



Exxon Valdez Oil Spill Trustee Council
Long-Term Research and Monitoring, Mariculture, Education and Outreach
Annual Project Reporting Form

**For Instructions for each section below, see Reporting Policy, II (B); the Reporting Policy can be found on the website, <https://evostc.state.ak.us/policies-procedures/reporting-procedures/>*

Project Number: 25210128

Project Title: Status and trends of EVOS injured seabirds in the Kenai Peninsula coast and Kachemak Bay

Principal Investigator(s):

Kenai Peninsula Coast Component

Tuula Hollmen, PI, Alaska SeaLife Center and University of Alaska Fairbanks

John Maniscalco, Co-PI

Marc Romano, Co-PI

Erik Osnas, Co-PI, US Fish and Wildlife Service, Migratory Bird Management, Alaska Region

Brendan Higgins, Alaska Sealife Center

Kachemak Bay Component (original reporting date)

Elizabeth Labunski, PI, US Fish and Wildlife Service, Migratory Bird Management, Alaska Region

Robert Kaler, Co-PI, US Fish and Wildlife Service, Migratory Bird Management, Alaska Region

Erik Osnas, Co-PI, US Fish and Wildlife Service, Migratory Bird Management, Alaska Region

Kachemak Bay Component (resubmission date)

Robert Kaler, PI, US Fish and Wildlife Service, Migratory Bird Management, Alaska Region

Erik Osnas, Co-PI, US Fish and Wildlife Service, Migratory Bird Management, Alaska Region

Reporting Period: February 1, 2025 – January 31, 2026

Submission Date: February 27, 2026; resubmitted September 4, 2026

Project Website: N/A

Please check all the boxes that apply to the current reporting period.



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☒ **Project progress is on schedule.**

☐ **Project progress is delayed.**

☒ **Budget reallocation request.**

On April 30, 2026, we requested a one-year NCE with a project end date of January 31, 2027, which was approved on January 30, 2026. We are submitting a revised roll-over amount as requested. The amounts we request to carry over are:

Kenai Peninsula Component: \$151,854.46

Kachemak Bay Component: \$312,671.38

The rationale for this adjustment is as follows:

- The COVID-19 pandemic delayed the planned multiyear surveys in Kenai Fjords by one year, delaying the availability of completed survey data for analysis and synthesis.
- In FY25, administrative disruptions within the agency significantly constrained the U.S. Fish and Wildlife Service's staffing capacity, impeding the timely completion of planned analytical components of the project. Personnel shortages resulting from departmental downsizing, coupled with limited contracting capabilities, delayed the issuance of contracts essential for data synthesis, including the integration of oceanographic data. These challenges were further compounded by a 43-day Federal Government shutdown, which substantially reduced the available timeframe for project completion. The majority of the project team is U.S. Fish and Wildlife Service staff.

The requested budget adjustment will not change the original scope or objectives of the project. Carryover funds will be used in the analysis and synthesis of our project as originally proposed to ensure completion of all tasks with our collaborators and all deliverables within the revised period of performance.



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Original budget for Kenai Peninsula Coast Component

Budget Category:	Proposed FY 21	Proposed FY22	Proposed FY23	Proposed FY24	Proposed FY25	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	\$29,263.0	\$30,141.0	\$31,045.0	\$31,977.0	\$32,935.0	\$155,361.0	
Travel	\$595.0	\$0.0	\$0.0	\$0.0	\$670.0	\$1,265.0	
Contractual	\$72,300.0	\$80,469.0	\$76,702.0	\$49,500.0	\$50,985.0	\$329,956.0	
Commodities	\$5,000.0	\$0.0	\$0.0	\$0.0	\$0.0	\$5,000.0	
Equipment	\$5,000.0	\$0.0	\$0.0	\$0.0	\$0.0	\$5,000.0	
Indirect Costs (will vary by proposer)	\$34,291.0	\$35,395.0	\$34,479.0	\$26,073.0	\$27,069.0	\$157,307.0	
SUBTOTAL	\$146,449.0	\$146,005.0	\$142,226.0	\$107,550.0	\$111,659.0	\$653,889.0	
General Administration (9% of subtotal)	\$13,180.4	\$13,140.5	\$12,800.3	\$9,679.5	\$10,049.3	\$58,850.0	N/A
PROJECT TOTAL	\$159,629.4	\$159,145.5	\$155,026.3	\$117,229.5	\$121,708.3	\$712,739.0	
Other Resources (Cost Share Funds)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	
COMMENTS: This summary page provides an five-year overview of proposed project funding and actual cumulative spending. The column titled 'Actual Cumulative' must be updated each fiscal year as part of the annual reporting requirements. Provide information on the total amount actually spent for all completed years of the project. On the Project Annual Report Form, if any line item exceeds a 10% deviation from the originally-proposed amount; provide detail regarding the reason for the deviation.							

Original budget for Kachemak Bay Component

Budget Category:	Proposed FY 20	Proposed FY21	Proposed FY22	Proposed FY23	Proposed FY24	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	\$51,500.0	\$62,933.0	\$64,821.4	\$66,765.4	\$37,704.9	\$283,724.7	
Travel	\$12,000.1	\$15,300.1	\$15,696.8	\$16,105.9	\$9,773.0	\$68,875.9	
Contractual	\$0.0	\$30,000.0	\$30,000.0	\$30,000.0	\$0.0	\$90,000.0	
Commodities	\$9,500.0	\$10,635.0	\$12,774.0	\$11,317.0	\$3,500.0	\$47,726.0	
Equipment	\$35,200.0	\$0.0	\$4,000.0	\$0.0	\$0.0	\$39,200.0	
Indirect Costs (will vary by proposer)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	
SUBTOTAL	\$108,200.1	\$118,868.1	\$127,292.1	\$124,188.4	\$50,977.9	\$529,526.6	
General Administration (9% of subtotal)	\$9,738.0	\$10,698.1	\$11,456.3	\$11,177.0	\$4,588.0	\$47,657.4	
PROJECT TOTAL	\$117,938.1	\$129,566.2	\$138,748.4	\$135,365.3	\$55,565.9	\$577,184.0	
Other Resources (Cost Share Funds)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	N/A



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Revised budget for Kenai Peninsula Coast Component

Budget Category:	Proposed FY 21	Proposed FY22	Proposed FY23	Proposed FY24	Proposed FY25	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	\$29,263.00	\$30,141.00	\$31,045.00	\$31,977.00	\$32,935.00	\$155,361.00	\$189,757.74
Travel	\$595.00	\$0.00	\$0.00	\$0.00	\$670.00	\$1,265.00	\$472.94
Contractual	\$72,300.00	\$80,469.00	\$76,702.00	\$49,500.00	\$50,985.00	\$329,956.00	\$157,051.12
Commodities	\$5,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$5,000.00	\$21,129.16
Equipment	\$5,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$5,000.00	\$13,118.00
Indirect Costs (<i>will vary by proposer</i>)	\$34,291.00	\$35,395.00	\$34,479.00	\$26,073.00	\$27,069.00	\$157,307.00	\$120,505.45
SUBTOTAL	\$146,449.00	\$146,005.00	\$142,226.00	\$107,550.00	\$111,659.00	\$653,889.00	\$502,034.41
General Administration (9% of subtotal)	\$13,180.41	\$13,140.45	\$12,800.34	\$9,679.50	\$10,049.00	\$58,849.70	\$45,183.10
PROJECT TOTAL	\$159,629.41	\$159,145.45	\$155,026.34	\$117,229.50	\$121,708.00	\$712,738.70	\$547,217.51
Other Resources (Cost Share Funds)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	N/A

COMMENTS:

This summary page provides an five-year overview of proposed project funding and actual cumulative spending. The column titled 'Actual Cumulative' must be updated each fiscal year as part of the annual reporting requirements. Provide information on the total amount actually spent for all completed years of the project. On the Project Annual Report Form, if any line item exceeds a 10% deviation from the originally-proposed amount; provide detail regarding the reason for the deviation.

Revised budget for Kachemak Bay Component

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PROGRAM PROJECT BUDGET PROPOSAL AND REPORTING FORM

Budget Category:	Proposed FY 21	Proposed FY22	Proposed FY23	Proposed FY24	Proposed FY25	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	\$42,500.0	\$62,933.0	\$64,821.4	\$66,765.4	\$37,704.9	\$274,724.7	\$116,714.8
Travel	\$7,440.0	\$15,300.1	\$15,696.8	\$16,105.9	\$9,773.0	\$64,315.8	\$33,205.1
Contractual	\$0.0	\$30,000.0	\$30,000.0	\$30,000.0	\$0.0	\$90,000.0	\$0.0
Commodities	\$7,495.2	\$10,635.0	\$12,774.0	\$11,317.0	\$3,500.0	\$45,721.2	\$29,781.4
Equipment	\$36,200.0	\$0.0	\$4,000.0	\$0.0	\$0.0	\$40,200.0	\$22,589.0
SUBTOTAL	\$93,635.2	\$118,868.1	\$127,292.1	\$124,188.4	\$50,977.9	\$514,961.7	\$202,290.3
General Administration (9% of subtotal)	\$8,427.2	\$10,698.1	\$11,456.3	\$11,177.0	\$4,588.0	\$46,346.6	
PROJECT TOTAL	\$102,062.3	\$129,566.2	\$138,748.4	\$135,365.3	\$55,565.9	\$561,308.2	
Other Resources (Cost Share Funds)	\$48,144.0	\$49,408.3	\$50,710.6	\$52,051.9	\$47,433.4	\$247,748.2	
FWS in-kind support							

COMMENTS: Actual cumulative amount summarizes the funds spend for FY25. Spending deviated more than 10% below projected amounts for FY25. We will work with EVOSTC staff to discuss unspent funds and roll over appropriate amounts to FY26 due to a NCE moving the final project due date to 1 March 2027. Additional details provide for each spending category in the budget section of the annual report. This summary page provides a five-year overview of proposed project funding and actual cumulative spending. The \$3,500 line item (FY25) for commodities (outreach and publishing costs) was inadvertently omitted from the previous budget table and has been updated.



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☒ Personnel changes.

We are requesting that the Principal Investigator for the Kachemak Bay component be adjusted as a result of the retirement of Elizabeth Labunski from the US Fish and Wildlife Service. The requested changes are:

- Remove Elizabeth Labunsky from the list of Investigators.
- Change Robert Kaler's role from Co-PI to PI.

