

**EVOSTC FY17-FY21 INVITATION FOR PROPOSALS  
FY19 (YEAR 8) CONTINUING PROJECT PROPOSAL SUMMARY PAGE**

**Project Number and Title**

Gulf Watch Alaska: Pelagic Component Project

**19120114-M**—Continuing the Legacy: Prince William Sound Marine Bird Population Trends

**Primary Investigator(s) and Affiliation(s)**

Kathy Kuletz, US Fish and Wildlife Service

Robb Kaler, US Fish and Wildlife Service

**Date Proposal Submitted**

August 17, 2018

**Project Abstract**

We conduct small boat surveys to monitor the abundance of marine birds in Prince William Sound, Alaska. The surveys are conducted every two, even numbered, years and therefore occur during July 2018 and 2020 during the current Gulf Watch Alaska (GWA) funding cycle (FY17-21). Fifteen surveys over a 29-year period have monitored population trends of marine birds and mammals in Prince William Sound after the *Exxon Valdez* oil spill. We use data collected to examine trends from summer to determine whether populations in the oiled zone are increasing, decreasing, or stable. We will also examine overall population trends for the Sound. Continued monitoring of marine birds and synthesis of the data are needed to determine whether populations injured by the spill are recovering. Data collected from 1989 to 2016 indicated that pigeon guillemots (*Cephus columba*) and marbled murrelets (*Brachyramphus marmoratus*) are declining in the oiled areas of Prince William Sound. We have found high inter-annual variation in numbers of some bird species and therefore recommend continuing to conduct surveys every two years. These surveys are the primary means to evaluate recovery of most of these injured marine bird species. Surveys also benefit the nearshore and forage fish components of the GWA Long-term Monitoring program, as well as the Herring Research and Monitoring program. In FY18, we recently completed our July survey and have been working with other GWA investigators to integrate marine bird survey datasets for all of GWA to conduct analyses across-components and regions. We are not proposing changes to this project for FY19.

**EVOSTC Funding Requested\* (must include 9% GA)**

FY17	FY18	FY19	FY20	FY21	TOTAL
\$24,900	\$222,200	\$24,900	\$222,200	\$24,900	\$519,100

**Non-EVOSTC Funds to be used, please include source and amount per source: (see Section 6C for details)**

FY17	FY18	FY19	FY20	FY21	TOTAL
\$23,000	\$56,000	\$23,000	\$56,000	\$22,000	\$180,000

## 1. PROJECT EXECUTIVE SUMMARY

### *Pelagic Component*

The pelagic component research team proposed for FY17-21 to continue monitoring key pelagic species groups in Prince William Sound (PWS) using the same five projects focused on killer whales, humpback whales, forage fish, and marine birds (two projects: summer and fall-winter). Thus, the two over-arching questions for the pelagic component to answer during this 5-year period are:

1. What are the population trends of key upper trophic level pelagic species groups in PWS – killer whales, humpback whales, marine birds, and forage fish?
2. How do predator-prey interactions, including interannual changes in prey availability, contribute to underlying changes in the populations of pelagic predators in PWS and Middleton Island?

### *PWS Summer Marine Bird Monitoring*

Boat-based marine bird surveys have been conducted on randomized transects in PWS (Fig. 1), Alaska, over a 29-year period following the 1989 *Exxon Valdez* oil spill (EVOS). In order to better understand the dynamics of a marine bird community that has experienced the simultaneous effects of a major oil spill and climate variability, this project collects additional information to monitor the distribution and abundance of marine birds in PWS. In order to assess population trends in the years following the EVOS, the objectives of this project are to: (1) determine the abundance of marine bird populations in PWS during July 2018 and July 2020 in both oiled and unoiled regions; and (2) determine population abundance of marine bird populations in PWS during July 2018 and July 2020 for PWS as a whole.

