

Seabird Bycatch Estimates for Alaskan Groundfish Fisheries, 2007-2013.

December 2014

This report provides estimates of seabirds caught as bycatch in commercial groundfish fisheries operating in federal waters of the Alaska U.S. Exclusive Economic Zone for the years 2007 through 2013. Bycatch estimates for 1993 through 2006 have been previously reported in the Ecosystem Chapter of the annual Stock Assessment and Fishery Assessment reports (Fitzgerald et. al, 2008). The groundfish fishery includes the gear types demersal longline, pot, pelagic trawl, and non-pelagic trawl. The estimates provided here do not apply to gillnet, seine, troll, or jig. Data collection on the Pacific halibut longline fishery began in 2013 with the restructured observer program, although some small amounts of halibut fishery information were collected in years previous when an operator had both halibut and sablefish individual fishing quota. Provisions were also made in 2013 for groundfish vessels under 60 ft to carry observers. Information on observer program restructuring is located at the North Pacific Fisheries Management Council website. The NPFMC annually approves coverage levels for these fleets based on information provided by the Alaska Fisheries Science Center (AFSC) Observer Program.

Seabird Bycatch estimates are based on two sources of information, (1) data provided by NMFS-certified Fishery Observers deployed to vessels and floating or shoreside processing plants (AFSC 2012), and (2) industry reports of catch and production. The AFSC produced the estimates from 1993-2006 (Fitzgerald 2008). The NMFS Alaska Regional Office Catch Accounting System (CAS) produced the estimates from 2007-2013 (Cahalan et al., 2010). The main purpose of the CAS is to provide near real-time delivery of accurate groundfish and prohibited species catch and bycatch information for inseason management decisions. It is also used for the provision of estimates of non-target species (such as invertebrates) and seabird bycatch in the groundfish fisheries. At each data run, the CAS produces estimates based on current data sets, which may have changed over time. Changes in the data are due to errors that were discovered during observer debriefing, data quality checks, and analysis. Examples of the possible changes in the underlying data are: changes in species identification; deletion of data sets where data collection protocols were not properly followed; or changes in the landing or at-sea production reports where data entry errors were found. The totals provided in this report include some changes from previous reporting, but are the most recent product of the CAS.

While numbers here are summarized into broad species groups in some cases, observers identify each bird from their sample to the most accurate species or species group that they can. For the analysis and reporting of bycatch, many of these are consolidated to a larger grouping (Table 1). For example, the species group “Gull” includes all Laridae except Kittiwakes. Most gulls that are identified to a specific code within this group are Glaucus, Glaucus-winged, Herring, and unidentified (typically juvenile) or hybrid gulls.

Estimated bycatch for the years 2007 through 2013 (Tables 2 through 15) are based on observer sample data. Biases do exist, however, with sampling on commercial fishing vessels. On demersal longline vessels, seabirds may drop off the hook while the gear is fishing or being retrieved. Drop-offs that occur alongside the vessel are seen by observers and included in their sample data. Only those seabirds that drop off underwater and out of sight are not recorded. On

trawl vessels, seabird mortality can occur due to interactions with gear such as net-monitoring equipment (paravanes or third wires) or be caught in the net wings and not be landed with the fish catch. These mortalities would not be included in the estimates reported below. The AFSC is working on an evaluation of these additional sources of mortality on trawl vessels and how best to monitor and include them in annual estimates (Fitzgerald et. al, in prep). This report is also based on the observer specimen identification. The AFSC manages a necropsy program where observers collect bycaught birds (and birds they collect from ship strikes). These birds are provided to a vendor to complete a necropsy which includes verifying the species identification. In the lab, we can more easily make an identification to species for some groups, so some birds taken only to a species group in the field will be identified to species. We have also uncovered a few incorrect identifications. The AFSC is in the process of using this information to update the observer database. This means that future runs of the CAS will provide different, but more accurate, results.

This report addresses only the point-count estimates for seabird mortality associated with groundfish. Estimates are provided for all gear types (pot, longline and trawl) across all Fishery Management Plan Areas (Bering Sea and Aleutian Islands, Gulf of Alaska) for each year (Table 2). Estimates for demersal longline across all Alaskan waters (Table 3) is provided followed by demersal longline bycatch by major fishery management plan area (Tables 4 through 6). The combined trawl fleet bycatch (Table 7) and trawl bycatch by fishery management area (Bering Sea and Aleutian Islands or Gulf of Alaska) or by gear type (pelagic and non-pelagic) are then shown (Tables 8 through 10). The pot fishery is reported in a single table (Table 11). Tables 12-15 provide the same data in the format of area, gear, target, and bycatch for each of the most recent years, 2010-2013. Missing from this report are measures of effort and seabird bycatch rates. While the CAS can provide information on seabird bycatch per metric ton of catch, that is not how bird bycatch rates are typically reported. For example, the international standard for longline fisheries is seabird bycatch per 1,000 hooks. The AFSC is engaged in development of procedures that will again provide reports on total effort and bycatch rates in line with international reporting standards.

