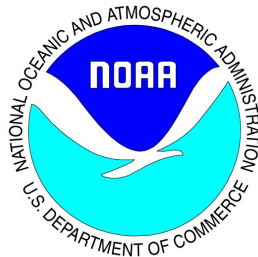


**FINAL
ENVIRONMENTAL IMPACT STATEMENT**

SEABIRD INTERACTION AVOIDANCE METHODS
under the
FISHERY MANAGEMENT PLAN FOR THE
PELAGIC FISHERIES OF THE WESTERN PACIFIC REGION

and

PELAGIC SQUID FISHERY MANAGEMENT
under the
FISHERY MANAGEMENT PLAN FOR THE
PELAGIC FISHERIES OF THE WESTERN PACIFIC REGION
and the
HIGH SEAS FISHING COMPLIANCE ACT



Prepared for:
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Pacific Islands Regional Office

Prepared by:
The Environmental Company

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Final Environmental Impact Statement

Seabird Interaction Avoidance Methods

under the
Fishery Management Plan for the
Pelagic Fisheries of the Western Pacific Region
and

Pelagic Squid Fishery Management

under the
Fishery Management Plan for the
Pelagic Fisheries of the Western Pacific Region
and the
High Seas Fishing Compliance Act

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Abstract: Two potential actions are assessed in this document. The objective of the first action is to reduce the adverse effects of interactions with seabirds from vessels authorized to fish under Hawaii longline limited entry permits. Longline fishing operations of these vessels result in the inadvertent hooking, entangling and killing of black-footed and Laysan albatrosses that nest in the Northwestern Hawaiian Islands. On rare occasions wedge-tailed and sooty shearwaters are also incidentally caught by these vessels. There is the potential for vessels in this fleet to interact with the endangered short-tailed albatross, although no such interaction has been documented. Information regarding new ways to reduce seabird interactions, including the use of side-setting and underwater setting chutes, recently has become available through cooperative research with fishery participants. This environmental impact statement analyzes alternatives to reduce the effects of seabird interactions in the Hawaii limited entry longline fishery. A range of methods to reduce interaction rates, singly and in combination, are analyzed for efficacy in reducing seabird interactions, operational practicability, likelihood of compliance, and cost.

The objective of the second action assessed in this document is enhanced monitoring of the United States squid jigging fisheries, including a nascent high seas industrial-scale fishery and several coastal small-boat fisheries in Hawaii. Two independent sets of alternatives for monitoring of these fisheries are evaluated that would effect new or modified management regimes authorized under the Magnuson-Stevens Act or the High Seas Fishing Compliance Act.

Executive Summary

Purpose and Need

Two potential actions are assessed in this document. The objective of the first action is to reduce the adverse effects of interactions¹ with seabirds from vessels authorized to fish under Hawaii longline limited entry permits. This would be accomplished through a regulatory amendment to the *Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region* (Pelagics FMP). Implementation of the action would proceed through promulgation of revised regulations by the National Marine Fisheries Service (NMFS). Longline fishing operations of these vessels result in the inadvertent hooking, entangling and killing of black-footed and Laysan albatrosses that nest in the Northwestern Hawaiian Islands (NWHI). On rare occasions wedge-tailed and sooty shearwaters are also incidentally caught by these vessels. There is the potential for vessels in this fleet to interact with the endangered short-tailed albatross, although no such interaction has been documented. Information regarding new ways to reduce seabird interactions, including the use of side-setting and underwater setting chutes, recently has become available through cooperative research with fishery participants. This environmental impact statement analyzes alternatives to reduce the effects of seabird interactions in the Hawaii limited entry longline fishery. A range of methods to reduce interaction rates, singly and in combination, are analyzed for efficacy in reducing seabird interactions, operational practicability, likelihood of compliance, and cost.

