



# National Seabird Program Annual Accomplishments 2021

## 2021 Summary

- ❖ 17 Policy & Regulatory actions
- ❖ 30 Meetings/conferences
- ❖ 26 Seabird Presentation
- ❖ 19 Publications (3 in press)
- ❖ 8 Research Fieldwork Projects
- ❖ 7 Seabird Projects Funded

NOAA Fisheries' National Seabird Program (NSP) remained highly productive through the second year of COVID. 2021 called for creativity in adapting to our new COVID-induced work reality, and the NSP team members excelled in many conservation areas.

## Highlights

### *Practicality and Efficacy of Tori Lines to Mitigate Albatross Interactions in the Hawaii Deep-set Longline Fishery* – PIRO

successfully collaborated with the Western Pacific Fishery Management Council and Hawai'i Longline Association and designed "light" tori line design to minimize Black-footed Albatross fishery interactions as well as improve the practicality and safety of tori lines. The Western Pacific Regional Fishery Management Council has voted to recommend replacing blue-dyed bait and strategic offal discharge with tori lines. **Colby Brady** and **Sarah Ellgen**, with Milani Chaloupka, Eric Gilman, Matthew Carnes, Asuka Ishizaki, Hollyann Naholowaa, Yonat Swimmer, John Wang, & Eric Kingma

*Podcast: A Story of Fishermen Joining Forces with Scientists and Regulators to Protect the Short-tailed Albatross* – In honor of International Albatross Day, The Conservation Café takes a virtual journey to the Pacific Ocean, where hake and pollock fishermen have joined forces with federal scientists and regulators to protect the endangered Short-tailed Albatross. **Jason Jannot**, NOAA's Northwest Fisheries Science Center, and Dan Waldeck, Executive Director of the Pacific Whiting Conservation Cooperative tell a fascinating story about how federal regulators and fishermen, who are often at odds, sat down together to craft a new vision for protecting an endangered seabird. [Conservation Café Podcast](#).

*Seabird Conservation through International Cooperation* – Asia Pacific Economic Cooperation (APEC) invited NSP scientists to present U.S. mitigation measures to promote a greater awareness of seabird conservation and the threat of fisheries bycatch with member economies to work collectively to improve seabird bycatch mitigation measures in the Pacific. **Tom Good, Keeley Kent, and Colby Brady**

*Methods to Reduce Night-time Collisions with Lighted Vessels at Sea* – A workshop was held at the 3rd World Seabird Conference in October 2021 to bring together science, management, fisheries, and NGOs to explore developing lights to deter seabirds from vessels based on validated work using UVLED lighting on fixed-wing aircraft. **Jeannette Zamon, Jeff Shenot, and Don Ronning**

*Migratory Bird Treaty Act and Best Management Practices to Prevent Incidental Take of Seabirds* – In 2021 the U.S. Fish and Wildlife Service (FWS) formally overturned an earlier rule stating that the Migratory Bird Treaty Act only applied when companies or individuals killed birds on purpose. Current rulemaking to allow seabird bycatch incidental take options are being explored. **Lee Benaka, Jane Dolliver, Shannon Fitzgerald, Ryan Silva, and Annette Henry**