The revised personnel list for the Kachemak Bay component is as follows:

Kachemak Bay Component

Robert Kaler, PI, US Fish and Wildlife Service, Migratory Bird Management, Alaska Region

Erik Osnas, Co-PI, US Fish and Wildlife Service, Migratory Bird Management, Alaska Region

The Kenai Peninsula Coast Component team will remain the same, as follows:

Kenai Peninsula Coast Component

Tuula Hollmen, PI, Alaska SeaLife Center and University of Alaska Fairbanks

John Maniscalco, Co-PI

Marc Romano, Co-PI

Erik Osnas, Co-PI, US Fish and Wildlife Service, Migratory Bird Management, Alaska Region

Brendan Higgins, Alaska Sealife Center

1. Summary of Work Performed:

Kenai Peninsula Coast Component

For the Kenai Peninsula component, work conducted during the reporting period contributed to project objectives 1-4:

1. Estimate current population size for Kittlitz's murrelet, marbled murrelet, and pigeon guillemot in the Kenai Fjords, and determine decadal trends in abundance for murrelets.



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2. Characterize current distribution of Kittlitz's and marbled murrelet in Kenai Fjords, investigate temporal changes in density patterns, and identify factors that influence density patterns.
 3. Estimate current population size, trends in distribution, and trends in relative abundance of pigeon guillemot in Resurrection Bay.
 4. Estimate juvenile densities and age ratios as an index of productivity for marbled murrelet and pigeon guillemot in Resurrection Bay.

The Kenai Peninsula Coast component completed all fieldwork planned for the period. Resurrection Bay marine bird surveys were conducted using standard distance sampling techniques from a 23-foot open landing craft piloted 100 m from the shoreline. A single observer as well as the boat pilot records all birds within 100 m perpendicular to the survey vessel on both the inshore and offshore sides, surveying a 200 m wide transect along the shoreline. Observations are recorded using CyberTracker software on a Nautiz X7 PDA by a separate data recorder. The survey begins in the Seward small boat harbor and follows the coastline to Caines Head, then circling back north through Thumb Cove and back to the Seward small boat harbor for a total of 44 km. All birds and mammals are recorded as well as distance bin (25 m increments), side of boat, and age/sex when applicable. Survey dates are presented in Table 1 and survey routes are shown in Figure 1.

Table 1. Dates of surveys conducted in Resurrection Bay during the reporting period. Upper bay surveys are for all species of marine birds and mammals. The juvenile surveys are exclusively for the EVOS project focal species (marbled murrelet, Kittlitz's murrelet, and pigeon guillemot).

Date	Upper Bay	Juvenile
9/16/2024	X	X
10/15/2024	X	
11/14/2024	X	
12/13/2024	X	
1/14/2025	X	
2/20/2025	X	
3/12/2025	X	
4/11/2025	X	
5/7/2025	X	
6/12/2025	X	



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7/24/2025	X	X
8/1/2025		X
8/6/2025		X
8/22/2025	X	X
8/26/2025		X
9/5/2025		X
9/12/2025		X
9/19/2025		X
9/29/2025	X	X
10/27/2025	X	

A list of species observed during the reporting period is presented in Table 2. Spatial distribution of the 10 most commonly observed species is presented in Figures 2 - 11.

Table 2. Marine bird and mammal observations recorded on water, on land, and in the air during surveys in Resurrection Bay.

English Name	Scientific Name	Number
Unidentified Loon	<i>Gavia (Genus)</i>	2
Common Loon	<i>Gavia immer</i>	7
Yellow-billed Loon	<i>Gavia adamsii</i>	1
Pacific Loon	<i>Gavia pacifica</i>	2
Red-necked Grebe	<i>Podiceps grisegena</i>	14
Horned Grebe	<i>Podiceps auritus</i>	176
Fork-tailed Storm-Petrel	<i>Hydrobates furcatus</i>	26
Double-crested Cormorant	<i>Nannopterum auritum</i>	101
Pelagic Cormorant	<i>Urile pelagicus</i>	417
Great Blue Heron	<i>Ardea herodias</i>	19
Trumpeter Swan	<i>Cygnus buccinator</i>	28
Mallard	<i>Anas platyrhynchos</i>	204
Northern Pintail	<i>Anas acuta</i>	24
Green-winged Teal	<i>Anas crecca</i>	11
American Wigeon	<i>Mareca americana</i>	1
Greater Scaup	<i>Aythya marila</i>	56
Unidentified Duck	<i>Anatinae (Subfamily)</i>	14
Unidentified Goldeneye	<i>Bucephala (Genus)</i>	124



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Common Goldeneye	<i>Bucephala clangula</i>	109
Barrow's Goldeneye	<i>Bucephala islandica</i>	1901
Bufflehead	<i>Bucephala albeola</i>	128
Long-tailed Duck	<i>Clangula hyemalis</i>	7
Harlequin Duck	<i>Histrionicus histrionicus</i>	924
Unidentified Scoter	<i>Melanitta (Genus)</i>	3
White-winged Scoter	<i>Melanitta deglandi</i>	7
Surf Scoter	<i>Melanitta perspicillata</i>	955
Black Scoter	<i>Melanitta americana</i>	2
Unidentified Merganser	<i>Mergus (Genus)</i>	40
Common Merganser	<i>Mergus merganser</i>	787
Red-breasted Merganser	<i>Mergus serrator</i>	71
Bald Eagle	<i>Haliaeetus leucocephalus</i>	142
Peregrine Falcon	<i>Falco peregrinus</i>	1
Black Oystercatcher	<i>Haematopus bachmani</i>	1
Spotted Sandpiper	<i>Actitis macularius</i>	1
Wandering Tattler	<i>Tringa incana</i>	2
Rock Sandpiper	<i>Calidris ptilocnemis</i>	55
Dunlin	<i>Calidris alpina</i>	3
Surfbird	<i>Calidris virgata</i>	9
Unidentified Gull	<i>Larus (Genus)</i>	3099
Glaucous Gull	<i>Larus hyperboreus</i>	1
Glaucous-winged Gull	<i>Larus glaucescens</i>	2627
Glaucous-winged x Herring Gull	<i>Larus (Genus)</i>	5
Herring gull	<i>Larus argentatus</i>	78
Short-billed Gull	<i>Larus brachyrhynchus</i>	500
Bonaparte's Gull	<i>Chroicocephalus philadelphia</i>	4
Black-legged Kittiwake	<i>Rissa tridactyla</i>	3534
Arctic Tern	<i>Sterna paradisaea</i>	8
Common Murre	<i>Uria aalge</i>	17
Pigeon Guillemot	<i>Cepphus columba</i>	417
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	681
Horned Puffin	<i>Fratercula corniculata</i>	2



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Belted Kingfisher	<i>Megaceryle alcyon</i>	7
Black-billed Magpie	<i>Pica hudsonia</i>	3
Common Raven	<i>Corvus corax</i>	4
American Crow	<i>Corvus brachyrhynchos</i>	451
Harbor Porpoise	<i>Phocoena phocoena</i>	3
Sea Otter	<i>Enhydra lutris</i>	114
River Otter	<i>Lontra canadensis</i>	8
Steller Sea Lion	<i>Eumetopias jubatus</i>	28
Unidentified Seal	<i>Phocidae (Family)</i>	1
Harbor Seal	<i>Phoca vitulina</i>	141



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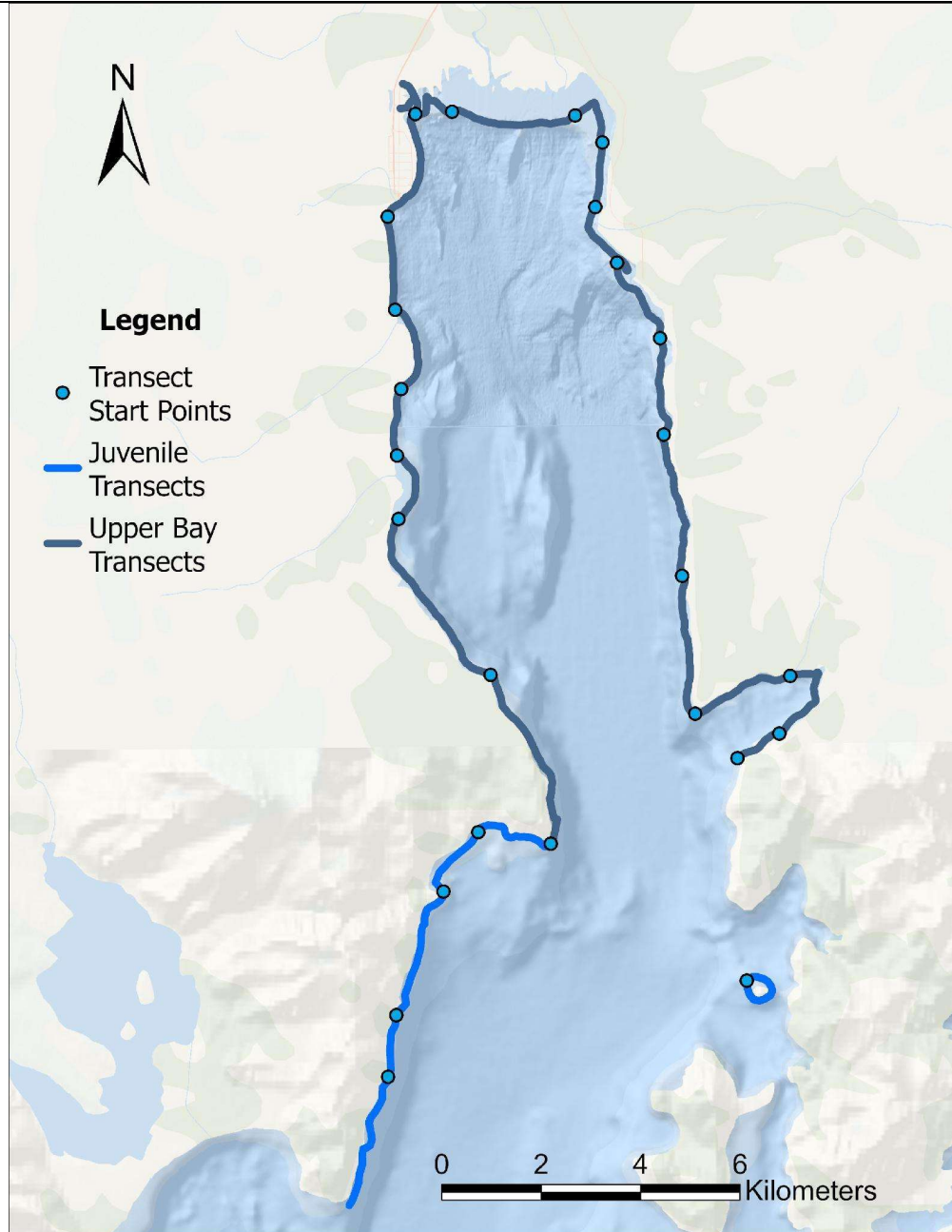


Figure 1. Survey route for marine birds and mammals in Resurrection Bay. Upper bay surveys were conducted monthly (Table 1), juvenile surveys constitute both the upper bay as well as the extended juvenile transects and were conducted weekly from July 24 - September 29, 2025.



