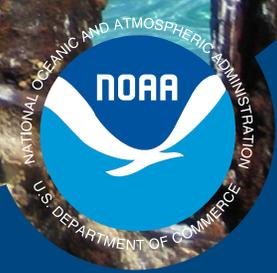


2013 ANNUAL REPORT

Seabird Interactions and Mitigation Efforts in Hawaii Longline Fisheries



NOAA
FISHERIES
Pacific Islands
Regional Office

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Pacific Islands Regional Office
NOAA National Marine Fisheries Service
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Cover image: Brown noddies, NWHI, Tern Island.



Mostly red-footed boobies on railing while terns fly about. Hawaii, NWHI, Tern Island.

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1. Introduction

The National Marine Fisheries Service (NMFS) Pacific Islands Regional Office (PIRO) manages Hawaii longline fisheries to reduce, as practicable, interactions between fishing operations and seabirds. NMFS monitors the fisheries to determine the effectiveness of management efforts to reduce interactions and the severity of interactions that do occur. The PIRO Observer Program documents interactions and mitigation efforts aboard vessels at sea, and the PIRO Sustainable Fisheries Division reports annually on fishing effort, seabird interactions, and mitigation research¹. You may view this report, and similar reports from previous years, at www.fpir.noaa.gov.

1.1 Background

NMFS and the Western Pacific Fishery Management Council (WPFMC) manage two Hawaii pelagic longline fisheries under the Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region (FEP). Since 1994, the Hawaii longline fleet has been limited to 164 permits. Activity levels in any given year since 2004 range from 11 to 35 vessels active in the shallow-set fishery, and 122 to 129 vessels active in the deep-set fishery. Nearly all vessels in the shallow-set fishery also participate in the deep-set fishery during the year. The deep-set fishery targets primarily bigeye tuna at depths to 400 meters (m) and operates over broad areas mainly to the north-northeast and southwest of the main Hawaiian Islands. The shallow-set fishery targets swordfish at depths to 100 m and typically operates over a large area north of the Hawaiian Islands. The FEP contains a detailed description of the Hawaii longline fisheries (WPFMC 2009).

During the deployment (setting) and retrieval (hauling) of longline fishing gear, hooks and line may hook or entangle seabirds that attempt to take bait or catch. Seabirds are more likely to drown when the interaction occurs during setting because the weight of the gear can pull the seabird underwater. Although interactions are inevitable, fishermen take steps to avoid and minimize interactions so that seabird populations remain healthy, and fishermen can pursue their livelihood. By using safe handling and release techniques, fishermen can help many seabirds survive their injuries.

Seabirds that feed around the Hawaiian Islands in areas where the Hawaii longline fisheries operate include Laysan albatross (*Phoebastria immutabilis*), black-footed albatross (*P. nigripes*), shearwaters, fulmars, boobies,

and the endangered short-tailed albatross (*P. albatrus*). However, management of the Hawaii longline fisheries has greatly minimized interactions with seabirds, particularly with Laysan and black-footed albatrosses. In 2000, NMFS estimated 2,433 seabird interactions occurred in the Hawaii longline fisheries. Implementation of seabird safe handling and mitigation measures after 2004 significantly reduced annual interactions, so that in 2013, NMFS estimated 180 total interactions with seabirds. (See Table 5 under Section 2.2 for more information). Credit for this successful reduction in interactions is mostly due to the fishermen, who understand and implement the seabird mitigation requirements. The requirements include mandatory training in seabird identification, seabird deterrent fishing gear and techniques, and special handling and release of incidentally-caught seabirds.

1.2 Seabird Mitigation Measures for the Hawaii Longline Fisheries

Most regulations for the Hawaii longline fisheries are in Title 50 of the Code of Federal Regulations **Part 600**, and **Part 665** (50 CFR Parts 600 and 665). NMFS provides a regulation summary to Hawaii longline fishermen. Regulations specific to the mitigation of seabird interactions and safe handling techniques are in 50 CFR 665.815. The ways that fishermen implement required seabird mitigation measures depend on how and where fishermen conduct fishing operations. The mitigation measures below are also described in the *Biological Opinion of the USFWS for the operation of the Hawaii-based pelagic longline fisheries, shallow set and deep set, Hawaii* (USFWS 2012).

Side-Setting

Side-setting involves deploying the gear from the side of the vessel, compared to the conventional approach of setting from the stern. In side-setting, crew set baited hooks forward and close to the side of the vessel's hull where seabirds are unable or unwilling to pursue them. With required branch line weighting, by the time the vessel stern passes the location where baited hooks have been set, the baited hooks will have sunk to a depth where albatrosses cannot reach them (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 the ability of seabirds to land along the side of the vessel where baits are accessible.

Table 1 summarizes the number of Hawaii pelagic longline deep- and shallow-set vessels observed to set from the stern and from the side in 2013, with some vessels

¹This 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 Hawaii-based Pelagic Longline Fisheries (USFWS 2012).

operating in both deep- and shallow-set fisheries. In 2013, the majority of vessels in both fisheries chose to stern-set. In 2013, four vessels in the deep-set fishery set from both the stern and side.

Table 1. Number of observed Hawaii longline vessels that side- and stern-set in 2013

Fishery	Deck setting position	Vessels
Deep-set	Stern-setting	93
Deep-set	Side-setting	36
Shallow-set	Stern-setting	15
Shallow-set	Side-setting	0

Source: NMFS PIRO Observer Program, unpublished.

Weighted Branch Lines

Weights placed close to the hook on branch lines quickly sink baited hooks before foraging seabirds can take the baits and possibly become hooked or entangled in longline gear. When required, Hawaii longline fishermen must attach a weight of at least 45 gram (g) within 1 m of the hook to sink the branch lines quickly. Fishermen commonly use weights from 45 to 80 g. Nearly all fishermen in the deep- and shallow-set fisheries use weighted branch lines.