The objective of the second action assessed in this document is enhanced monitoring of the United States (U.S.) squid jigging fisheries, including a nascent high seas industrial-scale fishery and several coastal small-boat fisheries. Two independent sets of alternatives for monitoring of these fisheries are evaluated that would result in new or modified management regimes authorized under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act or MSA) (16 U.S.C. 1801 et seq.) or the High Seas Fishing Compliance Act (HSFCA) (16 U.S.C. 5501 et seq.). Implementation of this action would be accomplished by amendment of the Pelagics FMP and subsequent promulgation of new regulations by NMFS, or by amendment of the regulations implementing the HSFCA. Although high seas squid jigging is a very large international fishery, U.S. participation has been minimal to date, with but four vessels intermittently participating in the fishery since 2001. In Hawaii, two coastal small-boat jig fisheries target squid for local consumption and tuna bait, respectively. In other areas in the western Pacific region (Northern Mariana Islands and Guam), development of squid fisheries is being contemplated. For several reasons, assessment of the impacts of various potential management regimes for these fisheries is appropriate at this time. NMFS and the regional fishery management councils established under the MSA are proposing to develop ecosystem-

¹A seabird interaction is any contact between a seabird and fishing gear, implying that the seabird became entangled or was hooked, usually resulting in mortality to the seabird. Seabird “takes” or “captures” are usually recorded at the end of a set, during haulback of the longline, but may be recorded by observers or researchers during setting of a longline. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. This definition is implied herein when the term “take” is used in the context of a Biological Opinion prepared pursuant to section 7 of the Endangered Species Act.

based management of fisheries. As squid is an important prey base for many pelagic species, including protected marine mammals and seabirds, as well as tunas and billfish, it is appropriate to include squid as a pelagic management unit species. The Western Pacific Fishery Management Council (WPFMC or Council)² is considering management of pelagic squid species under its existing Pelagics FMP (WPFMC 1986, as amended).

Currently, high seas squid jigging by U.S. vessels is managed under the HSFCA, and vessels participating in that fishery carry HSFCA permits. As a result of a recent court decision (Turtle Island Restoration Network and Center for Biological Diversity v. NMFS, No. 02-15027, D.C. No. CV-01-01706-VRW Opinion [9th Cir. 2003], hereafter TIRN v. NMFS 2003), NMFS will bring all high seas fisheries authorized under the HSFCA into full compliance with provisions of the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.), the Marine Mammal Protection Act (MMPA) (16 U.S.C. 1361 et seq.) and the Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.). Although some of the fisheries permitted under the HSFCA are currently in compliance with those laws, others are not. Specifically, the U.S. Pacific high seas squid jigging fishery has not been assessed under NEPA, and further permitting of vessels in that fishery will not be done until requirements of NEPA are fulfilled. This EIS provides the NEPA analysis of a range of alternatives to monitor and manage that fishery.

The two existing small-boat squid jig fisheries in Hawaii are currently monitored under the State of Hawaii's Commercial Catch Reporting System. Fishers are required to hold state commercial fishing licenses and submit catch reports to the Hawaii Division of Aquatic Resources. It is not anticipated that management of these fisheries would change upon implementation of any of the squid fishery management alternatives assessed in this EIS.

Objectives

The specific objectives for the two actions assessed in this environmental impact statement are taken from action documents of the WPFMC (WPRFMC 2004c, 2004d), where they were stated as follows.

Seabird Action Objective. “The primary objective of the seabird management action is the cost-effective further reduction of the potentially harmful effects of fishing by Hawaii-based longline vessels on the short-tailed albatross, but the overarching goal is to reduce the potentially harmful effects of fishing by Hawaii-based longline vessels on all seabirds.”

Squid Action Objective. “The objective of the squid fishery management action is to establish appropriate mechanisms for the monitoring and management of pelagic squid harvest by domestic vessels, whether fishing under the authority of the MSA (Council fisheries) or the HSFCA (high seas fisheries).”

Because of the two authorities contained in the squid fishery management objective, two sub-objectives were defined by the Council, as follows.

²The Council also uses Western Pacific Regional Fishery Management Council (WPRFMC) in referring to itself, and when used, its publications are so attributed herein.

Squid Action Sub-objective A. “To establish appropriate mechanisms for the monitoring and management of pelagic squid fishing activities by domestic vessels currently regarded as within the Western Pacific Fishery Management Council’s authority (i.e., vessels fishing for squid or landing squid in ports within the U.S. Western Pacific Exclusive Economic Zone [EEZ]).”

