

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

CHRIS WILLIAMS
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GARY BURKE
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FRED HEPP
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JEFF HEPP
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Petitioners and Plaintiffs,

v.

WILBUR ROSS, in his official capacity as
Secretary of the U.S. Department of
Commerce
1401 Constitution Avenue, NW
Washington, DC 20230

NATIONAL MARINE FISHERIES
SERVICE
1315 East-West Highway
14th Floor
Silver Spring, MD 20910

Respondents and Defendants.

No. _____

**PETITION FOR REVIEW & COMPLAINT FOR
DECLARATORY & INJUNCTIVE RELIEF**

INTRODUCTION

1. Fishing is an ancient and honorable tradition. Plaintiffs are four California fishermen who have for decades plied their trade in the waters off California's coast, using drift gill nets to catch swordfish. In doing so, they have been good stewards, employing a variety of measures to mitigate unwanted bycatch in their nets and maintain the sustainability of the fishery. Despite these efforts, their livelihoods are now threatened by a statutorily defective and unconstitutional rule approved by Defendant National Marine Fisheries Service through power delegated by Defendant Wilbur Ross. *See Fisheries off West Coast States; Highly Migratory Fisheries; California Drift Gillnet Fishery; Protected Species Hard Caps for the California/Oregon Large-Mesh Drift Gillnet Fishery*, 85 Fed. Reg. 7246 (Feb. 7, 2020).

2. Pursuant to the so-called "hard caps" rule, the West Coast drift gill net fishery would be immediately closed to all participants (including Plaintiffs) if a certain amount of bycatch (in most cases, just two individuals of a covered species) occurred over a two-year rolling period. The closure would continue until May 1 of the fishing season following two seasons of no hard cap exceedance. Thus, a closure could last for years. But even a shorter closure would significantly harm West Coast fishermen such as Plaintiffs, as well as the communities that depend upon a vibrant fishing industry. As alleged below, the extraordinarily ill-considered hard caps rule was issued in violation of the Magnuson-Stevens Fishery Conservation and Management Act ("Fishery Act" or "Act"), 16 U.S.C. §§ 1801–1891d, as well as the Constitution's Appointments Clause and Take Care Clause, U.S. Const. art. II, § 2, cl. 2; art. II, § 3, cl. 5.

3. Regulations issued under the Fishery Act must be consistent with its ten National Standards, 16 U.S.C. § 1851. These standards are the Act's guiding principles and apply to all fishery decisions made under its authority. Pursuant to the standards, fishery management plans and regulations must accommodate the

interests of fishing communities in the management of fishery resources. In particular, the National Standards require fishery regulations to minimize costs, to be based upon the best scientific information available, and to account for the importance of fishery resources to fishing communities. *Id.* § 1851(a)(2), (7), (8).

4. The hard caps rule violates each of these three requirements. Indeed, the Service itself admitted in the preamble to the hard caps rule that the rule's provisions are "inconsistent with [Fishery Act] National Standard 7," and suggested that they may also be inconsistent with National Standards 2 and 8. *See* 85 Fed. Reg. at 7247, 7249. Although the agency promised that it "intends to review all options for addressing the economic impacts to [drift gill net] fishery participants through a separate rulemaking," *id.*, the Fishery Act does not allow the Service to promulgate an illegal rule simply because it intends to remedy the rule's illegality at some as yet undetermined date.

5. The hard caps rule was also issued in violation of the Constitution's Appointments Clause. The Appointments Clause reserves the exercise of significant federal power, including rule-making power, to "Officers of the United States." *Buckley v. Valeo*, 424 U.S. 1, 140–41 (1976) (per curiam). Such officers must be appointed by the President with the advice and consent of the Senate, except that Congress may by law vest the appointment of "inferior" officers in the President alone, the courts of law, or the heads of departments. These limitations establish clear lines of accountability, enabling the American people to hold public officials responsible for poor appointments.

6. Under the Fishery Act, regional fishery management councils are responsible for establishing fishery management plans and proposing implementing regulations. When a council proposes a regulation, the Service is required to issue it as a final rule, provided the regulation is consistent with the Act and other applicable law. The councils therefore decide the essential policy questions governing fishery

management. This, in combination with their statutorily granted discretion and independence, means that fishery council members must be appointed as superior officers. Here, the hard caps rule was proposed by the Pacific Fishery Management Council. But none of its members was appointed by the President with the advice and consent of the Senate. Moreover, even if inferior officers could wield the Pacific Council's power, for reasons alleged herein, the Council members were not properly appointed as inferior officers. Accordingly, the Constitution forbade them from proposing the hard caps rule.

7. Federal officials exercising officer powers are subject to another accountability mechanism. The Take Care Clause requires that officers be removable by the President, so that he can take care that the laws be faithfully executed. This powerful mechanism for oversight persists even if the President has other means of controlling an officer. To be sure, Congress may provide tenure protection for officers. But such protection must be limited to a single layer; Congress may not require the President to obtain the acquiescence of a tenure-protected official to remove another tenure-protected official. *Free Enter. Fund v. Public Co. Accounting Oversight Bd.*, 561 U.S. 477, 493 (2010). Further, tenure protections may not be so stringent as to prevent the President from taking care that the laws be faithfully executed. *See id.* at 503.

8. Given these standards, 13 of the 14 members of the Pacific Council enjoy such strong tenure protection that they cannot be effectively overseen. Most of the members cannot be removed unless other members of the Council consent or the member violates certain financial conflict-of-interest provisions. Some members cannot be removed at all. Such protections stymie the President's efforts to oversee the members' duties and therefore violate the Take Care Clause. And because the hard caps rule was brought about by Council members wielding officer power outside of presidential oversight, the rule is void.

JURISDICTION AND VENUE

9. The Court has jurisdiction over this action pursuant to 28 U.S.C. § 1331 (federal question jurisdiction); *id.* § 2201 (authorizing declaratory relief); *id.* § 2202 (authorizing injunctive relief); 16 U.S.C. § 1855(f) (providing for judicial review of Fishery Act regulations); *id.* § 1861 (providing district court jurisdiction over cases arising under the Fishery Act); and 5 U.S.C. §§ 701–04, 706 (applicable judicial review provisions of the Administrative Procedure Act).

10. Venue in the District of Columbia is proper because Defendant Ross resides in this district, where he maintains his principal office. *Cf.* 28 U.S.C. § 1391(e)(1)(A).

PARTIES

Plaintiffs

11. Chris Williams is a California resident and an active commercial drift gill net fisherman, possessing both federal and state drift gill net permits for swordfish. Mr. Williams has participated in the California swordfish drift gill net fishery for over two decades, and is the president of the Ventura County Commercial Fishermen’s Association. With his wife, Mr. Williams operates a fresh fish market, through which Mr. Williams sells some of his catch. He and his wife would like to pass on their business to their children. However, the hard caps rule threatens to derail the Williams’ plans. If the drift gill net fishery closes, Mr. Williams and his wife will lose 60% to 70% of their income.

12. Gary Burke is a California resident and an active commercial drift gill net fisherman, possessing both federal and state drift gill net permits for swordfish. Mr. Burke has participated in the California swordfish drift gill net fishery since its inception. He is approaching retirement and, if the drift gill net fishery shuts down, Mr. Burke will lose 30% to 40% of his annual income.

13. Fred Hepp is a California resident and a partially retired commercial drift gill net fisherman, possessing both federal and state drift gill net permits for swordfish. Mr. Hepp is a third-generation fisherman and has participated in the California swordfish drift gill net fishery since its inception. Mr. Hepp and his family depend on a reliable and sustainable drift gill net fishery.

14. Jeff Hepp is a California resident, a son of Fred Hepp, and an active commercial drift gill net fisherman, possessing both federal and state drift gill net permits for swordfish. Mr. Hepp has participated in the California swordfish drift gill net fishery since its inception, when he started working with Plaintiff Fred Hepp as a high school student. Mr. Hepp employs his nephew, Henry Hepp, on his vessel. In 2018, Mr. Hepp purchased two new drift gill nets, and intends to participate in the California swordfish drift gill net fishery for the rest of his career. However, under a hard caps closure, Mr. Hepp will lose 30% to 40% of his annual income.

15. Beyond Plaintiffs' likely loss of income, the hard caps rule inflicts an economic injury on each Plaintiff by reducing the value of Plaintiffs' swordfish-related fishing assets. Had hard caps been in effect over the last decade, the fishery would have closed for one and a half seasons, from the 2010–2011 season to the 2011–2012 season. West Coast Region, National Marine Fisheries Service, Final Environmental Assessment on Hard Caps 61 (June 2017) [hereinafter EA], <https://bit.ly/2Tl5NDe>. Just the risk of such closures and consequent economic wipe-out deters others from entering the fishery, thereby reducing the value of Plaintiffs' transferable federal permits as well as their vessels and gear, much of which is specific to drift gill net fishing.

Defendants

16. Defendant Wilbur Ross is the Secretary of Commerce and the official charged by law with administering the Fishery Act. He is sued in his official capacity only.

17. The National Marine Fisheries Service (also known as NOAA Fisheries) is an agency within the Department of Commerce. The Secretary of Commerce has delegated to the Service the authority to administer the relevant portions of the Fishery Act.

LEGAL BACKGROUND

Federal Fisheries Management

18. The Fishery Act establishes ten national standards for fishery management. 16 U.S.C. § 1851(a)(1)–(10).

19. These standards are implemented through fishery management plans and amendments usually developed by eight regional fishery management councils and approved by the Service. *See id.* §§ 1852, 1854(a).

20. The fishery management plans are, in turn, implemented through regulations usually proposed by the regional councils and approved by the Service. *Id.* §§ 1853(c), 1854(b).

21. The Service may reject councils' fishery management plans, amendments, and implementing regulations only if the same would violate "applicable law," such as the National Standards. *See id.* § 1854(a)(3), (b)(1). The Fishery Act does not authorize the Service to outright reject councils' fishery management plans, amendments, or implementing regulations for any other reason, such as a preference for a different policy approach. *See id.*

22. National Standard 7 requires that all environmental mitigation "minimize costs and avoid unnecessary duplication." *Id.* § 1851(a)(7).

23. National Standard 2 requires conservation and management measures to be "based upon the best scientific information available." *Id.* § 1851(a)(2).

24. National Standard 8 requires conservation and management measures to "take into account the importance of fishery resources to fishing communities . . . , in order to (A) provide for the sustained participation of such communities, and (B) to

the extent practicable, minimize adverse economic impacts on such communities.” *Id.* § 1851(a)(8).

The Regional Fishery Management Councils

25. Among the eight fishery management councils established by the Fishery Act is the Pacific Fishery Management Council (“Council” or “Pacific Council”), which covers the states of California, Oregon, Washington, and Idaho. *Id.* § 1852(a)(1)(F).

26. The Council has 14 voting members. *Id.*

27. A quorum is a majority of the Council, and the Council acts by majority vote of those present and voting. *Id.* § 1852(e)(1).

28. One voting member of the Council is “[t]he regional director of the National Marine Fisheries Service for the geographic area concerned, or his designee.” *Id.* § 1852(b)(1)(B).

29. Four voting members are the “principal State official with marine fishery management responsibility and expertise in each constituent State, who is designated as such by the Governor of the State, so long as the official continues to hold such position, or the designee of such official.” *Id.* § 1852(b)(1)(A).

30. Nine voting members are appointed by the Secretary. *Id.* § 1852(a)(1)(F).

31. The Fishery Act requires the Secretary, with respect to eight of the nine slots filled by him, to “appoint the members of each Council from a list of individuals submitted by the Governor of each applicable constituent State,” which list shall include “not less than three individuals for each applicable vacancy.” *Id.* § 1852(b)(2)(C). Four of these slots are “obligatory,” meaning they are state-specific and receive nominations from a single Governor, resulting in three or more nominations per slot. *Id.* § 1852(a)(1)(F) (requiring that of the eight Governor-nominated slots, “at least one . . . shall be appointed from each such State”); 50 C.F.R.

§ 600.215(a)(2)(i). Under current regulations, the other four slots are designated “at large,” meaning these slots each receive a minimum of three nominations from each of the four Governors, for a total of 12 or more nominations per slot. 50 C.F.R. § 600.215(a)(2)(iii).

32. The Secretary may reject a list only if individuals named therein fail to satisfy certain minimal statutory requirements, in which case the Governor may revise the list or resubmit the original list with additional explanations of the individuals’ qualifications; the Secretary may not reject the list on the basis of the individuals’ judgment, policy prescriptions, or character. *See* 16 U.S.C. § 1852(b)(2)(C).

33. One Council member is appointed by the Secretary in accordance with § 1852(b)(5), which requires the Secretary to appoint the member from a list of not less than three individuals submitted by a tribal government with federally recognized fishing rights from the Pacific Council states. *Id.* § 1852(a)(1)(F).

34. The Act permits the Secretary to remove a Council member appointed by the Secretary pursuant to § 1852(b)(2) or (b)(5) only if the Council first recommends removal by a two-thirds majority of voting members and states the basis for the recommendation, or the member violates § 1857(1)(O), a financial conflict-of-interest provision. *Id.* § 1852(b)(6). The Act does not provide at all for the removal of the other five voting members of the Council.

The Appointments Clause

35. The Appointments Clause of the United States Constitution provides that the President “shall nominate, and by and with the Advice and Consent of the Senate, shall appoint” all “Officers of the United States.” U.S. Const. art. II, § 2, cl. 2. This requirement applies to both principal (also called superior) officers and inferior officers, except that “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.” *Id.*

36. Any person holding a “continuing position established by law,” *Lucia v. SEC*, 138 S. Ct. 2044, 2051 (2018) (citation and internal quotation mark omitted), and “exercising significant authority pursuant to the laws of the United States is an ‘Officer of the United States,’ and must, therefore, be appointed in the manner prescribed by” the Appointments Clause, *Buckley*, 424 U.S. at 126.

37. Rule-making is significant authority which may only be exercised by an officer. *Id.* at 140–41.

38. The Appointments Clause is not limited to officials with authority to “enter a final decision” on behalf of the United States; it applies to any official who “exercise[s] significant discretion” in “carrying out . . . important functions.” *Freytag v. Comm’r*, 501 U.S. 868, 881–82 (1991).

39. A person exercising officer powers may be appointed as an inferior officer if his “work is directed and supervised at some level by others who were appointed by Presidential nomination with the advice and consent of the Senate.” *Edmond v. United States*, 520 U.S. 651, 663 (1997). It is necessary but “not enough that other officers may be identified who formally maintain a higher rank, or possess responsibilities of a greater magnitude.” *Id.* at 662–63.

40. Three factors that bear on whether an official wielding officer powers may be appointed as an inferior officer are: (1) whether the officer is subject to oversight in the conduct of his duties; (2) whether the officer is subject to removal without cause; and (3) whether the officer has “no power to render a final decision on behalf of the United States unless permitted to do so by other Executive officers.” *Id.* at 664–65.

The Take Care Clause

41. The Take Care Clause charges the President to “take Care that the Laws be faithfully executed.” U.S. Const. art. II, § 3, cl. 5.

42. This provision empowers the President to remove officers, and this power persists even if the President can control an officer through other means, such as the budget process, regulations, or relieving the officer of his authority. *Free Enter. Fund*, 561 U.S. at 504.

43. Although Congress may shield officers from removal without cause, it may create only one level of tenure protection, *id.* at 493, and some removal standards may be so high as to be under any circumstance “inappropriate for officers wielding the executive power of the United States,” *id.* at 503.

FACTUAL ALLEGATIONS

The West Coast Swordfish Fishery

44. The swordfish (*Xiphias gladius*) is a large migratory fish found throughout the Pacific, Atlantic, and Indian Oceans. Popular since ancient times as food, the swordfish has for decades been the subject of a robust commercial fishery off of the U.S. West Coast.

45. The West Coast swordfish fishery has been a part of the Pacific Council’s highly migratory species fishery management plan since the early 2000s. *See* 69 Fed. Reg. 18,444 (Apr. 7, 2004).

46. The fishery is economically viable because of the drift gill net. This fishing gear typically comprises of a wall of nylon netting that hangs in the water column and is kept at the proper depths through weights and buoys. The drift gill net’s mesh is large enough to allow a fish to insert its head but not its body, thus catching the fish by its gills.

47. As with nearly all commercial fishing gear, the use of drift gill nets produces bycatch, *i.e.*, the catch of species other than the intended species. Decades

ago, the drift gill net fishery was considered to have an unacceptably high bycatch rate for marine mammals and other protected species. But subsequently enacted regulation has nearly eliminated unwanted bycatch. For example, the Service has implemented time and area closures to protect leatherback and loggerhead sea turtles. National Marine Fisheries Service, U.S. Department of Commerce, U.S. National Bycatch Report 36 (2011). The agency also has required the use of acoustic pingers to discourage interaction with cetaceans, such as whales and dolphins. *Id.* These and other mitigation efforts “have dramatically reduced bycatch of protected species such that it is now relatively unusual for many large whales and turtles to become entangled.” West Coast Region, National Marine Fisheries Service, FAQs: West Coast drift gillnet (DGN) fishery & protected species 4 (June 2017), <https://bit.ly/2KsCdcu>.

48. Because of these and other measures, the Service in 2018 re-designated the California drift gill fishery a “Category II” fishery, 83 Fed. Reg. 5349, 5362 (Feb. 7, 2018), meaning that it only occasionally injures marine mammals. National Marine Fisheries Service, U.S. Department of Commerce, Marine Mammal Protection Act List of Fisheries, <https://bit.ly/2PQVokK> (last visited Mar. 3, 2020). The Service reaffirmed the fishery’s Category II status in 2019, 84 Fed. Reg. 22,051, 22,063 (May 16, 2019), and has proposed to retain that status for 2020, 84 Fed. Reg. 54,543, 54,551 (Oct. 10, 2019).

The Hard Caps Rule

49. In 2012, the Pacific Council took up consideration of a hard caps proposal. Under the basic terms of the proposal, whenever the number of entanglements fishery-wide reached a certain amount, the fishery would be closed for all participants.

50. The proposal ran into significant opposition, not just from fishermen, *see, e.g.*, Letter of Ventura County Commercial Fishermen’s Association to Lyle

Enriquez, National Marine Fisheries Service (Dec. 27, 2016), but also from several government scientific advisory groups which found the proposal to be unnecessary and ill-advised, *see, e.g.*, Pacific Offshore Cetacean Take Reduction Team, National Marine Fisheries Service, Pacific Fishery Management Council Proposed Hard Caps on Marine Mammal Bycatch in the Drift Gillnet Fishery 3 (May 8, 2015) (“While the goal is commendable, the [take reduction team] has identified serious concerns with the proposed bycatch reduction concept and design (the imposition of ‘hard caps’), and finds that it is not based on the best available science.”); Letter of Marine Mammal Commission to Eileen Sobeck, Assistant Administrator for Fisheries, Nat’l Marine Fisheries Serv. (June 26, 2015) (“The Commission is concerned that the [Council’s] proposed measures are rather blunt, are not based on the best available science, do not reflect the most recent estimates of bycatch rates (and their variances), and would not reduce the probability of fishery interactions with marine mammals while the fishery is operating.”); Highly Migratory Species Advisory Subpanel, Pacific Fishery Management Council, Report on Swordfish Management and Monitoring Hardcaps 1–2 (Sept. 2015) (recommending against adoption of hard caps because they are a “blunt,” “very regressive management tool” creating only “minor benefits to marine mammals but major negative impacts to the fishery,” while ignoring “past and ongoing efforts” by other conservation agencies taking “a far more holistic approach”); Highly Migratory Species Advisory Subpanel, Pacific Fishery Management Council, Comments on Hard Caps for Priority Protected Species for the Drift Gillnet Fishery 1 (Nov. 2015) (“The numbers accepted on the hard caps go beyond what is necessary for protection of the affected species. . . . [¶] The inflexible nature of hard caps discourages fishermen from achieving the primary objectives of the [Marine Mammal Protection Act], which is to maintain optimum sustainable populations of marine mammals.”). A true and correct copy of the Ventura County Commercial Fishermen’s

Association letter is attached hereto as Exhibit A, and other documents referenced therein are attached thereto as additional exhibits.

51. Despite this opposition, the Council approved the hard caps rule in 2015. The Council vote was 11 in favor of the regulation, three against. Voting in favor were the Service's regional administrator, three of the four state officials, the tribal representative, and six of the eight members appointed by the Secretary. Pacific Fishery Management Council, Council Meeting Record: 231st Session of the Pacific Fishery Management Council 17–18 (Sept. 2015), <https://bit.ly/2Ijn75j>.

52. Under the Council-approved version of the hard caps rule, should bycatch of one of six species of cetaceans or sea turtles reach a certain amount (for most such species, just two individuals) at any point during a fishing season, the fishery would be closed for all participants and would not reopen until May 1 of the fishing season after the rolling two-year total falls below the hard cap value—a period that could stretch on for years.

53. In October, 2016, following the Service's legal review of the Council's approved hard caps proposal, the agency published the proposed rule. *Fisheries off West Coast States; Highly Migratory Fisheries; California Drift Gillnet Fishery; Protected Species Hard Caps for the California/Oregon Large-Mesh Drift Gillnet Fishery*, 81 Fed. Reg. 70,660 (Oct. 13, 2016).

54. After the comment period on the proposed rule, the Service “conducted further analysis of the economic effects of the action.” 85 Fed. Reg. at 7247. That analysis “identified significant adverse short-term economic effects that were not identified at the proposed rule stage.” *Id.* Specifically, the original analysis failed to consider the short-term effects of fishery closure as well as the inability of swordfish fishermen to find substitute catch in the event of a swordfish closure. EA at 72–77.

55. As a result of the reanalysis, the Service concluded that the proposed rule was inconsistent with the National Fisheries Standard 7, *see* 85 Fed. Reg. at

7247, and therefore withdrew it. *Fisheries Off West Coast States; Highly Migratory Fisheries; California Drift Gillnet Fishery; Protected Species Hard Caps for the California/Oregon Large-Mesh Drift Gillnet Fishery*, 82 Fed. Reg. 26,902 (June 12, 2017).

56. The withdrawal was then successfully challenged in the United States District Court for the Central District of California. *See Oceana, Inc. v. Ross*, No. 17-cv-5146. That court ruled that, once the Service has made a determination that a Council proposal is legal and publishes a proposed rule, the agency must either promulgate the rule as is or, if it believes that changes are warranted, consult with the Council before proceeding with any amended rule. *Id.*, Docket No. 102, at 7 (Oct. 24, 2018). Thus, even if the Service correctly determined that the hard caps proposal was illegal, the agency was still required to consult with the Council before withdrawing it. *See id.* at 7 n.2 (“Since [the Service] did not consult with the Pacific Council after the public comment period, the Court need not decide whether withdrawing proposed regulations is an option under § 1854(b).”). Because no such consultation had occurred, the court remanded the matter to the agency either to promulgate the original hard caps proposal or to consult with the Council before doing anything further. *Id.* at 8.

57. About a year later, no formal consultation had occurred, and so the plaintiff moved the district court for special relief. The court responded by ordering the Service within 30 days to promulgate the hard caps rule as is or to consult with the Council before making any changes to the rule. *Id.*, Docket No. 131 (Jan. 8, 2020).

58. Because the next Council meeting was more than 30 days away, the Service promulgated the hard caps rule as originally approved by the Council. 85 Fed. Reg. 7246. The rule goes into effect March 9, 2020. *Id.*

DECLARATORY AND INJUNCTIVE RELIEF ALLEGATIONS

59. Each of the Plaintiffs has a significant interest in whether the hard caps rule was lawfully promulgated. A substantial portion of the income of at least some of the Plaintiffs depends on reliable participation in a sustainable drift gill net fishery. Further, Plaintiffs' drift gill net fishing permits, vessels, and gear comprise a significant portion of Plaintiffs' assets. A fishery that can suddenly be shut down for years at a time visits significant economic hardship on Plaintiffs, in addition to reducing the value of their permits, vessels, and gear. A decision declaring the hard caps rule void as inconsistent with the National Standards, the Appointments Clause, or the Take Care Clause would remedy these injuries by preserving the value of Plaintiffs' assets and enabling Plaintiffs to continue to take part in the drift gill net fishery under the environmentally adequate regulations pre-existing the hard caps rule.

60. Plaintiffs have no plain, speedy, and adequate remedy at law for their injuries. Money damages in this case are not available.

61. This case is currently justiciable because the hard caps rule will govern this year's fishing season and all subsequent seasons.

62. Therefore, declaratory and injunctive relief are appropriate to resolve this controversy.

FIRST CLAIM FOR RELIEF

Violation of the Fishery Act's National Standards

(16 U.S.C. § 1851(a); 5 U.S.C. § 706(2)(A), (C))

63. The preceding paragraphs are incorporated herein by reference.

64. The hard caps rule is a final agency action, 5 U.S.C. § 704. It represents the consummation of the Service's decision-making process with respect to whether such a proposal should be codified, and it has immediate legal and practical

consequences by, among other things, requiring the closure of the swordfish fishery whenever a hard cap is reached.

65. Regulations like the hard caps rule that purportedly implement fishery management plans and amendments must be consistent with the National Standards, 16 U.S.C. § 1851(a)(1)–(10).

66. National Standard 7 requires environmental mitigation to “minimize costs and avoid unnecessary duplication.” *Id.* § 1851(a)(7).

