



NOAA FISHERIES

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Mottled Petrel. Photo credit Sophie Webb

National Seabird Program 2018 Annual Report

NOAA Fisheries' National Seabird Program (NSP) is a crosscutting group of managers and scientists who work domestically and internationally to protect and conserve seabirds. Our activities are guided by statutes (The National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries, Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds, the Migratory Bird Treaty Act, Magnuson-Stevens Reauthorization Act, Endangered Species Act, National Environmental Policy Act, Oil Pollution Act), and emerging agency priorities (e.g., Ecosystem-Based Fishery Management Policy and Road Map, The National Marine Fisheries Service Climate Science Strategy, Annual Guidance Memoranda). Together, these form the basis for NSP’s two overarching goals:

- 1) Mitigate bycatch – NOAA Fisheries is directly responsible for mitigating bycatch in U.S. fisheries, and supports a variety of international agreements and Regional Fisheries Management Organizations to mitigate bycatch associated with non-U.S. fisheries.
- 2) Promote seabirds as ecosystem indicators – Seabirds are excellent indicators of ecosystem status. As highly migratory, near-apex predators, they integrate across trophic levels, space, and time, and are easily studied relative to other marine species.

The NSP works through representation on steering committees and working groups within and external to NOAA Fisheries, and through partnerships with other NOAA Line Offices, Fisheries Management Councils (FMC), the States, and other Federal agencies (e.g., U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Department of State). Our members work in all five NOAA Fisheries Regional Offices (Alaska Regional Office, ARO; Greater Atlantic Regional Fisheries Office, GARFO; Pacific Islands Regional Office, PIRO; Southeast Regional Office, SERO; & West Coast Regional Office, WCRO) six Science Centers (Alaska Fisheries Science Center, AFSC; Northeast Fisheries Science Center, NEFSC; Northwest Fisheries Science Center, NWFSC; Pacific Islands Fisheries Science Center, PIFSC; Southeast Fisheries Science Center, SEFSC; & Southwest Fisheries Science Center, SWFSC) and Headquarters Offices of Protected Resources (OPR), Science and Technology (OST), International Affairs and Seafood Inspection (IASI), Sustainable Fisheries (OSF), Habitat Conservation (OHC), General Counsel (OGC), and NOAA's National Ocean Service (NOS). As such, we are a nationally coordinated program that benefits from significant leveraging at the regional level.

This report summarizes the significant activities and accomplishments of the NSP during 2018. For more information, visit our website: <https://st.nmfs.noaa.gov/national-seabird-program/>

Policy and Management

Alaska Fisheries Science Center

Report of seabirds collected under salvage – *Completed annual report of seabirds collected under USFWS salvage permit.*

Alaska Regional Office

Report of seabird bycatch in Federal fisheries off Alaska – *Completed annual bycatch report of short-tailed albatross (and other seabirds) as required by USFWS Biological Permit.*

Anne Marie Eich

Northwest Fisheries Science Center

Management of EBFM-related seabird time series for the northern California Current – *Planning, executing, analyzing, and distributing data to IEA and state-of-the-ecosystem reports/memos regarding summer seabird distribution and abundance in the northern US domain of the California Current (Cape Blanco to*

Cape Flattery). Note: this is the only source of long-term, repeated-transect data with accompanying oceanographic and fisheries information for this geographic area.

Jeannette Zamon

Pacific Islands Regional Office

Revision of seabird mitigation measure – *The Western and Central Pacific Fisheries Commission adopted a revised conservation and management measure for seabirds (CMM 2018-03), which added hook shielding devices as a stand-alone mitigation option as well as expanded the southern boundary of application from south of 30° S to south of 25° S.*

Valerie Post

Overtaking of NMFS Special Use Permit for seabird take – U.S. 9th Circuit Court of Appeals overturned a lower court's judgment that affirmed the

USFWS decision to issue a special purpose permit to NMFS for the shallow-set longline fishery in Hawaii under the Migratory Bird Treaty Act (MBTA). The Court concluded that incidental take of seabirds in basic commercial activities like fishing did not fall under the “special purpose” permit provision in 50 C.F.R. § 21.27, and ruled that the USFWS’s interpretation of § 21.27 as authorizing it to grant an incidental take permit to the NMFS did not conform to either the MBTA’s conservation intent or the regulation.

Sarah Ellgen

West Coast Regional Office

Seabird bycatch mitigation measures alternatives – *Developing requirements for groundfish longline vessels 26 to 55 feet to either use streamer lines or to night set.*

Keeley Kent

Synergistic Policy and Management

Offal grinding regulations – *Provided feedback and advice to the USFWS exploring the effects of changes to at-sea macerating (offal grinding) regulations for the Alaska groundfish fisheries, primarily freezer longline vessels.*

Anne Marie Eich (AKRO)
Shannon Fitzgerald (AFSC)



Juan Fernandez Petrel. Photo credit NOAA

Research and Fieldwork

Alaska Fisheries Science Center

Advancing multi-spectral imaging technology for seabird bycatch assessment – *Evaluation of multi-spectral camera systems for seabird bycatch identification continues at AFSC. Multi-spectral camera learning project to improve seabird ID on small vessels using EM continues, working up image data for first 967 images.*