# Policy and Regulatory Actions

- Developed NEPA Environmental Assessment for Western Pacific Fisheries Management Council (Council) and preliminary preferred alternative for tori lines to be utilized as a regulatory substitute for status quo seabird bycatch regulatory mitigation measures. Final action by Council anticipated by December 2021. **Colby Brady, Lynn Rassel, Mark Fox, Heather Cronin, & other PIRO and Counsel staff**
- Research conducted by PIRO, et al., led to Western Pacific Fishery Management Council (Council) to recommend regulatory implementation of "light" tori line designs tested in the Hawaii deep-set longline fishery in 2020 and 2021 in place of blue dye bait and strategic offal discards. **Colby Brady, PIRO**
- Provided North Pacific Fishery Management Council with seabird information in the Ecosystem Status Reports including many council presentations on seabirds. There has much progress in "seabird syntheses" that incorporated local and traditional knowledge as well as cross-agency. The council has shown great interest in incorporating Local Knowledge and Traditional Knowledge in science and seabirds have been our first focal area for this effort. **Stephani Zador, Bridget Ferris, Elizabeth Siddon, Ivonne Ortiz, & Gemma Carroll, AFSC**
- Represented NOAA Fisheries at regional and national levels regarding USFWS efforts to implement an incidental take permitting approach for U.S. Fisheries seabird bycatch into the Migratory Bird Treaty Act. **Shannon Fitzgerald & Jane Dolliver, AFSC; Ryan Silva, GARFO; Lee Benaka, S&T; Annette Henry, SWFSC**
- Reviewed MBTA rule and rule revocation, Prepared NOAA Fisheries comments on Administrative Rule and final EIS redefining unintended take under the Migratory Bird Treaty Act. **Lee Benaka, OST; Shannon Fitzgerald, AFSC; Mi Ae Kim, IATC; Annette Henry, SWFSC**
- Coordinated with USFWS ESA-threatened Eider group to do formal consultation and a new Biological Opinion for AFSC research activities; drafted AFSC response to USFWS Biological Opinion for Short-tailed Albatross, Spectacled and Steller's Eider. **Shannon Fitzgerald & Jane Dolliver, AFSC**
- Collaborated with USFWS staff regarding Short-tailed Albatross biological opinion considerations. **Colby Brady, Lynn Rassel, Mark Fox, Heather Cronin, & other PIRO and Counsel staff**
- New Biological Opinion for the Bering Sea, Aleutian Islands, and Gulf of Alaska Groundfish fisheries. **Joe Krieger & Anne Marie Eich, ARO**
- Consulted with Nick Holmes, a researcher with The Nature Conservancy, about at-sea survey data and model outputs describing Laysan and Black-footed Albatross distribution and seasonality in the vicinity of the Channel Islands National Marine Sanctuary. **Trevor Joyce & Tammy Russell SWFSC**
- Responded internally to AFSC/ARO and FWS policy on response to ESA takes in fisheries. **Shannon Fitzgerald & Jane Dolliver, AFSC**
- Organized and led 17 listening sessions in support of AFSC seabird strategic plan. **Shannon Fitzgerald & Jane Dolliver, AFSC**
- Drafted AFSC seabird strategic planning information for managers. **Shannon Fitzgerald & Jane Dolliver, AFSC**
- Provided Seabird training for at-sea fisheries observers by several science centers and regional offices; AFSC, in coordination with UW/COASST had multiple 3-week and annual briefing sessions both online and in lab sessions. **Shannon Fitzgerald & Jane Dolliver, AFSC; Joan Browder, SEFSC,**
- The first session of the annual training on Protected Resource issues for AFSC research and charter cruises was held in 2021 which included a new emphasis on threatened eiders. **Shannon Fitzgerald & Jane Dolliver, AFSC.**
- Confidentiality agreements either updated or implemented for 3 contractors and several USFWS branches. **Shannon Fitzgerald & Jane Dolliver, AFSC**
- U.S. Offshore Wind Synthesis of Environmental Effects Research Provided Offshore Wind Energy Development review for Synthesis of Environmental Effects Research (SEER) regarding seabirds and bats. **Jeff Shenot, OHC & Annette Henry, SWFCS**