67. As the Service itself recognizes, the hard caps rule is inconsistent with National Standard 7 because of its severe economic impact. *See, e.g.*, National Marine Fisheries Service, Final Regulatory Impact Review and Final Regulatory Flexibility Analysis 23 (Jan. 2020), <https://bit.ly/2Q2HzMb> (“After publishing the rule, NMFS intends to review all options *for bringing the regulations into compliance with the MSA, particularly National Standard 7*, through a separate rulemaking”) (emphasis added).

68. National Standard 2 requires conservation and management measures to be “based upon the best scientific information available.” 16 U.S.C. § 1851(a)(2).

69. As the Marine Mammal Commission, the Pacific Ocean Cetacean Take Reduction Team, and the Highly Migratory Species Advisory Subpanel all agreed, the hard caps rule is scientifically indefensible because, among other deficiencies noted in their objections to the proposal, the rule is more restrictive than needed to protect the affected species.

70. The rule therefore violates National Standard 2.

71. National Standard 8 requires that conservation and management measures “take into account the importance of fishery resources to fishing communities, . . . in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.” 16 U.S.C. § 1851(a)(8).

72. As the Service itself has concluded, the hard caps rule is “expected to have significant costs to [drift gill net] fishery participants,” and will “likely result in reduced domestic supply of swordfish to west coast markets, in the event of a fishery closure.” EA at 83.

73. The hard caps rule therefore violates National Standard 8.

74. For these reasons, the hard caps rule is arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law or in excess of statutory authority, 5 U.S.C. § 706(2)(A), (C).

SECOND CLAIM FOR RELIEF

Exercise of Powers Reserved to Officers of the United States by Persons Not Appointed Consistent with the Appointments Clause

(U.S. Const. art. II, § 2, cl. 2; 5 U.S.C. § 706(2)(B))

75. The preceding paragraphs are incorporated herein by reference.

76. Council members wield power reserved for officers of the United States because they hold continuing offices established by law and exercise significant powers pursuant to the laws of the United States, including rule-making powers.

77. Although Council members cannot promulgate regulations on their own, proposed Council regulations may be blocked only for inconsistency with law, not policy. *See* 16 U.S.C. § 1854(b). Thus, the Council and its members are endowed with significant power to make federal fishery policy.

Unlawful Superior Officers

78. Council members must be appointed as superior officers because they are not effectively supervised by anyone who is appointed by the President with the advice and consent of the Senate. Council members are not removable at will but instead enjoy extraordinarily strong protections against removal. *See id.* § 1852(b)(6). They have wide discretion over policy decisions. *See id.* § 1854(a)(3), (b). And they operate largely independent of external direction: they set their own priorities,

establish and direct their own staff, and create their own operating procedures. *Id.* § 1852(e), (g)–(i).

79. Despite the requirement that they be appointed as superior officers, Council members are not appointed through presidential nomination and Senate confirmation. *Cf. id.* § 1852(b)(2), (b)(5). They therefore exercise their powers unconstitutionally.

Unlawful Inferior Officers—Appointment by Constitutionally Ineligible Persons

80. Even if Council members need only be appointed as inferior officers, such appointment has not been properly effected, and they therefore exercise their powers unconstitutionally.

81. The default appointment procedure for inferior officers is Presidential nomination followed by Senate confirmation. *Edmond*, 520 U.S. at 660.

82. The Constitution permits Congress to loosen this requirement within strict limits: Congress may only vest the appointment of inferior officers in the President, the courts of law, or the heads of departments. U.S. Const. art. II, § 2, cl. 2.

83. Four seats on the Council are filled pursuant to four governors' designations; they are not filled by the President, the courts of law, or a head of department. *See* 16 U.S.C. § 1852(b)(1)(A). These four seats are therefore unconstitutionally filled.

84. One seat is taken by the Service's West Coast regional administrator, *see id.* § 1852(b)(1)(B), whose appointment Congress has not vested by law in the President, the courts of law, or a head of department, *cf.* Reorganization Plan No. 4 of 1970, 5 U.S.C. App. and, as reasonable opportunity for further investigation or discovery will likely reveal, who is not appointed by the President, a court of law, or a head of department. This seat also is unconstitutionally filled.

*Unlawful Inferior Officers—Unconstitutional
Restraint on Appointing Officer’s Power*

85. Statutorily, eight Council seats are filled by the Secretary from lists provided by four governors, 16 U.S.C. § 1852(b)(1)(C), (b)(2)(C), and one seat is filled by the Secretary from a list provided by Indian tribes, *id.* § 1852(b)(5)(A). The Secretary may reject a governor-prepared list only if it fails to meet objective statutory criteria, not for policy or character reasons. *See id.* § 1852(b)(2)(C). The Secretary may not reject a tribe-prepared list at all. *See id.* § 1852(b)(5). Because the governors may designate as few as three individuals per obligatory vacancy and 12 individuals per at-large vacancy, they can effectively force the Secretary to appoint individuals whose judgment and character he mistrusts and whose policy prescriptions he disagrees with; and, a fortiori, so may the tribes. This arrangement unconstitutionally constrains the appointment power. *See Myers v. United States*, 272 U.S. 52, 128 (1926) (holding that statutory limitations on an appointment power cannot “so limit selection and so trench upon executive choice as to be in effect legislative designation”); *United States v. Espy*, 145 F.3d 1369, 1372 (D.C. Cir. 1998) (quoting *Myers* and acknowledging that Congress faces “constitutional limits” in restricting executive appointments).

Unlawful Inferior Officers—Residual Error

86. Even if the division of the appointment power established by the Fishery Act were permissible, the nine seats reserved for Secretarial appointment would still be unconstitutionally filled because the Secretary has not actually made those appointments. Rather, the Assistant Administrator for Fisheries—who is not the President, a court of law, or a head of department—has been delegated the responsibility for these appointments from the Secretary and the NOAA Administrator. National Oceanic & Atmospheric Administration, U.S. Department of

Commerce, NOAA Organizational Handbook: Transmittal No. 61, at PDF 2, 3 (2015), <https://bit.ly/38nxCir>.

87. The hard caps rule is therefore contrary to constitutional right, power, privilege, or immunity, 5 U.S.C. § 706(2)(B).

THIRD CLAIM FOR RELIEF

Exercise of Powers Reserved to Officers of the United States by Persons Not Properly Removable Pursuant to the Take Care Clause

(U.S. Const. art. II, § 3, cl. 5; 5 U.S.C. § 706(2)(B))

88. The preceding paragraphs are incorporated herein by reference.

89. For reasons discussed in the Second Claim for Relief, Council members are officers of the United States.

90. The Take Care Clause requires that officers be removable by the President, so that he may oversee and thereby take responsibility for their actions. The Constitution tolerates at most a single layer of tenure protection for officers.

91. The four Council members designated by governors as their respective states' principal officials for fisheries, 16 U.S.C. § 1852(b)(1)(A), are not removable by the President or other officer of the United States, which arrangement violates the Take Care Clause.

92. The nine Council members appointed by the Secretary from a governor- or tribe-provided list may be removed by the Secretary only if two-thirds of the Council agrees, or if the member violates certain financial conflict-of-interest provisions. *Id.* § 1852(b)(6)(A)–(B).

93. The former method creates more than one layer of tenure protection, because to remove a Council member, the Secretary must first gain the assent of other Council members, who are similarly protected. In fact, this removal method creates interminable layers of tenure protection because the protection is recursive: to remove a Council member, the Secretary must gain the assent of other Council

members, none of whom can be removed without the assent of other Council members, none of whom can be removed without the assent of other Council members, and so forth. The result is that just one-third of the Council, if united, can frustrate all attempts of removal under this pathway. This level of protection prevents the President from holding the Council to account and therefore does not satisfy the Take Care Clause.

94. The latter method is not a removal provision that permits the President to take care that the laws be faithfully executed, because it is not substantially related to the performance of Council members' duties. Removal provisions do not satisfy the Take Care Clause simply by technically permitting removal in narrow circumstances. *Cf. Free Enter. Fund*, 561 U.S. at 503 (noting that some removal standards may "be inappropriate for officers wielding the executive power of the United States"). The second removal method would not permit removal even of a member who flagrantly abuses his power, engages in nepotism, or engages in criminal malfeasance while in office, so long as he scrupulously divulges his financial interests and recuses himself from the appropriate Council decisions. For example, so long as members avoid financial conflicts of interests, they may openly violate every regulation-created rule that purports to govern their conduct, *see* 50 C.F.R. § 600.225 (prohibiting abusing one's office to interfere with an election, restricting lobbying activities, forbidding adverse action against Council employees based on political affiliation or activity, and prohibiting criminal and dishonest conduct), yet retain their position. The second pathway to removal therefore does not satisfy the Take Care Clause.

95. For the foregoing reasons, 13 of the 14 Council members' removal protections violate the Take Care Clause because the President is not capable of overseeing the Council's agenda or actions. Therefore, the hard caps rule is contrary to constitutional right, power, privilege, or immunity, 5 U.S.C. § 706(2)(B).

PRAYER FOR RELIEF

Wherefore, Plaintiffs pray for relief as follows:

1. As to the First Claim for Relief, a judgment declaring that the hard caps rule violates the National Standards;
2. As to the First Claim for Relief, a preliminary and permanent prohibitory injunction setting aside the hard caps rule, and forbidding Defendants from enforcing it, because it violates the National Standards;
3. As to the Second Claim for Relief, a judgment declaring that the hard caps rule violates the Appointments Clause;
4. As to the Second Claim for Relief, a preliminary and permanent prohibitory injunction setting aside the hard caps rule, and forbidding Defendants from enforcing it, because it violates the Appointments Clause;
5. As to the Third Claim for Relief, a judgment declaring that the hard caps rule violates the Take Care Clause;
6. As to the Third Claim for Relief, a preliminary and permanent prohibitory injunction setting aside the hard caps rule, and forbidding Defendants from enforcing it, because it violates the Take Care Clause;
7. As to all Claims for Relief, an award of reasonable attorney fees and costs, pursuant to 28 U.S.C. § 2412, or any other applicable authority; and

8. As to all Claims for Relief, any other relief that the Court deems just and proper.

DATED: March 6, 2020.

Respectfully submitted,

s/ Damien M. Schiff
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Exhibit A



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Refer To File #: 501982-0001

Via Email and U.S. Mail

December 27, 2016

Mr. Lyle Enriquez
NMFS West Coast Region
501 W. Ocean Blvd., Suite 4200
Long Beach, CA 90802
lyle.enriquez@noaa.gov

Re: Comments re Proposed Rule—NOAA-NMFS-2016-0123

Dear Mr. Enriquez:

On behalf of the Ventura County Commercial Fishermen's Association ("VCCFA"),¹ we are writing regarding the proposed rule issued by the National Marine Fisheries Service ("NMFS") on October 13, 2016 ("Proposed Rule") to implement hard caps for the California/Oregon Large-Mesh Drift Gillnet Fishery ("DGN Fishery"), as well as the Environmental Assessment ("EA") and Regulatory Impact Review and Initial Regulatory Flexibility Analysis ("RIR/IRFA") issued in support of the Proposed Rule. See 81 Fed. Reg. 70660 (Oct. 13, 2016). In a letter dated December 14, 2015, the VCCFA previously submitted comments regarding the Pacific Fishery Management Council's ("Council") actions with respect to the proposed hard caps, and incorporates by reference the concerns set forth in that letter. Unfortunately, many of those concerns were not addressed in the Proposed Rule. Specifically, NMFS appears to have ignored the advice of several expert advisory teams, including the Marine Mammal Commission, who informed the Council that: "The Commission is concerned that the [Council's] proposed measures are rather blunt, are not based on the best available science, do not reflect the most recent estimates of bycatch rates (and their variances), and would not reduce the probability of fishery interactions with marine mammals while the fishery is operating." Letter from Marine Mammal Commission, dated June 26, 2015 (attached hereto as Exhibit 1).² Similar concerns were voiced by the Pacific Offshore Cetacean Take Reduction Team ("POCTRT") and the Council's own Highly Migratory Species ("HMS") Advisory Subpanel. Indeed, the POCTRT noted that "hard caps are not consistent with agency's 'best practices,'" and concluded that the Council's adoption of hard caps "appear[ed] arbitrary and lacking in scientific justification, because they are not supported by a clear rationale and lack an

¹ The Ventura County Commercial Fishermen's Association is a 501(c)(3) organization that promotes the regional efforts of fishing communities with the aim of improving the economic and biological sustainability of fisheries.

² See http://www.pcouncil.org/wp-content/uploads/2015/08/G2a_MMC_Rpt_SEPT2015BB.pdf.

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analytical basis.” Letter from POCTRT to Eileen Sobeck, dated May 8, 2015 (attached hereto as Exhibit 2), at 5.³

Appearing to have turned a blind eye to the concerns of these expert advisory entities, NMFS issued the Proposed Rule on October 13, 2016. As described in further detail below, the Proposed Rule is legally unauthorized, based on faulty economic assumptions, inconsistent with the Magnuson-Stevens Fishery Conservation Act’s (“MSA”) National Standards, and will ultimately result in the wrongful closure of the DGN Fishery. The VCCFA therefore requests that NMFS reconsider the Proposed Rule, and move forward in a manner that is consistent with the MSA, other applicable law, and the agency’s own policies.

1. Background.

The Proposed Rule contemplates the establishment of two-year rolling hard caps that are based on observed mortality or injury. Under the proposed system, onboard observers will record the number of animals killed or injured during the previous and current fishing season. If the number for any species reaches or exceeds the cap number, the DGN Fishery will be shut down for at least the remainder of the fishing season. The fishery will reopen when the rolling two-year total falls below the cap level. If a cap level is reached early in the fishing season, the DGN Fishery could be shut down for nearly two full fishing seasons. The rolling hard cap levels are as follows:

Species	Hard Cap
Fin whales	2
Humpback whales	2
Sperm whales	2
Leatherback sea turtles	2
Loggerhead sea turtles	2
Olive ridley sea turtles	2
Green turtles	2
California-Oregon-Washington stock of short-fin pilot whales	4
California-Oregon-Washington stock of common bottlenose dolphins	4

³ See http://www.pcouncil.org/wp-content/uploads/2015/05/E3a_NMFS_Rpt_POCTRT_Ltr_JUN2015BB.pdf

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The species listed above are currently regulated by the Endangered Species Act (“ESA”) and the Marine Mammal Protection Act (“MMPA”). NMFS expressly acknowledges that the DGN Fishery “currently complies with all applicable laws, including the [MSA], [ESA], and [MMPA]. EA at 1.

Pursuant to section 7 of the ESA, NMFS issued a biological opinion on May 2, 2013, in which NMFS concluded that the DGN Fishery is not likely to jeopardize the continued existence of any listed species or adversely modify their critical habitat. Biological Opinion on the Continued Management of the DGN Fishery, May 2, 2013, *available at* http://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/memo_signed_dgn_biop_050213.pdf, at 123. Pursuant to section 9 of the ESA, NMFS also issued an incidental take statement, which authorizes the take of ESA-listed species that are incidental to commercial fishing, provided that the DGN Fishery complies with certain measures specified in the biological opinion. *Id.* at 125-130; *see also id.* at 21 (“[b]ased on observer records, the incidental take of ESA-listed species are rare events in the DGN fishery”). If the incidental take levels are exceeded, NMFS will re-initiate consultation pursuant to section 7 and implement any and all measures needed to protect the ESA-listed species. While under certain circumstances this could result in shutting down the fishery for a period of time, such an alternative is not *automatic*, as is the case with the proposed hard caps. The ESA consultation process, rather than an arbitrary imposition of hard caps, is the appropriate framework to address impacts to ESA-listed species.

In addition, the DGN Fishery is regulated under the MMPA. Specifically, Section 118 of the MMPA requires NMFS to develop and implement take reduction plans to assist in the recovery or to prevent the depletion of strategic marine mammal stocks. 16 U.S.C. § 1387. NMFS established the POCTRT on February 12, 1996 (61 Fed. Reg. 5385) to prepare a draft take reduction plan. On October 3, 1997 (62 Fed. Reg. 51805), the POCTRT issued a final rule requiring new training, equipment, and other gear modifications for the DGN Fishery to reduce the level of mortality and serious injury to several marine mammal stocks. The DGN Fishery has complied with the requirements of the recovery plan for over 18 years. It is estimated that the recommendations of the POCTRT have resulted in the substantial reduction (and in some cases, elimination) of marine mammal take. *See, e.g., Carretta, et. al, Marine mammal and sea turtle bycatch in the California/Oregon swordfish and thresher shark drift gillnet fishery in 2009. Administrative Report LJ-10-03 (2010); Barlow, J. and G. A. Cameron, Field experiments show that acoustic pingers reduce marine mammal bycatch in the California drift gillnet fishery. Marine Mammal Science 19(2):265-283 (2003).* The MMPA’s take reduction plans and POCTRT process—and not the Proposed Rule’s hard caps—are the proper way to protect marine mammals.

Notwithstanding this comprehensive regulatory scheme, the Proposed Rule purports to impose hard caps that will ultimately result in shutting down the DGN Fishery for future generations.

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2. The Proposed Rule is Legally Unauthorized.

a. Applicable Fishery Management Plan.

The DGN Fishery is managed pursuant to the Fishery Management Plan (“FMP”) for U.S. West Coast Fisheries for Highly Migratory Species. The HMS FMP was developed by the Council in response to the need to coordinate state, Federal, and international fisheries management. NMFS first approved the plan in 2004. The HMS FMP has been amended twice since its implementation: (1) Amendment 1, approved by NMFS on June 7, 2007, and (2) Amendment 2, approved by NMFS on June 27, 2011. It is undisputed that the Proposed Rule does not purport to amend the HMS FMP.

b. MSA Section 304.

MSA Section 304, 16 U.S.C. § 1854, sets forth the actions that may be taken by the Secretary of Commerce (“Secretary”) under the authority of the MSA. Specifically, Section 304(a) sets forth the rules applicable to FMPs or amendments to FMPs, while Section 304(b) sets forth the rules applicable to other regulations. These are different regulatory schemes that are procedurally and substantively distinct. For example, among other things, an FMP or FMP amendment requires the Secretary to “consult with the Secretary of State with respect to foreign fishing; and consult with the Secretary of the department in which the Coast Guard is operating with respect to enforcement at sea and to fishery access adjustments....” 16 U.S.C. § 1854(a)(2). Similar requirements do not apply with respect to regulations promulgated pursuant to the MSA. See 16 U.S.C. § 1854(b). Section 304 illustrates the differences between the Secretary’s actions with respect to FMPs or FMPs amendments, as compared to regulations.

c. Legal Justification for the Proposed Rule.

The Proposed Rule states: “The implementation of hard caps is intended to manage the fishery under the MSA to protect certain non-target species. Its purpose is not to manage marine mammal or endangered species populations, but rather to enhance the provisions of [the] ESA and the MMPA **under MSA Section 303(b)(12)** and National Standard 9.” 81 Fed. Reg. at 70661 (emphasis added); see also *id.* at 70660 (“NMFS is proposing regulations under the authority of Section 303(b) of the [MSA] to implement [the Proposed Rule]”). In short, NMFS cites MSA Section 303(b)(12) as providing it with the legal authority to implement the Proposed Rule. This assertion fails as a matter of law.

MSA Section 303(b)(12) states: “Any **fishery management plan** which is prepared by any Council, or by the Secretary, with respect to any fishery, may—(12) include management measures **in the plan** to conserve target and non-target species and habitats, considering the variety of ecological factors affecting fishery populations.” 16 U.S.C. § 1853(b)(12) (emphasis added). Section 303(b)(12) only applies to FMPs and FMP amendments. The Proposed Rule is not an FMP or FMP amendment. Rather, as described in MSA Section 304(b), the Proposed Rule is a regulation. Indeed, NMFS acknowledges that the Proposed Rule is a regulation, and not an FMP or FMP amendment. 81 Fed. Reg. at 70661 (“Pursuant to section 304(b)(1)(A), the NMFS West Coast Regional Administrator has determined that this proposed rule is consistent with the HMS FMP...”). Therefore, Section 303(b)(12) does not provide NMFS with the authority to adopt the Proposed Rule, because the Proposed Rule is not an FMP or FMP

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amendment. If, in the future, NMFS wishes to propose hard caps as part of an amendment to the HMS FMP, it may attempt to rely on Section 303(b)(12) as providing it with authority to do so at that time. Now, however, Section 303(b)(12) does not provide NMFS with any authority whatsoever with respect to the Proposed Rule.⁴

The VCCFA explained in detail in its December 14, 2015 comment letter why the Council and NMFS do not have the authority to implement hard caps in the manner that is currently proposed. These reasons are not repeated here, but are incorporated by reference.

In sum, NMFS does not have the authority—under MSA Section 303(b)(12) or any other section—to adopt the Proposed Rule. The VCCFA therefore requests that NMFS reconsider the Proposed Rule to ensure that it is consistent with applicable law.

3. The Proposed Rule Misstates the Economic Harm that it will Cause to the DGN Fishery.

In multiple instances in the Proposed Rule and supporting materials, NMFS asserts that the economic losses sustained by a DGN Fishery closure can be mitigated by DGN Fishery permittees because they can harvest other species under other permits. *E.g.*, 81 Fed. Reg. at 70662 (“DGN effort is variable over the course of a fishing season, as vessels may choose to fish for salmon, albacore, and other marketable species based on abundance and environmental conditions, which may mitigate some of the anticipated economic losses.”); RIR/IRFA at 14 (“The ability for DGN vessels to participate in multiple fisheries may help offset potential economic losses of potential fishery closures associated with the proposed action.”); *see also* RIR/IRFA at 4; RIR/IRFA at 11; EA at 18; EA at 67.

These statements are false and misleading. As a result, the agency has failed to prepare an accurate, and therefore meaningful, analysis on the economic impact of the Proposed Rule. It is simply untrue that members of the DGN Fishery can offset the economic harm that would result from the Proposed Rule. Attached hereto as Exhibit 3 is a chart showing the active DGN Fishery vessels and the permits they hold.⁵ These are the vessels that have made swordfish landings in the past five years. Of the 23 vessels identified, only three have permits for albacore. This fundamentally undermines the assertion in the Proposed Rule and supporting materials that “permittees may concentrate on more favorable fisheries, such as albacore” if the DGN Fishery conditions are “unfavorable.” RIR/IRFA at 4; EA at 18. Regarding other fisheries, five permittees have permits for white seabass, one permittee has a rock crab permit, and one permittee has a lobster permit. These low numbers underscore the importance of the DGN Fishery for its active participants. Indeed, nearly half of the active DGN Fishery vessels **only** have access to the DGN Fishery.⁶

⁴ To the extent that NMFS is relying on National Standard 9 to provide it with legal authority to promulgate the Proposed Rule, such reliance is misplaced. Pursuant to 16 U.S.C. § 1851(a), any FMP, and any regulation implementing any FMP, must be consistent with the National Standards. Thus, while the Proposed Rule must be consistent with the National Standards, such standards do not provide NMFS with any independent regulatory authority.

⁵ Exhibit 3 includes only those permits actively fished by each vessel.

⁶ Any assertion that deep-set buoy gear (DSBG) is a viable alternative for DGN permit holders can be easily rejected. Such an assertion ignores the fact that DSBG is the subject of an Exempt Fishery Permit

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The assertion that the participants in the DGN Fishery can mitigate or otherwise offset the economic harm that will undoubtedly result from the Proposed Rule is unfounded. If the hard caps are exceeded and the DGN Fishery is closed, these vessels will suffer significant and unavoidable economic harm. The DGN fleet could not survive such a closure. If the Proposed Rule becomes final, it is very possible that the DGN Fishery will altogether shut down because it is no longer economically viable.⁷ Such a result is contrary to the spirit and purpose of the MSA, and should be avoided at all costs.

4. The Proposed Rule Violates the National Standards.

The VCCFA's December 14, 2015 letter describes in detail how the Proposed Rule violates the MSA's ten National Standards, which are incorporated herein by reference. 16 U.S.C. § 1851(a). While these arguments are not repeated here, the VCCFA wishes to emphasize the following:

a. National Standard 1

National Standard 1 states: "Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield ["OY"] from each fishery for the United States fishing industry." 16 U.S.C. § 1851(a). The Proposed Rule will not allow the DGN Fishery to achieve OY. The hard caps have the potential to shut down the DGN Fishery for nearly two fishing seasons. It simply cannot follow that this will allow the DGN Fishery to achieve OY. Indeed, as set forth in the charts attached hereto as Exhibit 4, domestic swordfish production only supplies a small percentage of U.S. demand. If the DGN Fishery is unable to participate in two fishing seasons, the gap between the current state of the fishery and the achievement of OY will only widen.

b. National Standard 2

National Standard 2 requires the Council and NMFS to ensure that FMPs are "based upon the best scientific information available." 16 U.S.C. § 1851(a)(2). As described above, the Proposed Rule does not reflect the best information available with respect to the permits held by the active DGN participants, or the ability of these participants to mitigate the economic harm that will undoubtedly result from the hard caps. For this reason alone, the Proposed Rule fails to comply with National Standard 2.

In addition, several expert advisory teams have noted that the Proposed Rule does not appear to be based on the best available scientific information. Specifically, the Marine

(EFP), and therefore is experimental in nature. It is not a valid, federally permitted gear type for the HMS fishery, and cannot be relied upon as a meaningful way to offset the economic harm that will be caused by the Proposed Rule.

⁷ To that end, the Proposed Rule will negatively impact the transferability of the DGN Fishery's permits. The average age of a DGN Fishery permittee is 65. Even without the proposed hard caps, the future size of the fleet will naturally decline in the near future due to, among other things, transferability eligibility requirements. If the Proposed Rule becomes final, the DGN Fishery permits will become virtually worthless. No one will buy a DGN Fishery permit that is subject to the Proposed Rule. With no new entrants to the fishery, it will shut down, eliminating DGN Fishery opportunities for future generations.