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Barrow's Goldeneye

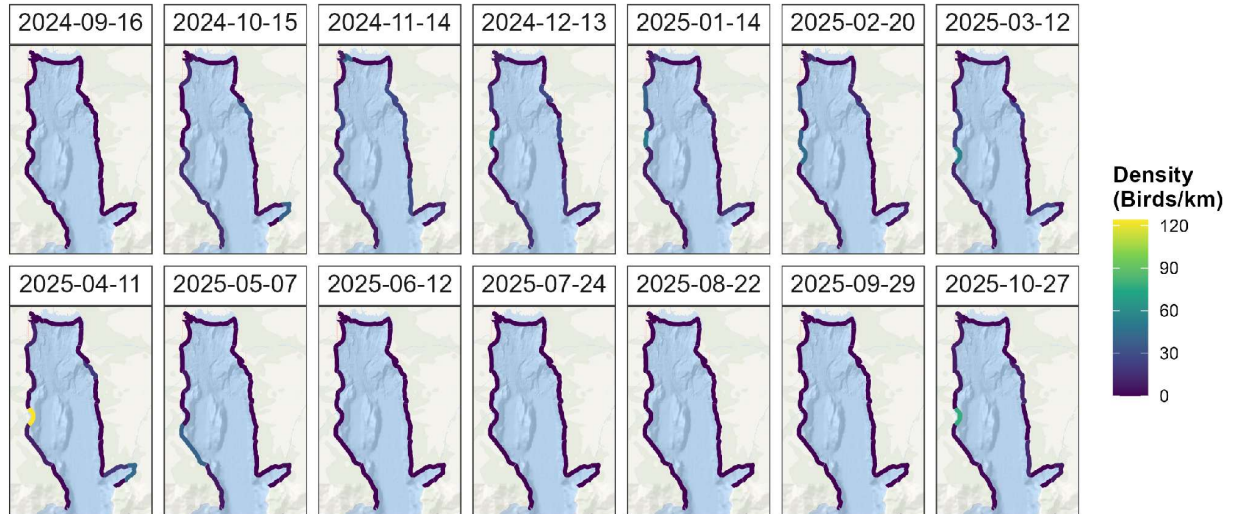


Figure 2. Distribution of Barrow's goldeneyes in Resurrection Bay during September 26, 2024 – October 27, 2025. Density is calculated for each transect as the total count / transect length.

Black-legged Kittiwake

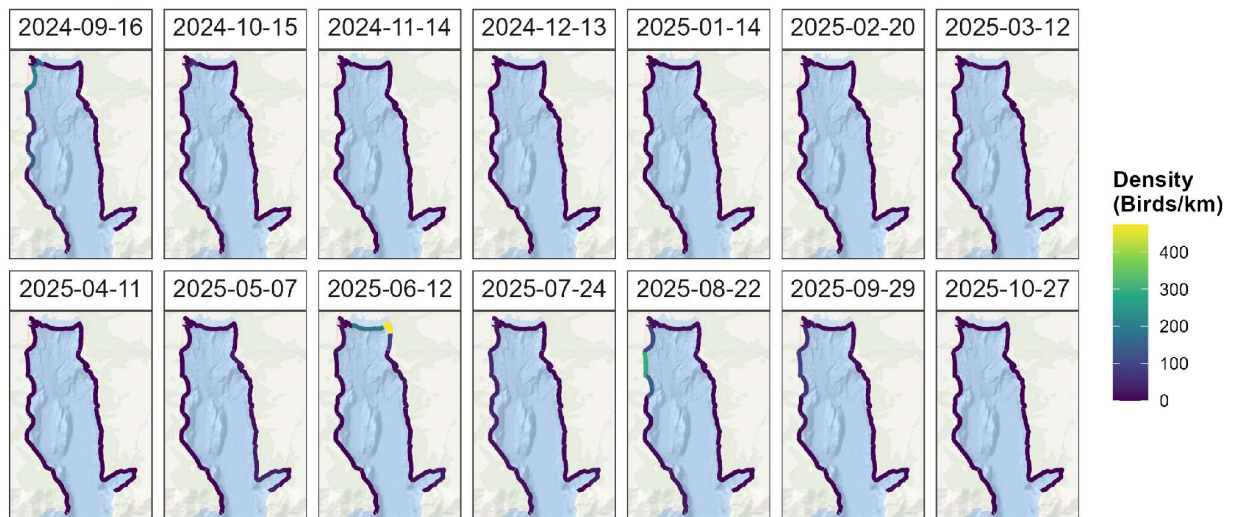


Figure 3. Distribution of black-legged kittiwakes in Resurrection Bay during September 26, 2024 – October 27, 2025. Density is calculated for each transect as the total count / transect length.



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Common Merganser

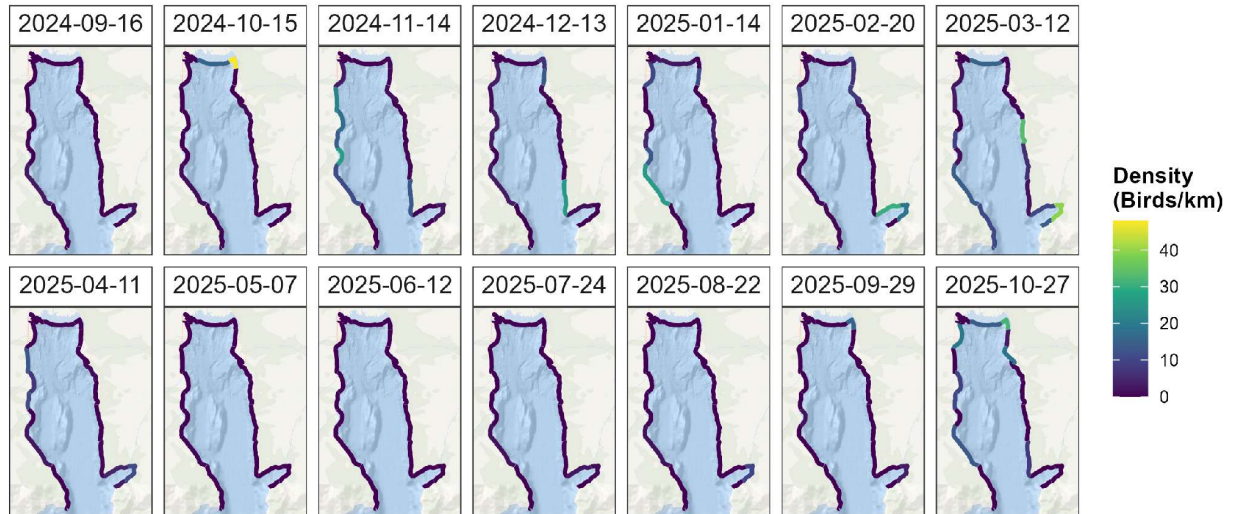


Figure 4. Distribution of common mergansers in Resurrection Bay during September 26, 2024 – October 27, 2025. Density is calculated for each transect as the total count / transect length.

Glaucous-winged Gull

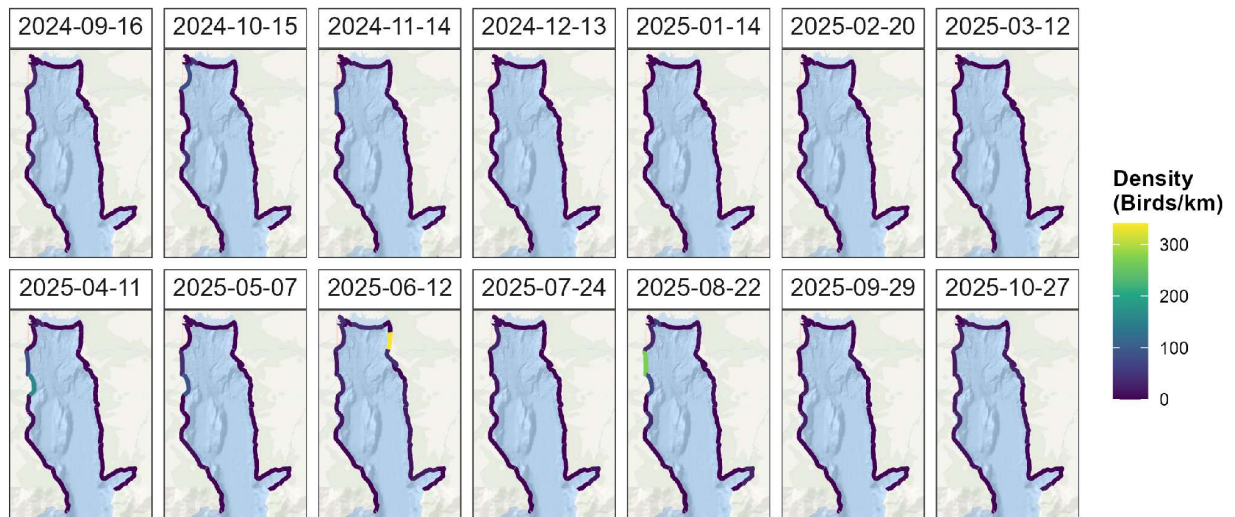


Figure 5. Distribution of glaucous-winged gulls in Resurrection Bay during September 26, 2024 – October 27, 2025. Density is calculated for each transect as the total count / transect length.



