Seabird Interactions and Mitigation Efforts in Hawai‘i Pelagic Longline Fisheries 2024 Annual Report

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Please note: Data in this report are considered to be preliminary and may be revised as better information becomes available. For the most current data, please contact the NOAA Fisheries Pacific Islands Regional Office.

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1. INTRODUCTION

This annual report is required in the Terms and Conditions of the 2012 Biological Opinion of the U.S. Fish and Wildlife Service for the operation of Hawai'i-based Pelagic Longline Fisheries (USFWS 2012).

The National Marine Fisheries Service (NMFS) Pacific Islands Regional Office (PIRO) is responsible for minimizing, as practicable, interactions between Hawai'i pelagic longline fishing operations and seabirds. NMFS monitors the fisheries to determine the effectiveness of management measures implemented to minimize interactions and the severity of interactions. NMFS documents interactions and mitigation efforts aboard vessels at sea and reports annually on fishing effort, seabird interactions, and mitigation research. View this report and similar reports from earlier years online at https://www.fisheries.noaa.gov/pacific-islands/bycatch/seabird-interactions-pelagic-longline-fishery.

1.1 Background

NMFS and the Western Pacific Fishery Management Council (WPFMC) manage two Hawai'i pelagic longline fisheries under the Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific (FEP) and implementing regulations. The deep-set longline fishery targets primarily bigeye tuna at depths to 400 meters (m) and operates mainly north-northeast and southwest of the main Hawaiian Islands. The shallow-set longline fishery targets swordfish at depths to 100 m and typically operates north and east of the Hawaiian Islands. In 2024, Hawai'i longline vessels ranged between 49 and 98 feet in length. The FEP has a detailed description of the two fisheries (WPFMC 2009, as amended).

Since 1994, the Hawai'i longline fleet has been limited to 164 permits, which allow fishing in both the shallow- and deep-set fisheries. Beginning in 2004, vessels were required to declare if they would be shallow or deep fishing before leaving on a fishing trip. Activity levels in any given year since 2004 range from 11 to 35 vessels in the shallow-set fishery, and 111 to 150 vessels in the deep-set fishery. Nearly all vessels in the shallow-set fishery also take part, to some degree, in the deep-set fishery during the year. In 2024, 150 vessels made 21,823 deep-sets in 1,635 trips and set 65.9 million hooks, and 21 vessels made 874 shallow-sets in 54 trips and set 1.1 million hooks (WPFMC 2025).

Laysan albatross, black-footed albatross, shearwaters, fulmars, boobies, and the endangered short-tailed albatross feed around the Hawaiian Islands in areas where the longline fisheries operate. During the deployment (setting) and retrieval (hauling) of longline fishing gear, hooks and line may occasionally hook or entangle seabirds that try to take bait or catch. Seabirds are more likely to drown when the interaction occurs during setting because the weight of the gear may pull the seabird underwater. Although some interactions are inevitable, fishermen take steps to avoid and minimize interactions.

In this report, the statistics on seabird interactions are based on observations from observers—NMFS monitors aboard fishing vessels. In 2000, NMFS estimated 2,433 seabird interactions in the Hawai'i longline fisheries. Beginning in 2001, NMFS implemented a series of seabird mitigation measures, including seabird-deterrent fishing gear and techniques that have reduced interactions. In 2024, there were 91 observed interactions in the shallow-set fishery, which has 100 percent observer coverage, and an estimated 78 interactions in the deep-set fishery, which had 13.35 percent observer coverage (Cooper 2025).

Data summaries throughout this report and elsewhere may vary slightly depending upon the data source, including revisions. For example, observers may report seabird interactions by date of trip (departure or

arrival), set date, or haul date in a given year. NMFS typically bases observer coverage levels on the trip departure date. In 2021, the NMFS Sustainable Fisheries Observer Program began accounting for protected species interactions in their quarterly, semiannual, and annual reports based on the date that the haul on which the interaction occurred began. In earlier years, interactions were based on the vessel arrival date. NMFS also provides summary reports from mandatory logbook data reported by captains.

1.2 Seabird Mitigation Measures for the Hawai‘i Longline Fisheries

Most of the regulations for Hawai‘i longline fisheries are in Title 50, Code of Federal Regulations, Parts 600 and 665 (50 CFR 600 and 665). Regulations specific to the mitigation of seabird interactions and safe handling techniques are at 50 CFR 665.815. NMFS also provides a regulation summary, a compliance guide for reducing seabird interactions, and seabird handling guidelines to Hawai‘i longline fishermen and the general public.

The ways that fishermen carry out required seabird mitigation measures depend on how and where fishermen fish. Mitigation measures to reduce seabird interactions differ between the two options of stern-setting and side-setting. The following sections describe each of the main gear and operation requirements. The 2012 Biological Opinion (USFWS 2012) also describes these measures. New seabird mitigation measures that modify requirements for Hawai‘i deep-setting longline vessels that set gear from the stern went into effect on April 1, 2024.

Stern-Setting Versus Side-Setting

Stern-setting is the most common method of deploying longline fishing gear, where crewmen deploy (set) baited hooks from the back (stern) of the vessel. Shallow-setting vessels that set gear using this method must bait hooks with thawed, blue-dyed bait and begin setting no earlier than 1 hour after local sunset and complete setting by local sunrise. Additionally, crews must strategically discharge fish, fish parts, or spent bait (collectively known as "offal") on the side of the vessel opposite the gear deployment or retrieval, when seabirds are present. Deep-setting vessels that set gear using this method north of latitude 23° N must deploy a tori line (bird-scaring streamer) system prior to setting the first hook. A line shooter must also be used, and each branch line must be fitted with a weight of at least 45 g (1.6 oz) within 1 m (3.3 ft) of each hook to reduce the risk of seabird bycatch.

In side-setting, the crew sets baited hooks forward and close to the side of the vessel’s hull where seabirds are unable or unwilling to pursue the hooks. With required branch line weighting, the baited hooks will have sunk to a depth where seabirds cannot reach them by the time the vessel stern passes the location where baited hooks have been set (Gilman and Brothers 2006; Gilman et al. 2005, 2007a, 2007b). Additionally, deploying a required bird curtain aft of where crew is deploying the gear inhibits seabirds from landing on the water along the side of the vessel where baits are accessible.

