***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: 23210128

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

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

Reporting Period: February 1, 2023 – January 31, 2024

Submission Date: March 1, 2024

Project Website: N/A

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

☒ **Project progress is on schedule.**

☐ **Project progress is delayed.**

☐ **Budget reallocation request.**

☐ **Personnel changes.**

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.
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.

Surveys were conducted in Kenai Fjords during summer season of 2023. The early season surveys were conducted June 5 - 7 in Aialik and Northwestern Fjords (Figure 1). The middle season surveys were conducted during July 7-19 in Aialik, Northwestern, and McCarty Fjords (Figure 1). The late season surveys were conducted August 7 - 9 in Aialik and Northwestern Fjords. An additional survey was conducted during the late season in Aialik July 23-27.

These surveys were conducted from a landing craft with one observer on the port side and another on the starboard side, a data recorder, and a vessel operator aboard. For inshore transects the vessel traveled 100 m from the shoreline. All bird and marine mammal observations were recorded in 25 m bins within 150 m from each side of the vessel (with the exception of inshore transects which had a maximum of 100 m from the shoreline). Flying birds were recorded every 60 seconds. At the beginning and end of each transect the time, latitude, longitude, wind speed, wind direction, air temperature, and wave height were recorded. Additionally, during the survey observer conditions on each side of the boat were recorded along with cloud coverage, Beaufort number, ice size, and ice coverage and were updated if changes were observed while moving along the transect. A summary of all sightings is presented in Table 1, and raw count data for murrelets and pigeon guillemot are summarized in Table 2 and Figure 2. Distribution of murrelets and pigeon guillemots in Kenai Fjords during surveys in 2023 is presented in Figures 4-14.

