

**FY16 National Seabird Program Awards
NOAA National Marine Fisheries Service**

Estimating and Understanding Seabird Bycatch of U.S. Atlantic Pelagic Longline Fleet

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Seabirds are among the many oceanic pelagic species captured incidentally in the U.S. Western Atlantic pelagic longline fishery. Mandatory logbook reporting became a permit requirement in this fishery in 1986. A Pelagic Observer Program (POP) has been collecting bycatch data by randomly sampling fleet effort since 2004. Although seabird bycatch was recorded, lack of identification skills resulted in most seabirds caught before 2004 being recorded as simply “seabird,” or, at best, gull or shearwater. Initiation at SEFSC of a seabird bycatch project in 2004 with support from the National Seabird Program led to identification to species level of almost all seabirds caught thereafter, and several new species have been added to the seabird bycatch species list for this fishery. Annual and long-term estimates of the total seabird bycatch of the fleet are made from POP and logbook data in this Project. Substantial improvements in assessment and estimation methodology have been applied to the data by colleagues at Virginia Polytechnic University. Bycatch estimation has begun to include a close look at the three east coast statistical areas where seabird bycatch is concentrated. This focus has allowed greater opportunity to examine the main seabird community contributing to bycatch and its supporting ecosystem. The ocean there is major feeding habitat for an exceptionally diverse group of seabird species including boreal, temperal, and tropical nesters, some of which are rare species of concern both domestically and internationally.



FY16 Project objectives are to:

- 1) conduct seabird identification training classes
- 2) advance the science of estimating seabird bycatch
- 3) recalculate and update the time series of estimated total fleet catch from 1992 through the latest year of data
- 4) provide species-level bycatch estimates for the most abundant and consistently caught species, and
- 5) estimate probability of capture of rare seabird species—and probability of the event’s detection.

Development of educational video for seabird handling techniques for Hawaii longline fishermen and NMFS observers

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Project Background & Objective(s): The Hawaii longline fisheries interact with seabirds, primarily North Pacific albatrosses. Albatrosses are large birds with a wide wingspan; their size and strength can

make handling and hook removal challenging. Federal regulations require seabird mitigation practices



and proper handling and release techniques. Seabird mitigation measures have greatly reduced seabird bycatch since they were implemented in 2001. In 2014, for example, NMFS observers recorded just 51 birds caught in the deep-set fishery (20% coverage); of these, six seabirds were released injured and 45 were dead. In the shallow-set fishery (100% coverage), observers documented 72 birds caught (56 released injured and 16 dead). http://www.fpir.noaa.gov/SFD/pdfs/seabird/2014_PIR_Seabird_Report_Feb_2016.pdf.

The Pacific Islands Regional Office (PIRO) will help improve knowledge about seabird handling and release techniques for longline vessel owners, operators, and NMFS observers through the development of a 5-8 minute educational video. The educational video will include de-hooking and handling footage of past seabird interactions, and demonstrations and explanations by experts of proper de-hooking and safe handling procedures. The video will be incorporated in the required protected species training for longline vessel owners and operators, as well as NMFS longline fisheries observers. The Sustainable Fisheries Division at PIRO will work with the PIRO Communications Program in developing content and producing the video, and collaborate with the U.S. Fish and Wildlife Service (USFWS) on demonstrating best practices. This project will support the *Memorandum of Understanding on Migratory Bird Conservation between the USFWS and NMFS* by improving the knowledge of seabird handling and release techniques for entangled or injured birds to maximize the likelihood of survival of seabirds caught incidental to fishing operations and released alive.

Streamer Line Distribution in Alaska Longline Fisheries

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This project will provide fishermen with streamer lines to reduce the incidental mortality of seabirds in the hook-and-line fisheries off Alaska. Seabird avoidance measures, specifically streamer lines, reduce the incidental mortality of seabirds in the hook-and-line fisheries off Alaska by nearly 100% when properly deployed (see [research](#)). Streamer lines have been required for 12 years, since 2004 (see [history](#)). It is likely that the incidental mortality of seabirds in the hook-and-line fisheries off Alaska could be further reduced on many vessels with new streamer line gear. We will purchase up to 75 pairs of streamer lines to distribute at seabird avoidance outreach meetings in Alaska, primarily to halibut and sablefish IFQ vessel operators. Streamer lines will also be distributed to NMFS Law Enforcement Offices in Alaska that request streamer lines.



In Alaska, [seabird avoidance measures](#) are required to be used by operators of vessels > 26 ft LOA using hook-and-line gear while fishing for 1) [IFQ](#) halibut, [CDQ](#) halibut, or [IFQ](#) sablefish in the EEZ off Alaska or State of Alaska waters (0-200 nm combined) and 2) groundfish in the EEZ off Alaska (3 to 200 nm). Vessels > 55 ft LOA in the EEZ must use a minimum of a paired streamer line of a specified performance and

material standard. Vessels > 26 ft LOA and ≤ 55 ft LOA must use a minimum of a single streamer line or, in limited instances, a minimum of one buoy bag line. Limited exemptions from seabird avoidance regulations exist. Vessel operators using hook-and-line gear and fishing for groundfish in State of Alaska waters must refer to State regulations (see [5AAC 28.055](#)).