Thawed and Blue-dyed Bait

Dyeing bait to a specific blue color is a means to reduce visibility by reducing contrast with the sea surface. Fishermen thaw the bait to increase sink rates and to allow a more effective penetration of the blue dye. Almost all bait used in the Hawaii longline fisheries consists of fusiform fish: mackerel (saba), sardines, and saury (sanma). NMFS prohibits the use of squid bait in the shallow-set fishery to reduce sea turtle interactions. While fishermen may still use squid in the deep-set fishery, the cost is currently higher than some fish bait.

Strategic Offal Discards

Fishermen developed the technique of strategically discarding offal to distract albatrosses from attempting to steal baits from hooks before the branch lines can be retrieved. Fishermen discard swordfish heads and livers on the opposite the side of the vessel from fishing operations to distract albatrosses away from the baited hooks. NMFS observers in the mid-1990s noted that strategically discarding offal reduced incidental hookings and entanglements of albatrosses, and it is now a requirement. When seabirds are present around the vessel, fishermen that are deep-setting north of 23° N. latitude, or shallow-setting anywhere, are required to use strategic offal

Table 2. Seabird bycatch mitigation requirements for the Hawaii longline fleet.

	1. How do you set your gear →		2. Do you shallow-set or deep-set, and where are you →	
	3. 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 the set			Yes	Yes
Deploy gear so that hooks do not resurface			Yes	Yes
Attach 45 g or heavier weights within 1 m of hook of each hook		Yes	Yes	Yes
Use a line shooter to set the mainline		Yes		
Keep two 1-pound containers of blue-dye on boat	Yes	Yes		
Use completely thawed and blue-dyed bait	Yes	Yes		
Keep fish parts and spent bait with all hooks removed for strategic offal discard	Yes	Yes		
Cut all swordfish heads in half, and use heads and livers for strategic offal discard	Yes	Yes		
Night Set - begin set 1 hour after local sunset and finish 1 hour before next sunrise and keep lighting to a minimum	Yes			

discards as a seabird bycatch mitigation measure when setting from the stern.

Night Setting

Night-setting as a seabird mitigation measure requires that shallow-set fishermen, that stern-set, to start deploying their gear no earlier than one hour after local sunset and complete the set no later than the following sunrise, using only the minimum number of lights necessary to conform to navigation rules and best safety practices. The requirement to night-set is based on the premise that seabirds cannot see baited hooks in the dark and, thus, do not attack them. Night-setting has been a very effective seabird mitigation measure, reducing seabird interactions as much as 98% ((McNamara et al. 1999, Boggs 2003).

1.3 Protected Species Workshops

In addition to operational requirements to reduce or deter 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 the identification, safe handling, and release techniques for sea turtles, marine mammals, and seabirds. The workshop also reviews regulatory and compliance requirements. In a classroom setting, fishermen learn from oral presentations, hands-on demonstrations, videos, and printed reference materials. NMFS also offers the workshops on line. A valid workshop certificate is necessary for owners to receive and annually renew Federal longline fishing permits. Longline vessel operators must also have on board the vessel a valid protected species workshop certificate issued by NMFS to the operator of the vessel.



Protected Species Workshop, Pier 38, Honolulu

In 2013, NMFS PIRO provided protected species workshop training for 233 Hawaii-based longline vessel owners and captains, and other interested individuals. Another 85 vessel owners, captains, and crewmembers completed protected species workshop training in American Samoa with assistance from the PIRO Observer Program.

1.4 Fishing Effort and Observer Coverage

From 2012 to 2013 fishing effort in the deep-set fishery increased, and effort in the shallow-set fishery decreased (Table 3). In 2013, NMFS placed observers on 20.4% of deep-set fishing trips and 100% of shallow-set fishing trips. NMFS provides summary reports from mandatory logbook data reported by longline captains. Effort data for 2013 are summarized in this section by haul date.

Please note that other summaries throughout this report (and elsewhere) may vary slightly depending upon the data source, including revisions. For example, data obtained from seabird interactions on observed trips can be reported by date of trip departure or arrival, set date, or haul date in a given year. Likewise, a quarterly report might vary from an annual report if, for example, double counting occurred and was corrected after evaluating data collection methods. NMFS typically bases observer coverage levels on the trip departure date, while protected species interactions reported in the observer program's quarterly, semiannual, and annual reports are typically based on vessel arrival date.

Table 3. Hawaii deep- and shallow-set fisheries effort and observer coverage, 2012 and 2013.

Source: NMFS PIFSC logbook and NMFS PIRO Observer Program, unpublished data, received 10/2014.

2013

	Deep-set fishery	Shallow-set fishery
Number of vessels	133	15
Trip	1,383	58
Sets	18,772	962
Hooks	46,919,110	1,074,909
Observer coverage	20.4%	100%

2012

	Deep-set fishery	Shallow-set fishery
Number of vessels	129	20
Trip	1,306	83
Sets	17,155	1,474
Hooks	40,719,827	1,505,467
Observer coverage	21%	100%

Figures 1 and 2 illustrate the spatial distribution of fishing effort in 2013 by the Hawaii deep- and shallow-set longline fisheries, respectively.