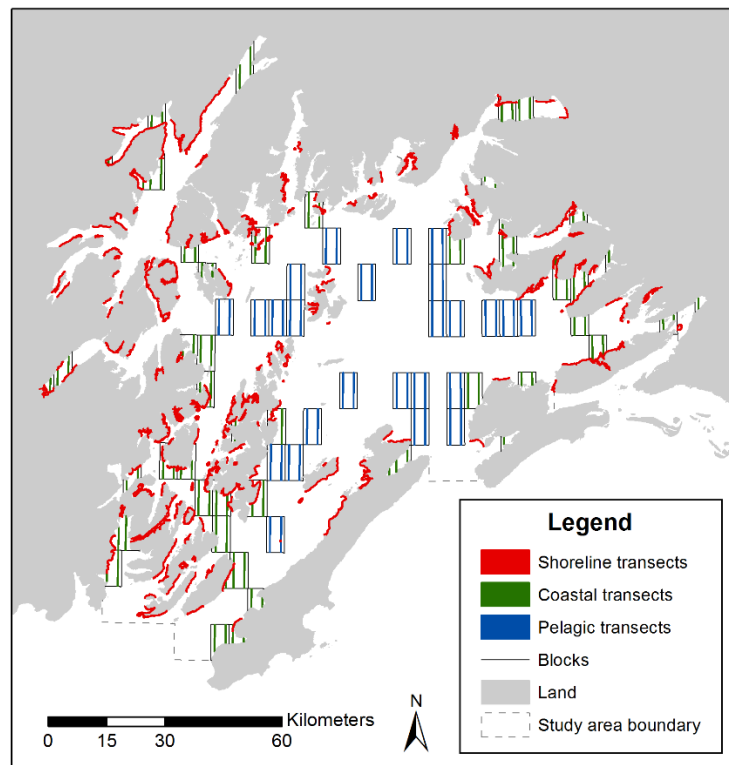


Figure 1. Location of marine bird survey transects within Prince William Sound, Alaska.

Using data collected during small boat surveys (1989-2012), Cushing (2018) used taxon- and community-centric approaches to examine patterns of marine bird distribution and abundance in PWS and found marine bird communities as a whole to be spatially structured along a primary onshore-offshore environmental gradient, and secondarily structured along an estuarine-marine environmental gradient. Cushing (2018) also investigated spatial habitat associations and temporal change of *Brachyramphus* murrelets and found that abundance estimates for both marbled murrelets (*Brachyramphus marmoratus*) and Kittlitz’s murrelets (*B. brevirostris*) decreased by more than two-thirds over the study period. There was no evidence that rates of change differed along environmental or geographic gradients and no evidence that changes in seasonal patterns of abundance occurred. In FY19 we will continue to explore the hypothesis that climate variability has differentially affected nearshore and offshore components of PWS food webs, and how this may have contributed to the failure of some taxa to recover from the population injury caused by the EVOS.

We recently completed our July FY18 survey. FY19 is a non-survey year for the PWS marine bird survey and no field component will occur. Dr. Kuletz and Mr. Kaler will work with Axiom Data Science staff to insure data management requirements are met. Dr. Kuletz and Mr. Kaler will also work with FWS Migratory Bird biometricians (Dr. Eric Osnas and Dr. Charles Frost) to stream line QA/QC process, data analysis, and report creation using applications created using Program R ([www.r-project.org](http://www.r-project.org)). We are also working with the GWA Science Coordinator and investigators to integrate marine bird datasets across GWA. Marine birds are the only taxa where species are represented across all three GWA components. We expect data integration to be completed in FY19, which will allow GWA region-wide analysis of marine bird data.

We are not proposing any changes to this project for FY19.

**2. PROJECT STATUS OF SCHEDULED ACCOMPLISHMENTS**

**A. Project Milestones and Tasks**

Table 1. Project milestone and task progress by fiscal year and quarter, beginning February 1, 2017. Yellow highlight indicates proposed fiscal year Work Plan. Additional milestones and tasks may be added. C = completed, X = not completed or planned. Fiscal Year Quarters: 1= Feb. 1-April 30; 2= May 1-July 31; 3= Aug. 1-Oct. 31; 4= Nov. 1-Jan 31.

Milestone/Task	FY17				FY18				FY19				FY20				FY21			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Milestone 1: admin &amp; logistics</b>																				
Contracting & hiring					C	C							X	X						
Recruit volunteers, housing/travel & permits					C	C							X	X						
Survey vessel Preparation & Winterization		C	C											X	X					
<b>Milestone 2: data acquisition &amp; processing</b>																				
Boat-based marine bird survey							C								X					

Marine bird and mammal data processing								X	X							X	X				
<b>Milestone 3: data management</b>																					
Database mgmt./QAQC	C	C	C	C	C	C	C	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Metadata	C								X									X			
Workspace upload		C								X									X		
<b>Milestone 4: analysis &amp; reporting</b>																					
Analysis and summary	C				C									X				X			
Annual Reports	C				C				X					X				X			
Annual PIs meeting				C				X				X					X				X
FY Work Plan			C				C				X					X					
Permit reports				C				X				X					X				X

**B. Explanation for not completing any planned milestones and tasks**

Milestones and tasks have been completed as planned.

**C. Justification for new milestones/tasks**

No new milestones or tasks are proposed in FY19.