# Publications

- Baker, M.R., Batten, S.D., Bond, N.A., Chandler, P.C., ... and **Zador, S.G.** 2021. Marine Ecosystems of the North Pacific Ocean 2009–2016: Synthesis Report.
- Beck, J., Michael, P.E., Hester, M., Nevins, H.M., Donnelly-Greenan, E., Gible, C., Phillips, E.M., Young, C. and **Fitzgerald, S.** 2021. Seasonal variation of Pacific Northern Fulmar bycatch: Implications for age and sex-specific mortality. *Fisheries Oceanography*, 30(3), pp.253-263. <https://onlinelibrary.wiley.com/doi/epdf/10.1111/fog.12518>
- Bi, R., Jiao, Y. and **Browder, J.A.** 2021. Climate driven spatiotemporal variations in seabird bycatch hotspots and implications for seabird bycatch mitigation. *Scientific reports*, 11(1), pp.1-15.
- Bi, R. and Jiao, Y. 2021. Predicted seabird bycatch in the U.S. Atlantic pelagic longline fishery during 1992-2019 based on observer and logbook data. Report to NOAA Fisheries Southeast Fisheries Science Center from Virginia Polytechnic Institute and State University, Department of Fish and Wildlife Conservation, Blacksburg, VA. **(Project received NOP Funding)**.
- Gilman, E., Chaloupka, M., Ishizaki, A., Carnes, M., Naholowaa, H., **Brady, C.**, Ellgen, S. and Kingma, E., 2021. Tori lines mitigate seabird bycatch in a pelagic longline fishery. *Reviews in Fish Biology and Fisheries*, 31(3), pp.653-666.
- Good, T.P.**, Weitkamp, L.A., Lyons, D.E., Roby, D.D., Andrews, K.S. and Bentley, P.J. 2022. In Press. Availability of alternative prey influences avian predation on salmonids. *Estuaries and Coasts*.
- Hinke, J.T.**, Russell, T.M., Hermanson, V., Brazier, L., and Walden, S. 2021. Serendipitous observations from animal-borne video loggers reveal synchronous diving and equivalent prey capture rates in chinstrap penguins. *Marine Biology*.
- Jannot J.E.**, Ward, E.J., Somers, K.A., Feist, B.E., **Good, T.P.**, Lawson, D. and Carretta, J.V. (2021) Using Bayesian Models to Estimate Humpback Whale Entanglements in the United States West Coast Sablefish Pot Fishery. *Front. Mar. Sci.* 8:775187. doi: 10.3389/fmars.2021.775187
- Jannot, J.E.**, Wuest, A., **Good, T.P.**, Somers, K.A., Tuttle, V.A., Richerson, K.A., Shama, R.S. McVeigh, J.T. 2021. Seabird Bycatch in U.S. West Coast Fisheries 2002-18. NOAA Technical Memorandum NMFS-NWFSC-165
- Krieger, J.R.** and **Eich, A.M.** 2021. Seabird Bycatch Estimates for Alaska Groundfish Fisheries: 2020. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-F/AKR-25, 40 p. 10.25923/a0fb-nt02.
- Leirness J.B.**, Adams, J., Ballance, L.T., Coyne, M., Felis, J.J., **Joyce, T.**, Pereksta, D.M., **Winship, A.J.**, Jeffrey, C.F., Ainley, D.G. and Croll, D., 2021. Modeling at-sea density of marine birds to support renewable energy planning on the Pacific outer continental shelf of the contiguous United States (No. BOEM 2021-014). Bureau of Ocean Energy Management. <https://pubs.er.usgs.gov/publication/70228321>
- Moravek, J.A., Clipp, H.L., **Good, T.P.**, and Kiffney, P.M. 2021. Exploring the effects of river gradient and small, seasonal inputs of adult Pacific salmon on aquatic and riparian assemblages. *Freshwater Science*, <https://doi.org/10.1086/712605>;
- Phillips, E.M.**, Chu, D., Gauthier, S.G., Parker-Stetter, S.L., Shelton, A.O., Thomas, R. In Press. Spatiotemporal variability of euphausiids in the California Current Ecosystem: Insights from a recently developed time series.
- Pons, M., Watson, J.T., Ovando, D., Andraka, S., Brodie, S., Domingo, A., Fitchett, M., Forselledo, R., Hall, M., Hazen, E.L. and **Jannot, J.E.** In Press. Trade-offs between bycatch and target catches in static versus dynamic fishery closures. *Proceedings of the National Academy of Sciences*, 119(4), p.e2114508119. <https://www.pnas.org/content/119/4/e2114508119>
- Russel, T., Beck, J., Hyrenbach, D., **Peschon, J.**, Ellgen, S., and **Fitzgerald, S.** 2021 Demographics of Black-footed Albatross caught in the Hawaii Deep-Set Longline Fishery. In: Hyrenbach KD, Ishizaki A, Polovina J, Ellgen S [editors]. 2021. The factors influencing albatross interactions in the Hawaii longline fishery: towards identifying drivers and quantifying impacts. U.S. Dept. of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-PIFSC122, 163 p. doi:10.25923/nb95-gs31TM-PIFSC-122.
- Santora, J.A.**, Rogers, T.L., Cimino, M.A., Sakuma, K.M., Hanson, K.D., Dick, E.J., Jahncke, J., Warzybok, P. and Field, J.C., 2021. Diverse integrated ecosystem approach overcomes pandemic-related fisheries monitoring challenges. *Nature communications*, 12(1), pp.1-10. <https://doi.org/10.1038/s41467-021-26484-5>
- Santora, J.A.**, Schroeder, I.D., Bograd, S.J., Chavez, F.P., Cimino, M.A., Fiechter, J., Hazen, E.L., Kavanaugh, M.T., Messié, M., Miller, R.R. and Sakuma, K.M., 2021. Pelagic Biodiversity, Ecosystem Function, and Services: An Integrated Observing and Modeling Approach. *Oceanography*, 34(2), pp.16-37.
- Suryan, R.M.**, Arimitsu, M.L., Coletti, H.A., Hopcroft, R.R., Lindeberg, M.R., Barbeaux, S.J., Batten, S.D., ... and S.G. Zador., 2021. Ecosystem response persists after a prolonged marine heatwave. *Scientific reports*, 11(1), pp.1-17.
- Williams, G.D., Andrews, K.S., Brown, J.A., **Zador, S.G.**, & Harvey, C.J. 2021. Place-based ecosystem management: Adapting integrated ecosystem assessment processes for developing scientifically and socially relevant indicator portfolios. *Coastal Management*, 49(1), pp.46-71.