Food habits, plastic ingestion, and bycatch mortality of seabirds – *Seabird necropsy program with Oikonos is ongoing with ca 3,000 birds completed to date; Marine bird food habits work with William Walker continues; Joint session with NIST and Republic of Korea scientists under NOAA cooperative research program completed necropsy of 40 fulmars for plastics load and tissue samples. Analysis of Alaska Trawl mortality data continues: moving into challenges to extrapolation. Observer deployments and data collection continues; Collection of carcasses on temporary hold.*

Shannon Fitzgerald

Prince William Sound Integrated Predator-Prey survey – *11-20 September 2018.*

Rob Suryan

Northeast Fisheries Science Center

Seabird surveys - *Seabird observers were on the following shipboard cruises off the US east coast in 2018: 23 May - 07 Jun; 20-26 Jun; 15-17 Jul; 30 Jul - 10 Aug; 7-22 Aug; 24-31 Aug; 02-08 Sep.*

Debi Palka

Northwest Fisheries Science Center

Quantifying seabird-cable strikes in catcher-processor fishery (NSP-funded project) – *Completed Fall 2017 data collection to quantify seabird-cable strikes in the West Coast at-sea hake catcher-processor fishery to identify cryptic mortality in the trawl fleet. Data analysis and write-up are ongoing.*

Breeding ecology, diet and habitat use of rhinoceros auklets – *Fieldwork on breeding ecology and diet of rhinoceros auklets in Puget Sound and on the outer WA coast. Collaborating with Canadian colleagues on GPS tagging study of auklets.*

Tom Good

Annual seabird surveys for Northern California Current time series – *Seabird surveys aboard NOAA charter vessel F/V Frosti, 19-27 June 2018 as part of Juvenile Salmon Ocean Ecosystem Survey (JSOES). Physical oceanography, zooplankton tows, surface fish trawls, and seabird surveys from Newport, OR to Cape Flattery, WA.*

Field-testing of small-boat acoustic system for forage fish surveys - *Initial testing and calibration of small-boat fisheries hydroacoustics as a potential tool for surveying forage fish biomass in the lower Columbia River and Columbia River Estuary.*

Jeannette Zamon

Southwest Fisheries Science Center

California Current Ecosystem Survey (CCES) (National Seabird Program-funded project) – *This survey continues a*

time series of seabird strip transect surveys in the California going back to 1996. The spatial extent of this survey differed substantially from past surveys in this region but extended coverage from US-Canada border to mid-Baja California, Mexico and seaward to 200 nmi and covered the time period 26 June to 4 December 2018

Lisa T. Ballance
Trevor Joyce
Annette Henry

Long-term Seabird Research in Support of Fisheries Management – *The 2018/19 Antarctic field season was conducted at Cape Shirreff, Livingston Island, and Copacabana Field Camp, King George Island (Antarctic Peninsula). Both sites have long-term research programs on krill predators (including penguins and Brown Skuas) that provide advice to fishery managers in the Southern Ocean on potential impacts of fishing and environmental change on status and performance of air breathing predators. <https://swfsc.noaa.gov/textblock.aspx?parentmenuid=42&id=22832>*

Jefferson Hinke

Presentations and Meetings

North Pacific Fisheries Management Council Meeting and Sub-meetings, Portland, OR, February 2018; Stephanie Zador

Virginia Tech Chapter of American Fisheries Society Meeting, Blacksburg, VA, February 2018

- *Using ecological traits to improve seabird bycatch risk analysis*, Can Zhou, Yan Jiao, Joan Browder

US-Mexico Bilateral, Silver Spring, MD, February 2018; Lisa T. Ballance

Salmon Ocean Ecology Meeting, Newport OR, February 2018 (invited talk)

- *Ocean avian predation on Columbia River salmon populations: what we know, what we don't know, and next steps to improve our knowledge*. Jeannette Zamon

Pacific Seabird Group Annual Meeting, La Paz, Mexico, February 2018

- *Clipperton Island: Life and death of a desert tropical isle*; **Robert Pitman** (Plenary Speaker)
- *Advancing Effective Ecosystem-Based Fisheries Management in the California Current System: Metrics for Quantifying Prey Availability to Predators to Model Allocations of Allowable Biological Catches*; David G. Ainley, Jarrod A. Santora, Peter Warzybok, John C. Field, Brian Wells, Phillip J. Capitolo, Jessie N. Beck, Ryan D. Carle, Erica Donnelly, Gerard J. McChesney, Meredith Elliott, Russell W., Kirsten Lindquist, Peter, Jan Roletto, Michelle Hester, Jaime Jahncke, Peter Adams
- *Seabirds of Pacific Mexico: Diversity, Distribution, and Abundance*; Lisa T. Ballance, Trevor Joyce, and Robert L. Pitman
- *Seabird Distributions and Relative Abundance in the Central and Eastern Pacific Based on At-Sea Surveys, 1988-2017*; Trevor W. Joyce, Robert L. Pitman, and Lisa T. Ballance
- *Seabird Restoration on the Baja California Pacific Islands, Mexico: A Five-Year Binational and Multinstitutional Experience*; Yuliana Bedolla-Guzmán, María Félix, Alejandra Fabila-Blanco, Esmeralda Bravo-Hernandez, Alfonso Hernandez-Ríos, Miguel Corrales-Sauceda, Alicia Aztorga-Ornelas, Alejandro Aguilar-Vargas, Alfonso Aguirre-Muñoz, Annie Little, Jennifer Boyce, Eduardo Íñigo-Eliás, Stephen Kress, and Federico Méndez-Sánchez
- *Addressing Seabird Bycatch in the Pacific Coast Groundfish Fishery: Collaboration Leads to Feasible Conservation Measures*; Laura Todd, Amanda Gladics, Tom Good, Jason Jannot, and Ed Melvin
- *Potential Interaction Analysis of Offshore Wind Energy Areas and Breeding Avian Species on the US Atlantic Coast*; Jeri L. Wisman, Sara M. Maxwell