Of special note in this report are the incidental takes of Short-tailed albatross (*Phoebastria albatrus*) in 2010 and 2011. Two short-tailed albatross were observed taken in August and September of 2010, leading to an estimated take of 15 birds (Tables 2, 3, 5, and 12). Another single take was reported in October, 2011, leading to an estimate of 5 short-tailed albatross (Tables 2, 3, 5, and 13). These birds were taken in the demersal longline cod fishery in the Bering Sea. The Biological Opinion for the Short-tailed albatross (USFWS 2003) allows for an expected incidental take of 4 birds in each two-year period for the demersal longline fishery. Note that this take is based on numbers of birds observed rather than the estimate of total take derived from the observed take. The takes recorded in 2010 and 2011 were the first ones observed since 1998.

Figure 1 depicts seabird bycatch in the groundfish fisheries from 1993 through 2013 using results from the two analytical methods noted above (AFSC internal analysis, 1993-2006; CAS 2007-2013). The 2013 estimated numbers for the combined groundfish fisheries are the lowest since we began estimating bycatch in 1993. The 2013 estimates are 62% of the running 5-year average for 2008-2012 of 7,558 birds and are the lowest total since we began using the CAS in 2007.

While the fisheries achieved the lowest overall seabird bycatch since 1993, albatross bycatch increased in 2013 to 438 birds (249 black-foots and 189 Laysan), an increase of 25% compared to the previous 5 year average of 350. The 2013 numbers included the halibut fishery where previous years did not. However, the increase in albatross bycatch in the sablefish fisheries (>100) surpassed the new contribution from the halibut fishery (53 birds) while other fisheries (cod freezer longline) experienced reduced albatross bycatch numbers. Overall, Laysan albatross (*Phoebastria immutabilis*) bycatch increased by 40% and black-footed albatross (*P. nigripes*) increased by 70%. Although the black-footed albatross is not endangered (unlike its relative, the short-tailed albatross), it is considered a Bird of Conservation Concern by the U.S. Fish & Wildlife Service. This designation means that without additional conservation actions, these birds of concern may become candidates for listing under the Endangered Species Act. The US Fish and Wildlife Service has been petitioned to list the black-footed albatross as threatened, but their analysis of the current state did not support a listing at this time (Federal Register, 2011)

Northern fulmar (*Fulmaris glacialis*) bycatch remained the highest proportion in the catch at 69%. Fulmar bycatch increased by 8% from the year before but remained 30% below the 5-year average. Fulmar bycatch has ranged between 45% to 76% of the total seabird bycatch since 2007. Average annual mortality for fulmars since 2007 has been 4,472. When compared to estimates of the total population size in Alaska of 1.4 million (Denlinger2006), this represents an annual 0.33% mortality due to fisheries. However, there is some concern that the mortality could be colony-specific possibly leading to local depletions (Hatch2010).

The demersal longline fishery in Alaska typically drives the overall estimated bycatch trends. Bycatch in the longline fishery showed a marked decline beginning in 2002 (Figure 1.) due to the deployment of streamer lines as bird deterrents. Since then, annual bycatch has remained below 10,000 birds, dropping as low as 4,007 in 2010. Numbers increased to 8,940 in 2011, the second highest in the streamer line era, but fell back to 4,571 in 2012 and further decreased to 4,246 in 2013. The increased numbers in 2011 were due to a doubling of the gull (*Larus* spp) numbers (1,088 to 2,157) and a 3-fold increase in fulmars, from 1,882 to 5,848. These species group numbers have decreased in 2013 as well, to 553 and 2,795 respectively. The addition of observers to many vessels in the Gulf of Alaska contributed important data for our understanding of seabird bycatch patterns and quantities. Note that in the year an entire fishery (halibut) was added the overall estimated seabird bycatch was the lowest ever, even while albatross bycatch increased, as was expected. The GOA typically accounts for few numbers of birds in most species groups except albatross.

The marked decline in overall numbers of birds caught after 2002 (Figure 1) reflects the increased use of seabird mitigation devices. A large portion of the freezer longline fleet adopted these measures in 2002, followed by regulation requiring them for the rest of the fleet beginning in February 2004. There are many factors that may influence annual variation in bycatch rates, including seabird distribution, population trends, prey supply, and fisheries activities. Work has continued on developing new and refining existing mitigation gear (Dietrich 2008).