# National Seabird Program Funded Projects

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

**Title:** Estimating fishery-seabird interactions in the Northwest Atlantic

**Project PIs & Affiliations:** Ryan Silva, Cooperative Research Liaison, Sustainable Fisheries, GARFO & Debra Palka, NEFSC

Use existing Bayesian analysis framework to input and estimate seabird bycatch for 2017 through 2020

**Title:** Seabird Atlas of the Eastern Pacific Ocean

**Project PIs & Affiliations:** Lisa T. Ballance, Oregon State University, Trevor Joyce & Annette Henry, SWFSC  
Synthesize seabird data into a Seabird Atlas of the Eastern Pacific Ocean and published in a monograph series which will provide access to seabird data collected.

**Title:** Focusing on seabirds: Developing capacity to collect ecological data during Pacific hake acoustic-trawl stock assessment surveys

**Project PIs & Affiliations:** Elizabeth M. Phillips, Rebecca E. Thomas, & Stephen K. de Blois, Fishery Resource Analysis and Monitoring Division, NWFSC

Summary: Conduct a pilot study to evaluate ability to conduct seabird observations and refine data collection protocols during the annual hake survey in the California Current.

**Title:** Linking seabird protection to protection of other bycatch taxa in the western North Atlantic pelagic longline fishery

**Project PIs & Affiliations:** Joan A. Browder, SEFSC, Yan Jiao, Virginia Tech University, Blacksburg, VA  
Develop approach to reducing seabird bycatch through redeployment of the U.S. Atlantic pelagic longline fleet away from seabird bycatch hotspots without jeopardizing other protected species.

**Title:** Training remote Alaska community members to conduct beached bird surveys

**Project PIs & Affiliations:** Elizabeth Siddon, Auke Bay Lab, AFSC, Bridget Ferriss & Stephani Zador, Resource Ecology and Fisheries Management Division, AFSC, Ivonne Ortiz, CICCOES University of Washington  
Expand community based training in standard survey and data-submitting protocols to remote communities in Alaska; patterns of how many and when beached birds reach shorelines and are observed by community members have been used as indicators of marine ecosystems for fisheries managers.

**Title:** Pacific Seabird Bycatch Necropsy Program

**Project PIs & Affiliations:** Shannon Fitzgerald, AFSC; Michelle Hester & Jessie Beck, Oikonos Ecosystem Knowledge

Make important use of bycaught seabirds to refine estimates of the impacts of bycatch on populations, provide ecosystem modeling information, and monitor changes in the marine environment. AFSC has expanded this project to include two other centers: PIRO and NWFSC.

**Title:** Integrating historical at-sea seabird distribution data to analyze long-term changes in seabird community composition and diversity.

**Project PIs & Affiliations:** Jefferson Hinke, Antarctic Ecosystem Research Division, SWFSC, Robert L. Brownell, Jr., International Protected Marine Resources, SWFSC, Tamara Russell, Scripps Institution of Oceanography  
Digitize seabird data from Smithsonian Pacific Ocean Biological Survey Program (POBSP) and compare southern California and northern Baja 1967-1969 to 1975-2018 survey data to investigate seabird diversity and community composition changes and extend seabird time series for Southern California coast.

## 2021 National Seabird Program Team

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For more information, visit our website: <https://www.fisheries.noaa.gov/national/science-data/seabirds>