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Mammal Commission stated: “The Commission is concerned that the [Council’s] proposed measures are rather blunt, are **not based on the best available science**, do not reflect the most recent estimates of bycatch rates (and their variances), and would not reduce the probability of fishery interactions with marine mammals while the fishery is operating.” See Exhibit 1 (emphasis added). Similarly, the POCTRT stated that it “has identified serious concerns with the proposed bycatch reduction concept and design (the imposition of ‘hard-caps’), and finds that it is **not based on the best available science**.” See Exhibit 2 at 3 (emphasis added); see also *id.* at 5-6. In addition, the HMS Advisory Subpanel recommended against the adoption of hard caps because it “considers hard caps to be a very regressive management tool especially when other options are available.”⁸ HMSAS Report on Swordfish Management and Monitoring Hardcaps (attached hereto as Exhibit 5). The HMS Advisory Subpanel further stated that the proposed hard caps are “**contrary to science** and the strong advice from the Marine Mammal Commission and the NOAA Assistant Administrator for Fisheries, Eileen Sobeck.” HMSAS Comments on Items Not on the Agenda (attached hereto as Exhibit 6) (emphasis added);⁹ see also *id.* (“The numbers accepted on the hard caps go beyond what is necessary for the protection of the affected species....The inflexible nature of hard caps discourages fishermen from achieving the primary objective of the MMPA, which is to maintain optimum sustainable populations of marine mammals.”). By ignoring the recommendations of its own scientific experts and advisors, NMFS has failed to use the best available science in violation of National Standard 2.

c. National Standard 8

National Standard 8 requires the Council and NMFS to “take into account the importance of fishery resources to fishing communities by utilizing economic and social data ... in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.” 16 U.S.C. § 1851(a)(8). As applied here, and as described above, NMFS’s analysis of the Proposed Rule’s economic impact on the DGN Fishery is fatally flawed. It is based on faulty assumptions relating to the active participants’ ability to offset economic harm, and ignores that the Proposed Rule will result in a fishery that is not economically viable. This is a clear violation of National Standard 8. Indeed, as explained by the HMS Advisory Subpanel, “[t]here are new tools being developed to reduce interactions with marine mammals through technology and gear modification that are showing promise and need to be explored.” See Exhibit 5. Similarly, the POCTRT urged the Council to reject the hard caps because reducing take of marine mammals will “be most effectively and efficiently achieved” through the POCTRT process (implemented under the MMPA), and because the hard caps will impose “a possibly unnecessary and severe economic burden on the participants.” See Exhibit 2. Yet, NMFS has ignored these recommendations in violation of National Standard 8.

⁸ See http://www.pcouncil.org/wp-content/uploads/2015/09/G2a_SUP_HMSAS_Rpt_SEPT2015BB.pdf.

⁹ See http://www.pcouncil.org/wp-content/uploads/2015/11/B1a_Sup_REVISED_HMSAS_Rpt_HardCapsIntl_Nov2015BB.pdf.

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d. National Standard 9

National Standard 9 states: “Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.” 16 U.S.C. § 1851(a)(9). The Proposed Rule states that it is intended to address National Standard 9. Notably, however, the Proposed Rule ignores the established hierarchy of the National Standards. Specifically, National Standards 1 and 2 use the word “shall,” while National Standards 8 and 9 are modified by the phrase “to the extent practicable.” Accordingly, the National Standards that are stated as a mandate must be given higher priority by NMFS than the National Standards that are only to be applied “to the extent practicable.” As applied here, NMFS has acted unlawfully by placing a higher priority on National Standard 9 than on National Standards 1 and 2.¹⁰

5. **Other Considerations.**

a. The Proposed Rule will result in Conservation Leakage.

Conservation leakage occurs when unilateral marine conservation actions shift ecosystem impacts elsewhere. As recently explained: “Conservation leakage results when domestic measures to conserve resources lead to negative environmental impacts from an increase in foreign production to meet persistent demand.” M. Helvey, et. al, *Can the United States Have Its Fish and Eat It Too?*, Marine Policy 75 (2017), 62-67 (attached hereto as Exhibit 7).

As respects the DGN Fishery, Helvey et al. explains how the Pacific Leatherback Conservation Area has resulted in significant conservation leakage:

Squires et al. provide another example of leakage associated with a time-area closure in the West Coast drift gillnet (DGN) swordfish fishery. In an effort to reduce fishery interactions with the endangered leatherback sea turtle, NMFS established the Pacific Leatherback Conservation Area (PLCA), which overlaps substantially with the DGN fishing grounds along the U.S. West Coast. Since 2001, this time-area closure has prohibited DGN fishing for three months during the prime swordfish fishing season. The authors’ benefit-cost analysis of the regulation’s impacts determined a U.S. production leakage of \$27.5 million due to lost producer and consumer surpluses in the West Coast fishery with increased imports. In addition, the transfer of swordfish effort to other Pacific Rim nation swordfish fleets is estimated to have caused a conservation leakage of an **additional bycatch of 1457 endangered leatherback sea turtles compared to 45 turtles had the U.S. fishing grounds remained open.**

¹⁰ The MSA defines the term “bycatch” to specifically exclude marine mammals. See 16 U.S.C. § 1802(2); 16 U.S.C. § 1802(12). Not only does the Proposed Rule incorrectly use the term “bycatch” to refer to take of marine mammals, but NMFS’ reliance on National Standard 9 (which, by definition, does not refer to marine mammals) to justify the Proposed Rule is entirely misplaced.

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Id. at 64 (emphasis added); see also H. Gjertsen, *Cost-Effectiveness of Alternative Conservation Strategies with Application to the Pacific Leatherback Turtle*, Conservation Biology, Vol. 28, No. 1, 140-149 (attached hereto as Exhibit 8).

The impact of conservation leakage is significant. As applied here, the Proposed Rule will undoubtedly result in increased harm to listed species and other protected marine mammals in other parts of the world. To that end, the Proposed Rule is short-sighted, by ignoring the far-reaching implications of it as a regulatory scheme. The VCCFA encourages NMFS to consider these impacts, and how the transfer of the DGN Fishery's efforts to other areas in the Pacific Rim will harm the very species that the Proposed Rule is intended to protect.

b. Impacts to Marine Mammals are Minimized under the Current Regulatory Regime.

As described above and in the VCCFA's December 14, 2015 letter, the POCTRT developed a take reduction plan and issued management measures to implement that plan in 1997. The DGN Fishery's compliance with these requirements has resulted in the substantial reduction and/or elimination of marine mammal bycatch.

Because of the success of the POCTRT's recommendations, it was unnecessary to reconvene the team for over a decade. However, in 2010, two endangered sperm whales (California/Oregon/Washington stock) were killed or seriously injured, which exceeded the potential biological removal ("PBR") for that stock. The POCTRT was immediately reconvened, whereupon it quickly crafted emergency measures that were designed to ensure that take would not exceed PBR again while continuing to allow the DGN Fishery to operate. 78 Fed. Reg. 54548 (Sept. 4, 2013).

It has been widely recognized that this process was extremely successful. The MMPA's protocol, involving the POCTRT, is extremely effective. Among other reasons, this is because it (1) includes marine mammal and fishery experts, (2) involves consensus-based decisions, and (3) requires a close working relationship between scientists and managers within NMFS. Indeed, it is important to note that the POCTRT opposes the Proposed Rule, as it "has identified serious concerns with the proposed bycatch reduction concept and design (the imposition of 'hard-caps'), and finds that it is not based on the best available science." See Exhibit 2 at 3; see also *id.* at 5-6.

The example of the sperm whales, and the DGN Fishery and the POCTRT's responses thereto, demonstrate that the Proposed Rule is simply unnecessary.

c. The Proposed Rule Contravenes the MMPA.

In general, the MMPA establishes a moratorium on the taking and importation of marine mammals, subject to certain exceptions. 16 U.S.C. § 1371. The exception for commercial fishing is set forth in Section 118. 16 U.S.C. § 1378. Among other things, Section 118 includes provisions relating to the establishment of PBR to evaluate the level of threat to a marine mammal stock, the classification of fisheries according to such threats, and providing for the management of such threats by take reduction plans. *Id.* Taken together, these provisions—and only these provisions—authorize the take of marine mammals incidental to commercial

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fishing. But, without complying with Section 118, the Proposed Rule in effect authorizes the incidental take of marine mammals up to the “hard cap” limit specified for each species. Put another way, under the Proposed Rule, the “hard cap” is essentially an authorization to take up to that limit, which directly contravenes the MMPA. The MMPA is the only mechanism whereby commercial fisheries may incidentally take marine mammals. As described above, it is undisputed that the DGN Fishery complies with the MMPA, the incidental take limits established thereby, and the take reduction plan measures established by the POCTRT. The Proposed Rule, however, steps outside the confines of the MMPA, and establishes incidental take limits without any authority to do so. As previously explained by the VCCFA in the December 14, 2015 letter, Congress intended for the MMPA (and the ESA, as applicable) to govern the management of marine mammals and other imperiled species. The Proposed Rule is an unconscionable abuse of power by the Council and NMFS that is fundamentally inconsistent with Congressional intent, and the comprehensive statutory scheme that Congress enacted.

d. No Population Viability Analysis was Performed.

In *Hawaii Longline Ass'n. v. Nat'l Marine Fisheries Serv.*, 281 F. Supp. 2d 1 (D.D.C. 2003), representatives of the Hawaii-based pelagic longline fishery challenged regulations intended to protect endangered sea turtles, and the related biological opinion. The United States District Court for the District of Columbia invalidated the regulations and biological opinion, holding that they were arbitrary, capricious, and not in accordance with law. Thereafter, in *Turtle Island Restoration Network v. U.S. Dep't of Commerce*, 834 F. Supp. 2d 1004 (D. Haw. 2011), aff'd, 672 F.3d 1160 (9th Cir. 2012), environmental groups challenged the 2008 biological opinion setting forth the interaction limits for loggerhead and leatherback sea turtles. Pursuant to a 2011 consent decree, the court ordered NMFS to issue a new biological opinion for the longline fishery.

In revising the biological opinion and setting the new interaction limits, NMFS performed a population viability analysis (“PVA”) for both the loggerhead and leatherback sea turtles. A PVA is a species-specific method of risk assessment that determines the probability that a population will go extinct within a given number of years. Based on the revised biological opinion and the related incidental take statement, NMFS ultimately set the interaction limits as 26 for leatherback turtles and 34 for loggerhead turtles. See 77 Fed. Reg. 34334 (Jun. 11, 2012); 77 Fed. Reg. 60637 (Oct. 4, 2012).

Here, without any explanation, NMFS has departed from this methodology in developing the Proposed Rule. As one court stated: “[A]gencies do not have carte blanche.... An agency cannot merely flit serendipitously from case to case, like a bee buzzing from flower to flower, making up the rules as it goes along.” *Henry v. INS*, 74 F.3d 1, 6 (1st Cir. 1996) (citations omitted); see also *National Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967, 981 (2005) (“[u]nexplained inconsistency is ... a reason for holding an interpretation to be an arbitrary and capricious change from agency practice under the Administrative Procedure Act”); *National Treasury Employees Union v. Federal Labor Relations Auth.*, 404 F.3d 454, 457-58 (D.C. Cir. 2005) (agency’s “failure to follow its own well-established precedent without explanation is the very essence of arbitrariness”). Yet, NMFS has failed to perform a population viability analysis in developing the Proposed Rule. Without such an analysis, as in the lawsuits described above, the hard caps set forth in the Proposed Rule are arbitrary, capricious, and not in accordance with law.

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e. The Proposed Rule Will Become Obsolete Once Observer Coverage Increases.

As recognized by the Proposed Rule, observer coverage in the DGN Fishery is currently 30 percent. 81 Fed. Reg. at 70660. As also recognized by the Proposed Rule, the Council “recommended hard cap values for when the DGN observer coverage level is less than 75 percent; the Council will revisit hard cap values when observer coverage becomes greater than 75 percent.” As a practical matter, the Council intends to increase observer coverage in the near-term. Thus, the Proposed Rule will become obsolete once observer coverage increases, but not without potentially causing great harm to the DGN Fishery.

f. It is Problematic that the Proposed Rule is Not Tied to ESA and/or MMPA Standards.

The hard caps set forth in the Proposed Rule are based on PBR for marine mammals, as developed under the MMPA, and on incidental take statements for listed-species, as developed under the ESA. *E.g.*, EA at 11. The hard caps, however, will not automatically change if PBR or incidental take numbers change. This is extremely problematic, and conflicts with the very purpose of the MMPA and ESA. Indeed, the purpose of the MMPA is to achieve optimum sustainable populations of marine mammals; the purpose of the ESA is protect, conserve, and promote the recovery of imperiled species. If the populations of these species increase (as is intended), it follows that interactions with the DGN Fishery will also likely increase. Any hard caps should be adjusted to reflect any increase in population. Without such an adjustment mechanism, it becomes increasingly more likely that an interaction will occur, and the DGN Fishery will be shut down. To impose this risk on the fishery, with no way to alleviate the risk as populations recover and grow, will be catastrophic.

6. Conclusion

The Proposed Rule is legally unauthorized, does not reflect up-to-date information regarding economic harm, and will result in an economically unviable DGN Fishery. For the reasons set forth above, the VCCFA requests that NMFS reconsider the Proposed Rule, and move forward in a manner that is consistent with the MSA and other applicable law.

Please do not hesitate to contact me regarding any of the issues discussed above.

Sincerely,



Ashley J. Remillard
Jay Sterne
of Nossaman LLP

AJR:ajr
Enclosures

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cc: Eileen Sobeck, Assistant Administrator for Fisheries
Samuel D. Rauch, III, Deputy Assistant Administrator for Regulatory Programs
Donna Wieting, Chief, Office of Protected Resources Division
Rebecca Lent, Executive Director, Marine Mammal Commission

EXHIBIT 1



MARINE MAMMAL COMMISSION

26 June 2015

Eileen Sobeck, Assistant Administrator for Fisheries
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

Dear Ms. Sobeck:

The Marine Mammal Commission (Commission) has been following the recent proposal from the Pacific Fishery Management Council (PFMC) to address marine mammal bycatch in the California thresher shark/swordfish ($\geq 14''$ mesh) drift gillnet (DGN) fishery.¹ This letter highlights some of the Commission's concerns with the proposed bycatch measures, as well as with procedural issues associated with the PFMC's development of those measures.

The Commission is grateful for the opportunity to have a staff member serve on the Pacific Offshore Cetacean Take Reduction Team (POCTRT). The POCTRT has seen much success over the past two decades, achieving reductions in marine mammal bycatch and even meeting the zero mortality rate goal for most stocks. The PFMC is now proposing to implement a bycatch reduction measure independent of those already in place, by setting hard caps on the allowable bycatch of Endangered Species Act (ESA)-listed marine mammals, as well as on certain non-listed marine mammal stocks. It is not clear how the PFMC measures would be implemented vis-à-vis those already in place under the Take Reduction Plan applicable to this fishery, or currently under evaluation by the POCTRT, and under the applicable incidental take permit for sperm and humpback whales. Specifically, would the measures proposed by the PFMC supersede or supplement the measures adopted under the Marine Mammal Protection Act (MMPA) and, if there were inconsistencies, which would take precedence and how would the differences be reconciled?

The Commission is concerned that the PFMC's proposed measures are rather blunt, are not based on the best available science, do not reflect the most recent estimates of bycatch rates (and their variances), and would not reduce the probability of fishery interactions with marine mammals while the fishery is operating. At recent POCTRT meetings, team members reviewed information and considered advice from Southwest Fisheries Science Center scientists with expertise in marine mammal population dynamics on the use of permanent hard caps of the sort being recommended by the PFMC. The team agreed with NMFS scientists that hard caps would be inappropriate for managing marine mammal interactions that are "rare events" and involve long-lived species. Finally, shutting down the fishery when a cap is reached would require in-season monitoring (something not currently in place and not possible under the current monitoring system) and seems more burdensome to the fishery than necessary for meeting MMPA requirements concerning the mortality and serious injury of marine mammals in commercial fisheries.

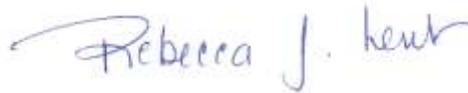
¹ Also known as the West Coast large mesh swordfish drift gillnet fishery.

Eileen Sobeck
29 June 2015
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The Commission appreciates the PFMC's interest in marine mammal protection from the fisheries under its jurisdiction. However, the Commission believes that close consultation and coordination with the POCTRT is the best approach to ensure that the marine mammal bycatch expertise on the POCTRT is reflected in the development of alternatives.

The Commission welcomes an opportunity to discuss this issue with you during our next in-person meeting.

Sincerely,

A handwritten signature in blue ink that reads "Rebecca J. Lent". The signature is written in a cursive style with a long horizontal flourish at the beginning.

Rebecca J. Lent, Ph.D.
Executive Director

cc: Samuel D. Rauch, III
William W. Stelle, Jr.
Donna S. Wieting
Christopher E. Yates

EXHIBIT 2

Pacific Offshore Cetacean Take Reduction Team

8 May 2015

Agenda Item E.3.a
NMFS Report
June 2015

TO: Eileen Sobeck, Assistant Administrator for NOAA Fisheries

CC: Richard Merrick, Director, Scientific Program and Chief Science Advisor
Donna Wieting, Chief, Office of Protected Resources Division
Alan D. Risenhoover, Chief, Sustainable Fisheries Division
Samuel D. Rauch, III, Deputy Assistant Administrator for Regulatory Programs
Adam Issenberg, Chief, Fisheries and Protected Resources Section, NOAA
Office of General Counsel
Will Stelle, West Coast Regional Administrator
Rebecca Lent, Executive Director, Marine Mammal Commission
Members, POCTRT

FROM: Pacific Offshore Cetacean Take Reduction Team (signatories listed below)

DATE: May 8, 2015

RE: Pacific Fishery Management Council Proposed Hard Caps on Marine Mammal
Bycatch in the Drift Gillnet Fishery

INTRODUCTION

We are writing to express several serious concerns regarding the Pacific Fishery Management Council's (PFMC) proposed "hard caps" on the bycatch of strategic stocks of marine mammals in the California/Oregon drift gillnet (DGN) fishery for thresher shark and swordfish.

As required by the Marine Mammal Protection Act, the Pacific Offshore Cetacean Take Reduction Team (POCTRT) was convened in 1996 in response to excessive bycatch of marine mammals in this fishery to develop a Take Reduction Plan (TRP) for reducing that bycatch. The POCTRT has been intimately involved in the development of bycatch reduction measures in this fishery, which largely have been adopted and implemented by NMFS, and have proved to be successful for the last 20 years (including the achievement of the zero mortality rate goal (ZMRG) for most stocks over that same period).

We believe that the TRT system provides the most effective and appropriate process for addressing bycatch reduction, and do not believe that the PFMC's proposed measures will improve the management of marine mammal bycatch in the DGN fishery. The bycatch of strategic stocks in the DGN fishery has become a relatively rare event, the importance of which we do not downplay, but we continue to work closely with the agency to understand its complexity and to achieve further reductions.

We laud the desire of the PFMC to reduce bycatch and support their efforts to reduce non-target fish bycatch in fisheries. We also commend their desire to reduce the bycatch of marine mammals in the DGN fishery, but believe that this goal has been and will

continue to be most effectively and efficiently achieved through the TRT process. This position reflects our consideration of several significant issues which we discuss herein.

BACKGROUND AND ELEMENTS OF TRT SUCCESS

The POCTRT was convened in 1996 to reduce bycatch of marine mammals in the DGN fishery, specifically addressing incidental serious injury and mortality of Baird's beaked whales, Cuvier's beaked whales, beaked whales in the genus *Mesoplodon*, short-finned pilot whales, pygmy sperm whales, sperm whales, and humpback whales. Following its inception, the team met 5 times in 5 months to create a consensus-based plan to reduce marine mammal bycatch in the DGN fishery.

POCTRT Composition, Actions and Success

The POCTRT was and continues to be made up of experts on marine mammals, the California and Oregon marine ecosystems, and the DGN fishery. The team includes experts from federal agencies, state agencies, DGN fishermen, scientists, and representatives of environmental NGOs. The team worked diligently to produce a TRP, the first to be created with the complete consensus of its TRT. The team carefully considered the factors responsible for the bycatch of several species, and designed mitigation measures to reduce the risk – primarily the use of pingers, training workshops and gear modification (e.g., extenders), and a voluntary reduction in the number of permits, which resulted in a significant reduction in the size of the fleet. Management measures called for in the TRP were implemented in 1997 and were likely responsible for a substantial reduction (and in some cases, elimination) in the bycatch of key species of marine mammals (Carretta et al., 2008). Because of that success it was not necessary to reconvene the team until very recently.

Timely Team Reconvening and Process Design

In 2010, two endangered sperm whales (California/Oregon/Washington stock) were killed or seriously injured, which pushed the bycatch rate above the potential biological removal (PBR) for that stock. The team was reconvened, whereupon it quickly crafted emergency measures that were designed to ensure that take would not exceed PBR again while continuing to allow the fishery to operate as long as possible (Emergency Rule 78 FR 54548, September 4, 2013). At the same time, in response to the POCTRT recommendations, NMFS investigated the status of CA/OR/WA sperm whales, the factors contributing to their bycatch, and improved methods for assessing the magnitude of the bycatch when such events are rare.

This process, which is still ongoing, has resulted in an emerging consensus that the sperm whale bycatch rate in this fishery since 2001 is below PBR and is not a serious threat to the viability or recovery of the population. Nonetheless, the POCTRT is continuing to

work toward the development of long-term management measures that will ensure that bycatch of sperm whales and other species remains below PBR and is further reduced toward ZMRG.

The effectiveness of this process has not been an accident. It is the direct result of the design of the TRT system as crafted in the MMPA. Key features are 1) the inclusion of experts on marine mammals and the fishery from several sectors, 2) the close working relationship of the team with scientists and managers within NMFS, and 3) the ability of the team to reach consensus decisions. In addition, the plan is comprehensive, covering management measures, needed research, public outreach, and monitoring. We are concerned in part because the PFMC's proposed measures share few of these characteristics.

ISSUES OF GREATEST CONCERN IN THE PFMC'S PROPOSAL TO IMPLEMENT "HARD CAPS"

Stemming from its recently stated goal to reduce bycatch of finfish and protected species in the DGN fishery the PFMC has proposed to impose "hard caps" with respect to the taking of several marine mammal species/stocks. While the goal is commendable, the TRT has identified serious concerns with the proposed bycatch reduction concept and design (the imposition of "hard-caps"), and finds that it is not based on the best available science.

In its Preferred Alternative, the PFMC has proposed to close the fishery for the remainder of a fishing season if more than a single sperm or humpback whale or two fin whales is/are killed or seriously injured in the fishery. There are several problems with this proposal.

- Hard caps as long-term management measures have been considered by the POCTRT and rejected for use in a situation where interactions are rare and sporadic. Dr. Jeff Moore (Protected Resources Division, Southwest Fisheries Science Center) presented an assessment of the use of "hard cap" as a bycatch reduction measure at the last POCTRT meeting.¹ Dr. Moore pointed out that annual hard caps are not appropriate for interactions in the DGN fishery because 1) of the prolonged life histories of marine mammals and slow reaction to low levels of mortality for the species of concern; 2) estimates of take within an annual time frame are highly prone to error unless observer coverage is close to 100%; 3) the Preferred Alternative enforces a lower limit than the targeted bycatch level under MMPA, which is statistically within the ZMRG averaged over time; 4) the Preferred Alternative is likely to produce over-reactive management, resulting in volatile decision making, and instability in the fishery, which can incentivize 'bad behavior'; 5) hard caps are not consistent with the agency's "best practices" (NOAA Guidelines for Assessing Marine Mammal Stocks; NMFS 2005, Moore and Merrick 2011) and default recommendation to

¹ Dr. Moore made a similar presentation to the HMS Management Team in February 2015

evaluate the effect of bycatch over multiple years; and 6) they are difficult to operationalize.