The longline fleet has traditionally been responsible for about 91% of the overall seabird bycatch in Alaska, as determined from the data sources noted above. However, standard observer

sampling methods on trawl vessels do not account for additional mortalities from net entanglements, cable strikes, and other sources. Thus, the trawl estimates are biased low (Fitzgerald et al., in prep). For example, the 2010 estimate of trawl-related seabird mortality is 823, while the additional observed mortalities (not included in this estimate and not expanded to the fleet) were 112. Observers now record the additional mortalities they see on trawl vessels and the AFSC Seabird Program is seeking funds to support an analyst to work on how these additional numbers can be folded into an overall estimate. The challenge to further reduce seabird bycatch is great given the rare nature of the event. For example, Dietrich and Fitzgerald (2010) found in an analysis of 35,270 longline sets from 2004 to 2007 that the most predominant species, northern fulmar, only occurred in 2.5% of all sets. Albatross, a focal species for conservation efforts, occurred in less than 0.1% of sets. However, given the vast size of the fishery, the total bycatch can add up to hundreds of albatross or thousands of fulmars.

It is difficult to determine how seabird bycatch numbers and trends are linked to changes in ecosystem components because seabird mitigation gear is used in the longline fleet. There does appear to be a link between poor ocean conditions and the peak bycatch years, on a species-group basis. Fishermen have noted in some years that the birds appear “starved” and attack baited longline gear more aggressively (Lundsten, pers. comm.). In 2008 general seabird bycatch in Alaska was at relatively low levels (driven by lower fulmar and gull bycatch) but albatross numbers were the highest at any time between 2002 and 2013. This could indicate poor ocean conditions in the North Pacific as albatross traveled from the Hawaiian Islands to Alaska. Broad changes in overall seabird bycatch, up to 5,000 birds per year, occurred between 2007 and 2013. This probably indicates changes in food availability rather than drastic changes in how well the fleet employs mitigation gear. A focused investigation of this aspect of seabird bycatch is needed and could inform management of poor ocean conditions if seabird bycatch rates (reported in real time) were substantially higher than normal. There seems to be a generally decreasing trend since the new estimation procedures began in 2007 indicating no immediate management concern other than continuing our goal of decreased seabird bycatch.

For questions or comments please contact Shannon Fitzgerald at (206) 526-4553 or shannon.fitzgerald@noaa.gov.

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Citations

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Table 1. Species and species group categories used in this report¹ and the individual species included in the grouping.

Species/species Group	Includes	Scientific Name
Short-tailed Albatross	n/a	<i>Phoebastria albatrus</i>
Laysan Albatross	n/a	<i>Phoebastria immutabilis</i>
Black-footed Albatross	n/a	<i>Phoebastria nigripes</i>
Unidentified Albatross	Short-tailed, Laysan, or black-footed.	n/a
Northern Fulmar	n/a	<i>Fulmarus glacialis</i>
Shearwaters	Unidentified Shearwater	<i>Puffinus</i> spp
	Sooty Shearwater	<i>Puffinus griseus</i>
	Short-tailed shearwater	<i>Puffinus tenuirostris</i>
	Unidentified dark Shearwater	<i>P. griseus</i> or <i>tenuirostris</i>
	Unidentified procellariid	Procellariiformes
Storm Petrel	Unidentified Storm Petrel	<i>Oceanodroma</i> spp.
	Fork-tailed Storm Petrel	<i>O. furcata</i>
	Leach's Storm Petrel	<i>O. leucorhoa</i>
Gull	Unidentified gull	<i>Laridae</i>
	Herring gull	<i>Larus argentatus</i>
	Glaucous gull	<i>Larus hyperboreus</i>
	Glaucous-winged gull	<i>Larus glaucescens</i>
	Slaty-backed Gull	<i>Larus schisti</i>
	Gull hybrids	<i>Laridae</i>
Kittiwake	Black-footed Kittiwake	<i>Rissa tridactyla</i> ,
	Red-legged Kittiwake	<i>Rissa brevirostris</i>
Murre	Unidentified Murre	<i>Uria</i> spp.
	Thick-billed Murre	<i>Uria lomvia</i>
	Common Murre	<i>Uria aalge</i>
Puffin	Unidentified Puffin	<i>Fratercula</i> spp.
	Horned Puffin	<i>F. corniculata</i>
	Tufted Puffin	<i>F. cirrhata</i>
	Rhinoceros Auklet	<i>Cerorhinca moncerata</i>
Auklet	Unidentified Murrelet or auklet	Several genera
	Murrelets	<i>Brachyramphus</i> spp and others
Other Alcid	Auklets	<i>Aethia</i> spp and others
	Unidentified alcid,	<i>Alcidae</i>
	Guillemot, unidentified	<i>Cepphus</i> spp.
Other Bird	Miscellaneous birds – could include:	
	Loons	<i>Gaviidae</i>
	Grebe	<i>Podicipedidae</i>
	Cormorant	<i>Phalacrocoracidae</i>
	Seaduck	<i>Anatidae</i>
	Jaeger/skua	<i>Stercorariidae</i>
	Terns	<i>Sternidae</i>
Unidentified Seabird	All of the above	