North Pacific Albatross Working Group Meeting, La Paz, Mexico, February 2018; Lisa T. Ballance, Jason Jannot, Trevor Joyce, Tom Good, Robert L. Pitman

Impromptu Meeting of NOAA Fisheries' National Seabird Program, La Paz, February 2018; Lisa T. Ballance, Tom Good, Jason Jannot, Trevor Joyce, Robert L. Pitman

Northwest Fisheries Science Center Science Symposium, Seattle WA, March 2018

- *Ocean avian predation on Columbia River salmon populations: what we know, what we don't know, and next steps to improve our knowledge*. Jeannette Zamon

OneNOAA Science Seminar Series, Silver Spring, MD, March 2018

- *Risk Factors for Seabird Bycatch in the Hawaii Longline Deep-set Tuna Fishery*; Eric Gilman, John Peschon, and Sarah Ellgen

Alaska Groundfish and Halibut Seabird Working Group, Juneau, AK, March 2018; Anne Marie Eich, Sarah Ellgen, Shannon Fitzgerald; Tom Good

Presentations and Meetings

National Observer Program Advisory Team Meeting – NOPAT, Newport, OR, April 2018;

- *NOAA Fisheries' National Seabird Program*, Lisa T. Ballance, Lee Benaka, Erin Wilkinson

Pacific Transitional Area Symposium, La Paz, Mexico, April 2018;

- *Understanding changes in Transitional Areas of the Pacific*, Johanna Wren, Scott Shaffer, and Jeffrey Polovina

North Pacific Fisheries Management Council Meeting, Anchorage, AK, April 2018;

- *Alaska Groundfish and Halibut Seabird Working Group recommendations & bycatch data*, Anne Marie Eich

California Seabird Coordination Meeting, Channel Islands National Park, CA, 24 April 2018; Tom Good

Observer Bird Cable Strike Training Seattle, WA, May, 2018; Jason Jannot and Tom Good

At-sea Hake Industry Update on Bird Cable Strike Project, May 2018; Jason Jannot

Bycatch Reduction Engineering Program (BREP) Grant Award Meeting, Pascagoula MS, May 2018; Shannon Fitzgerald, Erin Wilkinson, Anne Marie Eich

Sixth Session of the Meeting of Parties to the Agreement on the Conservation of Albatrosses and Petrels, Kruger National Park, South Africa, May 2018; Mi Ae Kim

Wildlife Center for the North Coast (regional seabird rehabilitation center), Astoria, OR, July 2018;

Led strategic planning visioning activity, Jeannette Zamon.

North Pacific Fisheries Management Council Electronic Monitoring Committee Meeting, Kodiak, AK August 2018; Shannon Fitzgerald

Eulachon Technical Recovery & Implementation Team, Ridgefield, WA, September 2018; Jeannette Zamon

Council for Conservation of Migratory Birds Meeting, Washington D.C., September 2018, Lee Benaka, Annette Henry,

National Observer Program Advisory Team Meeting – NOPAT, Galveston, TX, October 2018; Lisa T. Ballance, Lee Benaka, Annette Henry, Erin Wilkinson

Pacific Fishery Management Council, San Diego, CA, November 2018; Keeley Kent

Seabird Bycatch Mitigation Workshop, Western Pacific Fishery Management Council Office, Honolulu, HI, November 2018; Colby Brady, Sarah Ellgen, Mi Ae Kim, John Peschon, Jeffrey Polovina, Valerie Post, Johanna Wren

US West Coast Biological Observations Workshop, Santa Cruz, CA, November 2018; Lisa T. Ballance

Pink-footed Shearwater Workshop, Santa Cruz, CA, November 2018; Lisa T. Ballance, Jody Van Niekerk, Mi Ae Kim (by phone)

Western & Central Pacific Fisheries Commission 15th Annual Meeting, Honolulu, Hawaii, December 2018; Valerie Post

National Seabird Program In-person Meeting

In 2018, the National Seabird Program (NSP) convened a two-day meeting to obtain vital information necessary to assist in achieving two goals: (1) revisiting and refining the NSP mission and vision and (2) drafting a five-year NSP strategic plan. NSP representatives from every NOAA Fisheries science center, and regional and headquarters office, as well as invited participants from NOAA's National Ocean Service, the U.S. Fish and Wildlife Service, Bureau of Ocean Energy Management, and Fishery Management Councils were in attendance. Prior to the meeting, a steering committee, with input from the broader NSP, developed five strategic initiatives that formed the framework for a draft strategic plan:

- (1) monitor and estimate seabird bycatch;
- (2) mitigate seabird bycatch;
- (3) strengthen key partnerships;
- (4) promote seabirds in advancing ecosystem-based fisheries management; and
- (5) elevate awareness of and support for the National Seabird Program.