Table 1 summarizes the number of Hawai‘i deep- and shallow-set vessels observed to set from the stern and from the side in 2024. In 2024, most vessels chose to stern-set.

Table 1: Number of observed Hawai'i longline vessels that side- and stern-set in 2024.
Source: NMFS PIRO Sustainable Fisheries Observer Program, unpublished data, 07/25/2025

Fishery	Deck setting position	Vessels
Deep-set	Stern-setting	116
Deep-set	Side-setting	17
Shallow-set	Stern-setting	20
Shallow-set	Side-setting	2

Weighted Branch Lines

Fishermen place weights close to the hook on branch lines so baited hooks sink quickly and help prevent foraging seabirds from becoming hooked or entangled in longline gear. When deep-setting north of 23° N (either stern- or side-setting), or while shallow- side-setting anywhere, Hawai'i fishermen must attach a weight of at least 45 g within 1 m of the hook to sink the branch line quickly. Fishermen commonly use weights from 45–80 g.

Thawed and Blue-Dyed Bait

Dyeing bait to a specific blue color decreases visibility of the bait by reducing its contrast with the sea surface and is required for stern-setting vessels in the shallow-set fishery in combination with night-setting. Fishermen thaw the bait to increase sink rates and to allow a more effective penetration of the blue dye. At least two cans of blue dye must be maintained on board to ensure proper bait coloration. Almost all bait used in the Hawai'i longline fisheries consists of mackerel (saba), sardines, saury (sanma), and, beginning in 2022, herring and milkfish. NMFS prohibits squid bait in the shallow-set fishery to reduce sea turtle interactions. While fishermen may still use squid in the deep-set fishery, the squid bait costs more than some fish bait and is therefore less preferred.

Strategic Offal Discharge

Fishermen developed the technique of strategically discharging offal on the opposite side of the vessel during fishing operations to distract seabirds from trying to steal baits. NMFS observers in the mid-1990s noted that this technique reduced incidental hooking or entanglement of albatrosses, though recent research results show offal discharge can have the unintended effect of attracting more seabirds (Gilman et al. 2021). Strategic offal discharge is required when shallow-setting. All offal must be de-hooked before discharge, and swordfish heads must be halved vertically with the bill and liver removed.

Night-Setting

Night-setting as a seabird mitigation measure in the shallow-set fishery is based on the premise that seabirds cannot see baited hooks in the dark and therefore are not attracted to them. The measure requires shallow-set fishermen, when stern-setting, to start deploying gear no earlier than 1 hour after local sunset and complete the set no later than the following sunrise. The measure also requires using the minimum lighting necessary to conform to navigation rules and best safety practices. Night-setting has been a very effective seabird mitigation measure, reducing seabird interactions by as much as 98 percent (McNamara et al. 1999; Boggs 2003).

Tori Lines

Revised regulations took effect April 1, 2024, requiring a tori line (bird-scaring streamer) on deep-set longline vessels that set gear from the stern and fish north of lat. 23°. The tori line must be at least 100 m (328 ft) in

total length with a 50 m (164 ft) aerial section that includes streamers spaced less than 1 m (3.3 ft) apart (except the last 20 m of the aerial section). Two compliant tori lines must be available on board at the start of each trip. The tori line must be mounted at a height of at least 5 m (16.4 ft) above the water, with increased height required for attachment points set further forward from the stern. These vessels are no longer required to use thawed, blue-dyed bait and strategic offal (fish, fish parts, or spent bait) discharge. All other pelagic longline seabird mitigation regulations stay in effect and are listed in 50 CFR 665.815. Requirements have not changed for shallow-setting vessels or deep-setting vessels that set gear from the side. Additional information on this regulatory change is described in the regulatory amendment (WPRFMC and NMFS 2023), which can be viewed online at: https://www.regulations.gov/document/NOAA-NMFS-2022-0131-0006.

Table 2 summarizes the seabird mitigation requirements for 2024.

Table 2: Seabird mitigation requirements for the Hawai'i longline fleet in 2024.

What you need to do	Stern-setting		Side-setting	
	Shallow-set Anywhere	Deep-set North of 23° N	Shallow-set Anywhere	Deep-set North of 23° N
Deploy mainline from port or starboard side at least 1 m forward of stern corner			Yes	Yes
If line shooter is used, mount it at least 1 m forward from stern corner			Yes	Yes
Use a specified bird curtain aft of the setting station during set			Yes	Yes
Deploy gear so that hooks do not resurface			Yes	Yes
Attach 45 g or heavier weights within 1 m of each hook		Yes	Yes	Yes
Use a line shooter to set the mainline		Yes		
Use a tori line that meets required specifications during set		Yes		
Keep two 1-pound containers of blue-dye bait on boat	Yes			
Use completely thawed and blue-dyed bait	Yes			
Keep fish parts and spent bait with all hooks removed for strategic offal discard	Yes			
Cut all swordfish heads in half, and use heads and livers for strategic offal discard	Yes			
Night set – Begin set 1 hour after local sunset and finish 1 hour before next sunrise and keep lighting to a minimum	Yes			

1.3 Protected Species Workshops

In addition to gear and operational mitigation measures to deter or reduce seabird interactions, owners and operators of pelagic longline vessels must complete a protected species workshop each year (50 CFR 665.814).

The workshop includes training in identification, safe handling, and release techniques for sea turtles, marine mammals, seabirds, and protected sharks and rays. The workshop also reviews regulatory and compliance requirements. A valid workshop certificate is necessary to obtain or renew federal longline fishing permits, and operators must keep a copy of the certificate on board the vessel while fishing. In 2024, NMFS PIRO provided protected species workshop training for 282 Hawai‘i-based and 22 American Samoa–based longline vessel owners, operators, and other interested individuals.

Recent Endangered Species Act (ESA) Biological Opinions for the Hawai‘i and American Samoa longline fisheries include requirements to expand and offer protected species workshop trainings to all crew members. Vessels must have at least two trained individuals onboard during fishing trips, with one person on deck to oversee protected species interactions during gear retrieval. To support this, NMFS PIRO, in coordination with the Hawaii Longline Association, launched a pilot crew training program in April 2024. By the end of 2024, 534 crew members from 107 unique vessels had completed the training. A regulatory amendment to formalize this requirement is in development.

