Agencies must defend their need for the extra time.[60]

The standard for determining that designation will not be beneficial to a species and therefore "not prudent," is complicated and unclear. It is also FWS's most common justification for not designating.[61] FWS has tried to defend decisions not to designate based on this exclusion because alternative protections on the area already exist or because the §

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protected from disturbance or are representative of the historic geographical or ecological distribution of a species. *Id.*

[52] *Middle Rio Grande Conservancy Dist. v. Babbitt*, 206 F. Supp. 2d 1156, 1178 (D. N.M. 2000).

[53] *Home Builders Ass'n of N. Cal. v. U.S. Fish & Wildlife Serv.*, 268 F. Supp. 2d 1197, 1210 (E.D. Cal. 2003).

[54] 16 U.S.C. § 1532(5)

[55] *Id.* §1533(b)(2).

[56] The requirement of a cost-benefit analysis in critical habitat designation methodology is an important and interesting distinction from listing designation methodology, which forbids it. The only exception to the cost-benefit analysis and determination is if the Secretary determines that the species will go extinct without habitat designation. In such a case, the Secretary is required to designate the habitat as critical. *Id.* § 1533(b)(2).

[57] 50 C.F.R. § 424.12 (2008).

[58] *Id.* § 424.12.

[59] ESA § 4(b)(5)(c)(ii), 16 U.S.C. § 1533(b)(6)(c)(ii) (2005).

[60] *Northern Spotted Owl v. Lujan*, 758 F. Supp. 621 (W.D. Wash. 1991).

[61] Josh Thompson, *Critical Habitat Under the Endangered Species Act: Designation, Re-designation, and Regulatory Duplication*, 58 ALA. L. REV. 885, 891 (2007).

7 consultation process provides adequate protection.[62] Courts have maintained that a "not prudent" determination must be supported by a reasonable analysis of specific facts and cannot be defended based on the existence of the § 7 jeopardy standard.[63] Further, the court has maintained that FWS cannot use the existence of "special management" to preclude the need for designation.[64]

Another powerful justification for exceptions lies in the ESA provisions permitting the Services to perform economic analysis when considering designation and to preclude designation if the costs are too high.[65] It is a notable difference from the listing procedure, which explicitly precludes economic analysis.[66] Taking advantage of limited direction from the ESA, the Services have aggressively excluded habitat based on economic analysis.[67] Since FWS asserts that CHD does not provide a species with any additional protection, any cost of designation is likely to outweigh the benefit.[68]

Recently, federal courts have held that the FWS's economic analysis for CHD violated express intentions of the ESA. However, the courts' reasonings have not been consistent. In 2000, the U.S. District Court for New Mexico overturned the habitat designation for the Rio Grande Silvery Minnow because it found the FWS did not properly distinguish costs for listing and for designation.[69] In 2001, the U.S. Court of Appeals for the Tenth Circuit invalidated this method and determined that the FWS should consider all costs for designating critical habitat for the Southwestern willow flycatcher.[70] In 2003, the U.S. District Court for the Eastern District of California supported the Tenth Circuit holding in a challenge to the FWS's determination of CHD for the Alameda whipsnake.[71] The court vacated the CHD and remanded it to the FWS for the purpose of revising the legal description of the critical habitat.[72]

In 2004, the U.S. District Court for the District of Columbia disagreed with the Tenth Circuit's position and followed the 2000 New Mexico district court's holding that the Service must distinguish costs.[73] Some argue this inconsistent determination has led FWS to

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[62] Hagen & Hodges, *supra* note 35, at 401.
[63] *See Natural Res. Def. Council v. U.S. Dep't of Interior*, 113 F.3d 1121 (9th Cir. 1997); *Conservation Council for Haw. v. Babbitt*, 2 F. Supp. 2d 1280 (D. Haw. 1998); *See also* discussion on § 7 jeopardy standard, *infra* Part II.A.ii.
[64] *Center for Biological Diversity v. Norton*, 240 F. Supp. 2d 1090 (D. Ariz. 2003); *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059 (9th Cir. 2004).
[65] Patlis, *supra* note 35, at 153.
[66] H.R. Rep. No. 97-567, at 22 (1982).
[67] *See*, Thompson, *supra* note 61, at 889; Amy Sinden, *The Economics of Endangered Species: Why Less is More in the Economic Analysis of Critical Habitat Designations*, 28 HARV. ENVTL. L. REV. 129, 139 (2004); Amanda Garcia, *The Sage Grouse Debate: Cost-Benefit Analysis and the Discourse of the Endangered Species Act*, 14 N.Y.U. ENVTL. L.J. 572 (2006).
[68] *Id.* at 605.
[69] *Middle Rio Grande Conservancy Dist. v. Babbitt*, 206 F. Supp. 2d 1156, 1183 (D. N.M. 2000).
[70] *New Mexico Cattle Growers Ass'n v. U.S. Fish & Wildlife Serv.,* 248 F.3d 1277 (10th Cir. 2001).
[71] *Home Builders Ass'n of N. Cal. v. U.S. Fish & Wildlife Serv.*, 268 F. Supp. 2d 1197, 1239 (E.D. Cal. 2003).
[72] *Id.* at 1240.
[73] *Cape Hatteras Access Pres. Alliance v. U.S. Dept. of Interior*, 344 F. Supp. 2d 108, 132 (D. D.C. 2004).

perform more formal economic analysis, leading to fewer CHDs.[74] Although the most recent decision on this issue supports excluding listing costs from designation cost consideration, the decision does not bind other courts from following the Tenth Circuit and including listing costs. The issue will not be resolved between circuits until the Supreme Court rules on the matter.

Despite the substantial CHD exceptions available to the Services and their hesitation to designate, some species do receive CHD. When an area is designated as critical habitat, the designating agency must inform the public by issuing a formal rule and delineating the area on a map.[75] Designation does not create a sanctuary or automatically provide blanket protection for the area.[76] It is "essentially an official notification" to federal agencies that their § 7 consultation duties apply in the area.[77] Further, consultation only leads to protection when it is determined that a federal agency action may impact the area. Section 7 of the ESA explains the process for this determination.

2. Section 7: Consultation Process

Section 7 of the ESA imposes conservation obligations on federal agencies.[78] Section 7(a)(1) requires all federal agencies to further the purposes of the ESA by carrying out programs for the conservation of species.[79] Section 7(a)(2) requires federal agencies to consult with the Services to ensure their actions do not jeopardize the existence of listed species or adversely modify its critical habitat.[80] This consultation process is one of the most powerful conservation tools in the ESA, but it is also one of the most resource intensive.

Regulations define what it means to "jeopardize" a species or "adversely modify" habitat. An action jeopardizes a species if it is reasonably expected to "directly or indirectly . . . reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."[81] An action adversely modifies habitat if it is likely to result in a "direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical."[82] This definition includes PCEs.[83]

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[74] "For example, FWS used its formal CBA process to justify reducing the arroyo toad's critical habitat designation by 97 percent, reducing the bull trout's critical habitat by more than 75 percent, and to propose reducing the red-legged frog's critical habitat by 82 percent." Garcia, *supra* note 67, at 603; Sinden, *supra* note 67.
[75] 50 C.F.R. §§ 424.12(c), 424.18 (2008).
[76] Proposed Critical Habitat – Sandy Point, St. Croix, U.S. Virgin Islands, 43 Fed. Reg. 12050, 12050 (Mar. 23, 1978).
[77] *Id.* at 12051.
[78] *See* SULLINS, *supra* note 22, at 59-86.
[79] 16 U.S.C. § 1536(a)(1) (2008).
[80] *Id.* § 1536(a)(2).
[81] 50 C.F.R. § 402.02 (2008).
[82] *Id.*
[83] Final Designation of Critical Habitat for the Rio Grande Silvery Minnow, 64 Fed. Reg. 36,274 (July 6, 1999) (to be codified at 50 C.F.R. pt. 17).

If a federal agency action may jeopardize a species or adversely modify that species habitat, the agency must consult with the Service that oversees the species. The complicated consultation process strictly concerns the nature of a federal action and how that action might affect listed species. It can be broken down into three main steps: (1) Screening the "Action," (2) Biological Assessment, and (3) Formal Consultation.[84] The federal agency must use the best scientific data available to answer specific questions that determine the length of the process.

To "screen the 'action,'" the agency must determine if the action is a "major construction activity" and what listed species present in the action area (all areas directly or indirectly affected by the action) may be affected by the action. If these answers are positive, the agency is required to continue the process, by either preparing a biological assessment (BA) or conducting an informal consultation to determine whether the action is likely to adversely affect listed species or habitat.[85] If it is found likely, an agency must conduct a formal consultation with the Service and request the Service issue a biological opinion (BiOp). The BiOp must state how the agency action affects the species or its critical habitat, in terms of whether the action creates "no jeopardy," jeopardy with "reasonable and prudent alternatives (RPAs)," or "jeopardy with no RPAs." If the Service finds the action creates jeopardy or adverse modification, then the BiOp must include RPAs to the proposed action, if there are any.[86] RPAs must be alternatives that can be implemented consistent with the purposes of the action, are within the scope of the action agency's legal authority, are economically feasible, and avoid jeopardy or adverse modification.[87] While BiOps serve an "advisory function" and it is up to the action agency to decide how to proceed based on that advice,[88] the agency must select and implement an RPA before conducting the harmful activity.[89]

Despite its importance, the ESA does not define the consultation process very well and does not define important terms like "jeopardy" and "adverse modification." The Services are responsible for promulgating regulations that help clarify definitions and provide direction. However, without firm definitions from Congress, the interpretations of these critical terms are susceptible to political and economic agendas.[90]

B. How Useful is Critical Habitat?

The debate over the value of critical habitat centers on § 7 and the consultation process. Designating critical habitat adds a difficult step to the already arduous consultation process

[84] *See* SULLINS, *supra* note 22, at 71-81.
[85] 50 C.F.R. §§ 402.14(a) and (b) (2008).
[86] *Id.* § 402.14(h).
[87] *Id.* § 402.14(h)(3).
[88] Interagency Cooperation - Endangered Species Act of 1973, as Amended, 51 Fed. Reg. 19,926, 19,928 (June 13, 1986) (to be codified 50 C.F.R. 402); SULLINS, *supra* note 22, at 78.
[89] *Sierra Club v. Marsh*, 816 F.2d 1376, 1389 (9th Cir. 1987).
[90] For example, in December 2008, the Bush administration issued revised regulations that no longer require the Services to perform independent consultations with other agencies for environmental review determinations. Several non-profit organizations and the state of California immediately filed suit against the Bush administration over these regulations. The Obama administration responded to the regulations within hours of the 2009 Inauguration by freezing all new and pending federal regulations the Bush administration pushed through.

because it requires the Services to determine whether an action will "adversely modify" the habitat.[91] This extra step, coupled with the lack of a clear definition to distinguish protections provided by "adverse modification" from the "jeopardy" standard, creates an incentive for the Services to argue that "adverse modification" is superfluous to the "jeopardy" standard.[92] If it is, the Services argue, then designating critical habitat serves little to no purpose because the designation of critical habitat and the prohibition on "jeopardy" grant species the same protections. The Services, therefore, should not have to spend valuable time and energy assessing it. Decades of re-interpretation and argument over the value of the standards have resulted, much to the detriment of ESA critical habitat designation.

The Services have been reticent to designate critical habitat since Congress added the designation process in 1978. Up until the late 1990s, FWS determined that designation was not prudent for almost every species it listed. Although NMFS did not follow the FWS's policy, its designation record is actually lower than FWS.[93] In general, the Services complain that designation is too resource intensive, they do not have the monetary allocations to do so appropriately, and designation does not provide additional benefits anyway.[94] The courts have repeatedly lambasted FWS for "chronically failing"[95] to designate, identifying their "long held policy position that CHDs are unhelpful, duplicative, and unnecessary."[96]

Without definition and direction for CHD from the ESA, the Services started promulgating regulations and issuing guidelines soon after the Act's inception. The first guidelines, issued in 1975, seemed to support the importance of CHD and the power of the term "adverse modification."[97] However, the following year, the Services' regulations started reflecting their frustration and disinterest in CHD. They defined "adverse modification" and "jeopardy" in a way that conflated their meanings and created a weaker standard for both.[98] During the Reagan administration, FWS promulgated regulations that indicated adverse modification had little bearing on conservation[99] and in the G.H. Bush

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[91] 16 U.S.C. § 1536(a)(2) (2005).
[92] Thompson, *supra* note 61, at 896; Endangered and Threatened Wildlife and Plants; Final Listing Priority Guidance for Fiscal Years 1998 and 1999, 63 Fed. Reg. 25,502, 25,505 (May 8, 1998); Patlis, *supra* note 35, at 14; *Gifford Pinchot Task Force v. U.S Fish & Wildlife Serv.*, 378 F.3d 1059 (9th Cir. 2004).
[93] Daniel J. Rohlf, *Jeopardy Under the Endangered Species Act: Playing a Game Protected Species Can't Win*, 41 WASHBURN L.J. 114, 117 n.9 (2001).
[94] *Forest Guardians v. Babbitt*, 174 F.3d 1178, 1191 (10th Cir. 1998).
[95] *Alabama-Tombigbee Rivers Coalition v. Kempthorne,* 477 F.3d 1250, 1269 (11th Cir. 2007); Jessica Ferrell, *Court Upholds ESA "No Surprises" Rules, Boosts Confidence in Habitat Conservation Plans*, ENVIRONMENTAL NEWS, Oct. 10, 2007, at A1, *available at* http://www.martenlaw.com/news/?20071010-no-surprises-rules .
[96] *New Mexico Cattle Growers Ass'n v. U.S. Fish & Wildlife Serv.,* 248 F.3d 1277, 1283 (10th Cir. 2001).
[97] FWS and NMFS, Notice on Critical Habitat Areas, 40 Fed. Reg. 17,764 (April 22, 1975); Patlis, *supra* note 35, at 163.
[98] *Id.* at 169.
[99] M.F. Taylor, K.F. Suckling, and J.J. Rachlinksi, *The Effectiveness of the Endangered Species Act: A Quantitative Analysis*, 55 BIOSCIENCE 360 (2005).

administration, NMFS issued guidance that critical habitat was meaningless.[100] At this point, in a clear move away from critical habitat designation, NMFS actually started creating conservation areas instead of designating critical habitat.[101] More recently, under direction from the G.W. Bush administration, FWS started issuing a disclaimer criticizing CHD.[102]

It is not surprising that the Services resist CHD. They face remarkable practical difficulty in the designation process and struggle with the time consuming and costly steps the ESA demands, from listing a species, designating its habitat, creating a recovery plan, and administering the consultation process. The saga of the critical habitat designations for two species, the Rio Grande silvery minnow and the Alameda whipsnake, demonstrate the practical difficulties in designation. For both of these species, FWS faced nearly ten years of litigation between listing and final designation of critical habitat. However, regardless of the justification, courts have not been overly sympathetic to the Services' complaints.

Despite the Services' authority to promulgate regulations defining jeopardy and adverse modification, courts have rejected the Services' interpretations that conflate jeopardy and adverse modification.[103] In 2001, the Fifth Circuit held that FWS's interpretation conflicts with the intentions of the ESA. The Ninth Circuit, in *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, supported the Fifth Circuit's decision in 2004.[104] The court held that FWS unlawfully interpreted the definition of "adverse modification" and required the Services to consider adequately the recovery benefits that critical habitat provides to a species.[105] The District Court for the District of Columbia, in *Cape Hatteras Access Pres. Alliance v. U.S. Dept. of the Interior*, yet again confirmed this holding.[106] Increasing court pressure may force FWS to change their interpretation of the definition, but FWS has yet to act.

If the Services revised their critical habitat regulations to meet the court's requirement that definitions and procedures be aligned with ESA policy, designation could have a stronger role in facilitating recovery. "The status quo for CHD is divisive, inefficient, and harmful to species recovery efforts."[107] Studies suggest this could be turned around through actions like requiring the Services to consider the social costs of not designating critical habitat and by

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[100] MEMORANDUM FROM WILLIAM W. FOX, DIRECTOR, NATIONAL MARINE FISHERIES SERVICE, ON GUIDANCE ON DESIGNATING CRITICAL HABITAT, TO THE REGIONAL DIRECTORS (March 19, 1992). "...the direct impacts resulting from a designation, over and above the impacts of listing the species, in most cases are minimal. In general, the designation of critical habitat only duplicates and reinforces the substantive protections resulting from listing." *Id.* at 2.

[101] *See* 50 C.F.R. §§ 223.206-.207 (1999); Patlis, *supra* note 35, at n.165.

[102] In 2003, the Department of Interior required FWS to include a disclaimer in critical habitat designation stating "In 30 years of implementing the ESA, the Service has found that the designation of statutory critical habitat provides little additional protection to most listed species, while consuming significant amounts of scarce conservation resources." U.S. DEPT. OF THE INTERIOR, CRITICAL HABITAT DISCLAIMER, Washington D.C. May 1 2003, *quoted in* Suckling & Taylor, *supra* note 24, at 78.

[103] Garcia, *supra* note 67, at 602 and n.185.

[104] 378 F.3d 1059, 1069 (9th Cir. 2004).

[105] *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1069 (9th Cir. 2004).

[106] *Id.*

[107] Hagen & Hodges, *supra* note 35, at 406.

giving separate meaning to "adverse modification."[108] Species and habitat are inextricably linked.[109] If ESA regulation supported CHD better, it is very likely that more listed species would recover more quickly.

While "[n]o scientist or policymaker questions the fact that habitat is the key to the survival of [listed] species,"[110] the debate over the usefulness of CHD continues to grow, fueled by every court holding and designation determination. Although it is difficult to quantify the usefulness of critical habitat given the short time span since most designations and the varied time needs of a species to recover,[111] it seems studying its possible effects in terms of species recovery may be the best way. Several recent studies purport to do this, although they find different results.