- The POCTRT recognizes that in certain, likely short-term circumstances a hard cap might be appropriate. For example, in response to the 2010 bycatch of two sperm whales the POCTRT recommended a hard cap to prevent bycatch from exceeding PBR in the near future, which resulted in the issuing of Emergency Rule 78 FR 54548 on September 4, 2013. In that circumstance the cap was carefully designed as a short-term measure to take into account the dynamics of the fishery, its interactions with the marine mammals, and the latest science. The Council has not taken this approach. The Council's Preferred Alternative proposes permanent hard caps, without consideration for future adaptive management such as changes to marine mammal populations, permit latency, or their identification/integration with long term management goals for the fishery.
- Of particular concern, is the potential volatility in long-term management resulting from proposed annual hard caps based on rare events. Although there have been conservative annual hard caps or quotas instituted/considered under the Magnuson-Stevens Act (MSA) to address bycatch of overfished fish species or incidental take of quota-managed species by the NPFMC and the PFMC, there are some important differences. Hard caps/quotas on finfish, although in some cases very conservative, are capping take of metric tonnage of thousands or hundreds of individuals. Fishery managers are able to monitor catch in-season and project when a quota is likely to be reached, thus reducing volatility and maintaining an orderly fishery during the management process. However, bycatch of marine mammal species in the DGN fishery are rare events, involving one or two individuals only and with statistical occurrences averaging close to zero over several years. And, importantly those events cannot be "projected." The rarity and dynamics in these events are characteristically different than bycatch of finfish managed under caps or quotas.
- The Council's Preferred Alternative would apply hard caps to fin, humpback and sperm whales. These species (stocks, actually) were selected because their latest 5-year averages of serious injury and mortality were greater than their ZMRGs (10% of PBR). The Council proposal based the hard caps on the 'expected take' numbers in the "Incidental Take Statement" (ITS) contained in the May 2013 Biological Opinion regarding marine mammal bycatch in the DGN fishery. Based on analyses conducted in 2012 by marine mammal population-dynamics experts at the Southwest Fisheries Science Center, the ITS established an 'anticipated annual take' of up to 2 fin whales, 1 sperm whale, 1 humpback whale. These values were derived from historical information from the fishery "that [was] considered to be consistent with the manner of current and future operation of this fishery." The anticipated take is an expected number of takes based on the average, five-year bycatch rate. NMFS was able to issue a permit for the take of these species because the bycatch rate, reflected in the ITS, was below PBR, which enabled NMFS to make a Negligible Impact Determination

(NID) under the MMPA. Whether considering the permit and NID, or the ITS, the appropriate response under the MMPA to bycatch that exceeds the ITS expected take or PBR is the reexamination of the situation by the TRT and NMFS. Closure of the fishery in this situation would prevent further bycatch for the remainder of the fishing season, but would not lead to better understanding of the factors that contributed to the bycatch or whether the operation of the fishery had changes, or to improved bycatch reduction measures.

PFMC Preferred Alternative Is Not Based on Best Available Science and Lacks a Clear Rationale

- The PFMC has not used the best available science in selecting the values of its proposed hard caps. Extensive research and application of model-based approaches by marine mammal stock assessment and population dynamics scientists in the SWFSC Protected Resources Division have substantially refined the estimates of the long-term bycatch rate, the expected bycatch and its variance in a given year. That work has vastly improved the state of the science beyond that which informed the 2013 ITS. By taking numbers from the 2013 ITS the Council is proposing to base bycatch management on outdated information.
- The Council, in selecting the species to manage through hard caps and in establishing its basis for the hard caps, has made a number of decisions that appear arbitrary and lacking in scientific justification, because they are not supported by a clear rationale and lack an analytical basis. For example, the Preferred Alternative states that for fin whales the hard cap is “set above the estimated one-year take in the ITS, recognizing that [this] species [is] infrequently encountered in the DGN fishery so expected take is less likely to trigger a jeopardy determination.” The Council provides no justification for what ‘encounter frequency threshold’ was used, what its basis was, or on what basis they selected the increment to add to the cap.
- The Council acknowledges that “DGN fishery currently complies with all applicable laws, including the MSA, ESA, and MMPA,” and “seeks to establish more stringent standards with respect to these laws,” but does not provide a reason for why “more stringent standards” are needed or what goals would be achieved. This is especially puzzling given the success of the TRT process in reducing bycatch to very low levels in this fishery.
- The Council states that “[t]he proposed action is needed to better integrate fishery management under the HMS FMP with enhanced protection of ESA-listed species and other marine mammals,” but does not explain how it would lead to better integrated management or why that is necessary.

- The Council proposes establishing performance standards for non-ESA listed stocks, but does not explain why they are needed, or why they are not needed for listed stocks.
- The Council does not explain how hard caps would reduce bycatch of protected species, or by how much. There is no explanation of why they are needed in addition to the measures that result from the TRT process, or, why they would be an improvement.

ANTICIPATED IMPLEMENTATION CHALLENGES STEMMING FROM SHORTCOMINGS IN PFMC'S PROPOSAL

In addition to concerns that the Council's proposal is not adequately specified and lacks basis on the best available science, the proposal presents many implementation concerns and would likely create a number of problems, as described below.

- The management measures based on the recommendations of the POCTRT have been successful in part because of the responsive and adaptive TRT process. The Council's proposal lacks a mechanism to modify the caps when estimates of PBR or serious injury and mortality change.
- The imposition of hard caps would require in-season monitoring of fishery effort and bycatch, something that cannot be done now. The Council's proposal suggests an in-season monitoring system similar to that used in the Hawaii deep-set longline fishery could be used, but without assessing whether such a scheme could be implemented in the West Coast region for the DGN fishery. We note that, the Hawaii longline fishery's monitoring system works because it is managed under the TRP devised by the False Killer Whale Take Reduction Team.
- Although the Council's stated goal is the reduction of bycatch in general, the Council's proposal does not demonstrate how the caps would achieve that goal or how it would specifically reduce marine mammal bycatch in the long run. Under the TRT process, bycatch that exceeds some pre-defined threshold typically triggers additional analysis and research, and the consideration by the TRT of the factors responsible for the bycatch, so that measures can be adapted to reduce bycatch risk while allowing the fishery to operate. Although the Council's proposal would reduce bycatch by preventing further takes in the same fishing season, it would do so by closing the fishery and imposing a possibly unnecessary and severe economic burden on the participants.
- Because the Council's caps rely on reference points developed under the MMPA and ESA for other purposes, the Council in effect is using the MMPA and ESA inappropriately and as a very blunt instrument to try to regulate the bycatch of protected species.

- The implementation of hard caps by the Council would be seen by the fishermen (and likely other TRT members) as superseding the management coming from the TRT process. That could create a disincentive to their participation on the TRT, which would greatly diminish the effectiveness of the TRT.
- The DGN fishery operates with very slim profit margins and is able to support only a small number of boats. The imposition of a 'hard cap' system, with the potential for periodic full closures of the fishery could make the fishery economically unviable.

PFMC PROPOSAL'S IMPACTS ON NMFS' MANAGEMENT OF THE DGN FISHERY

Because the Council is operating independently of the POCTRT, the implementation of the Council's proposal would require NMFS to employ protected species bycatch management measures under the MSA separately from those implemented under the MMPA and the ESA through the TRT process. This precedent has the potential to create several management problems for, or at the very least create considerably more work by, NMFS to reconcile or integrate the different measures, such as:

- Overlapping and uncoordinated responsibilities
- Conflicting management measures and goals
- Break-down of what is now a clear separation of authority and responsibilities
- Duplication of effort
- Potentially less effective management
- More costly management
- Decreased support from stakeholders

RISKS OF UNCOORDINATED CO-MANAGEMENT OF MARINE MAMMAL BYCATCH IN THE FISHERY

There is nothing inherently wrong with developing management measures under more than one authority, or implementing them through more than one division within NMFS. Indeed, the POCTRT, working closely with the Protected Resources Division (PRD), addresses the requirements of the ESA and the MMPA, and when necessary NMFS has implemented the recommendations of the POCTRT under the MSA. In addition, the POCTRT regularly consults and works with the Sustainable Fisheries Division (SFD). However, few of these elements are at work at the Council.

The Council is not working closely with the POCTRT or the PRD, and is instead developing measures largely independently, presumably working with the SFD. This is a concern because of the obvious inefficiency of such a system, but also because unlike the POCTRT working with the PRD and SFD, the Council working with the SFD alone does not fully possess the experience and expertise to enable the crafting of effective measures to manage the bycatch of marine mammals.

Precedent-Setting Consequences Are of Concern

The PFMC's actions have the potential to set a precedent for other Councils to become involved in reducing marine mammal bycatch under the MSA instead of, or in addition to, the MMPA. Such an approach potentially suffers from all the problems described herein, and runs the risk of undermining the TRT system. We believe this precedent could lead to a duplication of effort, inefficient management, likely increased economic burden on the agency, and increased risk to protected resources for the following reasons:

- The MSA and the parts of the MMPA that address bycatch each have a very different focus – fish yield first and other species second *versus* the explicit problem of reducing the bycatch of marine mammals that interact with commercial fisheries.
- The MSA and MMPA/ESA reflect different mandates – the optimal exploitation of fish resources *versus* the protection of marine mammal species and populations. It does not make sense to try to manage marine mammal bycatch under the MSA. It was not designed for that task (bycatch is defined under the MSA as finfish), unlike the MMPA, and doing so is likely to produce less effective management.
- The MSA and MMPA/ESA have different management objectives. The same underlying surplus-production population-dynamics modeling framework is used to define benchmarks and reference points, but the way in which the model is used is very different – achieving maximal/optimal yield while secondarily minimizing incidental impacts *versus* achieving and maintaining OSP (not MSY or OY) and identifying the maximum take levels that do not compromise that goal.
- The MSA and MMPA establish different conservation/protection models – fishing is allowed until a negative impact is identified *versus* the precautionary approach, in which activities are permitted only if they are shown not to have an impact.
- The Council operates under a majority-rule decision-making model, while the POCTRT operates under a consensus-based decision-making model. We believe that the latter has a proven track record and is more effective at dealing with the complex interaction between protected species and fisheries. That the Council operates under majority rule, may in part explain why it has not been responsive to two of its expert committees (HMSMT and HMSAS), both of which have expressed strong concerns with implementation and utility of the hard cap proposals for the DGN Fishery
- The Council and the POCTRT use different stakeholder participation models. Participation in the Council is driven by self-interest, whereas the TRT is collaborative, and membership on the TRTs is mandated by the MMPA to include the full range of relevant stakeholders and experts specific to bycatch reduction.

There is no mechanism or requirement that a Council will have a balanced representation of stakeholders or individuals with the requisite experience and expertise to address marine mammal bycatch issues. In contrast, there is a great deal of effort that goes into making sure that TRTs have the necessary balance and range of expertise/experience. Indeed, consensus by a TRT requires the participation of all of the requisite sectors (federal government, state government, members of each fishery involved, scientists, and environmental NGO representatives).

The Council's basis and operating model have proven effective in recent years at sustainably management fishing, however that model does not have a similarly successful track record with respect to reducing bycatch.

CONCLUSIONS AND RECOMMENDATIONS

While the POCTRT appreciates the Council's desire to address marine mammal bycatch, MMPA Section 118 was purposefully enacted as the process for governing incidental commercial fishery takes, and was provided with support provisions (Section 117) that set up a process for the identification, quantification, and continual monitoring, assessment and adjustment (Scientific Review Groups & Stock Assessment Reports) of marine mammal stock status (PBRs). TRTs convene when necessary, evaluate bycatch in relation to stock status, and recommend fishery changes with the direct participation of all stakeholders. The Council process is simply not structured or funded to carry out that process, nor does it have the experience and expertise with marine mammals and protected species bycatch to be successful.

Nonetheless, the Council and NMFS's SFD have substantial experience and expertise with the management of fisheries, gear and fishing practice modification, and working with fisheries to achieve mutually beneficial outcomes. That experience and expertise would most effectively contribute to the improved bycatch reduction of marine mammals if used to augment the efforts of the TRT. The POCTRT suggests that the Council could enhance or improve the measures developed by the TRT by contributing its knowledge and expertise to the POCTRT, rather than trying to develop potentially competing and conflicting management measures independently of the POCTRT. One step in this direction has been the appointment of a Council representative to the POCTRT. We welcome the proposed appointment of David Crabbe as Council representative on the POCTRT and believe this will greatly assist our two groups in working together to reduce bycatch in the DGN fishery. The Council and the POCTRT share a significant common goal, and we believe that the Council can be most effective at reducing marine mammal bycatch by integrating its efforts into the TRT process.

Finally, we thank you for your consideration of these points and ask that this letter be shared with the Council – both as part of the read-ahead package and at the June meeting itself.

This letter was reviewed and formally endorsed by the following Team members:

Hannah Bernard, President, Hawai'i Wildlife Fund

John Calambokidis, Cascadia Research

Chuck Cook, The Nature Conservancy

Kathy Fosmark, Alliance of Communities for Sustainable Fisheries

Doyle Hanan, Hanan & Associates, Inc.

Jim Harvey, Director, Moss Landing Marine Laboratories

David Haworth, Commercial Fisherman (alternate)

Taryn Kiekow Heimer, Staff Attorney, Marine Mammal Project, Natural Resources Defense Council

Michelle Horeczko, Senior Environmental Scientist, California Dept. of Fish and Wildlife, Marine Region

Chuck Janisse, Alliance of Communities for Sustainable Fisheries

Donald Krebs, Commercial Fisherman

Arthur Lorton, Commercial Fisherman

Two additional Team members – Kristy Long and Tina Fahy, both with NOAA Fisheries – recused themselves consistent with the role of Agency members in decision-making outlined in the TRT Protocols. *Two other members, David Hanson and Dennis Heinemann, have recused themselves given the roles of their organizations (Pacific States Marine Fisheries Commission and Marine Mammal Commission, respectively).*

EXHIBIT 3

Active DGN Fishing Vessel		Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
1.	F/V Goldcoast (45')	Peak Swordfish Fishing	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Peak Swordfish Fishing	Peak Swordfish Fishing
2.	F/V Three Boys (42')	Peak Swordfish Fishing	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Peak Swordfish Fishing	Peak Swordfish Fishing
3.	F/V Chula (yacht)	Peak Swordfish Fishing	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Harpoon - Swordfish	Peak Swordfish Fishing	Peak Swordfish Fishing
4.	F/V Linde (mid-size)	Peak Swordfish Fishing				DGN - White Seabass	DGN - White Seabass	DGN - White Seabass	DGN - White Seabass			Peak Swordfish Fishing	Peak Swordfish Fishing
5.	F/V Gloria Marie (mid-size)	Peak Swordfish Fishing				DGN - White Seabass	DGN - White Seabass	DGN - White Seabass	DGN - White Seabass			Peak Swordfish Fishing	Peak Swordfish Fishing
6.	F/V Patty Jo (40')	Peak Swordfish Fishing				DGN - White Seabass	DGN - White Seabass	DGN - White Seabass	DGN - White Seabass			Peak Swordfish Fishing	Peak Swordfish Fishing
7.	F/V Mary Beth (smaller)	Peak Swordfish Fishing				DGN - White Seabass	DGN - White Seabass	DGN - White Seabass	DGN - White Seabass			Peak Swordfish Fishing	Peak Swordfish Fishing
8.	F/V Tytan (mid-size)	Peak Swordfish Fishing				DGN - White Seabass	DGN - White Seabass	DGN - White Seabass	DGN - White Seabass			Peak Swordfish Fishing	Peak Swordfish Fishing
9.	F/V DJ (mid-size)	Peak Swordfish Fishing						Troll/Pole - Albacore	Troll/Pole - Albacore	Troll/Pole - Albacore		Peak Swordfish Fishing	Peak Swordfish Fishing
10.	F/V Calogera (mid-size)	Peak Swordfish Fishing						Troll/Pole - Albacore	Troll/Pole - Albacore	Troll/Pole - Albacore		Peak Swordfish Fishing	Peak Swordfish Fishing
11.	F/V Sea Haven (50')	Peak Swordfish Fishing						Troll/Pole - Albacore	Troll/Pole - Albacore	Troll/Pole - Albacore		Peak Swordfish Fishing	Peak Swordfish Fishing
12.	F/V Temptation (larger)	Peak Swordfish Fishing										Peak Swordfish Fishing	Peak Swordfish Fishing
13.	F/V Trailblazer (mid-size)	Peak Swordfish Fishing										Peak Swordfish Fishing	Peak Swordfish Fishing
14.	F/V Spirit (45')	Peak Swordfish Fishing										Peak Swordfish Fishing	Peak Swordfish Fishing
15.	F/V Charolette V (mid-size)	Peak Swordfish Fishing										Peak Swordfish Fishing	Peak Swordfish Fishing
16.	F/V Diane Susan (mid-size)	Peak Swordfish Fishing										Peak Swordfish Fishing	Peak Swordfish Fishing
17.	F/V Margaret O (mid-size)	Peak Swordfish Fishing										Peak Swordfish Fishing	Peak Swordfish Fishing
18.	F/V Baby Jo (40')	Peak Swordfish Fishing										Peak Swordfish Fishing	Peak Swordfish Fishing
19.	F/V Saronga (50')	Peak Swordfish Fishing										Peak Swordfish Fishing	Peak Swordfish Fishing
20.	F/V Margaret O (50')	Peak Swordfish Fishing										Peak Swordfish Fishing	Peak Swordfish Fishing
21.	F/V Rosalia (36')	Peak Swordfish Fishing										Peak Swordfish Fishing	Peak Swordfish Fishing
22.	F/V Carolina Luise (40')	Peak Swordfish Fishing									Trap - Lobster	Trap - Lobster	Peak Swordfish Fishing
23.	F/V Addiction (42')	Peak Swordfish Fishing		Trap - Rock Crab	Trap - Rock Crab	Trap - Rock Crab	Trap - Rock Crab					Peak Swordfish Fishing	Peak Swordfish Fishing

NO FISHING



EXHIBIT 4

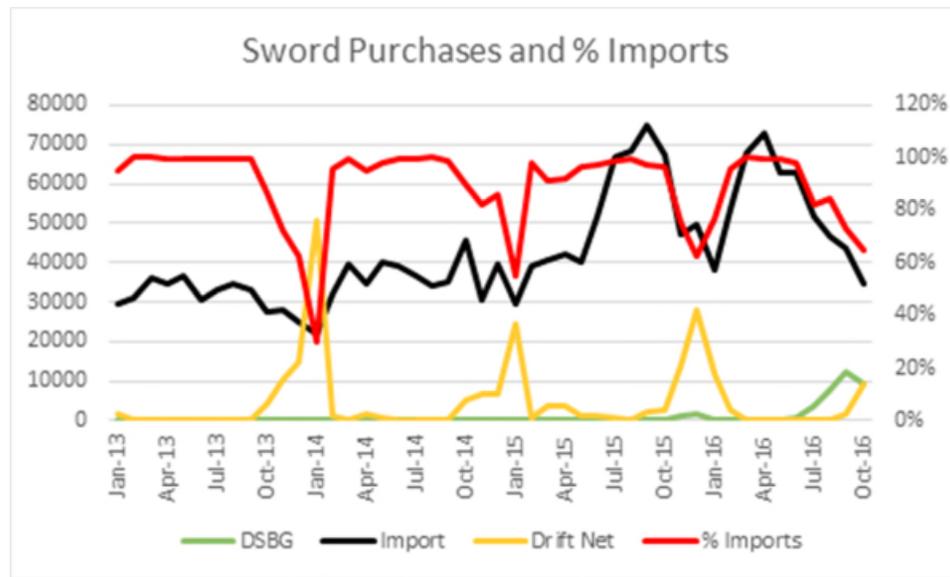
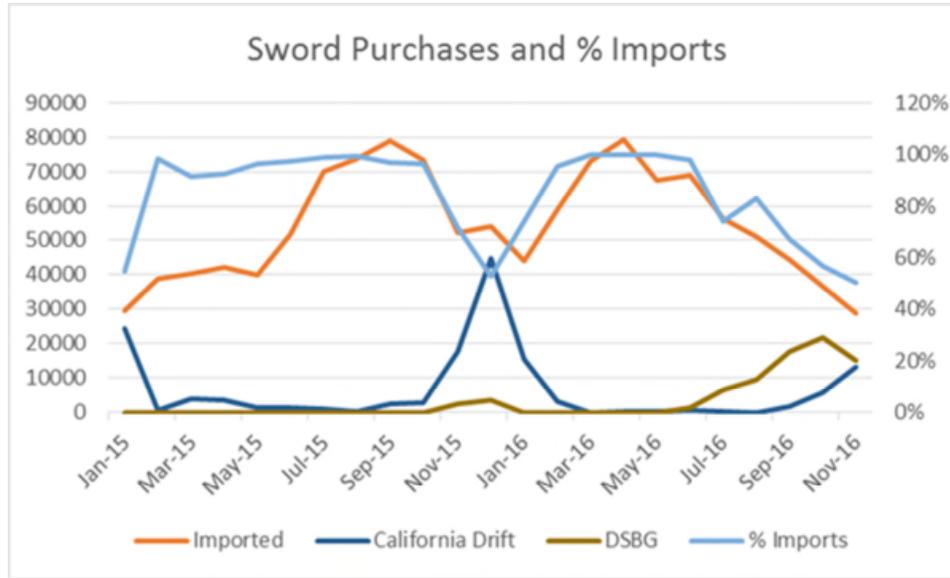


EXHIBIT 5

HIGHLY MIGRATORY SPECIES ADVISORY SUBPANEL REPORT ON SWORDFISH MANAGEMENT AND MONITORING HARDCAPS

The Highly Migratory Species Advisory Subpanel (HMSAS) recommends that the Council take a position of the No Action Alternative when considering the list of preferred alternatives for swordfish management and monitoring and hard caps.

The HMSAS considers hard caps to be a very regressive management tool especially when other options are available. Hard caps are a blunt management instrument that do not consider past and ongoing efforts by entities such as the Marine Mammal Protection Act (MMPA) Pacific Offshore Cetacean Take Reduction Team (POCTRT) and the Marine Mammal Commission (MMC) to improve issues involving interaction with Marine Mammals in the Driftnet fishery.

The HMSAS would like the Council to seriously consider the letter from the MMC dated June 26, 2015 to National Marine Fisheries Service (NMFS) as support for our positions and recommends it be favorably considered in the Council's decision on this matter. Also, a member of the Council has only recently been appointed to serve on the POCTRT, and the HMSAS believes he should have at least a chance to attend a meeting with them in order to discuss other alternatives to hardcaps.

The exempted fishing permit (EFP) application presented by the Alliance of Communities for Sustainable Fisheries that is being reviewed by NMFS includes seven new gear improvements that could reduce bycatch in the drift gillnet (DGN) fishery. Since 1996, the POCTRT made recommendations that have reduced bycatch in this fishery. At recent POCTRT meetings, Southwest Fisheries Science Center scientists agreed that hard caps would be inappropriate for managing marine mammal interactions that are rare events and involve long-lived species. The MMC believes that close consultation with the POCTRT is the best approach to ensure that their expertise is reflected in the development of alternatives. According to Eileen Sobeck, Assistant Administrator for Fisheries, NMFS: "the Pacific Offshore Cetacean Take Reduction Plan has been the most successful of all take reduction plans across the country."

The HMSAS recommends the Council select the No Action Alternative as the preferred alternative because the POCTRT is a far more holistic approach than hard caps. In addition, the legal process required by the MMPA is the application of Potential Biological Removal (PBR) as part of the POCTRT process to achieve the MMPA objective to reduce bycatch of marine mammals to insignificant levels approaching a zero mortality and injury rate.

There are new tools being developed to reduce interactions with marine mammals through technology and gear modification that are showing promise and need to be explored. For example, ECOCAST¹ is identifying marine mammal hotspots and marine satellite is passing the information in near real time to the fishermen. The HMSAS also is concerned that data going

¹ See [Agenda Item I.4.c Supplemental Public Comment 7 \(Electronic Only\) November 2014](#)

back 15 years does not reflect the new innovations and improvements that have recently been made. Instead of picking one of the hard cap measures that the team estimates will result in minor benefits to marine mammals but major negative impacts to the fishery, the Council should work with the POCTRT to develop performance and gear alternatives to reduce bycatch to the extent practicable. Working with NMFS and the POCTRT will also eliminate a duplication of effort in achieving the objective of reducing bycatch of marine mammals.

Marine mammals should continue to be managed by the MMPA through the TRT process. Seabirds should be managed under the authority of the U.S. Fish and Wildlife Service for obtaining an incidental take permit for seabirds in the DGN fishery.

As an alternative, if caps are needed, the HMSAS recommends a cap on the leatherback turtles and loggerhead turtles of six each per year, to be periodically reviewed. That would be part of the overall limit established by NMFS for U.S. fisheries in the Pacific.

PFMC
09/12/15

EXHIBIT 6

**HIGHLY MIGRATORY SPECIES ADVISORY SUBPANEL COMMENTS
ON ITEMS NOT ON THE AGENDA****Hard Caps for Priority Protected Species for the Drift Gillnet Fishery**

The HMSAS would like to make a comment about the last Council decision concerning the drift gillnet (DGN) fishery. At its September 2015 meeting, the Council approved hard caps on the DGN fishery as it applies to marine mammals and turtles. This decision is contrary to science and the strong advice from the Marine Mammal Commission and the NOAA Assistant Administrator for Fisheries, Eileen Sobeck.

We have serious concerns that this bypasses the Marine Mammal Protection Act (MMPA) and the Pacific Offshore Cetacean Take Reduction Team (POCTRT) and reduces the effectiveness of the NMFS Protected Resources Division. The innovative and problem solving skills of fishermen play an important part of the POCTRT process and this may be lost.

During the Council discussion, amendments were accepted creating fishery impacts that are more restrictive than necessary. The numbers accepted on the hard caps go beyond what is necessary for the protection of the affected species. In the event that the NMFS approves the hard caps, the Pacific Leatherback Conservation Area should be eliminated.

The inflexible nature of hard caps discourages fishermen from achieving the primary objective of the MMPA, which is to maintain optimum sustainable populations of marine mammals.

International Management of Pacific Bluefin Tuna

The HMSAS recommends that the Council send a letter to the U.S. Commissioners to the Western and Central Pacific Commission, and to The NMFS Pacific Islands Region Regional Administrator that would make the following points. The letter should also request that these ideas and comments with regard to Pacific bluefin tuna (PBF) should be raised by the U.S. Delegation with the Northern Committee members in their meeting in Bali, Indonesia on December 4, 2015.