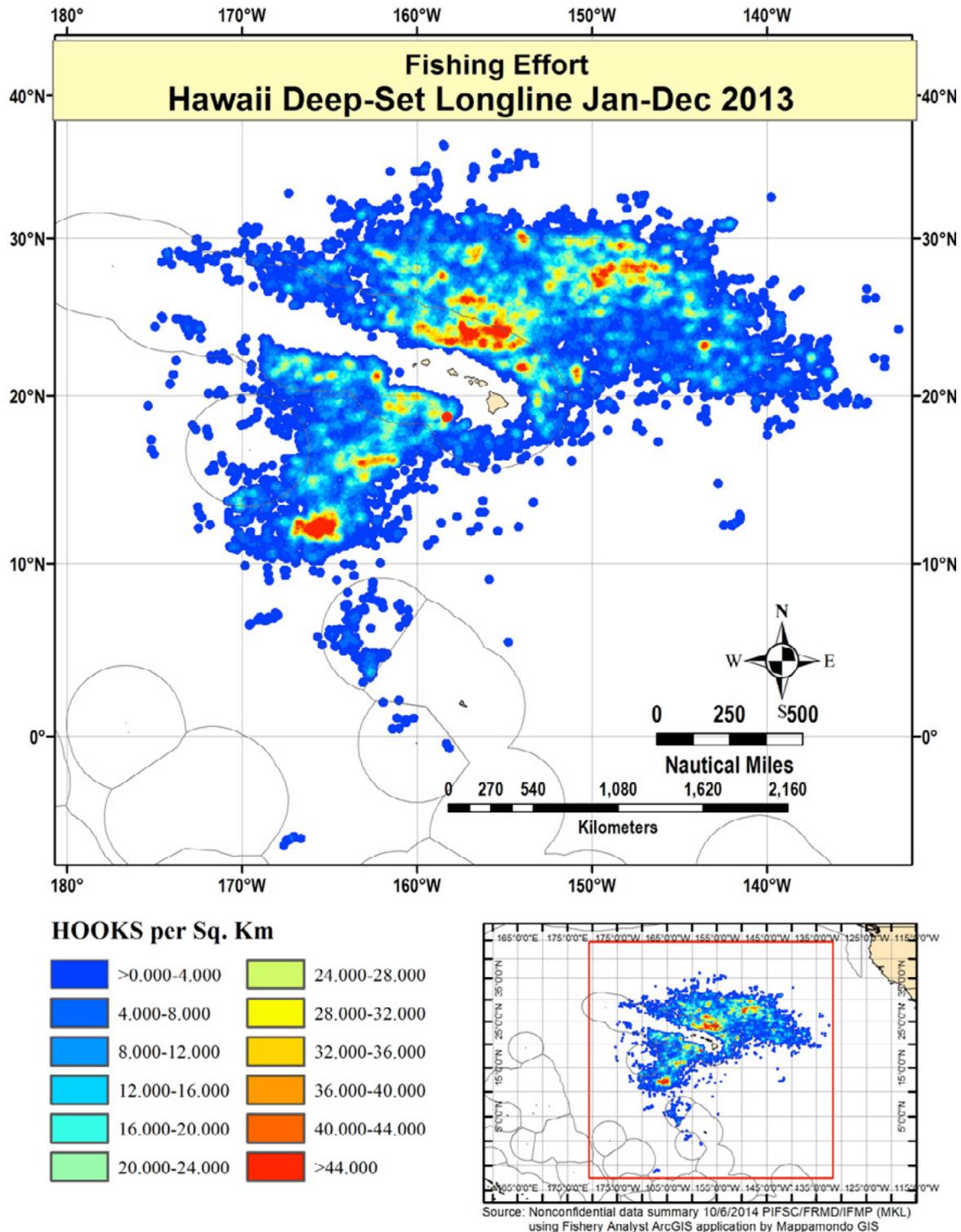


Figure 1. Spatial distribution of fishing effort by the Hawaii longline deep-set fishery, 2013.

Source: NMFS PIFSC logbook, unpublished data, received 10/6/2014.