Some research indicates that CHD does help a species survive and recover. Studies points out that species with critical habitat are more likely to be improving or stabilizing and less likely to be declining than those species without designation.[112] Some researchers looked at population trends of 1,095 species in association with time listed, CHD, and recovery plans, and determined that species with critical habitat are twice as likely to be recovering as those without it.[113] Others recently determined that "CHD is correlated to increased effort to protect species," and identified how biology, law, and policy can work together to improve its usefulness.[114] Research and assessment on the Pacific leatherback species in particular indicates the species may greatly benefit from CHD.[115]

Many studies using varied approaches find critical habitat is not useful. Most recently, two economists used regression analysis to examine FWS recovery scores of 225 species to determine that CHD does not promote species recovery or prevent species decline.[116] Other social scientists used similar data to analyze the association between species recovery and factors like CHD, funding, and FWS priorities and found no significant correlation to CHD and recovery.[117] Still others considered the recovery plans of 181 species to determine that recovery trends for species with critical habitat did not differ significantly from species without it.[118]

Although many recent empirical studies indicate that CHD is not useful, they all admit that the difficulties in analyzing this kind of data may lead to inexact results. One

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[108] *Id.* at 403; Patlis, *supra* note 35, at 138.
[109] *Id.* at 141.
[110] *Id.* at 136.
[111] T.D. Male and M.J. Bean, *Measuring Progress in U.S. Endangered Species Conservation*, 8 ECOLOGY LETTERS 986, 990 (2005).
[112] J.A. Clark et al., *Improving U.S. Endangered Species Act Recovery Plans: Key Findings and Recommendations of the SCB Recovery Plan Project*, 16(6) CONSERVATION BIOLOGY 1510-1519 (2002).
[113] Taylor, *supra* note 99; Male & Bean, *supra* note 111, at 986.
[114] Hagen & Hodges, *supra* note 35, at 400.
[115] Benson et al., *supra* note 7.
[116] Joe Kerkvliet and Christian Langpap, *Learning From Endangered and Threatened Species Recovery Programs: A Case Study Using U.S. Endangered Species Act Recovery Scores*, 63 ECOLOGICAL ECONOMICS 499 (2007).
[117] Male & Bean, *supra* note 111, at 991.
[118] Clark et al., *supra* note 112, at 1515.

researcher is quick to identify the limited sample size and shortsighted methodology.[119] Other researchers admit that recovery is correlated with funding, threats, and recovery potential, which are also directly tied to CHD. With limited fields to study from and easily manipulated statistics, many of the studies embrace the difficulties in identifying the usefulness of CHD. Yet another points out that given this situation, the Services should not be so quick to dismiss the usefulness of CHD.[120]

It does not seem possible to make a strong determination that CHD does not benefit species, given the short period of recovery time to analyze, the difficulty in determining causation, funding, threat assessment, and individual species biology which impacts how quickly they could recover. With the largely undisputed fact that species depend on healthy habitat, it does seem appropriate to give designation the benefit of the doubt and proceed as if it is certain to help species recover, at least until we have enough years of data and consistent management methodology to prove otherwise.

The real usefulness of CHD depends on how the Services interpret the ESA and promulgate regulations to designate critical habitat and protect it. It is likely that for CHD to be truly useful, the Services must adhere to the courts' requests that they change their regulations and attitude towards designation. Under the Bush administration, the Services did not appear to be willing to do so. However, the usefulness of critical habitat designation must be considered under the current regulatory situation. While the Obama administration is seeking to reverse some of the Bush administration regulatory changes to the ESA, it is unclear how the administration will treat CHD.

III. The Petition: Background, Details, and Analysis

A. Leatherback Biology

The leatherback sea turtle (*Dermochelys coriacea*) is a unique species. It is one of the oldest species on earth and the largest, deepest diving, and longest migrating sea turtle. It is also the only surviving sea turtle species of its taxonomic family, which is distinguished by a slightly flexible carapace, instead of a bony carapace.[121] Special adaptations enable the leatherback to spend virtually its entire life at sea, traversing great distances of ocean between foraging and nesting habitat.[122] Female leatherbacks leave the ocean every two or three years to lay nests of eggs on the same beach where they were born.[123]

Leatherbacks average four to six feet long, weigh between 550 to 1,545 pounds, and feed almost exclusively on jellyfish.[124] Females lay about five clutches of sixty eggs per season.[125]

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[119] *Id.*
[120] Hagen & Hodges, *supra* note 35, at 400.
[121] RECOVERY PLAN, *supra* note 9, at 4.
[122] Scott R. Benson et al., *Post-Nesting Migrations of Leatherback Turtles from Jamursaba-Medi, Bird's Head Peninsula, Indonesia*, 6 CHELONIAN CONSERVATION AND BIOLOGY 150, 151 (2007).
[123] *Id.* at 152.
[124] M.C. James & T.B. Herman, *Feeding of Dermochelys coriacea on Medusae in the Northwest Atlantic*, 4 CHELONIAN CONSERVATION AND BIOLOGY 202, 205 (2001).
[125] RECOVERY PLAN, *supra* note 9.

There is a high mortality rate for the eggs. Studies estimate that leatherbacks mature around thirteen years, but growth and maturity is uncertain.[126]

The leatherback species lives in both the Atlantic and Pacific Ocean, but the populations are endemic to those particular regions.[127] Although the leatherback is listed as one single population, NMFS manages them separately, and the agency is considering making the species two distinct population segments.[128] The Pacific population migrates great distances in the Pacific, from nesting beaches off equatorial warm waters to foraging grounds in more southern and northern cooler waters. Many Pacific leatherbacks migrate from Western Pacific nesting beaches to U.S. waters off the West Coast in August through November.[129] They migrate to the U.S. to forage on the abundant jellyfish population that is present due to the exceptional seasonal upwelling that creates an incredibly productive ecosystem.[130] Pacific leatherbacks only forage in U.S. west coast waters; they do not make landfall to nest on any beaches.

The entire leatherback population is decreasing, but the Pacific population is catastrophically declining. Over the last two decades, every major Pacific nesting site has lost population.[131] Research estimates that the number of female adults and sub-adults dropped from 91,000 to 2,955 and the entire population has diminished by ninety-five percent.[132] The Pacific leatherbacks are predicted to be on the verge of extinction.[133] The endangered leatherback population faces five major threats: entanglement in fishing gear; harvesting of adults and eggs; destruction of habitat through coastal development and erosion; ingestion of marine debris; and ocean acidification.

Leatherbacks directly face entanglement in gear, ingestion of debris, and ocean acidification in their foraging habitat. Debris ingestion and ocean acidification result from human activity, but it is uncertain how critical habitat designation would enable effective management to mitigate these threats. Entanglement in gear is a direct result of fishing activity in or near the habitat. Critical habitat designation can help curtail this threat by limiting fishing activity in the area and forcing specific regulation of water quality, but it is not the only way to do so.

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[126] DRIFT GILLNET BIOP, *supra* note 8, at 66.
[127] Johan Chevalier et al., *Significant Difference of Temperature-Dependent Sex Determination Between French Guiana (Atlantic) and Playa Grande (Costa-Rica, Pacific) Leatherbacks (Dermochelys coriacea)*, 20 ANNALES DES SCIENCES NATURELLES – TOOLOGIE ET BIOLOGIE ANIMALE 147, 148 (1999); Benson et al., *supra* note 122; NMFS issues separate Recovery Plans for the Atlantic and Pacific populations.
[128] NAT'L MARINE FISHERIES SERV. & U.S. FISH & WILDLIFE SERV., LEATHERBACK SEA TURTLE (*DERMOCHELYS CORIACEA*) FIVE-YEAR REVIEW: SUMMARY AND EVALUATION 3 (2007), *available at* http://www.nmfs.noaa.gov/pr/pdfs/species/leatherback_5yearreview.pdf (last visited Feb. 2, 2009).
[129] Benson et al., *supra* note 7, at 341.
[130] J.F. Eisenberg and J. Frazier, *A Leatherback Turtle (Dermochelys coriacea) Feeding in the Wild*, 17 J. HERPETOLOGY 81, 82 (1983); Benson et al., *supra* note 7, at 345.
[131] PACIFIC FISHERY MGMT. COUNCIL & NMFS, MANAGEMENT OF THE DRIFT GILLNET FISHERY EXEMPTED FISHING PERMIT AND/OR REGULATORY AMENDMENT: DRAFT ENVIRONMENTAL ASSESSMENT, REGULATORY IMPACT REVIEW, AND REGULATORY FLEXIBILITY ANALYSIS 67 (2006).
[132] Spotila et al., *supra* note 4, at 530.
[133] *Id.*

To save the leatherback from extinction, the threats they encounter in that habitat must be mitigated. In 1979, NMFS designated Atlantic leatherback nesting beaches as critical habitat to help protect the species. Since the two populations do not mingle, this habitat designation does not help protect the Pacific population. Because Pacific leatherbacks do not nest in U.S. waters, there is less that can be done to stop the destruction of nesting habitat. However, CHD could help mitigate threats in foraging habitat.

B. Leatherback History with the ESA

FWS and NMFS share management duties of ESA-listed species based on species habitat. NMFS manages marine species under the ESA and the Marine Mammal Protection Act (MMPA) and "works to conserve, protect, and recover species" listed under these acts.[134] It manages approximately 65 ESA-listed species and 160 marine mammal stocks.[135] When species like sea turtles use both marine and terrestrial habitat, NMFS and FWS may manage a species together. Because the Atlantic leatherback population has critical habitat to protect terrestrial nesting sites, both Services manage it. FWS is responsible for protection of leatherbacks in their nesting beach habitat, while NMFS has jurisdiction for the species in the marine environment.

The legal history of leatherback protection spans nearly forty years. In 1970, the species was listed under the predecessor to the current ESA.[136] In 1979, NMFS designated a small area of Atlantic nesting grounds in the U.S. Virgin Islands as critical habitat for the species.[137] NMFS justified this designation by stating, "The survival and recovery of the leatherback depends on the maintenance of suitable and undisturbed nesting beaches and protective waters adjacent to those beaches."[138] NMFS did not consider Atlantic offshore ocean or Pacific Ocean habitat.[139]

In 1998, twenty-eight years after listing, NMFS issued a Recovery Plan for the Pacific population.[140] The Secretary is required to create and implement recovery plans "for the conservation and survival of each listed species" under § 4(f) of the ESA.[141] However, the plans "are for guidance purposes only" and do not have the force of law.[142] FWS has stated that "implementation of all recovery tasks identified in a recovery plan is not assured by

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[134] *See* NOAA Fisheries, Office of Protected Resources, http://www.nmfs.noaa.gov/pr (last visited Feb. 2, 2009).
[135] *See* NOAA Fisheries, Office of Protected Resources, Species Information, http://www.nmfs.noaa.gov/pr/species/ (last visited Feb. 2, 2009).
[136] ESA listing rule, *supra* note 2.
[137] Critical Habitat – Sandy Point, St. Croix, U.S. Virgin Islands, 44 Fed. Reg. 17,710 (Mar. 23, 1979). *See also* Endangered and Threatened Species; Regulations Consolidation, 64 Fed. Reg. 14,052, 14,067 (Mar. 23, 1999) (In 1999 NMFS consolidated threatened and endangered species regulations).
[138] 44 Fed. Reg. 17,710, 17,712 (Mar. 23, 1979).
[139] 43 Fed. Reg. 12,050 (Mar. 23, 1978).
[140] Nat'l Marine Fisheries Serv.; Endangered and Threatened Wildlife; Recovery Plans for Listed Sea Turtles, 63 Fed Reg. 28359 (May 22, 1998).
[141] ESA § 4(f)(1), 16 U.S.C. § 1533(f)(1) (2005).
[142] *Fund for Animals v. Rice*, 85 F.3d 535, 548 (11th Cir. 1996). *See* 16 U.S.C. § 1533(f).

publication of the plan,"[143] but "review plans are considered an integral component of species conservation."[144] The Leatherback Plan stated that the Pacific population was "in severe decline and recovery actions must be given the highest priority."[145] It specifically identified the primary threats as incidental take from high seas fisheries, like drift gillnet fishing, and mortality related to nest destruction.[146] Incidental take means the turtle is not the primary target of fishermen, but the species gets caught in the fishing net and is "taken" incidentally with the targeted catch. Most importantly, the Plan declared a primary priority to take measures to ensure the maintenance of existing foraging areas as healthy environments.[147]

In 2001, NMFS promulgated a regulation creating a seasonal protected area to mitigate leatherback bycatch in the drift gillnet fishery.[148] Soon NMFS referred to this area as "The Leatherback Conservation Area" (LCA). The area spans an impressive 200,000 square miles, from the coastline of Oregon and California out to the edge of the Exclusive Economic Zone (EEZ), 200 nautical miles from shore, and comprises the primary foraging grounds of Pacific leatherback in U.S. jurisdiction. From August 15 to November 15 every year, during peak foraging time, the drift gillnet fishery is excluded from fishing in this area.[149]

Most recently in 2007, NMFS issued a Five-Year Review of the Pacific population.[150] The ESA mandates a review of listed species at least every five years to ensure listing classification accuracy and establish a current recovery priority number.[151] The recovery priority number is based on an analysis of recovery criteria, biology and habitat, threats, conservation measures, and regulatory mechanisms. The Review identified Pacific leatherback recovery priority "#1," which "represents a high magnitude of threat, a high recovery potential, and the presence of conflict with economic activities."[152] It further stated that, despite thirty-seven years of listing and great strides in research, nine years after the Recovery Plan identified an immediate need for recovery measures "a management plan designed to maintain sustained populations of turtles was not yet completed."[153]

C. The Leatherback Conservation Area

As previously mentioned, in 2001 NMFS promulgated a rule prohibiting the drift gillnet commercial fishery from fishing off most of California and Oregon from August 15 to

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[143] U.S. FISH & WILDLIFE SERV., REPORT TO CONGRESS ON THE RECOVERY PROGRAM FOR THREATENED AND ENDANGERED SPECIES 3 (1996), *available at* http://www.fws.gov/endangered/pdfs/Recovery/1996-1.PDF (last visited Feb. 2, 2009).
[144] SULLINS, *supra* note 22, at 37.
[145] RECOVERY PLAN, *supra* note 9, at vi.
[146] *Id.* at 17.
[147] *Id.* at 60-64.
[148] Drift gillnetting is a passive form of fishing where the fishermen use a very large mesh net that is designed to float vertically in the water column, typically over night. This method targets near surface swimming pelagic groups of fish, like tuna and swordfish.
[149] 50 C.F.R. § 660.713 (2008).
[150] *See* NMFS AND FWS, *supra* note 128.
[151] ESA § 4(c)(2)(a), 16 U.S.C. § 1533(c)(2)(a); Endangered and Threatened Wildlife and Plants; Initiation of a 5-year Review of Listed Sea Turtles, 70 Fed. Reg. 20,734 (April 21, 2005).
[152] RECOVERY PLAN, *supra* note 9, at 3.
[153] *Id.* at 7.

November 15.[154] This designation essentially created a seasonal protected area for Pacific leatherbacks. NMFS would later refer to it as "The Leatherback Conservation Area" (LCA).[155] Since its inception, no take of Pacific leatherback has been recorded.

NMFS created the LCA under authority of the Magnuson-Stevens Fishery Conservation and Management Act (MSA).[156] It was a required response to NMFS's biological opinion (BiOp) of NMFS's Marine Mammal Division's proposal to authorize marine mammal incidental take by the California/Oregon Drift Gillnet Fishery.[157] The BiOp determined that the drift gillnet fishery was "jeopardizing the continued existence of the leatherback population by appreciably reducing the likelihood of both the survival and recovery of the species."[158] The fishery was doing so by incidentally taking too many leatherbacks, typically by entanglement in fishery gear.[159] NMFS determined the unacceptable incidental take level was dependent on the area and season being fished.[160] As an alternative measure to prevent jeopardy, the agency proposed to close the fishery when conflicts are most likely.[161] NMFS accepted this as an appropriate mitigation measure and promulgated a regulation to do so.[162]

In 2004, NMFS further corroborated the LCA by promulgating regulations under the MSA implementing the fishery management plan (FMP)[163] for highly migratory species fisheries off the West Coast.[164] FMPs are plans developed by a Regional Fishery Management Council and NMFS to manage a fishery resource pursuant to the MSA. It does not have the force of law, but is advisory.[165] The ESA requires consultation with NMFS of FMPs and any implementing regulations.[166] NMFS incorporated the existing LCA into these regulations specifically for the drift gillnet fishery.[167] The FMP also excludes pelagic longlining in U.S. West Coast waters because of sea turtle take, but this restriction is not officially part of the LCA.

D. The Petition to Revise Leatherback Critical Habitat

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[154] Endangered and Threatened Wildlife; Sea Turtle Conservation Requirements; Taking of Threatened or Endangered Species Incidental to Commercial Fishing Operations, 66 Fed. Reg. 44,549 (Aug. 24, 2001).
[155] *Id.*
[156] *Id.*
[157] DRIFT GILLNET BIOP, *supra* note 8, at 3.
[158] *Id.*
[159] *Id.* "Take" is defined as "to harass, harm, pursue, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." ESA § 3, 16 U.S.C. § 1532. "Incidental take" is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity." 50 C.F.R. § 402.02 (2008).
[160] DRIFT GILLNET BIOP, *supra* note 8, at 92.
[161] 66 Fed. Reg. 44,549 (Aug. 24, 2001).
[162] DRIFT GILLNET BIOP, *supra* note 8.
[163] Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1851(b) (2007).
[164] Highly migratory species include tuna, swordfish, billfish, and sharks.
[165] Fisheries Off West Coast States and in the Western Pacific; Highly Migratory Species Fisheries, 69 Fed. Reg. 18,444 (Apr. 7, 2004).
[166] DRIFT GILLNET BIOP, *supra* note 8, at 3.
[167] 69 Fed. Reg. 18,444, 18,460 (Apr. 7, 2004).