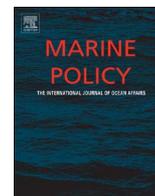
1. The U.S. recognizes and appreciates the recent steps taken by Japan to control its fleets, including its artisanal fleets, to reduce the take of juvenile (< 30 kg) PBF.
2. The U.S. also recognizes and appreciates Japan's willingness to consider additional conservation and management measures for this species in 2016.
3. The U.S. also believes the present target of rebuilding the stock to median historical SSB (42,592 t) within 10 years with at least 60% probability is much too slow and not sufficiently ambitious.
4. The U.S. requests that the Northern Committee revise paragraph 74 of the draft Summary Report of the Eleventh Regular Session of the Northern Committee to add that the International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean should also evaluate the impact on the rebuilding of the bluefin stock of agreeing to an annual time and area closure of the bluefin spawning grounds during April, May, and June.
5. The U.S. understands that these spawning grounds are in international waters and, therefore, such a closure would have to be monitored and enforced by the members of the Northern Committee, thus the U.S. requests that both such a time and area closure, as

well as a method of monitoring and enforcement, be placed on the agenda for Northern Committee 12 and suggests that an agreement be reached at that meeting.

EXHIBIT 7

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Can the United States have its fish and eat it too?



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ARTICLE INFO

Keywords:

Imported seafood
International trade
Leakage
Marine conservation policy
Seafood security

ABSTRACT

As domestic affluence increases, nations advocate for conservation policies to protect domestic biodiversity that often curtail natural resource production activities such as fishing. If concomitant consumption patterns remain unchanged, environmentally conscious nations with high consumption rates such as the U.S. may only be distancing themselves from the negative environmental impacts associated with consuming resources and commodities produced elsewhere. This unintended displacement of ecosystem impacts, or leakage, associated with conservation policies has not been studied extensively in marine fisheries. This paper examines this topic, drawing on case studies to illustrate the ways in which unilateral marine conservation actions can shift ecosystem impacts elsewhere, as has been documented in land use interventions. The authors argue that the U.S. should recognize these distant ecological consequences and move toward greater self-sufficiency to protect its seafood security and minimize leakage as well as undertake efforts to reduce ecosystem impacts of foreign fisheries on which it relies. Six solutions are suggested for broadening the marine conservation and seafood consumption discussion to address leakage induced by U.S. policy.

1. Introduction

The implementation of biodiversity conservation policies usually translates into improved environmental quality but often at the expense of curtailed production activities. If concomitant consumption remains unchanged, environmentally conscious consumer nations may only be isolating themselves from the environmental impacts associated with consumed resources and commodities produced elsewhere [1–4]. Globalized trade moves agricultural products, natural resources, and manufactured goods from the producing but relatively low-income countries to consuming and relatively high-income countries [5–7]. One result of this demand for resources and commodities produced elsewhere is that consumer countries with strong environmental oversight can cause biodiversity threats to species located in the producer countries [7,8].

Due to the spatial separation of production from consumption activities, consumers in higher-income countries may be unaware or

otherwise fail to account for the full environmental costs caused by the production of goods they utilize [9]. These negative environmental externalities, or impacts which manifest outside existing borders, are referred to as “leakage”,² of which there are four types: conservation, production, consumption, and trade. Conservation leakage results when domestic measures to conserve resources lead to negative environmental impacts from an increase in foreign production to meet persistent demand; production leakage arises when regulation of domestic producers results in a transfer of production effort to foreign producers; consumption leakage results when unmet internal consumption demand is satisfied by external supplies (e.g., imports); and trade leakage results when an import ban from particular industries causes a redirection in the flow of trade to other consumer markets [11].

Leakage related to land use including forest conservation policies has been well documented at local and national [12–16] and at international [17–20] scales. Similar efforts to evaluate leakage caused

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¹ Retired.

² Leakage refers to the displacement of environmental impact occurring when use policies aimed at reducing environmental pressure in a particular locale lead to a countervailing effect in another locale, offsetting the intended benefits of the initial policy [10]. Other terms characterizing this concept include “unequal ecological exchange,” “displaced environmental load,” “market transfer effect” and “spillover.”

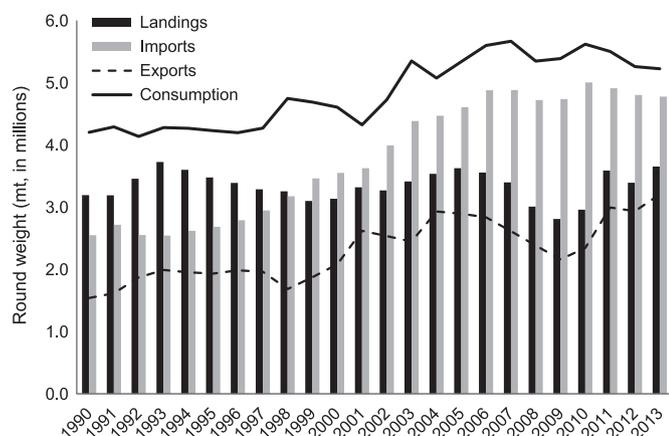


Fig. 1. U.S. consumption, landing and trade of edible fishery products by round weight, 1990–2013.

(Data source: NOAA National Marine Fisheries Service [26]).

by marine conservation policies affecting U.S. fishery production systems (i.e., the capture or culture of finfish and shellfish resources) are limited (i.e., [21–25]), even though the U.S. continues to be a major importer of seafood [26], ranked second only to Japan for all fishery and fishery product imports [27].

A recent debate has emerged over whether U.S. marine conservation policies³ that curtail fishing activities externalize negative environmental impacts of U.S. seafood consumption to other jurisdictions. Some conservation policy advocates argue that marine conservation efforts in the U.S. do not redistribute ecosystem impacts.⁴ However, the potential for transnational leakages seems probable when U.S. consumers rely on fishery production systems beyond the reach of U.S. management authority. Given international trade in seafood products, a unilateral conservation regulation that reduces production in one nation's fishery can be met by increased production in another nation where such conservation measures may be less stringent, thereby offsetting the environmental protections in the regulated fishery. Furthermore, the limited availability of information on such conservation leakage impacts makes them difficult to detect - much less address [28,29].

This paper seeks to broaden the conversation about U.S. marine conservation policy to encompass the implications of leakage caused by outsourcing fishery production. The examination is set against the backdrop of U.S. seafood security, especially seafood self-sufficiency, that is, producing the food a nation needs or that which its population demands. Section 2 of this paper summarizes general U.S. consumption patterns on a global scale. Section 3 focuses on seafood consumption trends in the U.S. with particular attention to two examples of U.S. reliance on foreign imports. Section 4 discusses studies that have addressed the unintended external conservation, production, consumption, and trade impacts resulting from unilaterally imposed policies on U.S. fisheries. Following discussion in Section 5, Section 6 highlights potential solutions for addressing policy-induced leakage and provides concluding remarks.

2. Global consumption

The relationship between domestic economic growth and improved environmental quality was first hypothesized to follow the trajectory of

³ U.S. marine conservation policies are embodied in and implemented through numerous statutes including the National Marine Sanctuaries Act, the Magnuson-Stevens Fishery Conservation and Management Act, the National Park Service Organic Act, the National Wildlife Refuge System Improvement Act, the Endangered Species Act, the Marine Mammal Protection Act, and more recently, the Antiquities Act.

⁴ http://www.pcouncil.org/wp-content/uploads/K5c_SUP_PC_PPT3_TIRN_MAR2014BB.pdf (slide 9).

the Kuznets curve where environmental degradation was predicted to decrease as national affluence increased (see review in Yandle et al. [30]). Rothman [31] was one of the first to argue that when international trade is considered, the behavior of the end-consumer rather than the producer is the principal driver of associated environmental impacts.

Various consumption-based approaches have been used to quantify ecological accountability among nations based on their consumption patterns and related impacts. Dietz et al. [32] used an ecological footprint⁵ assessment for attributing environmental stresses to the country where consumption occurs. Of the 20 nations evaluated, the U.S. had the largest footprint, followed closely by China. Bradshaw et al. [35] assessed nations' relative environmental impacts on their rankings for seven environmental variables and concluded that Brazil, the U.S., China, Indonesia, Japan, Mexico, India, Russia, Australia and Peru had the highest absolute impact (i.e., total resource use, emissions produced, and species threatened). Consistent with Bradshaw et al. [35], Selles [36] ranked China, the U.S., India, Brazil, Russia, Indonesia, Mexico, Australia, Japan and Germany as having the highest overall impact based on their contributions to global resource consumption and ecological degradation. Using a material footprint approach, Wiedmann et al. [37] determined that by absolute value, the U.S. is the largest importer and China is the largest exporter of primary resources embodied in trade. Using a species-threats approach based on net trade balances and foreign consumption (i.e., biodiversity footprint), Lenzen et al. [8] concluded that out of 187 countries, the U.S., members of the European Union (primarily, Germany, France, U.K., Italy and Spain), and Japan were the top final destinations of traded commodities whose production posed the greatest threats to biodiversity.

3. U.S. seafood consumption

Fish and shellfish imports into the U.S. have accounted for an average of over 17% of animal food product imports annually since 1999.⁶ Seafood imports have constituted up to 90%⁷ by weight of domestically consumed seafood in recent years compared to 61% in the early 1990s (Fig. 1, Table 1). One reason for this increase is that while total U.S. seafood consumption has increased over the last two decades from an annual average of 4.2 million metric tons (mt) during the period 1990–1995 to 5.4 million mt for the period 2010–2013, production has not matched U.S. preferences and buying habits.

Two examples of imported seafood favored by U.S. consumers underscore this point. Average annual consumption of shrimp in the U.S. has increased from about 265,000 mt in the mid-1970s to about 670,000 mt in recent years, far exceeding U.S. production (Fig. 2). Wild-caught shrimp used to account for nearly all shrimp consumption in the U.S., but imported cultured shrimp increasingly has substituted for this commodity over the past decade. Imports now make up the largest proportion of shrimp consumed whether captured or cultured having increased nearly six-fold from about 91,000 mt in 1975 to 509,000 mt in 2013. Similarly, imported swordfish satisfies the majority of U.S. demand, accounting for more than 80% of U.S. swordfish consumption by weight (Fig. 3). Both per capita and total consumption of swordfish peaked during the late 1990s, with total U.S. consumption tapering off to half at around 20,000 mt over the last several years.

⁵ Ecological footprint is one of many types of assessments used to assess the environmental impacts of production and consumption; other assessments include carbon and water footprints (see review by Galli et al. [33]). Life-cycle assessments are another tool used to measure such impacts [34].

⁶ <http://www.ers.usda.gov/data-products/us-food-imports.aspx#25418>, accessed June 9, 2016.

⁷ A portion of these imports are caught by U.S. fishermen, exported overseas for processing and then reimported.

Table 1

Annual average U.S. landings, trade, and consumption of edible fishery products in the U.S. by round weight, for periods 1990–95 through 2010–14. (Sources: NOAA National Marine Fisheries Service [26,38,39]).

Period	Landings	Imports	Exports	Consumption	Imports/Consumption (%)
1990–95	3,433,757	2,597,005	1,794,465	4,236,298	61%
1995–00	3,302,178	3,012,069	1,887,387	4,426,860	68%
2000–05	3,334,483	4,005,626	2,522,868	4,817,241	83%
2005–10	3,281,307	4,765,517	2,578,040	5,468,784	87%
2010–14	3,398,934	4,874,546	2,871,143	5,402,223	90%

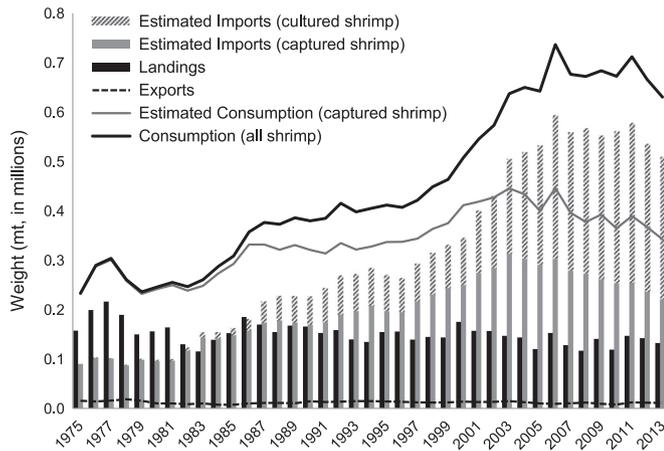


Fig. 2. U.S. consumption, catch and trade of shrimp, by weight, 1975–2013. Estimates of U.S. imports of captured and cultured shrimp were calculated as the ratio of captured shrimp to total shrimp production using NMFS and FAO data. (Data sources: NMFS Office Science and Technology: www.st.nmfs.noaa.gov/commercial-fisheries/)

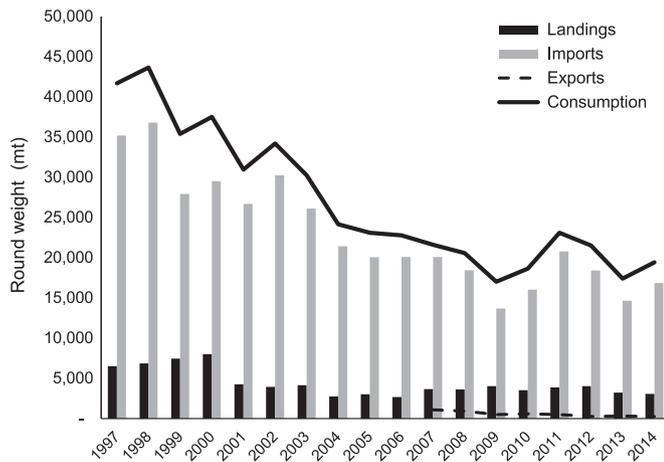


Fig. 3. U.S. landings, imports, exports and consumption of swordfish by round weight, 1997–2013. Data prior to 1997 are not included because U.S. swordfish imports before 1997 were not assigned a specific Harmonized System Code [22,24], precluding the identification of imports of swordfish fillets and meats. Consequently, total U.S. swordfish imports prior to 1997 are under-reported [40]. Data on U.S. exports of swordfish prior to 2007 are not available. (Data source: NMFS Office Science and Technology: [www.st.nmfs.noaa.gov/commercial-fisheries/commercial-landings/](http://www.st.nmfs.noaa.gov/commercial-fisheries/commercial-landings/annual-landings/)).

4. Leakage related to U.S. fisheries

Leakage occurs in a given fishery or fisheries when production impacts such as overfishing, habitat degradation, or bycatch are curtailed by regulations resulting in reduced supply in one area and a shift in production to other less regulated areas. For example, regulatory policies to address sea turtle bycatch in the Hawaii swordfish fishery provide an example of multiple types of leakage occurring concurrently. Both swordfish and sea turtles are transboundary (trans-

national) resources and vulnerable to multiple fleets serving global seafood markets. Concerns about domestic bycatch of leatherback and loggerhead sea turtles led NOAA's National Marine Fisheries Service (NMFS) to close the Hawaii swordfish fishery in 2001. The fishery was reopened in 2004 with several additional technological and administrative requirements. Sarmiento [21] measured trade leakages (i.e., transfer effects) generated by the closure and determined that imports of swordfish from other nations, primarily Ecuador and Panama, increased appreciably. Rausser et al. [22] calculated conservation leakage resulting from the closure, with an estimated increase of 1602 mt of swordfish imported annually due to the closure, resulting in an estimated 2882 additional (net) sea turtle interactions from the swordfish fisheries of foreign nations combined.

In a similar study, Chan and Pan [24] examined the period when the Hawaii shallow-set longline swordfish fishery reopened (2005–2008), and estimated that the increase in average annual Hawaii swordfish production contributed to 1841 fewer turtle interactions worldwide by displacing imports from fisheries that had higher sea turtle bycatch rates. They concluded that the regulatory changes reducing Hawaiian swordfish production did not reduce total region-wide sea turtle bycatch because the Hawaii fleet has one of the lowest sea turtle bycatch rates among the fleets fishing in the region [41]. Instead, with the reduced swordfish production from Hawaii's fleet, foreign fleets increased their harvests to maintain overall production, resulting in a net increase in sea turtle bycatch.

Squires et al. [25] provide another example of leakage associated with a time-area closure in the West Coast drift gillnet (DGN) swordfish fishery. In an effort to reduce fishery interactions with the endangered leatherback sea turtle, NMFS established the Pacific Leatherback Conservation Area (PLCA), which overlaps substantially with the DGN fishing grounds along the U.S. West Coast. Since 2001, this time-area closure has prohibited DGN fishing for three months during the prime swordfish fishing season. The authors' benefit-cost analysis of the regulation's impacts determined a U.S. production leakage of \$27.5 million due to lost producer and consumer surpluses in the West Coast fishery with increased imports. In addition, the transfer of swordfish effort to other Pacific Rim nation swordfish fleets is estimated to have caused a conservation leakage of an additional bycatch of 1457 endangered leatherback sea turtles compared to 45 turtles had the U.S. fishing grounds remained open.

Policy-induced leakage is not limited to international contexts; it also can occur domestically. Cunningham et al. [42] reportedly found evidence of production leakage between two adjacent regions subject to management by two separate U.S. fishery management councils (FMCs) resulting from a catch share program. The authors assert that such leakage is most acute in fisheries with low institutional barriers, similar gear, and high market substitutability for managed stocks with other species.

5. Discussion

While documented examples in fisheries are rare, the foregoing examples suggest that market-driven, economically-based leakage can occur in fisheries when unilateral conservation policies are put in place similar to land use interventions. Marine conservation policies can

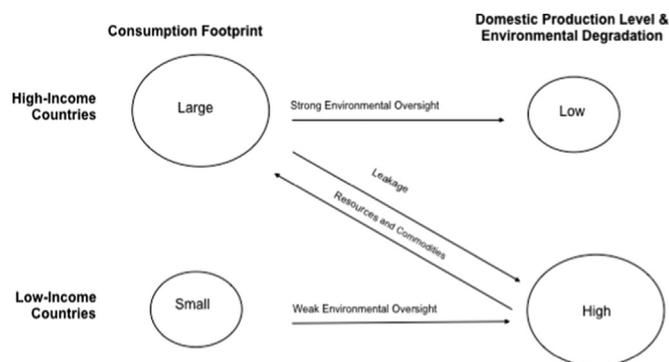


Fig. 4. Conceptual framework illustrating the relationship between high-income countries with high consumption footprints and corresponding stronger environmental oversight contributing to reduced domestic production (top horizontal line) and lower-income countries with low consumption footprints and weaker environmental oversight leading to higher domestic production (bottom horizontal line), with the latter providing resources and commodities to satisfy demand, leading to conservation leakage (diagonal lines).

stimulate resource production or exploitation activities in other locations, leading to production leakages in foreign [25] or neighboring jurisdictions [42]. This finding is not surprising as a regulated decrease in production at one location coupled with unchanged demand is expected under standard economic theory and assumptions to shift demand to other locations, stimulating increased production and increasing producer revenues elsewhere. Wear and Murray [12] documented the case where U.S. Endangered Species Act (ESA)-driven restrictions on federal timber harvests in the Pacific Northwest implemented to protect northern spotted owl habitat redirected production to southern U.S. and Canadian lumber producers. Mayer et al. [17] demonstrated how the increasing demand for wood products along with new forest conservation programs in Finland increased pressure on forests in neighboring Russia through wood imports.

The case studies also illustrate examples of trade leakages from increased imports [21], and conservation leakages from increased bycatch [22,24]. Consequently, reducing domestic production to achieve a particular conservation objective can lead to unintended negative consequences, reducing the net gains – and possibly increasing net losses – globally. Such outcomes suggest the need for multiple within- and across-border policy instruments to reach an optimum regulatory strategy. The need for global cooperation has been recognized in fishery [43] and forest conservation efforts [18,44]. At the local and regional scale, policy-makers should be mindful of negative consequences that may arise from unilateral actions especially in the context of global markets and possibly weaker environmental governance in other locations. In particular, as part of the ESA and National Environmental Policy Act consultation processes, federal managers need to take leakage into account as part of the net effects analysis for any proposed Federal action.

The disproportionate contribution of a small group of countries – including the U.S. – to global resource consumption and ecological degradation is not unexpected. Populations in high-income countries have far higher purchasing power compared to those in lower income countries [33,45]. Further, as countries become more affluent, domestic environmental protection becomes a regional and national priority [8,17,46,47]. However, when consumption levels remain high amid protective domestic environmental policies that reduce domestic output, external resources are increasingly depended upon to meet demand. The intertwined relationship among demand, environmental protection, and reliance on imported resources is closely analogous to the “Netherlands Fallacy.” Ehrlich and Ehrlich [48] used this term to describe how Dutch standards of living are made possible only through reliance upon imported goods, meaning that the Dutch population was not self-sufficient. The complex relationship among these production

and consumption factors is depicted in Fig. 4.

In terms of marine biodiversity, conservation leakage is of particular concern because much of the seafood imported into the U.S. is believed to be harvested under less stringent conservation requirements than imposed on U.S. fisheries [49–51]. Such leakages could be minimized if there were greater reliance on countries with sustainable fishing practices and more importantly, on U.S. capture and culture fisheries. However, efforts for greater self-sufficiency can only succeed if there is a fundamental change in U.S. attitudes that reconciles marine conservation goals with the reality that eating fish means harvesting seafood somewhere, just as Berlik et al. [44] reasoned that using wood means cutting trees somewhere.

Such changes in attitude could begin with shifting from excessive or outright fishing prohibitions to finding ways to minimize domestic biodiversity impacts. For example, the PLCA closure was implemented as an avoidance strategy to prevent interactions between DGN gear and leatherbacks sea turtles. A more effective alternative might have been considering other gear types that produce a comparable volume of swordfish catch with lower sea turtle interaction rates. Such a tactic would have reduced the negative economic impacts to fishermen and the reliance on imported swordfish while still achieving conservation goals. Another approach could include transitioning from static management regimes to dynamic ones where fisheries are managed in real or near-real time in response to shifting oceanographic, biological and ecological conditions [52–55]. The use of adaptive tactics also could be adopted by other nations to enable compliance with proposed NMFS regulations prohibiting seafood imports that do not meet U.S. standards for marine mammal protection.

6. Solutions

Global demand for food is expected to continue increasing well into the second half of this century corresponding with continuing population growth [45]. Seafood consumption is expected to continue to rise at a faster rate than freshwater fish consumption in both industrial and developing countries [56]. Environmentally concerned U.S. consumers can distance themselves from leakage concerns by reducing their seafood consumption, albeit at the expense of foregoing the known health benefits derived from seafood [57]. Further, limiting consumption of fish may generate leakage into agricultural production systems, which can create other environmental externalities such as fertilizer and pesticide runoff, which degrades terrestrial, freshwater, and marine ecosystems. Alternatively, the U.S. can consider its own seafood security by moving toward greater self-sufficiency as well as undertaking efforts to reduce biodiversity threats in foreign fisheries it relies upon to meet domestic seafood demand. To meet these challenges, several approaches for addressing leakage are suggested:

1. *Increase awareness of U.S. fisheries.* Most Americans remain unaware of the high environmental standards by which U.S. federal marine fisheries – and many state fisheries – are managed, in compliance with multiple state and federal laws. These standards conform to or exceed internationally accepted guidelines for sustainable fisheries adopted by the Food and Agriculture Organization of the United Nations [58]. Sea Grant Extension Programs in U.S. coastal states and territories have conducted education and outreach, with NOAA Fishwatch and a number of nongovernmental organizations also helping to bridge this gap. However, further efforts to address this lack of understanding are needed.
2. *Develop U.S. domestic aquaculture to complement capture fisheries.* The global status of marine capture fisheries is considered stable; however, increased catches are considered unlikely [59], suggesting that aquaculture will need to play a greater role in seafood security [60]. Aquaculture is considered the fastest growing animal food production sector and supplies more than half of the world's seafood for humans [61]. While there has been a reluctance

to embrace aquaculture more enthusiastically in the U.S. because of its own set of externalities (e.g., environmental impacts of fish feed, waste, disease control substances), it is a form of seafood production that can be managed for ecological and economic sustainability.

3. *Support sustainable fishing practices in other nations.* Such capacity-building efforts include transferring best fishing practices, technologies and monitoring practices to nations whose fisheries continue to supply U.S. markets. A few examples include NMFS programs for training Columbian fishermen on the effective use of turtle excluder devices in Caribbean and Pacific coast shrimp fisheries, instructing fishery observers in Ghana, Senegal, Sierra Leone, Liberia, and Gabon, and providing circle fishing hooks to South American countries.
4. *Multilateral cooperation.* Overarching World Trade Organization-consistent trade laws and regulations can help address production and trade leakages and their negative impacts across the entire ranges of affected stocks. Policy instruments and harvest strategies addressing information requirements (e.g., eco-labeling, certification, standards, consumer awareness campaigns and similar approaches) on bycatch reduction can be designed to create market prices and conditions that address external costs and benefits. U.S. delegations participating in international regional fishery management organizations and other fora can initiate that dialogue.
5. *Recognize the externalities of management decisions.* Leakage occurs when the spatial scale of intervention does not match the scale of the targeted problem [62]. Ignoring environmental impacts associated with goods produced elsewhere creates what Berlik et al. [44] described for U.S. timber management as the “illusion of natural resource preservation.” Policy-makers need to be mindful of and evaluate the challenges and trade-offs among the full range of impacts, including those beyond their jurisdictions, as part of the decision-making process.
6. *Treat wild capture and aquaculture fisheries as part of the food system.* Seafood represents a part of the nation’s food system [63,64]. Nonetheless, within the context of managing marine resources and ecosystem impacts, seafood rarely is acknowledged as a component of the human diet, despite its recognized importance as a source of nutrition and sustenance. Olson et al. [64] argue that treating seafood as a food production system provides a different frame of interpretation that does not end with harvesting but also includes distribution and use. Such a broader conceptualization can reestablish the connection between consumption and production behaviors, which underlies the reality that humans are part of the marine ecosystem.