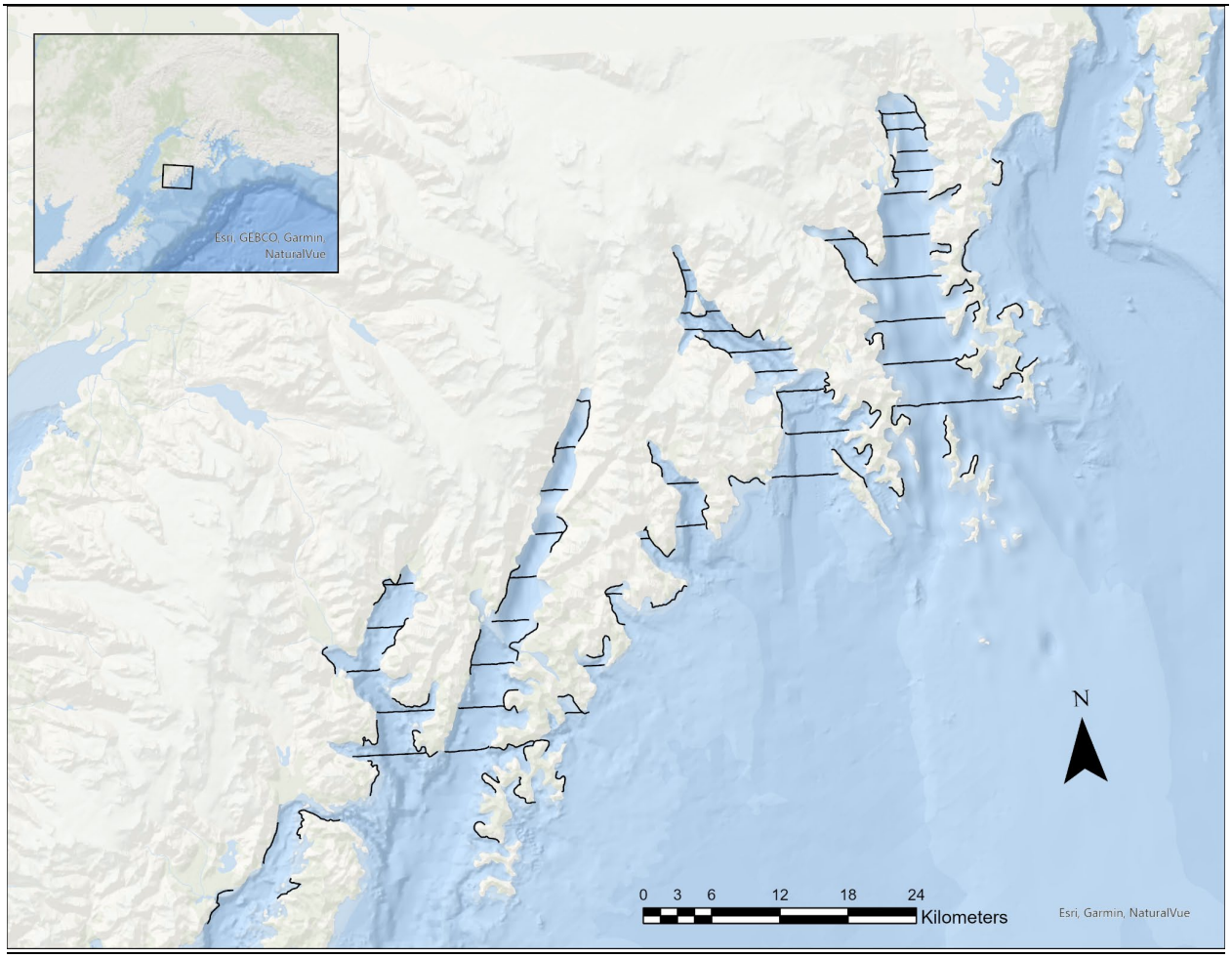


Figure 1. Transects completed in 2023 during either the early, middle, or late surveys.

Table 1. Marine bird and mammal observations recorded on water, on land, and in the air during surveys in Kenai Fjords, Alaska during all surveys.

English Name	Scientific Name	Number
American Crow	*Corvus brachyrhynchos*	61
Ancient Murrelet	*Synthliboramphus antiquus*	25
Arctic Tern	*Sterna paradisaea*	1
Bald Eagle	*Haliaeetus leucocephalus*	47
Barrow's Goldeneye	*Bucephala islandica*	66
Belted Kingfisher	*Megaceryle alcyon*	1
Black-legged Kittiwake	*Rissa tridactyla*	2228
Black Brant	*Branta bernicla*	1
Black Oystercatcher	*Haematopus bachmani*	46
Black Scoter	*Melanitta americana*	1
Black Turnstone	*Arenaria melanocephala*	13
Brachyramphus Murrelet	*Brachyramphus spp.*	8
Common Goldeneye	*Bucephala clangula*	2
Common Loon	*Gavvia immer*	3
Common Merganser	*Mergus merganser*	121
Common Murre	*Uria aalge*	265
Common Raven	*Corvus corax*	3
Double-crested Cormorant	*Nannopterum auritum*	156
Gadwall	*Anas strepera*	15
Glaucous-winged Gull	*Larus glaucescens*	2464
Greater Scaup	*Aythya marila*	3
Harlequin Duck	*Histrionicus histrionicus*	304
Herring Gull	*Larus argentatus*	2
Horned Puffin	*Fratercula corniculata*	508
Kittlitz's Murrelet	*Brachyramphus brevirostris*	178
Mallard	*Anas platyrhynchos*	1
Marbled Murrelet	*Brachyramphus marmoratus*	3829
Pacific Loon	*Gavia pacifica*	1
Parakeet Auklet	*Aethia psittacula*	2
Pelagic Cormorant	*Urile pelagicus*	338
Pigeon Guillemot	*Cepphus columba*	474
Red-breasted Merganser	*Mergus serrator*	11
Red-faced Cormorant	*Phalacrocorax urile*	4
Rhinoceros Auklet	*Cerorhinca monocerata*	2067
Semipalmated Plover	*Charadrius semipalmatus*	4
Short-billed Gull	*Larus canus*	76
Spotted Sandpiper	*Actitis macularius*	3
Surf Scoter	*Melanitta perspicillata*	342
Surfbird	*Aphriza virgata*	37
Tufted Puffin	*Fratercula cirrhata*	33
Unidentified Yellowlegs	*Tringa spp.*	1
Wandering Tattler	*Tringa incana*	2
White-winged Scoter	*Melanitta deglandi*	26
Harbor Seal	*Phoca vitulina*	441
Humpback Whale	*Megaptera novaeangliae*	1

River Otter	*Lontra canadensis*	4
Sea Otter	*Enhydra lutris*	356
Steller Sea Lion	*Eumetopias jubatus*	34

Table 2. Focal species raw counts for all surveys by survey and age group observed during the three standard Kenai Fjords Surveys. Note there are 27 transects covered during the June and August surveys and 100 transects covered during the July survey.