On September 26, 2007, conservation organizations, Center for Biological Diversity, Oceana and Turtle Island Restoration Network (Petitioners), petitioned NMFS to revise[168] leatherback sea turtle critical habitat to include habitat for the Pacific population.[169] Petitioners argued that the dramatically declining Pacific population is in dire need of habitat protection to prevent its extinction.[170] They proposed designating the LCA as critical habitat because that area is a major foraging ground upon which the species depends for survival and it meets all criteria for designation.[171] They also stipulated, "[T]he primary constituent elements should be those habitat components that are essential for feeding, resting, migrating, and include all marine waters, along with associated marine aquatic flora and fauna in the water column, and the underlying marine benthic community."[172]

The Petition argues that critical habitat is both prudent and determinable. The designation is prudent because it would benefit the species and would not increase the degree of threat. The designation is determinable because there is sufficient information analyzing the impacts of designation and the needs of the species are well known to permit identification of the area. The Petition cites the Recovery Plan and studies as enough proof that "increased long-term protection of the leatherback foraging grounds is not just beneficial to the species, but critical to its survival."[173]

Petitioners cite scientific data and NMFS leatherback management documents as the basis for designation because they demonstrate that the area contains physical and biological features essential to the conservation of the species. Specifically, data demonstrates the proposed area is a crucial feeding ground for leatherbacks because of its unique biological and physical features.[174] It is well established that leatherbacks migrate great distances across the Pacific Ocean to the U.S. West Coast to forage.[175] The turtles come to exploit the unique convergence zones and areas of upwelling waters that create seasonally abundant aggregations of jellyfish, their primary prey.[176] While this productive range encompasses more than the proposed area and Pacific leatherbacks have been seen as far north as

[168] The Petition seeks to revise habitat because the leatherback sea turtle already has critical habitat designated for the Atlantic population in the U.S. Virgin Islands. While the species is not listed as two distinct populations, the populations live in different oceans and do not mingle. Thus, habitat designation in the Atlantic does not provide any protection for the Pacific population.
[169] *See* PETITION, *supra* note 16.
[170] *Id.* at 1.
[171] *Id.* at ii.
[172] Fisheries of the Caribbean, Gulf of Mexico, and South Atlantic; Snapper-Grouper Fishery off the Southern Atlantic States; Amendment 15A, 72 Fed. Reg. 73,747 (Dec. 28, 2007).
[173] PETITION, *supra* note 16, at 35; RECOVERY PLAN, *supra* note 9; DRIFT GILLNET BIOP, *supra* note 8, at 67; *see* Benson et al., *supra* note 122.
[174] RECOVERY PLAN, *supra* note 9, at 14; *See* Benson et al., *supra* note 122; *See* D.B. Chelton et al., *Large-Scale Inter Annual Physical and Biological Interaction in the California USA Current*, 40(4) J. OF MARINE RESEARCH 1095 (1982).
[175] Benson et al., *supra* note 122, at 152.
[176] Benson et al., *supra* note 6, at 346; RECOVERY PLAN, *supra* note 9; *See* W.M. Graham et al., *A Physical Context for Gelatinous Zooplankton Aggregations: A Review*, 451 HYDROBIOLOGIA 199 (2001).

Alaska, studies indicate that the turtles generally appear to stay further south.[177] Petitioners say that research proves leatherbacks depend on this area specifically for necessary sustenance, thereby warranting designation.[178]

Petitioners further maintain that the area requires special management consideration. They state that NMFS's creation of the LCA supports this conclusion. They rely on a recent case in which the U.S. District Court for Arizona stated, "[T]he fact that a particular habitat does, in fact, require special management is demonstrative evidence that the habitat is 'critical.'"[179] Petitioners claim that current management is not adequate because it only curtails drift gillnet fishing threats and does not protect leatherbacks against other major threats "from other fisheries, ocean debris ingestion, vessel strikes, oil spills, coastal development, and changing ocean conditions from global warming and ocean acidification."[180] Petitioners cite NMFS's Leatherback Recovery Plan, which identifies a primary priority to protect and manage marine habitat by "identifying important habitat, ensur[ing] long-term protection of that habitat, prevent[ing] degradation of marine habitat from pollution and oil transshipment, and tak[ing] action."[181] Petitioners argue CHD of that water is the only available option to meet these goals because any other option, like the seasonal LCA, falls short of mitigating all the various threats.

The Petition maintains that designating the LCA as critical habitat could help mitigate many major threats from activities that cause entanglement in fishing nets, boat collisions, ocean pollution, and global warming.[182] Petitioners cite studies that demonstrate the turtles forage in this area from August to December.[183] Although this time is represented by the LCA, the Petition cites documents in which NMFS admitted to the value in protecting seasonal habitat all year round for other turtles in order to mitigate threats that take place when the species are not there but that affect their habitat.[184]

Currently the LCA is under threat from pollution and marine debris, which impacts leatherback foraging capacity. For example, turtles drown by becoming entrapped in discarded fishing lines and starve by consuming floating plastic bags they mistake for jellyfish, which stay in their stomachs and block further digestion. The Petition claims designation could help "prevent further degradation and maintain the healthy waters for

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[177] C.R. McMahon and G.C. Hays, *Thermal niche, large-scale movements and implications of climate change for a critically endangered marine vertebrate*, 12 GLOBAL CHANGE BIOLOGY 1330, 1336 (2006).
[178] Benson et al., *supra* note 6, at 346.
[179] PETITION, *supra* note 16, at 32 (*citing Center for Biological Diversity v. Norton*, 240 F. Supp 2d 1090, 1099 (D. Ariz. 2003) (The court found that FWS cannot refuse to designate habitat based on concluding that existing management measures are adequate).
[180] PETITION, *supra* note 16, at 33.
[181] RECOVERY PLAN, *supra* note 9, at 76; Endangered and Threatened Wildlife; Recovery Plans for Listed Sea Turtles 63 Fed. Reg. 28,359 (May 22, 1998).
[182] Benson et al., *supra* note 6, at 342; Spotila et al., *supra* note 4, at 529.
[183] C.H. Starbird et al., *Seasonal Occurrence of Leatherback Sea Turtles (Dermochelys coriacea) in the Monterey Bay Region, with Notes on Other Sea Turtles, 1986-1991*, 79 CALIF. FISH AND GAME 2, 54-62 (1993).
[184] Nat'l Marine Fisheries Service, Designating Critical Habitat: Green and Hawksbill Sea Turtles, 63 Fed. Reg. 46,693, 46,696 (Sept. 2, 1998).

the survival and recovery of the leatherback."[185] A recent study supports this argument by shedding light on how human activities impact the ocean's health.[186] However, Petitioners do not detail how CHD would actually achieve these goals, though they are not required to do so. On December 28, 2007, NMFS agreed the Petition *may* be warranted and announced it would further examine the Petition.[187]

IV. Evaluating the Role of Critical Habitat in the Ocean

NMFS faces a special challenge in designating critical habitat for listed marine species. Many more terrestrial than marine species have been listed.[188] Subsequently, more case law and regulation derive from terrestrial conservation problems, which do not necessarily lend themselves to marine protection problems. Further, it is easier to see how human activities like development and pollution directly affect species habitat on land, as opposed to the marine environment.

As the health of the ocean decreases and the number of endangered marine species increases, it is important to consider the value of designating critical marine habitat. Unfortunately, not a great deal is understood about the open ocean environment in terms of both species' needs and human impacts.[189] The lack of scientific data makes proving that the open ocean is "essential to conservation of the species" especially formidable. It is not surprising that, out of the fourteen marine species for which critical habitat has been designated, none of the habitat area is open ocean.[190]

Species like the Pacific leatherback present the greatest challenge for critical habitat designation because the only areas the turtle use within U.S. jurisdiction are open ocean.[191] Most marine endangered species that enter U.S. jurisdiction spend some time near or on U.S. shore, usually to breed, give birth, or feed.[192] Because these activities usually require a species to linger in an accessible area, we can more easily research their behavior there.[193]

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[185] PETITION, *supra* note 16, at 31.
[186] Benjamin S. Halpern et al., *A Global Map of Human Impact on Marine Ecosystems*, 319 SCIENCE 948 (Feb. 15, 2008).
[187] Listing Endangered and Threatened Wildlife and Designating Critical Habitat; 90-day Finding for a Petition to Revise the Critical Habitat Designation for the Leatherback Turtle, 72 Fed. Reg. 73,745 (Dec. 28, 2007) (to be codified 50 C.F.R. Part 226).
[188] Of the currently 1,391 listed U.S. species, 65 are marine and managed by NOAA's Office of Protected Resources. *See* http://ecos.fws.gov/tess_public/Boxscore.do and http://www.nmfs.noaa.gov/pr/species/ .
[189] STRUCTURE AND FUNCTION OF MARINE ECOSYSTEMS: HEARING BEFORE THE SUBCOMM. ON FISHERIES AND OCEANS, COMMITTEE ON NAT. RES., U.S. HOUSE OF REPS. (June 8, 2005) (statement by Dr. Stephen Murawski, Director, Office of Science and Technology, Nat'l Marine Fisheries Serv.).
[190] 50 C.F.R. § 226 (2008).
[191] To be clear, the U.S. can only designate critical habitat in U.S. waters. Although Pacific leatherbacks migrate across the Pacific Ocean, the only time they spend in U.S. jurisdiction is in our open ocean.
[192] This includes the Atlantic leatherback turtle, which has critical habitat designated in its breeding breaches in the U.S. Virgin Islands. *See* 44 Fed. Reg. 17,710 (Mar. 23, 1979).
[193] For example, consider the endangered Stellar sea lion, which spends most of its life in the ocean, but stops for significant and specific periods of time on particular beaches to breed and give birth. This species was listed as threatened in 1990 (Listing of Stellar Sea Lion as Threatened under ESA,

NMFS has not designated any open ocean areas as critical habitat. Out of the fourteen marine species granted critical habitat, NMFS has only considered open ocean designation for two, the Northern right whale and the Southern resident killer whale.[194] Instead of designating open ocean habitat for these species, NMFS designated areas that were relatively close to shore, protected, and/or shallow. NMFS admits in its notice to designate critical habitat for the killer whale that, although it recognizes the importance of offshore areas, it "cannot assess the value" of them at this time.[195]

NMFS is in the unusual position of having to designate open ocean habitat in order to designate any critical habitat for the Pacific leatherback. There must be enough scientific evidence to demonstrate that designating open ocean habitat for the leatherback is prudent and determinable, and to prove that the benefit is not outweighed by cost of designation.[196] NMFS must determine *where* habitat is "essential" and *how* protecting that habitat will benefit the species. This requires some degree of conclusive scientific data. Due to scientific uncertainties of location and benefit, and the existence of the LCA (which creates great benefit to the leatherback despite not being recognized as critical habitat), designation is unlikely.

A. Identifying Ocean Critical Habitat

NFMS describes its approach to critical habitat designation, based on the regulatory and statutory direction, as a two-part process.[197] First, NMFS identifies specific areas eligible for CHD. Then NMFS conducts the § 4(b)(2) analysis by determining the impacts of designation, the benefits of designation and exclusion, whether the benefits of exclusion outweigh the benefits of designation, and whether exclusion will result in the extinction of the species.[198]

1. Meeting the Definition of Critical Habitat

To designate critical habitat for a species, NMFS must first be able to identify specific areas that the species depends upon for habitat. This task is a considerable challenge for open ocean habitat because the dangerous unpredictable environment makes it very difficult to

55 Fed. Reg. 49,204 (Nov. 26, 1990)) and its breeding beaches were designated as critical habitat in 1993 (Designation Critical Habitat: Stellar Sea Lion, 58 Fed. Reg. 45,269 (Aug. 27, 1993)).

[194] Northern right whale designation includes the Great South Channel Critical Habitat Area off of Cape Code designated in 1994 (Designation Critical Habitat: Northern Right Whale, 59 Fed. Reg. 28,793 (June 3, 1994)) and the Bering Sea Critical Habitat Area off Alaska, designated in 2006 (Revision of Critical Habitat: Northern Right Whale, 71 Fed. Reg. 38,277 (July 6, 2006)). The Southern resident killer whale critical habitat area covers most of Washington State's inland waters and was designated in 2006 (Designation Critical Habitat: Southern Resident Killer Whale, 71 Fed. Reg. 69,054 (Nov. 29, 2006)).

[195] *Id.* at 69,063.

[196] 50 C.F.R. § 424.12 (2007).

[197] NAT'L MARINE FISHERIES SERV., NORTHWEST REGION, DISTRIBUTION OF CRITICAL HABITAT FOR SOUTHERN RESIDENT KILLER WHALES SECTION 4(B)(2) REPORT 6 (2006) [hereinafter KILLER WHALE REPORT].

[198] *Id.*

study species.[199] Most marine species information is gathered by fishery catch or take information, strandings, or direct observations.[200] These factors limit the ability to establish specific information about species activities, locations, and needs in the open ocean and how human activities affect these things.

Species in the open ocean are difficult to study for many reasons.[201] It is hard to locate a species and monitor it because the open ocean is very expansive and species are relatively small, move quickly, and usually dive below the surface for long periods of time. When species can be located, inherent difficulties associated with researching and tracking in the open ocean limits productivity. Logistically, working on an offshore research vessel is uncertain. Scientific equipment can be sensitive and fail due to wave motion and the conductive and corrosive nature of sea water. If equipment fails, it can only be replaced by what is already on the boat, which is usually limited because scientific equipment is expensive. The constant wave motion also makes it difficult to handle equipment. And finally, the ocean itself is mostly inaccessible, as it is difficult to see through the water even with remote sensing tools and the increased pressure limits of equipment. Although satellite-based tracking is improving and providing excellent data, it is still a new, expensive, limited tool.

NMFS has used the difficulty in assessing open ocean habitat as reason not to designate areas of it as critical habitat.[202] NMFS just recently declined to designate open ocean habitat for the Southern resident killer whale based on this premise. In the BiOp to determine critical habitat, NMFS brushed off open ocean designation in one paragraph. NMFS stated that, although it knew the whales used the offshore area and could infer that some Primary Constituent Elements (PCEs) are present, like prey and passage, it could not describe the PCEs adequately or identify specific areas with those features.[203] In the Final Notice to designate, NMFS explained that "based on difficulties of determining the presence of PCEs in specific offshore areas," it was unable to assess the human activities that impact PCEs or special management considerations for those PCEs.[204] NMFS did determine, however, that it had enough information to designate nearshore habitat.[205]

Although NMFS is required to consider critical habitat based on the best scientific information available, it must be able to determine PCEs with specificity to designate.[206] However, the level of specificity required is not clear. For the Northern right whale, NMFS identified critical habitat areas based on areas with abundant prey. It admitted it was unable to ascertain what physical and biological features produce aggregates of zooplankton, so "in absence of the appropriate data on the PCEs themselves, the

[199] DOUGLAS A. SEGAR, INTRODUCTION TO OCEAN SCIENCES: Ch. 2.3 (Difficulties in Studying the Ocean Environment) (W.W. Norton & Company Inc. 2006).
[200] For example, *see* Starbird et al., *supra* note 183.
[201] SEGAR, *supra* note 199.
[202] Designated Critical Habitat: Stellar Sea Lion, 58 Fed. Reg. 45,269 (Aug. 27, 1993); Designated Critical Habitat: Southern Resident Killer Whale, 71 Fed. Reg. 69,054 (Nov. 29, 2006).
[203] KILLER WHALE REPORT, *supra* note 197, at 35.
[204] 71 Fed. Reg. 69,054, 69,063 (Nov. 29, 2006).
[205] *Id.*
[206] *See* discussion supra II.A.i; *Middle Rio Grande Conservancy Dist. v. Babbitt*, 206 F. Supp. 2d 1156, 1178 (D. N.M. 2000); *Home Builders Ass'n of N. Cal. v. U.S. Fish & Wildlife Serv.*, 268 F. Supp. 2d 1197, 1210 (E.D. Cal. 2003).

distribution of right whales [was] used as a proxy."[207] NMFS determined these areas by evidence of consistently feeding whales, even if just a single whale.[208] Although this standard appears much lower than the one used for the Southern resident killer whale, it is important to note that NMFS originally declined designating the area for the Northern right whale and was ordered by a court to re-consider its assessment.[209]

Petitioners depend on several scientific studies, the Recovery Plan, and NMFS's reasoning for the creation of the LCA to prove that the proposed area contains physical and biological features essential to the conservation of the Pacific leatherback population. The Petition depends greatly on a recent study which provides specific information of leatherback abundance, distribution, and habitat off California over thirteen years.[210] This study was the first to examine this information and admitted that weather and inability to see into the ocean greatly limited the data.[211]

The Petition suggests that the PCEs for the proposed area should include: "those habitat components that are essential for the primarily biological needs of feeding, resting, and migrating, and include all marine waters, along with associated marine aquatic flora and fauna of the water column, and the underlying marine benthic community."[212] Although remarkably ambitious and vague, the Petition maintains the PCEs are consistent with other marine species' critical habitat, like the Steller sea lion and spectacled eider.[213] The Petition relies on the established fact that the marine area off California and Oregon is a unique environment in the Pacific Ocean that is highly productive.[214] While this fact is indisputable, NMFS will likely need more detail to identify specific areas within this huge swath of ocean most important to the Pacific leatherback. It is very improbable NMFS will issue a blanket designation for the entire area, due to regulatory requirements and that fact that the LCA is much larger than any other marine critical habitat area.[215]

Research indicates that it is not clear exactly what areas off California and Oregon Pacific leatherbacks particularly depend upon. Researchers maintain that, while leatherbacks have been observed feeding on jellyfish off California and Oregon for many years, and the area is indisputably a feeding area, a specific trophic link between physical processes and leatherbacks has not been studied.[216] This link would help establish more specific areas that leatherbacks depend upon, such as nearshore areas like Monterey Bay and the Gulf of the

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[207] NAT'L MARINE FISHERIES SERVICE, ALASKA FISHERIES SCIENCE CENTER PROCESSED REPORT 2006-06: HABITAT REQUIREMENTS AND EXTINCTION RISKS OF EASTERN NORH PACIFIC RIGHT WHALES 15 (2006) [hereinafter RIGHT WHALE HABITAT REPORT].
[208] Revision of Critical Habitat for the Northern Right Whale in the Pacific Ocean, 71 Fed. Reg. 38,277, 38,278 (July 6, 2006); RIGHT WHALE HABITAT REPORT, *supra* note 207, at 15.
[209] *Ctr. for Biological Diversity v. Evans*, 2005 U.S. Dist. LEXIS 44984 (N.D. Cal. June 14, 2005).
[210] Benson et al., *supra* note 6.
[211] *Id.* at 341.
[212] PETITION, *supra* note 16, at 32.
[213] *Id.*, *citing* 50 C.F.R. § 17.95(b) (2005).
[214] PETITION, *supra* note 16, at 30.
[215] To compare, the LCA is 200,000 square miles and the Northern right whale Pacific habitat totals 36,750 square miles (71 Fed. Reg. 38,277 (July 6, 2006)) and Southern Resident killer whale habitat totals 2,560 square miles (71 Fed. Reg. 69,054 (Nov. 29, 2006)).
[216] Benson et al., *supra* note 6, at 345.