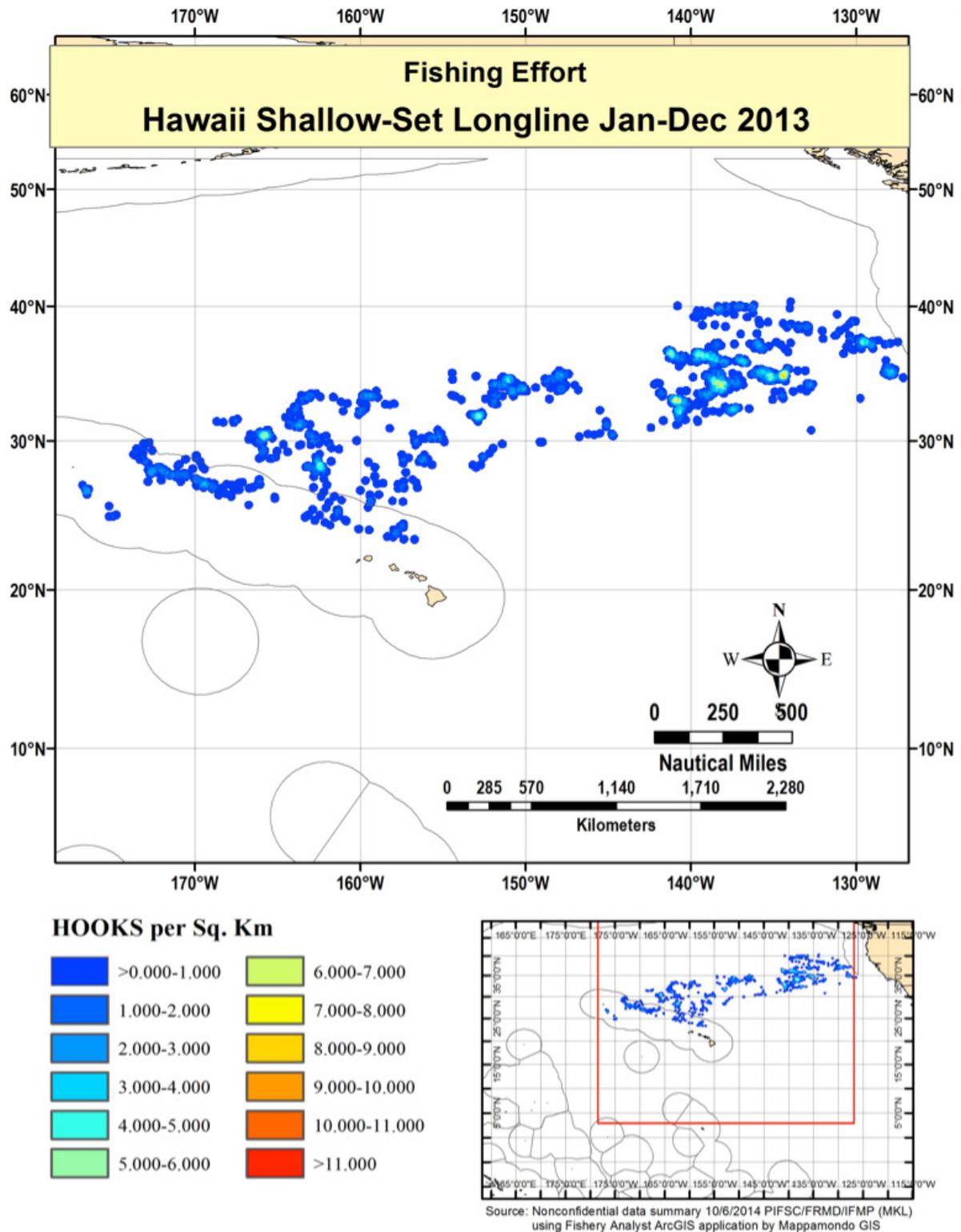


Figure 2. Spatial distribution of fishing effort by the Hawaii longline shallow-set fishery, 2013.

Source: NMFS PIFSC logbook, unpublished data, received 10/6/2014.

2. Interactions

2.1 Species

NMFS observers have recorded the following species being hooked or entangled in the longline fisheries since 1994, when NMFS began deploying observers: Laysan and black-footed albatrosses, sooty shearwater (*Puffinus griseus*), unidentified shearwaters, brown booby (*Sula leucogaster*), red-footed booby (*S. sula*), and Northern fulmar (*Fulmarus glacialis*). These species are not protected under the Endangered Species Act (ESA).

Figures 3 and 4 show the spatial distribution of observed seabird interactions in deep- and shallow-set fisheries, respectively, based on observations of seabirds in 2013. Most of the interactions occur north of 25° N., where seabirds are typically more abundant.

The Laysan albatross population estimate is about 1.2 million adults. Midway and Laysan Islands in the Northwestern Hawaiian Islands (NWHI) have the world's largest colonies, and together support more than 90% of the global breeding population (ACAP 2010). The global breeding population of black-footed albatross estimate is 245,234, with 95% breeding in the NWHI (USFWS 2012). Northern fulmars are located throughout the North Atlantic and North Pacific. The estimated worldwide population is 15 to 30 million individuals (Birdlife 2014a). The red-footed booby winters on tropical islands in most oceans, and its total population estimate is 1 million birds (Birdlife 2014b). The brown booby is found throughout the pan-tropical oceans, with a population estimate of 200,000 adults (Birdlife 2014c). The total world population of sooty shearwaters estimate is more than 20 million adults. These birds nest in Australia, New Zealand, and southern South

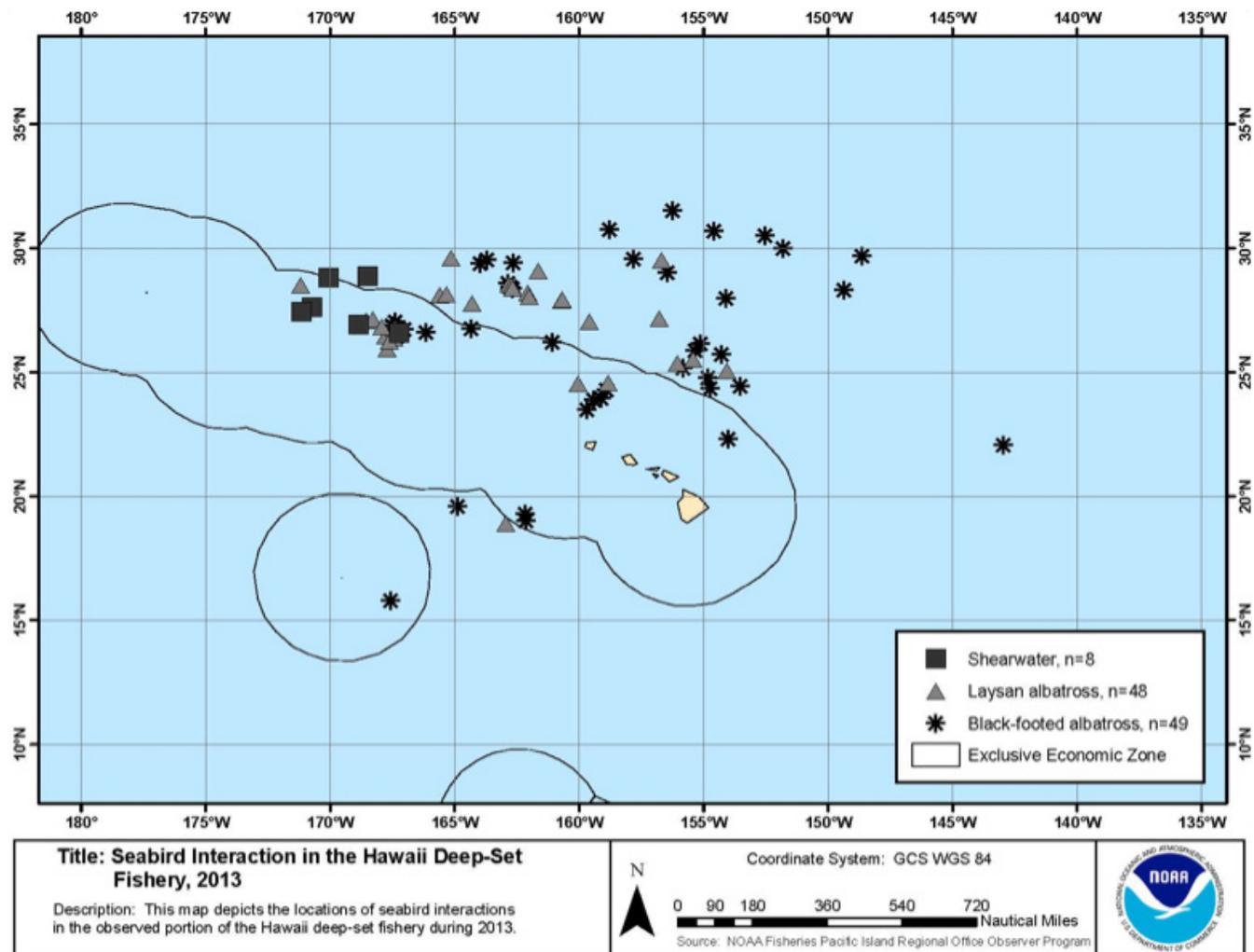


Figure 3. Locations of seabird interactions observed in Hawaii longline deep-set fishery, 2013.