Linking at-sea conditions with the coast-wide Cassin's Auklet Mass Mortality Event of 2014-2015: understanding effects of the Warm Blob on the California Current Ecosystem through a seabird indicator species

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During 2014-2015, the California Current Ecosystem experienced an unusually warm surface feature referred to as the Warm Blob. Surface temperatures 1-4°C above long-term averages caused major perturbations across all trophic levels, including an unprecedented, publicly-visible, coast-wide die-off of the Cassin's auklet (*Ptychoramphus aleuticus*). Necropsies indicated auklets were emaciated, implying these diving birds (dive range 3-43 m) were starving because they were unable to access zooplankton food sources. Coast-wide patterns of beach-cast birds are presently being analyzed. However, there has not yet been a focused effort to analyze at-sea auklet distribution and determine whether anomalies in the ocean distribution occurred and were correlated with Blob-induced changes to hydrography. The Northwest Fisheries Science Center (NWFSC) observed unusually high numbers of Cassin's auklets during annual surveys of the northern domain of the California Current, suggesting that survivors of the die-off may have moved northward during the period the Blob was present.



Photo credit: Sophie Webb

The three objectives of this proposal are:

- 1) to compile NWFSC at-sea observations of Cassin's auklet within the California Current Ecosystem before (2003-2013), during (2014-2015), and after (2016) the manifestation of the Warm Blob,
- 2) to determine whether the ocean distribution of Cassin's auklet changed or remained the same after the onset of the Warm Blob, and
- 3) to examine the relationship between pycnocline parameters (depth, strength, surface layer temperatures) and auklet densities at sea before, during, and after the manifestation of the Warm Blob.

To date, all inferences about the die-off come from shore-based observations of dead birds and necropsy data. Analysis of at-sea distributions and ocean conditions fills a data gap in our understanding of not only of the mass mortality event itself, but also of whether hydrographic conditions or changes in auklet distributions may provide early-warning indicators of severe disruptions to zooplankton at the base of the food web.

Pacific Seabird Bycatch Necropsy Program

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Photo credit: Charlotte Boyd

In this program, observers in Alaska, Hawaii, and US West Coast fisheries collect seabirds from the bycatch and other vessel interactions, with special focus on procellarids. Birds are forwarded to Oikonos, co-located with the Marine Wildlife Veterinary Care and Research Center, Santa Cruz, CA. This project has been going on for several years and makes important use of bycatch seabirds, providing a scientific collection that is incomparable to any we know of. Data can be used to refine estimates of the impacts of bycatch on populations, provide ecosystem modeling information, and monitor changes in the marine environment. Several items noted

as high priority in the FWS Laysan and Black-footed Albatross Conservation Action Plan can only be addressed through this project. Many of the results directly apply to collaborative work between NOAA Fisheries and the FWS. This program has been in place since 2007 and represents a valuable time-series of seabird data in support of a variety of activities. To date, over 2,500 birds have been examined and another 250 are being processed in FY15.

Birds are necropsied and a broad suite of data collected. Additionally, feather clips are made for stable isotope samples, and the stomachs are examined for plastics and the natural food items were then shipped back to the AFSC for the food habits project

Significance (with special focus or relevance to one or more of NOAA Fisheries' NSP focus areas and/or directives):

- 1) *Mitigation of Seabird Bycatch:* Although this project does not specifically address mitigation measures, the data can be used to understand population-level impacts by fisheries on populations or sub-populations and thereby help to target limited resources available for mitigation research.
- 2) *Promoting Seabirds as Ecosystem Indicators:* The data support population dynamics studies and the food habits information is especially important for developing and improving marine web food habits studies.
- 3) *NMFS-USFWS MOU on Migratory Bird Conservation:* As with many other AFSC-led seabird projects, this work addresses the MOU in many ways. It is especially useful in response to high priority action items in the Albatross conservation action plan. The FWS is viewed as our primary client in this work but data are important to many NMFS activities to better understand and steward ocean resources.

Seabird Training for Alaska Groundfish Observers

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The USFWS and NOAA's Alaska Fisheries Science Center (AFSC) worked closely during the high seas driftnet program, 1989-1993 to provide seabird training to observers. Based on this collaboration,

observer duties in the AFSC North Pacific Groundfish Observer Program were expanded to include seabird observation and bycatch monitoring. Fitzgerald of the AFSC and Dr. Patrick Gould of the USFWS worked together to develop supporting materials for observers, including species ID training. Species ID was especially important due to the rare bycatch of the endangered Short-tailed Albatross and was included as a requirement in the Biological Opinion.



Seabird responsibilities for observers were implemented in 1993. NSP funds will be used to train observers through the Coastal Observation and Seabird Survey Program at the University of Washington trains observers. The goal is to achieve consistency and reliably provide seabird training, and to provide high quality training to more than 400 observers per season. Provision of this training allows for good reliability in the seabird data collected, especially where it concerns any bycatch events of the endangered short-tailed albatross. An added benefit of COASST's involvement is their ability, at no extra charge, to organize unpaid student interns to assist with other seabird studies such as data entry or preparation of specimens.

Significance (with special focus or relevance to one or more of NOAA Fisheries' NSP focus areas and/or directives):

- 1) *Mitigation of Seabird Bycatch:* In all mitigation work we do in Alaskan waters large sample sizes are necessary. The work often complements observers already deployed to the vessel or brought on board under a special contract. Also, it is important to review observer data catch rate information to better understand where the greatest conservation need is among the many commercial fishing sectors.
- 2) *Promoting Seabirds as Ecosystem Indicators:* North Pacific Groundfish and Halibut Observers collect a broad suite of bycatch and fishery interaction data and also collect birds for the necropsy program. Some of these results support seabirds as ecosystem indicators studies.
- 3) *NMFS-USFWS Memorandum of Understanding on Migratory Bird Conservation:* The AFSC has built collaboration and client service to the FWS since the 1970's, and especially through the High Seas Driftnet and the Groundfish observer programs. The high quality of training provided to observers was established through this cooperation, and the derived from observer data serve the continued collaboration in many ways. Annual reports are provided to the FWS on total seabird bycatch estimates and the FWS provides input each year on their needs.