Faralones, instead of a general and enormous 200,000-square-mile area.[217] The Petition brushes these statements aside and focuses instead on the fact that NMFS determined the entire area was important to the leatherback. The Petition also ignores the fact that NMFS uses different standards to manage fishery areas than to designate critical habitat.

However, it is not clear exactly what information is sufficient to demonstrate dependence on a specific area. It is important to note that in determining Northern right whale critical habitat, NMFS stated that "the boundaries are based upon the best available information regarding the location of zooplankton in sufficient concentrations to encourage and sustain feeding by [N]orthern right whales."[218] Because Pacific leatherbacks forage on jellyfish, information on boundaries of jellyfish aggregations, if it exists, may be appropriately sufficient.

The lack of scientific evidence describing leatherback foraging behavior off U.S. waters makes it very difficult for NMFS to identify open ocean critical habitat for the leatherback. There is no proof that the entire area is distinct in a way that specifically benefits leatherbacks or that leatherbacks use every inch of it. Petitioners are hopeful that that level of detail is not necessary to designate, like it was not necessary for the LCA.[219] However, NMFS's primary determination of the LCA area was based on a widespread distribution of observations of leatherback entanglements so those events could be curtailed.[220] This data only indicates presence in the area, not dependence on it.

For species that greatly depend on the open ocean, identifying important areas offshore may be the biggest hurdle to achieving critical habitat. Not many species have conservation areas already in place that a petitioner can use to suggest importance. For the Pacific leatherback, the LCA is so enormous that it might not help prove necessity anyway. Designation is unlikely without sufficient scientific evidence to demonstrate a dependence on specific physical and biological features in a specific area.

2. Benefits of Exclusion: Economic Costs of Designation

In addition to the difference between scientific knowledge the habitat needs of marine and terrestrial species, the way people control, use, and impact marine habitat differs dramatically from land. This is important because the way humans use species' habitat directly affects the benefits critical habitat provides and the costs associated with designation. While humans use land in a myriad of ways and control it through private, state, and federal entities, there is a lack of firm private rights for use and control of the open ocean. Therefore, virtually every activity in the open ocean can be classified as a federal activity.[221]

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[217] *Id.* at 346.
[218] 71 Fed. Reg. 38,277, 38,281 (July 6, 2006).
[219] 66 Fed. Reg. 44,549, 44,550 (Aug. 24, 2001).
[220] *Id.* at 44,550.
[221] While states do exercise control out to three miles, federal law supersedes this control. For ESA purposes, when a species is listed under the ESA, it becomes the federal government's responsibility to manage the species' conservation.

The ocean ownership regime gives the federal government superseding power over the open ocean and any activity that occurs in it. The Magnuson-Stevens Fishery Conservation and Management Act permits the U.S. federal government to control waters off our coast out to 200 miles.[222] The Submerged Lands Act gives states jurisdiction out to three miles,[223] but federal law preempts state law if there is a conflict between the two.[224] Fewer actors and centralized control over the area could reduce economic burdens and increase efficient facilitation of consultations. Imperiled species like the Pacific leatherback have a great deal to gain from habitat designation and the open ocean may be a place where that benefit more easily outweighs the economic burden of the designation.

If NMFS does identify an area of the open ocean that meets the definition of "critical habitat," it will then conduct a § 4(b)(2) analysis to determine whether the benefits of excluding an area outweigh the benefits of designating it.[225] The Secretary can decline to designate critical habitat where she finds the benefits of exclusion outweigh the benefits of designation, unless exclusion will result in the extinction of the species.[226] The benefits to exclusion can include economic, national security, and other relevant impacts. The economic cost to be considered is the "probable economic impact of the CHD upon proposed or ongoing activities."[227] The economic cost associated with designating portions of the open ocean as critical habitat may easily outweigh the benefit of designation, especially if benefits are uncertain. NMFS has never performed this analysis for open ocean habitat, because it has never determined that the open ocean meets the definition of critical habitat for a species.

Based on other economic analyses for CHD, the economic impacts analysis will likely focus on the fishing industry and water quality management because they are the two biggest threats to Pacific leatherbacks in their foraging area.[228] The threats considered must contribute to the adverse modification of habitat. Specifically, this means the PCEs, and not activities that result in the "take" of the species because that is covered by the § 7 jeopardy analysis. Because jellyfish are not a target of commercial fishermen, the economic cost of restricting harvesting is probably low.[229]

The Pacific leatherback's ability to forage depends on the water quality of the ocean. Compromised ocean health can affect the species directly by affecting its health and indirectly by reducing jellyfish populations. Ocean acidification threatens jellyfish abundance, and pollution from activities like oil spills, oil and gas leasing and development, mining, disposal of dredge material, seafood processing waste discharge, and trash disposal threatens both jellyfish and the leatherback's ability to use its habitat. However, estimating

[222] 16 U.S.C. § 1801 (2007).
[223] 43 U.S.C. § 1301(a)(2) (2002).
[224] *Id.*
[225] *See* KILLER WHALE REPORT, *supra* note 197, at 6.
[226] 72 Fed. Reg. 73,745, 73746 (Dec. 28, 2007).
[227] 50 C.F.R. § 424.19 (2005).
[228] INDUSTRIAL ECONOMICS, INC., FINAL REPORT: ECONOMIC IMPACTS ASSOCIATED WITH CRITICAL HABITAT DESIGNATION FOR THE SOUTHERN RESIDENTIAL POPULATION OF KILLER WHALES (2006), *available at* http://www.nwr.noaa.gov/Marine-Mammals/Whales-Dolphins-Porpoise/Killer-Whales/ESA-Status/Orca-Critical-Habitat.cfm .
[229] See similar reasoning in Revision of Critical habitat: Northern Right Whale, 71 Fed. Reg. 38,277, 38,290 (July 6, 2006).

the costs of modifying water quality management is difficult, considering the expanse of the area, the fluid movement of the ocean, and the multiple regulating agencies. The California and Oregon Departments of Ecology set water quality standards for their respective state waters and NOAA monitors the rest of U.S. jurisdictional Pacific Ocean, all under EPA supervision. Current efforts to reverse ocean acidification or marine debris are only developing right now and may take decades to actually help imperiled species. Cost estimates likely would be enormous for any effort to address marine pollution or ocean acidification.

The "benefits of exclusion" include not just economic costs, but impacts to national security. Although it is not known whether sea turtles are sensitive to sonar, it has been suggested that they could be.[230] The recent controversy over whales and sonar includes sea turtles and may persuade NMFS to consider this issue very carefully.[231]

Given the enormous area under consideration, 200,000 square miles, NMFS may look to exclude areas that are too economically valuable to protect. NMFS could do this based on fishing areas. However, these areas would be very difficult for NMFS to identify since the most threatening activities generally take place over the entire area and activities in one area of the ocean can travel and impact another area. It is more likely that NMFS would find that it is too difficult to distinguish between areas in the open ocean and that designating the entire area would be prohibitively expensive. Threats like marine debris and ocean acidification are nearly impossible to prevent in open water, which implies that designation would require monitoring of all U.S. open water to meet critical habitat standards. This request is not only vague, but borders on the absurd in terms of potential economic cost.

B. What Conservation Benefits Would Ocean Critical Habitat Provide?

Determining the benefit of critical habitat may be the most important step in the path to designation. If benefits of designation cannot be ascertained clearly in comparison to the economic benefits of not designating, designation is unlikely. NMFS maintains that benefit of designation "depends upon the inherent conservation value of the area, the seriousness of the threats to that conservation value, and the extent to which an ESA [§] 7 consultation or educational aspects of designation will address those threats."[232] This analysis boils down to whether a threat is better mitigated through the jeopardy or adverse modification standard and the inherent conservation value of the area.

1. Creating the Baseline

[230] *Natural Res. Def. Council v. Gutierrez*, 2008 U.S. Dist. LEXIS 8744 (N.D. Cal. Feb. 6, 2008).
[231] Litigation over the Navy's use of sonar for training exercises off the coast of California culminated in November 2008 when the Supreme Court ruled that the lower courts did not give enough weight to the Navy's interest in national security when considering environmental harm. *Winter v. NRDC*, 129 S. Ct. 365 (2008). NMFS has promulgated regulations aimed to minimize impact to marine mammals, but the conflict is on-going.
[232] Designation for Critical Habitat for the Southern Resident killer whale, 71 Fed. Reg. 69,054, 69,065 (Nov. 26, 2006).

The key to determining the conservation benefit of designation is determining what baseline protection already exists without it and what additional benefits would be created. Since the species itself is already protected from jeopardizing federal activity, threats must be broken down to determine what threatens the species and what threatens the habitat. For example, fishery threats against leatherbacks are essentially mitigated through the jeopardy consultation process because fisheries do not target their prey or modify their habitat in a significant way. However, pollution may adversely modify the habitat by weakening prey abundance or threatening its inherent conservation value.

The baseline assessment of what conservation benefits a listed species has been awarded before designation can extend beyond the ESA. Other environmental statutes may directly or indirectly provide conservation protection for a species. For the Pacific leatherback, these acts include, but are not limited to, the Magnuson-Stevens Fishery Conservation and Management Act (MSA),[233] the Marine Mammal Protection Act (MMPA),[234] and the Clean Water Act (CWA).[235] The benefits these acts provide should be assessed to determine exactly what designation adds to existing conservation measures.

a. The Magnuson-Stevens Fishery Conservation and Management Act

The MSA is the principal law controlling marine fisheries management in federal waters. First enacted in 1976, the Act directs NMFS to manage and promote conservation of our fisheries. Two rounds of amendments have focused the Act towards rebuilding overfished stocks, protecting essential fish habitat, and reducing bycatch.[236] NMFS can promulgate regulations under the Act to meet these goals.

So far, the MSA has provided great benefit to the Pacific leatherback via the Leatherback Conservation Area.[237] Although the action was a result of ESA-mandated consultation of a fishery management plan, NMFS derived its power to create the area through the MSA. NMFS promulgates regulations under the MSA in accordance with its directives and in conjunction with other conservation acts like the MMPA and ESA to help protect listed species. These regulations are usually a result of a reasonable and prudent alternative to a finding of jeopardy as the result of a § 7 consultation BiOp for FMPs. Examples include "general catch restrictions" for sea turtles regarding incidental take handling rules,[238] Observer Program requirements, and the LCA.

In creating the LCA, NMFS took unprecedented direct action to stop the most pervasive and direct threat to the Pacific leatherback population, takings from the drift gillnet fishery. The LCA provides Pacific leatherbacks with an enormous conservation benefit by virtually stopping recorded take. Although the MSA could provide habitat protection through stricter requirements for gear loss and pollution from fishing boats, it appears its current benefit to Pacific leatherbacks is reducing take through fishery regulation.

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[233] 16 U.S.C. § 1801 et seq. (2008).
[234] *Id.* § 1361 et seq.
[235] 33 U.S.C. § 1251 et seq. (2008).
[236] Oct. 11, 1996, P.L. 104-297, Title I, § 101, 110 Stat. 3560; Jan. 12, 2007, P.L. 109-479, § 1(a), 120 Stat. 3575.
[237] 50 C.F.R. § 660.713 (2007).
[238] *See id.* § 660.711(d).

b. The Marine Mammal Protection Act of 1972

The MMPA protects all marine mammals in U.S. waters and from U.S. citizen action in the high seas, regardless of population status.[239] The Act establishes a moratorium on taking all marine mammals, with limited exceptions for activities like scientific research, aboriginal subsistence, and accidental takes by commercial fisheries.[240] While sea turtles are not mammals, they are susceptible to similar threats and benefit from similar protective measures. Therefore, sometimes regulations regarding fishing gear and take restrictions passed under the MMPA incidentally help sea turtles.

The MMPA increases knowledge about Pacific leatherback biology and take threats. One of the main goals of the MMPA is to reduce marine mammal bycatch from fisheries. Part of this goal is attained through the Observer Program, which NMFS uses to gather information about species interactions with fishery gear and actual takings. [241] While the MSA authorizes NMFS to require observers on federal commercial fisheries, the MMPA allows NMFS to require observers on both federal and non-federal commercial fishing vessels, depending on how much that fishery interacts with marine mammals. Although the program's first priority is to monitor marine mammals, the MMPA allows observers secondarily to monitor sea turtle interactions.[242] This provides an opportunity for observance that is otherwise only available through the ESA. The MMPA does not appear to mitigate Pacific leatherback habitat threats.

c. The Clean Water Act

The Federal Water Pollution Control Act Amendments of 1972, commonly referred to as the Clean Water Act,[243] is the primary law governing water pollution. The broad and ambitious goal of the Act is "to restore and maintain the chemical, physical, and biological integrity of the nation's waters . . . to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."[244] Section 303(d) of the CWA requires states to identify and list waters that do not meet water quality standards, determine which pollutants are causing the violation, and what levels of that pollutant are necessary to meet requirements. The CWA regulates various pollutants in water, including pH, which in the ocean is commonly referred to as "ocean acidification."

The Petition and NMFS identifies global warming and ocean acidification as a major threat to the Pacific leatherback, but fighting ocean acidification through the CWA is probably not

[239] The term "high seas" refers to any area of ocean not within a country's EEZ.
[240] *See generally* Marine Mammal Commission, Legislation – Marine Mammal Protection Act, http://www.mmc.gov/legislation/mmpa.html (last visited Feb. 2, 2009).
[241] The Observer Program is a program NMFS started in 1972 to gather data about what happens on a fishing vessel. Observers are placed on certain fishing vessels for particular periods of time to monitor and gather data on, for example, adherence to regulations regarding bycatch and vessel protocol. This program is under constant scrutiny and conflict between the pressure to place observers and the cost of doing so.
[242] Sea Turtle Conservation; Observer Requirements for Fisheries, 72 Fed. Reg. 43176, 43177 (Aug. 3, 2007).
[243] 33 U.S.C. § 1251 *et seq.* (2008).
[244] CWA § 101(a)(2), 33 U.S.C. § 1251(a) (2008).

realistic at this point. Further, the CWA is supposed to mitigate debris that actually reaches the ocean through waterways. However, this has proven to be a formidable task. While there is potential, the CWA does not provide much benefit to Pacific leatherbacks at this time due to scientific, political, and management limitations.

At baseline, the MSA and MMPA help directly or indirectly mitigate fishery threats that jeopardize the Pacific leatherback. All three acts could potentially help protect Pacific leatherback open ocean habitat, but do not seem to at this point. Therefore, there is room for CHD to benefit the Pacific leatherback by helping mitigate pollution threats and protect the inherent conservation value of the open ocean.

2. The Benefits of Critical Habitat Designation

NMFS indicates that there are primary and ancillary benefits to CHD.[245] Primary benefits include the addition of ascertaining "adverse modification to habitat" in the § 7 consultation process, notice of areas and features important to species conservation, and education and outreach. Ancillary benefits are more vague, but can include incidental economic benefits (for whales, this might be increased whale watching opportunities with increased population) or beneficial changes to the ecosystem and reduced pollution of the habitat.