**3. PROJECT COORDINATION AND COLLABORATION**

**A. Within an EVOSTC-funded Program**

Gulf Watch Alaska

The proposed project will collaborate closely with the Forage Fish project (M. Arimitsu, Pelagic Component Lead Investigator, project 19120114-C) and the Fall-Winter Marine Bird surveys (M. Bishop, Principal Investigator [PI], project 19120114-E) to collect comparable marine bird data, allowing us to compare summer and winter seabird communities and distributions. The shoreline surveys of our project will also be complimentary to the Nearshore component of GWA (H. Coletti, Nearshore Component Lead Investigator, project 19120114-H) and the pelagic surveys complimentary to the Environmental Drivers component (K. Kuletz, Principal Investigator). Integration of GWA marine bird datasets will allow for comparisons across marine habitats and regions.

Herring Research and Monitoring

This project provides relevant data on marine bird foraging activities to the Herring Research and Monitoring program.

### Data Management

This project coordinates with the data management program by submitting data and preparing metadata for publication on the Gulf of Alaska Data Portal and DataONE within the timeframes required.

#### **B. With Other EVOSTC-funded Projects**

The proposed project complements the EVOS Trustee Council- (EVOSTC)-funded effort to restore pigeon guillemot to the Naked Island Complex (Naked, Peak, and Storey islands; control island for comparison: Fool, Little Smith, and Smith Islands). Robb Kaler and Dr. David Irons are co- PIs for the pigeon guillemot restoration study. Data collected on marine birds from the Naked Islands region will be used to quantify population trends of species anticipated to benefit from mink removal efforts. Populations of marine birds anticipated to increase following mink suppression include pigeon guillemots, tufted and horned puffins, parakeet auklets, and Arctic terns.

#### **C. With Trustee or Management Agencies**

The proposed project supports the US Fish and Wildlife Service's (USFWS's) Migratory Bird Management mission to advance the conservation of migratory birds. The project will also inform other management agencies (US Forest Service, National Park Service, Alaska Department of Fish and Game) with lands and waters adjacent to our study area. Additionally, Co-PI Dr. Kathy Kuletz (USFWS) is also a PI of the seabird component for two other long-term monitoring projects that complement the PWS marine bird survey and will allow us to examine oceanographic and plankton data in conjunction with seabird distribution and relative abundance, with a seasonal component, across the Gulf Watch Alaska study area and will inform the fisheries management process in the Gulf of Alaska. Data on population trends are provided to the Alaska Maritime National Wildlife Refuge for inclusion in their annual report on status and trends of seabirds in Alaska.

## **4. PROJECT DESIGN – PLAN FOR FY19 (YEAR 8)**

### **A. Overall Project Objectives**

*Objective 1.* Determine population abundance, with 95% confidence limits, of marine bird populations in Prince William Sound during July 2018 in both oiled and unoled regions.

*Objective 2.* Determine population abundance, with 95% confidence limits, of marine bird populations in Prince William Sound as a whole during July 2018.

### **B. Changes to Project Design and Objectives**

No changes will be made to project design or objectives in FY19.

## **5. PROJECT PERSONNEL – CHANGES AND UPDATES**

No changes have been made to project personnel.

## **6. PROJECT BUDGET FOR FY19**

### **A. Budget Forms (See GWA FY19 Budget Workbook)**

Please see project budget forms compiled for the program.

### **B. Changes from Original Project Proposal**

No changes to the project budget have been made.

### **C. Sources of Additional Project Funding**

Dr. Kathy Kuletz salary (GS-13, \$11.5K per month) for 2 months/year). Dr. Kuletz will provide the project leader guidance and assist with data analysis and reporting. \$23K

Total in-kind contribution from USFWS for FY 19 = \$23K

## **7. FY18 PROJECT PUBLICATIONS AND PRODUCTS**

### *Publications*

Kaler, R., E. Labunski, and K. J. Kuletz. 2018. Prince William Sound marine bird surveys. *Exxon Valdez Oil Spill Long-Term Monitoring Program (Gulf Watch Alaska) Final Report (Exxon Valdez Oil Spill Trustee Council Project 16120114-K)*, Exxon Valdez Oil Spill Trustee Council, Anchorage, Alaska.

Kuletz, K., and R. Kaler. 2018. Continuing the legacy: Prince William Sound marine bird population trends. FY17 annual report to the Exxon Valdez Oil Spill Trustee Council, project 17120114-M.

### *Published datasets*

**Research Workspace:** No data were collected in 2017 for upload to the Research Workspace.

### *Presentations*

None

### *Outreach*

Robinson, R., A. Rademacher, R. Kaler, and D. Aderhold 2018. Coastal Observation and Seabird Survey Team die off alert training in Seldovia, AK, May 18.

## **LITERATURE CITED**

Cushing, D.A., D.D. Roby, and D.B. Irons. 2018. Patterns of distribution, abundance, and change over time in a subarctic marine bird community. *Deep Sea Research Part II: Topical Studies in Oceanography* 147:148-163.