Note: NMFS deployed observers on 20.4% of deep-set trips in 2013. Source: NMFS PIRO Observer Program, unpublished data, received 10/3/2014.

America (Birdlife 2014d). Both Hawaii longline fisheries have a low level of interactions with these species and, based on the population estimates, the fisheries have very little effect on their populations.

Some seabirds, especially shearwaters, are difficult to identify. Table 4 provides a summary of seabird specimens that NMFS observers collected for identification and biological study after capture in the Hawaii longline fisheries in 2013. Most seabird specimens are frozen and shipped to the California Department of Fish and Game, Office of Spill Prevention and Response, Marine Wildlife Veterinary Care and Research Center, in Santa Cruz, California.

Table 4. Summary of collected seabirds from the Hawaii longline fisheries, 2013.

Species	Number retained
Black-footed albatross	52
Laysan albatross	38
Sooty shearwater	8

Note: Not all dead seabirds are collected as specimens. Source: NMFS PIRO Observer Program, unpublished data, received 10/1/2014.

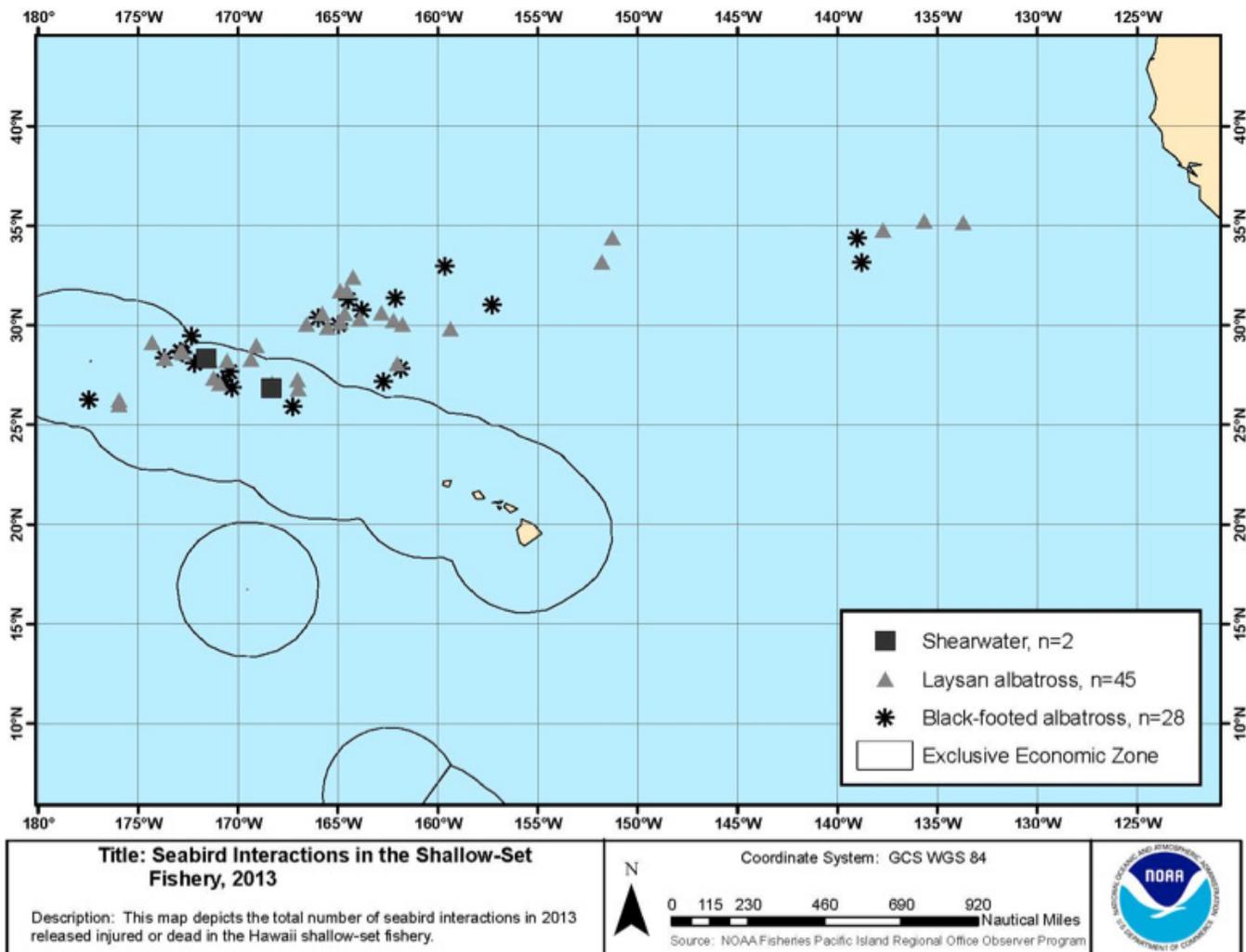


Figure 4. Locations of seabird interactions observed in Hawaii longline shallow-set fishery, 2013.

Note: NMFS deployed observers on every shallow-set trip in 2013. Source: NMFS PIRO Observer Program, unpublished data, received 10/3/2014.