7. Concluding remarks

The title of this paper plays on the popular 16th century English proverb questioning whether people can both have their cake and eat it too. This aphorism describes the challenge confronting fishery management decision-makers and seafood consumers. Reckoning with the inherent tradeoffs between conservation goals and seafood consumption demands may be a more practical approach rather than assuming “win-win” outcomes, where both are fully satisfied [65]. Decision-makers cannot dismiss this reality especially in the context of climate change and a growing human population [60]. Unilateral marine management policies that force greater reliance – and biodiversity impacts – on distant ecosystems call into question their global effectiveness and conservation ethicality.

Rothman [31] questioned whether wealthy nations were merely “passing the buck” when distancing themselves from the environmental degradation associated with their consumption habits. The full impact of U.S. seafood consumption patterns needs to be considered at the global level in light of continuing efforts to further marine biodiversity protections. Failing to do so only serves to counteract the effectiveness of domestic actions by externalizing negative environmental costs to

others.

Acknowledgements

The idea for this paper originated from a 2013 symposium organized by NMFS entitled “Eat Local, Think Global: A Case for U.S. Caught Fish” held in Oakland, CA, USA and frequent discussions with the late Pete Dupuy. We gratefully acknowledge helpful feedback on a previous draft of this manuscript from Carolyn Culver, Bob Harman, John Kaneko, Ana Kujundzic, Elizabeth Hellmers Mendoza, Tim Sippel, Galen Tromble, and an anonymous reviewer. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

- [1] M.A. Cole, U.S. environmental load displacement: examining consumption, regulations and the role of NAFTA, *Ecol. Econ.* 48 (2004) 439–450.
- [2] D. Gertner, A. Asher, M. Fripp, Trading away damage: quantifying environmental leakage through consumption-based, life-cycle analysis, *Ecol. Econ.* 63 (2007) 563–577.
- [3] M. Bagliani, G. Bravo, S. Dalmazzone, A consumption-based approach to environmental Kuznets curves using the ecological footprint indicator, *Ecol. Econ.* 65 (2008) 650–661.
- [4] J.H. Mills, T.A. Waite, Economic prosperity, biodiversity conservation, and the environmental Kuznets curve, *Ecol. Econ.* 68 (2009) 2087–2095.
- [5] A. Jorgenson, J. Rice, Structural dynamics of international trade and material consumption: a cross-national study of the ecological footprints of less-developed countries, *JWSR J. World-Syst. Res.* 11 (2005) 57–77.
- [6] K.H. Erb, F. Krausmann, W. Lucht, H. Haberl, Embodied HANPP: mapping the spatial disconnect between global biomass production and consumption, *Ecol. Econ.* 69 (2009) 328–334.
- [7] J. Weinzettel, E.G. Hertwich, G.P. Peters, K. Steen-Olsen, A. Galli, Affluence drives the global displacement of land use, *Glob. Environ. Change-Hum. Policy Dimens.* 23 (2013) 433–438.
- [8] M. Lenzen, D. Moran, K. Kanemoto, B. Foran, L. Lobefaro, A. Geschke, International trade drives biodiversity threats in developing nations, *Nature* 486 (2012) 109–112.
- [9] M. Kissinger, W. Rees, Importing terrestrial biocapacity: the U.S. case and global implications, *Land Use Policy* 27 (2010) 589–599.
- [10] P. Meyfroidt, E.F. Lambin, K.H. Erb, T.W. Hertel, Globalization of land use: distant drivers of land change and geographic displacement of land use, *Curr. Opin. Environ. Sustainability* 5 (2013) 438–444.
- [11] S. Barrett, *Environment and Statecraft: The Strategy of Environmental Treaty-Making*, Oxford University Press, New York, 2003.
- [12] D.N. Wear, B.C. Murray, Federal timber restrictions, interregional spillovers, and the impact on US softwood markets, *J. Environ. Econ. Manag.* 47 (2004) 307–330.
- [13] P.J.C. Oliveira, G.P. Asner, D.E. Knapp, A. Almeyda, R. Galvan-Gildemeister, S. Keene, R.F. Raybin, R.C. Smith, Land-use allocation protects the Peruvian Amazon, *Science* 317 (2007) 1233–1236.
- [14] B.C. Murray, B.A. McCarl, H.C. Lee, Estimating leakage from forest carbon sequestration programs, *Land Econ.* 80 (2004) 109–124.
- [15] P. Meyfroidt, T. Rudel, E. Lambin, Forest transitions, trade, and the global displacement of land use, *Proc. Natl. Acad. Sci. USA* 107 (2010) 20917–20922.
- [16] B. Sohngen, S. Brown, Measuring leakage from carbon projects in open economies: a stop timber harvesting project in Bolivia as a case study, *Can. J. For. Res.-Rev. Can. De Rech. For.* 34 (2004) 829–839.
- [17] A.L. Mayer, P.E. Kauppi, P.K. Angelstam, Y. Zhang, P.M. Tikka, Importing timber, exporting ecological impact, *Science* 308 (2005) 359–360.
- [18] J. Gan, B.A. McCarl, Measuring transnational leakage of forest conservation, *Ecol. Econ.* 64 (2007) 423–432.
- [19] P. Meyfroidt, E. Lambin, Forest transition in Vietnam and displacement of deforestation abroad, *Proc. Natl. Acad. Sci. USA* 106 (2009) 16139–16144.
- [20] T. Kastner, M. Kastner, S. Nonhebel, Tracing distant environmental impacts of agricultural products from a consumer perspective, *Ecol. Econ.* 70 (2011) 1032–1040.
- [21] C. Sarmiento, Transfer function estimation of trade leakages generated by court rulings in the Hawai’i longline fishery, *Appl. Econ.* 38 (2006) 183–190.
- [22] G. Rausser, S. Hamilton, M. Kovach, R. Stifter, Unintended consequences: the spillover effects of common property regulations, *Mar. Policy* 33 (2009) 24–39.
- [23] Z. Mukherjee, An economic approach to understanding the international transfer of bycatch from unilateral bycatch reduction policies, *Mar. Policy* 51 (2015) 190–195.
- [24] H.L. Chan, M. Pan, Spillover effects of environmental regulation for sea turtle protection in the Hawaii longline swordfish fishery, *Mar. Resour. Econ.* 31 (2016) 259–279.
- [25] D.Squires, C.Sun, J.Hilger, V.Chan, M.Helvey, S.Herrick Jr, S.Stohs, K.Segerson, Conservation of global public goods: The Endangered Species Act and Pacific sea turtles, U.S. Department of Commerce Southwest Fisheries Science Center Working Paper, NOAA NMFS Southwest Fisheries Science Center, La Jolla, CA, 2016.
- [26] NOAA National Marine Fisheries Service, Fisheries of the United States, U.S. Department of Commerce 2015, NOAA, 2014, p. 152.

- [27] Food and Agriculture Organization of the United Nations (FAO), The state of world fisheries and aquaculture 2014, FAO, Rome, 2014, p. 223.
- [28] M. Kotchen, Voluntary- and information-based approaches to environmental management: a public economics perspective, *Rev. Environ. Econ. Policy* 7 (2013) 276–295.
- [29] J. Mason, R. Kosaka, A. Mamula, C. Speir, Effort changes around a marine reserve: the case of the California Rockfish Conservation Area, *Mar. Policy* 36 (2012) 1054–1063.
- [30] T. Yandle, M. Bhattarai, M. Vijayaraghavan, Environmental Kuznets curves: A Review of Findings, Methods, and Policy Implications, Property and Environment Research Center (PERC), 2004, p. 38.
- [31] D.S. Rothman, Environmental Kuznets curves - real progress or passing the buck? A case for consumption-based approaches, *Ecol. Econ.* 25 (1998) 177–194.
- [32] T. Dietz, E.A. Rosa, R. York, Driving the human ecological footprint, *Front. Ecol. Environ.* 5 (2007) 13–18.
- [33] A. Galli, T. Wiedmann, E. Ercein, D. Knoblauch, B. Ewing, S. Giljum, Integrating ecological, carbon and water footprint into a “footprint family” of indicators: definition and role in tracking human pressure on the planet, *Ecol. Indic.* 16 (2012) 100–112.
- [34] E.G. Hertwich, Life cycle approaches to sustainable consumption: a critical review, *Environ. Sci. Technol.* 39 (2005) 4673–4684.
- [35] C. Bradshaw, X. Giam, N. Sodhi, Evaluating the relative environmental impact of countries, *PLoS One* 5 (2010) e10440.
- [36] H. Selles, The relative impact of countries on global natural resource consumption and ecological degradation, *Int. J. Sustain. Dev. World Ecol.* 20 (2013) 97–108.
- [37] T. Wiedmann, H. Schandl, M. Lenzen, D. Moran, S. Suh, J. West, K. Kanemoto, The material footprint of nations, *Proc. Natl. Acad. Sci. USA* 112 (2015) 6271–6276.
- [38] NOAA National Marine Fisheries Service, Fisheries of the United States, 1999, U.S. Department of Commerce, NOAA, 2000, p. 126.
- [39] NOAA National Marine Fisheries Service, Fisheries of the United States, 2005, U.S. Department of Commerce, NOAA, 2007, p. 104.
- [40] C. D’Angelo, H. Dewar, M. Helvey, N. Pradhan, S. Sonu, S. Squires, J. Sun, Y. Swimmer, C. Villafana, Understanding key issues facing U.S. West Coast swordfish fisheries and consumers, NOAA National Marine Fisheries Service White Paper, NOAA Southwest Region and Southwest Fisheries Science Center, 2011, p. 15.
- [41] P.K. Bartram, J.J. Kaneko, K. Kucey-Nakamura, Sea turtle bycatch to fish catch ratios for differentiating Hawaii longline-caught seafood products, *Mar. Policy* 34 (2010) 145–149.
- [42] S. Cunningham, L. Benneer, M. Smith, Spillovers in regional fisheries management: do catch shares cause leakage?, *Land Econ.* 92 (2016) 344–362.
- [43] N.C. Pradhan, P. Leung, A Poisson and negative binomial regression model of sea turtle interactions in Hawaii’s longline fishery, *Fish. Res.* 78 (2006) 309–322.
- [44] M. Berlik, D. Kittredge, D. Foster, The illusion of preservation: a global environmental argument for the local production of natural resources, *J. Biogeogr.* 29 (2002) 1557–1568.
- [45] H. Godfray, J. Beddington, I.R. Crute, L. Haddad, D. Lawrence, J. Muir, J. Pretty, S. Robinson, S. Thomas, C. Toulmin, Food security: the challenge of feeding 9 billion people, *Science* 327 (2010) 812–818.
- [46] A. Bruvoll, T. Faehn, Transboundary effects of environmental policy: markets and emission leakages, *Ecol. Econ.* 59 (2006) 499–510.
- [47] J.B. Jacobsen, N. Hanley, Are there income effects on global willingness to pay for biodiversity conservation?, *Environ. Resour. Econ.* 43 (2009) 137–160.
- [48] P. Ehrlich, A. Ehrlich, *The Population Explosion*, Simon and Shuster, New York, 1990, p. 320.
- [49] M. Smith, C. Roheim, L. Crowder, B. Halpern, M. Turnipseed, J. Anderson, F. Asche, L. Bourillon, A. Guttormsen, A. Khan, L. Liguori, A. McNevin, M. O’Connor, D. Squires, P. Tyedmers, C. Brownstein, K. Carden, D. Klinger, R. Sagarin, K. Selkoe, Sustainability and global seafood, *Science* 327 (2010) 784–786.
- [50] S.M. Garcia, A.A. Rosenberg, Food security and marine capture fisheries: characteristics, trends, drivers and future perspectives, *Philos. Trans. R. Soc. B-Biol. Sci.* 365 (2010) 2869–2880.
- [51] R. Hilborn, M. Melnychuk, Fisheries governance survey: Comparing across countries and stocks, in: California Environmental Associates (Ed.), *Ocean Prosperity Roadmap: Fisheries and Beyond*, 2015, pp. 11–14.
- [52] S. Maxwell, E. Hazen, L. Morgan, H. Bailey, R. Lewison, Finding balance in fisheries management, *Science* 336 (2012) (413–413).
- [53] E.A. Howell, A. Hoover, S.R. Benson, H. Bailey, J.J. Polovina, J.A. Seminoff, P.H. Dutton, Enhancing the TurtleWatch product for leatherback sea turtles, a dynamic habitat model for ecosystem-based management, *Fish. Oceanogr.* 24 (2015) 57–68.
- [54] R. Lewison, A. Hobday, S. Maxwell, E. Hazen, J. Hartog, D.C. Dunn, D. Briscoe, S. Fossette, C. O’Keefe, M. Barnes, M. Abecassis, S. Bograd, N. Bethoney, H. Bailey, D. Wiley, S. Andrews, L. Hazen, L. Crowder, Dynamic ocean management: identifying the critical ingredients of dynamic approaches to ocean resource management, *Bioscience* 65 (2015), 2015, pp. 486–498.
- [55] S. Maxwell, E. Hazen, R. Lewison, D. Dunn, H. Bailey, S. Bograd, D. Briscoe, S. Fossette, A. Hobday, M. Bennett, S. Benson, M. Caldwell, D.P. Costa, H. Dewar, T. Eguchi, L. Hazen, S. Kohin, T. Sippel, L.B. Crowder, Dynamic ocean management: defining and conceptualizing real-time management of the ocean, *Mar. Policy* 58 (2015) 42–50.
- [56] J. Kearney, Food consumption trends and drivers, *Philos. Trans. R. Soc. B-Biol. Sci.* 365 (2010) 2793–2807.
- [57] E.J. Brunner, P.J.S. Jones, S. Friel, M. Bartley, Fish, human health and marine ecosystem health: policies in collision, *Int. J. Epidemiol.* 38 (2009) 93–100.
- [58] M.L. Walsh, G.R. Tromble, W.S. Patrick, W.E. Morrison, Comparative analysis of U.S. federal fishery management to the FAO ecolabelling guidelines: A self-assessment, NOAA National Marine Fisheries Service, Office of Sustainable Fisheries, 2015, p. 158.
- [59] T. Branch, O. Jensen, D. Ricard, Y. Ye, R. Hilborn, Contrasting global trends in marine fishery status obtained from catches and from stock assessments, *Conserv. Biol.* 25 (2011) 777–786.
- [60] J. Rice, S. Garcia, Fisheries, food security, climate change, and biodiversity: characteristics of the sector and perspectives on emerging issues, *ICES J. Mar. Sci.* 68 (2011) 1343–1353.
- [61] D. Klinger, R. Naylor, Searching for solutions in aquaculture: charting a sustainable course, *Annu. Rev. Environ. Resour.* 37 (2012) 247–276.
- [62] S. Wunder, How do we deal with leakage?, in: A. Angelsen (Ed.) *Moving Ahead with REDD: Issues, Options and Implications*, Center for International Forestry Research (CIFOR), Bogor, Indonesia, 2008, pp. 65–75.
- [63] C.R. Daniel, A.J. Cross, C. Koebnick, R. Sinha, Trends in meat consumption in the USA, *Public Health Nutr.* 14 (2011) 575–583.
- [64] J. Olson, P. Clay, P. Pinto da Silva, Putting the seafood in sustainable food systems, *Mar. Policy* 43 (2014) 104–111.
- [65] T. McShane, P. Hirsch, T. Trung, A. Songorwa, A. Kinzig, B. Monteferri, D. Mutekanga, H. Thang, J. Dammert, M. Pulgar-Vidal, M. Welch-Devine, J. Brosius, P. Coppolillo, S. O’Connor, Hard choices: making trade-offs between biodiversity conservation and human well-being, *Biol. Conserv.* 144 (2011) 966–972.

EXHIBIT 8



Cost-Effectiveness of Alternative Conservation Strategies with Application to the Pacific Leatherback Turtle

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Abstract: *Although holistic conservation addressing all sources of mortality for endangered species or stocks is the preferred conservation strategy, limited budgets require a criterion to prioritize conservation investments. We compared the cost-effectiveness of nesting site and at-sea conservation strategies for Pacific leatherback turtles (*Dermochelys coriacea*). We sought to determine which conservation strategy or mix of strategies would produce the largest increase in population growth rate per dollar. Alternative strategies included protection of nesters and their eggs at nesting beaches in Indonesia, gear changes, effort restrictions, and caps on turtle takes in the Hawaiian (U.S.A.) longline swordfish fishery, and temporal and area closures in the California (U.S.A.) drift gill net fishery. We used a population model with a biological metric to measure the effects of conservation alternatives. We normalized all effects by cost to prioritize those strategies with the greatest biological effect relative to its economic cost. We used Monte Carlo simulation to address uncertainty in the main variables and to calculate probability distributions for cost-effectiveness measures. Nesting beach protection was the most cost-effective means of achieving increases in leatherback populations. This result creates the possibility of noncompensatory bycatch mitigation, where high-bycatch fisheries invest in protecting nesting beaches. An example of this practice is U.S. processors of longline tuna and California drift gill net fishers that tax themselves to finance low-cost nesting site protection. Under certain conditions, fisheries interventions, such as technologies that reduce leatherback bycatch without substantially decreasing target species catch, can be cost-effective. Reducing bycatch in coastal areas where bycatch is high, particularly adjacent to nesting beaches, may be cost-effective, particularly, if fisheries in the area are small and of little commercial value.*

Keywords: bycatch, economics, fisheries, nesting, noncompensatory mitigation, sea turtle

Rentabilidad de Estrategias de Conservación Alternativas Aplicadas a Tortugas Laúd del Pacífico

Resumen: *Aunque la conservación holística que aborda todas las causas de mortalidad de especies en peligro es la estrategia de conservación preferida, los presupuestos limitados requieren un criterio para priorizar las inversiones de conservación. Comparamos la rentabilidad de estrategias de conservación del sitio de anidación y de conservación en el mar aplicadas en tortugas laúd del Pacífico (*Dermochelys coriacea*). Tratamos de determinar cual estrategia o combinación de estrategias produciría el mayor incremento de la tasa de crecimiento poblacional por dólar. Las estrategias alternativas incluyeron la protección de anidantes y sus huevos en playas de anidación y criaderos, cambio de equipo en la pesquería de pez espada en Hawái (E.U. A.) y el cierre temporal y de áreas en la pesquería con redes agalleras en California (E. U. A.). Utilizamos un modelo poblacional con una métrica biológica para medir los efectos de las alternativas de conservación. Normalizamos todos los efectos para priorizar aquellas estrategias con el mayor efecto biológico en relación con su costo económico. Utilizamos simulación Monte Carlo para abordar la incertidumbre en las variables principales y para calcular la distribución de probabilidades para mediciones*

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Paper submitted December 19, 2012; revised manuscript accepted May 10, 2013.

de rentabilidad. La protección de la playa de anidación fue la forma más rentable para lograr incrementos en las poblaciones de tortugas laúd. Este resultado crea la posibilidad de la mitigación no compensatoria de la captura incidental, en la que las pesquerías con altos niveles de captura incidental invierten en la protección de playas de anidación. Un ejemplo de esta práctica son los procesadores de atún en E.U. A. y de los pescadores de California que utilizan redes agalleras que financian la protección de sitios de anidación. Bajo ciertas condiciones, las intervenciones de pesquerías, con tecnologías que reducen la captura incidental de tortugas laúd sin una disminución sustancial de la captura de la especie de interés, pueden ser rentables. La reducción de la captura incidental en áreas costeras donde es elevada, particularmente cerca de playas de anidación, puede ser particularmente rentable si las pesquerías en el área son pequeñas y con escaso valor comercial.

Palabras Clave: Anidación, captura incidental, economía, mitigación no compensatoria, pesquerías, tortuga marina

Introduction

Although holistic conservation addressing all sources of mortality for endangered species or stocks is the preferred conservation strategy (Dutton & Squires 2011), limited budgets require a criterion to prioritize conservation investments. Cost-effectiveness analysis (CEA) helps in the prioritization of conservation strategies by identifying the strategy that will have the greatest effect for a given cost. This is measured by the biological impact (benefit) divided by the action's economic cost. A CEA-derived conservation strategy or mix of strategies provides the largest increase in population growth rate per dollar of conservation investment. Strategies yielding the greatest effect, such as those with elasticities that indicate the largest increase in population growth rate per unit increase in survival, may be relatively costly, whereas other activities with a lower absolute effect may have a greater effect per dollar and thus provide better results for the same amount of money.

The collapse of Pacific leatherback (*Dermochelys coriacea*) populations is a result of at-sea mortality from fisheries bycatch and direct harvest and of egg and hatchling mortality due to loss of nesting habitat, nest predation, egg harvest, and other beach-related sources of mortality (Spotila et al. 2000; Tapilatu et al. 2013). Holistic conservation of this species includes conservation of nesting beaches to protect nesting females, their eggs, and critical breeding habitat and to maximize hatchling production; enhancement of at-sea survival of juveniles and adults by reducing turtle bycatch from industrial and artisanal fishing; and reducing subsistence take.

We compared cost-effectiveness of 3 strategies to protect the western Pacific leatherback turtle population: nesting beach protection in Papua, Indonesia; gear, effort, and turtle take regulations in the Hawaiian (U.S.A.) longline (HLL) swordfish fishery; and temporal and area closures in the California (U.S.A.) drift gill net fishery (CDGN). Part of the western Pacific leatherback population migrates from breeding areas in Indonesia to foraging areas across the North Pacific from Hawaii to California.

At the time of our study, there were no conservation projects focused on reducing bycatch of this population of leatherbacks from artisanal fisheries, so we could not estimate these costs. Thus, we focused on the other 2 strategies.

Methods

CEA

CEA is used to compare conservation strategies that have effects of different magnitudes. In a CEA, the strategy's effect is divided by its cost and gives priority to those strategies with the greatest biological effect relative to its economic cost. A CEA can be used as a decision tool to rank strategies for implementation until a budget is exhausted. A related decision beyond this paper's scope considers how to allocate resources within a given strategy, for example, what proportion of funds should be allocated to each nesting beach. Generally, CEA tests the null hypothesis that the mean cost-effectiveness of one strategy does not differ from that of a competing strategy.

We illustrate the least-cost solution to achieving population level E as a reduction in mortality on nesting beaches of X_2^* and on foraging grounds of X_1^* (Fig. 1). Suppose current projects reduce mortality on foraging grounds to X_1' and reduce mortality on nesting beaches to X_2' for a total cost (TC'). One could achieve the same population level by investing more in projects to reduce mortality on nesting beaches (to X_2^*) and investing less in projects to reduce mortality on foraging grounds (to X_1^*). This achieves the same population level, E , at a lower cost, TC^* .

In economic terms, efficiency occurs when resources (inputs) are used in such a way as to produce the maximum possible output. When alternative projects are not mutually exclusive and may be combined at various levels, efficiency requires that each project be implemented to the level at which the last dollar invested in each project returns the same benefit, where the benefit in

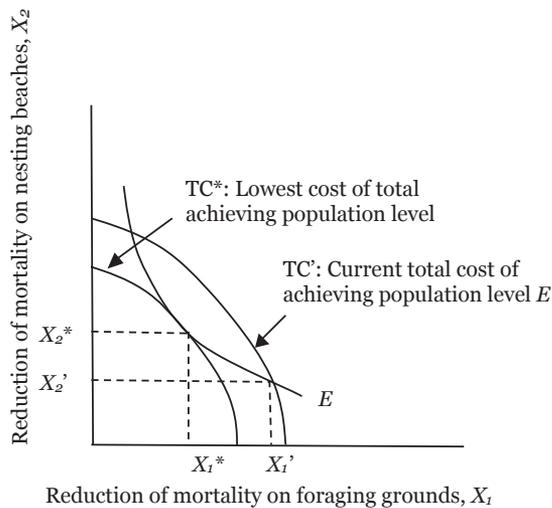


Figure 1. Costs of reduction of mortality of Pacific leatherback turtles on nesting beaches relative to foraging grounds to achieve a given population level (E).

this case is the marginal reduction in turtle mortality. It is assumed that marginal returns decrease as investment in a project increases. If the marginal benefit of one project is much higher than another, additional funds should keep being allocated to that project until the marginal benefits of the projects equalize. When projects cannot be implemented at continuously varying scales or there are greater than proportional benefits from increasing the scale of competing projects, a discrete choice of one project over another may be required.

Data and Uncertainty

Conservation projects involve a range of activities that incur costs. Some of these may involve one-time expenditures, whereas others may be recurrent. In 2005, we collected data on the costs of 3 leatherback conservation projects. For some projects, we estimated costs from available data, such as fishery cost-earnings studies or annual reports. To measure the benefits of the conservation projects, we developed a population model (and a biological metric).

Because there are still few data with which to estimate population models' basic life-history parameters for leatherback turtles, the population trajectory even without conservation investments is uncertain. Quantitative analyses are often based on population viability analyses (PVA) that use trends in the number of adult female turtles in a population (often computed from the number of observed nests). These approaches require information on basic life-history parameters (e.g., survival rates, age at first reproduction, and fertility). It is a common

practice to include uncertainty in estimated life-history parameters for PVA (e.g., Caswell 2001).