Squid Action Sub-objective B. “To establish appropriate mechanisms for the monitoring and management of pelagic squid fishing activities by domestic vessels not currently regarded as subject to any regional fishery council’s jurisdiction (i.e., vessels fishing for squid outside of the U.S. EEZ and not making landings in U.S. ports).”

Alternatives

Seabird Action Alternatives

Implicit in the Council’s seabird action objective is the desire to minimize adverse effects of longline-seabird interactions on seabird populations. There are two potential strategies that could be employed to reduce the harmful effects of longline-seabird interactions on seabird populations: a) reduce the number of interactions, and b) reduce the consequences of such interactions. Cost-effectively reducing the consequences of seabird hookings appears problematic. Birds hooked while longlines are being set are pulled underwater and have a very high probability of mortality. Birds hooked while longlines are being retrieved may be recovered and released alive, but their injuries may result in delayed mortality. It is possible that birds retrieved alive could be given first aid (antibiotics, etc.) or longer-term care before release. This could reduce the consequences of some interactions (i.e., increase post-hooking survival rates), but would require training of fishermen, purchase of supplies and diversion of labor from the primary fishing activity. In any event, the majority of interactions occur during setting of the longline, so this strategy has inherent limitations. Nevertheless, two measures to reduce the effects of interactions (handling guidelines for hooked seabirds and mandatory attendance at NMFS’ protected species workshops by owners and operators of longline vessels) are in effect and would not be affected by the action assessed in this EIS. However, reducing the number of longline-seabird interactions appears to be a more promising strategy to accomplish the action objective, especially given the large amount of work that has been done in recent years to develop and test methods to inhibit such interactions.

The number of longline-seabird interactions may be reduced either by reducing the number of hooks deployed (i.e., reducing fishing effort) or by reducing the number of interactions per unit effort (i.e., reducing the interaction rate). Reduction of fishing effort would reduce fleet revenues and thus not support the action objective of cost-effective reduction of harmful effects to seabirds. Reduction of the interaction rate between longlines and seabirds, however, may be accomplished in a number of cost-effective ways, and this is the strategy adopted in developing alternatives for analysis in this EIS.

There are a number of methods that have been developed by fishermen and scientists that are aimed at reducing longline-albatross interactions. In 1991, Brothers had a fishing master deploy a diversion steamer line and found that it reduced bait loss to birds by 69% (Brothers 1991). Prior to 1991, fishing masters had tried towing buoys, throwing explosives, towing artificial lures and

adding weights to sink baits faster (Brothers 1991). Since then additional seabird interaction avoidance methods have been invented (Alexander et al. 1997, Brothers et al. 1999a, 1999b, McNamara et al. 1999, Boggs 2001, Melvin et al. 2001, Gilman et al. 2003). All seabird interaction avoidance methods, regardless of the details of their design or implementation methodologies, attempt to do one of the following in order to keep albatrosses away from baits:

1. Make baits difficult for birds to detect;
2. Make baits difficult for birds to reach;
3. Frighten, physically deter or draw birds away from baits; and
4. Reduce the number of birds congregating around the fishing vessel.

In formulating alternatives for assessment in this EIS, first, the characteristics of individual methods that could result in reductions of longline-seabird interaction rates were evaluated. The methods evaluated included those that were specified by the United States Fish and Wildlife Service (USFWS) in its current Biological Opinions (BiOp) on effects of the deep and shallow-set sectors of the fishery (USFWS 2002, 2004a), including thawed, blue-dyed bait, strategic offal discard, using a line-shooter with weighted branch lines and setting lines at night. In addition, an important factor in the Council's decision to initiate this action is that newly developed seabird interaction avoidance methods, and methods used in other fisheries elsewhere, may also be effective in the Hawaii longline fishery. Specifically, bird-scaring streamer lines (tori lines) have proven to be effective in deterring seabirds from approaching baited hooks in other longline fisheries, and two other methods have shown promise in reducing interaction rates in limited testing. These two methods are intended to make it difficult for birds to reach baited hooks. The first of these is the underwater setting chute. In this method, baited hooks are deployed through a metal chute at depths beyond the diving capabilities of the seabirds. The second method is side-setting. This method requires reconfiguration of deck gear such that the longline is deployed from the side of the vessel rather than from the stern. The baited hooks sink to depths beyond the reach of seabirds by the time the vessel over passes the hooks. Characteristics of tori lines, underwater setting chutes and side-setting were evaluated and they are all included in alternatives assessed in this EIS.