Petitioners set out to prove the benefits of designation based on NMFS's own statements that the turtle population cannot withstand further jeopardy and deserves "#1" priority effort to increase protection against identified threats. Petitioners argue that designation will help mitigate at least three major threats that are not remedied without CHD, including entanglement in fishing gear, ingestion of marine debris, and global warming/ocean acidification.[246]

The Petition argues for the benefits of designation with scientific data and NMFS's own statements. It specifically cites the green and hawksbill sea turtle CHD notice, where NMFS identified at least five reasons that CHD generally benefits turtles.[247] These benefits included educational benefits, helping focus conservation and management efforts, and three specifically related to § 7: designation "provides a clear indication to Federal agencies regarding when section 7 consultation is required, . . . assists [them] in determining which activities conducted outside of designated area are subject to section 7, and . . . in planning future actions."[248]

Although the green and hawksbill sea turtle habitat designation was for nesting sites and not for an open ocean area, Petitioners believe the acknowledged benefits still apply. However, education can help protect beaches in a way that it cannot so readily protect the open ocean. People are more aware of how their actions on land affect the land and less aware about how those actions affect the ocean because the links are more direct on land. It is relatively simple to show the correlation between eating turtle eggs and lowering the

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[245] Nat'l Marine Fisheries Serv., Designation of Critical Habitat for Southern Resident Killer Whale, 71 Fed. Reg. 69,054, 69,064 (Nov. 29, 2006).
[246] PETITION, *supra* note 16, at 9-21.
[247] Designated Critical Habitat: Green and Hawksbill Sea Turtles, 63 Fed. Reg. 46693, 46696 (Sept. 2, 1998).
[248] *Id.* at 46,696-97.

population, but the link between vehicle emissions and ocean acidification is considerably more removed. Demonstrating the educational benefits from designating open ocean is difficult. People know the ocean is home to many species and notifying people, through designation, that the open ocean off of California and Oregon is especially important to sea turtles, simply will not be as effective as identifying a particular beach or bay.

The ancillary benefits to protecting the open ocean may be considerable, but technology and public interest to curtail ocean pollution is lacking. Further, it is uncertain that designating the open ocean could even help prevent ocean pollution, which makes designation fairly superfluous. Until particular PCEs and specific areas can be identified off the California and Oregon coast, the benefits of designation likely remain weak, at best.

C. Possible Alternatives for Protection

The Petition to designate ESA critical habitat for the Pacific leatherback is one obvious way to bolster protection for the endangered species, but the ESA might not be the most effective legal tool at NMFS's disposal. The greater goal of the Petition is to help protect the leatherbacks against identified threats to sustain and enhance the population. Conservation organizations and the Services could explore other legal tools that might better meet this goal.

The MSA, MMPA, and CWA all may provide further conservation opportunities to the Pacific leatherback. For example, through the MSA mandates to reduce bycatch and protect essential fish habitat, NMFS may be able to curtail most threats to the Pacific leatherback. Specifically, NMFS could promulgate more restrictive fishing regulations, like restricting other fishing fleets, creating stricter gear use and loss regulations, and developing more meaningful pollution measures. These measures could not only further mitigate threats from fishery entanglement, but also threats that adversely modify the open ocean foraging habitat, like debris and pollution.

The MMPA could also directly help the Pacific leatherback, instead of providing incidental benefit as it does now, if Congress amended it. Sea turtles are not specifically protected, like some marine species of concern, by an act like the MMPA or the Migratory Bird Treaty Act.[249] Therefore, they fall into a category of marine species that are highly at risk, endearing to the public, but afforded no specific special protective rights from an act (besides the ESA).[250] Sea turtle behavior and threat susceptibility is more similar to marine mammals than any other marine animal group, so incorporating them into the MMPA would probably not dramatically shift MMPA implementation measures. If Congress amended the MMPA to include sea turtles, it is possible that major threats that result in jeopardy to leatherbacks and adverse modification to the open ocean from fisheries and pollution could be mitigated in a manner similar to that already available for marine mammals.

The CWA also holds potential for Pacific leatherback threat mitigation in the future. Recently, the Center for Biological Diversity started petitioning states to list the Pacific Ocean as a CWA impaired body of water, due to too low pH values (i.e. ocean acidification),

[249] Migratory Bird Treaty Act of 1918, 16 U.S.C. § 702 *et seq.* (2008).
[250] In terms of their own act, like marine mammals or migratory birds.

and establish total maximum daily loads for the cause of pollution, carbon dioxide.[251] Research indicates that ocean acidification impairs many organisms, like cnidarians, the primary foraging target of leatherback turtles.[252] If the CBD petitions are successful, the CWA may be the most direct way to protect leatherback ocean habitat. Primarily, it could lead to a decrease in ocean acidification because the EPA and coastal states will have to monitor and manage the ocean's pH.

The MSA, MMPA, and CWA all provide windows of opportunity for achieving threat mitigation goals that CHD could also provide. Although ESA critical habitat designation potentially provides the most safeguards for Pacific leatherbacks,[253] it is unlikely to be granted at this time given the inherent difficulties and high cost of open ocean designation. Continuing to depend on the ESA § 7 consultation process and subsequent regulations through the MSA, as well as exploring other legal alternatives, may be the most realistic option for effective Pacific leatherback protective measures and recovery at this time.

V. Conclusion

The ESA may simply not be the most effective source of protection for species like the Pacific leatherback that only uses U.S. open ocean habitat. This species forages across an enormous area of open ocean and faces threats that protective mitigating measures would be incredibly expensive and resource intensive, if not simply impossible, to curtail. The turtles need a foraging area with significantly less fishing pressure, fishing gear and plastic debris, boat traffic, and impacts from global warming, like ocean acidification. It is unlikely that NMFS could justify the benefits of exclusion do not outweigh the benefits of designation.

It cannot be denied that the Pacific leatherback requires further protection against threats to avoid extinction. Despite thirty-seven years of protection and its own Conservation Area, the Pacific leatherback continues to decline at a rapid rate. Within the cost-benefit analysis, surely, Congress intended ESA critical habitat designation to value the risk of losing a historic species. Nevertheless, the "prudent" standard allows NMFS to weigh benefit versus cost and, in this case, makes it difficult to imagine NMFS ruling the benefit of designation outweighs the benefits of not designating.

At this time, it seems unlikely that any species will be granted offshore critical habitat in the near future because the value of critical habitat is too tenuous. Further, current policy gives little hope of designation without a significant legal battle. Since 1996, FWS has listed 250 species but only designated critical habitat for two, despite the requirement to designate habitat within a year of listing unless certain exceptions apply. As of 2004, only

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[251] When carbon dioxide is assimilated into the ocean, it reacts with seawater and lowers the pH, thus making the ocean more acidic.

[252] Studies suggest that ocean acidification impairs the calcification rates of calcium carbonate. Most organisms in the ocean have or depend on a species that construct cell coverings and skeletons with calcium carbonate, like types of plankton and mollusks. It is suggested that ocean acidification threatens the entire marine food web. *See generally* GERMAN ADVISORY COUNCIL, *supra* note 12.

[253] For example, only the ESA can enable NMFS to implement a rule to specifically research sea turtle interactions on commercial fishing vessels. *See* Sea Turtle Conservation; Observer Requirement for Fisheries, 72 Fed. Reg. 43,176 (Aug. 3, 2007).

37% of species listed on the ESA had critical habitat designated.[254] Further, of the sixty-five species under NMFS jurisdiction, only fourteen have critical habitat designated.[255] The Bush Administration has not listed or designated critical habitat for any species without prompting from petition or court action. In the downturn of the economy, funding for conservation is likely to lessen, although this may be mitigated by the Obama administration's support of the ESA.[256]

The leatherback Petition may be a prodigious opportunity for critical habitat designation innovation. Perhaps facing habitat designation consideration for a beloved species that is spiraling towards extinction is just the inspiration NMFS needs to consider the benefits of open ocean designation explored in this paper. Despite limited science, management capacity, and knowledge of the open ocean, it is still possible for NMFS to find value in designation over the economic burden. The Petition has the potential to encourage NMFS to re-assess their value standards in critical habitat designation and set a precedent for open ocean critical habitat designation. With increased effort to consider designating open ocean, the difficulties of doing so and factors that limit its protective benefits to species can be overcome.

The arguments and research backing up designating open ocean critical habitat probably do not meet the standards for implementation. There is little regulatory support for NMFS, the agency that manages commercial fishing fleets and monitors all actions in the open ocean, to designate an enormous area that is one of the most productive and economically viable ocean areas as critical habitat for a species that is only there three months out of the year. Although the Petition serves a greater purpose for raising these arguments and requiring NMFS to consider them, conservation organizations might be more successful considering other legal options in the MSA, MMPA, and CWA. Although this action may be a compromise of the power and purpose of the ESA and critical habitat designation, it may also be the best chance the Pacific leatherback population has for survival.

[254] Suckling & Taylor, *supra* note 24, at 76.
[255] National Marine Fisheries Serv., Endangered and Threatened Species Under NMFS' Jurisdiction, *available at* http://www.nmfs.noaa.gov/pr/pdfs/species/esa_table.pdf (last visited Feb. 2, 2009).
[256] Tony Davis, *Endangered Species Rule: Muddled Future*, ARIZONA DAILY STAR, Jan. 20, 2009.

Regional Fishery Management Councils: A Governance Framework on Unstable Constitutional Grounds

John-Austin Diamond[1]

I. Introduction

In the spring of 2008, the Pacific Fishery Management Council took emergency action to close the West Coast salmon fishery for the first time in the history of the country. The California State Department of Fish and Game predicted the closure would cost the state's commercial fishing industry $255 million and 2,263 jobs in 2008 alone.[2] The more than two million recreational fishermen in California who spend approximately $2.38 billion on fishing each year also would be negatively impacted.[3]

Managing America's offshore fisheries presents a challenge because the resource is regionally segmented with each fishery possessing geographically unique attributes. To accommodate this intricacy, § 302 of the Magnuson-Stevens Fishery and Conservation Act (Magnuson Act) established eight Regional Fishery Management Councils (FMCs): New England, North Pacific, Mid-Atlantic, Pacific, South Atlantic, Western Pacific, Gulf of Mexico, and the Caribbean. The FMCs prepare fishery management plans, subject to approval and implementation by the National Marine Fisheries Service (NMFS), for fisheries found within the area three to 200 miles offshore, known as the Exclusive Economic Zone (EEZ).

Individuals are appointed to serve on the FMCs in two different ways. Approximately 75% of all FMC members are appointed by the Secretary of Commerce from a limited list of individuals nominated by the Governor of each applicable constituent state.[4] The members appointed by the Secretary "must be individuals who, by reason of their occupational or other experience, scientific expertise, or training, are knowledgeable regarding the conservation and management, or the commercial or recreational harvest, of the fishery resources of the geographical area concerned."[5] The remaining voting members of the FMC

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[1] J.D. Candidate, Vermont Law School, 2009.
[2] Matt Weiser, *Salmon Fishing Closure Prompts Schwarzenegger to Declare Emergency*, THE SACRAMENTO BEE, Apr. 11, 2008, *available at* http://www.klamathbasincrisis.org/fishermen/closure/schwarzennegarEM041108.htm (last visited Feb. 2, 2009).
[3] Press Release, American Sportfishing Association, *California Bans Recreational Fishing in the Channel Islands*, *available at* http://www.asafishing.org/asa/newsroom/newspr_102402.html (last visited Feb. 2, 2009).
[4] 16 U.S.C. § 1852(2)(C).
[5] *Id.* § 1852(b)(2)(A).

include state officials, nominated by their respective Governors, with fishery management expertise and the "regional director of the NMFS for the geographic area concerned."[6]

As twenty-five percent of the members are neither appointed by the President, the courts, or department heads, this article examines whether the FMC structure is unconstitutional in abrogation of the Appointments Clause of the U.S. Constitution. The Presidential power of appointment originates in the Appointments Clause of the United States Constitution.

> [The President] . . . shall nominate, and by and with the Advice and Consent of the Senate, shall appoint Ambassadors, other public Ministers and Consuls, Judges of the Supreme Court, and all other Officers of the United States, whose Appointments are not herein otherwise provided for, and which shall be established by Law: but the Congress may by Law vest the Appointment of such inferior Officers, as they think proper, in the President alone, in the Courts of Law, or in the Heads of Departments.[7]

Pursuant to the Appointments Clause, the President recommends individuals for Cabinet-level positions to the Senate for confirmation. Deputy undersecretaries, however, are generally appointed by the President without Senatorial consent. Congressional approval of Presidential appointments creates a balance of power which assures that no single branch receives too much control.

Buckley v. Valeo[8] stands as the keystone case for the constitutional analysis of Presidential appointments.[9] In *Buckley*, the U.S. Supreme Court examined the constitutionality of an eight-member commission established by the Federal Election Campaign Act of 1971 (FECA). The commission had certain recordkeeping, disclosure, investigatory, rulemaking, and enforcement powers with respect to federal campaign expenditures. The members of the Commission were appointed as follows: two members by the *pro tempore* of the Senate, two by the Speaker of the House, and two by the President.[10] The Secretary of the Senate and the Clerk of the House served as *ex officio* nonvoting members.[11]

The Supreme Court held that "powers given to Congress under the Twelfth Amendment to regulate practices in connection with Presidential elections do not permit it to create a federal commission to regulate such elections in a manner violative of the [A]ppointments [C]lause."[12] The FECA violated the Constitution by vesting appointment powers in the Speaker of the House and the President pro tempore of the Senate. Under the Appointments Clause, Congress may only vest the appointment of inferior officers in the President, in the courts, or in department heads. According to the Supreme Court, "neither

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[6] *Id.* § 1852(b)(1).
[7] U.S. CONST. art. II, §2, cl. 2.
[8] 96 S. Ct. 612 (1976).
[9] *Id.* at 688 ("All Officers of the United States are to be appointed in accordance with the [Appointments] Clause.")
[10] *Id.* at 679.
[11] *Id.* at 626.
[12] *Id.* at 647.

the Speaker of the House, nor the President pro tempore of the Senate, come within the terms 'Courts of Law' or 'Heads of Departments.'"[13]

In *Buckley*, the U.S. Supreme Court created a three-prong test to determine whether an individual must be appointed in accordance with the Appointments Clause. The Appointments Clause applies to (1) all executive or administrative officers, (2) who serve pursuant to federal law, and (3) who exercise significant authority over federal government actions.[14] If an individual meets all three prongs, he or she must be appointed by the President, the courts, or a department head.

Concerns over the constitutionality of the FMC appointment process arose immediately upon its implementation. In 1984, the Department of Justice advised President Ronald Reagan that the promulgation of regulations by the Councils would violate the Appointments Clause.[15] Based on that warning, President Reagan signed a bill amending provisions of the Magnuson Act based on his "understanding that Councils will only make recommendations with respect to proposed regulations. It is the Secretary, not the Councils who must make final decisions on the appropriate final action to be taken in response to recommendations transmitted by the Councils."[16]

In the early 1990s, environmental groups challenged the constitutionality of the Pacific Fishery Management Council.[17] While the court ultimately ruled that the plaintiffs lacked standing to raise their claim,[18] the case should serve as a warning that future challenges are possible. Concerns over the constitutionality of the Council system remain.

In fact, in January 2007, upon the signing of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006, President Bush stated that "provisions of the Act . . . purport to give significant governmental authority of the United States to individuals who are not appointed in accordance with the Appointments Clause of the Constitution. The executive branch shall construe these provisions in a manner consistent with the Appointments Clause."[19]

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[13] *Id.* at 645.
[14] *Seattle Master Builders Association v. Pacific Northwest Electric Power and Conservation Planning Council,* 786 F.2d 1359 (9th Cir. 1985).
[15] Press Release, White House, *Statement by Ronald Reagan on Signing a Bill Concerning Marine Sanctuaries and Maritime Safety* (Oct. 19, 1984), *available at* http://www.presidency.ucsb.edu/ws/index.php?pid=39281 (last visited Feb. 2, 2009).
[16] *Id.*
[17] *Northwest Environmental Defense Center v. Brennen*, 958 F.2d 930 (9th Cir. 1992).
[18] *Id.* at 937.
[19] Press Release, White House, *Statement by President George W. Bush Upon Signing [H.R. 5946]*, 2007 U.S.C.C.A.N. S83 (Jan. 27, 2007). Presidential signing statements do not necessarily have the force of law, but can serve legitimate legal purposes. Signing statements can provide an explanation of the bill's likely effects upon constituencies; provide direction to the President's subordinates within the executive branch regarding implementation; and inform Congress that certain applications may result in an unconstitutional exercise of executive power. *See*, U.S. Department of Justice, *Memorandum for Bernard N. Nussbaum, Counsel to the President*, Nov. 3, 1993 *available at* http://www.usdoj.gov/olc/signing.htm . It is generally recognized that the president may use a signing statement to "announce that, although the legislation is constitutional on its face, it would be unconstitutional in various applications, and that in such applications he will refuse to execute it."

II. Assessment of the Constitutionality of Fishery Management Councils

A. Council Members as "Officers"

The Supreme Court in *Buckley* held that "officers of the United States" include "all persons who can be said to hold an office under the government" including "any appointee exercising significant authority pursuant to the laws of the United States."[20] Upon first glance, this definition of officer converts the *Buckley* test into a two-prong, rather than a three-prong, test. The first prong is met anytime the second and third prongs are met. Some courts, however, have treated the first prong as a formal requirement and granted "officer" status only "when the delegee has formal duties, holds an established office, has a prescribed tenure and receives federal emoluments."[21]

The U.S. Supreme Court held in *U.S. v. Hartwell*[22] that

> An office is a public station, or employment, conferred by the appointment of government. The term embraces the ideas of tenure, duration, emolument, and duties.
>
> The employment of the defendant was in the public service of the United States. He was appointed pursuant to law, and his compensation was fixed by law. Vacating the office of his superior would not have affected the tenure of his place. His duties were continuing and permanent, not occasional or temporary. They were to be such as his superior in office should prescribe. A government office is different from a government contract. The latter from its nature is necessarily limited in its duration and specific in its objects. The terms agreed upon define the rights and obligations of both parties, and neither may depart from them without the assent of the other.[23]

In a memorandum analyzing whether an executive order applied to all executive branch employees of FMCs, the Department of Justice's Office of Legal Counsel (OLC) concluded that Council members are not executive branch "employees" (or officers) subject to the Order.[24] The OLC contended that the first prong of the *Buckley* test is met only when a

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Id. at 2. Although federal law does not prohibit such signing statements, such statements may obstruct Congressional intent. Signing statements could be used by a President to subvert the intended effect of certain legislation. *See*, Trevor W. Morrison, *Constitutional Avoidance in the Executive Branch*, 106 COLUM. L. REV. 1189, 1247 (2006) ("The use of avoidance style reasoning in signing statements has a fairly established history although recent scholarship suggests that the Bush Administration has taken the practices to new level.") For example, President Bush's statement on signing the 2006 Defense Appropriations bill significantly expanded the executive branch's discretion in implementing Senator John McCain's anti-torture amendment. *Id.*

[20] Gordon C. Wilson, Note, *Limitations on Congressional Power to Establish Interstate Mechanisms of Governance: The Unconstitutionality of the Ozone Transport Region Created Under Section 184 of the Clean Air Act*, 11 J. L. & POL. 381, 387-88 (1995) (*referencing Buckley*, 424 U.S. at 125-26).

