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A Knot in the Line: Sea Turtle Bycatch Reduction Problems in the United States Atlantic Pelagic Longline Fishery

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COMMENT

A KNOT IN THE LINE: SEA TURTLE BYCATCH REDUCTION PROBLEMS IN THE UNITED STATES ATLANTIC PELAGIC LONGLINE FISHERY

INTRODUCTION

As an endangered green sea turtle makes his way along the Atlantic Ocean, he encounters what seems to be a delightful surprise, a floating squid. Not able to resist the tasty morsel, the turtle bites down on the treat. Instantly the turtle feels a piercing pain, and the reality of what has just occurred is revealed. The turtle has not found a stray squid; he has come across, and has become attached to, a baited fishing hook.

This hook is not an illegal trap set by poachers to harvest sea turtles and sell their shells or meat on the black market. Rather, the hook is part of a legal fishing line, targeted to catch tunas and swordfish. But this unfortunate turtle is not alone—a bird's-eye view of the ocean unveils a web of fishing lines that catch hundreds of turtles, along with millions of pounds of other non-targeted sea life.[1] All creatures incidentally caught on fishing lines or by other methods are referred to as "bycatch."[2] Twenty-five percent of everything caught in the world's oceans is bycatch.[3]

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[1] MARINE FISH CONSERVATION NETWORK, TURNING A BLIND EYE: THE 'SEE NO EVIL' APPROACH TO WASTEFUL FISHING 1 (2006), *available at* www.conservefish.org/storage/marinefish3/documents/blindeye_lowres.pdf.

[2] *Id.*

[3] *See* Tim Eichenberg & Mitchell Shapson, *The Promise of Johannesburg: Fisheries and the World Summit on Sustainable Development*, 34 GOLDEN GATE U. L. REV. 587, 642 (2004). In 2002 alone, the bycatch of twenty-seven U.S. fisheries, only a portion of the total fisheries in the nation, totaled more than two billion pounds of dead sea life, the equivalent of what one study referred to as

Commercial fishing grounds, which often overlap with sea turtle habitats, create "a gauntlet of deadly obstacles for turtles and other ocean wildlife."[4] Sea turtles in the Atlantic Ocean "are forced to swim through waters crowded with massive bottom trawls, gillnets, longlines, and scallop dredges."[5] This is especially troubling since all sea turtle species found in the Atlantic Ocean are listed under the Endangered Species Act as either endangered or threatened.[6]

There are numerous United States fisheries that catch sea turtles throughout the Atlantic Ocean.[7] United States fisheries are permitted to catch a certain number of sea turtles, regardless of their Endangered Species Act listed status.[8] However, some of these fisheries consistently exceed the permitted number of sea turtles they are allowed to capture.[9] The United States Atlantic pelagic longline fishery is one such fishery.[10]

In the U.S. Atlantic pelagic longline fishery, the number of listed sea turtles caught each year as bycatch is staggering. Over an eight-year period, annual sea turtle bycatch estimates fluctuated dramatically, ranging from 287 to 856.[11] Furthermore, the 2006 estimates for sea turtle

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the "weight of over 270,00 Hummer H2 sport utility vehicles, more than fifteen QE2 luxury liners, or 7 billion fish fillet sandwiches." MARINE FISH CONSERVATION NETWORK, *supra* note 1.

[4] OCEANA, NET CASUALTIES 5 (2006), *available at* www.oceana.org/fileadmin/oceana/template/sea_turtles/images/Net_Casualties_FINAL_spreads_01.pdf.

[5] *Id.* Bottom trawls, gillnets, longlines and dredges are examples of the fishing gear commercial fishing vessels use. Monterey Bay Aquarium, How Fish Are Caught or Farmed – Seafood Watch, www.mbayaq.org/cr/cr_seafoodwatch/sfw_gear.asp (last visited Jan. 11, 2009).

[6] *See* OCEANA, *supra* note 4, at 3.

[7] *Id.* at 8. It is important to recognize that sea turtle bycatch is an international problem requiring an international effort to effectively reduce sea turtle bycatch numbers and promote sea turtle protection and recovery. *See* NOAA FISHERIES, NORTHEAST DISTANT FISHERY SEA TURTLE REDUCTION PROJECT, SEA TURTLE BYCATCH: A SHARED GLOBAL PROBLEM, www.nmfs.noaa.gov/mediacenter/turtles/docs/international_problem.pdf (last visited Jan. 11, 2009).

[8] OCEANA, *supra* note 4, at 8.

[9] *Id.* at 18.

[10] *Id.* at 20. The U.S. Atlantic pelagic longline fishery is only one of the pelagic fisheries in the Atlantic Ocean and accounts for just five to eight percent of the longline hooks in the Atlantic. NOAA FISHERIES, NORTHEAST DISTANT FISHERY SEA TURTLE REDUCTION PROJECT, PROFILE: THE ATLANTIC PELAGIC LONGLINE FLEET 1, www.nmfs.noaa.gov/mediacenter/turtles/docs/pelagic_longlining.pdf (last visited Jan. 11, 2009) [hereinafter NOAA FISHERIES, APL FLEET PROFILE]. Although the U.S. domestic fleet is a statistically small part of a global problem, the United States is a critical player in sea turtle international conservation. The United States is a member nation of the Inter-American Convention for the Protection and Conservation of Sea Turtles, an international treaty that sets standards for the conservation of sea turtles and their habitats. NOAA FISHERIES, NORTHEAST DISTANT FISHERY SEA TURTLE REDUCTION PROJECT, SEA TURTLE BYCATCH: A SHARED GLOBAL PROBLEM 2, www.nmfs.noaa.gov/mediacenter/turtles/docs/international_problem.pdf (last visited Jan. 11, 2009).

[11] NAT'L MARINE FISHERIES SERV., BIOLOGICAL OPINION, REINITIATION OF CONSULTATION ON THE ATLANTIC PELAGIC LONGLINE FISHERY FOR HIGHLY MIGRATORY SPECIES 2-13 (2004) [hereinafter NMFS, BIOLOGICAL OPINION] (on file with author).

bycatch, which took into account new regulations introduced to reduce sea turtle bycatch and reduced fishing and sea turtle migrations resulting from hurricane Katrina,[12] reached 976 protected sea turtles.[13] The actual numbers may be higher. A substantial problem with accurately estimating sea turtle bycatch in the U.S. Atlantic pelagic longline fishery is that there is no consistent or required reporting methodology.[14]

Some laws and regulations intended to protect sea turtles from becoming bycatch, such as the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, and federal sea turtle bycatch regulations, are already in place.[15] However, the current laws alone do not protect sea turtles from becoming bycatch by the U.S. Atlantic pelagic longline fishery. A more effective approach would be to modify the direct interactions with hooked sea turtles, amend the current federal laws and regulations, and adopt additional protective measures at the fishery level.

Part I of this Comment describes the problem of sea turtle bycatch, focusing on the direct impacts on sea turtles, ineffective laws, and poor reporting. Part II describes the U.S. Atlantic pelagic longline fishing industry by discussing longline fishing methodology, the historical background of the industry, the fish species harvested, and the areas covered by the fishery. Part III describes the current laws and regulations designed to protect sea turtles from becoming bycatch in the U.S. Atlantic pelagic longline fishery. Finally, Part IV provides recommendations for reducing sea turtle bycatch in the future.

I. THE PROBLEMS OF SEA TURTLE BYCATCH

A. DIRECT IMPACTS ON SEA TURTLES

In United States waters, and in the Atlantic Ocean in particular, sea

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[12] Telephone Interview with Brendan Cummings, Staff Attorney and Oceans Program Coordinator, Center for Biological Diversity (Feb. 20, 2008).

[13] CAROL FAIRFIELD-WALSH & LANCE P. GARRISON, NAT'L MARINE FISHERIES SERV., ESTIMATED BYCATCH OF MARINE MAMMALS AND TURTLES IN THE U.S. ATLANTIC PELAGIC LONGLINE FLEET DURING 2006, at iii (2007), available at www.sefsc.noaa.gov/PDFdocs/TM_560_FairfieldWalsh_Garrison.pdf. The report's authors "applied a delta-lognormal approach to estimate region specific and total annual interactions with protected species for the fishery." *Id.*

[14] The lack of required reporting is a problem across all fisheries. As Oceana points out in its report *Net Casualties*, the federal government has only assessed twenty-five fisheries, despite the fact that there are many more fisheries that interact with sea turtles. Furthermore, the numbers do not represent other activities that affect sea turtles, such as beach restoration projects, coastal development, and oil exploration. OCEANA, *supra* note 4, at 8.