After evaluating of the characteristics of individual seabird interaction avoidance measures, measures were evaluated in combination to determine if there were combinations of these that worked substantially better than a single measure alone. In general, combinations involving side-setting appeared to give the greatest deterrent potential, but every combination had disadvantage of one sort or another. While side-setting appears to be a very promising measure, only limited and unstandardized experimentation has been done. Few data are available for its performance on vessels that have voluntarily adopted it, and those that have adopted it have not necessarily practiced it according to the specifications that would be required. It is uncertain if all vessels in the Hawaii-based fleet could physically convert to side-setting. It is also unknown whether seabirds would become accustomed to the technique, and learn to approach closer to a vessel's hull to take a bait. For these reasons, it appears premature to require the use of side setting throughout the fleet.

Combinations of measures employing thawed, blue-dyed bait suffered from the decreased performance of the dye on fish (mackerel-type fish bait is now required to be used in the shallow-set sector of the fishery to minimize sea turtle interactions) as compared with squid, which was

formerly used as bait in the shallow-set sector of the fishery. Strategic offal discards may ultimately serve to attract more birds to the vicinity of the longline vessel. Line-shooters can deploy the weighted branch lines at a speed exceeding that of the vessel, creating slack in the line and sinking the baited hooks relatively quickly. They are routinely used in this manner by vessels targeting bigeye tuna in deep sets. However, line-shooters can be adjusted to deploy the longline without slack at the vessel's speed, thus holding the line relatively near the surface. Tori lines may work well when positioned over the baits, but can blow away from the longline or tangle with it. Night-setting is effective and is typically used when shallow-setting for swordfish. It is not used when deep setting, however. Initial tests have shown the setting chute to be unreliable and inconvenient. Additional design development is required to resolve the difficulties encountered in testing of the prototypes.

In consideration of the above, a wide variety of alternatives were examined. These alternatives are generally of the form where vessels may use the current suite of measures required by regulations implementing the most recent BiOps for the deep-set sector (USFWS 2002) and shallow-set sector (USFWS 2004a) of the fishery or one of the individual methods above, but alternatives are offered which also consider requiring side-setting and eliminating thawed, blue-dyed bait and strategic offal discard from the default suite of measures.

Squid Fishery Management Alternatives

Two sets of squid fishery management alternatives were developed corresponding to the two sub-objectives stated above. In addition to a No Action Alternative, each set of alternatives includes an alternative to enlist the voluntary collection of data by fishery participants and placement of observers on their vessels. These alternatives include development of an accessible, centralized database of information on the fishery. Each set also includes alternatives that would make these measures mandatory. Additional alternatives considered placement of the pelagic squid jigging fishery under an existing or a new FMP. Finally, alternatives are considered that would promote international management of pelagic squid resources.

Preferred Alternatives

The Preferred Alternatives are as follows.

Seabird Action Preferred Alternative

Alternative SB7D: Swordfish (shallow-setting) vessels, wherever they fish, either use side-setting or use all of the following measures simultaneously: night-setting; thawed, blue-dyed bait; and tori lines. Use strategic offal discard when birds are present. Tuna (deep-setting) vessels, when fishing north of 23°N latitude, either use side-setting or use all of the following measures simultaneously: a line-shooter and weighted branch lines (45 g within 1 meter [m] of the hook); thawed, blue-dyed bait; and tori lines. Use strategic offal discards when birds are present.

Squid Action Preferred Alternatives

The Preferred Alternatives for the respective squid action sub-objectives in the western Pacific region are as follows.

SQA.3: Improve mandatory monitoring and establish mechanisms for management by including pelagic squid as a management unit species in the existing Pelagics FMP. Replace HSFCA logbooks currently used with logbooks revised to add data fields covering squid harvesting, and require operators of squid vessels permitted under the HSFCA to also include any EEZ fishing activities in this logbook. Require vessels that harvest pelagic squid solely in EEZ waters to either use this logbook or to participate in state³ reporting systems. Require vessels to carry observers if so requested by NMFS. Centralize the logbook into a database easily available to resource managers.