	June 5-7			July 7-19			August 7-9		
Species	Adult	Juvenile	Unknown	Adult	Juvenile	Unknown	Adult	Juvenile	Unknown
Marbled Murrelet	373	0	0	2381	26	1	579	28	0
Kittlitz's Murrelet	45	0	0	59	0	0	8	0	0
Unknown Murrelet	2	0	2	2	0	0	0	0	0
Pigeon Guillemot	25	0	0	316	0	0	37	7	0

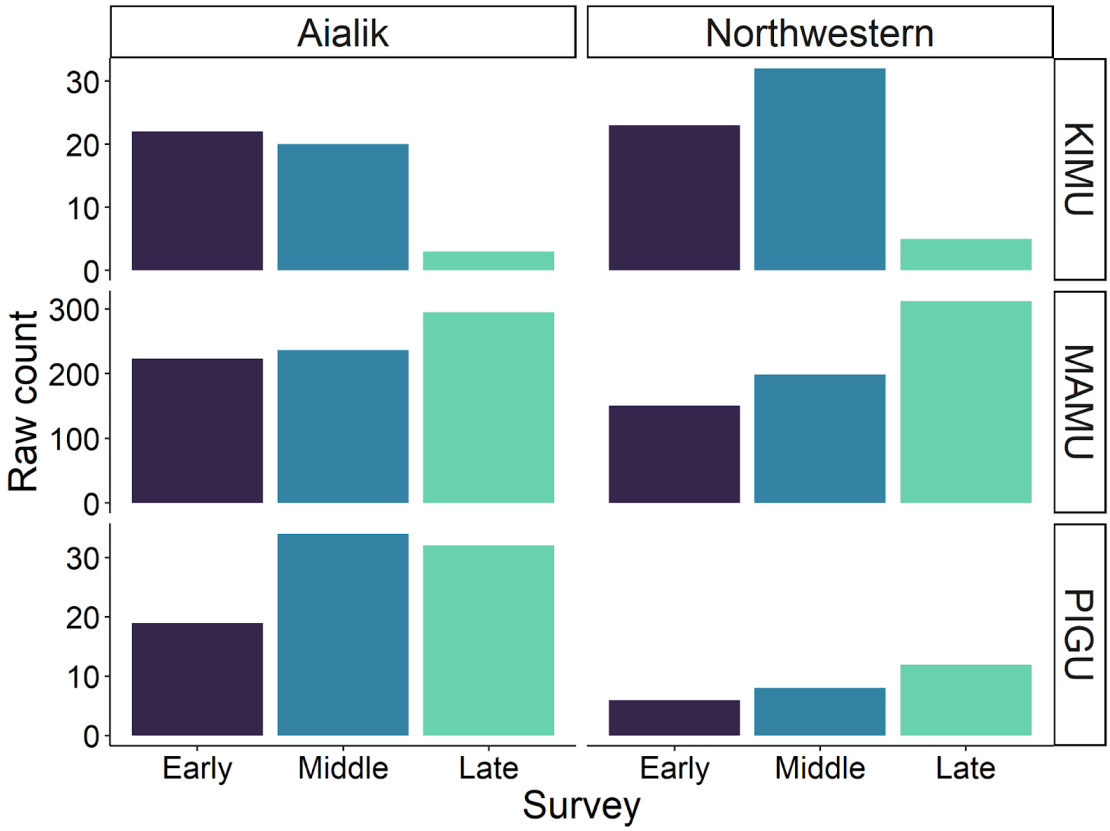


Figure 2. Raw counts for the three focal species in Aialik and Northwestern for transects surveyed during all three standard surveys. KIMU = Kittlitz's murrelet, MAMU = marbled murrelet, PIGU = pigeon guillemot.