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Harlequin Duck

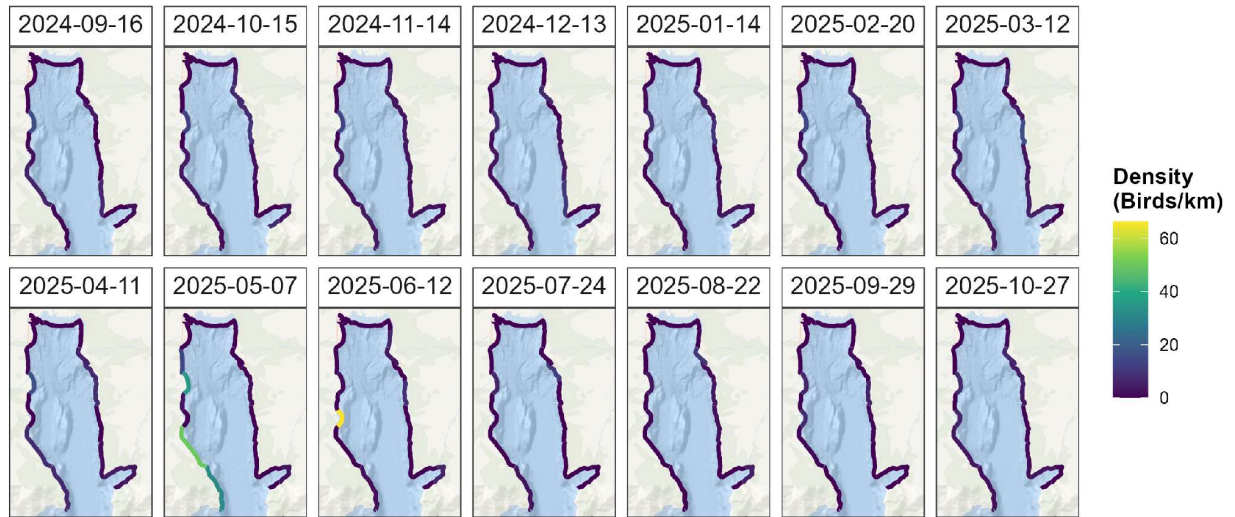


Figure 6. Distribution of harlequin ducks in Resurrection Bay during September 26, 2024 – October 27, 2025. Density is calculated for each transect as the total count / transect length.

Mallard

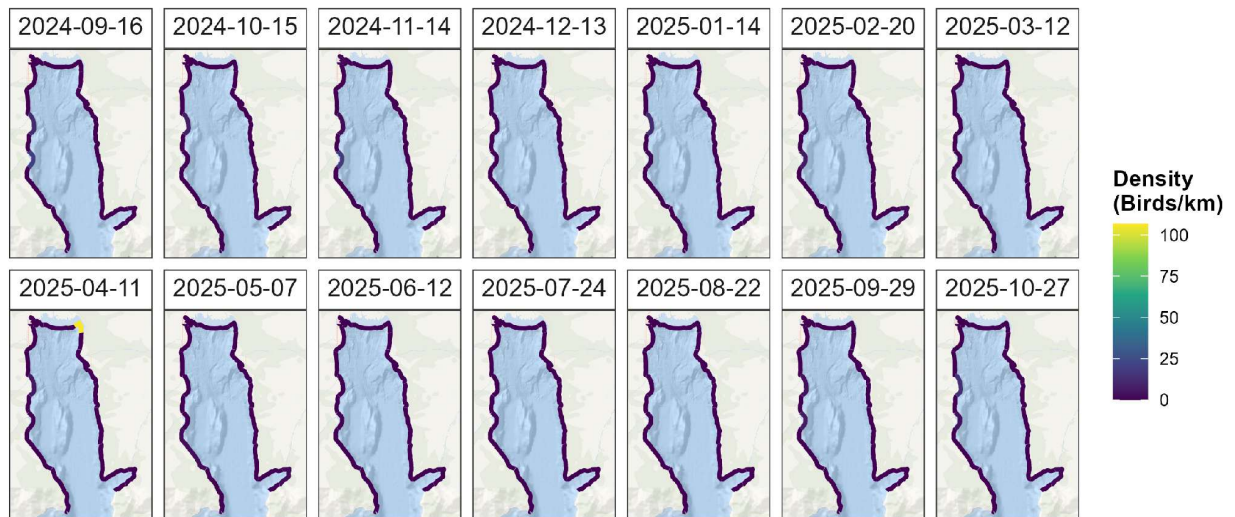


Figure 7. Distribution of mallards in Resurrection Bay during September 26, 2024 – October 27, 2025. Density is calculated for each transect as the total count / transect length.



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Marbled Murrelet

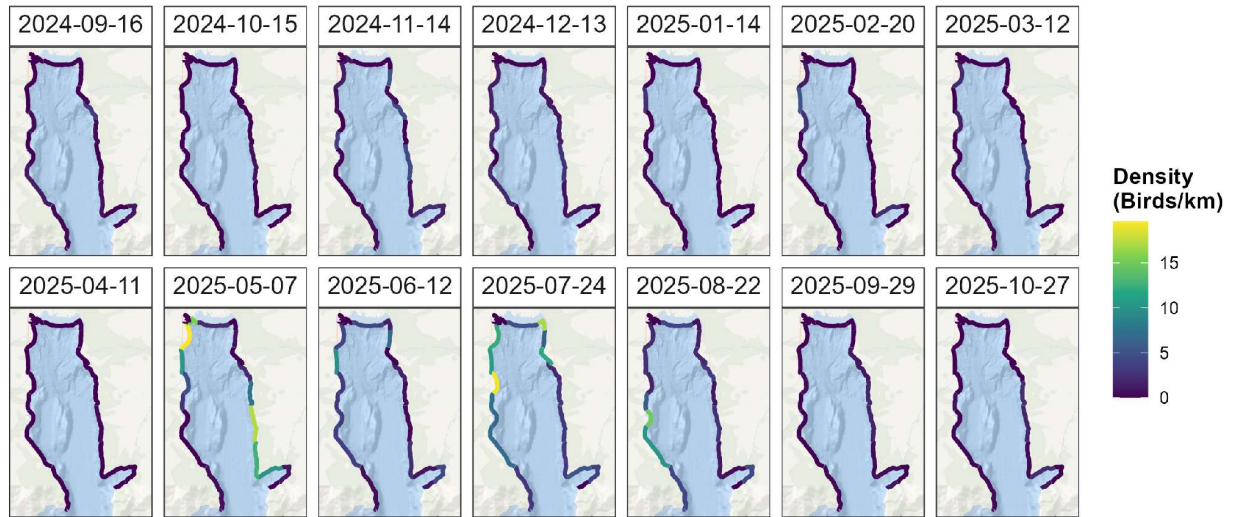


Figure 8. Distribution of marbled murrelets in Resurrection Bay during September 26, 2024 – October 27, 2025. Density is calculated for each transect as the total count / transect length.

Pelagic Cormorant

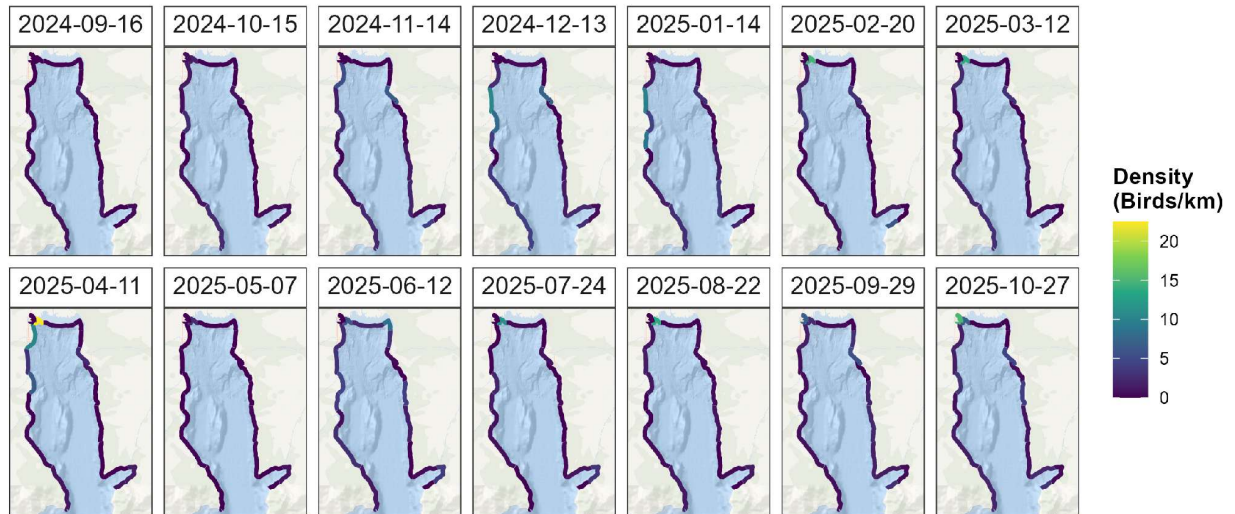


Figure 9. Distribution of pelagic cormorants in Resurrection Bay during September 26, 2024 – October 27, 2025. Density is calculated for each transect as the total count / transect length.



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Short-billed Gull

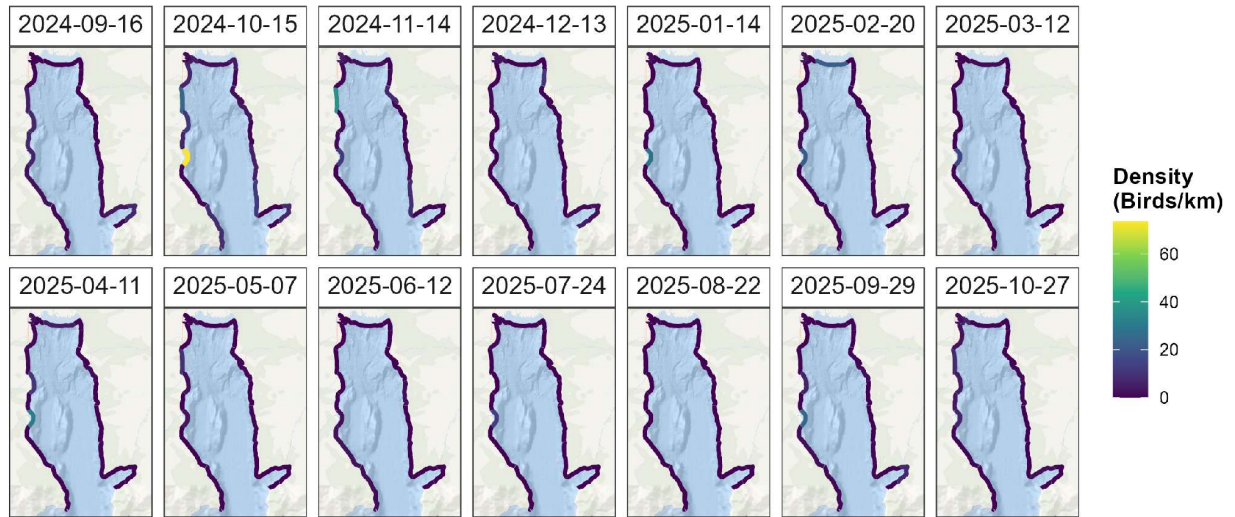


Figure 10. Distribution of short-billed gulls in Resurrection Bay during the reporting period September 26, 2024 – October 27, 2025. Density is calculated for each transect as the total count / transect length.