SQB.4: Improve mandatory monitoring by replacing the HSFCA logbooks currently used with required logbooks specifically designed for squid harvesting. Centralize logbook data into a database easily available to resource managers. Require vessels to carry observers if so requested by NMFS. In addition, HSFCA permit applications should be revised to indicate the specific fisheries (including both gears and target species) in which permittees anticipate fishing on the high seas (e.g., jigging for pelagic squid).

Issues to be Resolved

Although the following issues are not intended to be resolved or clarified in this EIS, their ultimate resolution would provide a more informed context in terms of albatross and squid biology and stock status for future management decisions.

- The seabird interaction avoidance measures established by regulations implementing the USFWS 2000 BiOp (USFWS 2000) were not in effect long enough before closure of the swordfish sector of the fishery in 2001 to assess their effectiveness in shallow-set operations. There is not enough observer data yet from the reauthorized swordfish fishery to determine the combined effects of seabird interaction avoidance measures and new sea turtle interaction avoidance measures (circle hooks, mackerel-type bait) on seabird interactions. The requirement for one hundred percent observer coverage in the reauthorized shallow-set sector of the fishery will allow quantification of seabird capture rates using the combination of seabird and turtle interaction avoidance measures.
- Quantification of seabird interactions in foreign longline fisheries is needed to better understand the effects of global longline fishing on seabird populations.
- Population trajectories for Laysan and black-footed albatross populations are an active area of research. Several modeling efforts are underway, but results are not yet available. Completion of these studies will help to clarify the status and the effects of longline fishing on these populations. Additional abundance data for nonbreeding and subadult seabirds would also contribute to our understanding of the status of these populations.

³or purposes of this document, State means the State of Hawaii, the Territory of American Samoa, the Territory of Guam or CNMI.

- The rate at which seabirds hooked during longline operations fall off the hook as a result of gear deployment/haul back operations, ocean currents, scavenging by predators or fisher actions is poorly understood, and additional focused observations would be useful to more completely understand the effects of longline fishing on these populations.
- Much of the basic biology of squid species and information regarding the status of the stocks is currently unknown. Additional research is needed in these areas. In addition, bycatch and protected species interaction data from pelagic squid jigging fisheries are very sparse. Better understanding of that issue through effective data gathering is a primary impetus for the proposed squid action. Under the MSA, FMP management measures must be “necessary and appropriate” for the conservation and management of fisheries. The HSFCA is the existing tool for collecting information about this fishery; however, the information regarding high seas jig fishing collected in the permit application and logbook system is currently inadequate in several respects, including identification and enumeration of bycatch and discards. MSA National Standard 7 (16 U.S.C. § 1851(a)(7)) requires conservation and management measures to “where practical, minimize costs...” The Preferred Alternatives for the squid jig fishery management action entail few costs above what is now incurred in management of the fishery. Additional costs would include broader data collection and analysis, and deployment of at least one observer in the fleet.

Areas of Controversy

There are no major controversies about the proposed seabird and squid actions assessed in this EIS. It is generally agreed that reduction of the effects of longline-seabird interactions is desirable and will benefit albatross populations. There is some uncertainty, as noted above, about the population trajectories of the Laysan and black-footed albatrosses, and hence about the importance of the effect of the proposed action on those populations. While some agencies and non-governmental organizations (NGOs) are advocating for elevating the protected statuses of these species (i.e., listed as “threatened” under the Endangered Species Act) because of presumed population declines, long-term trends in abundance are unclear, and there is disagreement about these trajectories among scientists. Modeling studies currently underway may clarify this situation.

The domestic high seas squid jigging fishery in the Pacific Ocean presently consists of a handful of vessels, but the squid resource may represent one of the few major living marine resources with potential for substantially increased exploitation. At this time, very little is known about the effect of the fishery on protected and other non-target species or on marine ecosystems generally. The purpose of the squid fishery management action assessed in this EIS is to develop a better understanding of the squid resource base and effects of the fishery on the pelagic ecosystem before a much larger fishery emerges. Widely reported in the popular press has been the lively controversy about claims that the abundance of top predators in the world’s oceans has decreased by some 90%, despite the high levels of tuna landings and recruitment in recent years. A better understanding of squid population dynamics may aid our understanding of pelagic predator populations, as well.