[21] *U.S. v. Hartwell,* 73 U.S. 389, 393 (1867).

[22] 73 U.S. 385 (1867).

[23] *Id.* at 393.

[24] Office of Legal Counsel, U.S. Department of Justice, *Memorandum to Ginger Lew, General Counsel, Department of Commerce, Applicability of Executive Order N. 12674 to Personnel of*

person is "(1) [appointed] to a position of employment (2) within the federal government (3) that carries significant authority pursuant to the laws of the United States."[25]

Despite the OLC's advisory opinions, Council members arguably meet all three of these sub-elements and the first prong of the *Buckley* test. Council members are in a position of employment within the federal government. According to federal law, federal employees are those (1) appointed by an appropriate official, (2) engaged in the performance of a Federal function, and (3) subject to the supervision of an appropriate Federal officer or employee.[26]

75% of the Council members easily meet the first element since they are appointed by the Secretary of Commerce. As for the second element, all Council members are clearly engaged in the performance of a federal function, the management of U.S. fisheries. The Councils were created to provide assistance and support to NMFS and the Secretary of Commerce with respect to fisheries management. Council members receive compensation from the federal government for travel and other expenses. The Office of General Counsel for the Department of Commerce has declared that the Councils are "subordinate parts of the Department of Commerce" and "an integral part of the Department."[27]

However, it is not as clear whether Council members are "subject to the supervision" of the Secretary of Commerce. The OLC, under President Clinton, concluded that Council members do not qualify as employees because they are subject only to limited supervision of the Secretary of Commerce.[28] First, the OLC found that the Secretary's power to remove officers is quite limited. The Secretary may only remove a Council member upon the prior recommendation of two-thirds of a Council.[29] Second, the OLC referred to the Councils' veto power. Councils are empowered by the Magnuson Act to prevent the Secretary from taking certain regulatory actions, such as limiting access to a fishery.[30]

The DOJ has previously stated, "However independent the Councils may be in their day-to-day operations, ultimate authority over a majority of their membership, budgets, and their major area of concern – the fishery management plans – remains with the Secretary or other federal agencies."[31] The Secretary of Commerce reviews all plans and proposals submitted by the Councils and only the Secretary can publish regulations to implement those plans and proposals.

Limited supervision, however, is not the same as the absence of supervision. As discussed in more detail below, a position on a FMC carries significant authority to determine how

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Regional Fishery Management Councils (Dec. 3, 1993), *available at* http://www.usdoj.gov/olc/fishery.htm .

[25] Office of Legal Counsel, U.S. Dept. of Justice, *Memorandum for the General Counsels of the Federal Government on the Constitutional Separation of Powers between the President and Congress* (May 7, 1996), *available at* http://www.usdoj.gov/olc/delly.htm .

[26] 5 U.S.C. § 2105(a).

[27] General Counsel, U.S. Dept. of Commerce, *Memorandum for William Hogarth, Council Members and Staff Eligibility for Voluntary Participation in Federal Employees Health Benefits Program* (July 12, 2007).

[28] OLC, *supra* note 24.

[29] 16 U.S.C. § 1852(b)(6).

[30] *Id.* § 1864(c)(3).

[31] OLC, *supra* note 24.

fisheries will be managed. Council members develop the fishery management plans which are approved by the Secretary unless inconsistent with the Magnuson Act or other relevant laws.[32] Councils conduct public hearings, develop annual catch limits for each managed fishery, and establish multi-year research priorities.[33]

B. Council Members Serve Pursuant to Federal Law

The second prong of the *Buckley* test is that the officer must serve pursuant to federal law. The Council members clearly serve pursuant to federal law. The eight regional fishery management councils are creatures of federal law. The Magnuson Act established the Councils in 1976, delineated the appointment and removal process, and set the parameters for their activities and duties.[34]

The Councils' situation is distinguishable from a recent challenge to the Pacific Northwest Electric Power Conservation Planning Council (Planning Council).[35] The Planning Council develops and maintains a regional power plan and a fish and wildlife program to balance the Northwest's environmental and energy needs.

Like the FMCs, the Planning Council seeks to manage regional issues that occur within state boundaries but have national implications. A group of industry leaders and home builders challenged the constitutionality of the Planning Council in 1985 in *Seattle Master Builders Association v. Pacific Northwest Electric Power and Conservation Planning Council*.[36] The plaintiffs brought suit against the Planning Council over allegations that the Planning Council structure violated the Appointments Clause of the Constitution.

The court acknowledged that even though the Planning Council exercised significant authority and discretion, the court ruled that it was constitutional. According to the court, the Planning Council failed to meet the second prong of the *Buckley* analysis because "the Council members do not perform their duties "pursuant to the laws of the United States."[37] The court concluded that the Planning Council failed to qualify as "officers" of the United States because their appointment, salaries, administrative operations, and direction of the Councils are all state-derived.[38] The FMCs, however, were created by federal law, are administered by federal entities, and are supervised by the Secretary of Commerce.

C. Council Members Exercise Significant Authority

The third prong in the *Buckley* analysis requires an officer to exercise significant authority before his appointment will trigger the Appointments Clause. A position with "significant authority" possesses enforcement authority to bind the federal Government.[39] For example,

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[32] 16 U.S.C § 1854(a)(1)(A).
[33] *Id.* § 1852.
[34] *Id.*
[35] *Seattle Master Builders Association v. Pacific Northwest Electric Power and Conservation Planning Council*, 786 F. 2d. 1359 (1985).
[36] *Id.*
[37] *Id.* at 1364.
[38] *Id.*
[39] OLC, *supra* note 25.

the creation of a Presidential advisory committee composed entirely of congressional appointees would not implicate the Appointments Clause because such committees exercise no power to bind the President and are purely advisory in nature.[40] Because Councils have the power to bind the federal government, their members exercise significant authority.

The definition of "significant authority" played a major role in the Supreme Court's decision in *Freytag v. Commissioner*.[41] In *Freytag*, the appointment of special trial judges, referred to as commissioners, by the Chief Judge of the U.S. Tax Court was questioned. Justice Blackmun, writing for the majority, rejected the Commissioners' argument that they were simply federal employees lacking authority to render a final decision and that their role merely was "assisting" the tax court judges in decision-making.

Justice Blackmun declared that this argument ignored the significance of the duties and discretion that commissioners exercised. The commissioners' office was established by law and their duties, salary, and means of appointment were specified by statute.[42] The Court concluded that the commissioners exercised significant authority because they "take testimony, conduct trials, rule on the admissibility of evidence, and have the power to enforce compliance with discovery orders. In the course of carrying out these important functions, the special trial judges exercise significant discretion."[43]

III. Conclusion

The Constitutionality of the Councils has been questioned since their creation. Strong arguments exist that could potentially declare the entire Council system unconstitutional under the Appointments Clause of the Constitution. However, in the only reported decision addressing the constitutionality of FMCs, *Northwest Environmental Defense Center v. Evans*,[44] the U.S. District Court for the District of Oregon held that the Pacific Fishery Management Council did not violate the Appointments Clause. This decision may serve as persuasive, but non-binding authority, in other jurisdictions.

16 U.S.C. §1854(b)(1)(A) permits a proposed FMP plan to automatically take effect if the Secretary of Commerce failed to notify the Council of his disapproval within 95 days. The Northwest Environmental Defense Center (NEDC) contended that this provision, among others, granted Council members significant authority and required the members be appointed pursuant to the Appointments Clause.

The Department of Justice countered by arguing that a fishery management plan "has no force or effect" until the Secretary of Commerce issues regulations to implement it.[45] Significant authority therefore, according to the DOJ, lies with the Secretary of Commerce.

The District Court construed the phrase "significant authority" narrowly, holding that it arises "from the ability to promulgate, not propose, implementing regulations for a fishery

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[40] *Id.*
[41] *Freytag v. Commissioner of Internal Revenue*, 111 S. Ct. 2631, 2645 (1991).
[42] *Id.* at 2645.
[43] *Id.*
[44] 1988 U.S. Dist. Lexis 8977 (1988).
[45] *Id.* at *17.

management plan or plan amendments."[46] Under the district court's definition, only administrative agencies would have significant authority within the federal government because only they have the authority to promulgate regulations.

In reaching its conclusion, however, the court failed to take into account the numerous other significant powers granted to FMC members by the Magnuson Act. Councils are more than advisory panels. In fact, Councils have the authority to create their own advisory panels and appoint members to assist in "the development, collection, evaluation, and peer review of such statistical, biological, economic, social, and other scientific information as is relevant to such Council's development and amendment of fishery management plan."[47] Further, Councils formulate fishery management plans, conduct public hearings, prepare comments on foreign fishing applications, review optimum yield stock assessments, develop annual catch limits for each managed fishery, and create multi-year research priorities for fisheries.[48]

At times, the Councils' authority even seems to exceed that of the Secretary. Section 304(h) of the Magnuson Act limits the Secretary of Commerce's power to repeal a fishery management plan. "The secretary may repeal or revoke a fishery management plan for a fishery under the authority of the Council only if the Council approves the repeal or revocation by a three-quarters majority of the voting members of the Council."[49] Without the consent of three-quarters of the Council, the Secretary has no other choice but to enforce the management plan given to him by the Councils. The Secretary's power to promulgate regulations becomes less significant when the Council is empowered to authorize any repeal or revocation.

Section 304(c)(3) of the MSA states that for a fishery *under the authority* of the Council, "the Secretary may not include in any fishery management plan, or any amendment to any such plan, prepared by him, a provision establishing a limited access system, including any limited access privilege program unless such system is first approved by a majority of the voting members, present and voting, of each appropriate council."[50] By employing the language, "under the *authority* of the council" an assumption is created which suggests Congress intended the Councils to manage fisheries somewhat autonomously. The Secretary cannot establish a limited access program without the consent of the Councils. The Magnuson Act "empowers the Councils to prevent certain regulatory actions by the Secretary and in effect puts the Councils on a footing with the Secretary in regulating access to regional fisheries."[51]

In addition, the Councils exercise significant authority over the Secretary's removal powers. Section 302(b)(6) of the MSA severely limits the Secretary's power to remove Council appointees. "The Secretary may remove for cause any member of a Council required to be appointed by the Secretary . . . if the Council concerned first recommends removal by not

[46] *Id.* at *18.
[47] 16 U.S.C. § 1852(g).
[48] *Id.* § 1852(h).
[49] *Id.*
[50] *Id.* §1852(c)(3).
[51] General Counsel, *supra* note 27.

less than two-thirds of the members who are voting members and submits such removal recommendation to the Secretary in writing."[52]

Coupled with the power to appoint officers is the essential authority to remove officers. This vital safeguard ensures adequate political accountability of appointees. Section 302(b)(6) bestows upon Council members the ability to significantly shape national fisheries policy and management.[53] As such, they are officers who must be appointed pursuant to the Appointments Clause.

[52] 16 U.S.C. § 1852.

[53] A secondary, but important, analysis must be undertaken to determine whether Council members are principal or inferior officers. Principal officers may be appointed only by the President. Inferior officers may be appointed by either the President, the courts, or department heads. If Council members are principal officers, the Council structure is unconstitutional because no member is appointed by the President. The Supreme Court in *Morrison v. Olson* acknowledged that "the line between 'inferior' and 'principal' officers is one that is far from clear, and the Framers provided very little guidance into where it should be drawn." *Morrison v. Olson*, 108 S. Ct. 2597, 2603 (1988). *Morrison* was brought by three government officials questioning the authority of counsels appointed by the judiciary under the authority of the Ethics and Government Act (EGA). The court eventually held that the EGA did not violate the Appointments Clause, the counsel members were inferior officers, and there was no violation of the separation of powers doctrine.

National Security vs. Whales: The Navy and the Natural Resources Defense Counsel Battle Their Way to the Supreme Court

Alicia Schaffner[1]

"We are tied to the ocean. And when we go back to the sea, whether it is to sail or to watch it, we are going back from whence we came."

Pres. John F. Kennedy, Australian Ambassadors Dinner for the America's Cup Crews, September 14, 1962, Newport, R.I.

I. Introduction

In the past few years, the battle over the Navy's use of low and mid-frequency sonar has become hotly contested. The lines are clearly drawn between two groups advocating two very different agendas: marine mammal conservation and national security. Sonar is a necessary tool used by the Navy to detect enemy submarines, but environmentalists argue that it should be used only with the proper precaution and after the proper planning.

Legally, this is a battle over whether the Navy properly adhered to federally mandated environmental planning processes. The National Resources Defense Council (NRDC) has long argued that the Navy has not properly taken the environmental impacts of its sonar activities into account when planning training exercises. As a result, the NRDC frequently brings the Navy into court contending that its planning process for sonar training violates the National Environmental Policy Act (NEPA).

The latest skirmish involved a challenge to an Environmental Assessment (EA) prepared by the Navy in 2007 for sonar training in the Pacific Ocean off the coast of California. After a California district court and the Ninth Circuit Court of Appeals enjoined the Navy's sonar training, the Navy appealed to the U.S. Supreme Court. The Supreme Court in *Winter v. NRDC* held that the lower courts had not given proper weight to the Navy's interest in

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military training and protecting national security.[2] As a result, the district court had improperly enjoined the Navy from conducting sonar training.

This article begins by examining the general use of sonar by the Navy and its effects on marine mammals. The article then provides a time line of the *Winter v. NRDC* litigation, followed by an analysis of the Supreme Court's ruling.

II. Listening Underwater

Because of the lack of light in the deep ocean, sound is the primary navigation tool for humans and marine life traversing the depths. Marine mammals use echolocation to avoid collisions and locate prey. Echolocation is when a cetacean produces sound, most likely via vibrations of the nasal sac system near the nasal plugs.[3] The nasal sac system consists of a series of muscular valves and compliant sacs associated with the blowhole. Air sacs contract in synchrony with the echolocation clicks.[4] A cetacean's melon, a fatty structure located in its forehead, may serve as an "acoustic lens" to focus outgoing acoustic energy forward into the water in order to scan the area ahead of it.[5] Vibrations from the water are transmitted through the bones of the skull and adaptations allow cetaceans to localize sound underwater. Although some cetaceans, such as whales, have other senses including sight, touch and taste, hearing is paramount to their survival.[6]

Since humans cannot naturally echolocate underwater, sailors rely on sonar to keep their ships safe. Sonar is an acronym for the phrase "Sound Navigation and Ranging."[7] It is used to detect objects, such as underwater mines and other submarines, and estimate their range, velocity, and direction. Sonar can also be used to determine water depth. Sonar is the Navy's primary defense from an underwater attack.

The Navy uses two forms of sonar: passive and active. Passive sonar is a listening device that uses hydrophones to receive, amplify, and process underwater sounds. Passive sonar is used to detect and identify submarines by matching the sounds detected with known frequencies of submarine engines and propellers.[8] The primary benefit of passive sonar is that it can detect certain submarines without placing additional sound into the water. Unfortunately, passive sonar is ineffective at detecting modern, quiet submarines and submarines that are moving slowly or not at all.[9]

Active sonar, however, can detect quiet submarines and is extremely useful for precise location, classification, and rapid targeting.[10] There are three types of active sonar – high, mid, and low. High frequency sonar (>10kHz) is generally used to determine water depth,

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[2] *Winter v. NRDC,* 129 S. Ct. 365 (2008).
[3] I. A. VAUGHAN ET AL., MAMMALOGY 432-424 (4th ed. 2000).
[4] *Id.* at 424-427.
[5] *Id.*
[6] *Id.* at 424-427.
[7] U.S. Navy, *Understanding Sonar*, http://www.navy.mil/oceans/sonar.html (last visited Feb. 2, 2009).
[8] *Id.*
[9] *Id.*
[10] *Id.*

locate mines, and guide torpedoes. High frequency sonar has a short range, less than five nautical miles, and produces weak sound energy.[11]

Mid-frequency sonar (1kHz-10kHz), with a range of one to ten nautical miles, is the primary tool for identifying submarines. Mid-frequency sonar is emitted into the water column at a pressure of 235+ decibels for about 0.5 – 2 seconds and repeated every 28 seconds.[12] To provide some perspective, this intensity would be similar to that of a rocket taking off.[13] The Occupational Safety and Health Administration (OSHA) requires that hearing protection be used where workers are exposed to sounds at "90 dB for eight hours or 110 dB for as little as thirty minutes."[14]

Low frequency sonar (<1kHz) has a range of about 100 nautical miles and is used mostly for long-range search and surveillance of submarines.[15] While low frequency sonar is quite useful for tracking submarines, it has the unfortunate drawback of allowing enemy submarines to extrapolate the location of the ship producing the sound.[16] As a result, this sonar is primarily used during training and maintenance activities. About 58% of the U.S. Navy's surface ships are equipped with active sonar, and about half of these ships are underway at any given point in time.