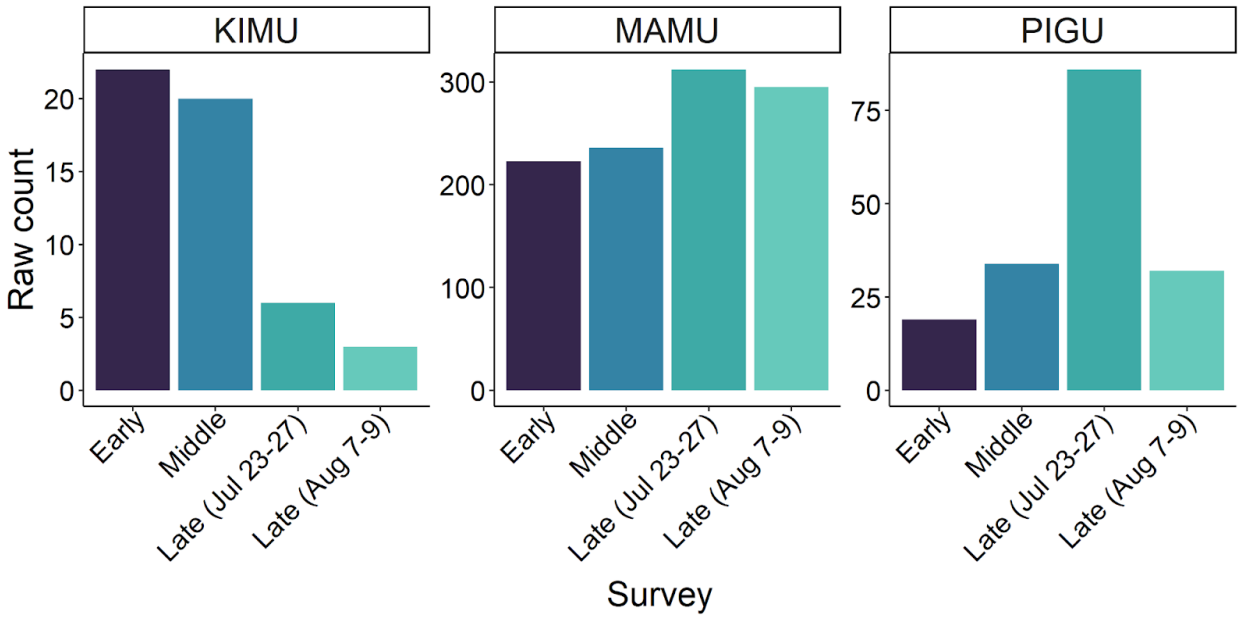


Figure 3. Raw counts for the three focal species in Aialik for transects replicated on the three standard surveys and the additional survey in the late season. KIMU = Kittlitz's murrelet, MAMU = marbled murrelet, PIGU = pigeon guillemot.