[15] MARINE FISH CONSERVATION NETWORK, *supra* note 1.

turtle habitats and migratory paths overlap with commercial fishing routes,[16] and thousands of sea turtles are inadvertently caught each year as bycatch.[17] Commercial fishing vessels are permitted to catch a specified number of sea turtles each year, but all too often, the vessels exceed their permitted numbers and continue to catch sea turtles without consequences.[18] The U.S. Atlantic pelagic longline fishery (USAPL) is one fishery that routinely exceeds its yearly permitted number of harvested sea turtles.[19]

Many sea turtle populations have dramatically declined due to human interactions.[20] Currently, all six of the sea turtle species found in United States waters are listed under the Endangered Species Act (ESA) as either threatened or endangered.[21] Additionally, three of these sea turtle species' habitats are listed under ESA as "critical habitats."[22] Thus, minimizing sea turtle bycatch and mortality from commercial fishing is critical to the survival of all sea turtle species in the Atlantic Ocean.[23]

Sea turtles have delicate reproductive cycles and are therefore particularly sensitive to interactions with humans.[24] Sea turtles reach reproductive maturity late in life, even though the life span of a sea turtle

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[16] *See* OCEANA, *supra* note 4.

[17] *Id.*

[18] *See id.* at 8.

[19] *Id.* at 20.

[20] Eric Gilman et al., *Reducing Sea Turtle By-catch in Pelagic Longline Fisheries*, 7 FISH & FISHERIES 2, 3 (2006).

[21] OCEANA, *supra* note 4, at 3. The following sea turtles are listed under the ESA as either threatened or endangered: olive ridley sea turtle (*Lepidochelys olivacea*) – threatened; green sea turtle (*Chelonia mydas*) – endangered in Florida and threatened in the remainder of the United States; Kemp's ridley sea turtle (*Lepidchelys kempii*) – endangered; loggerhead sea turtle (*Caretta caretta*) – threatened; leatherback sea turtle (*Dermochelys coriacea*) – endangered; and hawksbill sea turtle (*Eremochelys imbricata*) – endangered. *Id.* at 6-7.

[22] NOAA Fisheries Office of Protected Res., Marine Turtle Species Under the Endangered Species Act (ESA), www.nmfs.noaa.gov/pr/species/esa/turtles.htm (last visited Feb. 15, 2009). Critical habitats are listed for the green, hawksbill, and leatherback sea turtles. *Id.* ESA defines "critical habitat" as "(i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 1533 of this title, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 1533 of this title, upon a determination by the Secretary that such areas are essential for the conservation of the species." Endangered Species Act, 16 U.S.C.A. § 1532(5)(A) (Westlaw 2009). Interestingly, the listing of "critical habitat" is not required for those species that were listed under the ESA prior to the 1978 ESA amendments. *See* NOAA Fisheries Office of Protected Res., Marine Turtle Species Under the Endangered Species Act (ESA), www.nmfs.noaa.gov/pr/species/esa/turtles.htm (last visited Feb. 15, 2009).

[23] OCEANA, *supra* note 4.

[24] *Id.*

may indeed be very long.[25] For example, the loggerhead sea turtle (*Caretta caretta*), which is found in the Atlantic Ocean from the Netherlands to Argentina, does not reach reproductive maturity until the age of thirty-five.[26] Sensitivity is further magnified because sea turtles do not reproduce every year.[27] A female green sea turtle (*Chelonia mydas*), for example, lays a clutch of eggs only every two to four years.[28] Additionally, as a result of natural factors such as predation and other environmental risks, few juvenile turtles survive to reach the age of reproductive maturity.[29]

B. INEFFECTIVE LAWS

Federal fisheries are required to include bycatch reduction strategies in their management plans.[30] And under federal statute, if a federal fishery engages in conduct that is likely to jeopardize sea turtles listed as endangered or threatened under the ESA because there is a risk that fishing practices will inadvertently catch protected turtles, the fishery must apply for an exemption from otherwise prohibited conduct.[31] If the exemption is granted, it will specify how many sea turtles the fishery is permitted to take each year.[32] However, the fishery is given a three-year period to fish under the exemption before it will be reviewed for compliance.[33] Therefore, if the fishery exceeds the number of permitted turtle takes in either of the first two years, the fishery can *legally* continue to fish and take turtles until the permit expires.[34]

C. POOR REPORTING

For a sea turtle bycatch reduction strategy to be effective, it must be based on reliable data.[35] The most efficient way to collect reliable data is

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[25] *Id.*

[26] NOAA FISHERIES, OFFICE OF PROTECTED RES., LOGGERHEAD TURTLE (*CARETTA CARETTA*), www.nmfs.noaa.gov/pr/species/turtles/loggerhead.htm (last visited Feb. 15, 2009).

[27] *Id.*

[28] *Id.*

[29] OCEANA, *supra* note 4.

[30] *See* MARINE FISH CONSERVATION NETWORK, *supra* note 1, at 2.

[31] *See* 16 U.S.C.A § 1536(g) (Westlaw 2009). The ESA defines "take" as: "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Id.* § 1532(19).

[32] 50 C.F.R. § 222.307(d) (Westlaw 2009).

[33] Telephone Interview with Brendan Cummings, *supra* note 12.

[34] *Id.*; OCEANA, *supra* note 4, at 18.

[35] MARINE FISH CONSERVATION NETWORK, *supra* note 1, at 4.

through a comprehensive observer program.[36] Observers are independent, certified[37] field biologists, who collect data while aboard fishing vessels.[38] Observers are able to provide data concerning bycatch composition, fishing techniques, marine mammal and sea turtle interactions, and other important fishery information.[39] However, observer programs are not without flaws. As with any data-collection strategy, the value of observer-gathered data is useful only if it is based on a sample size that accurately reflects the entire sea turtle population and fishing industry.[40]

Scientists argue that in order for an observer program to be effective, observers need to go out on 20%, and in some cases on 50%, of the vessels.[41] However, the actual percentages do not meet the scientists' recommendations. In the most recent ESA Biological Opinion, the National Marine Fisheries Service reported that in an eight-year period, observer coverage on USAPL fishing vessels ranged from 2% to 5.2%, well below the recommended levels.[42] Consequently, without accurate amounts of data, efforts to minimize sea turtle bycatch in the USAPL will have little value.[43]

II. THE U.S. ATLANTIC PELAGIC LONGLINE FISHERY

The USAPL is named after the longline fishing method used,[44] and the pelagic[45] realm of the Atlantic Ocean where the vessels fish.[46] Additionally, because the USAPL has consistently, and without consequences, exceeded its permitted number of allowable sea turtle

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[36] *Id.*

[37] Observers are certified by the National Marine Fisheries Service. *Id.*

[38] *Id.*

[39] *Id.*

[40] *Id.*

[41] *Id.*

[42] NMFS, BIOLOGICAL OPINION, *supra* note 11, at tbl.2.3.6. In comparison with other federal fishing vessels, these numbers are not all that surprising. Some of the other federal fisheries have percentages ranging from 1% to 5%, while others have no observer programs at all. However, there are other federal fisheries that have 100% observer attendance on all fishing vessels, demonstrating that high observer coverage is indeed possible. MARINE FISH CONSERVATION NETWORK, *supra* note 1, at 5.

[43] MARINE FISH CONSERVATION NETWORK, *supra* note 1, at 4.

[44] *See* NOAA FISHERIES, APL FLEET PROFILE, *supra* note 10.

[45] Pelagic is defined as "of, relating to, or living or occurring in the open sea." MERRIAM-WEBSTER'S ONLINE DICTIONARY, Pelagic, www.merriam-webster.com/dictionary/pelagic (last visited Feb. 18, 2009).