III. Impacts of Noise on Marine Mammals

The oceans are noisy. Oil and gas exploration companies conduct high-energy seismic surveys. Commercial shipping ensures a near-constant rumble of engines and propellers. Since the sounds generated from these activities fall within the hearing ranges of marine mammals, all of this activity creates an underwater world constantly flooded with intense sound.

As the level of ocean noise has increased, concerns have risen about the potential impacts on marine mammals and other marine life.[17] In 2005, the National Research Council (NRC) investigated the effects of noise on marine mammal populations. The NRC identified five different levels of effects ranging from individual behavior changes to population-level changes. The NRC also determined that proximity to the source also correlates to the impact of the effect. The closer the cetacean is to the source, the higher the probability that the exposure could result in death and acoustic trauma. Marine mammals farther removed from the sound may suffer hearing loss or display avoidance techniques and other minor behavioral changes.[18]

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[11] MICHAEL JASNY ET AL., NATURAL RESOURCES DEFENSE COUNCIL, SOUNDING THE DEPTHS II: THE RISING TOLL OF SONAR, SHIPPING AND INDUSTRIAL OCEAN NOISE ON MARINE LIFE 3 (2005), *available at* http://www.nrdc.org/wildlife/marine/sound/sound.pdf (last visited Feb. 2, 2009)
[12] *Id.*
[13] *Ocean Noise Affects Marine Life*, 44(5) ENVIRONMENT 4 (2002).
[14] Jasny, *supra* note 11.
[15] *Id.*
[16] *Id.*
[17] NATIONAL RESEARCH COUNCIL, MARINE MAMMAL POPULATIONS AND OCEAN NOISE: DETERMINING WHEN NOISE CAUSES BIOLOGICALLY SIGNIFICANT EFFECTS (2005).
[18] *Id.*

Not all marine mammals respond to sound in the same way. Some species are very susceptible to sonar. The species affected include: the Pygmy Sperm Whale, Gervais' Beaked Whale, Blainville's Beaked Whale, Melon-Headed Whales, Bottlenosed Dolphin, and the Cuvier's Beaked Whale, which is quite possibly the marine mammal most affected by sonar.[19] Scientists have not yet determined why these animals are so vulnerable to sonar, but all the above species share two traits: the use of echolocation and migration to cold waters for feeding and to warmer waters to give birth.[20]

Both physical and behavioral change can be observed after a marine mammal is exposed to acoustic trauma. Physiological damage includes: injury to body tissue, embolism, gross damage to the auditory system, permanent and temporary hearing loss and disorientation.[21] Due to the stress from the sounds, their immune systems are often vulnerable to disease and reproductive rates decrease.[22] Repetitive exposures to noise, such as sonar, may also to lead to chronic impacts, such as desensitization to noise, which results in animals remaining near the sources of the damaging sound.[23]

There are other behavioral effects as well, such as stranding, interruption to normal behavior such as feeding, breeding and nursing, loss of efficiency, increased antagonism, and displacement from preferred areas.[24] Ocean noise may hinder the ability of individual cetaceans to communicate with other members of the same species. Biologically important sounds may be masked by sonar, which leads to decreased reproductive rates.[25] In addition, there may be some interference with the ability to acoustically interpret their environment and interference with food-finding.[26]

There may also be some indirect effects on the cetaceans. High intensity sound may affect the entire ecosystem. For example, the viability of fish eggs may be reduced and the fish themselves may be injured. Sonar may cause temporary deafness which will impact the ability of fish to feed, mate, avoid predators, and school.[27] The loss of fish and fish eggs may reduce the amount of prey available for marine mammals. Ultimately, these changes could impact humans if noise contributes to declining fish catch rates.[28] However, it has been argued that sonar does not have that much of an impact on fish. So far research indicates that the most notable effects only arise after fish are continually exposed to the sound, as opposed to intermittently exposed.[29]

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[19] Jasny, *supra* note 11, at 8-9, 11
[20] whaleroute.com, *Whale Migration*, http://www.whaleroute.com/migrate/ (last visited Feb. 2, 2009).
[21] Jasny, *supra* note 11, at 7
[22] T. A. Romano et al, *Anthropogenic sound and marine mammal health: measures of the nervous and immune systems before and after intense sound exposure*, 61(7) CANADIAN JOURNAL OF FISHERIES AND AQUATIC SCIENCES 1124 (2004).
[23] Jasny, *supra* note 11, at 7
[24] A. Frantzis, *Does Acoustic Testing Strand Whales?*, 392 NATURE 29 (1998).
[25] *Id.*
[26] Patrick Miller et al., *Whale Songs Lengthen in Response to Sonar*, 405 NATURE 903 (2000).
[27] *NRDC v. England*, Complaint for Declaratory and Injunctive Relief (C.D. Cal. Oct. 19, 2005) *available at* http://www.nrdc.org/media/docs/051019.pdf (last visited Feb. 2, 2009).
[28] *Id.*
[29] INTERNATIONAL COUNCIL FOR EXPLORATION OF THE SEA. REPORT OF THE AD-HOC GROUP ON THE IMPACTS OF SONAR ON CETACEANS AND FISH (2005), *available at* http://www.ices.dk/advice/Request/EC/DG%20Env/sonar/agisc05.pdf (last visited Feb. 2, 2009).

IV. Marine Mammal Strandings

In March 2000, seventeen cetaceans stranded over the course of two days in the Bahamas' Northeast and Northwest Providence Channels.[30] The multi-species mass stranding included Blainville's beaked whales, Cuvier's beaked whales, and Minke whales. Ten of these whales survived and returned to the ocean, but the other seven did not. Necropsies revealed that the cetaceans had sustained acoustic or impulse trauma evidenced by the presence of hemorrhaging in the brain and auditory system. The Navy was conducting sonar tests nearby around the time of the stranding and its reports indicate that the stranding was caused by mid-frequency sonar.[31] Since the stranding, the original population of beaked whales in this area has disappeared. They may have been killed or permanently displaced because of the sonar testing.[32]

Marine mammal strandings in the vicinity of underwater sonar testing were first documented in the 1960s. Since then, the problem seems to have worsened and several mass strandings have coincided with sonar activities.[33] In addition to the 2000 Bahamian stranding, a mass stranding of approximately 200 melon-headed whales in July 2004 in the Hawaiian Islands was linked to the naval exercise RIMPAC '04.[34] That month, researchers also discovered a large concentration of whale strandings near Yokosuka, a major U.S. Navy base off the Pacific coast of Japan.[35]

In January 2005, in the Outer Banks of North Carolina, thirty-four pilot whales, two pygmy sperm whales, and one minke whale beached themselves.[36] This stranding correlated with a Navy sonar exercise.[37] These exercises were completed in order to ensure that military strike groups were adequately prepared to deploy and work proficiently at sea to aid in the fight on terrorism.[38] Post-mortem tissue scans showed hemorrhaging in the pygmy sperm whale and pilot whale that was consistent with other stranding events.[39]

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[30] Jasny, *supra* note 11, at 1.
[31] U.S. DEPARTMENT OF COMMERCE AND U.S. NAVY, JOINT INTERIM REPORT BAHAMAS MARINE MAMMAL STRANDING EVENT OF 15-16 MARCH 2000 (Dec. 2001), *available at* http://www.nmfs.noaa.gov/pr/pdfs/health/stranding_bahamas2000.pdf (last visited Feb. 2, 2009).
[32] *Id.*
[33] Jasny, *supra* note 11, at 8-9.
[34] *Id.*
[35] NRDC, *Protecting Whales from Dangerous Sonar*, http://www.nrdc.org/wildlife/marine/sonar.asp (last visited Feb. 2, 2009).
[36] Marc Kaufman, *Whale Stranding in NC Followed Navy Sonar Use*, WASHINGTON POST, Jan. 28, 2005.
[37] *Id.*; Jasny, *supra* note 10, at 8-9.
[38] Press Release, U.S. Navy, *Kearsarge Expeditionary Strike Group Completes Exercise*, Jan. 28, 2005, *available at* www.navy.mil/search/display.asp?story_id=16829 (last visited Feb. 2, 2009).
[39] Press Release, NRDC, *Government Report on Mass Whale Stranding in N.C. Identifies Naval Sonar as Possible Cause*, Mar. 29, 2006, *available at* http://www.nrdc.org/media/pressreleases/060329a.asp (last visited Feb. 2, 2009). Other marine mammal deaths possibly linked to military activity include: Madeira in 2000, Greece in 1996, the U.S. Virgin Islands in 1998 and 1999, the Canary Islands in 1985, 1988, 1989, 2002, and 2004, the Gulf of Alaska in June 2004 and the northwest coast of the United States in 2003. Jansy, *supra* note 11, at 8-9.

V. Sonar and National Security

The Navy has been firm in its position that the use of sonar in military training is essential for national security.[40] Many countries, including nations hostile to the U.S., have obtained quiet, modern submarines.[41] These submarines are extremely dangerous unless the Navy can detect them. The Navy trains sonar technicians on both active and passive sonar systems. Computers are used for basic training, but field experience is also necessary. Because the ocean is so noisy, sonar technicians must learn how to distinguish natural sounds from manmade noises. Sailors must learn how to focus during stressful situations, because combat can be a time of chaos and panic. According to the Navy, "[l]ive training with sonar at sea is essential to the safety of our sailors, their ability to survive submarine attacks, and ultimately, their ability to hunt and kill enemy submarines when necessary – a critical component of maintaining the security of our nation."[42]

The Navy does express concern about the potential impact of active sonar on marine mammals, but the Navy's mission is to defend the United States at sea, through combat if necessary. The Navy has spent millions of dollars on scientific research to better understand the effects of sound on these creatures. The Navy has pledged their commitment to further research and to use mitigation measures to minimize the effects on marine mammals; however, they are steadfast in their conviction that the Navy "cannot put the lives of its Sailors at risk or fail to remain prepared to defend our nation by eliminating active sonar use."[43]

In response to claims that sonar is responsible for mass strandings, the Navy asserts that its use of sonar has been associated with only a "very small fraction" of marine mammal strandings worldwide.[44] The Navy forwards other potential explanations of strandings such as: disease, parasite infestation, harmful algal blooms, injuries from ship strikes or fishery entanglements, exposure to pollution, trauma, starvation, or unusual weather or oceanographic events.[45]

NOAA Fisheries, also referred to as the National Marine Fisheries Services, has conducted research into a subset of stranding events known as Marine Mammal Unusual Mortality Events to try and determine why they occur. Some of the triggers discovered by NOAA Fisheries match the Navy's explanations including: infections, biotoxins, human interaction and malnutrition.[46] This does boost the Navy's assertion that there are other causes of

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[40] Fact Sheet, U.S. Navy, *Navy's Need for Sonar and Marine Mammal Protection Efforts* (2008), *available at* http://www.navy.mil/oceans/Need_for_Training_v2.pdf (last visited Feb. 2, 2009).
[41] *Id.*
[42] U.S. Navy, *Understanding Sonar: Navy's Need for Sonar Training*, http://www.navy.mil/oceans/training.html (last visited Feb. 2, 2009).
[43] U.S. Navy, *Understanding Sonar: Marine Mammals and Sound*, http://www.navy.mil/oceans/maritime.html (last visited Feb. 2, 2009).
[44] U.S. Navy, *Understanding Sonar: Stranding Events*, http://www.navy.mil/oceans/strand.html (last visited Feb. 2, 2009).
[45] *Id.*
[46] NOAA Fisheries, *Marine Mammal Unusual Mortality Events*, http://www.nmfs.noaa.gov/pr/health/mmume/ .

marine mammal strandings. However, it does not detract from the fact that in some situations military sonar has been positively linked to marine mammal stranding events.

As evidence of its environmental ethic, the Navy has developed an "At Sea" policy to help sailors comply with environmental requirements during naval exercises and training.[47] The policy states that "the Navy shall comply with applicable statutes, regulations and executive orders and will strive to protect the environment, prevent pollution, and protect natural, historic, and cultural resources."[48]

The Navy policy mandates that major fleet exercises be reviewed for environmental compliance and for potential consequences on marine mammals and other marine life. Mitigation measures must be used and can include conducting exercises in areas known to lack concentrations of marine mammals, posting highly trained lookouts, listening for marine mammals with passive sonar, creating buffer zones within which operations will be altered or delayed if marine mammals are present, ceasing sonar operations if marine mammals are detected within 200 yards of an active sonar dome, and conducting aerial searches for marine mammals in the area before, during, and after sonar operations.[49]

Because some the mitigation measures are highly dependent on visual surveys, most exercises occur during the day. When exercises are conducted at night, the Navy relies on night vision equipment, radar, and passive sonar to locate protected animals and coral reefs.[50] The Navy has designed these measures to help ship commanders maintain readiness and protect the environment during training and exercises by identifying and utilizing appropriate protective measures for sensitive marine life.[51]

VI. *Winter v. NRDC* Timeline

Under the Coastal Zone Management Act (CZMA), federal activities affecting a state's coastal resources must "be carried out in a manner that is consistent to the maximum extent practicable" with that state's coastal management plan.[52] To ensure this mandate is implemented, the CZMA requires federal agencies to submit a consistency determination to the relevant state agency before undertaking activities.[53]

On October 30, 2006, the Navy submitted plans for fourteen training exercises using mid-frequency sonar, scheduled from February 2007 through January 2009 off the coast of Southern California, to the California Coastal Commission.[54] These exercises, involving various ships, submarines, amphibious vehicles, aircraft, and live ordinance, were intended

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[47] The Undersecretary of the Navy, *Memorandum for the Chief of Naval Operations, Commandant of Marine Corps Subj. Compliance with Environmental Requirements in the Conduct of Naval Exercises or Training at Sea* 1 (Dec. 28, 2000), *available at* http://www.navy.mil/oceans/At_Sea_Policy_Memo.pdf (last visited Feb. 2, 2009).
[48] *Id.* at 2.
[49] U.S. Navy, *Environmental Stewardship: Marine Mammal Protection*, http://www.navy.mil/oceans/protection.html (last visited Feb. 2, 2009).
[50] *Id.*
[51] *Id.*
[52] 33 U.S.C. § 1456(c)(1)(A).
[53] *Id.* § 1456(c)(1)(C).
[54] Kenneth Weiss, *Bush Acts to Lift Curbs on Navy Sonar Use*, LOS ANGELES TIMES, Jan. 17, 2008.

to prepare naval strike groups for deployment to the western Pacific and the Middle East.[55] This submission set off the two-year legal battle that has yet to be completely resolved.

In January 2007, the Commission voted to allow the Navy's exercises to continue if the Navy abided by strict mitigation measures relating primarily to the use of sonar.[56] Some of the Commission's mitigation measures included maintaining sound levels below 154 dB, avoiding seamounts, and utilizing two NOAA-trained observers to monitor the sonar use.[57] However, because the Navy did not agree that sonar would "result in reasonably foreseeable effects to California's coastal uses or resources," it refused to comply with the Commission's proposed mitigation measures.[58]

In response to a successful previous sonar lawsuit by the NRDC, Congress amended the MMPA in 2003 to authorize the Secretary of Defense to "exempt any action or category of actions undertaken by the Department of Defense or its components from compliance with any requirement of [the MMPA], if the Secretary determines that it is necessary for national defense."[59] The Department of Defense issued the Navy a National Defense Exemption for the California training exercises in January 2007.[60] The exemption was conditional, however. The Navy was required to implement twenty-nine specific conditions designed to protect marine mammals which were developed in coordination with NOAA Fisheries, including:

> 1) training lookouts and officers to watch for marine mammals; (2) requiring at least five lookouts with binoculars on each vessel to watch for anomalies on the water surface (including marine mammals); (3) requiring aircraft and sonar operators to report detected marine mammals in the vicinity of the training exercises; (4) requiring reduction of active sonar transmission levels by 6 dB if a marine mammal is detected within 1,000 yards of the bow of the vessel, or by 10 dB if detected within 500 yards; (5) requiring complete shutdown of active sonar transmission if a marine mammal is detected within 200 yards of the vessel; (6) requiring active sonar to be operated at the "lowest practicable level"; and (7) adopting coordination and reporting procedures.[61]

In February 2007, prior to the first scheduled test, the Navy released an environmental assessment (EA) pursuant to the National Environmental Policy Act (NEPA).[62] NEPA requires federal agencies to prepare environmental impact statements (EIS) for "major Federal actions significantly affecting the quality of the human environment."[63] If the significance of the action is unknown or unclear, an agency may first prepare an EA to

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[55] *NRDC v. Winter*, 518 F.3d 658, 698 (9th Cir. 2008).
[56] Jane Kay, *Strict Rules for Navy's Use of Sonar Off Coast*, SAN FRANCISCO CHRONICLE, Jan. 11, 2007.
[57] *Id.*
[58] *California Coastal Panel Seeking AG Advice on Navy Sonar Stance*, INSIDE THE NAVY, Mar. 12, 2007.
[59] 16 U.S.C. § 1371(f).
[60] 43 Fed. Reg. 4189, 4190 (Jan. 24, 2008).
[61] *Winter v. NRDC,* 129 S.Ct. 365, 371-372 (2008).
[62] U.S. NAVY, COMPOSITE TRAINING UNIT EXERCISES AND JOINT TASK FORCE EXERCISES FINAL ENVIRONMENTAL ASSESSMENT/OVERSEAS ENVIRONMENTAL ASSESSMENT 107, 115 (2007).
[63] 42 U.S.C. § 4332(C).

determine whether the potential environmental impacts will rise to a level which warrants the preparation of an EIS.[64] If, after the preparation of EA, the agency concludes that the impact will not be significant, it may issue a "Finding of No Significant Impact" (FONSI) and refrain from producing an EIS.[65]

In its EA, the Navy estimated that the sonar use during the fourteen training exercises would result in the taking of 170,000 marine mammals.[66] Most of these would be non-lethal behavioral-type takes, primarily as the result of harassment. The Navy also estimated that there was the potential for "8,000 exposures powerful enough to cause a temporary threshold shift in the affected mammals' sense of hearing and an additional 466 instances of permanent injury to beaked and ziphiid whales."[67] Despite these findings, the Navy concluded that the training exercises would not have a significant impact on the environment and, therefore, an EIS was not required.[68] The Navy commenced training operations on schedule.