2. INTERACTIONS

2.1 Species

NMFS observers have recorded the following bird species being hooked or entangled in the longline fisheries since 1994, when NMFS began deploying observers: Laysan albatross *(Phoebastria immutabilis)*, black-footed albatross *(P. nigripes)*, sooty shearwater *(Puffinus griseus)*, unidentified shearwaters, brown booby *(Sula leucogaster)*, red-footed booby *(S. sula)*, Northern fulmar *(Fulmarus glacialis)*, glaucous winged gull *(Larus glaucescens)*, and an unidentified gull. None of these species is listed under the ESA. Both Hawai‘i longline fisheries have low levels of interactions with these species. Based on the population estimates, the fisheries likely have little to no effect on these populations.

Some seabirds, especially shearwaters, are difficult to identify at sea. To support research and conservation, NMFS observers in the Hawai‘i longline fisheries collect certain seabirds caught incidentally during fishing. From the beginning of 2024, this would include the first dead Laysan and black-footed albatross from each trip, any banded individuals, and all other dead seabird species. Specimens are frozen and shipped to Oikonos, a nonprofit partner that has worked with NOAA since 2007 to collect biological data. This collaboration earned NOAA the 2023 Presidential Migratory Bird Federal Stewardship Award, presented in June 2024.

However, due to new federal spending guidance, NOAA suspended some grants and terminated some contracts, including the Oikonos agreement, in April 2025. To ensure continuity, seabird necropsies are now conducted locally at labs in O‘ahu, reducing shipping needs while maintaining data collection. Following necropsy, the seabirds are donated to Hawaiian cultural practitioners. Collection continues to be covered under existing confidentiality agreements and contracts, facilitating coordination with NOAA’s Pacific Islands Regional Office. That said, observers have been instructed not to collect seabird specimens at this time.

Table 3: Summary of collected seabirds from the Hawai'i longline fisheries, 2024.
Note: Not all dead seabirds are collected as specimens.
Source: NMFS PIRO Sustainable Fisheries Observer Program, unpublished data, 07/25/2025.

Species	Number collected
Black-footed albatross	9
Laysan albatross	6
Brown booby	1

2.2 Location and Date of Interactions

The spatial distribution of observed seabird interactions in 2024 in the deep- and shallow-set fisheries are shown in Figures 1 and 2, respectively. Most of the interactions occur north of 20° N, where seabirds are typically more abundant and fishing effort is more concentrated. Figures 3 and 4 show the quarter of the year during which observed seabird interactions occurred in 2024 and cumulatively since 2004 in the deep- and shallow-set fisheries, respectively. Most of the interactions occurred in the first and second quarters (January through June) in 2024 and since 2004, with few interactions occurring in the third quarter.

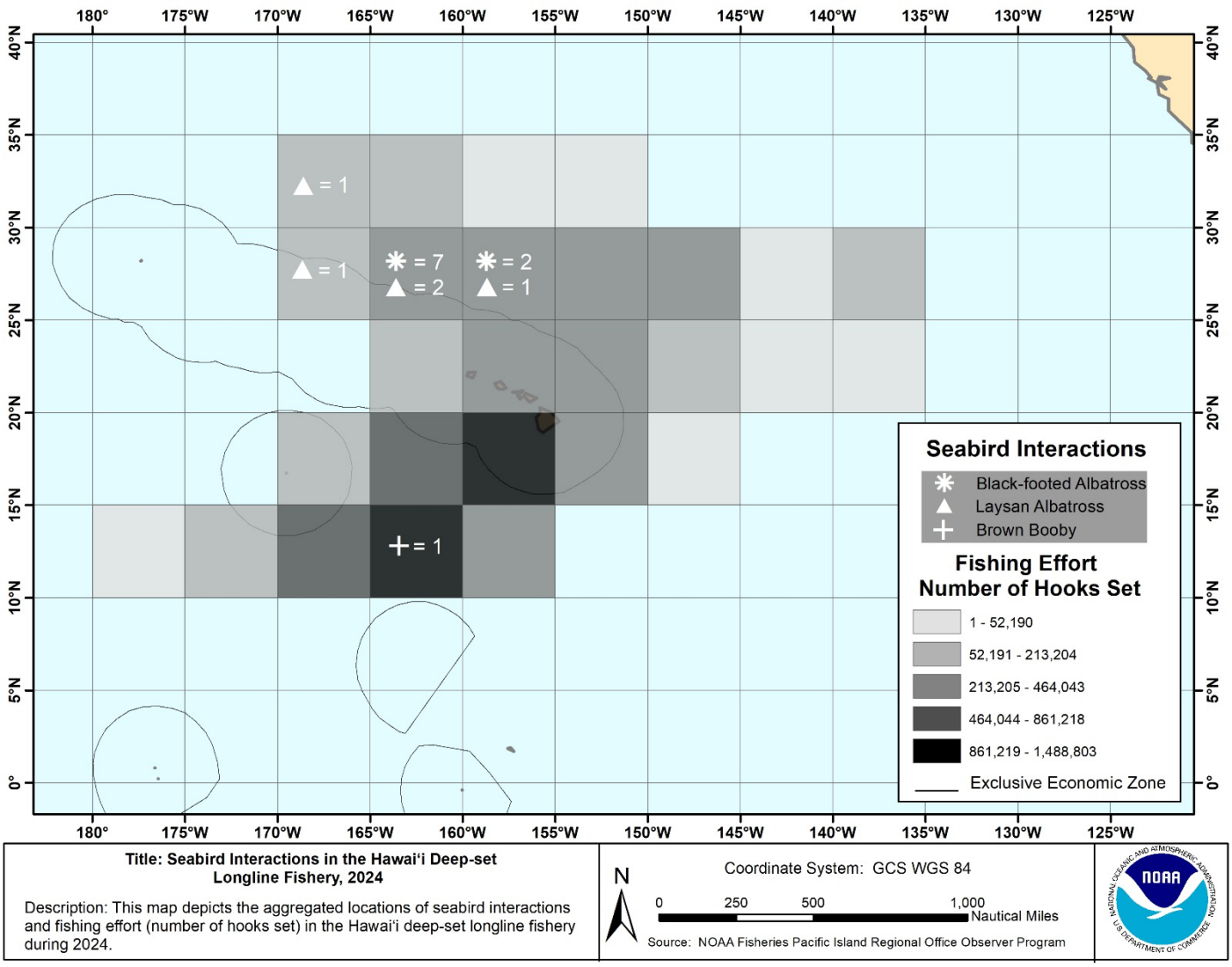

Figure 1: Locations of seabird interactions observed in Hawai‘i deep-set longline fishery, 2024.
Note: NMFS deployed observers on 17.41% of deep-set trips in 2024.
Source: NMFS PIRO Sustainable Fisheries Observer Program, unpublished data, 09/11/2025.