[46] *See* NOAA FISHERIES, APL FLEET PROFILE, *supra* note 10; NOAA, Atlantic Highly Migratory Species (HMS) Fisheries; Vessel Monitoring Systems (VMS), 68 Fed. Reg. 37,772-02 (June 25, 2003) (amending 50 C.F.R. § 635).

takes,[47] the USAPL is also referred to as one of the Nation's *dirtiest* fisheries.[48]

A. LONGLINE FISHING

1. Longline Fishing Basics

Longline fishing involves a system of fishing gear, unique to the fishery, that consists of "a continuous monofilament mainline, suspended below the water's surface by a series of foam or plastic floats,"[49] with three or more hooks attached.[50] The mainline is supported by floatlines, vertical lines in the water column that connect the mainline to buoyant objects at the surface of the water.[51] These floatlines are designed to suspend the mainline at a specific depth below the surface of the ocean.[52] Gangions are lines hanging from the mainline to which the baited hooks are attached.[53]

The hooks attached to the gangion lines can vary in shape, size, and opening.[54] Traditionally, the USAPL used J hooks.[55] The J hook is shaped like the letter "J" with the sharp point of the hook pointing straight up to the surface of the water. Now, as required by current fishery regulations,[56] all USAPL vessels can use only circle hooks. Circle hooks are more circular or oval in shape,[57] as compared to the traditional J-hook. The circle shape is created by turning the sharp point of the hook inward, positioning it almost parallel to the water's surface.[58]

Each assembly of mainline, floatline, gangions, and hooks is called a "set."[59] The average set in the United States is twenty-eight miles

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[47] OCEANA, *supra* note 4, at 8.

[48] *See id.* at 3.

[49] ATLANTIC PELAGIC LONGLINE TAKE REDUCTION TEAM, DRAFT ATLANTIC PELAGIC LONGLINE TAKE REDUCTION PLAN 25 (2006), available at http://sero.nmfs.noaa.gov/pr/pdf/PLTRP%20FINAL%20DRAFT%208June06.pdf.

[50] 50 C.F.R. § 635.2 (Westlaw 2009). For a depiction of the typical USAPL fishing gear, see ATLANTIC PELAGIC LONGLINE TAKE REDUCTION TEAM, supra note 49.

[51] 50 C.F.R. § 635.2 (Westlaw 2009).

[52] *Id.*

[53] *Id.*

[54] Gilman et al., *supra* note 20, at 11. For a depiction of some of the common fishing hooks used by the USAPL fishing industry, see *id.*

[55] *See id.* at 4, 5.

[56] 50 C.F.R. § 635.21(c)(2)(v)(A) (Westlaw 2009).

[57] *Id.* § 635.2.

[58] *Id.*

[59] ATLANTIC PELAGIC LONGLINE TAKE REDUCTION TEAM, *supra* note 49, at 25.

long.[60] The length of the float line and leader averages approximately 28.8 fathoms (172.8 feet).[61] Hook depths vary, ranging from just below the surface of the water down to 150 fathoms (900 feet).[62] Hook depth can also fluctuate depending upon the degree of the curve in the mainline, thus allowing the hooks to catch fish at alternate depths.[63]

Modifications can be made to the set. Some vessels use electronic transmitters, known as "high flyers," to monitor the position of the set while at sea.[64] The set can also be altered to target a particular species of fish.[65] Swordfish sets, for example, usually include chemical or light emitters on the gangions, which help attract this particular fish to the bait.[66]

2. *Historical Background*

Longline fishing has historical roots stemming across the globe. For centuries, European fishermen used a very basic form of longline fishing—baited hooks attached to a mainline coiled inside wooden tubs—to catch bottom-dwelling fish species such as the Atlantic cod (*Gadus morhua*).[67] The Europeans brought this primitive form of longline fishing over to the New World, where New England fisheries adopted the method to harvest local cod and halibut.[68]

Longline fishing also has roots in Japan, where fishermen developed an alternate form of longline fishing consisting of hollow glass balls to keep the mainline afloat.[69] However, unlike the Europeans, the Japanese did not target bottom-dwellers. Rather, they harvested primarily North Pacific bluefin tuna (*Thunnus thynnus orientalis*).[70]

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[60] *Id.*

[61] *Id.* (citing 2004 data, and noting a range that year of between 1 and 240 fathoms (six feet to 1440 feet)). One fathom is equal to six feet.

[62] *Id.* at 26.

[63] *Id.*

[64] 50 C.F.R. § 635.2 (Westlaw 2009). *See also* ATLANTIC PELAGIC LONGLINE TAKE REDUCTION TEAM, *supra* note 49, at 25.

[65] *Id.*

[66] *Id.*

[67] *Id.*

[68] *Id.*

[69] *Id.*

[70] Historically, the underwater mainline consisted of separate sections of fishing line that were tied together into one "longline" before being set into the ocean, and then untied as the harvest was brought back onto the boat. Since the development of a single-strand longline, this fishing method has evolved to become the primary method to commercially harvest pelagic species worldwide. *Id.*

B. FISH SPECIES HARVESTED AND AREAS COVERED

The USAPL harvests highly migratory species (HMS), such as bluefin, yellowfin, bigeye, albacore and skip jack tunas, sharks, white and blue marlin, sailfish, and longbill spearfish,[71] from the pelagic level of the Atlantic Ocean.

The USAPL has five divisions ("fishery segments"), each with its own area of operation, target species, bait choice, and longline deployment practice.[72] Each USAPL division may have a range of fishing vessels (small, medium, and large) and may vary with regard to its operation schedule and fish hold capacity.[73] However, all USAPL fishing vessels concentrate their fishing efforts on edges of water, where different ocean currents and water temperatures naturally meet.[74] It is at these edges of water where HMS congregate.[75]

III. SEA TURTLE BYCATCH LAW

A. BASIC STRUCTURE OF THE FISHERY HIERARCHY: WHO ARE THE MAIN PLAYERS?

The National Marine Fisheries Service (NMFS) is responsible for the management, conservation, and protection of living marine resources

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[71] 50 C.F.R. § 635.2 (Westlaw 2009).

[72] The five USAPL fishery segments are as follows: (1) The Gulf of Mexico yellowfin tuna fishery harvests yellowfin tuna year-round. Some of the vessels in this division also fish for swordfish on a seasonal basis and take part in some of the other Gulf of Mexico fisheries. (2) The south Atlantic-Florida East Coast to Cape Hatteras swordfish fleet comprises the full range of ship sizes and primarily focuses on swordfish year round. The smaller vessels focus on the area between the straits of Florida, up to the Gulf Stream off the coast of South Carolina, while the larger vessels range from the Yucatan to the West Indies and the Caribbean. Occasionally, the larger vessels migrate as far north as the southern New England states, targeting swordfish and bigeye tuna. (3) The mid-Atlantic and New England swordfish and bigeye tuna division's primary catch is bigeye and yellowfin tunas. These vessels also harvest swordfish, and some occasionally venture into other fisheries to catch other animals such as scallops, monkfish, and tilefish during the off-season. (4) The U.S. Atlantic distant water swordfish division comprises primarily large vessels with high storage capacity that cover almost the entire western North Atlantic. Ships travel across the Atlantic as far east as the Azores and Mid-Atlantic Ridge in their search for swordfish. (5) The Caribbean Island tuna and swordfish segment started out fishing from small boats near shore, harvesting swordfish, tunas, and other pelagic finfish. Subsequently, regulations and increasing expenses caused this fishery to cease operations, but recently a yellowfin tuna fishery has developed out of Trinidad and Tobago. ATLANTIC PELAGIC LONGLINE TAKE REDUCTION TEAM, *supra* note 49, at 26-27.

[73] *Id.* at 26. The USAPL comprises less than 10% of the entire international pelagic longline presence in the Atlantic Ocean. *Id.* at v.

[74] *Id.* at 27.