At the meeting, background presentations associated with each initiative were given, and working groups discussed revisions to the NSP mission statement and drafted goals and milestones associated with each strategic initiative. The working groups were remarkably productive and significantly advanced the development of goals and milestones associated with their strategic initiative. The steering committee for the 2018 NOAA Fisheries' National Seabird Program Meeting, along with the broader NSP, will use the information obtained from this meeting to further develop its five-year strategic plan. The plan will follow calendar years, beginning in 2020 and ending in 2024. Our goal is to have the plan formalized, approved, and published as a NOAA Technical Memorandum in spring 2019.



Front row: Jeff Shenot, Harvey Walsh, Therese Conant, Jen Zamon, Stephani Zador, Erin Wilkinson, Liz Labunski, Asuka Ishizaki, Mridula Srinivasan, Mi Ae Kim, Tammy Russell. Middle row: Dave Pereksta, Scott Johnston, Jason Jannot, Tom Good, Jennifer Lee, Noelle Olsen, Lee Benaka, Kevin Powers, Robert Pitman, Rachael Wadsworth, Jenny McDaniel. Back Row: Lisa T. Ballance (NSP Chair), Ryan Silva, Laura Todd, Annette Henry, Roberta Swift, Steve MacLean, Rob Suryan, Shannon Fitzgerald, Summer Martin, and Trevor Joyce.

Attendance: Individuals from Alaska Regional Office: Anne Marie Eich, Jennifer Roberts; Alaska Fisheries Science Center: Shannon Fitzgerald, Rob Suryan, Stephani Zador; Greater Atlantic Regional Fisheries Office: Ryan Silva; International Affairs and Seafood Inspection: Mi Ae Kim; Northeast Fisheries Science Center: Gina Shield, Harvey Walsh; Northwest Fisheries Science Center: Tom Good, Jason Jannot, Ryan Shama, Jen Zamon; Office of General Council: Stacey Nathanson; Office of Habitat Conservation: Jeff Shenot; Office of Protected Resources: Therese Conant, Laura Koehn; Office of Sustainable Fisheries: Erin Wilkinson; Pacific Islands

National Seabird Program In-person Meeting

Fisheries Center: Summer Martin; Southeast Fisheries Science Center: Joan Browder; Southeast Regional Office: Jennifer Lee; Southwest Fisheries Science Center: Lisa T. Ballance, Annette Henry, Jefferson Hinke, Trevor Joyce, Robert Pitman; West Coast Regional Office: Yvonne DeReynier, Keeley Kent, Rachael Wadsworth; Western Pacific Fishery Management Council: Asuka Ishizaki; North Pacific Fishery Management Council: Steve MacLean; U.S. Fish & Wildlife Service: Scott Johnston, Lesley Kordella, Elizabeth Labunski, Roberta Swift, Laura Todd; Bureau of Ocean Energy Management: Dave Pereksta; National Marine Sanctuaries: Kevin Powers; Scripps Institution of Oceanography: Tammy Russell; Individuals from Alaska Fisheries Science Center: Shannon Fitzgerald, Rob Suryan, Stephani Zador; Alaska Regional Office: Anne Marie Eich, Jennifer Roberts; Greater Atlantic Regional Fisheries Office: Ryan Silva; Office of International Affairs and Seafood Inspection: Mi Ae Kim; Northeast Fisheries Science Center: Gina Shield, Harvey Walsh; Northwest Fisheries Science Center: Tom Good, Jason Jannot, Ryan Shama, Jen Zamon; Office of General Counsel: Stacey Nathanson; Office of Habitat Conservation: Jeff Shenot; Office of Protected Resources: Therese Conant; Office of Sustainable Fisheries: Erin Wilkinson; Pacific Islands Fisheries Science Center: Summer Martin; Pacific Islands Regional Office: Colby Brady, Sarah Ellgen, John Peschon, Joshua Rudolph; Office of Science and Technology: Lee Benaka, Laura Koehn, Noelle Olsen, Mridula Srinivasan; Southeast Regional Office: Jennifer Lee; Southeast Fisheries Science Center: Joan Browder; Southwest Fisheries Science Center: Lisa T. Ballance (Chair), Annette Henry, Jefferson Hinke, Trevor Joyce, Robert Pitman; West Coast Regional Office: Yvonne DeReynier, Keeley Kent, Rachael Wadsworth; Western Pacific Fishery Management Council: Asuka Ishizaki; North Pacific Fishery Management Council: Steve MacLean; U.S. Fish & Wildlife Service: Scott Johnston, Lesley Kordella, Elizabeth Labunski, Roberta Swift, Laura Todd; Bureau of Ocean Energy Management: Dave Pereksta; National Marine Sanctuaries: Kevin Powers; Scripps Institution of Oceanography: Tammy Russell



Greater Shearwater. Photo credit Robert Pitman.

Publications

A.J. Winship, B.P. Kinlan, T.P. White, J.B. Leirness, and J. Christensen. 2018. Modeling At-Sea Density of Marine Birds to Support Atlantic Marine Renewable Energy Planning: Final Report. U.S. Department of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs, Sterling, VA. OCS Study BOEM 2018-010. x+67 pp.

https://coastalscience.noaa.gov/data_reports/modeling-at-sea-density-of-marine-birds-to-support-atlantic-marine-renewable-energy-planning-final-report/

Donnelly-Greenan, E., Hyrenbach, D., Beck, J., **Fitzgerald, S.**, Nevins, H. and Hester, M., 2018. First quantification of plastic ingestion by Short-tailed Albatross *Phoebastria albatrus*. *Marine Ornithology*, 46, pp.79-84. (based on long term NSP funding)

Eich, A.M., J. Roberts, and S.M. Fitzgerald. 2018. Seabird Bycatch Estimates for Alaska Groundfish Fisheries: 2016 through 2017. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-F/AKR-18, 32 p. doi:10.25923/vb9g-s503.