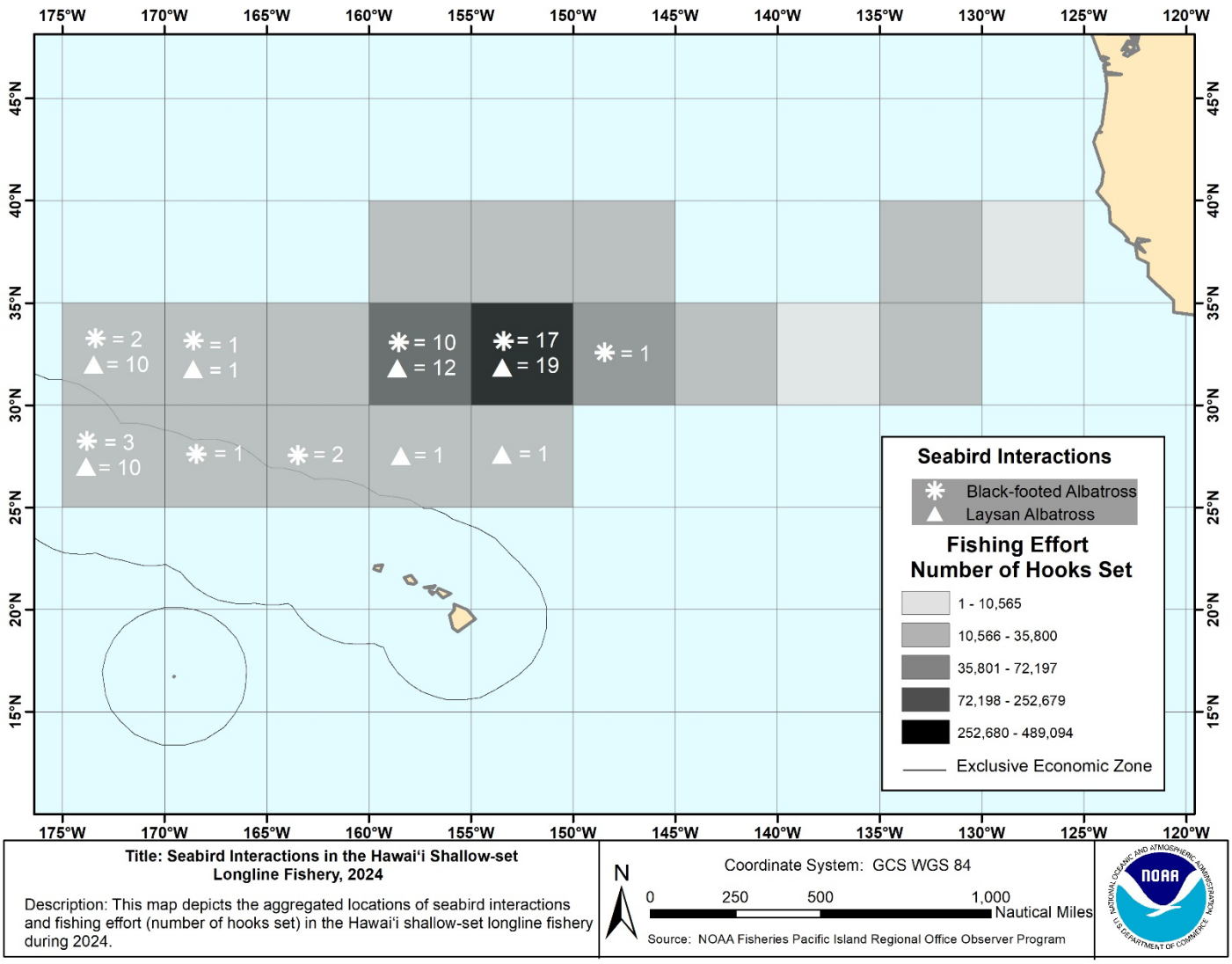

Figure 2: Locations of seabird interactions observed in Hawai'i shallow-set longline fishery, 2024.
Note: NMFS deployed observers on every shallow-set trip in 2024.
Source: NMFS PIRO Sustainable Fisheries Observer Program, unpublished data, 09/11/2025.

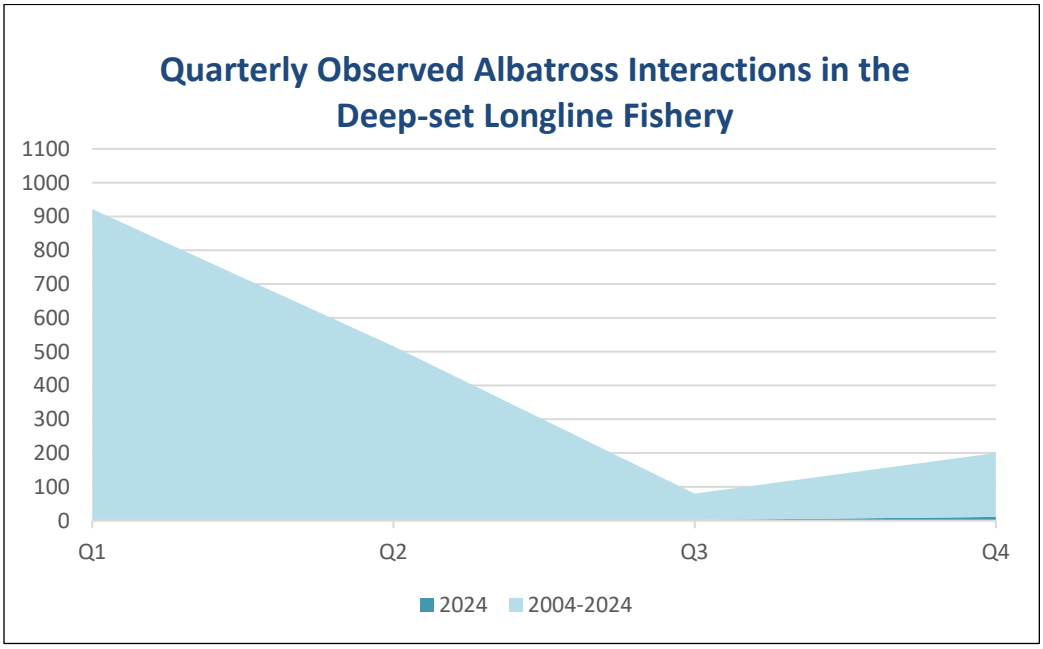

Figure 3: Number of observed seabird interactions in the deep-set longline fishery, 2004–2024 and 2024, in each date by quarter (Q).