2.2 Interactions

Table 5 summarizes observed seabird interactions, including the condition of seabirds upon release, and fishing effort in both Hawaii-based longline fisheries from 2004 to 2013. During this period, there was 100% observer coverage of shallow-set fishery; therefore, the number of interactions shown in Table 5 represents the fishery-wide totals.

Almost all interactions in the deep-set fishery occur when gear is being set during the day while seabirds are actively feeding. Seabirds may be hooked or entangled

and then drown while the gear sinks. Deep-set gear is typically hauled at night and the hooked or entangled seabirds caught while setting are retrieved dead. Because most seabirds are inactive at night, very few interactions occur during gear hauling in the deep-set fishery. In 2013, observers recorded the deep-set fishery to interact with 48 Laysan albatrosses, 49 black-footed albatrosses, and eight sooty shearwaters (Table 5). Nearly all of the seabirds observed to interact with the deep-set fishery were retrieved dead (95%). Table 6 contains the total estimated number of interactions with Laysan albatross, black-footed albatross and shearwaters based on observer records for the deep-set fishery in 2013.

Table 5. Numbers of observed seabird catch levels, fishing effort, and nominal interaction rates in the Hawaii longline fisheries, 2004-2013.

Year	Laysan albatross	Black-footed albatross	Sooty shearwater	Other or unidentified bird species caught	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)
Deep-set Fishery									
2004	2	5		2	9		9	7,868,613	0.001
2005	6	11		1*	18		18	9,328,681	0.002
2006	1	17	5		23		23	7,437,498	0.003
2007	7	18			25		25	7,728,502	0.003
2008	14	30	14	2**	60	4	56	8,747,496	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	8,314,744	0.006
2012	31	36	7		74	5	67	8,845,848	0.008
2013	48	49	8		105	5	100	9,296,069	0.011
Shallow-set Fishery									
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***	79	61	18	1,832,471	0.043
2011	49	19			68	53	15	1,505,467	0.045
2012	62	37			99	77	21	1,476,969	0.067
2013	45	28	2		75	48	27	1,074,909	0.070

Note: Data are based on the date and time of the beginning of the haul. Interaction rates are rounded to the nearest thousandths (third decimal) place. Footnote: *brown booby; **red-footed booby and unidentified seabird; ***Northern fulmar. Source: NMFS PIRO Observer Program, unpublished data, received 10/1/2014.

Table 6. Estimated number of total seabird interactions in the Hawaii deep-set longline fishery, 2013.

Species	Total annual estimate	95% confidence interval
Black-footed albatross	257	174-352
Laysan albatross	236	150-334
Shearwater	43	21-75

Note: Table lists point estimates of the total number of incidental interactions by species, and corresponding 95% confidence intervals, in the Hawaii deep-set longline fishery from observed interactions during 2013.

The estimate for shearwaters represents an estimate for the number of incidental interactions by the group of species considered shearwaters.

Source: McCracken 2014.

The shallow-set fishery typically sets at night and hauls the gear during the day; therefore, most of the interactions occur when fishermen retrieve the gear and birds are actively feeding. In 2013, the shallow-set fishery interacted with 45 Laysan albatrosses, 28 black-footed albatrosses, and two sooty shearwaters (Table 5). Approximately 36% of seabirds were retrieved dead.

Seabirds can be hooked, entangled, or both. Table 7 provides a summary of capture and release conditions in 2013. Most birds are hooked in the beak or wing. Over half of the birds captured were released alive (mostly injured and alive from the shallow-set fishery). Regulations require fishermen to remove as much gear as safely possible from any seabirds captured before they are released, so seabirds rarely have gear attached to them when released.

Analysis of Seabird Interactions in the Hawaii Shallow-set Fishery

To better understand seabird bycatch during hauling operations, NMFS analyzed observer data collected from the Hawaii shallow-set longline fishery. Over the study period, May 2004 to October 2013, 74% (on average) of seabirds retrieved during the haul were alive.

Effective management in the Hawaii longline shallow-set fishery has greatly reduced seabird bycatch, primarily through mitigation measures required during longline gear setting (gear deployment). Since effective implementation of these measures in 2001, approximately 75% of the remaining seabird interactions occur during gear hauling.

In a limited study sponsored by NMFS in Hawaii, researchers identified various factors that affect the incidental catch of seabirds during the haul (Gilman et al. 2014). Aside from inter-annual variations, some of the factors identified included the number of albatrosses near the fishing vessels during gear hauling, and the length of the leaders. The branch line weight and the wind speed were also important. The study noted that research on potential alternative fishing operations that might reduce the seabird interactions during longline gear hauling should focus on reducing bird access to baited hooks as the crew coils the branch lines. Such possible alternatives include shorter leaders, heavier swivels, more efficient branch line coiling, and shielding the area where hooks becomes accessible.

State and Federal agencies and other groups conduct bird banding as a technique to study the movement, survival, and other characteristics of birds. Table 8 provides a summary of observed seabirds with leg bands from interactions in 2013 with both Hawaii longline fisheries.

Table 7. Capture and release details by species for seabird interactions in the Hawaii longline fisheries, 2013.

Number for each species/group	MANNER OF CAPTURE				GEAR ATTACHED UPON RELEASE ¹			
	Hooked only	Entangled only	Both hooked and entangled	Not known or not recorded	Line only	Hook only	Hook and line	No gear attached ²
Laysan albatross	74	3	14	2	0	1	0	35
Black-footed albatross	68	1	8	0	0	0	0	14
Sooty Shearwater	9	0	1	0	0	0	0	2

¹ Released seabirds are those that were released alive, discarded dead, or dead seabirds collected as specimens.

² This column includes seabirds with unknown or unrecorded manner of capture.

Source: NMFS PIRO Observer Program, unpublished data, received 10/1/2014.

Table 8. Seabirds observed with bands from interactions with the Hawaii longline fisheries, 2013.