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Harvey, C.J., Garfield, N., Williams, G.D., Andrews, K.S., Barceló, C., Barnas, K.A., Bograd, S.J., Brodeur, R.D., Burke, B.J., Cope, J.M. deWitt, L., Field, J., Fisher, J., Greene, C., Good, T., Hazen, E., Holland, D., Jacox, M., Kasperski, S., Munsch, S., Norman, K., Peterson, W.T., Poe, M., Samhouri, J., Schoeder, I., Sydeman, W., Thayer, J., Thompson, A., Tolimieri, N., Varney, A., Wells, B., **Hinke, J.T.**, Barbosa, A., Emmerson, L.M., Hart, T., Juárez, M.A., Korczak-Abshire, M., Milinevsky, G., Santos, M., Trathan, P.N., Watters, G.M. and Southwell, C., 2018. Estimating nest-level phenology and reproductive success of colonial seabirds using time-lapse cameras. *Methods in Ecology and Evolution*.

Hipfner, J.M., Galbraith, M., Tucker, S., Studholme, K.R., Domalik, A.D., Pearson, S.F., **Good, T.P.**, Ross, P.S. and Hodum, P., 2018. Two forage fishes as potential conduits for the vertical transfer of microfibres in Northeastern Pacific Ocean food webs. *Environmental Pollution*, 239, pp.215-222.

Jannot, J.E., T. Good, V. Tuttle, A.M. Eich, and S. Fitzgerald, editors. 2018. U.S. West Coast and Alaska Trawl Fisheries Seabird Cable Strike Mitigation Workshop, November 2017: Summary Report. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-142;

Jones, T., Parrish, J.K., Peterson, W.T., Bjorkstedt, E.P., Bond, N.A., **Ballance, L.T.**, Bowes, V., Hipfner, J.M., Burgess, H.K., Dolliver, J.E., Lindquist, K., Lindsey, J., Nevins, H.M., Robertson, R.R., Roletto, J., Wilson, L., **Joyce, T.** and Harvey, J. 2018. Massive mortality of a planktivorous seabird in response to a marine heatwave. *Geophysical Research Letters*, 45(7), pp.3193-3202.

Lively-Anderson, J.A. and **T.P. Good.** Ghost Fishing. Chapter 10 In *World Seas: An Environmental Evaluation*, Second Edition: Ecological Issues and Environmental Impacts, C.R.C. Sheppard, ed. Academic Press, October 2018.

Nevins, H.M., Beck, J., Michael, P.E., Hester, M., **Peschon, J.**, Donnelly-Greenan, E. and **Fitzgerald, S.**, 2018. Demographics of Laysan *Phoebastria immutabilis* and Black-footed *P. nigripes* Albatross caught as bycatch in Alaskan groundfish and Hawaiian longline fisheries. *Marine Ornithology*, 46, pp.187-196.

Piatt, J.F., Arimitsu, M.L., Sydeman, W.J., Thompson, S.A., Renner, H., **Zador, S.**, Douglas, D., Hatch, S., Kettle, A. and Williams, J., 2018. Biogeography of pelagic food webs in the North Pacific. *Fisheries Oceanography*, 27(4), pp.366-380.

Phillips, E.M., Horne, J.K., Adams, J. and **Zamon, J.E.**, 2018. Selective occupancy of a persistent yet variable coastal river plume by two seabird species. *Marine Ecology Progress Series*, 594, pp.245-261.

Thompson, A.R., Schroeder, I., Bograd, S.J., Hazen, E.L., Jacox, M.G., Leising, A., Wells, B.K., Fisher, J.L., Jacobson, K., Zeman, S., Bjorkstedt, E.P., Robertson, R.R., Chavez, F.P., Kahru, M., Goericke, R., McClatchie, S., Peabody, C.E., Baumgartner, T.R.,

Publications

Lavaneigos, B.E., Gomez-Valdex, J., Brodeur, R.D., Daly, E.A., Morgan, C.A., Auth, T.D., Burke, B.J., Field, J., Sakuma, K., Weber, E.D., Watson, W., Coates, J., Schoenbaum, R., Rogers-Bennett, L., **Suryan, R.M.**, Dolliver, J, Lored, S., **Zamon J.E.**, Schneider, S.R., Golightly, R.T., Warzybok, P., Jahncke, J., Santora, J.A., Thompson, S.A., Sydeman, W., and Melin, S.R. 2018. State of the California Current 2017-2018: still not quite normal in the north and getting interesting in the south. California Cooperative Oceanic Fisheries Investigations Report 59, pp. 1-66.