Note: Q1 = January 1st–March 31st, Q2 = April 1st–June 30th, Q3 = July 1st–September 30th, and Q4 = October 1–December 31st.

Source: NMFS PIRO Sustainable Fisheries Observer Program, unpublished data, 05/31/2025.

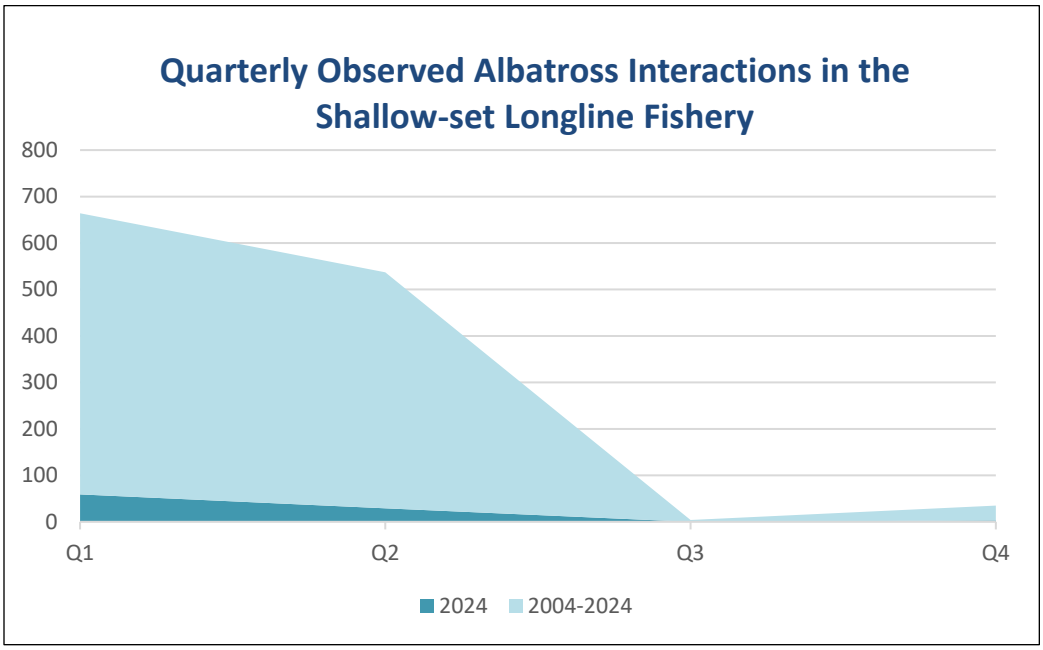

Figure 4: Number of observed seabird interactions in the shallow-set longline fishery, 2004–2024 and 2024, in each date by quarter (Q).

Note: Q1 = January 1st–March 31st, Q2 = April 1st–June 30th, Q3 = July 1st–September 30th, and Q4 = October 1–December 31st.

Source: NMFS PIRO Sustainable Fisheries Observer Program, unpublished data, 09/11/2025.

2.3 Number of Interactions and Effort

Seabirds can be hooked, entangled, or both, but are most commonly hooked only. Regulations require fishermen to remove as much gear as is safely possible from any captured seabirds before releasing them. Albatross interactions are relatively rare events in the Hawai'i longline fisheries. In 2024, there were no albatross interactions on 97 percent of observed deep-set trips and 69 percent of shallow-set trips. Table 4 summarizes the number of observed seabird interactions, the condition of the seabirds upon release, and fishing effort in both fisheries from 2004–2024.

During that period, NMFS deployed observers on 100 percent of shallow-set fishing trips, so the number of interactions shown in Table 4 represents the fishery-wide totals. NMFS deployed observers on approximately 13 percent of deep-set trips in 2024, so we expanded the observed interactions using the observer coverage rate to estimate total interactions (Table 5). Figure 5 shows the seabird interaction rate from 2004–2024 based on the data from Table 4.

Table 4: Numbers of observed seabird catch levels, fishing effort, and interaction rates in the combined Hawai'i longline fisheries, 2004–2024.
Note: Observed seabird catch and effort are based on the date and time of the beginning of the haul.
Source: Sustainable Fisheries Observer Program data (unpublished, 09/11/2025) and Sustainable Fisheries Observer Program annual reports (NMFS 2025a and NMFS 2025b).

Deep-set Fishery

Year	Laysan albatross	Black-footed albatross	Sooty shearwater	Other or unidentified bird species	Total birds observed caught	Birds released injured and alive	Birds released dead	Total observed effort (hooks)	Seabird interaction rate (birds per 1,000 hooks observed)
2004	2	5	-	2	9	-	9	4,013,212	0.002
2005	6	11	-	1[1]	18	-	18	9,328,681	0.002
2006	1	17	5	-	23	-	23	7,434,798	0.003
2007	7	18	-	-	25	-	25	7,728,502	0.003
2008	14	30	14	2[2]	60	4	56	8,747,946	0.007
2009	18	23	4	-	45	-	45	7,872,668	0.006
2010	39	17	1	-	57	1	56	8,161,800	0.007
2011	32	13	3	-	48	2	46	8,328,872	0.006
2012	31	36	6	-	73	5	68	8,845,848	0.008
2013	48	49	8	-	105	5	100	9,296,069	0.011
2014	12	38	1	-	51	6	45	9,556,918	0.005
2015	25	101	4	2[4]	132	19	113	9,309,682	0.014