[75] *Id.*

and their habitats within the United States' Exclusive Economic Zone, 3 to 200 miles offshore.[76] NMFS fulfills its duties by policing the nation's fisheries, in addition to foreign fisheries in U.S. waters.[77] NMFS is a division within the federal Department of Commerce's National Oceanographic and Atmospheric Agency (NOAA).[78]

Congress authorized NMFS to assess and predict the status of fish stocks, ensure compliance with fishery regulations, and minimize wasteful fishing practices, including bycatch.[79] NMFS has six regional offices and eight councils,[80] and it is capable of working with local communities on fishery management and bycatch reduction issues.[81]

NMFS's Southeast Fisheries Science Center (SEFSC) is responsible for collecting data from the USAPL and other fisheries that harvest HMS.[82] The SEFSC works in conjunction with NMFS regional offices and state fishery agencies to collect relevant fishery data.[83] In order to comply with the SEFSC's data collection program, longline vessels are required to carry observers, when asked, and to submit detailed logbooks describing HMS fishing activities.[84] The SEFSC then publishes annual summaries that include the number of sets deployed, the number of hooks used, and the number of active vessels in the USAPL.[85]

B. TURTLE BYCATCH LAW BY STATUTE

The Endangered Species Act (ESA)[86] and the Magnuson Stevens Fishery Conservation and Management Act (MSA)[87] are the two main

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[76] National Marine Fisheries Service, *About National Marine Fisheries Service*, www.nmfs.noaa.gov/aboutus.htm (last visited Dec. 16, 2008).

[77] *Id.*

[78] *Id.*

[79] Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C.A. § 1801 *et seq.* (Westlaw 2009).

[80] National Marine Fisheries Service, *supra* note 76. The six regional offices are: the Alaska Regional Office, the Southwest Regional Office, the Northwest Regional Office, the Southeast Regional Office, the Pacific Islands Regional Office, and the Northeast Regional Office. NOAA Fisheries: Regions, www.nmfs.noaa.gov/regional.htm (last visited Dec. 16, 2008). The eight councils, which manage the marine resources in their area, are the New England, Mid-Atlantic, South Atlantic, Gulf of Mexico, North Pacific, Western Pacific, Pacific Fishery, and Caribbean councils. NOAA Fisheries: Councils, www.nmfs.noaa.gov/councils.htm (last visited Dec. 16, 2008).

[81] National Marine Fisheries Service, *supra* note 76.

[82] ATLANTIC PELAGIC LONGLINE TAKE REDUCTION TEAM, *supra* note 49, at 28.

[83] *Id.*

[84] *Id.*

[85] *Id.*

[86] *See* 16 U.S.C.A. § 1531 *et seq.* (Westlaw 2009).

[87] *Id.* § 1851.

federal statutes that address sea turtle bycatch.

1. *The Endangered Species Act of 1973*

The ESA provides for the protection of endangered or threatened species and the conservation of the habitats on which they depend.[88] The ESA also prohibits the taking of any listed species of wildlife within the territorial seas of the United States or upon the high seas.[89] The Act defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[90]

Section 7 of the ESA requires interagency cooperation to ensure that any action authorized, funded, or carried out by a federal agency "is not likely to jeopardize the continued existence" of a listed species or adversely affect its critical habitat.[91] The ESA requires that a federal agency proposing an action consult with the Secretary of the Department of Commerce, i.e., NMFS, if (1) the "action" agency has reason to believe that a listed species may be present in the area of its proposed action and may be affected by the action, and (2) the proposed agency action is likely to jeopardize a listed species or its critical habitat.[92] Subsequent to the consultation, NMFS issues a written statement known as a "biological opinion," detailing how the proposed agency action will affect the listed species or critical habitat.[93]

Moreover, the ESA gives NMFS the authority to recommend that an exemption be granted, even when fishing activity *is* "likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species."[94] The ESA sets out specific application guidelines for exemptions,[95] including publication in the Federal Register.[96]

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[88] NOAA Fisheries Office of Protected Resources, Endangered Species Act (ESA), www.nmfs.noaa.gov/pr/laws/esa; *see also* 16 U.S.C.A. § 1531 (Westlaw 2009).

[89] 16 U.S.C.A. § 1538 (Westlaw 2009).

[90] *Id.* § 1532(19).

[91] *Id.* § 1536(a)(2).

[92] *Id.* § 1536(a)(4).

[93] *See id.* § 1536(b); 50 C.F.R. § 402.14(h) (Westlaw 2009).

[94] 16 U.S.C.A. § 1536(a)(2) (Westlaw 2009). The Secretary is required to submit a report regarding the proposed exemption to a committee consisting of the Secretary of Agriculture, the Secretary of the Army, the Chairman of the Council of Economic Advisors, the Administrator of the Environmental Protection Agency, the Secretary of the Interior, the Administrator of the National Oceanic and Atmospheric Administration, and an individual appointed by the President. This committee then votes on whether to grant the exemption. *Id.* § 1536(e)(3), (h).

[95] *Id.* § 1536(g)(1).

[96] *Id.* § 1536(g)(2)(B).

Furthermore, if the fishery reaches the exempted number of turtles, the fishery can reinitiate the consultation and exemption process.[97]

ESA section 11 authorizes citizen suits to enforce the ESA in three specific situations.[98] First, the citizen suit provision empowers a citizen to sue to enjoin a person, government, or federal agency that is in violation of the ESA.[99] Second, the provision permits a citizen to sue to compel the Secretary of Commerce to enforce the prohibited conduct.[100] Lastly, the citizen suit provision authorizes a citizen to file suit against the Secretary of Commerce for failing to perform his or her nondiscretionary duties under the ESA.[101] Therefore, under the ESA citizen suit provision, citizens may take an active role in the protection of listed sea turtles.

2. *The Magnuson-Stevens Fishery Conservation and Management Act of 1976*

The MSA is the leading law that governs marine fisheries management in United States federal waters.[102] The MSA protects specific groups of fish described as valuable and renewable resources, including highly migratory species (HMS).[103] The MSA provides protections for HMS by granting the authority to regulate HMS to the Secretary of Commerce.[104]

The Secretary of Commerce is required to establish guidelines for the development of Fishery Management Plans (FMPs).[105] In general, FMPs are designed to (1) minimize bycatch, (2) minimize bycatch mortality when bycatch cannot be avoided,[106] and (3) establish a standardized reporting methodology to assess the type and quantity of bycatch occurring in the fishery.[107] FMPs, by design, can limit fishing

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[97] 50 C.F.R. § 402.14(i)(4) (Westlaw 2009).

[98] 16 U.S.C.A. § 1540 (Westlaw 2009).

[99] *Id.*

[100] *Id.*

[101] *Id.*

[102] *Id.* § 1801 *et seq.*

[103] The other three groups of fishes are: (1) the species found off the coast of the United States, (2) the species that dwell in or on the United States' Continental Shelf, and (3) the anadromous species that spawn in United States rivers and estuaries before returning to the ocean. *Id.* § 1801(a)(1). Interestingly, the MSA protects not only all fish species in the above groups, but also non-fish species such as corals, crustaceans, mollusks, and sponges. *Id.* § 1802(7). Clearly absent from the MSA protection, however, are marine mammals and birds. MARINE FISH CONSERVATION NETWORK, *supra* note 1, at 4.

[104] 16 U.S.C.A. § 1852 (Westlaw 2009).

[105] *Id.* § 1851(b).

[106] *Id.* § 1851(a)(9).

[107] *Id.* § 1853(a)(11).

seasons, fishing gear and equipment, the number of fishermen allowed to fish for a particular species, and the total number of fish that can be harvested.[108]

The MSA also lays the foundation for observer programs.[109] The MSA requires the Secretary of Commerce, after an opportunity for public comment, to establish guidelines dictating when fishing vessels are required or not required to carry an observer on board.[110] The Secretary must also establish observer-training programs designed to ensure that every observer has adequate knowledge of basic boat safety and possesses fishery and statistical analysis skills sufficient to fulfill the responsibilities of the position.[111]

Additionally, the MSA contains an enforcement provision that authorizes the Secretary of Commerce, the secretary of the department in which the Coast Guard is operating,[112] or any officer authorized by either the Secretary of Commerce or secretary of the department in which the Coast Guard is operating to enforce the MSA.[113]

C. TURTLE BYCATCH REGULATIONS

In addition to the federal statutes, the USAPL must abide by several regulations and the Highly Migratory Species Fishery Management Plans (HMS FMP), which are also designed to protect sea turtles.