In March 2007, the National Resources Defense Council (NRDC) filed suit in the district court for the Central District of California. The NRDC claimed the Navy violated NEPA by failing to prepare an adequate EA that considered "the cumulative impacts of, and all reasonable alternatives to, the proposed actions" and by failing to prepare an EIS despite "the potential for the challenged exercises to have a significant impact on the environment."[69] With respect to the CZMA, the NRDC argued that the Navy "failed to carry out federal activities that affect California's costal zone in a manner consistent with the [California Coastal Management Plan]."[70]

A. August 2007 District Court Opinion

In August 2007, the District Court enjoined the Navy's sonar training activities.[71] According to the district court, a preliminary injunction may be granted when the party seeking the injunction demonstrates "either (1) a combination of probable success on the merits and the possibility of irreparable harm; or (2) that serious questions are raised and the balance of hardships tips in its favor."[72]

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[64] 40 C.F.R. § 1501.4.
[65] *Id.* § 1501.4(e).
[66] *NRDC v. Winter*, 2007 WL 2481037 at *1 (C.D. Cal. Aug. 7. 2007).
[67] *Id.*
[68] U.S. Navy, *supra* note 62, at 112.
[69] *NRDC v. Winter,* 2007 WL 2481037 at *3 (C.D. Cal. Aug. 7, 2007).
[70] *Id.* The CZMA claim was eventually dropped from the lawsuit. The CZMA allows the President to exempt federal agencies from compliance with a state CMP when he "determines that the activity is in the paramount interest of the United States." (16 U.S.C. § 1456(c)(1)(B)). In January 2008, after determining that Navy's use of mid-frequency sonar in the SOCAL training exercises was "essential to national security" and "in the paramount interests of the United States," President Bush exempted the Navy from compliance with the CZMA. (Marc Kaufman, *Navy Wins Exemption from Bush to Continue Sonar Exercises in California*, THE WASHINGTON POST, Jan. 17, 2008). This was the first time this provision had been invoked.
[71] *NRDC v. Winter,* 2007 WL 2481037 at *4 (C.D. Cal. Aug. 7, 2007).
[72] *Id.*

The court found that NRDC "raised substantial questions as to whether the SOCAL exercises will have a significant impact on the environment."[73] The NRDC presented substantial scientific evidence to the court linking marine mammal strandings to sonar activities. Although the Navy has been using mid-frequency sonar in California training exercises for over thirty years without one documented stranding, the court concluded that "a lack of documented evidence of the disturbance, injury, or even death of marine mammals in a particular geographic area does little to prove that MFA sonar never caused such adverse effects."[74] The Navy even acknowledged this potential for harm in its EA.

The court also concluded that NRDC demonstrated a probability of success on their claim that the Navy's proposed mitigation measures were inadequate. "An agency may avoid the requirement to prepare an EIS by adopting mitigation measures sufficient to eliminate any substantial questions over the potential for significant impact on the environment."[75] The court found that the 1,000-yard safety zone and presence of visual monitors would do little to protect the whales from the effects of the sonar.

The court granted NRDC's requested preliminary injunction after determining that NRDC "established to a near certainty that use of MFA sonar during the planned SOCAL exercises will cause irreparable harm to the environment."[76] The court was satisfied that the balance of harm tilted in favor of NRDC, because the harm to the environment "outweighs the harm that [the Navy] would incur if prevented from using MFA sonar, absent the use of effective mitigation measures, during a subset of their regular activities in one part of one state for a limited period."[77]

B. November 2007 Ninth Circuit Court of Appeals Ruling

The Navy appealed the grant of a preliminary injunction to the Ninth Circuit Court of Appeals. The Ninth Circuit held that the district court failed to properly balance the harms. "The district court was required to consider, not only 'balance of hardships' as between the [NRDC] and the Navy as an Executive Branch agency, but also the 'public interest' in having a trained and effective Navy."[78] The Ninth Circuit granted the Navy's motion to stay the preliminary injunction pending appeal.

After hearing the appeal, the Ninth Circuit stated that the "[p]laintiffs have met the necessary burden of proof to demonstrate that some form of preliminary injunctive relief is appropriate."[79] The court found that the NRDC met its burden for injunctive relief because the NRDC showed "a strong likelihood of success on the merits of their claims," as well as the fact that they might suffer "irreparable injury" if relief is not granted.[80] The court also found that the balance of hardships tipped in favor of the NRDC and that the public

[73] *Id.*
[74] *Id.*
[75] *Id.* at *6.
[76] *Id.* at *10.
[77] *Id.*
[78] *NRDC v. Winter*, 502 F.3d 859, 862 (9th Cir. 2007).
[79] *NRDC v. Winter*, 508 F.3d 885, 886 (9th Cir. 2007).
[80] *Id.*

interest would be served by an injunction that prescribed the proper mitigation measures.[81] The court vacated the stay of injunction and remanded the case to the district court so it could enter a "modified preliminary injunction" containing the "appropriate mitigating conditions."[82]

C. January 2008 District Court Opinion

The struggle to find the proper balance between environmental protection and national security continued after the Ninth Circuit remanded the case to the district court. The court tried to craft more balanced mitigation measures which would satisfy the desires of both sides. In the end, the court imposed a number of mitigation measures on the Navy's training exercise. First, the court required the Navy "maintain a 12 nautical mile exclusion zone from the California coastline at all times."[83] Second, the Navy was prohibited from using any type of MFA sonar when marine mammals are spotted within 2,200 yards (approximately 2,000 meters).[84] Third, the court required the Navy to "monitor for the presence of marine mammals for 60 minutes before employing MFA sonar" and use aerial monitoring and two dedicated NOAA-trained lookouts at all times. Finally, MFA sonar has to be powered down "in the presence of significant surface ducting conditions" (which causes sound to travel at higher intensities than normal) and the Navy had to avoid using "MFA sonar in the geographically restricted, biologically rich Catalina Basin."[85] The Navy filed for appeal on January 11, 2008, but the Ninth Circuit quickly denied their request for a stay.[86]

D. Presidential Exemption and CEQ Alternative Arrangements

When the Ninth Circuit refused to stay the district court's injunction, the Navy sought relief through the Executive Branch. The Council on Environmental Quality (CEQ), located within the Executive Office of the President, consented to the Navy's use of "'alternate arrangements'" to comply with NEPA "because 'emergency circumstances' prevented normal compliance."[87]

Where emergency circumstances make it necessary to take an action with significant environmental impact without observing the provisions of these regulations, the federal agency taking the action should consult with the CEQ about alternative arrangements. Agencies and the CEQ will limit such arrangements to actions necessary to control the immediate impacts of the emergency. Other actions remain subject to NEPA review.[88]

The CEQ was established to assist federal agencies with the implementation of NEPA and works with other agencies and executive offices to develop "environmental policies and initiatives."[89] 40 C.F.R. § 1506.11 allows CEQ to permit federal agencies, in "emergency

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[81] *Id.*
[82] *Id.* at 887.
[83] *NRDC v. Winter*, 530 F. Supp. 2d 1110, 1119 (C.D. Cal. 2008).
[84] *Id.*
[85] *Id.* at 1121.
[86] *Id.* at 1223.
[87] *Id.* at 1224.
[88] 40 C.F.R. § 1506.11.
[89] *Id.*

circumstances," to take actions that will affect the environment without observing the ordinary NEPA procedural requirements. Any alternative arrangements developed by the federal agency and CEQ should be tailored to control the "immediate impacts of the emergency."[90]

The CEQ determined that the district court's injunction "imposes training restrictions that continue to create a significant and unreasonable risk that Strike Groups will not be able to train and be certified as fully mission capable."[91] The alternative arrangements approved by the CEQ included: "(1) providing notice to the public regarding ongoing EIS preparation; (2) a commitment to continue research measures "for continual improvement in the quality of information" on the "quantity, distribution, migration, and reactions of marine mammals to MFA sonar;" and (3) maintaining the [mitigation measures required by the National Defense Exemption]."[92]

The alternative arrangements would be in place for the remaining training exercises. The Navy agreed to complete the EIS it was currently working on for the SOCAL exercises. A final draft of the EIS was released in December 2008.[93]

E. February 2008 District Court Opinion

The CEQ's actions prompted the Navy to move to vacate the district court's injunction with respect to the 2,200-yard shutdown zone and the restrictions on training in surface ducting conditions. The district court held that §1506.11 was inapplicable to the Navy's situation because there was no emergency circumstances.[94] In previous cases upholding the CEQ's approval of alternative arrangements for military activities, courts deferred to CEQ's determination "based on facts suggesting the need to avert imminent crises outside the agency's control."[95]

Here, however, the district court concluded that any "emergency," if there was one, was largely of the Navy's own making. The Navy knew there was a possibility that an injunction could be issued. The possible outcomes of litigation are far from sudden and can be prepared for ahead of time.[96] According to the court, this emergency arose from the Navy's failure to provide the environmental documentation required to conduct these tests in a timely manner.[97] The court also had difficulty categorizing *routine* naval training as an emergency.[98] The court refused to read "emergency circumstances" so broadly as to "permit[] agencies to avoid their NEPA obligations by re-characterizing ordinary, planned

[90] *NRDC v. Winter*. 527 F.Supp.2d 1216, 1225 (C.D. Cal. 2008).
[91] *Id.* at 1224.
[92] *Id.*
[93] *See*, Southern California Range Complex Environmental Impact Statement website, http://www.socalrangecomplexeis.com/default.aspx .
[94] *NRDC v. Winter*, 527 F.Supp.2d 1216, 1227-1228 (C.D. Cal. 2008).
[95] *Id.* at 1228.
[96] *Id.* at 1229.
[97] *Id.* at 1228.
[98] *Id.*

activities as 'emergencies' in the interests of national security, economic stability, or other long-term policy goals."[99]

The court recognized that Congress, if it so chooses, can change the law in order to change the outcome of litigation. However, neither the executive nor the legislative branch can encroach on judicial power by directing the outcome of litigation.[100] The court denied the Navy's request for a stay of the previous injunction. The court reasoned that the injunction allows the Navy to train, albeit with mitigation measures. The court found the injunction to be in the public interest, because it allows for training to maintain national security in a way that is least detrimental to the environment.[101] Ultimately, the court held that the stay allows the Navy to continue training exercises "while limiting negative effects on marine life."[102]

F. February 2008 Ninth Circuit Court of Appeals Ruling

On February 29, 2008, the Ninth Circuit affirmed the district court's February ruling.[103] The Ninth Circuit determined that the Navy's need to train with mid-frequency sonar without the use of mitigation measures did not qualify as an "emergency circumstance" under CEQ regulation. As such, it was not entitled to alternative accommodations under NEPA and the Navy was bound to act under the parameters of the district court's narrowly tailored injunction.

VII. U.S. Supreme Court Decision

After this long and winding road of litigation, the case finally moved to the U.S. Supreme Court. The Navy raised two primary issues on appeal: (1) whether the Ninth Circuit was correct in determining that the district court was not compelled to vacate its preliminary injunction after the CEQ determined that the imposed mitigation measures created an emergency circumstance and (2) whether the issuance of the preliminary injunction was valid.

On November 12, 2008, the Supreme Court, apparently favoring national security over environmental protection, held the Navy's need to conduct realistic training "plainly outweighed" the NRDC's important interest in the preservation of marine mammals.[104] The Court, however, did not reach the merits of the case. The Supreme Court reversed the decision of the Ninth Circuit Court of Appeals on procedural grounds.

The lower courts had held that once a plaintiff demonstrates a strong likelihood of prevailing on the merits, "a preliminary injunction may be entered based only on a 'possibility' of irreparable harm."[105] The Supreme Court agreed with the Navy that this

[99] *Id.* at 1232.
[100] *Id.* at 1234.
[101] *Id.* at 1238-1239.
[102] *Id.* at 1239.
[103] *NRDC. v. Winter*, 518 F.3d 658, 702 (9th Cir. 2008).
[104] *Winter v. NRDC*, 129 S. Ct. 365, 382 (2008).
[105] *Id.* at 375.

standard is "too lenient."[106] According to the Court, "a plaintiff seeking a preliminary injunction must establish that he is likely to succeed on the merits, that he is likely to suffer irreparable harm in the absence of preliminary relief, that the balance of equities tips in his favor, and that an injunction is in the public interest."[107]

Although the district court originally determined that irreparable harm would result from sonar training exercises generally, the court did not revisit its findings after the Navy agreed to abide by four of the court's six mitigation measures. By the time the litigation reached the Supreme Court, the Navy was only challenging the 2,200-yard shutdown zone and the requirement to power down during surface ducting conditions. The Supreme Court found this failure to be significant, as the four mitigation measures could significantly reduce the risk of harm.[108]

But even if the NRDC had shown irreparable injury, the Supreme Court determined that the injury was "outweighed by the public interest and the Navy's interest in effective, realistic training of its sailors."[109] The Court found that the lower courts had "significantly understated the burden the preliminary injunction would impose on the Navy's ability to conduct realistic training exercises."[110] The interests of the Navy with respect to national security and training must be weighed against "possible harm to the ecological, scientific, and recreational interests" asserted by the NRDC.[111] In this case, the Court held that the balance tipped in favor of the Navy. The Court made clear, however, that "military interests do not always trump other considerations."[112]

The Court found that the lower courts did not seriously consider the balance of harm to the parties, especially the harm to the public interest in national defense. The Court emphasized the lower court's lack of deference to Navy officers' judgments about how the injunction would reduce the effectiveness of the Navy's training. The Navy presented evidence that the mitigation measures would force the Navy to deploy a submarine force that is inadequately trained in the use of sonar which is the only instrument reliable enough to detect the enemy submarines and thus necessary to detect enemy submarines.[113] The Supreme Court held that the assertions of military experts with respect to training needs and national security threats were entitled to "great deference."[114]

The Supreme Court held that "the District Court abused its discretion by imposing a 2,200-yard shutdown zone and by requiring the Navy to power down its MFA sonar during significant surface ducting conditions."[115] The Ninth Circuit had determined that requiring the Navy to shutdown MFA beyond its self-imposed zone of 200 yards would not be burdensome because marine mammal sighting were rare. The Supreme Court noted,

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[106] *Id.*
[107] *Id.* at 374.
[108] *Id.* at 376.
[109] *Id.*
[110] *Id.* at 377.
[111] *Id.*
[112] *Id.*
[113] *Id.* at 378.
[114] *Id.*
[115] *Id.* at 382.

however, that the injunction would greatly expand the radius of the zone and that if the shutdowns occurred during critical times it could delay training for several days, imposing a significant burden on the Navy. With respect to the requirement to "power down" during surface ducting conditions, the Ninth Circuit determined this was a reasonable restriction because the Navy had certified other training groups without training in such conditions. The Supreme Court again disagreed, finding that because submariners take advantage of the phenomenon to avoid being detected by sonar and since this phenomenon is rare, it is particularly important for the Navy to be able to train under these conditions. The Supreme Court reversed the decision of the Ninth Circuit and vacated the preliminary injunction to the extent it was challenged by the Navy.

VIII. Conclusion

The lengthy litigation between the Navy and NRDC has finally come to an end, just in time for a new round of military training exercises.[116] The Navy does seem to have a growing marine stewardship ethic. When it comes to prioritizing their duties, however, the Navy places protecting the country before protecting marine life and the environment. The Supreme Court seems to agree that the Navy's responsibilities with respect to national security come before their responsibility as stewards to the environment. Although the NRDC made a valid argument that that the Navy should have prepared an EIS before proceeding with the training, the Supreme Court did not address that issue. Justice Ginsberg, in her dissent, wrote in support of the NRDC's position and highlighted how the Navy undermined the purpose behind NEPA with their actions in this case.[117] Justice Ginsburg suggests that all of this litigation could have been avoided had the Navy just acted properly from the beginning.

Of course, this case is not a total loss for the NRDC. The lower courts imposed six mitigation measures on the Navy's testing. Four remain in place following the Supreme Court's decision. The training exercises conducted by the Navy during the past two years were therefore more environmentally friendly than they might have been without the litigation.

Justice Roberts, using a quote from President Theodore Roosevelt, suggests that "the only way in which a Navy can ever be made efficient is by practice at sea, under all the conditions which would have to be met if war existed."[118] The Navy's efforts to develop the capability to detect enemy submarines are an essential component of its military responsibilities. But the ocean and all of the creatures within it are an integral part of the human ecosystem. If agencies are allowed to perform actions that will have a significant effect on the environment without adequate forethought, the environment will suffer in the long run. A balance between national security and environmental protection must be found before it is too late.

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[116] In January, the NOAA Fisheries issued regulations governing the U.S. Navy's unintentional taking of marine mammals incidental to training, maintenance, and research, development, testing, and evaluation activities conducted in the Southern California Range Complex through January 2014. 74 Fed. Reg. 3882 (Jan. 21, 2009).

[117] *Winter v. NRDC*, 129 S. Ct. 365, 389-391 (2008).

[118] *Id.* at 382.