Year	Laysan albatross	Black-footed albatross	Sooty shearwater	Other or unidentified bird species	Total birds observed caught	Birds released injured and alive	Birds released dead	Total observed effort (hooks)	Seabird interaction rate (birds per 1,000 hooks observed)
2016	33	104	4	3[5]	144	7	137	9,901,279	0.015
2017	38	103	-	1[6]	142	13	129	10,190,504	0.014
2018	35	190	9	2[8]	236	28	208	11,907,869	0.020
2019	43	145	-	1[9]	189	8	181	12,739,655	0.015
2020	59	95	1	1[10]	156	13	143	8,849,665	0.018
2021	38	87	-	2[12]	127	10	117	11,460,814	0.011
2022	56	47	-	1[14]	104	2	102	12,417,687	0.008
2023	11	33	1	2[15]	47	2	45	10,997,973	0.004
2024	5	9	-	1[16]	15	1[17]	14	8,221,945	0.002

Shallow-set Fishery

Year	Laysan albatross	Black-footed albatross	Sooty shearwater	Other or unidentified bird species	Total birds caught	Birds released injured and alive	Birds released dead	Total observed effort (hooks)	Seabird interaction rate (birds per 1,000 hooks observed)
2004	1	-	-	-	1	1	-	115,718	0.009
2005	62	7	-	-	69	47	22	1,358,247	0.051
2006	8	3	-	-	11	5	6	676,716	0.016
2007	40	8	-	-	48	40	8	1,353,761	0.035
2008	33	6	-	-	39	24	15	1,460,042	0.027
2009	81	30	1	-	112	88	24	1,694,550	0.066
2010	40	38	-	1[3]	79	61	18	1,835,182	0.043
2011	49	19	-	-	68	53	15	1,505,467	0.045
2012	62	37	-	-	99	78	21	1,476,969	0.067

Year	Laysan albatross	Black-footed albatross	Sooty shearwater	Other or unidentified bird species	Total birds caught	Birds released injured and alive	Birds released dead	Total observed effort (hooks)	Seabird interaction rate (birds per 1,000 hooks observed)
2013	45	28	2	-	75	48	27	1,074,909	0.070
2014	39	32	1	-	72	56	16	1,470,683	0.049
2015	43	38	-	-	81	65	16	1,274,805	0.064
2016	25	40	-	-	65	50	15	796,165	0.082
2017	6	53	-	1[7]	60	38	22	1,083,216	0.055
2018	2	7	-	-	9	7	2	486,013	0.019
2019	15	19	-	-	34	26	8	374,487	0.091
2020	26	5	-	1[11]	32	32	-	624,579	0.051
2021	10	45	1	1[13]	57	45	12	1,026,373	0.056
2022	38	71	-	-	109	84	25	1,242,997	0.088
2023	15	23	-	-	38	32	6	1,139,864	0.033
2024	54	37	-	-	91	54[17]	37	1,170,372	0.078

[1]Brown booby; [2]red-footed booby and unidentified seabird; [3]northern fulmar; [4]red-footed booby and unidentified shearwater; [5]two red-footed boobies and one unidentified albatross; [6]unidentified gull; [7]glaucous-winged gull; [8]one brown booby and one red-footed booby; [9]brown booby; [10]brown booby; [11]northern fulmar; [12]unidentified shearwater; [13]unidentified shearwater; [14]brown booby; [15]one masked booby and one red-footed booby; [16] brown booby; [17]none of the seabirds released alive in 2024 had any gear attached.

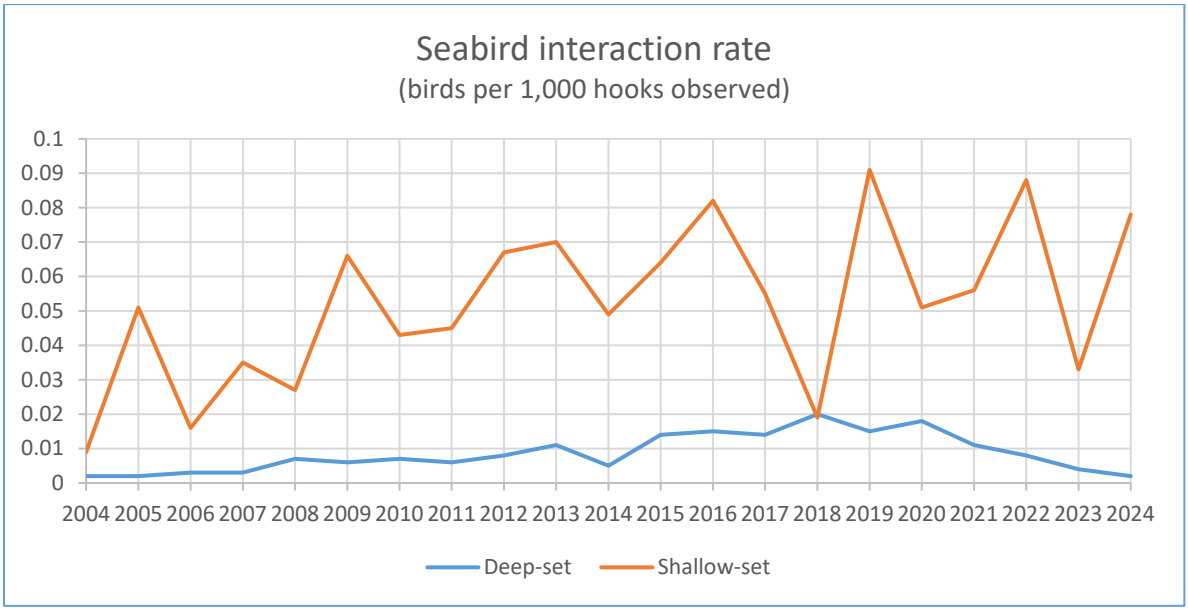

Figure 5: Seabird interaction rates in the deep-set and shallow-set longline fisheries.

Almost all interactions in the deep-set fishery occur when fishermen set gear during the day while seabirds are actively feeding. Because most seabirds are inactive at night, very few interactions occur when fishermen typically haul deep-set gear. In 2024, in the deep-set fishery observers documented interactions with three Laysan albatrosses, eight black-footed albatrosses, and one brown booby (Table 4). All of the seabirds observed to interact with the deep-set fishery were dead at the vessel (100%). Table 5 shows the total estimated number of interactions with Laysan albatrosses, black-footed albatrosses, and boobies based on observer records for the deep-set fishery in 2024.