Species	Disposition	Date banded	Band(s) recovery date	Location banded	Age at banding (yr)	Age at recovery (yr)
Black-footed Albatross	Dead	6/5/1998	1/15/2013	French Frigate Shoals (Tern Island)	<1	15
Black-footed Albatross	Dead	6/7/2000	1/18/2013	French Frigate Shoals (Tern Island)	<1	13
Black-footed Albatross	Dead	6/5/2008	1/18/2013	French Frigate Shoals (Tern Island)	<1	5
Black-footed Albatross	Dead	6/2/2003	2/16/2013	French Frigate Shoals (Tern Island)	<1	10
Laysan Albatross	Injured	4/7/2005	2/27/2013	Kauai (Kilauea Point)	>/=1	>/=8
Laysan Albatross	Injured	6/1/1995	3/18/2013	French Frigate Shoals (Tern Island)	<1	18
Laysan Albatross	Dead	6/1/2005	3/3/2013	French Frigate Shoals (Tern Island)	<1	8
Black-footed Albatross	Dead	6/9/2006	3/7/2013	French Frigate Shoals (Tern Island)	<1	7
Laysan Albatross	Dead	6/5/1998	3/2/2013	French Frigate Shoals (Tern Island)	<1	15
Black-footed Albatross	Dead	12/30/1997	3/7/2013	French Frigate Shoals (Tern Island)	>/=3	>/=19
Laysan Albatross	Dead	1/21/2004	3/9/2013	French Frigate Shoals (Tern Island)	>/=3	>/=12
Laysan Albatross	Injured	5/27/1994	3/29/2013	French Frigate Shoals (Tern Island)	<1	19
Laysan Albatross	Dead	2/22/2004	5/1/2013	Kauai (Kilauea Point)	>/=1	>/=10
Black-footed Albatross	Injured	1/17/2007	5/4/2013	Laysan Island	>/=1	>/=7
Black-footed Albatross	Injured	5/20/2008	4/20/2013	French Frigate Shoals (Tern Island)	<1	5
Laysan Albatross	Dead	6/18/2001	5/1/2013	French Frigate Shoals (Tern Island)	<1	12
Laysan Albatross	Dead	5/27/1994	5/2/2013	French Frigate Shoals (Tern Island)	<1	19
Laysan Albatross	Injured	12/16/2009	5/8/2013	French Frigate Shoals (Tern Island)	>/=3	>/=14
Laysan Albatross	Injured	5/17/1993	5/9/2013	French Frigate Shoals (Tern Island)	<1	10
Black-footed Albatross	Dead	6/1/1995	5/7/2013	French Frigate Shoals (Tern Island)	<1	18
Laysan Albatross	Dead	6/5/1996	5/10/2013	French Frigate Shoals (Tern Island)	<1	17
Black-footed Albatross	Dead	1/2/2007	5/23/2013	Laysan Island	<1	6
Laysan Albatross	Dead	6/12/2002	5/31/2013	Laysan Island	<1	11
Black-footed Albatross	Injured	12/6/2006	5/24/2013	Laysan Island	>/=1	>/=8
Black-footed Albatross	Dead	12/1/2006	5/25/2013	Laysan Island	>/=1	>/=8
Black-footed Albatross	Dead	6/7/2000	5/26/2013	French Frigate Shoals (Tern Island)	<1	13
Black-footed Albatross	Dead	6/8/2001	5/29/2013	French Frigate Shoals (Tern Island)	<1	12
Laysan Albatross	Dead	12/27/2001	5/26/2013	French Frigate Shoals (Tern Island)	>/=3	>/=15
Laysan Albatross	Dead	6/5/1996	5/26/2013	French Frigate Shoals (Tern Island)	<1	17
Laysan Albatross	Dead	6/10/2002	5/31/2013	French Frigate Shoals (Tern Island)	<1	11
Laysan Albatross	Dead	11/30/2000	6/3/2013	French Frigate Shoals (Tern Island)	>/=3	16
Laysan Albatross	Dead	6/24/2004	6/15/2013	French Frigate Shoals (Tern Island)	<1	9
Black-footed Albatross	Dead	6/18/2012	6/26/2013	Kure Atoll (Green Island)	<1	1

Source: USGS, USFWS, and NMFS, unpublished data, received 10/1/2014.

3. Sightings of ESA-Listed Seabirds

The distributions of three seabirds protected under the ESA overlap with the areas where the Hawaii longline fisheries operate: the endangered short-tailed albatross, and Hawaiian dark-rumped petrel (*Pterodroma sandwichensis*) and the threatened Newell’s shearwater (*Puffinus auricularis newelli*). There have been no observed interactions (hooking or entanglement) between the Hawaii longline fisheries and any ESA-listed seabirds. In 2013, observers did not record any sightings of Newell’s shearwaters or Hawaiian dark-rumped petrels in either fishery. Also, there were no sightings of short-tailed albatross on observed deep-set trips in 2013.

There were sightings of short-tailed albatross in the shallow-set fishery in 2013. Figure 5 shows the locations of these sightings compared to the observed fishing effort. The two short-tailed albatrosses in the 35° - 40° quadrant were

observed by two different observers on two different fishing vessels within the same day, but at different times. The two short-tailed albatrosses in the 30° - 35° quadrant were observed by the same observer on the same fishing vessel within a two day period. While these reported sightings may have constituted between one to four short-tailed albatrosses, it seems most likely that these four sightings were of two individuals, or possibly only one.



Short-tailed albatross on Torsishima Island, Japan.