1. Current Regulations

The Department of Commerce has promulgated several regulations under the ESA and MSA that attempt to reinforce the effort to reduce sea turtle bycatch numbers by imposing additional requirements on USAPL fishing vessels.[114] For example, regulations require that USAPL vessels carry observers on board when requested by NMFS.[115] Additionally, recently adopted regulations require the USAPL to carry very specific HMS fishing gear and sea turtle bycatch mitigation equipment.[116] Furthermore, the regulations mandate that once a USAPL fishing vessel

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[108] *See generally id.* § 1853 (describing the contents of fishery management plans).
[109] *Id.* § 1881(b).
[110] *Id.*
[111] *Id.*
[112] *Id.* § 1861(a).
[113] *Id.* § 1861(b).
[114] *See, e.g.*, 50 C.F.R. §§ 222.101, 635.1 (Westlaw 2009).
[115] *Id.* §§ 222.401, 635.7.
[116] *Id.* § 635.21(c)(2)(v)(D), (E).

captures the exempted number of turtles, the vessel must immediately reapply for an exemption.[117]

2. *The Role of the Highly Migratory Species Fishery Management Plan*

In the early 1990s, the Secretary of Commerce delegated to NMFS the authority under the MSA to manage HMS in the Atlantic Ocean.[118] In 1992, NMFS created the HMS Management Division to manage HMS in the Atlantic Ocean.[119] In July 2006, the HMS Management Division produced the final version of a consolidated Atlantic HMS FMP, which still remains in effect.[120]

The HMS FMP discusses area closures to help reduce sea turtle bycatch numbers.[121] The FMP also addresses the use of observers aboard USAPL vessels to specifically address sea turtle bycatch.[122] However, the FMP clearly states that the current observer program is voluntary.[123] The FMP also mentions the implementation of mandatory workshops for fishermen to learn how to safely release sea turtles caught in longline gear.[124]

IV. RECOMMENDATIONS: THE FUTURE OF SEA TURTLE BYCATCH

There are two distinct issues entangled in the problem of sea turtle bycatch. First, the direct and detrimental impacts of bycatch threaten the survival of each species of sea turtles. Second, the statutes and regulations designed to protect sea turtles from becoming bycatch are rife with inadequacies that prevent the laws from being effective. These two problems of sea turtle bycatch are not mutually exclusive. Rather, they are greatly intertwined and, consequently, so are their solutions.

NMFS correctly recognizes that the incidental capture of sea turtles in fisheries is a primary threat to the recovery and conservation of sea turtles in the Atlantic Ocean.[125] Thus, the most effective way to increase

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[117] *Id.* § 402.14(i)(4).

[118] HIGHLY MIGRATORY SPECIES MANAGEMENT DIVISION, FINAL CONSOLIDATED ATLANTIC HIGHLY MIGRATORY SPECIES FISHERY MANAGEMENT PLAN 1-2 (2006), *available at* www.nmfs.noaa.gov/sfa/hms/Amendment2/FEIS%20Chapter1.pdf.

[119] *Id.*

[120] *Id.* at 1-1.

[121] *Id.* at 1-5.

[122] *Id.* at 1-20.

[123] *Id.*

[124] *Id.* at 1-4.

[125] NOAA Fisheries Office of Protected Resources, Fisheries Interactions/Protected Species

sea turtle survival is to reduce turtle bycatch numbers by adopting a three-fold approach. First, modify the direct interactions with hooked and entangled sea turtles. Second, amend the current statutes and regulations to enhance the protections already in place. Third, make additional changes to the HMS FMP to further reduce sea turtle bycatch at the fishery level.

A. CHANGES IN DIRECT INTERACTIONS WITH SEA TURTLES

Loggerhead and leatherback turtles are the primary species of marine sea turtles caught in USAPL fishing gear.[126] However, the two species are caught in longlines in very different ways.[127] Loggerhead turtles are hard-shelled turtles, and they get caught in longline gear when they bite down on baited hooks.[128] This type of foul-hooking can result in a loggerhead being hooked to the longline by its mouth, or worse, further down its digestive tract, if the turtle swallows the hook.[129] Fishery management authorities suggest that turtles hooked on the mouth are more likely to survive than those that have swallowed the longline hook.[130]

On the other hand, leatherback turtles, as soft-shelled turtles, get hooked somewhere on their soft bodies or become entangled in the longline.[131] Studies show that leatherback turtles become entangled in the longline even before they have an opportunity to bite down on the enticing baited hook.[132] Scientists suggest that this is because they are less maneuverable than their hard-shell relatives.[133]

Once a sea turtle is caught on the longline and discovered by a USAPL vessel, one of two events may occur: either the turtle dies, and therefore cannot be released back into the ocean, or the turtle is still alive and is returned to the ocean once dehooked from the fishing line.[134] But what happens to a sea turtle once released? Is she able to pick up where she left off on her migratory journey, or is she too injured and forced to

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Bycatch, www.nmfs.noaa.gov/pr/interactions/#turtle (last visited Jan. 11, 2009).

[126] Gilman et al., *supra* note 20, at 3.

[127] *See id.* at 11.

[128] *Id.*

[129] *Id.* at 13.

[130] *Id.*

[131] *Id.* at 11.

[132] *Id.*

[133] *Id.*

[134] *NOAA Partners with Fishery Organizations, Academia, and Private Industry to Develop New Technologies That Save Sea Turtles*, NOAA MAGAZINE, Aug. 16, 2004, www.magazine.noaa.gov/stories/mag144.htm.

remain at sea, never completing her instinctive ritual? Is she able to reproduce, or is her body too stressed to reproduce? Does she live to a ripe old age, or does an infection from foul-hooking end her life?

The answers to these questions are unclear.[135] Studies suggest that the location of foul-hooking may have an impact on the sea turtle's survival,[136] but there have been no direct studies of this issue. One cannot assume that the majority of dehooked sea turtles return to their "daily lives" without the evidence to support such an assumption.[137] The impact of this assumption, if incorrect, would only further add to the obstacles faced by these species already in peril.[138]

To get a better understanding of what happens after release, a percentage of released turtles from the USAPL should be equipped with satellite monitoring devices.[139] These devices can be programmed to record location data via satellite, providing researchers the information necessary to answer the above questions.[140] By charting the turtle's location for a select period of time, scientists can determine whether the turtle made it to her migration end point, to her beach to lay her clutch, or whether she survived for a certain recorded period of time after release.[141]

These monitoring devices can be pricey, costing approximately $3,000 for the device and another $3,000 to monitor and collect the data.[142] However, costs can be mitigated. First, the fishery can use older and less advanced models.[143] For use here, a device need only record the turtle's location for a specified amount of time, or until the battery on the

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[135] Telephone Interview with David Godfrey, Executive Dir., Caribbean Conservation Corp. (Feb. 19, 2008).

[136] Gilman et al., *supra* note 20, at 13.

[137] *See* OCEANA, *supra* note 4, at 11.

[138] Telephone Interview with David Godfrey, *supra* note 135.

[139] The percentage of turtles selected to be equipped with monitoring devices should be determined by turtle conservation biologists in order to select an adequate sample size that can best represent the total population and to avoid any bias that may arise concerning choosing turtles that appear more healthy once released from the longline. Telephone Interview with David Godfrey, *supra* note 135. However, attaching satellite-tracking devices may be feasible only for hard-shelled turtle species, since the device may be glued to the top of the sea turtle's shell. Attaching tracking devices to soft-shell turtles is much more involved. Due to the composition of the shell, the device cannot be glued on; rather, it must be incorporated into a harness placed on the turtle. This method is much more costly and time-consuming. Telephone Interview with Dan Evans, Outreach and Field Program Coordinator, Caribbean Conservation Corp. (Feb. 25, 2008).

[140] Telephone Interview with David Godfrey, *supra* note 135.