¹ A complete list of the species and species group categories used by North Pacific Groundfish Observers is available in the Groundfish Observer Manual (AFSC 2010)

Table 2. Total estimated seabird bycatch in Alaskan federal groundfish fisheries, all gear types and Fishery Management Plan areas combined, 2007 through 2013.

Species/ Species Group	Year						
	2007	2008	2009	2010	2011	2012	2013
Unidentified Albatross	23	0	0	0	0	0	0
Short-tailed Albatross	0	0	0	15	5	0	0
Laysan Albatross	17	226	148	233	205	135	189
Black-footed Albatross	208	314	56	48	221	141	249
Northern Fulmar	4,806	3,334	8,200	2,452	6,214	3,022	3,268
Shearwater	3,587	1,224	622	653	195	514	191
Storm Petrel	1	44	0	0	0	0	0
Gull	1,360	1,551	1,335	1,145	2,158	890	556
Kittiwake	10	0	16	0	6	5	3
Murre	6	6	13	102	14	6	3
Puffin	0	0	0	5	0	0	0
Auklet	0	3	0	0	0	7	4
Other Alcid	0	0	105	0	0	0	0
Other Bird	0	0	136	0	0	0	0
Unidentified	522	541	696	240	306	285	267
Total	10,540	7,243	11,325	4,894	9,324	5,005	4,730

Table 3. Summary of estimated seabird bycatch in the Alaskan demersal longline groundfish fishery, all Fishery Management Plan areas combined, 2007 through 2013.

Species/ Species Group	Year						
	2007	2008	2009	2010	2011	2012	2013
Unidentified Albatross	23	0	0	0	0	0	0
Short-tailed Albatross	0	0	0	15	5	0	0
Laysan Albatross	17	226	139	233	206	135	189
Black-footed Albatross	208	314	56	48	221	81	249
Northern Fulmar	3,783	2,763	7,442	1,882	5,848	2,725	2,795
Shearwater	2,861	1,211	574	498	191	458	190
Storm Petrel	0	0	0	0	0	0	0
Gull	1,058	1,482	1,253	1,088	2,157	890	553
Kittiwake	10	0	10	0	6	5	3
Murre	5	6	13	0	0	6	0
Puffin	0	0	0	5	0	0	0
Auklet	0	0	0	0	0	7	0
Other Alcid	0	0	0	0	0	0	0
Other Bird	0	0	0	0	0	0	0
Unidentified	506	541	652	237	306	264	267
Total	8,470	6,543	10,139	4,007	8,940	4,571	4,246

Table 4. Estimated Seabird bycatch in the Aleutian Islands Area demersal longline groundfish fishery.

Species/ Species Group	Year						
	2007	2008	2009	2010	2011	2012	2013
Unidentified Albatross	0	0	0	0	0	0	0
Short-tailed Albatross	0	0	0	0	0	0	0
Laysan Albatross	13	51	26	133	12	77	96
Black-footed Albatross	0	0	0	0	5	0	12
Northern Fulmar	64	97	120	111	21	7	45
Shearwater	53	39	10	13	11	15	0
Storm Petrel	0	0	0	0	0	0	0
Gull	37	19	36	177	17	12	24
Kittiwake	0	0	0	0	0	0	0
Murre	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0
Auklet	0	0	0	0	0	0	0
Other Alcid	0	0	0	0	0	0	0
Other Bird	0	0	0	0	0	0	0
Unidentified	7	1	1	1	0	0	0
Total	174	207	193	434	66	111	177

Table 5. Estimated Seabird bycatch in the Bering Sea Area demersal longline groundfish fishery.