Surf Scoter

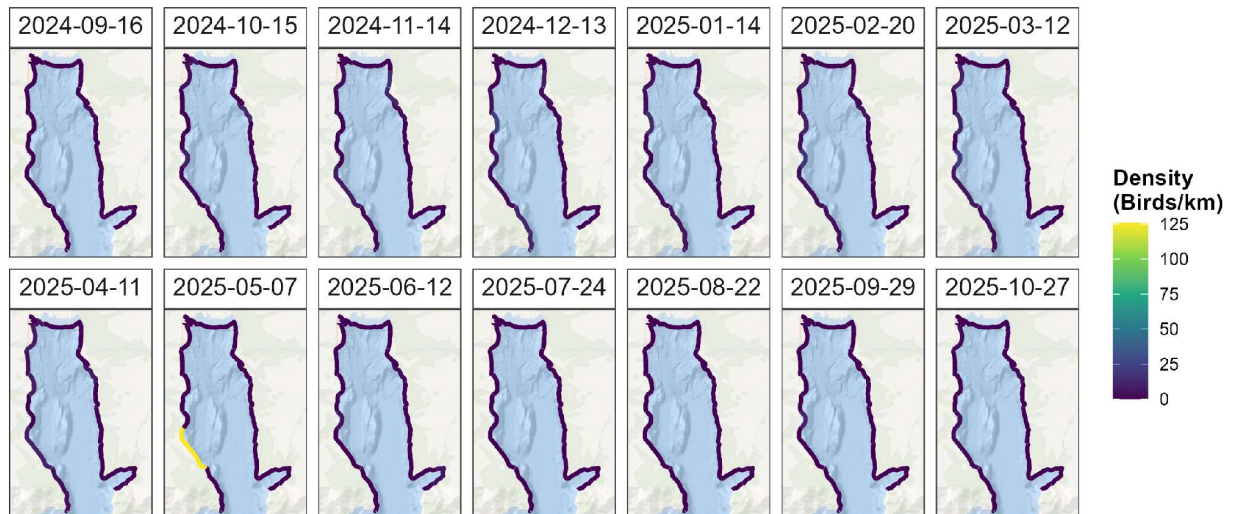


Figure 11. Distribution surf scoters in Resurrection Bay during September 26, 2024 – October 27, 2025. Density is calculated for each transect as the total count / transect length.



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Marbled murrelet and pigeon guillemot fledgling surveys were continued in Resurrection Bay from July 24 - September 29, 2025 (Figure 12) following the survey protocols used in previous years. Surveys covered approximately 72 km of coastline and were conducted from a vessel traveling 100 m from the shore with an observer, data recorder, and vessel operator aboard. For these surveys, murrelets and pigeon guillemots were recorded in 25 m bins within 100 m from each side of the vessel in upper Resurrection Bay ($N = 9$). Number (Table 3), timing (Figure 12) and distribution of observations (Figures 13 - 15) are presented.

Table 3. Raw counts for murrelet and pigeon guillemot observations in upper Resurrection Bay surveys from July 24 - September 29, 2025, by age group.

Species	Adult	Juvenile	Unknown age
Marbled murrelet	1311	173	18
Kittlitz's murrelet	0	0	0
Unknown murrelet	0	0	0
Pigeon guillemot	485	37	0

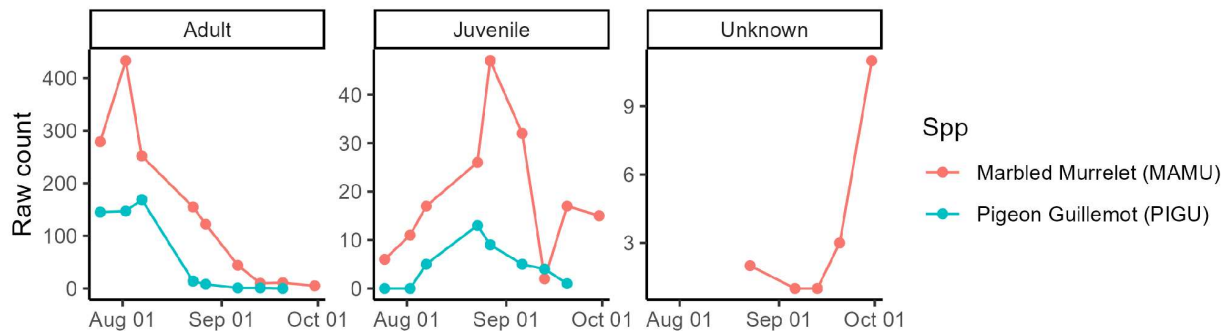


Figure 12. Seasonal distribution of adult, juvenile, and unknown age murrelet and pigeon guillemot observations from surveys conducted weekly in Resurrection Bay between July 24 - September 29, 2025.



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Marbled Murrelet Juveniles in Resurrection Bay

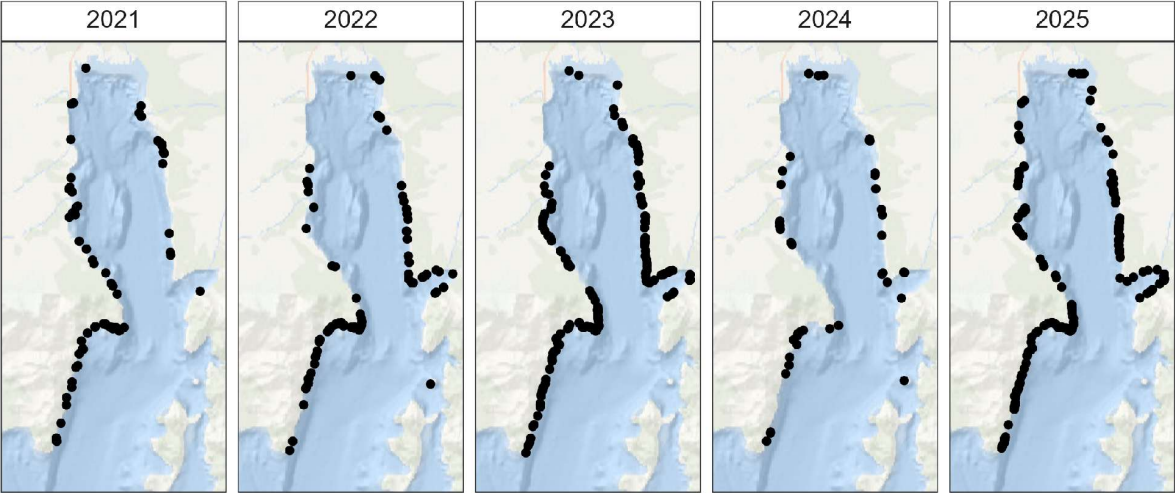


Figure 13. Distribution of observations of marbled murrelets in Resurrection Bay 2021 – 2025.

Pigeon Guillemot Juveniles in Resurrection Bay

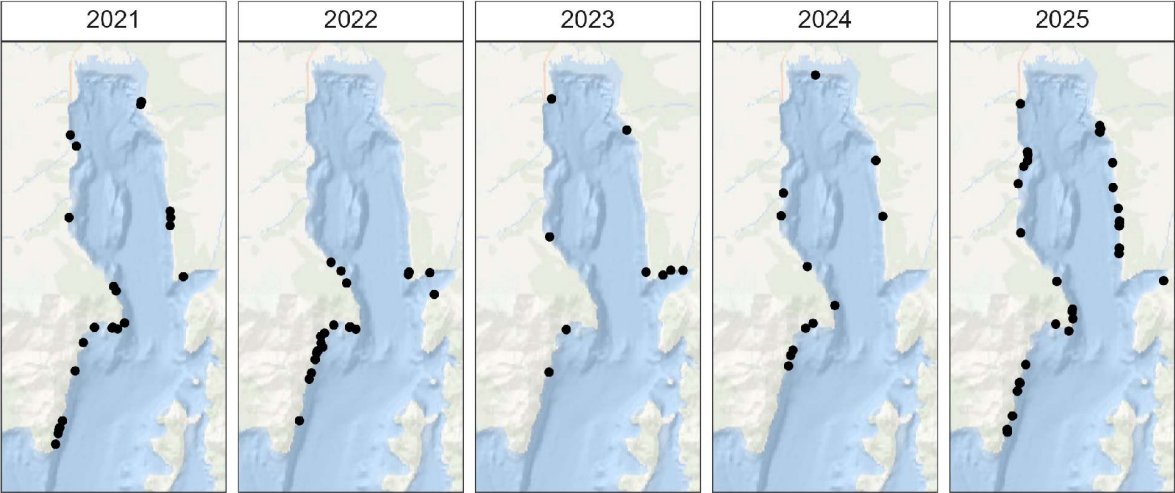


Figure 14. Distribution of observations of pigeon guillemots in Resurrection Bay 2021 – 2025.



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Kittlitz's Murrelet Juveniles in Resurrection Bay

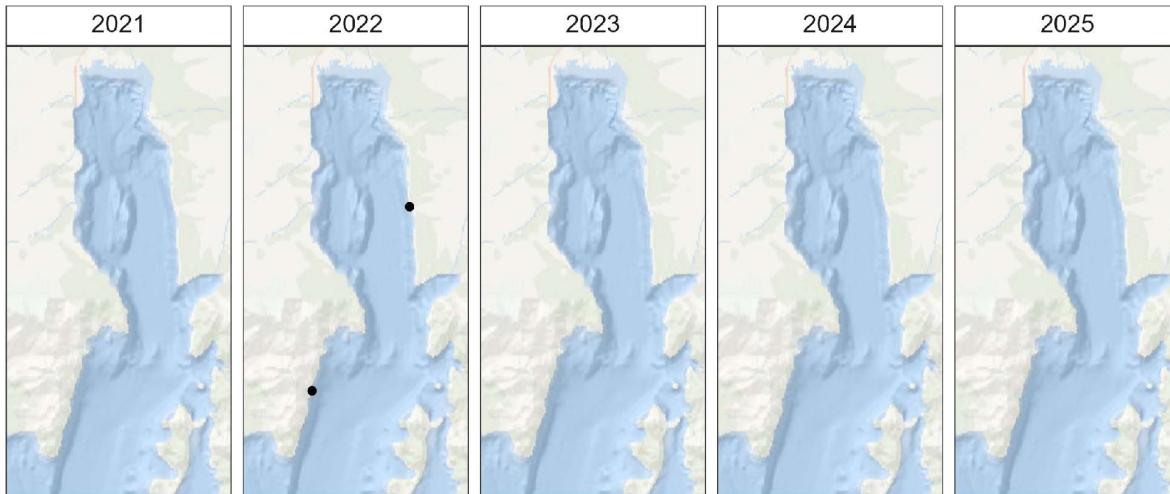


Figure 15. Distribution of observations of Kittlitz's murrelets in Resurrection Bay 2021 – 2025.