Wells, B.K., I.D. Schroeder, S.J. Bograd, E.L. Hazen, M.G. Jacox, A. Leising, N. Mantua, J. A. Santora, J. Fisher, W.T. Peterson, E.P. Bjorkstedt, R.R. Robertson, F.P. Chavez, R. Goericke, R. Kudela, C. Anderson, B.E. Lavaniegos, J. Gomez-Valdes, R.D. Brodeur, E.A. Daly, C.A. Morgan, T. Auth, J. Field, K. Sakuma, S. McClatchie, A.R. Thompson, E.D. Weber, W. Watson, **R.M. Suryan**, J.K. Parrish, J. Dolliver, S. Lored, J.M. Porquez, **J.E. Zamon**, S.R. Schneider, R.T. Golightly, P. Warzybok, R. Bradley, J. Jahncke, S.R. Melin, J. A. Hilderbrand, A.J. Debich, and B. Thayre. 2017. State of the California Current 2016-2017: Still anything but "normal" in the north. California Cooperative Oceanic Fisheries Investigations Reports 58:1-55

Williams, T., **Zamon, J.E.**, 2017. Ecosystem status report of the California Current for 2017: a summary of ecosystem indicators compiled by the California Current Integrated Ecosystem Assessment Team (CCIEA). NOAA Technical Memorandum NMFS-NWFSC-139, Seattle. 61 pp.

In Press

Jannot, J.E. T.P. Good, K. Somers, V. Tuttle, and J. McVeigh. 2018. *In press*. Seabird Mortality in U.S. West Coast Groundfish Fisheries 2002-2016. NOAA Fisheries, NWFSC Observer Program, 2725 Montlake Blvd E., Seattle, WA 98112. U.S. Dept. of Commer. NOAA Technical Memorandum.

Phillips, E.M., Horne, J.K., **Zamon J.E.**, Felis, J.J, and Adams, J. *In press*. Does perspective matter? Comparing Eulerian and Lagrangian estimates of seabird distributions. Ecology and Evolution.

Sigourney D., Orphanides C, **Hatch J.** *In press*. Estimates of seabird bycatch in commercial fisheries off the east coast of the United States from 2015 and 2016. NEFSC. NOAA Technical Memorandum. In press.

Zhou, Can, Y. Jiao, and **J.A. Browder.** *In press*. Seabird bycatch vulnerability to pelagic longline fisheries ecological traits matter. Aquatic Conservation.



Group of terns at sea. Photo credit NOAA

Outreach and Other

Alaska Fisheries Science Center

Ocean Debris Samplers – *Submitted proposal to BOEM in collaboration with Oikonos to use Northern Fulmars as ocean debris samplers over the next 3-5 yrs and complete analysis of chemical efforts of plastics.* Shannon Fitzgerald

Seabird Distribution Data – *Working with Gulf Watch Alaska investigators to compile and analyze data for the Gulf of Alaska.* Rob Suryan

Alaska Regional Office

NOAA Fisheries Employee of the Year – *Awarded to Anne Marie Eich and Sadie Wright in the Professional/Scientific/Technical category.*

Electronic Monitoring Handout – *Created to describe protocol for displaying seabird bycatch to cameras.* Anne Marie Eich

Distribution of free seabird mitigation devices, streamer lines, to Federal longline fleet (National Seabird Program-funded project).

Anne Marie Eich
Jennifer Roberts

International Affairs and Seafood Inspection

Bronze Medal Award – *A Bronze Medal was awarded to Mi Ae Kim for providing key scientific and policy advice supporting U.S. leadership in the development and adoption of the world's largest marine reserve in the Antarctic.*

Northwest Fisheries Science Center

Identified and reported all cases of bird band sightings (2001-2017).

Ryan Shama

NOAA Fisheries Employee of the Year – *Awarded to Christa Colway in the Professional/Scientific/Technical category.*

Seabird Indicator Time Series – *Assembled seabird indicator time series for the California Current Integrated Ecosystem Assessment (CCIEA) website and annual report on the "State of the California Current Ecosystem" to the Pacific Fisheries Management Council.* Tom Good (website, PFMC report), Jeannette Zamon (data contributor)

Successful Doctoral Defense – *Elizabeth Phillips (University of Washington) successfully defended her doctoral thesis about*

seabird use of the Columbia River Plume and interactions with salmon and forage fishes.

NOAA Living Marine Resources Cooperative Science Center Graduate Fellow – *Nicole Kleponis learned land- and vessel-based seabird survey methods for master's thesis that inventoried winter habitat use by seabirds in Delaware Bay. This fellowship program provides graduate-level training for under-represented minorities in mission-critical areas of marine science.*

NOAA Co-supervising Doctoral Student – *Along with Professor Gail Davoren (University of Manitoba), student Laura Bliss is working on analyses of habitat associations among physical features, forage fish, seabirds, and cetaceans in the North Atlantic and California Current ecosystems.*

Board Service for Regional Seabird Rehabilitation Center - *Secretary, voting member, and Strategic Planning Coordinator for the Board of Directors for the Wildlife Center of the North Coast.*

Sold-out "Wings Over Willpa" public seabird field trip in Columbia River Plume – *As part of a new bird-centered public outreach program with USFWS Willapa Bay Refuge, planned and served as naturalist guide for a seabird-focused, chartered at-sea excursion.* <https://friendsofwillaparefuge.org/wings-over-willapa/>

Jeannette Zamon

Grant Award – *The NOAA Cooperative Research Program awarded a grant for the project: "Detecting and Mitigating Cryptic Seabird Bycatch in West Coast At-Sea Hake Fisheries."*

Tom Good
Jason Jannot
Vanessa Tuttle
Amanda Gladics (OR SeaGrant)

Seabird Cable Strikes – *Trained fisheries observers to collect seabird cable-strike data on at-sea hake trawl vessels in cooperation with Oregon SeaGrant (A. Gladics) and industry.*