[141] *Id.*

[142] *Id.*

[143] *Id.*

device runs out.[144] Additionally, refurbished devices may be used, as long as they are in good working condition.[145] Second, observers could be trained to attach them to the sea turtles.[146] Because observer training and salary compensation are already provided by NMFS, this would prevent any additional personnel costs from being incurred by the USAPL.[147] Lastly, any costs incurred for the purchase and analysis of the data retrieved could be abated by university or conservation group involvement, or by the use of scientific grants.[148] NMFS could contract with a local university, funded by a scientific grant, to download and analyze the data.[149] The results from these devices would provide the information needed to determine what occurs after a hooked sea turtle is released back into the ocean.[150]

B. MODIFICATIONS TO THE LAWS

To most effectively minimize sea turtle bycatch, modifications should be made to the existing laws and regulations.[151] At first glance, the

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[144] *Id.*

[145] *Id.* However, it is important to point out that while refurbished devices can be used, the number of available refurbished devices may not be enough for the appropriate sample size needed to produce reliable results. *Id.*

[146] Telephone Interview with Barbara Schroeder, Nat'l Sea Turtle Coordinator for the Nat'l Marine Fisheries Serv. (Mar. 3, 2008) (explaining how observers in the Hawaii Longline Fishery have been trained to attach satellite devices on hooked and released turtles). The Secretary can require an observer program to include additional information necessary for monitoring a fishery. 16 U.S.C.A. § 1881(a)(2) (Westlaw 2009). Thus, the Secretary could require that the USAPL observer program include the training necessary to attach and deploy monitoring devices on selected sea turtles.

[147] Sea Turtle Conservation; Observer Requirement for Fisheries, 72 Fed. Reg. 43,176 (Aug. 3, 2007).

[148] The University of Florida's Archie Carr Center for Sea Turtle Research in Gainesville, Florida, and the University of the Azores' Department of Oceanography and Fisheries in Azores, Portugal, are two such universities that have collaborated with NMFS to study and report on past interactions between the USAPL and sea turtles. HIGHLY MIGRATORY SPECIES MANAGEMENT DIVISION, REPORT OF THE NMFS TECHNICAL GEAR WORKSHOP TO REDUCE THE INCIDENTAL CAPTURE OF SEA TURTLES IN THE ATLANTIC PELAGIC LONGLINE FISHERY 5 (2001), *available at* www.nmfs.noaa.gov/sfa/longline_gear_Workshop.PDF; Telephone Interview with Barbara Schroeder, *supra* note 146 (explaining that this type of collaboration is already under way in the Hawaii Longline Fishery); *see also* Caribbean Conservation Corporation & Sea Turtle Survival League, Support CCC's Sea Turtle Migration-Tracking Project!, www.cccturtle.org/sponsors.php ?page=project-supporter (last visited Nov. 13, 2008).

[149] *See, e.g.*, HIGHLY MIGRATORY SPECIES MANAGEMENT DIVISION, *supra* note 148, at n.3.

[150] Telephone Interview with David Godfrey, *supra* note 135.

[151] Currently, the courts are ineffective forums for reducing the numbers of sea turtles caught as bycatch. *See* Oceana, Inc. v. Gutierrez, 488 F.3d 1020, 1024 (D.C. Cir. 2007) (upholding the lower court's determination that NMFS did not act arbitrarily or capriciously when it set out mortality rates for leatherback sea turtles in the USAPL in its 2004 biological opinion); N.C.

current statutes appear to fully address the problems of sea turtle bycatch. The ESA specifically protects endangered and threatened sea turtle species, and the MSA regulates and governs the USAPL fishery.[152] It is easy to assume that when placed side by side, the two independent statutes would cover the entire scope of the sea turtle bycatch problem. However, both the ESA and the MSA lack specific protective elements that, if added, could more effectively reduce the frequency of sea turtle bycatch.

1. The ESA

First and foremost, Congress needs to modify the sea turtle take exemption application and approval process. Currently, sea turtle take exemptions constitute a free pass by the ESA because there is no penalty once a USAPL vessel exceeds its permitted number of allowable takes.[153] If modifications are not made to the sea turtle take exemption process, we are in effect condoning the violation of take limitations created to protect sea turtle species.

The most effective way to address the current application and approval process of sea turtle takes is the most extreme—prohibit *any* exemptions for listed sea turtles by mandating that the USAPL cannot take any turtles. This is the only way to ensure that the USAPL will not contribute to the further depletion of sea turtle species.[154]

In the alternative, a less extreme approach is to make the exemption application and approval process more vigorous.[155] A more effective application process requires two essential modifications. First, the number of sea turtles requested in the exemption application needs to be a number that *truly* does not result in the further depletion of the endangered or threatened turtle species.[156] The number of permitted sea

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Fisheries Ass'n. v. Gutierrez, 518 F. Supp. 2d 62, 85 (D.D.C. 2007) (stating legal challenges to the Secretary of Commerce's compliance with the MSA are frequently unsuccessful); *see also* Oceana, Inc. v. Evans, 384 F. Supp. 2d 203, 219 (D.D.C. 2005) ("Time and time again courts have upheld agency action based on the 'best available' science, recognizing that some degree of speculation and uncertainty is inherent in agency decisionmaking."). Courts consistently come down on the side of the regulatory agencies, according them great deference. Furthermore, in MSA actions in particular, plaintiffs often lack the requisite standing to file suit. *See* Lujan v. Defenders of Wildlife, 504 U.S. 555, 561 (1992) (holding plaintiff must demonstrate that he or she has been harmed by the government action). Regardless of the reasoning, the result is the same: courts remain ineffective forums, causing us to look at alternative methods to reduce sea turtle bycatch numbers.

[152] *See* 16 U.S.C.A §§ 1531 *et seq.*, 1801 *et seq.* (Westlaw 2009).

[153] *See* OCEANA, *supra* note 4, at 18.

[154] Telephone Interview with Brendan Cummings, *supra* note 12.

[155] *Id.*

[156] *Id.*

turtle takes should promote their recuperation while providing for the USAPL's sustainability.[157] This means, however, that for some sea turtle species, like the leatherback sea turtle, the permitted number may realistically be zero, meaning no allowable takes.[158] Otherwise, sea turtle numbers will remain stagnant at best, and in the case of the leatherback, population numbers may quickly drop to the level of extinction.[159]

Second, Congress needs to require that an independent federal agency approve the sea turtle take exemptions.[160] At present, NMFS is both the action agency that applies for the exemption and the reviewing agency that approves the exemption.[161] With the same agency sitting on both sides of the exemption aisle, conflicts of interest can arise.[162] There is no oversight at the application approval level to ensure that NMFS is objectively approving or rejecting sea turtle take exemptions.[163]

In addition to the application and approval process, NMFS needs to tighten the reins on the exemption review process. Currently, NMFS allows continued fishing when a fishery reaches the permitted turtle take limit.[164] This is because, although the exempted number of sea turtle takes is established on a "per year" basis, the exemption is granted for a three-year period.[165] Thus, even if the USAPL grossly exceeds its annual limit of permitted sea turtle takes in one of the first two years of the exemption period, the exemption is not violated until another year of fishing passes and the entire three-year exemption is reviewed.[166]

The ESA does not require that the exemption be granted for a three-year period.[167] Rather, the ESA states that an exemption is permanent unless the reviewing agency determines, based on the best scientific knowledge, that a permanent exemption would lead to the extinction of the species.[168] NMFS, the reviewing agency here, does not dispute that unmonitored sea turtle takes, occurring as bycatch, would lead to the extinction of listed sea turtle species.[169] Therefore, NMFS can feasibly

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[157] *Id.*

[158] *Id.*

[159] *Id.*

[160] *Id.*

[161] *Id.*; *see also* NMFS, BIOLOGICAL OPINION, *supra* note 11.

[162] Telephone Interview with Brendan Cummings, *supra* note 12.

[163] *Id.*

[164] OCEANA, *supra* note 4, at 22.

[165] NMFS, BIOLOGICAL OPINION, *supra* note 11, at 2-13; Telephone Interview with Brendan Cummings, *supra* note 12.

[166] Telephone Interview with Brendan Cummings, *supra* note 12.

[167] *See* 16 U.S.C.A. § 1536(g), (h) (Westlaw 2009).

[168] *Id.* § 1536(h)(2)(B).

[169] *See* Telephone Interview with Barbara Schroeder, *supra* note 146 (explaining that

expunge this three-year exemption period and adopt an alternative period better suited to both conserve the sea turtle species and allow USAPL fishing that complies with the ESA.