We conducted analyses on Kittlitz's murrelet habitat use and associations in the Kenai Fjords region. These analyses leveraged a long-term oceanography dataset (historical data) that our project is building on to investigate change over time in habitat characteristics, and contemporary data collected in our study to better understand finer scale habitat patterns.

Change Over Time

We modeled Kittlitz's murrelet habitat selection by fitting a set of logistic Resource Selection Functions (RSFs) (Boyce et al. 2002), which compared characteristics of locations where Kittlitz's murrelets were observed with randomly selected unused locations in Aialik Bay. This model structure allowed us to evaluate use of habitat attributes in proportion to their abundance in the study area. The candidate set of models utilized season, time-period (historical vs contemporary), the first principal component of variation of temperature and salinity (PC1, Figure 16), stratification index, mixed layer depth, and the distance to closest possible nesting habitat. Models were compared using AICc model selection. The top model included season, time period, a season x time period interaction, PC1, stratification index, and mixed layer depth. Predicted probability of habitat use showed a general decline across the study period (Figure 17).

Fine Scale Distribution Patterns



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In addition to investigating change over time, we conducted a preliminary fine scale analysis on patterns of occurrence of both Kittlitz's and marbled murrelets in Aialik Bay. We modeled the association between murrelet habitat characteristics and murrelet density for both species using a Density Surface Model (DSM). Density surface models allow for complex relationships between explanatory variables and the density of the study species (Miller et al. 2013). We fit DSMs for both murrelet species that used temperature, salinity, and turbidity at 0 m, 5 m, and 20 m, as well as the mixed layer depth, stratification index, and abundance of fish schools as explanatory variables.

Kittlitz's murrelet distribution was influenced by temperature at 5 m, turbidity at 0 m and 20 m, salinity at 5 m, and the count of fish schools (Figure 18). The fitted model explained 90.8% of the deviance in Kittlitz's murrelet distribution. Marbled murrelets distribution was influenced by temperature at 20 m, turbidity at 20 m, and stratification index (Figure 19). The fitted model explained 35.0% of the deviance in marbled murrelet distribution. Overall, Kittlitz's murrelets were more influenced by oceanographic variables from shallower parts of the water column than marbled murrelets. Further investigation of this topic may reveal information about the ecological niche separation of these two closely related species.



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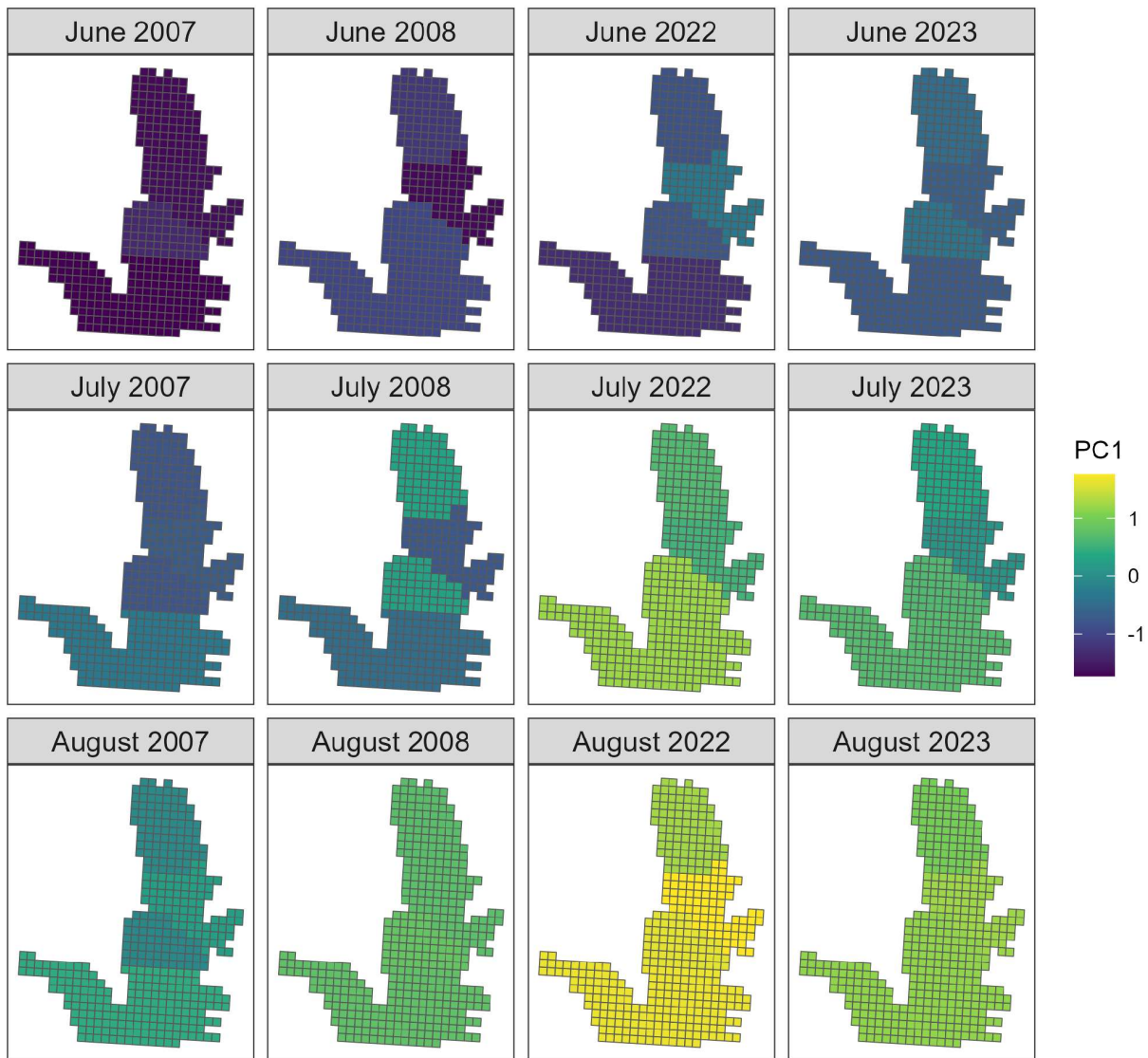


Figure 16. Principal component analysis scores of the first principal component (PC1) of variation of water column salinity and temperature in Aialik Bay. The principal component analysis was conducted using temperature and salinity values at 5 m and 20 m sampled using a CTD (conductivity, temperature, depth) in June, July, and August of 2007, 2008, 2022, and 2023. PC1 was influential in explaining predicted Kittlitz's Murrelet probability of occupancy in Aialik Bay using a resource selection function.



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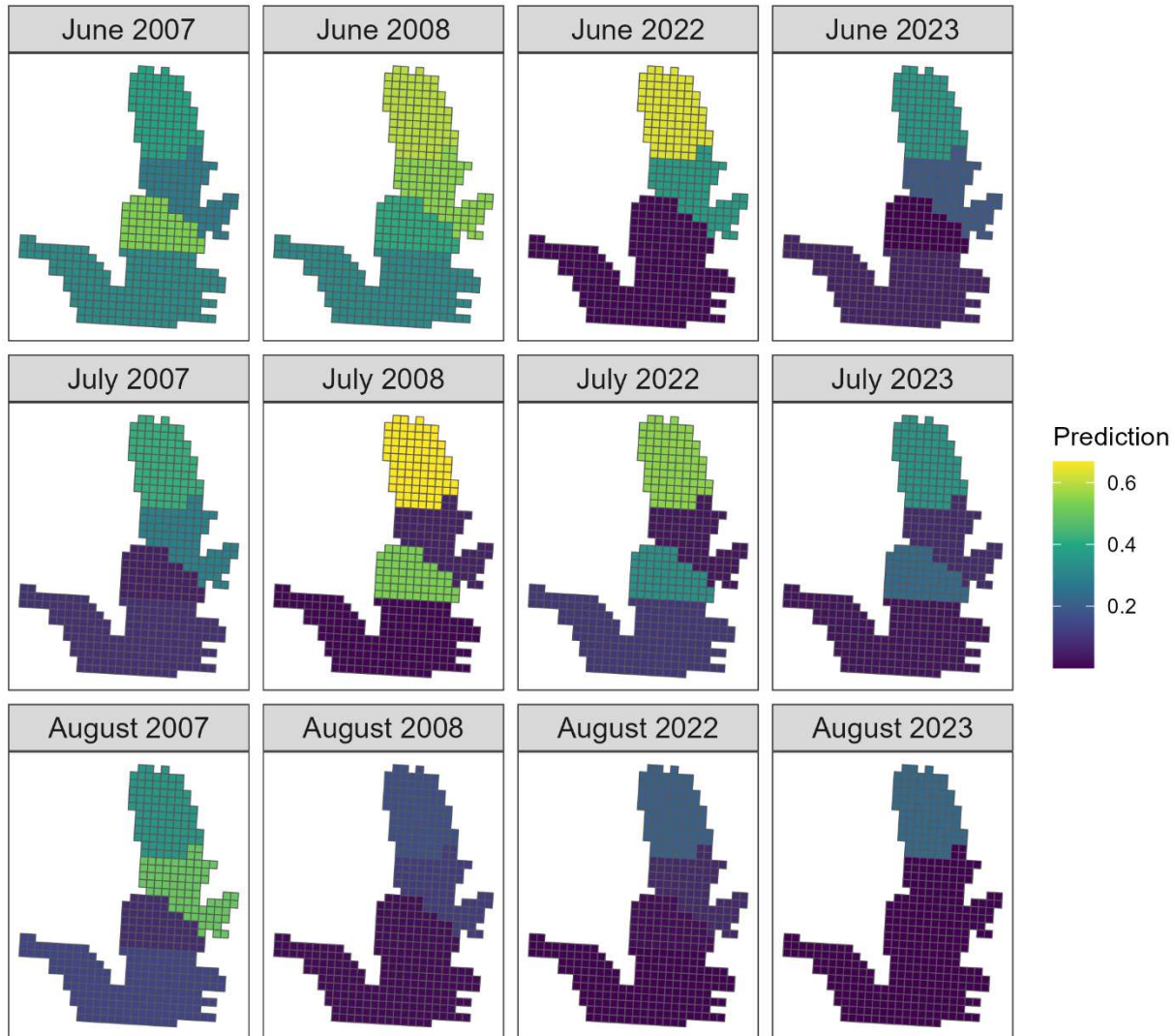


Figure 17. Probability of Kittlitz's Murrelet use in Aialik Bay. Predictions are based on a resource selection function using a principal component variable reduction of water temperature and salinity, as well as a stratification index, and mixed layer depth as predictor variables. The stratification index is a non-dimensional index of the difference between the density above and below the mixed layer. Mixed layer depth is the depth at which potential density σ_θ changed by 0.3 kg m^{-3} relative to σ_θ at a depth of 0.5 m. Environmental variables used in the resource selection function were aggregated at a 500 m resolution. Cooler colors represent lower predicted probability of Kittlitz's murrelet use while warmer colors predict a higher probability of use.