Table 5: Estimated total seabird interactions in the Hawai‘i deep-set longline fishery, 2024.
Note: Table lists point estimates and standard error of the total number of incidental interactions by species in the Hawai‘i deep-set longline fishery based on observed interactions during 2024. Point estimates are based on the trip arrival date rather than haul date.
Source: Cooper 2025.

Species	Total annual estimate	Standard error
Black-footed albatross	52	29.5
Laysan albatross	20	10.6
Brown booby	6	6.0

Because the shallow-set fishery typically sets gear at night and hauls during daylight hours (when seabirds are actively foraging), most interactions occur during gear retrieval. In 2024, the fishery interacted with 54 Laysan albatrosses and 37 black-footed albatrosses (Table 4), with 59% released alive at the vessel. This live release rate was lower than average, largely due to experimental fishing conducted in 2024 under an Experimental Fishing Permit (EFP), which exempted participating vessels from certain seabird mitigation requirements.

A total of 33 albatrosses were caught during experimental trips, with 28 of these released dead, accounting for 76% of all seabirds released dead in this fishery in 2024. These numbers reflect the total catch due to 100 percent observer coverage for this fishery.

When albatross interactions do occur, it is common for more than one albatross interaction to occur per trip, resulting in a large percentage of the annual albatross interactions occurring on a small number of trips. In 2024, 14 albatross in the deep-set fishery were observed caught over 7 individual trips (just 3% of total trips), and 9 of those albatross (64%) were caught on two individual trips (just 1% of total trips). In the shallow-set fishery, 91 albatross were caught over 23 individual trips (43% of total trips), and 56 of those albatross (62%) were caught on six individual trips (just 11% of total trips).

Table 6: Number of observed deep-set and shallow-set longline trips by the number of albatross interactions per trip, 2024. The total number of observed trips in this period was 218 for deep-set and 54 for shallow-set.
Source: NMFS PIRO Sustainable Fisheries Observer Program, unpublished data, 09/11/2025.

Deep-set longline			Shallow-set longline		
Number of albatross per trip	Number of trips[1]	% of total albatross caught	Number of albatross per trip	Number of trips[1]	% of total albatross caught
0	211	0	0	31	0
1	5	36	1	6	7
2	0	0	2	5	11
≥3	2	64	3	5	16
-	-	-	4	1	4
-	-	-	≥5	6	62

[1]Based on begin haul date.

3. ENDANGERED SPECIES ACT-LISTED SEABIRDS

There have been no observed interactions (hooking or entanglement) between the fisheries and any ESA-listed seabirds. The distributions of three seabird species that are protected under the ESA—the endangered short-tailed albatross, Hawaiian dark-rumped petrel *(Pterodroma sandwichensis)*, and threatened Newell's shearwater *(Puffinus newelli)*—overlap with the areas where the Hawai'i longline fisheries operate. There were three sightings of a short-tailed albatross from a shallow-set vessel in 2024, but no interaction with fishing gear occurred. Figure 6 shows the location of the sighting compared to the observed fishing effort.