2. *The MSA*

The MSA recognizes that "certain stocks of fish have declined to the point where their survival is threatened, and other stocks of fish have been so substantially reduced in number that they could become similarly threatened as a consequence of . . . the inadequacy of fishery resource conservation and management practices and controls."[170] This language mirrors the effects that bycatch has on sea turtle populations. Thus, many of the general fishery provisions that the MSA establishes to address declining fish stocks are incidentally well-suited to reduce sea turtle bycatch as well.[171]

Accordingly, to stay true to the MSA's purpose, the MSA should be amended to include a citizen suit provision. Like the citizen suit provision in the ESA,[172] an express citizen suit provision in the MSA would empower ordinary citizens to assist in the reduction of sea turtle mortalities by taking an active role in the enforcement of the MSA.[173] Currently, the MSA can be enforced only by the Secretary of Commerce, the secretary of the department in which the Coast Guard is operating,[174] or any officer authorized by either the Secretary of Commerce or secretary of the department in which the Coast Guard is operating.[175] Although citizens can challenge an MSA agency action based on the "arbitrary and capricious" abuse of discretion standard under the Administrative Procedure Act,[176] this does not provide them with the arsenal needed to enforce MSA provisions.[177] Additionally, there is nothing in the MSA that holds the Secretary of Commerce or the other above-mentioned officers accountable when they choose not to enforce

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inconsistent or inaccurate logs, coupled with the need for other improvements in monitoring techniques, mean that turtle bycatch continues to be one of the most devastating factors in the decline of the turtle population).

[170] 16 U.S.C.A. § 1801(a)(2) (Westlaw 2009).

[171] *See id.* § 1801(c)(3).

[172] *Id.* § 1540(g).

[173] *See id.*

[174] *Id.* § 1861(a).

[175] *Id.* § 1861(b)

[176] 5 U.S.C.A. § 706 (Westlaw 2009).

[177] Telephone Interview with Brendan Cummings, *supra* note 12 (commenting that adding a citizen suit provision would help enforce the MSA, because, as it stands, the MSA makes bringing cases very difficult).

the law or turn a blind eye to violations.[178]

Yet another problem with the current MSA enforcement provision is the enormous physical distance between the fishing vessels or docks where the monitored activity is taking place and the offices where the enforcement officers work. The U.S. Coast Guard has two district offices to cover the entire jurisdiction of the USAPL—one in Boston, Massachusetts, and the other in Portsmouth, Virginia.[179] In contrast, citizens may be much closer to the interactions between sea turtles and the USAPL.[180] For example, concerned residents may own homes or businesses by the docks where the USAPL vessels offload their catch, including the turtles that have been killed.[181] A citizen suit provision may even encourage current and former fishery employees to "blow the whistle" on the violations they witness first hand.[182] A citizen suit provision would in effect mean many more enforcers and, therefore, better enforcement.[183]

An MSA citizen suit provision should be modeled after the current provision in the ESA.[184] First, it should allow a citizen to file suit to enjoin any person, federal government, or federal agency alleged to be in violation of the MSA.[185] Second, a citizen should be able to compel the Secretary of Commerce, and possibly the other individuals authorized with enforcement powers, to apply the prohibitions listed in the MSA.[186] Lastly, a citizen suit provision should empower any citizen to file suit against the Secretary of Commerce or other federal agents for failing to perform any nondiscretionary act or duty required under the MSA.[187]

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[178] *See* 16 U.S.C.A § 1861(a), (b) (Westlaw 2009).

[179] *See* United States Coast Guard: Units, www.uscg.mil/top/units/ (last visited Dec. 16, 2008).

[180] Telephone Interview with Dan Evans, *supra* note 139.

[181] *Id.*

[182] Telephone Interview with Barbara Schroeder, *supra* note 146.

[183] Telephone Interview with Dan Evans, *supra* note 139.

[184] *See* 16 U.S.C.A. § 1540(g) (Westlaw 2009) (providing for citizen suits under the ESA). For a discussion regarding the significance of citizen suits in the enforcement of federal statutes, see Kristi M. Smith, *Who's Suing Whom?: A Comparison of Government and Citizen Suit Environmental Enforcement Actions Brought Under EPA-Administered Statutes, 1995-2000*, 29 COLUM. J. ENVTL. L. 359 (2004).

[185] *See* 16 U.S.C.A. § 1540(g)(1)(A) (Westlaw 2009) (comparable provision under the ESA).

[186] *See* Envtl. Def. Ctr. v. Babbitt, 73 F.3d 867, 871 (9th Cir. 1995) (citizen suit under the ESA used to compel the Secretary of the Interior to exercise his nondiscretionary duty under the ESA).

[187] *See* Schoeffler v. Kempthorne, 493 F. Supp. 2d 805, 813 (W.D. La. 2007) (citizen suit brought under the ESA, seeking declaratory and injunctive relief against the Secretary of the Interior for failure to designate critical habitat for the Louisiana Black Bear, a threatened species).

3. Regulations

Observer programs in the USAPL fishery should be mandatory and not discretionary. Currently, NMFS *may* select a USAPL vessel to carry an observer.[188] If selected, the vessel is required to carry an observer.[189] Thus, the way the regulations currently read, NMFS has the discretionary power to select when observers should be used and when to waive an observer requirement.[190]

Consequently, regulations should be modified to require a certain percentage of vessels to carry observers, rather than giving NMFS the discretion to arbitrarily select a vessel to carry an observer.[191] Mandatory observer coverage in the USAPL is the best way to secure reliable and accurate bycatch data that will in turn be used to reduce turtle bycatch numbers because this type of reporting is what observers are trained to do.[192] Observers are present on vessels to collect and report which and how many species are caught as bycatch.[193] Their job is to report just the facts. The scientific process requires accurate facts, stripped of any presumptions and possible bias. Without untainted numbers, any efforts to address the problem will be futile.[194]

A required minimum percentage of observer coverage may also reduce the problem of bias.[195] Bias may occur when a particular vessel is selected, or not selected, for observer coverage.[196] Bias is an important concern and can be mitigated by increasing observer coverage across the entire USAPL.[197] Bias inhibits the accurate representation of the fishing effort and catch that the observer program strives to document.[198] If a percentage of observer coverage is established across the entire USAPL, the likelihood of bias will be diminished.

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[188] 50 C.F.R. § 635.7(a) (Westlaw 2009) ("NMFS may select for at-sea observer coverage any vessel that has an Atlantic HMS, tunas, shark or swordfish permit issued under § 635.4 or § 635.32.").

[189] *Id.*

[190] *See id.*

[191] *See* MARINE FISH CONSERVATION NETWORK, *supra* note 1, at 23.

[192] *Id.*

[193] *Id.* at 4.

[194] *See id.* at 23.

[195] *See* HIGHLY MIGRATORY SPECIES MANAGEMENT DIVISION, DRAFT AMENDMENT 2 TO THE CONSOLIDATED ATLANTIC HIGHLY MIGRATORY SPECIES FISHERY MANAGEMENT PLAN 3-123 (2007), *available at* www.nmfs.noaa.gov/sfa/hms/hmsdocument_files/FMPs.htm.

[196] *Id.* at 3-122.

[197] *Id.* at 3-123. However, some vessels operate under very limited resources and cannot accommodate observers; therefore, these particular vessels would still be excluded from the total observer coverage pool. *Id.*

[198] *Id.* at 3-121.

The infrastructure for observer programs is already in place.[199] The MSA authorizes NMFS to set up observer programs and has determined how observers are to be trained and certified.[200] NMFS is even responsible for paying observer salaries, compensation, and insurance costs.[201] Thus, the only remaining link in the chain is to require that a specific percentage of USAPL vessels carry observers.

The NMFS acknowledges that the best way "to learn more about sea turtle-fishery interactions is to place observers aboard fishing vessels."[202] NMFS needs to put some teeth into its statement. Otherwise, what will compel a vessel to carry an observer?