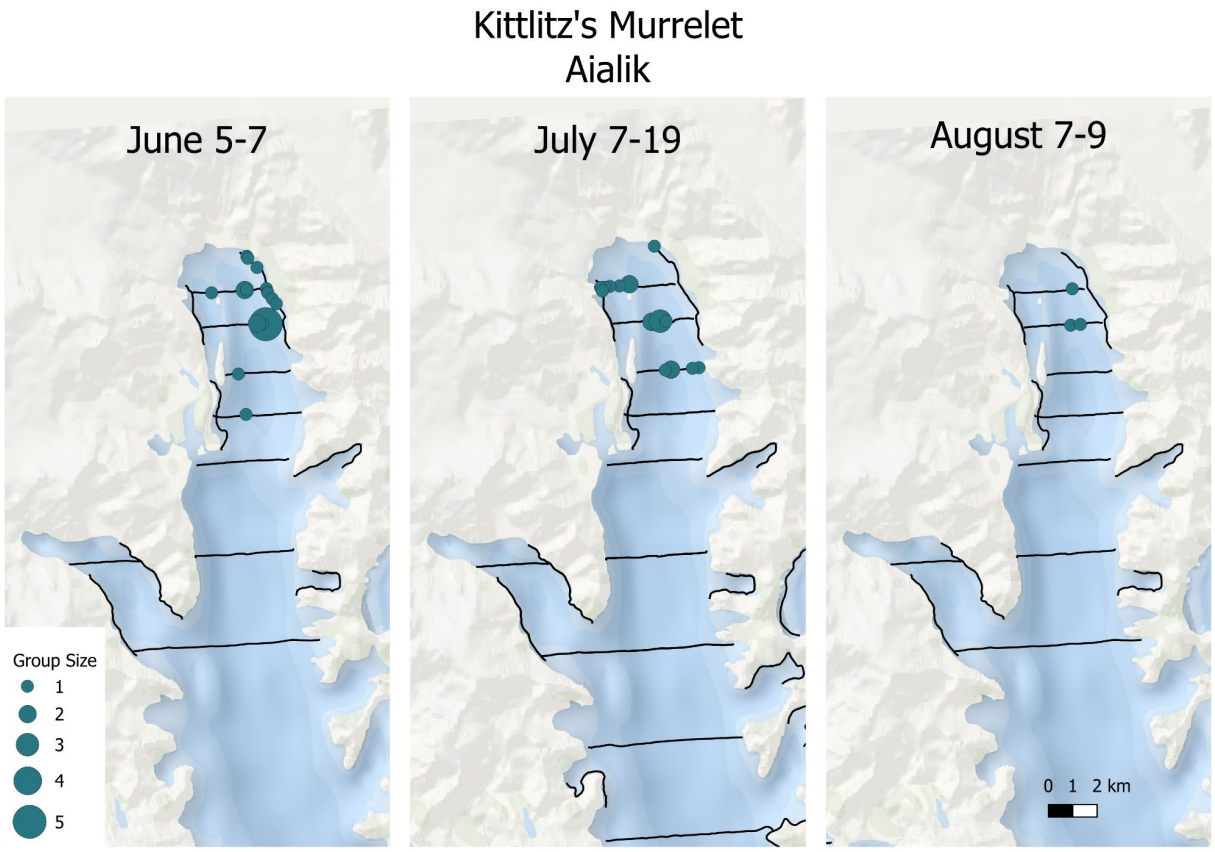


Figure 4. Distribution of Kittlitz's murrelet sightings in Aialik Fjord in 2023.