Tom Good
Jason Jannot

Outreach and Other

Pacific Islands Regional Office

Seabird Handling Placard (National Seabird Program-funded project) - *Completed safe seabird handling placard for use by Hawaii longline vessel owner and operators.*

Sarah Ellgen
Andrew Torres

NOAA Fisheries Employee of the Year – *Awarded to John Peschon and Sarah Ellgen in the Professional/Scientific/Technical category.*

Southeast Fisheries Science Center

Seabird Identification Training – *For observers with U.S. Atlantic pelagic longline fishery.*

Joan Browder

Southwest Fisheries Science Center

Seabird Relative Abundance Modeling – *Compiled database of at-sea transect surveys from the US West Coast for a project.*

Trevor Joyce

New Graduate Student - *Beginning doctorate research at Scripps Institution of Oceanography to focus on seabirds (Tammy Russell).*

Lisa T. Ballance



Red-footed Booby. Photo credit Jody Van Niekerk

Synergistic Outreach and Other

Updated annual seabird estimates through 2017 fishing year.

Joan Browder (SEFSC)
Anne Marie Eich (ARO)

Seabird Training Seminar – *For observers in the Pelagic Observers Program.*

Joan Browder (SEFSC)
Tom Good (NEFSC)

National Seabird Program Funded Projects: 2018

Seed funding for these projects was provided by the
Office of Science and Technology's National Observer Program

Pacific Seabird Bycatch Necropsy Program

Shannon Fitzgerald, Alaska Fisheries Science Center, Michelle Hester, Oikonos, Jennifer Ferdinand, Alaska Fisheries Science Center, John Kelly, Pacific Islands Regional Office, and Cassandra Donovan, Northwest Fisheries Science Center

Fisheries Observers in Alaska, Hawaii, and US West Coast fisheries collect primarily procellariid seabirds from commercial fishing bycatch. Birds are forwarded to Oikonos, co-located with the Marine Wildlife Veterinary Care and Research Center, Santa Cruz, CA to make use of bycatch seabirds, providing specimens and information incomparable to any known. Data are 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 are addressed through this project. 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 3,000 birds have been examined. The data are used to understand population-level impacts by fisheries on populations or sub-populations and thereby help to target limited resources available for mitigation research.



Black-footed Albatross. Photo credit NOAA.

Linking Population Health, Disease, and Contaminants in Seabirds

Shannon Fitzgerald, Alaska Fisheries Science Center, Jennifer Ferdinand, Alaska Fisheries Science Center, Dr. Julia Parrish, and Hillary Burgess, University of Washington

The USFWS and NOAA's Alaska Fisheries Science Center (AFSC) worked closely during the high seas driftnet program, 1989-1993 to include seabird observation and bycatch monitoring for fisheries observers. Species ID is especially important due to the rare bycatch of the endangered Short-tailed albatross and was included as a requirement in the Biological Opinion. To achieve consistency and reliably provide seabird training the Coastal Observation and Seabird Survey Program at the University of Washington provides training. More than 400 observers annually go through observer certification training or annual pre-deployment briefings. Each type of training includes a focused session on seabirds. These sessions allow for good reliability in the seabird data collected, especially where bycatch events of the endangered short-tailed albatross occur. Doing this task as a contracted vendor is of value to the government regarding our use of limited seabird resources. 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. This project complements observers already deployed to the vessel or brought on board under a special contract. It also provides information about where the greatest conservation need is among the many commercial fishing sectors. Moreover, the North Pacific 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.

National Seabird Program Funded Projects: 2018

Streamer Line Distribution in Alaska Longline Fisheries

Anne Marie Eich, Alaska Regional Office

This project will provide fishermen with streamer lines to reduce the incidental mortality of seabirds in the hook-and-line fisheries off



Short-tailed Albatross. Photo credit R. Suryan

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 purchased up to 60 pairs of streamer lines that were distributed through select NMFS Law Enforcement Offices in Alaska.

In Alaska, [seabird avoidance measures](#) are required to be used by operators of vessels > 26 ft LOA using hook-and-line gear fishing for IFQ halibut, [CDQ](#) halibut, or IFQ sablefish in the EEZ off Alaska or State of Alaska waters (0 to 200 nm combined); or 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 ≤ to 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. Other than noted above, vessel operators using hook-and-line gear and fishing for groundfish in waters of the State of Alaska must refer to State regulations (see [5AAC 28.055](#)).

Outreach Initiative to Educate Stakeholders and Mitigate Seabird Interactions with Commercial Fisheries in the Northwest Atlantic

Ryan Silva, Greater Atlantic Regional Fisheries Office, Debra Palka, Northeast Fisheries Science Center, Gina Shield, Northeast Fisheries Science Center

Through support of the National Seabird Program, the Northeast Fisheries Science Center recently completed seabird bycatch estimates based on data from 1996 – 2016 (Hatch, 2017). This analysis showed that twenty-six seabird species are bycaught in commercial fisheries operating in the Greater Atlantic Region; twenty-five are listed as “migratory” under 50 C.F.R. 10.13. Of particular concern are the large number of lethal greater shearwaters takes (1500 – 2000 per year) resulting from commercial fishing practices. Greater Shearwaters are considered a Species of Conservation Concern by the U.S. Fish and Wildlife Service and are on National Audubon Society and American Bird Conservancy watch lists.