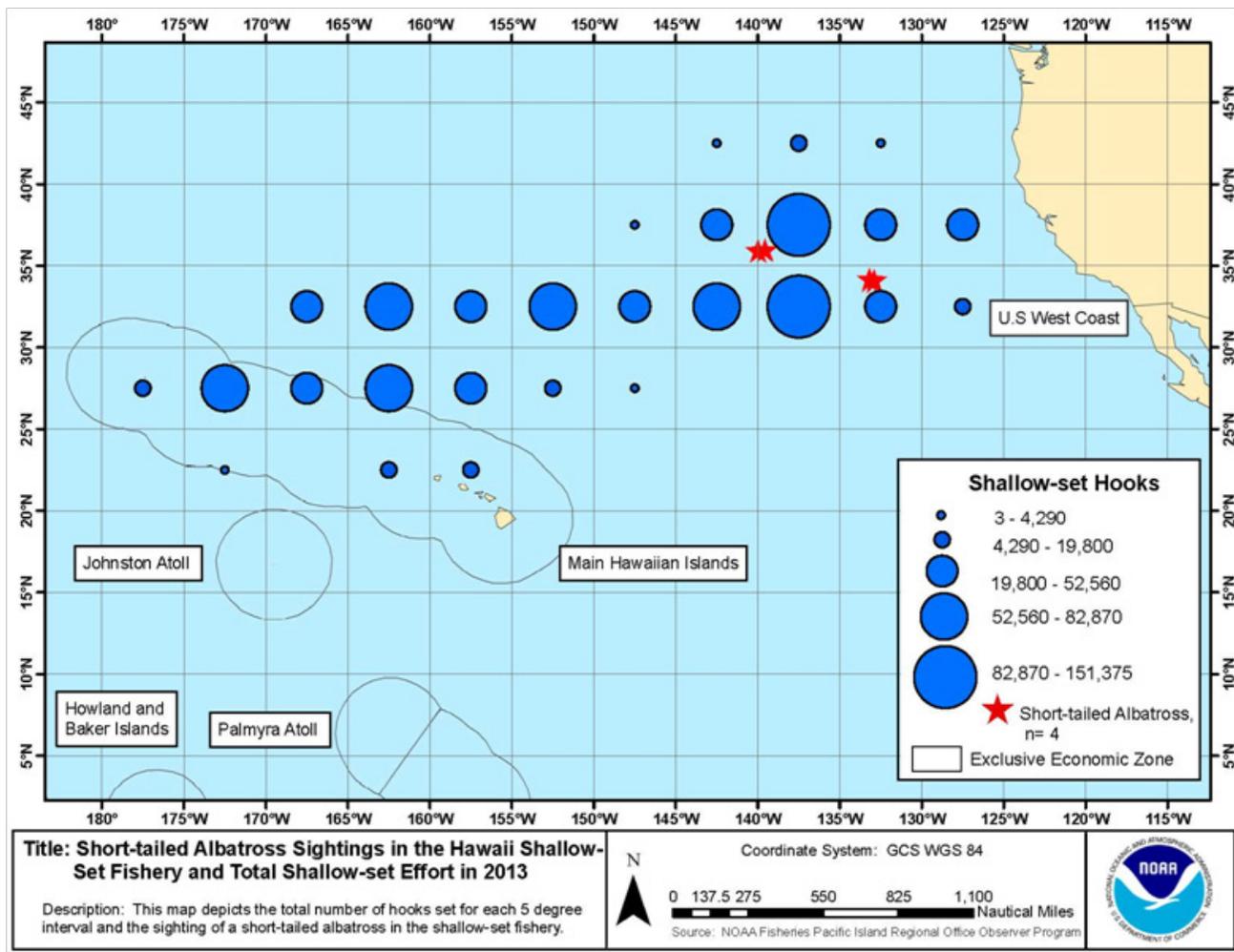


Figure 5. Short-tailed albatross sightings and fishing effort in the Hawaii shallow-set fishery, 2013.

Source: NMFS PIRO Observer Program, unpublished data, received 10/3/2014.

4. Management

Migratory Birds

In August 2012, under the Migratory Bird Treaty Act, the USFWS issued a Special Purpose Permit to NMFS for the shallow-set fishery. The permit authorizes the incidental take of a limited number of migratory birds in the shallow-set longline fishery until March 31, 2015, and includes short-tailed albatross, black-footed albatross, Laysan albatross, sooty shearwater, and Northern fulmar. For further information, please visit the USFWS website (<http://www.fws.gov/pacific/migratorybirds/nepa.html>).

5. Summary

Table 9 compares the 2012 and 2013 observed interactions in the two fisheries. Observed interactions with seabirds in the shallow-set fishery decreased from 2012 to 2013. In 2012, the shallow-set fishery interacted with 99 seabirds (62 Laysan albatrosses and 37 black-footed albatrosses). In 2013, the shallow-set fishery interacted with 75 seabirds (45 Laysan albatrosses, 28 black-footed albatrosses, and two sooty shearwaters). Although the seabird interactions decreased, the interaction rate increased slightly because the total fishing effort decreased (Table 5).

Table 9. Comparison of observed interactions in Hawaii longline fisheries, 2012 and 2013.

	2012	2013
Seabirds observed in deep-set	74	105
Seabirds observed in shallow-set	99	75
Deep-set interaction rate (birds per 1,000 hooks observed)	0.008	0.011
Shallow-set interaction rate (birds per 1,000 hooks observed)	0.067	0.070

Note: Since 2004, NMFS has targeted observer coverage in the deep-set fishery at 20% annually and has placed observers on every trip in the shallow-set fishery.

In the deep-set fishery, observed interactions with seabirds increased from 2012 to 2013. In 2012, the NMFS Observer Program documented 74 seabird interactions in the deep-set fishery (31 Laysan albatrosses, 36 black-footed albatrosses, and seven sooty shearwaters). In 2013, observers documented fishery interactions with 105 seabirds (48 Laysan albatrosses, 49 black-footed albatrosses, and eight sooty shearwaters). In the deep-set fishery, both the number of interactions and effort increased, resulting in a slight increase in the interaction rate (Table 5). Even with the increased interactions in the deep-set longline fishery, both Hawaii longline fisheries

interacted with a low level of seabirds in 2012 and 2013 compared to the period before 2004 when seabird measures were implemented.

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