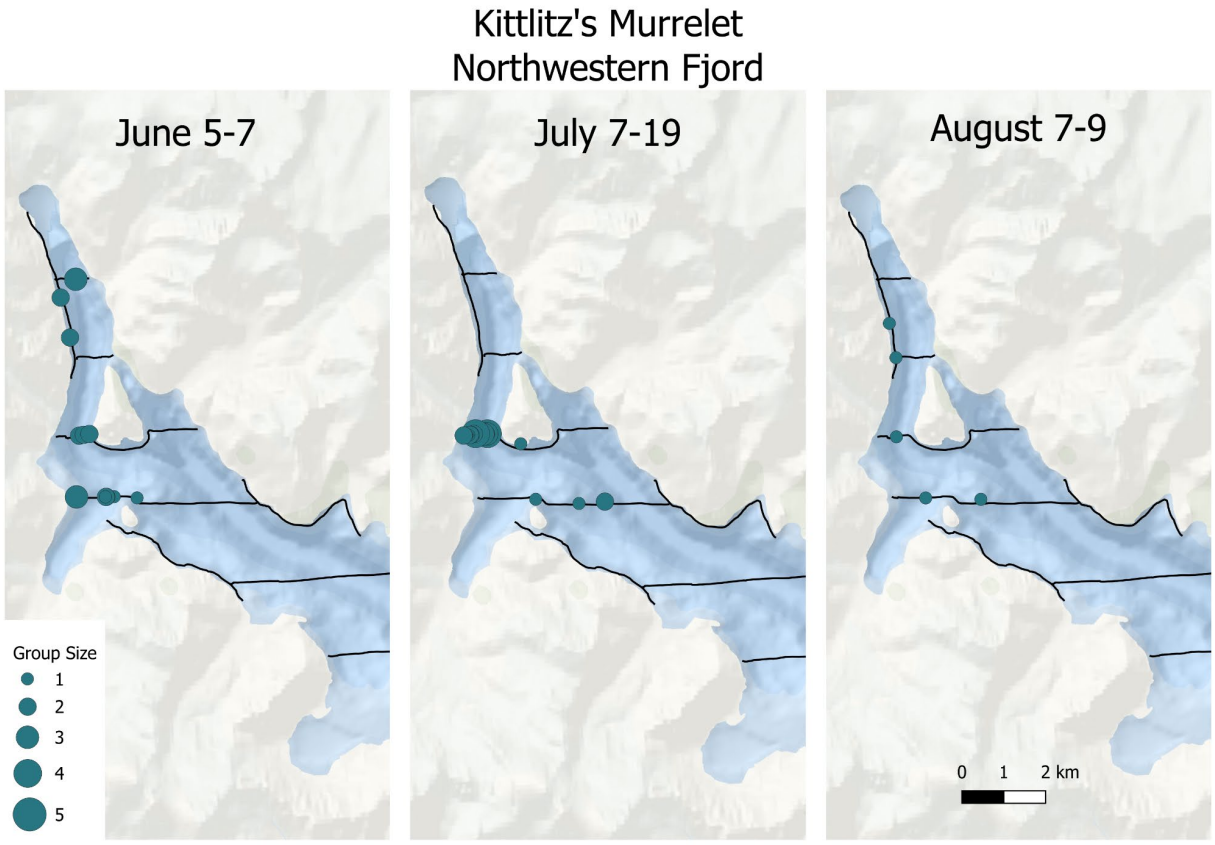


Figure 5. Distribution of Kittlitz's murrelet sightings in Northwestern Fjord in 2023.

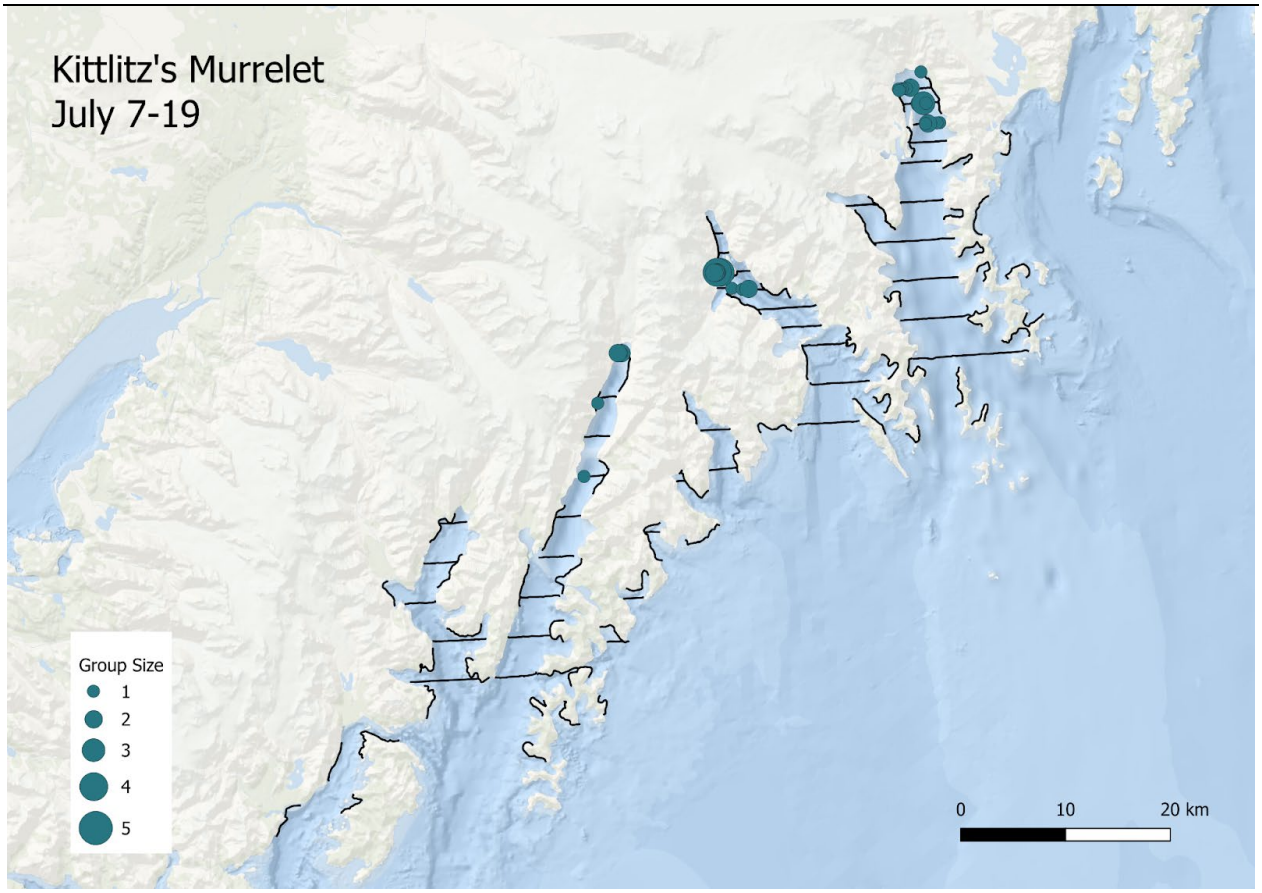


Figure 6. Coastwide distribution of Kittlitz's murrelet sightings in July 2023.