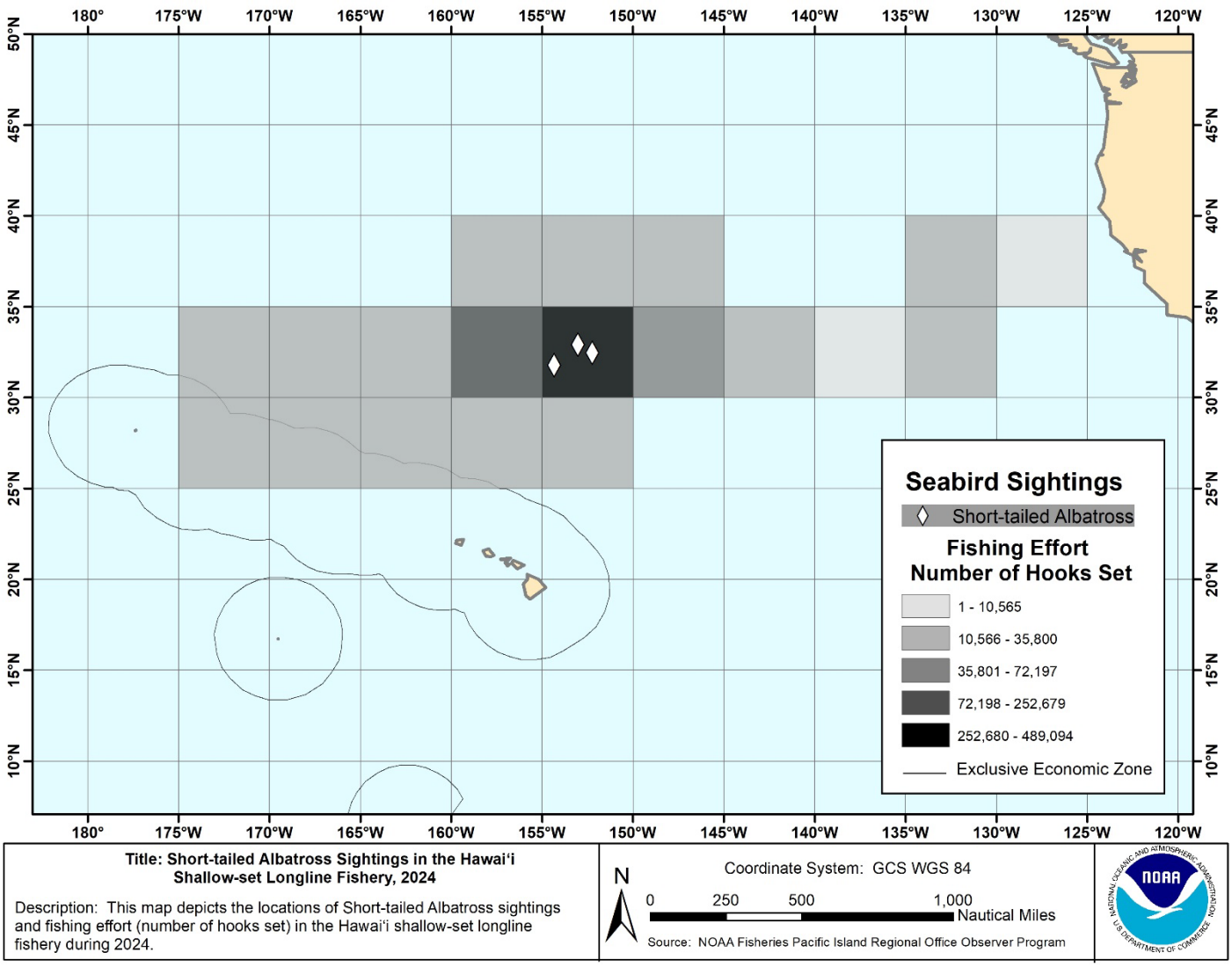

Figure 6: Short-tailed albatross sightings and fishing effort in the Hawai'i shallow-set fishery, 2024.
Source: NMFS PIRO Sustainable Fisheries Observer Program, unpublished data, 07/25/2025.

4. RESEARCH AND WPFMC ACTIONS

Since NMFS implemented seabird mitigation regulations in 2001, overall seabird catch rates in the Hawai'i longline fisheries have declined. However, beginning in 2015 the deep-set fishery experienced an increase in albatross interactions and interaction rates, peaking in 2018. From 2019 through 2024, observed interactions steadily declined, returning to pre-2015 levels by 2023. In the shallow-set fishery, albatross interaction rates have shown more variability, influenced by seasonal closures and albatross migration patterns. Interactions peaked in 2019 (Figure 5).

These fluctuations are largely influenced by the degree of overlap between fishing effort and nesting albatross foraging areas, which in turn are affected by large-scale climate patterns such as the Pacific Decadal Oscillation (PDO) and El Niño–Southern Oscillation. For example, black-footed albatross nest in the Northwestern Hawaiian Islands and during a positive PDO phase, cold, nutrient-rich waters shift southward, increasing the overlap between deep-set fishing grounds and black-footed albatross foraging areas and raising interaction risk (Wren et al. 2019; Hyrenbach et al. 2021). Conversely, a negative PDO phase reduces this overlap as the productive fronts the birds forage in are displaced northward. PDO also works in combination with El Niño–Southern Oscillation where El Niño enhances (dampens) a positive (negative) PDO while a La Niña dampens (enhances) it. The most recent positive PDO ended in 2016, and current negative PDO conditions (alongside a shift from El Niño in 2019 to La Niña in subsequent years) may help explain the peak in black-footed albatross interactions in 2019 and the sustained decline that followed.

In response to rising albatross interactions, the WPFMC convened workshops in 2017 and 2018 to investigate causes and review existing mitigation measures. These efforts identified tori lines as a promising alternative to blue-dyed bait and prioritized them for further research.

Deep-set Longline

In response to increased black-footed albatross interactions beginning in 2015, the WPFMC, NMFS' Pacific Islands Fisheries Science Center, PIRO, and the Hawaii Longline Association initiated cooperative research to improve seabird bycatch mitigation. Workshops held in 2017 and 2018 identified blue-dyed bait as a candidate for removal and highlighted tori lines (streamer lines designed to deter seabirds) as a promising alternative. From 2019 to 2021, two joint research projects were conducted to design and test tori lines in the Hawai'i deep-set longline fishery.

Results from the 2020 and 2021 studies showed that tori lines significantly reduced albatross attempts, gear contacts, and captures—performing better than blue-dyed bait, especially when not paired with offal discharge (Gilman et al. 2021; Chaloupka et al. 2021; WPFMC 2021). Based on these findings, the WPFMC took final action at its 189th meeting in December 2021 to recommend replacing existing seabird mitigation measures (blue-dyed bait and strategic offal discharge) with a new tori line requirement for stern-setting vessels. The WPFMC also recommended incorporating best practices for offal management into the annual protected species workshop, rather than maintaining it as a regulatory requirement.

NMFS published the proposed rule on October 17, 2023 (88 FR 71523), and the final rule on March 1, 2024 (89 FR 15062). The new tori line requirement took effect on April 1, 2024. Additional details can be found in the regulatory amendment, available at: https://www.fisheries.noaa.gov/action/tori-line-requirement-stern-setting-vessels-hawaii-deep-set-longline-fishery

Shallow-set Longline

At its 185th meeting in March 2021, the WPFMC considered options for modifying seabird mitigation measures for the shallow-set longline fishery. Because conditions and interactions with seabirds differ between the shallow-set and deep-set longline fisheries, the WPFMC recommended more research under an EFP for the development of an appropriate combination of mitigation measures for the shallow-set longline fishery. The recommendation also included a priority to identify a combination of mitigation measures that maintain effectiveness of seabird deterrence during dusk compared to the existing night-setting suite of measures, to offer operational flexibility in starting the setting operations before sunset.

In November 2021, NMFS received an EFP application from the Hawaii Longline Association to conduct a pilot study in the shallow-set longline fishery, where two tori lines were deployed during gear setting beginning at dusk, rather than the standard 1 hour after local sunset (86 FR 71234). The study also excluded the use of blue-dyed bait and strategic offal discharge. The WPFMC endorsed the proposal during its 189th meeting in December 2021, and NMFS issued the EFP on March 24, 2022 (87 FR 15383). Field trials concluded in early 2024, and results were presented at the 153rd Scientific and Statistical Committee (SSC) meeting and the 200th WPFMC meeting in September 2024.

The SSC recommended that the lightweight, short-streamer tori line design tested under the EFP not be approved as a seabird mitigation measure for the shallow-set fishery, citing higher seabird encounter rates, challenging wind conditions, and overall limited effectiveness compared to current requirements. In response, the WPFMC did not recommend regulatory action but instead supported continued research and development of seabird mitigation options for this fishery. Specifically, the WPFMC recommended further evaluation of the removal of blue-dyed bait and hook pods as potential mitigation measures. Research and gear trials to improve seabird bycatch mitigation in the Hawai'i shallow-set fishery are ongoing.

For more information on seabird interactions and ongoing research in these fisheries, please contact Lynn Rassel and John Peschon, PIRO Sustainable Fisheries.

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