Species/ Species Group	Year						
	2007	2008	2009	2010	2011	2012	2013
Unidentified Albatross	0	0	0	0	0	0	0
Short-tailed Albatross	0	0	0	15	5	0	0
Laysan Albatross	4	7	14	16	29	42	15
Black-footed Albatross	18	7	5	9	2	0	1
Northern Fulmar	2,520	1,812	6,726	1,718	5,135	2,699	2,551
Shearwater	2,776	1,172	564	486	153	442	190
Storm Petrel	0	0	0	0	0	0	0
Gull	422	1,340	829	631	1,649	827	407
Kittiwake	10	0	10	0	6	5	3
Murre	5	6	13	0	0	6	0
Puffin	0	0	0	5	0	0	0
Auklet	0	0	0	0	0	7	0
Other Alcid	0	0	0	0	0	0	0
Other Bird	0	0	0	0	0	0	0
Unidentified	444	267	463	236	305	264	267
Total	6,199	4,611	8,624	3,116	7,284	4,292	3,434

Table 6. Estimated Seabird bycatch in the Gulf of Alaska Area demersal longline groundfish fishery.

Species/ Species Group	Year						
	2007	2008	2009	2010	2011	2012	2013
Unidentified Albatross	23	0	0	0	0	0	0
Short-tailed Albatross	0	0	0	0	0	0	0
Laysan Albatross	0	168	100	84	164	16	78
Black-footed Albatross	190	307	51	40	215	81	237
Northern Fulmar	1,198	853	596	54	692	19	199
Shearwater	32	0	0	0	27	0	0
Storm Petrel	0	0	0	0	0	0	0
Gull	599	123	387	279	491	50	122
Kittiwake	0	0	0	0	0	0	0
Murre	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0
Auklet	0	0	0	0	0	0	0
Other Alcid	0	0	0	0	0	0	0
Other Bird	0	0	0	0	0	0	0
Unidentified	55	274	188	0	0	0	0
Total	2,097	1,726	1,323	457	1,589	166	636

Table 7. Estimated seabird bycatch for Alaskan groundfish trawl fisheries, pelagic and non-pelagic gear combined, all Fishery Management Plan areas combined.

Species/ Species Group	Year						
	2007	2008	2009	2010	2011	2012	2013
Unidentified Albatross	0	0	0	0	0	0	0
Short-tailed Albatross	0	0	0	0	0	0	0
Laysan Albatross	0	0	9	0	0	0	0
Black-footed Albatross	0	0	0	0	0	60	0
Northern Fulmar	652	537	634	506	330	297	463
Shearwater	726	13	41	155	3	56	1
Storm Petrel	1	44	0	0	0	0	0
Gull	303	9	82	57	1	0	3
Kittiwake	0	0	6	0	0	0	0
Murre	2	0	0	102	14	0	3
Puffin	0	0	0	0	0	0	0
Auklet	0	3	0	0	0	0	4
Other Alcid	0	0	105	0	0	0	0
Other Bird	0	0	136	0	0	0	0
Unidentified	16	0	44	3	0	0	0
Total	1,700	606	1,057	823	348	413	474

Table 8. Estimated seabird bycatch for the Alaskan groundfish Bering Sea and Aleutian Islands Fisheries Management Plan area, pelagic and non-pelagic trawl gear combined.

Species/ Species Group	Year						
	2007	2008	2009	2010	2011	2012	2013
Unidentified Albatross	0	0	0	0	0	0	0
Short-tailed Albatross	0	0	0	0	0	0	0
Laysan Albatross	0	0	9	0	0	0	0
Black-footed Albatross	0	0	0	0	0	0	0
Northern Fulmar	562	498	634	384	303	297	320
Shearwater	726	13	41	155	3	56	1
Storm Petrel	1	44	0	0	0	0	0
Gull	303	9	82	57	1	0	3
Kittiwake	0	0	6	0	0	0	0
Murre	2	0	0	102	14	0	3
Puffin	0	0	0	0	0	0	0
Auklet	0	3	0	0	0	0	4
Other Alcid	0	0	105	0	0	0	0
Other Bird	0	0	136	0	0	0	0
Unidentified	16	0	44	3	0	0	0
Total	1,610	567	1,057	701	321	353	331

Table 9. Estimated seabird bycatch for the Alaskan groundfish Gulf of Alaska Fisheries Management Plan area, pelagic and non-pelagic trawl gear combined.