The cause of these takes varies, but the primary culprit includes a baiting/chumming practice around gillnets, and birds feeding on discards from gillnet and trawl vessels, among other sources. We propose a seabird bycatch outreach initiative in the Greater Atlantic Region to educate fishermen, regional fishery management councils and inter-state commission, and the general public on these issues. Through this initiative, we intend to produce and promote electronic, printed, and video outreach materials, and engage in targeted outreach events. Materials would be promoted through NOAA Fisheries and Stellwagen Bank National Marine Sanctuary online and social media outlets, and presented at fisherman’s forums, fishery management meetings, and to programs such as the Stellwagen Bank National Marine Sanctuary’s Middle School Seabird Program and the NOAA Outreach and Education on Protected Species program (<https://www.nefsc.noaa.gov/psb/NOEPS/>).

National Seabird Program Funded Projects: 2018

Linking Population Health, Disease, and Contaminants in Seabirds

Tom Good, Northwest Fisheries Science Center, and Gina Ylitalo, Northwest Fisheries Science Center

Elevated levels of anthropogenic contaminants, including persistent organic pollutants (POPs), have been reported throughout the food web in Puget Sound. However, linking contaminants to population health and performance can be difficult, as sampling requires baselines and unusual mortality events. In 2016, a dramatic die-off of Rhinoceros Auklets (*Cerorhinca monocerata*) in Puget Sound resulted in encounter rates on local beaches 150 times greater than normal. The local breeding colony experienced unusual adult and chick mortality, and chick provisioning and fledging rates were the lowest in 11 years. Initial necropsies diagnosed bacterial septicemia and pneumonia, with many carcasses showing emaciation.

The objective of this project is to link environmental contaminants to seabird health and performance by comparing POPs levels in auklets bycaught in Puget Sound salmon fisheries (baseline) to POPs levels in auklets salvaged during the 2016 unusual mortality event. Some of the specimens were also analyzed by the USGS National Wildlife Health Center, thus creating potential links between contaminants and health/performance. At the Northwest fisheries Science Center Environmental Chemistry Program laboratory, we will quantify tissue-specific concentrations of a suite of persistent organic pollutants, including 40 PCBs, six DDTs, 15 PBDEs, eight chlordanes, HCHs, and HCB.

As Rhinoceros Auklets are being monitored as a Puget Sound Vital Sign indicator, this project can inform the use of additional seabird indicators, such as contaminants, that are more closely connected to population health and performance. Directed sampling of avian piscivores in Puget Sound has not occurred since the 1980s, which are important upper trophic-level consumers.



Rhinoceros Auklet workup. Photo credit Cliff Brown

Distribution and Abundance of Seabirds in the California Current: Continuing a Time Series

Lisa T. Ballance, Southwest Fisheries Science Center

The Southwest Fisheries Science Center conducts comprehensive marine mammal, seabird, and ecosystem surveys in U.S. waters of the Eastern Pacific Ocean every 3-6 years. The seabird surveys are designed to estimate abundance and distribution within an ecosystem context. Seabird data collected at-sea aboard NOAA research vessel surveys addresses two principal goals: 1) Data on abundance and distribution is necessary to identify which species are vulnerable to bycatch, to quantify where and when, and to develop risk assessment and bycatch mitigation strategies and 2) Seabirds are excellent indicators of ecosystem status. As highly migratory, near-apex predators, seabirds integrate across trophic levels, space, and time, and are easily studied relative to other marine species. Their abundance, distribution, and temporal patterns can provide valuable insights into ecosystem status. From June through December 2018, seabird data were collected in waters within the Exclusive Economic Zone off the U.S. west coast, and territorial waters of Mexico and Canada as part of a cetacean and ecosystem assessment survey conducted aboard NOAA Ship *Lasker*. This

project is a continuation of a series of research cruises that have been repeated periodically off the Eastern Pacific Ocean Coast for cetacean stock assessment.

Can Species-Specific Seabird Bycatch of the US Atlantic Pelagic Longline Fleet be Estimated Effectively? Application of a Bayesian Approach

Joan A. Browder, Southeast Fisheries Science Center

Two hurdles must be overcome for effective estimation of species-specific seabird bycatch of the U.S. Atlantic pelagic longline fleet: 1) estimating species-specific bycatch when overall bycatch is extremely low and 2) estimating overall bycatch correctly. Species-specific estimates will be made not only for observed bycatch species but also species of special concern foraging in the longline fleet's fishing area. Species will be linked through similarity analysis based on size, feeding and diving patterns, and other characteristics and subjected to Bayesian hierarchical models. To improve overall estimation accuracy, the project will address seabird bycatch falling off the line without observation. Birds can be attracted to a baited hook at either line setting or line hauling stages, and detailed work elsewhere suggests birds hooked on the set often fall off before the line is hauled back to the vessel to be identified and recorded. Observed seabird bycatch may consist almost entirely of birds caught on the "haul". While this project cannot make up for this shortcoming, it can determine the loss of accuracy leading from it. This project will deep-dive data from other water areas and learn from the literature to come up with needed estimates for the Atlantic fleet and new perspective on the birds involved. Acquiring better estimates of species-specific bycatch, observation probability of catch of a rare bird, and recording-bias in seabird bycatch estimates will help resource managers clarify the need for improved observer coverage and bycatch reduction strategies.



Pomarine Jaeger caught on camera by pelagic longline observer in southeastern Gulf of Mexico, April 2014.

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Red-tailed Tropicbird. Photo credit Jody Van Niekerk