Because marine turtles are long-lived species, natural survival rates are constrained. Fecundity is perhaps one of the least uncertain parameters to quantify for sea turtles because it is based on reproductive output of females derived from egg counts; these data are routinely recorded at nesting beaches. In contrast, age at first reproduction is a difficult parameter to estimate because it has generally not been possible to mark hatchlings and follow them to maturity or directly determine age in sea turtles from empirical observation. Demographic model outputs are more sensitive to the effects of uncertainty in age at maturity (or age at first reproduction) than those from other parameters.

Other than a few studies (e.g., Limpus et al. 1994) in which hatchling loggerhead cohorts were followed to their maturity, age at first reproduction is estimated indirectly through skeletochronology (e.g., Avens et al. 2009) or inferred from observed population growth rates (e.g., Dutton et al. 2005), with controversial outcomes. Age at first reproduction affects adult survival and fertility. Consequently, accurate and precise estimates of age at maturity, which may vary from population to population depending on the productivity of the environment, is important for developing effective conservation and management rules.

To compare the strategies' effects, we converted the estimated number of leatherback hatchlings from a nesting beach to a measure comparable with turtle captures avoided in bycatch reduction projects. For simplicity, we used stage-specific reproductive values (RVs) to provide an estimate of female adult equivalence. Wallace et al. (2008) suggest using RVs as a metric to develop conservation strategies. We used an RV of 426 for adults (RV for hatchlings is 1), which we based on rough estimates of life-history parameters (T. Eguchi, unpublished data).

Different approaches are used to address uncertainty in marine resource management (Regan et al. 2005). The traditional approach is to parameterize a model with best estimates of parameters and then conduct a sensitivity analysis. This is the approach taken in Gjertsen (2011), where the authors used best estimates of parameters to analyze cost and benefit data to make preliminary cost-effectiveness comparisons. The most common method of directly incorporating uncertainty in parameter estimates is to assign a probability distribution to the parameter in question with an assumed mean and standard deviation (Halpern et al. 2006). We used this method here. We directly incorporated uncertainty regarding estimates by providing probability distributions for the model parameters and conducting Monte Carlo simulations of the model. We implicitly assumed technical efficiency (i.e., within a project the given effect cannot be achieved at a lower cost). We implicitly assumed that the marginal

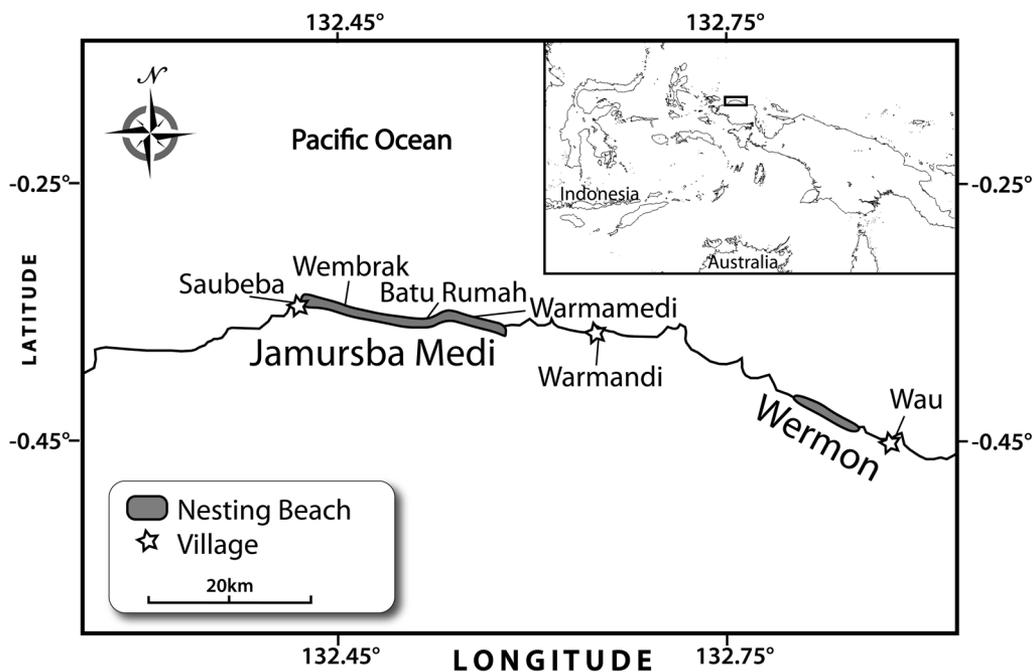


Figure 2. Map of leatherback turtle nesting sites in Jamursba Medi and Wermon, Papua, Indonesia (Tapilatu et al. 2013).

cost of reducing turtle mortality is constant, although we expect it to increase over some period; as turtle mortality progressively declines, costs per unit reduction will rise.

Description of Strategies and Measurement of Costs and Benefits

JAMURSB A MEDI AND WERMON NESTING BEACHES

Jamursba Medi and Wermon beaches in Papua, Indonesia, host the largest remaining leatherback nesting population in the Pacific, and together approximately 75% of nesting in the western Pacific occurs on these beaches (Dutton et al. 2007). On the 2 beaches, 5000–6000 nests/year are created (Hitipeuw et al. 2007). Jamursba Medi is a series of 3 beaches covering a 20-km stretch on the northern coast of Bird's Head peninsula in Papua Barat, Indonesia (formerly Irian Jaya), which is 130 km northeast of the nearest town, Sorong (Fig. 2). Wermon beach is approximately 30 km east of Jamursba Medi and extends for 6 km (west of Manokwari).

On both beaches egg consumption by humans was high until a conservation project was started in Jamursba Medi in 1993 and in Wermon in 2003 by WWF-Indonesia. This organization has been working with the communities, Balai Besar Konservasi Sumber Daya Alam (BKSDA)-Sorong, and Papua State University (UNIPA) to protect nesting leatherbacks, and human consumption of eggs has essentially ceased. Community members are hired as monitors to collect data and protect nests from predators.

Since we collected data for this paper, UNIPA began leading the conservation and monitoring project. Because the nesting beaches are far from large human settlements and there were no roads or electricity in the village, WWF built a base camp on the beach for their staff and the patrol team on Jamursba Medi beach. This camp included a few basic structures with a generator and water pump.

Cost data from a number of other nesting beach projects throughout the western Pacific indicated conservation projects on nesting beaches have relatively high fixed costs (costs that are not easily altered in the short run or with the scale of the operation) at each site but low variable costs (costs that can be modified in the short run or as the scale of the operation changes). A site with 3000 nests has protection costs similar to a site with 30 nests, mainly because a large portion of administrative costs (e.g., rent, utilities) and field costs (e.g., transportation) is not particularly sensitive to the size or scale of the project. This tends to confer economies of scale to larger sites because the fixed costs are spread out over a larger number of nests and hatchlings. Additional nests can be protected quite cheaply (e.g., by hiring additional patrollers at relatively low wages), although this will vary by location. Variable costs are mainly patroller wages and field equipment. These costs represent a small portion of overall expenditures (20–50%) and increase slowly as nesting site size increases. To a certain extent, additional beach area can be covered at little marginal cost, that is, until the area becomes so great that some of the costs need to be replicated (e.g., meetings and training with additional communities, additional field stations). There are

Table 1. Variables related to costs and benefits of protecting nesting beaches in Jamursba Medi and Wermon, Indonesia.^a

<i>Cost^b</i>		<i>Benefit</i>	
<i>variable description</i>	<i>distribution</i>	<i>variable description</i>	<i>distribution</i>
Capital assets Jamursba Medi, <i>A</i> (\$)	uniform (13,130; 27,280)	fraction of female hatchlings, <i>A</i>	triangular (0.53; 0.6; 0.65)
Capital assets Wermon, <i>B</i> (\$)	best estimate (11,920)	number of nests Wermon, <i>B</i>	best estimate (2,520)
Economic life, <i>C</i> (years)	triangular (5;10;20)	number of nests Jamursba Medi, <i>C</i>	best estimate (3,720)
Administrative costs, <i>D</i> (\$)	best estimate (75,693)	nests destroyed per year, <i>D</i>	beta (2.7; 15.4)
Field costs, <i>E</i> (\$)	best estimate (72,269)	nest depredated per year, <i>E</i>	beta (2.9; 10.4)
Annual egg revenue/site, <i>F</i> (\$)	uniform (23,037; 76,996)	number of eggs/nest, <i>F</i>	gamma (120; 0.62)
Transfers, <i>G</i> (\$)	best estimate (42,655)	hatchling success rate Wermon, <i>G</i> (fraction/year)	beta (1.64; 1.84)
		hatchling success rate Jamursba Medi, <i>H</i> (fraction/year)	triangular (0; 0; 1)
		adult reproductive value, <i>I</i> ^c	gamma (10.225; 42.679)

^aAdditional information about estimates is in Supporting Information.

^bMonetary unit (\$) is value of US\$ in 2005.

^cRelative contribution of adults to current and future reproduction compared with the contribution of hatchlings.

also economies of scope through which other sea turtle species are protected at the same site, but for simplicity's sake we did not consider these additional effects.

We estimated annual values of different cost components of the nesting beach projects as described by

$$[(A + B)/C] + D + E + (F - G). \quad (1)$$

Table 1 contains definitions of these variables. The nesting project's annual economic costs were approximately \$209,261, which included annual administrative costs, field costs, capital asset expenditures, and foregone community egg revenue minus transfers (i.e., scholarships, boats, and local wages provided by WWF) (Gjertsen 2011). Because of the remote location of this nesting beach, foregone development opportunities due to turtle conservation were not relevant. However, foregone development could become an issue in the future, for example, if current mineral prospecting results in commercial interest in the area or if tourism infrastructure is developed.

To describe the benefits of the nesting beach project in terms of adult females, we estimated the annual number of female hatchlings and normalized it by the adult RV as described by

$$\{[A \times B \times [1 - (D + E)] \times F \times G]/I\} + \{[A \times C \times [1 - (D + E)] \times F \times H]/I\}. \quad (2)$$

The components of Eq. (2) are as follows:

{(percentage of female hatchlings) × (no. of nests) × [1 - (nest destruction rate + nest predation rate)] × (no. of eggs/nest) × (hatching success rate)}/adult RV. Table 1 contains definitions of these variables. The value

of hatchlings, measured by this formula in Gjertsen (2011), is approximately 134 adult females/year.

HAWAIIAN SHALLOW-SET LONGLINE FISHERY REGULATIONS

Leatherbacks from the population nesting in Papua, Indonesia, are taken as bycatch in areas fished by the HLL fishery (Dutton et al. 2000; Benson et al. 2011). After a 3-year closure due to unacceptable levels of leatherback and loggerhead bycatch, the HLL fishery reopened in 2004 under a set of stringent regulations designed to reduce bycatch. The main changes were reduction in annual set numbers (reduced by approximately 50%); enactment of annual maximum limits on sea turtle bycatch (16 leatherbacks, 17 loggerheads; if limits are reached, the fishery is closed for the remainder of the calendar year); required use of 18/0 or larger circle hooks (no smaller than 50 mm [1.97 inches] outer diameter) with 10° offset; and required use of mackerel-type bait.

We estimated the annual economic costs of the HLL fishery regulations as the direct and indirect or opportunity costs (Table 2). Opportunity costs are the foregone net benefits from the next-best alternative; thus, costs are the observer costs and expected annual revenue loss from the regulations, that is

$$\text{triangular}[0, (B \times C), (B \times D)] + E. \quad (3)$$

Gjertsen (2011) estimated the annual economic costs from the HLL regulations as \$2,805,426 on the basis of expected annual revenue loss from the regulations plus the observer costs: $(B \times C) + E$.

Table 2. Variables related to costs and benefits of Hawaiian shallow-set longline fishery regulations.^a

<i>Cost^b</i>		<i>Benefit</i>	
<i>variable description</i>	<i>distribution</i>	<i>variable description</i>	<i>distribution</i>
Expected annual revenue loss after regulations, <i>A</i> (\$)	triangular (0; <i>BC</i> ; <i>BD</i>)	preregulation annual turtle take per 1000 hooks, <i>A</i>	best estimate (0.029)
Preregulation revenue, <i>B</i> (\$)	best estimate (54,385,150)	preregulation annual number of hooks, <i>B</i> (in 000s)	triangular (2000; 4000; 4000)
Expected reduction in revenue, <i>C</i> (low value)	best estimate (0.0225)	preregulation annual mortality rate, <i>C</i>	triangular (0; 0.14; 1)
Expected reduction in revenue, <i>D</i> (high value)	best estimate (0.044)	postregulation annual maximum allowable turtle take, <i>D</i>	best estimate (16)
Observer cost, <i>E</i> (\$)	best estimate (1,581,760)	postregulation annual turtle take per 1000 hooks, <i>E</i>	best estimate (0.005)
		postregulation annual number of hooks, <i>F</i> (in 000s)	triangular (1000; 2000; 2000)
		postregulation annual mortality rate, <i>G</i>	triangular (0; 0.13; 1)

^aAdditional information about estimates in Supporting Information.

^bMonetary unit (\$) is value of US\$ in 2005.

We estimated the benefits from the HLL fishery regulations as a reduction in expected annual mortality (Table 2):

$$(A \times B \times C) - \min[(D, (E \times F \times G))]. \quad (4)$$

Benefits from the HLL regulations in Gjertsen (2011) were a reduction in mortality by 100 adult female leatherbacks: $[(A \times B \times C) - D]$.

CDGN TEMPORAL AND AREA CLOSURES

We estimated the costs of the CDGN temporal and area closures as the direct and indirect cost (i.e., observer cost plus short-term economic profit per set multiplied by the foregone sets because of the closure) (Table 3):

$$(A \times E) + F. \quad (5)$$

Gjertsen (2011) estimated the cost from the CDGN closures as \$2,053,964/year.

We estimated the benefits of the CDGN closures as a reduction in expected annual mortality due to the closure. This was measured as the reduction in expected annual take postclosure compared with preclosure multiplied by the mortality rate (Table 3):

$$(A - J) \times K, \quad (6)$$

where we used the following equations: leatherback take preclosure (minimum) = $[(B + C)/(D \times E)]$; leatherback take preclosure (maximum) = $H \times I$; leatherback take postclosure (minimum) = 0; and leatherback take postclosure (maximum) = $[(F \times C)/G]$. Gjertsen (2011) estimated the benefits from the CDGN fishery closures as a reduction in mortality by 10 adult female leatherbacks $[(A - J) \times K]$.

We did not estimate the full extent of regulatory costs for the Hawaiian and California interventions because a complete estimate would include unavailable information on staff time and meeting time allocated specifically to program administration. Observer program costs are broad estimates and are not solely for the purpose of leatherback conservation and may therefore be overestimated.

We conducted Monte Carlo simulations of the model (Eqs. 1–6) in @Risk (version 6, Palisade, Ithaca, New York). We performed 5000 iterations with Monte Carlo sampling.

Results

Analysis conducted in Gjertsen (2011) revealed that current activities producing hatchlings at Jamursba Medi and Wermon nesting beaches cost more than 10 times less per adult female turtle than the HLL regulations and more than 100 times less per adult female turtle than the CDGN temporal and area closures (Table 4). For the same cost, the nesting beach project thus yielded over 10 times as many adult female leatherbacks as HLL regulations and over 100 times as many adult female leatherbacks as the temporal and area closure.

When we conducted simulations as described by Eqs. 1–6, the median cost per adult female turtle through nesting beach protection was \$1,132 (SD 1,404). The median cost per adult female turtle through HLL regulations was \$90,118 (SD 1,537,263). The median cost per adult female turtle through the CDGN closures was \$171,000 (SD 85,690).

These results were quite robust to uncertainty surrounding parameter estimates. Most cost-effectiveness

Table 3. Variables related to costs and benefits of California drift gillnet time-area closure.^a

<i>Cost^b</i>		<i>Benefit</i>	
<i>variable description</i>	<i>distribution</i>	<i>variable description</i>	<i>distribution</i>
Number of annual sets, <i>A</i>	triangular (418; 836; 1273)	annual leatherback take preclosure, <i>A</i>	triangular (8.7; 8.7; 48.2)
Average annual number of sets in closed area before closure, <i>B</i>	best estimate (836)	total observed takes inside closed area preclosure, <i>B</i>	best estimate (18)
Reduction in total annual sets after closure, <i>C</i>	best estimate (1273)	total observed takes outside closed area preclosure, <i>C</i>	best estimate (5)
Half of average annual number of sets in closed area before closure, <i>D</i>	best estimate (418)	annual observer coverage rate, <i>D</i>	best estimate (0.2)
Short-term economic profit per set, <i>E</i> (\$)	best estimate (1799)	number of years observed, <i>E</i>	best estimate (11)
Annual observer costs, <i>F</i> (\$)	best estimate (550,000)	annual number of sets outside closure post closure, <i>F</i>	best estimate (1448)
		annual number of observed sets outside closed area preclosure, <i>G</i>	best estimate (4147)
		highest annual observed turtle takes per set preclosure, <i>H</i>	best estimate (0.018)
		average number of total sets preclosure, <i>I</i>	best estimate (2,716)
		annual leatherback take postclosure, <i>J</i>	triangular (0; 1.7; 1.7)
		annual mortality rate, <i>K</i>	uniform (0.54; 0.63)

^aAdditional information about estimates in Supporting Information.

^bMonetary unit (\$) is value of US\$ in 2005.

Table 4. Annual cost per adult female of leatherback protection strategies.

	<i>Annual cost (2005 US\$)</i>	<i>Ratio of cost of fisheries interventions relative to nesting beach intervention (2005 US\$)</i>
Jamursba Medi and Wermon nesting beach	1558	1558/1558 = 1
Hawaiian shallow-set longline fishery	28,054	28054/1558 = 18
California drift gillnet fishery	205,396	205396/1558 = 132

simulation results for nesting beach protection relative to HLL regulations showed that it was tens of thousands to hundreds of thousands of dollars cheaper per adult turtle to protect beaches than it was to have HLL regulations (mean [SD] = 148,390 [1,537,261]). The range was considerable, from nesting beach protection costing \$46 million less than HLL regulations to nesting beach protection costing \$48 million more than the HLL regulations, but nearly all 5000 data points clustered about the mean. There was a <1% chance of HLL fishery regulations being more cost-effective than nesting beach protection.

The results were most sensitive to the number of eggs per nest, the expected annual revenue loss from regulations, and number of hooks before regulations.

The bulk of our simulation results for cost-effectiveness of nesting beach protection versus CDGN closures indicated that it was hundreds of thousands of dollars cheaper per adult turtle to protect nesting beaches than to have CDGN closures (mean [SD] = 188,672 [85,677]) (Fig. 3). There was a 0% chance of CDGN closure being more cost-effective than nesting beach protection. The results were most sensitive to leatherback take preclosure, followed by foregone sets due to closure, mortality rate, leatherback take postclosure, and reduction in expected annual mortality.

Discussion

Conservation investments in nesting beach protection and bycatch mitigation activities can target different stages in a species' life cycle in a holistic conservation strategy. Because all stages of the life cycle are important for population persistence, interventions targeting each stage represent a necessary but not sufficient condition for conservation and population recovery and requires an allocation of conservation resources.

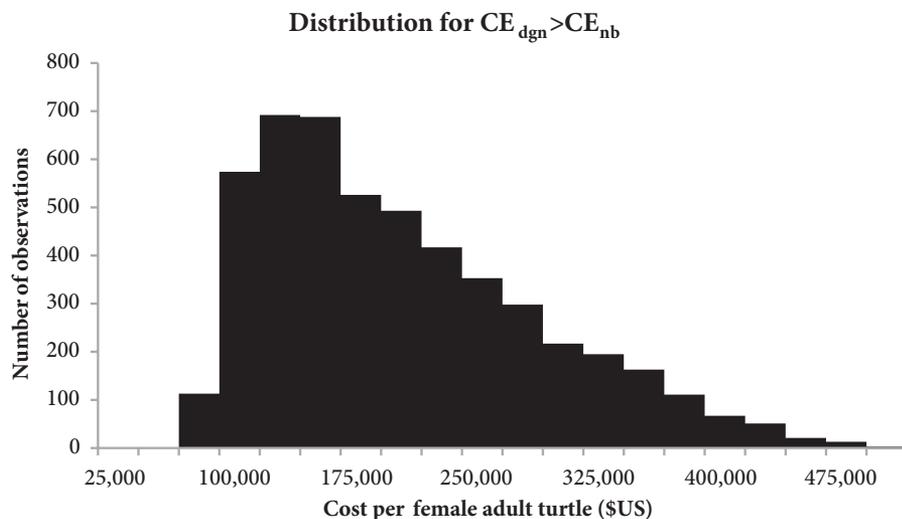


Figure 3. Distribution of cost per adult female turtle of protecting nesting beaches (CE_{nb}) in Papua, Indonesia, versus cost per adult female of temporal and area closures of the California drift gillnet fishery (CE_{dgn}) ($CE_{dgn} - CE_{nb}$).

In the case of the leatherback turtle, interventions to protect turtles, especially females, yield greater positive reproductive effect for a population than enhancing egg production because of the long lives and fecundity of sexually mature females and relatively low survival of eggs and hatchlings. Nonetheless, conservation activities with the highest biological effect may also be the most costly, so with a finite budget, undertaking these activities may result in a lower total effect than more of the less costly, lower impact activity. Under current conditions, we found that nesting site conservation to rebuild Pacific leatherback populations was the most cost-effective investment. Hatchling production in the western Pacific is greatest on Jamursba Medi and Wernon beaches. Thus, these beaches represent one of the better-case scenarios for cost-effective nesting beach conservation. Limits as to how much can be achieved by investing in nesting beach protection suggest that at some point the effect per dollar will decrease. These diminishing returns apply to conservation dollars allocated to any specific conservation activity, but given the orders-of-magnitude difference in cost-effectiveness, expanding nesting beach protection should dominate over any reasonable range of conservation investments in the near future. Low hatching success at many nesting beaches indicates substantial expected gains from increasing investment in improving hatchling production at these sites (Tiwari et al. 2011). In addition, the establishment of community-based nesting conservation projects and presence of patrollers have an added benefit of providing protection for nesting females at little or no additional cost.

The 2 at-sea regulations represent relatively high-cost, low-impact strategies. There may be more cost-effective bycatch reduction strategies, such as fisheries closures off nesting beaches during nesting season (Yeo et al. 2011). Such low-cost, high-impact opportunities should be pursued, for example, reducing bycatch when there is

a small number of fishers that cause high levels of bycatch (Peckham et al. 2007; Yeo et al. 2011).

Results for the CDGN temporal and area closures and the HLL regulations indicated leatherback protection on fishing grounds can be costly, mainly due to the opportunity cost of foregone profits from a decrease in effort or catch, and the effects of these measures are highly variable. However, the fact that other species and their habitats are protected by closures increases net benefits. Technological fixes, such as lower impact fishing gear, generally entail lower economic costs than temporal and area closures, which often close the most productive and profitable fishing grounds. Although substituting circle for J hooks in the pelagic longline fishery for swordfish was effective and did not reduce catch rates (Watson et al. 2005), finding a comparable bycatch-reducing technology for drift gill nets and other net fisheries has been more challenging.

Because leatherbacks are migratory, bycatch-reduction strategies are a weakest link technology. Effects may be zero (or negative) if efforts are only implemented in one area or one fishery, particularly when there is the possibility of imports from unregulated fisheries filling the swordfish harvesting shortfall (called production and trade leakages) and transfer of turtle mortality to unregulated fisheries. Because any one country's outcome depends not only on its own actions, but also on the actions of others, unilateral actions are unlikely to be successful, and self-enforcing multilateral conservation cooperation or coordination is instead required.

Cost-effectiveness of conservation of sea turtle nesting sites can be orders of magnitude greater than at-sea conservation, even when accounting for uncertainty in the main variables. These results reinforce the call for industry and developed nations to mitigate fishery bycatch by financing nesting site protection (Steering Committee of the Bellagio Conference on Sea Turtles 2004). This mitigation cannot offset fisheries bycatch for rare species until

these populations rebuild (Finkelstein et al. 2008; Dutton & Squires 2011; Dutton et al. 2011), and for other reasons such mitigation must include benefits to communities at nesting sites that exceed their conservation opportunity costs and avoid adverse selection of mitigating what would have been done anyway (Janisse et al. 2010). Starting in 2004, the CDGN fleet pioneered noncompensatory mitigation for Mexican nesting sites financed by a voluntary lump-sum tax (Janisse et al. 2010). Similarly, U.S. tuna canners, through the International Seafood Sustainability Foundation, voluntarily mitigate global longline catches through noncompensatory, global, nesting site conservation financed by an ad valorem tax on tunas. The first dividend of these double-dividend Pigovian taxes is the tax that partially internalizes sea turtle mortality external cost and creates incentives that more closely align swordfish producer and consumer behavior with social and conservation objectives. The second dividend is conservation benefits financed by tax receipts. Voluntary policies can be successful under some conditions, but there are limits, and complementary policies may be necessary (Segerson 2010).

Sea turtle nesting site conservation also may have advantages in terms of tractability compared with the difficulties of addressing stochastic bycatch of small-scale and artisanal fisheries and relatively rare species (Peckham et al. 2007; Segerson 2011) and the multilateral cooperation necessary for reducing bycatch in a transboundary fishery. Leatherbacks pass through the high seas, different exclusive economic zones, convention areas of 2 Pacific regional fishery management organizations, and several other smaller subregional territories. Because of their terrestrial nesting habitat and highly migratory aquatic life history, transboundary leatherbacks are thus subject to transnational externalities. In contrast to the aquatic habitat, nesting habitat occurs at a limited number of sites. There is a wide range of nesting site conservation strategies, including strategies that incorporate social norms and economic incentives (Dutton et al. 2011; Dutton & Squires 2011; Gjertsen & Stevenson 2011), but this discussion extends beyond the scope of this paper.

