

## Data Report

# Hawaii Longline Fishery 2021 Seabird and Sea Turtle Bycatch for the Entire Fishing Grounds, Within the IATTC Convention Area, and Seabird Bycatch to the North of 23° N and 23 °N–30° S

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The tables in this report include information on sea turtle and seabird bycatch requested by the (1) Pacific Islands Regional Office (PIRO) for their annual review of seabird interactions, (2) West Coast Regional Office (WCRO) for use in preparing their submission to the Inter-American Tropical Tuna Commission (IATTC), and (3) Pacific Islands Fisheries Science Center (PIFSC) for use in preparing their submission to the Western and Central Pacific Fisheries Commission (WCPFC).

Tables 1 through 4 provide the bycatch estimates for seabirds and sea turtles requested by the PIRO and WCRO. Table 5 provides the bycatch estimates for seabirds to the north of 23° N and 23° N–30° S requested by the PIFSC. Tables 6 and 7 provide the requested information about fishing effort. The estimates and measures of effort are for all longline trips landed in 2021. When computing effort within the IATTC Convention Area for Tables 6 and 7, a fishing operation (set) was considered within the region if at least one of the recorded locations (begin set, end set, begin haul, or end haul) was within the region. The total number of trips within the IATTC Convention Area is the number of trips that had at least one fishing operation (set) in the region. The number of hooks hauled on a fishing operation assigned to the IATTC Convention Area was the number of hooks multiplied by the proportion of recorded locations within the area. For example, if the end set and begin haul were located within the area and the begin set and end haul were located outside the area, the number of hooks hauled was multiplied by 2/4 to estimate the number of hooks assigned to the area. The total number of hooks within the IATTC Convention Area is the sum of hooks assigned to the area. The methods used to sample the deep-set fishery and estimators of bycatch are described in McCracken (2019).

**Table 1. Estimates of the number of incidental interactions of sea turtles for the Hawaii deep-set longline fishery in 2021. Estimates are provided for all species with an observed interaction in 2021 and species of concern because of their endangered species status and history of previous interactions. Estimates are given for the entire fishing grounds and for waters within the IATTC Convention Area.**

<b>Species of Sea Turtle</b>	<b>Observed Takes</b>	<b>Point Estimates</b>	<b>Standard Error</b>
<b>Total Fishing Grounds</b>			
Loggerhead	1	5	4.4
Leatherback	1	8	6.9
Olive Ridley	7	46	18.1
Green	3	17	8.8
<b>Within IATTC Convention Area</b>			
Loggerhead	0	0	1.7
Leatherback	0	0	1.7
Olive Ridley	0	0	3.5
Green	0	0	2.4

**Table 2. Estimates of the number of incidental interactions of seabirds for the Hawaii deep-set longline fishery in 2021. Estimates are provided for all species with an observed interaction in 2021. Estimates are given for the entire fishing grounds and for waters within the IATTC Convention Area.**

<b>Species of Seabird</b>	<b>Observed Takes</b>	<b>Point Estimates</b>	<b>Standard Error</b>
<b>Total Fishing Grounds</b>			
Albatross, Laysan	38	244	99.6
Albatross, Black-footed	87	536	132.3
Shearwater, Unidentified	2	9	6.9
<b>Within IATTC Convention Area</b>			
Albatross, Laysan	0	0	5.0
Albatross, Black-footed	0	0	5.0
Shearwater, Unidentified	0	0	2.1

**Table 3. Number of observed incidental interactions of sea turtles for the Hawaii shallow-set longline fishery in 2021 where the Hawaii shallow-set longline fishery had 100% observer coverage. Counts are provided for all species with an observed interaction in 2021 and species of concern because of their endangered species status and history of past interactions. Counts are given for the entire fishing grounds and for waters within the IATTC Convention Area.**

<b>Species of Sea Turtle</b>	<b>Observed Takes</b>
<b>Total Fishing Grounds</b>	
Loggerhead	16
Leatherback	3
Olive Ridley	2
Green	1
Unidentified Hardshell	1
<b>Within IATTC Convention Area</b>	
Loggerhead	3
Leatherback	0
Olive Ridley	0
Green	0
Unidentified Hardshell	0

**Table 4. Number of observed incidental interactions of seabirds for the Hawaii shallow-set longline fishery in 2021 where the Hawaii shallow-set longline fishery had 100% observer coverage. Counts are provided for all species with an observed interaction in 2021. Counts are given for the entire fishing grounds and for waters within the IATTC Convention Area.**

<b>Species of Seabird</b>	<b>Observed Takes</b>
<b>Total Fishing Grounds</b>	
Albatross, Laysan	10
Albatross, Black-footed	45
Shearwater, Unidentified	1
Shearwater, Sooty	1
<b>Within IATTC Convention Area</b>	
Albatross, Laysan	1
Albatross, Black-footed	2
Shearwater, Unidentified	0
Shearwater, Sooty	1

**Table 5. Observed and estimated number of bycatch events of seabirds for the Hawaii longline fisheries, deep-set and shallow-set combined. Estimates are provided for all species with an observed bycatch event from 2021. Estimates are given for the entire fishing grounds (total), to the north of 23° N, and 23° N–30° S.**

Species of Seabird	Observed Bycatch			Estimated Bycatch		
	>23° N	23° N–30° S	Total	>23° N	23° N–30° S	Total
Albatross, Laysan	46	2	48	241	13	254
Albatross, Black-footed	109	23	132	435	146	581
Shearwater, Unidentified	3	0	3	10	0	10
Shearwater, Sooty	1	0	1	1	0	1

**Table 6. Number of trips, sets, and hooks recorded in the vessel logbook database (Pacific Islands Science Center, 2022) and Longline Observer Data System (Pacific Islands Regional Office, 2022) for the Hawaii deep-set longline fishery in 2021. Total counts are given for the entire fishing grounds and for waters within the IATTC Convention Area.**

Source of Counts	Trips	Sets	Hooks
<b>Total fishing grounds</b>			
Number recorded in logbooks	1,611	21,774	64,027,284
Number recorded in LODS	291	3,980	11,469,212
<b>Within IATTC Convention Area</b>			
Number recorded in logbooks	279	2,894	8,460,163
Number recorded in LODS	55	510	1,445,275

**Table 7. Number of trips, sets, and hooks recorded in the Longline Observer Data System (Pacific Islands Regional Office, 2022) for the Hawaii shallow-set longline fishery in 2021, fishery had 100% observer coverage. Total counts are given for the entire fishing grounds and for waters within the IATTC Convention Area.**

Source of Counts	Trips	Sets	Hooks
<b>Total fishing grounds</b>			
Number recorded in LODS	55	755	957,811
<b>Within IATTC Convention Area</b>			
Number recorded in LODS	11	149	209,757

## References

Pacific Islands Fisheries Science Center, 2022: Hawaii Longline Logbook, <https://www.fisheries.noaa.gov/inport/item/2721>.

Pacific Islands Regional Office, 2022: Longline Observer Data System, <https://www.fisheries.noaa.gov/inport/item/9027>.

McCracken ML. 2019. Sampling the Hawaii deep-set longline fishery and point estimators of bycatch. U.S. Dept. of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-PIFSC-89, 22 p. <https://doi.org/10.25923/2psa-7s55>.