Species/ Species Group	Year						
	2007	2008	2009	2010	2011	2012	2013
Unidentified Albatross	0	0	0	0	0	0	0
Short-tailed Albatross	0	0	0	0	0	0	0
Laysan Albatross	0	0	0	0	0	0	0
Black-footed Albatross	0	0	0	0	0	60	0
Northern Fulmar	91	39	0	122	27	0	143
Shearwater	0	0	0	0	0	0	0
Storm Petrel	0	0	0	0	0	0	0
Gull	0	0	0	0	0	0	0
Kittiwake	0	0	0	0	0	0	0
Murre	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0
Auklet	0	0	0	0	0	0	0
Other Alcid	0	0	0	0	0	0	0
Other Bird	0	0	0	0	0	0	0
Unidentified	0	0	0	0	0	0	0
Total	91	39	0	122	27	60	143

Table 10. Estimated seabird bycatch for the Alaskan groundfish pelagic (P) and non-pelagic (N) trawl gear types across all Fisheries Management areas.

Species/ Species Group	Trawl	Year						
		2007	2008	2009	2010	2011	2012	2013
Unidentified Albatross	P	0	0	0	0	0	0	0
	N	0	0	0	0	0	0	0
Short-tailed Albatross	P	0	0	0	0	0	0	0
	N	0	0	0	0	0	0	0
Laysan Albatross	P	0	0	0	0	0	0	0
	N	0	0	9	0	0	0	0
Black-footed Albatross	P	0	0	0	0	0	0	0
	N	0	0	0	0	0	60	0
Northern Fulmar	P	552	290	301	69	215	90	123
	N	101	248	333	436	115	207	340
Shearwater	P	21	13	3	22	3	12	1
	N	705	0	38	133	0	44	0
Storm Petrel	P	1	0	0	0	0	0	0
	N	0	44	0	0	0	0	0
Gull	P	9	9	3	0	1	0	3
	N	294	0	79	57	0	0	0
Kittiwake	P	0	0	6	0	0	0	0
	N	0	0	0	0	0	0	0
Murre	P	2	0	0	0	14	0	3
	N	0	0	0	102	0	0	0
Puffin	P	0	0	0	0	0	0	0
	N	0	0	0	0	0	0	0
Auklet	P	0	3	0	0	0	0	4
	N	0	0	0	0	0	0	0
Other Alcid	P	0	0	0	0	0	0	0
	N	0	0	105	0	0	0	0
Other Bird	P	0	0	3	0	0	0	0
	N	0	0	133	0	0	0	0
Unidentified	P	16	0	37	3	0	0	0
	N	0	0	7	0	0	0	0
Total	P	601	315	353	94	233	102	134
	N	1,100	292	704	728	115	311	340

Table 11. Estimated seabird bycatch for pot vessels fishing groundfish in Alaskan federal waters, all Fishery Management Plan areas combined

Species/ Species Group	Year						
	2007	2008	2009	2010	2011	2012	2013
Unidentified Albatross	0	0	0	0	0	0	0
Short-tailed Albatross	0	0	0	0	0	0	0
Laysan Albatross	0	0	0	0	0	0	0
Black-footed Albatross	0	0	0	0	0	0	0
Northern Fulmar	371	34	125	65	37	0	19
Shearwater	0	0	5	0	0	0	0
Storm Petrel	0	0	0	0	0	0	0
Gull	0	60	0	0	0	0	0
Kittiwake	0	0	0	0	0	0	0
Murre	0	0	0	0	0	0	0
Puffin	0	0	0	0	0	0	0
Auklet	0	0	0	0	0	0	0
Other Alcid	0	0	0	0	0	0	0
Other Bird	0	0	0	0	0	0	0
Unidentified	0	0	0	0	0	21	0
Total	371	94	130	65	37	21	19

Table 12. Estimated seabird bycatch in Alaska by groundfish fishery target in 2010.

Fishery			Total	Species	Number
Region	Gear	Target			
BSAI	Longline	Greenland Turbot	202	Northern Fulmar	170
				Shearwaters	4
				Gulls	16
				Unidentified bird	11
BSAI	Longline	Pacific Cod	3,118	Short-tailed Albatross	15
				Black-footed Albatross	9
				Laysan Albatross	41
				Northern Fulmar	1,631
				Shearwaters	489
				Gull	702
BSAI	Longline	Sablefish	229	Puffin	5
				Unidentified bird	226
				Laysan Albatross	107
				Northern Fulmar	26
BSAI	Trawl	Atka Mackerel	159	Shearwaters	6
				Gulls	90
				Northern Fulmar	84
BSAI	Trawl	Rock Sole	24	Murres	24
BSAI	Trawl	Pacific Cod	139	Northern Fulmar	139
BSAI	Trawl	Rockfish	34	Northern Fulmar	34
BSAI	Trawl	Pollock	94	Northern Fulmar	69
				Shearwaters	22
				Unidentified	3
BSAI	Trawl	Yellowfin Sole	250	Northern Fulmar	57
				Shearwaters	58
				Gulls	57
				Murres	78
BSAI	Pot	Pacific Cod	65	Northern Fulmar	65
				Black-footed Albatross	9
GOA	Longline	Pacific Cod	201	Laysan Albatross	9
				Northern Fulmar	35
				Gulls	147
				Black-footed Albatross	30
GOA	Longline	Sablefish	256	Laysan Albatross	75
				Northern Fulmar	18
				Gulls	132
GOA	Trawl	Arrowtooth Flounder	122	Northern Fulmar	122
Total					4,894

Table 13. Estimated seabird bycatch in Alaska by groundfish fishery target in 2011.