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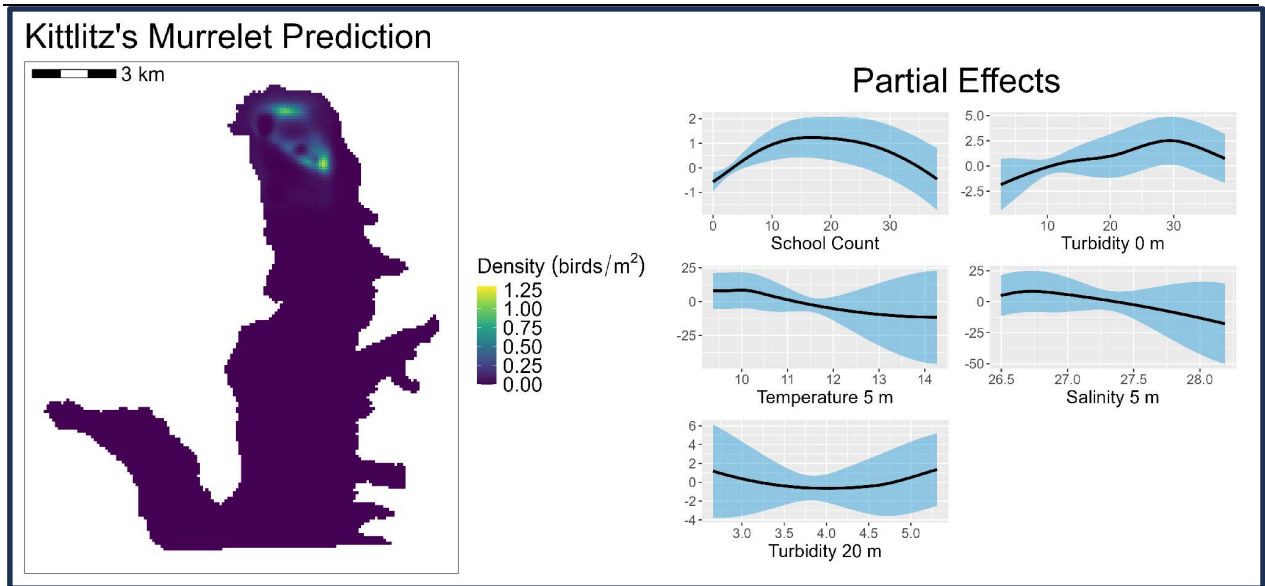


Figure 18. Left panel: Predicted density surface for Kittlitz's murrelets in Aialik Bay. Right panel: Partial effects plots of smooth functions that comprise the density surface model. Partial effects are shown for smooths that were not penalized out of the model.

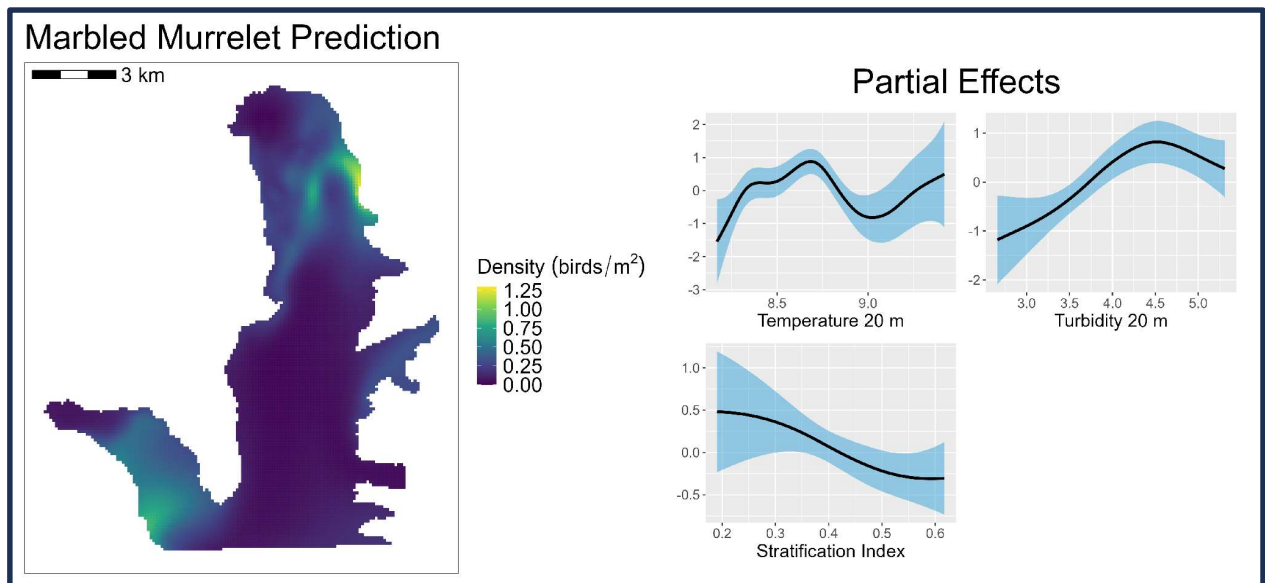


Figure 19. Left panel: Predicted density surface for marbled murrelets in Aialik Bay. Right panel: Partial effects plots of smooth functions that comprise the density surface model. Partial effects are shown for smooths that were not penalized out of the model.



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Kachemak Bay Component

The Kachemak Bay component completed all planned fieldwork in 2024, and in 2025 project efforts transitioned fully into the synthesis and integration phase. Throughout the year, datasets were prepared for archival in DataOne, including the development of refined metadata, creation of data dictionaries, along with coordination with the Tetra Tech (formerly Axiom) data management team. These activities have positioned the project well for FY26 by enabling continued progress to reach our individual project objectives and supporting integrated synthesis across both project components.

In 2025, the team also participated in the Alaska Seabird Festival, providing public outreach on Alaska seabirds and current seabird related topics. During the event, we addressed questions regarding seabird ecology and the potential lingering effects of the *Exxon Valdez* Oil Spill (EVOS). Many attendees were visitors from outside Alaska and expressed strong support for the efforts of the EVOS Trustees to improve understanding of injured species and their recovery through research initiatives such as this project.

Integration Component

Project principal investigators from both components convened a virtual workshop in June 2025 to bring together all project participants and begin the transition from the fieldwork phase of the project to the synthesis and integration stage. The workshop included a review of project objectives to ensure alignment and to position the group to begin coordinated data analysis efforts across the two study regions in 2026.

2. Products:

Peer-reviewed publications:

Higgins, B. 2025. Explaining The Association Between Kittlitz's Murrelets (*Brachyramphus brevirostris*) And Tidewater Glaciers: Which Habitat Factors Influence Spatial Distribution? Thesis, University of Alaska Fairbanks, Fairbanks, USA.



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Higgins B., G. Breed, S. Danielson, T. Hollmen, T. in prep. What is the Specific Relationship Between Tidewater Glacier Oceanography and Kittlitz's Murrelet Foraging Habitat? .

Reports:

Annual EVOSTC Reports 2021-2024.

Popular articles:

None at this time

Conferences and workshops:

Higgins, B., and T. Hollmen. Using Density Surface Models to Understand Kittlitz's Murrelet Habitat Associations. Poster presentation. Alaska Marine Science Symposium, Anchorage, AK, USA, January 2026.

Labunski, E.. Overview of the Kachemak Bay Marine Bird Project. USFWS Mariculture Working Group Meeting. Virtual presentation. March 2025.

Labunski, E.. Synopsis of Kachemak Bay Murrelet Surveys in Kachemak Bay. Alaska Fishery Development Foundation, Murrelet Bycatch Mitigation Meeting. Virtual presentation. December 2025.

Public presentations:

Hollmen, T. Project outreach presentations, ASLC Education and Public Outreach Programs, 2025.

Hollmen, T., and S. Donahue. Project outreach presentations at Seward Seabird Festival, June 2025.

Labunski, L. Project outreach presentations at Seward Seabird Festival, June 2025.

Data and/or information products developed during the reporting period:



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Produced finalized survey data files including the 2025 field season.

Created data products including species summary tables and species distribution maps.

Submitted data files from the 2025 field season on the Research Workspace.

Data sets and associated metadata:

The Kachemak Bay and Kenai Peninsula Coast project components are coordinating under a joint data management plan and a research workspace to archive data sets and metadata to ensure comprehensive data sharing between the two project components. In 2025, we continued coordination with Adrienne Canino of Tetra Tech to finalize project datasets for archival, including the development of associated metadata and data dictionaries. The Kachemak Bay component datasets from 2021-2023 have been archived in DataOne and are accessible under the following DOI: <https://search.dataone.org/view/10.24431/rw1kaia>.

In addition, all finalized survey data will be formatted and archived in the North Pacific Pelagic Seabird Database (NPPSD) and made publicly available by the U.S. Geological Survey Alaska Science Center.

Additional Products not listed above:

None at this time.

3. Coordination and Collaboration:

The Alaska SeaLife Center or Prince William Sound Science Center

PI Hollmen is affiliated with the Alaska SeaLife Center. Research, data management and outreach activities have been jointly discussed and integrated across both project components. We will continue to collaborate to maintain strong alignment between the components and to ensure effective synthesis of results across the entire scope of the project.

EVOSTC Long-Term Research and Monitoring Projects



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We have participated in several annual meetings of the EVOSTC LTRM program, providing project updates and supporting data sharing efforts across related studies. Future discussions will focus on opportunities to integrate datasets for broader, region wide analyses of trends and distributions of focal species, including sea otters. Marine bird and mammal distribution and population estimates from our study will be made available to researchers involved in the EVOSTC LTRM program; Project 25120114-M, Prince William Sound Marine Bird Population Trends and Offshore Surveys; and Project 25120114-H, Nearshore Ecosystem in the Gulf of Alaska; and the Northern Gulf of Alaska Long Term Ecological Research (NGA LTER) program.