C. MODIFICATIONS TO THE FISHERY MANAGEMENT PLAN

The USAPL, as a longline fishery, is in a good position to find practical and economically feasible ways to reduce turtle bycatch numbers.[203] The USAPL uses gear that is more selective than its gillnet and trawl cousins.[204] Furthermore, the USAPL has already adopted changes to reduce bycatch or bycatch mortality, demonstrating its intent to reduce turtle bycatch numbers.[205]

The USAPL has undergone significant changes in the past two decades.[206] For example, in 1994 the USAPL consisted of 501 active fishing vessels.[207] Eleven years later, the 2005 fishing fleet was reduced to 94 vessels.[208] Changes to the USAPL have also been implemented in an attempt to reduce sea turtle bycatch.[209] These include the introduction of time restrictions and area closures, changes in gear requirements, a switch from the traditional "J" hook to the circle hook to reduce sea turtle bycatch, and safe handling and release requirements.[210]

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[199] *See* 16 U.S.C.A. § 1881b(b)(1) (Westlaw 2009).

[200] *Id.* § 1881b(b).

[201] Sea Turtle Conservation; Observer Requirement for Fisheries, 72 Fed. Reg. 43,176 (Aug. 3, 2007).

[202] *Id.*

[203] Gilman et al., *supra* note 20, at 4.

[204] *Id.*

[205] *See* ATLANTIC PELAGIC LONGLINE TAKE REDUCTION TEAM, *supra* note 49, at vi.

[206] *Id.*

[207] *Id.* at v-vi.

[208] *Id.*

[209] *Id.* at v.

[210] *Id.* at vi.

1. The Status Quo

NMFS describes its sea turtle bycatch reduction plan as a gear-focused approach.[211] Its program, called "The Strategy for Sea Turtle Conservation and Recovery in Relation to Atlantic and Gulf of Mexico Fisheries," focuses on the evaluation and prioritization of gear types in the longline industry with the aim of reducing sea turtle bycatch numbers.[212] NMFS supports its approach by stating that it "evaluate[s] and address[es] sea turtle bycatch comprehensively across jurisdictional boundaries and fishing sectors on a per-gear basis to determine where further measures may be needed to reduce sea turtle bycatch and recover sea turtle populations."[213] NMFS also argues that a gear-based approach will cover the entire longline fishery by targeting the gear shown to be the most harmful to sea turtles.[214]

Although it may be true that certain gear types are more likely than others to inadvertently catch sea turtles,[215] an exclusively gear-based approach is an unconventional and narrow method to reduce bycatch numbers.[216] Traditional bycatch reduction plans are designed to incorporate various modifications, not just changes in one element of the fishery.[217] A gear-based approach is easy to implement because the research is already out there.[218] Additionally, this strategy looks good on paper, but further research and studies need to be performed to determine whether a gear-based approach is indeed the best method to reduce turtle bycatch.[219]

2. Additional Modifications

a. Observer Programs

As an alternative to the inclusion of observer coverage percentages

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[211] NOAA Fisheries Office of Protected Resources, Sea Turtle Strategy, www.nmfs.noaa.gov/pr/species/turtles/strategy.htm (last visited Nov. 26, 2008).

[212] *Id.*

[213] *Id.*

[214] *Id.*

[215] *Id.*

[216] *See generally* ALASKA REGIONAL FISHERIES, ALASKA REGION CURRENT BYCATCH PRIORITIES AND IMPLEMENTATION PLAN (2003), *available at* www.nmfs.noaa.gov/by_catch/AKRfinal_bycatchplan.pdf (discussing the relative merits of gear-based and alternative methods of reducing bycatch).

[217] *See, e.g., id.*

[218] *See, e.g.*, Gilman et al., *supra* note 20, at 4.

[219] *See id.*

in the regulations, the HMS FMP should establish its own observer percentage goals. At a minimum, the HMS FMP should adopt the recommendation of 12-15% observer coverage proposed in the *Draft Atlantic Pelagic Longline Take Reduction Plan*.[220]

The proposed amendment to the current HMS FMP addresses observer coverage, but instead of making recommendations to accommodate increased observer coverage, it highlights factors that will lead to and justify lower observer numbers.[221] The plan suggests that low or no observer coverage is justified by lack of adequate funding; incremental coverage costs that are disproportionately high compared to benefits; and logistical considerations, such as lack of adequate accommodations on a vessel, unsafe conditions, and lack of cooperation by fishermen.[222]

The HMS FMP should overcome these obstacles, not accept them. If not, the HMS FMP is effectively creating multiple exemptions from the MSA observer requirement. For example, if a vessel cannot adequately accommodate an observer,[223] does this mean that it will be removed from the pool of vessels NMFS can select to carry an observer? What if this vessel, and others like it, fish in turtle-dense areas? This valuable data will be lost. Further, an unsafe condition for an observer or inadequate workspace aboard a fishing vessel also removes the vessel from the observer provision.[224] These, too, are free passes out of observer program participation.

It is important to keep in mind that observer coverage and data collection are not exclusive to sea turtle bycatch reduction. It is an MSA requirement to reduce *all* bycatch collected by federal fisheries.[225] Thus, sea turtle bycatch data collection is already one of the responsibilities of observers on fishing vessels, not an additional requirement.[226]

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[220] ATLANTIC PELAGIC LONGLINE TAKE REDUCTION TEAM, *supra* note 49, at vii. This plan, which followed a 2003 settlement agreement between NMFS and the Center for Biological Diversity, is specifically designed to reduce the bycatch of whales and dolphins. *See id.* at iv. However, these strategies and methodologies are applicable to sea turtles as well. Additionally, it is important to note that the research has already been performed, and all that remains is the implementation step.

[221] *See* HIGHLY MIGRATORY SPECIES MANAGEMENT DIVISION, *supra* note 195.

[222] *Id.*

[223] *See id.* at 3-120.

[224] *See* 16 U.S.C.A. § 1881(b) (Westlaw 2009).

[225] *See id.* § 1801.

[226] *See id.* § 1881(b).

b. Additional Gear Modifications: Hook Depth

Gear modifications must be realistic and economical for them to work and be implemented.[227] Gear modifications are very important because it is at the contact point between the fishing equipment and the sea turtle where bycatch occurs or—more importantly—is avoided. Actual implementation is probably the key factor in gear modification strategies, given the status of current observer programs and lack of proper enforcement provisions in the statutes.[228] Because gear modifications have been the focus of regulations thus far, additional changes to gear modifications have a greater chance of being adopted.

An example of an additional modification is a change in gear depth. Research shows that "turtles spend most of their time in seawater less than 40 meters deep, indicating that longline gear set deeper in the water column will catch fewer turtles."[229] This proposition is supported by data showing that deep longlines result in lower turtle bycatch rates than shallower longlines.[230]

However, this modification may not be realistic for all divisions of the USAPL. Deeper longlines may result in a lower harvest or no harvest at all if the target fish species is not found in deeper waters.[231] Therefore, NMFS should conduct research to determine whether this is a realistic modification with respect to the species longlines are designed to catch. The divisions that will not be hindered should adopt this modification in gear depth.

CONCLUSION

Sea turtle bycatch is a multifaceted problem and its presence in the USAPL continues to be a clear threat to the six species of endangered and threatened sea turtles in the Atlantic Ocean.

The most effective way to simultaneously reduce the numbers of sea turtles caught as bycatch and increase sea turtle survival is to adopt a three-fold approach. First, direct interactions with hooked and entangled sea turtles need to be modified in order to better understand what occurs after a turtle is released. This can be done by attaching monitoring devices to a certain percentage of dehooked and released sea turtles to

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[227] *See* Gilman et al., *supra* note 20, at 18.

[228] *See generally id.* (discussing the importance of commercial participation in gear studies as the most effective means of determining effective gear modification techniques).

[229] *Id.* at 15.

[230] *Id.*

[231] *Id.*

record tracking data for a specific amount of time.

Second, while federal statutes and current regulations provide a foundation for sea turtle protection, certain amendments should be adopted. One amendment needs to address the ESA sea turtle take exemption application process. A second amendment should add a citizen suit provision to the MSA. The current regulations should be also be amended to require observer program percentages, to effectively protect delicate sea turtle populations.

Finally, the HMS FMP should adopt additional modifications, such as required observer program percentages and reduced hook depth to further reduce sea turtle bycatch. Only then will we have a clear understanding of the sea turtle bycatch problem and subsequently be able to effectively reduce sea turtle bycatch numbers in the future.

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