Fishery			Total	Species	Number
Region	Gear	Target			
BSAI	Longline	Greenland Turbot	540	Laysan Albatross	5
				Northern Fulmar	497
				Shearwaters	38
BSAI	Longline	Pacific Cod	6,754	Short-tailed Albatross	5
				Laysan Albatross	28
				Northern Fulmar	4,638
				Shearwaters	126
				Kittiwake	6
				Gull	1,646
BSAI	Longline	Sablefish	57	Unidentified bird	306
				Black-footed Albatross	7
				Laysan Albatross	9
BSAI	Trawl	Atka Mackerel	29	Northern Fulmar	29
BSAI	Trawl	Yellowfin Sole	59	Northern Fulmar	59
BSAI	Trawl	Pacific Cod	0	None	
BSAI	Trawl	Pacific Ocean Perch	0	None	
BSAI	Trawl	Pollock	233	Northern Fulmar	215
				Shearwaters	3
				Gulls	1
				Murres	14
BSAI	Trawl	Sablefish	0	None	
BSAI	Pot	Sablefish	0	None	
BSAI	Pot	Pacific Cod	0	None	
GOA	Longline	Pacific Cod	43	Northern Fulmar	7
				Gulls	36
GOA	Longline	Halibut	61	Gulls	61
				Black-footed Albatross	215
				Laysan Albatross	164
				Northern Fulmar	684
GOA	Longline	Sablefish	1,484	Shearwaters	27
				Gulls	394
				Flatfish	0
				None	
GOA	Trawl	Pacific Cod	0	None	
GOA	Trawl	Rockfish	27	Northern Fulmar	27
GOA	Trawl	Sablefish	0	None	
GOA	Pot	Pacific Cod	37	Northern Fulmar	37
Total					9,324

Table 14. Estimated seabird bycatch in Alaska by groundfish fishery target in 2012.

Fishery			Total	Species	Number
Region	Gear	Target			
BSAI	Longline	Greenland Turbot	409	Northern Fulmar	355
				Shearwaters	40
				Unidentified bird	15
BSAI	Longline	Pacific Cod	3,891	Laysan Albatross	28
				Northern Fulmar	2,351
				Shearwaters	418
				Kittiwake	5
				Gull	827
				Murre	6
				Auklets	7
				Unidentified bird	249
BSAI	Longline	Sablefish	104	Laysan Albatross	91
				Gulls	13
BSAI	Trawl	Atka Mackerel	52	Northern Fulmar	8
				Shearwaters	44
BSAI	Trawl	Rock Sole	49	Northern Fulmar	49
BSAI	Trawl	Pacific Cod	0	None	
BSAI	Trawl	Arrowtooth Flounder	150	Northern Fulmar	150
BSAI	Trawl	Pollock	102	Northern Fulmar	90
				Shearwaters	12
BSAI	Trawl	Sablefish	0	None	
BSAI	Pot	Sablefish	0	None	
BSAI	Pot	Pacific Cod	21	Unidentified Bird	21
GOA	Longline	Pacific Cod	44	Northern Fulmar	19
				Gulls	25
GOA	Longline	Sablefish	123	Black-footed Albatross	81
				Laysan Albatross	16
				Gulls	25
GOA	Trawl	Flatfish	0	None	
GOA	Trawl	Pacific Cod	0	None	
GOA	Trawl	Rockfish	60	Black-footed Albatross	60
GOA	Trawl	Sablefish	0	None	
GOA	Pot	Pacific Cod	0	None	
Total					5,005

Table 15. Estimated seabird bycatch in Alaska by groundfish fishery target in 2013.