Our results suggest that additional investment in nesting site conservation at the margin can enhance cost-effective Pacific leatherback conservation as part of a holistic strategy that reduces threats at all life stages.

Acknowledgments

We thank R. Vetter, S. Stohs, and N. Spear for comments, as well as 2 anonymous reviewers. T. Hitipeuw and others at WWF-Indonesia provided information about Jamursba Medi and Wermon conservation projects. D. Kobayashi provided data and simulations for the

HLL fishery. The authors are responsible for remaining errors.

Supporting Information

Description of variables related to costs and benefits (Appendix S1), estimates of costs and benefits (Appendix S2), summary statistics from the simulations on distribution of benefits and costs (Appendix S3), and graphical results of the simulations on distribution of cost per adult female turtle (Appendix S4) are available online. The authors are solely responsible for the content and functionality of these materials. Queries (other than absence of the material) should be directed to the corresponding author.

Literature Cited

- Avens, L., J. C. Taylor, L. R. Goshe, T. T. Jones, and M. Hastings. 2009. Use of skeletochronological analysis to estimate the age of leatherback sea turtles *Dermochelys coriacea* in the western North Atlantic. *Endangered Species Research* 8:165-177.
- Benson, S. R., et al. 2011. Large-scale movements and high use areas of western Pacific leatherback turtles, *Dermochelys coriacea*. *Ecosphere* 2: Art84.
- Caswell, H. 2001. *Matrix population models*. Sinauer Associates, Sunderland, Massachusetts.
- Dutton, P. H., C. Hitipeuw, M. Zein, S. Benson, G. Petro, J. Pita, V. Rei, L. Ambio, and J. Bakarbesy. 2007. Status and genetic structure of nesting populations of leatherback turtles (*Dermochelys coriacea*) in the Western Pacific. *Chelonian Conservation Biology* 6:47-53.
- Dutton, P. H., A. Frey, R. A. LeRoux, and G. Balazs. 2000. Molecular ecology of leatherback turtles in the Pacific. Pages 248-253 in N. Pilcher and G. Ismail, editors. *Sea turtles of the Indo-Pacific: research management & conservation*. ASEAN Academic Press, London.
- Dutton, P. H. and D. Squires. 2011. A holistic strategy for Pacific sea turtle conservation. Pages 37-59 in P. H. Dutton, D. Squires, and M. Ahmed, editors. *Conservation of Pacific sea turtles*. University of Hawaii Press, Honolulu.
- Dutton, P., H. Gjertsen, and D. Squires. 2011. Conservation of the leatherback sea turtle in the Pacific. Pages 195-204 in R. Q. Grafton, R. Hilborn, D. Squires, M. Tait, and M. Williams, editors. *Handbook of marine fisheries conservation and management*. Oxford University Press, Oxford, United Kingdom.
- Dutton, D. L., P. H. Dutton, M. Chaloupka, and R. H. Boulon. 2005. Increase of a Caribbean leatherback turtle *Dermochelys coriacea* nesting population linked to long-term nest protection. *Biological Conservation* 126:186-194.
- Finkelstein, M., et al. 2008. Evaluating the potential effectiveness of compensatory mitigation strategies for marine bycatch. *PLoS ONE* 3: DOI:10.1371/journal.pone.0002480.
- Gjertsen, H. 2011. Can we improve our conservation bang for the buck? Cost effectiveness of alternative leatherback turtle conservation strategies. Pages 60-84 in P. H. Dutton, D. Squires, and M. Ahmed, editors. *Conservation of Pacific sea turtles*. University of Hawaii Press, Honolulu.
- Gjertsen, H., and T. Stevenson. 2011. Direct incentive approaches for leatherback turtle conservation. Pages 164-182 in P. H. Dutton, D. Squires, and M. Ahmed, editors. *Conservation of Pacific sea turtles*. University of Hawaii Press, Honolulu.
- Halpern, B., H. M. Regan, H. P. Possingham, and M. A. McCarthy. 2006. Accounting for uncertainty in marine reserve design. *Ecology Letters* 9:2-11.

- Hitipeuw, C., P. H. Dutton, S. Benson, J. Thebu, and J. Bakarbesi. 2007. Population status and inter-nesting movement of leatherback turtles, *Dermochelys coriacea*, nesting on the northwest coast of Papua, Indonesia. *Chelonian Conservation and Biology* 6:28–36.
- Janisse, C., D. Squires, J. Seminoff, and P. Dutton. 2010. Conservation investments and mitigation: the California drift gillnet fishery and Pacific sea turtles. Pages 231–240 in R. Q. Grafton, R. Hilborn, D. Squires, M. Tait, and M. Williams, editors. *Handbook of marine fisheries conservation and management*. Oxford University Press, Oxford, United Kingdom.
- Limpus, C. J., P. J. Couper, and M. A. Read. 1994. The loggerhead turtle, *Caretta caretta*, in Queensland: population structure in a warm temperate feeding area. *Memoirs of the Queensland Museum* 37:195–204.
- Peckham, S. H., D. M. Diaz, A. Walli, G. Ruiz, L. B. Crowder, and W. J. Nichols. 2007. Small-scale fisheries bycatch jeopardizes endangered Pacific loggerhead turtles. *PLoS ONE* 2: e1041.
- Regan, H. M., Y. Ben-Haim, B. Langford, W. G. Wilson, P. Lundberg, S. J. Andelman, and M. A. Burgman. 2005. Robust decision-making under severe uncertainty for conservation management. *Ecological Applications* 15:1471–1477.
- Segerson, K. 2010. Can voluntary programs reduce sea turtle bycatch? Insights from the literature in environmental economics. Pages 618–629 in R. Q. Grafton, R. Hilborn, D. Squires, M. Tait, and M. Williams, editors. *Handbook of marine fisheries conservation and management*. Oxford University Press, Oxford, United Kingdom.
- Segerson, K. 2011. Policies to reduce stochastic sea turtle bycatch. Pages 370–395 in P. H. Dutton, D. Squires, and M. Ahmed, editors. *Conservation of Pacific sea turtles*. University of Hawaii Press, Honolulu.
- Spotila, J. R., R. D. Reina, A. C. Steyermark, P. T. Plotkin, and F. V. Paladino. 2000. Pacific leatherback turtles face extinction. *Nature* 405:529–530.
- Steering Committee of the Bellagio Conference on Sea Turtles. 2004. What can be done to restore Pacific turtle populations? The Bellagio blueprint for action on Pacific sea turtles. The WorldFish Center, Penang.
- Tapilatu, R. F., P. H. Dutton, M. Tiwari, T. Wibbels, H. V. Ferdinandus, W. G. Iwanggin, and B. H. Nugroho. 2013. Long-term decline of the western Pacific leatherback, *Dermochelys coriacea*: a globally important sea turtle population. *Ecosphere* 4: Art25.
- Tiwari, M., D. L. Dutton, and J. Garner. 2011. Nest relocation: a necessary management tool for western Pacific leatherback nesting beaches. Pages 87–96 in P. H. Dutton, D. Squires, and M. Ahmed, editors. *Conservation of Pacific sea turtles*. University of Hawaii Press, Honolulu.
- Wallace, B. P., S. S. Heppell, R. L. Lewison, S. Kelez, and L. B. Crowder. 2008. Impacts of fisheries bycatch on loggerhead turtles worldwide inferred from reproductive value analyses. *Journal of Applied Ecology* 45:1076–1085.
- Watson, J., S. Epperly, A. Shah, and D. Foster. 2005. Fishing methods to reduce sea turtle mortality associated with pelagic long-lines. *Canadian Journal of Fisheries and Aquatic Sciences* 62:965–981.
- Yeo, B. H., D. Squires, K. Ibrahim, H. Gjertsen, S. Kamil, R. Zulkifli, T. Groves, P. Dutton, M. Hong, and C. Tan. 2011. Sea turtle–fisheries interactions in coastal fisheries: a case study of the East Coast of Peninsular Malaysia. Pages 290–318 in P. H. Dutton, D. Squires, and M. Ahmed, editors. *Conservation of Pacific sea turtles*. University of Hawaii Press, Honolulu.



CIVIL COVER SHEET

JS-44 (Rev. 6/17 DC)

I. (a) PLAINTIFFS (b) COUNTY OF RESIDENCE OF FIRST LISTED PLAINTIFF _____ (EXCEPT IN U.S. PLAINTIFF CASES)	DEFENDANTS COUNTY OF RESIDENCE OF FIRST LISTED DEFENDANT _____ (IN U.S. PLAINTIFF CASES ONLY) <small>NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE TRACT OF LAND INVOLVED</small>
(c) ATTORNEYS (FIRM NAME, ADDRESS, AND TELEPHONE NUMBER)	ATTORNEYS (IF KNOWN)

II. BASIS OF JURISDICTION (PLACE AN x IN ONE BOX ONLY) <table style="width:100%; margin-top: 5px;"> <tr> <td><input type="radio"/> 1 U.S. Government Plaintiff</td> <td><input type="radio"/> 3 Federal Question (U.S. Government Not a Party)</td> </tr> <tr> <td><input type="radio"/> 2 U.S. Government Defendant</td> <td><input type="radio"/> 4 Diversity (Indicate Citizenship of Parties in item III)</td> </tr> </table>	<input type="radio"/> 1 U.S. Government Plaintiff	<input type="radio"/> 3 Federal Question (U.S. Government Not a Party)	<input type="radio"/> 2 U.S. Government Defendant	<input type="radio"/> 4 Diversity (Indicate Citizenship of Parties in item III)	III. CITIZENSHIP OF PRINCIPAL PARTIES (PLACE AN x IN ONE BOX FOR PLAINTIFF AND ONE BOX FOR DEFENDANT) FOR DIVERSITY CASES ONLY! <table style="width:100%; margin-top: 5px;"> <thead> <tr> <th></th> <th style="text-align: center;">PTF</th> <th style="text-align: center;">DFT</th> <th></th> <th style="text-align: center;">PTF</th> <th style="text-align: center;">DFT</th> </tr> </thead> <tbody> <tr> <td>Citizen of this State</td> <td style="text-align: center;"><input type="radio"/> 1</td> <td style="text-align: center;"><input type="radio"/> 1</td> <td>Incorporated or Principal Place of Business in This State</td> <td style="text-align: center;"><input type="radio"/> 4</td> <td style="text-align: center;"><input type="radio"/> 4</td> </tr> <tr> <td>Citizen of Another State</td> <td style="text-align: center;"><input type="radio"/> 2</td> <td style="text-align: center;"><input type="radio"/> 2</td> <td>Incorporated and Principal Place of Business in Another State</td> <td style="text-align: center;"><input type="radio"/> 5</td> <td style="text-align: center;"><input type="radio"/> 5</td> </tr> <tr> <td>Citizen or Subject of a Foreign Country</td> <td style="text-align: center;"><input type="radio"/> 3</td> <td style="text-align: center;"><input type="radio"/> 3</td> <td>Foreign Nation</td> <td style="text-align: center;"><input type="radio"/> 6</td> <td style="text-align: center;"><input type="radio"/> 6</td> </tr> </tbody> </table>		PTF	DFT		PTF	DFT	Citizen of this State	<input type="radio"/> 1	<input type="radio"/> 1	Incorporated or Principal Place of Business in This State	<input type="radio"/> 4	<input type="radio"/> 4	Citizen of Another State	<input type="radio"/> 2	<input type="radio"/> 2	Incorporated and Principal Place of Business in Another State	<input type="radio"/> 5	<input type="radio"/> 5	Citizen or Subject of a Foreign Country	<input type="radio"/> 3	<input type="radio"/> 3	Foreign Nation	<input type="radio"/> 6	<input type="radio"/> 6
<input type="radio"/> 1 U.S. Government Plaintiff	<input type="radio"/> 3 Federal Question (U.S. Government Not a Party)																												
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Citizen or Subject of a Foreign Country	<input type="radio"/> 3	<input type="radio"/> 3	Foreign Nation	<input type="radio"/> 6	<input type="radio"/> 6																								

IV. CASE ASSIGNMENT AND NATURE OF SUIT

(Place an X in one category, A-N, that best represents your Cause of Action and one in a corresponding Nature of Suit)

<input type="radio"/> A. Antitrust 410 Antitrust	<input type="radio"/> B. Personal Injury/Malpractice 310 Airplane 315 Airplane Product Liability 320 Assault, Libel & Slander 330 Federal Employers Liability 340 Marine 345 Marine Product Liability 350 Motor Vehicle 355 Motor Vehicle Product Liability 360 Other Personal Injury 362 Medical Malpractice 365 Product Liability 367 Health Care/Pharmaceutical Personal Injury Product Liability 368 Asbestos Product Liability	<input type="radio"/> C. Administrative Agency Review 151 Medicare Act <u>Social Security</u> 861 HIA (1395ff) 862 Black Lung (923) 863 DIWC/DIWW (405(g)) 864 SSID Title XVI 865 RSI (405(g)) <u>Other Statutes</u> 891 Agricultural Acts 893 Environmental Matters 890 Other Statutory Actions (If Administrative Agency is Involved)	<input type="radio"/> D. Temporary Restraining Order/Preliminary Injunction Any nature of suit from any category may be selected for this category of case assignment. *(If Antitrust, then A governs)*
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<input type="radio"/> E. General Civil (Other) OR <input type="radio"/> F. Pro Se General Civil			
<u>Real Property</u> 210 Land Condemnation 220 Foreclosure 230 Rent, Lease & Ejectment 240 Torts to Land 245 Tort Product Liability 290 All Other Real Property <u>Personal Property</u> 370 Other Fraud 371 Truth in Lending 380 Other Personal Property Damage 385 Property Damage Product Liability	<u>Bankruptcy</u> 422 Appeal 27 USC 158 423 Withdrawal 28 USC 157 <u>Prisoner Petitions</u> 535 Death Penalty 540 Mandamus & Other 550 Civil Rights 555 Prison Conditions 560 Civil Detainee – Conditions of Confinement <u>Property Rights</u> 820 Copyrights 830 Patent 835 Patent – Abbreviated New Drug Application 840 Trademark	<u>Federal Tax Suits</u> 870 Taxes (US plaintiff or defendant) 871 IRS-Third Party 26 USC 7609 <u>Forfeiture/Penalty</u> 625 Drug Related Seizure of Property 21 USC 881 690 Other <u>Other Statutes</u> 375 False Claims Act 376 Qui Tam (31 USC 3729(a)) 400 State Reapportionment 430 Banks & Banking 450 Commerce/ICC Rates/etc. 460 Deportation	462 Naturalization Application 465 Other Immigration Actions 470 Racketeer Influenced & Corrupt Organization 480 Consumer Credit 490 Cable/Satellite TV 850 Securities/Commodities/Exchange 896 Arbitration 899 Administrative Procedure Act/Review or Appeal of Agency Decision 950 Constitutionality of State Statutes 890 Other Statutory Actions (if not administrative agency review or Privacy Act)

<input type="radio"/> G. Habeas Corpus/ 2255 530 Habeas Corpus – General 510 Motion/Vacate Sentence 463 Habeas Corpus – Alien Detainee	<input type="radio"/> H. Employment Discrimination 442 Civil Rights – Employment (criteria: race, gender/sex, national origin, discrimination, disability, age, religion, retaliation) *(If pro se, select this deck)*	<input type="radio"/> I. FOIA/Privacy Act 895 Freedom of Information Act 890 Other Statutory Actions (if Privacy Act) *(If pro se, select this deck)*	<input type="radio"/> J. Student Loan 152 Recovery of Defaulted Student Loan (excluding veterans)
<input type="radio"/> K. Labor/ERISA (non-employment) 710 Fair Labor Standards Act 720 Labor/Mgmt. Relations 740 Labor Railway Act 751 Family and Medical Leave Act 790 Other Labor Litigation 791 Empl. Ret. Inc. Security Act	<input type="radio"/> L. Other Civil Rights (non-employment) 441 Voting (if not Voting Rights Act) 443 Housing/Accommodations 440 Other Civil Rights 445 Americans w/Disabilities – Employment 446 Americans w/Disabilities – Other 448 Education	<input type="radio"/> M. Contract 110 Insurance 120 Marine 130 Miller Act 140 Negotiable Instrument 150 Recovery of Overpayment & Enforcement of Judgment 153 Recovery of Overpayment of Veteran’s Benefits 160 Stockholder’s Suits 190 Other Contracts 195 Contract Product Liability 196 Franchise	<input type="radio"/> N. Three-Judge Court 441 Civil Rights – Voting (if Voting Rights Act)

V. ORIGIN
 1 Original Proceeding
 2 Removed from State Court
 3 Remanded from Appellate Court
 4 Reinstated or Reopened
 5 Transferred from another district (specify)
 6 Multi-district Litigation
 7 Appeal to District Judge from Mag. Judge
 8 Multi-district Litigation – Direct File

VI. CAUSE OF ACTION (CITE THE U.S. CIVIL STATUTE UNDER WHICH YOU ARE FILING AND WRITE A BRIEF STATEMENT OF CAUSE.)

VII. REQUESTED IN COMPLAINT	CHECK IF THIS IS A CLASS ACTION UNDER F.R.C.P. 23 <input type="checkbox"/>	DEMAND \$ _____	JURY DEMAND: YES <input type="checkbox"/> NO <input type="checkbox"/>
VIII. RELATED CASE(S) IF ANY	(See instruction)	YES <input type="checkbox"/> NO <input type="checkbox"/>	If yes, please complete related case form

DATE: _____	SIGNATURE OF ATTORNEY OF RECORD _____
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INSTRUCTIONS FOR COMPLETING CIVIL COVER SHEET JS-44
 Authority for Civil Cover Sheet

The JS-44 civil cover sheet and the information contained herein neither replaces nor supplements the filings and services of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. Consequently, a civil cover sheet is submitted to the Clerk of Court for each civil complaint filed. Listed below are tips for completing the civil cover sheet. These tips coincide with the Roman Numerals on the cover sheet.

- I.** COUNTY OF RESIDENCE OF FIRST LISTED PLAINTIFF/DEFENDANT (b) County of residence: Use 11001 to indicate plaintiff if resident of Washington, DC, 88888 if plaintiff is resident of United States but not Washington, DC, and 99999 if plaintiff is outside the United States.
- III.** CITIZENSHIP OF PRINCIPAL PARTIES: This section is completed only if diversity of citizenship was selected as the Basis of Jurisdiction under Section II.
- IV.** CASE ASSIGNMENT AND NATURE OF SUIT: The assignment of a judge to your case will depend on the category you select that best represents the primary cause of action found in your complaint. You may select only one category. You must also select one corresponding nature of suit found under the category of the case.
- VI.** CAUSE OF ACTION: Cite the U.S. Civil Statute under which you are filing and write a brief statement of the primary cause.
- VIII.** RELATED CASE(S), IF ANY: If you indicated that there is a related case, you must complete a related case form, which may be obtained from the Clerk’s Office.

Because of the need for accurate and complete information, you should ensure the accuracy of the information provided prior to signing the form.

**UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA**

_____)	
<i>Plaintiff</i>)	
)	
v.	)	Civil Action No.
)	
_____)	
<i>Defendant</i>)	

SUMMONS IN A CIVIL ACTION

To: *(Defendant's name and address)*

A lawsuit has been filed against you.

Within 45 days after service of this summons on you (not counting the day you received it) you must serve on the plaintiff an answer to the attached complaint or a motion under Rule 12 of the Federal Rules of Civil Procedure. The answer or motion must be served on the plaintiff or plaintiff's attorney, whose name and address are:

If you fail to respond, judgment by default may be entered against you for the relief demanded in the complaint. You also must file your answer or motion with the court.

ANGELA D. CAESAR, CLERK OF COURT

Date: _____

Signature of Clerk or Deputy Clerk

Civil Action No. _____

PROOF OF SERVICE

(This section should not be filed with the court unless required by Fed. R. Civ. P. 4 (l))

This summons for *(name of individual and title, if any)* _____
was received by me on *(date)* _____.

I personally served the summons on the individual at *(place)* _____
_____ on *(date)* _____ ; or

I left the summons at the individual's residence or usual place of abode with *(name)* _____
_____, a person of suitable age and discretion who resides there,
on *(date)* _____, and mailed a copy to the individual's last known address; or

I served the summons on *(name of individual)* _____, who is
designated by law to accept service of process on behalf of *(name of organization)* _____
_____ on *(date)* _____ ; or

I returned the summons unexecuted because _____ ; or

Other *(specify):* _____

My fees are \$ _____ for travel and \$ _____ for services, for a total of \$ _____.

I declare under penalty of perjury that this information is true.

Date: _____

Server's signature

Printed name and title

Server's address

Additional information regarding attempted service, etc:

Attachment to Summons

CHRIS WILLIAMS, GARY BURKE; FRED HEPP; and JEFF HEPP, Plaintiffs

WILBUR ROSS, in his official capacity as Secretary of the U.S. Department of Commerce; and NATIONAL MARINE FISHERIES SERVICE, Defendants

**UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA**

_____)	
<i>Plaintiff</i>)	
)	
v.	)	Civil Action No.
)	
_____)	
<i>Defendant</i>)	

SUMMONS IN A CIVIL ACTION

To: *(Defendant's name and address)*

A lawsuit has been filed against you.

Within 45 days after service of this summons on you (not counting the day you received it) you must serve on the plaintiff an answer to the attached complaint or a motion under Rule 12 of the Federal Rules of Civil Procedure. The answer or motion must be served on the plaintiff or plaintiff's attorney, whose name and address are:

If you fail to respond, judgment by default may be entered against you for the relief demanded in the complaint. You also must file your answer or motion with the court.

ANGELA D. CAESAR, CLERK OF COURT

Date: _____

Signature of Clerk or Deputy Clerk

Civil Action No. _____

PROOF OF SERVICE

(This section should not be filed with the court unless required by Fed. R. Civ. P. 4 (l))

This summons for *(name of individual and title, if any)* _____
was received by me on *(date)* _____.

I personally served the summons on the individual at *(place)* _____
_____ on *(date)* _____ ; or

I left the summons at the individual's residence or usual place of abode with *(name)* _____
_____, a person of suitable age and discretion who resides there,
on *(date)* _____, and mailed a copy to the individual's last known address; or

I served the summons on *(name of individual)* _____, who is
designated by law to accept service of process on behalf of *(name of organization)* _____
_____ on *(date)* _____ ; or

I returned the summons unexecuted because _____ ; or

Other *(specify)*: _____

My fees are \$ _____ for travel and \$ _____ for services, for a total of \$ _____.

I declare under penalty of perjury that this information is true.

Date: _____

Server's signature

Printed name and title

Server's address

Additional information regarding attempted service, etc:

Attachment to Summons

CHRIS WILLIAMS, GARY BURKE; FRED HEPP; and JEFF HEPP, Plaintiffs

WILBUR ROSS, in his official capacity as Secretary of the U.S. Department of Commerce; and NATIONAL MARINE FISHERIES SERVICE, Defendants

**UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA**

_____)	
<i>Plaintiff</i>)	
)	
v.	)	Civil Action No.
)	
_____)	
<i>Defendant</i>)	

SUMMONS IN A CIVIL ACTION

To: *(Defendant's name and address)*

A lawsuit has been filed against you.

Within 45 days after service of this summons on you (not counting the day you received it) you must serve on the plaintiff an answer to the attached complaint or a motion under Rule 12 of the Federal Rules of Civil Procedure. The answer or motion must be served on the plaintiff or plaintiff's attorney, whose name and address are:

If you fail to respond, judgment by default may be entered against you for the relief demanded in the complaint. You also must file your answer or motion with the court.

ANGELA D. CAESAR, CLERK OF COURT

Date: _____

Signature of Clerk or Deputy Clerk

Civil Action No. _____

PROOF OF SERVICE

(This section should not be filed with the court unless required by Fed. R. Civ. P. 4 (l))

This summons for *(name of individual and title, if any)* _____
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I personally served the summons on the individual at *(place)* _____
_____ on *(date)* _____ ; or

I left the summons at the individual's residence or usual place of abode with *(name)* _____
_____, a person of suitable age and discretion who resides there,
on *(date)* _____, and mailed a copy to the individual's last known address; or

I served the summons on *(name of individual)* _____, who is
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My fees are \$ _____ for travel and \$ _____ for services, for a total of \$ _____.

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WILBUR ROSS, in his official capacity as Secretary of the U.S. Department of Commerce; and NATIONAL MARINE FISHERIES SERVICE, Defendants

**UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA**

_____)	
<i>Plaintiff</i>)	
)	
v.	)	Civil Action No.
)	
_____)	
<i>Defendant</i>)	

SUMMONS IN A CIVIL ACTION

To: *(Defendant's name and address)*

A lawsuit has been filed against you.

Within 45 days after service of this summons on you (not counting the day you received it) you must serve on the plaintiff an answer to the attached complaint or a motion under Rule 12 of the Federal Rules of Civil Procedure. The answer or motion must be served on the plaintiff or plaintiff's attorney, whose name and address are:

If you fail to respond, judgment by default may be entered against you for the relief demanded in the complaint. You also must file your answer or motion with the court.

ANGELA D. CAESAR, CLERK OF COURT

Date: _____

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I returned the summons unexecuted because _____ ; or

Other *(specify):* _____

My fees are \$ _____ for travel and \$ _____ for services, for a total of \$ _____.

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Date: _____

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