EVOSTC Mariculture Projects

Data collected during our surveys is also being made available to regional mariculture projects to support their development. PI Labunski has joined the U.S. Fish and Wildlife Service (USFWS) Mariculture Working Group to share information and provide insight on mariculture development in Alaska. As part of this coordination, we have shared the timing of our surveys, discussed historic transects that have been conducted in Kachemak Bay, and agreed to collaborate on future data sharing efforts. Finalized datasets will be archived in the EVOSTC Project Workspace, DataOne, and in the publicly available North Pacific Pelagic Seabird Database.



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EVOSTC Education and Outreach Projects

PI Hollmen is on the project team for the CORaL network, facilitating close collaborations and coordination of activities between our project and the network, including community outreach and education opportunities in the region.

In 2025, The Kenai Peninsula Coast component participated with a booth in the Seward Seabird Festival in Seward, Alaska, sharing information about our project with the public. PI Labunski represented the U.S. Fish and Wildlife Service at the Alaska Seabird Festival, staffing the Service's information booth and providing visitors with information on ongoing seabird research across the state. Labunski also responded to public questions about seabirds and the potential lingering effects of the *Exxon Valdez* oil spill and highlighted how projects such as Project 25210128 and Project 25120114 M (Prince William Sound Marine Bird Population Trends and Offshore Surveys) contribute to improving our understanding of these issues.

We are planning additional community engagement activities for 2026, including the Seward Seabird Festival and efforts in coordination with the Northern Gulf of Alaska Long Term Ecological Research (NGA LTER) Program.

Trustee or Management Agencies

Several investigators on our project team are affiliated with USFWS, enabling close coordination between this project and the agency. The marine bird data collected through this study directly supports the USFWS Migratory Bird Management mission to inform the conservation of migratory birds, including recent revisions to the Service's Birds of Conservation Concern (BCC) List.

Our project has also contributed information to the Bureau of Ocean Energy Management (BOEM) regarding migratory bird species in the Lower Cook Inlet Planning Area. We met with BOEM Alaska staff to review available data from Kachemak Bay and to discuss how these data can support responsible, sustainable energy development planning in the region. In addition, we have shared our datasets with members of the USFWS Migratory Bird Program to support the development of new study proposals for the Lower Cook Inlet Planning Area.

Beyond informing EVOSTC on the recovery status of impacted resources, this project will also provide valuable information to other natural resource management agencies in the Gulf of



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Alaska region, including ADFG, AMNWR, NPS, and USGS. We also continue coordinating field and outreach efforts closely with our partners in the Kenai Fjords National Park and the Ocean Alaska Science and Learning Center.

Native and Local Communities

The Kenai Peninsula Component is closely linked to a community science project established in Seward in 2018, engaging local high school students in marine bird observations throughout the school year and lead by PI Hollmen. The student science education program is continuing during the school year of 2025-2026. The student science network is expanding regionally through collaboration with the CORaL network.

We have engaged with local and Native communities in the region through several avenues. PI Labunski participates biannually in the Alaska Migratory Bird Co Management Council (AMBCC) meeting, providing updates on seabird research and addressing questions from tribal community representatives. We have also coordinated with Aaron Poe of the Northern Latitudes Partnership regarding the Kelp Values project, which aims to ensure that mariculture development in southcentral Alaska aligns with traditional cultural values and marine resource conservation.

Looking ahead to 2026, and in coordination with the NGA LTER program, we are planning additional outreach efforts, including invited visits to communities in the Lower Cook Inlet to share project information and respond to community questions. We are planning to work cooperatively with the CORaL network to facilitate regional community presentations in local communities. In 2026, our project again plans to participate in the 2026 Seward Seabird Festival in Seward, Alaska.

Literature Cited

Arimitsu, M. L., J. F. Piatt, E. N. Madison, J. S. Conaway, and N. Hillgruber. 2012. Oceanographic gradients and seabird prey community dynamics in glacial fjords. *Fisheries Oceanography* 21(2–3): 148–169. <https://doi.org/10.1111/j.1365-2419.2012.00616.x>

Boyce, M. S., P. R. Vernier, S. E. Nielsen, and F. K. A. Schmiegelow. 2002. Evaluating resource selection functions. *Ecological Modelling*, 157(2), 281–300.
[https://doi.org/https://doi.org/10.1016/S0304-3800\(02\)00200-4](https://doi.org/https://doi.org/10.1016/S0304-3800(02)00200-4)



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Gay, S. M., and P. J. Armato. 1999. Hydrography of McCarty Fjord, Northwestern Fjord and Aialik Bay, Kenai Fjords National Park, Alaska. Report to the National Park Service. Prince William Sound Science Center, Cordova, Alaska. 47pp.

Kuletz, K. J., E. A. Labunski, and S. G. Speckman. 2008. Abundance, distribution, and decadal trends of Kittlitz's and marbled murrelets and other marine species in Kachemak Bay, Alaska. Final Report (Project No. 14) by U.S. Fish and Wildlife Service for Alaska Department of Fish and Game, State Nongame Wildlife Grant, Anchorage, Alaska.

Miller, D. L., M. L. Burt, E. A. Rexstad, and L. Thomas. 2013. Spatial models for distance sampling data: recent developments and future directions. *Methods in Ecology and Evolution*, 4(11), 1001–1010. <https://doi.org/10.1111/2041-210X.12105>

4. Response to EVOSTC Review, Recommendations and Comments:



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5. Budget:

Kenai Peninsula Coast Component

Budget Category:	Proposed FY 21	Proposed FY22	Proposed FY23	Proposed FY24	Proposed FY25	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	\$29,263.00	\$30,141.00	\$31,045.00	\$31,977.00	\$32,935.00	\$155,361.00	\$189,757.74
Travel	\$595.00	\$0.00	\$0.00	\$0.00	\$670.00	\$1,265.00	\$472.94
Contractual	\$72,300.00	\$80,469.00	\$76,702.00	\$49,500.00	\$50,985.00	\$329,956.00	\$157,051.12
Commodities	\$5,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$5,000.00	\$21,129.16
Equipment	\$5,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$5,000.00	\$13,118.00
Indirect Costs (<i>will vary by proposer</i>)	\$34,291.00	\$35,395.00	\$34,479.00	\$26,073.00	\$27,069.00	\$157,307.00	\$120,505.45
SUBTOTAL	\$146,449.00	\$146,005.00	\$142,226.00	\$107,550.00	\$111,659.00	\$653,889.00	\$502,034.41
General Administration (9% of subtotal)	\$13,180.41	\$13,140.45	\$12,800.34	\$9,679.50	\$10,049.00	\$58,849.70	\$45,183.10
PROJECT TOTAL	\$159,629.41	\$159,145.45	\$155,026.34	\$117,229.50	\$121,708.00	\$712,738.70	\$547,217.51
Other Resources (Cost Share Funds)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	N/A

COMMENTS:

This summary page provides an five-year overview of proposed project funding and actual cumulative spending. The column titled 'Actual Cumulative' must be updated each fiscal year as part of the annual reporting requirements. Provide information on the total amount actually spent for all completed years of the project. On the Project Annual Report Form, if any line item exceeds a 10% deviation from the originally-proposed amount; provide detail regarding the reason for the deviation.

Personnel: Staff salary costs consisted of part-time regular staff salaries and seasonal staff salaries, and were as anticipated. Staff participated in preparation for field work, survey work, data QA/QC, preparation of data for workspace submission, and preparation of data summaries and analysis.

Contractual: Contractual costs included vessel charters and PI time, and were as anticipated.

Travel: No travel costs occurred during the reporting period.

Commodities: Commodities costs included vessel fuel costs.

Equipment: No equipment purchases were made during the reporting period.

Kachemak Bay Component



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EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
PROGRAM PROJECT BUDGET PROPOSAL AND REPORTING FORM

Budget Category:	Proposed FY 21	Proposed FY22	Proposed FY23	Proposed FY24	Proposed FY25	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	\$42,500.0	\$62,933.0	\$64,821.4	\$66,765.4	\$37,704.9	\$274,724.7	\$116,714.8
Travel	\$7,440.0	\$15,300.1	\$15,696.8	\$16,105.9	\$9,773.0	\$64,315.8	\$33,205.1
Contractual	\$0.0	\$30,000.0	\$30,000.0	\$30,000.0	\$0.0	\$90,000.0	\$0.0
Commodities	\$7,495.2	\$10,635.0	\$12,774.0	\$11,317.0	\$3,500.0	\$45,721.2	\$29,781.4
Equipment	\$36,200.0	\$0.0	\$4,000.0	\$0.0	\$0.0	\$40,200.0	\$22,589.0
SUBTOTAL	\$93,635.2	\$118,868.1	\$127,292.1	\$124,188.4	\$50,977.9	\$514,961.7	\$202,290.3
General Administration (9% of subtotal)	\$8,427.2	\$10,698.1	\$11,456.3	\$11,177.0	\$4,588.0	\$46,346.6	
PROJECT TOTAL	\$102,062.3	\$129,566.2	\$138,748.4	\$135,365.3	\$55,565.9	\$561,308.2	
Other Resources (Cost Share Funds) FWS in-kind support	\$48,144.0	\$49,408.3	\$50,710.6	\$52,051.9	\$47,433.4	\$247,748.2	
COMMENTS: Actual cumulative amount summarizes the funds spend for FY25. Spending deviated more than 10% below projected amounts for FY25. We will work with EVOSTC staff to discuss unspent funds and roll over appropriate amounts to FY26 due to a NCE moving the final project due date to 1 March 2027. Additional details provide for each spending category in the budget section of the annual report. This summary page provides a five-year overview of proposed project funding and actual cumulative spending. The \$3,500 line item (FY25) for commodities (outreach and publishing costs) was inadvertently omitted from the previous budget table and has been updated.							

Personnel: Staff costs in FY25 were limited and primarily contributed to E. Labunski's salary when contributing time to project coordination, data management and outreach events. The balance of the remaining salary will be charged in FY26 for the synthesis portion of the project following the NCE finalized at the end of 2025.

Travel: Travel costs in 2025 were associated with PI Labunski traveling to the Seabird Festival in Seward Alaska in May 2025 to participate in the public outreach event. We anticipate additional travel funds will be spent in 2026 to attend public outreach events and in-person coordination meeting if necessary.

Contractual: No purchases made in FY25. We met with a contractor to outline the support needed for the Kachemak Bay synthesis component of the project. We are now developing a scope of work focused on integrating available oceanographic and other datasets to help describe murrelet distribution in Kachemak Bay, identify important marine habitats, and support preparation of the final integrated project report.

Commodities: No purchases made in FY25, as planned. The \$3,500 line item for commodities (outreach and publishing costs) was inadvertently omitted from the previous budget table and has been updated.

Equipment: No purchases made in FY25, as planned.