Fishery			Total	Species	Number
Region	Gear	Target			
BSAI	Longline	Greenland Turbot	130	Northern Fulmar	65
				Shearwaters	60
				Unidentified	5
BSAI	Longline	Pacific Cod	3,288	Laysan Albatross	4
				Northern Fulmar	2,487
				Shearwaters	130
				Kittiwake	3
				Gull	402
				Unidentified bird	262
BSAI	Longline	Sablefish	165	Black-footed Albatross	12
				Laysan Albatross	107
				Northern Fulmar	34
				Gulls	12
BSAI	Longline	Halibut	12	Gulls	12
BSAI	Longline	Rockfish	5	Gulls	5
BSAI	Trawl	Rock Sole	112	Northern Fulmar	112
BSAI	Trawl	Arrowtooth Flounder	8	Northern Fulmar	8
BSAI	Trawl	Yellowfin Sole	77	Northern Fulmar	77
BSAI	Trawl	Pacific Ocean Perch	0	None	
BSAI	Trawl	Pollock	134	Northern Fulmar	123
				Shearwaters	1
				Gulls	3
				Murres	3
				Auklets	4
BSAI	Trawl	Sablefish	0	None	
BSAI	Pot	Sablefish	0	None	
BSAI	Pot	Pacific Cod	19	Northern Fulmar	19
GOA	Longline	Pacific Cod	34	Northern Fulmar	8
				Gulls	26
GOA	Longline	Sablefish	493	Black-footed Albatross	184
				Laysan Albatross	78
				Northern Fulmar	191
				Gulls	39
GOA	Longline	Halibut	110	Black-footed Albatross	53
				Gulls	57
GOA	Trawl	Flatfish	0	None	
GOA	Trawl	Pacific Cod	0	None	
GOA	Trawl	Arrowtooth Flounder	143	Northern Fulmar	143
GOA	Trawl	Sablefish	0	None	
GOA	Pot	Pacific Cod		None	
Total					4,729

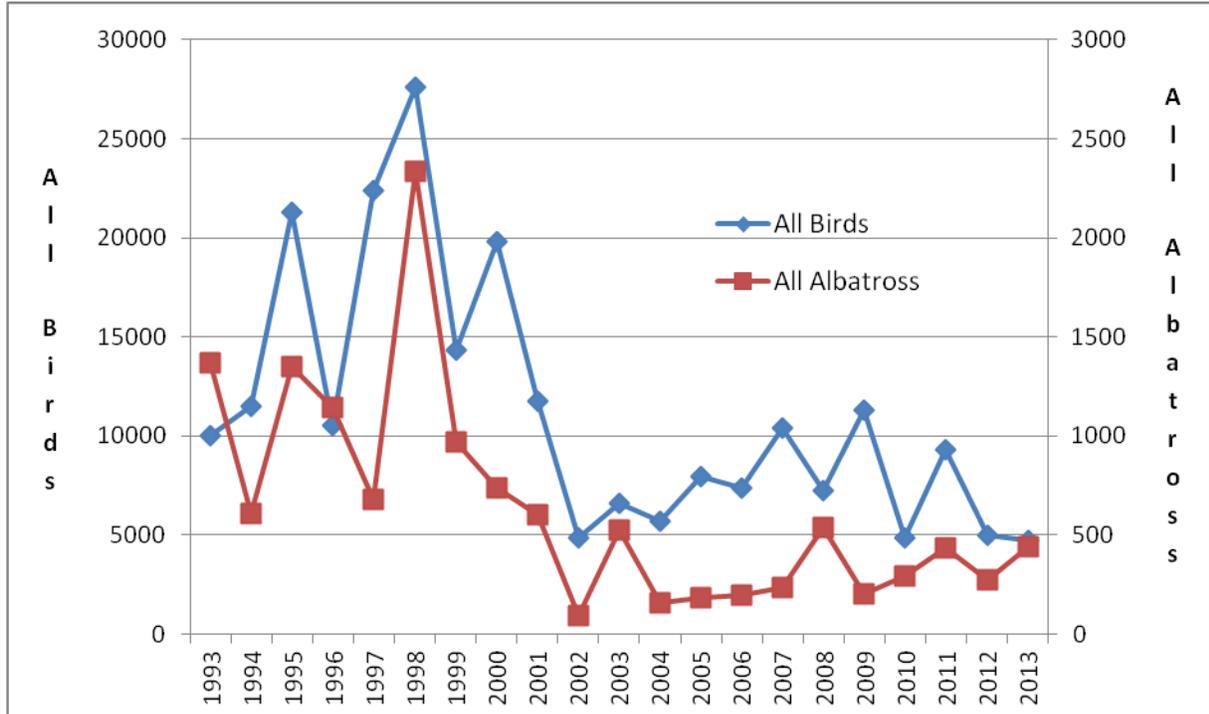


Figure 1. Total estimated bycatch of all seabirds and all albatross in Alaskan Groundfish fisheries, all gears combined -- 1993 to 2013.