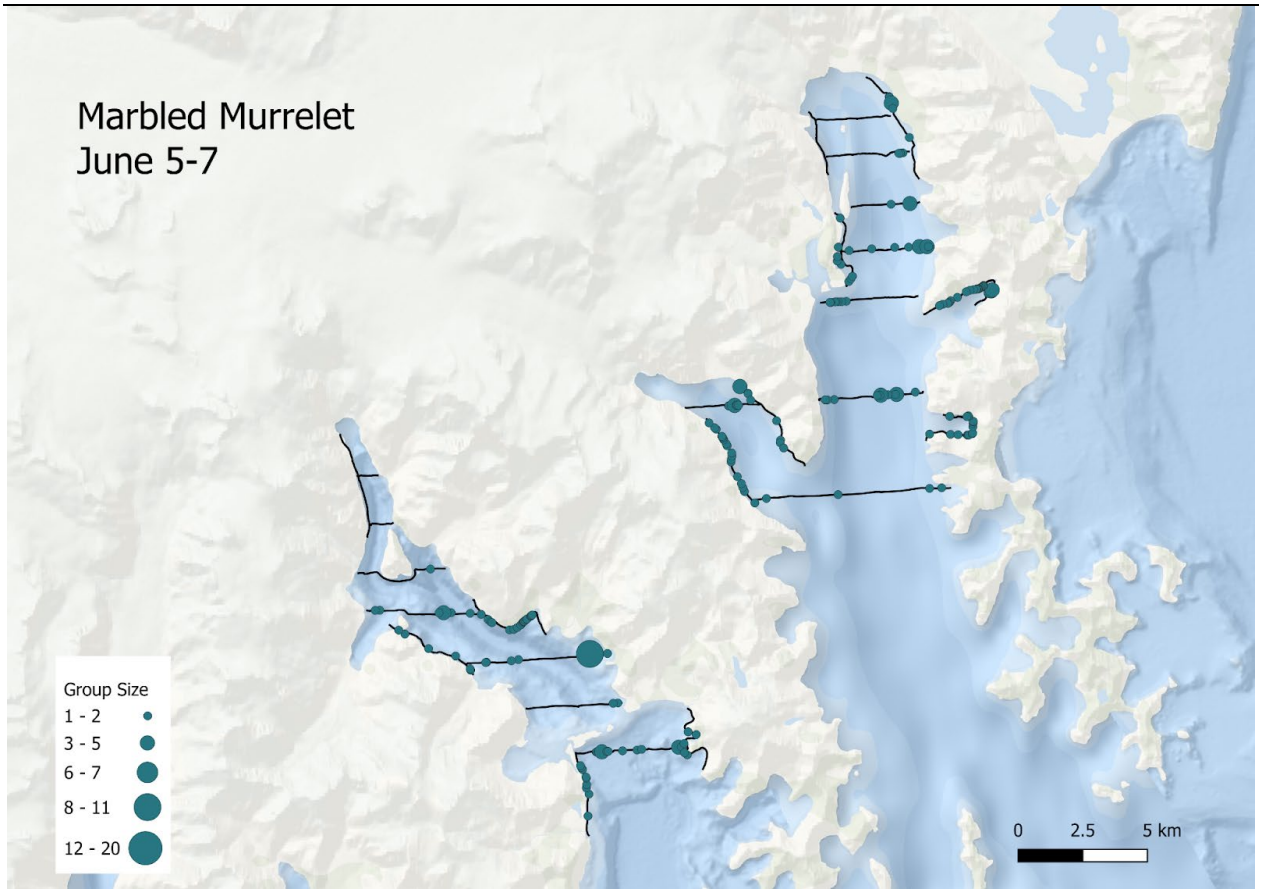


Figure 7. Distribution of marbled murrelet sightings during the June 2023 survey.

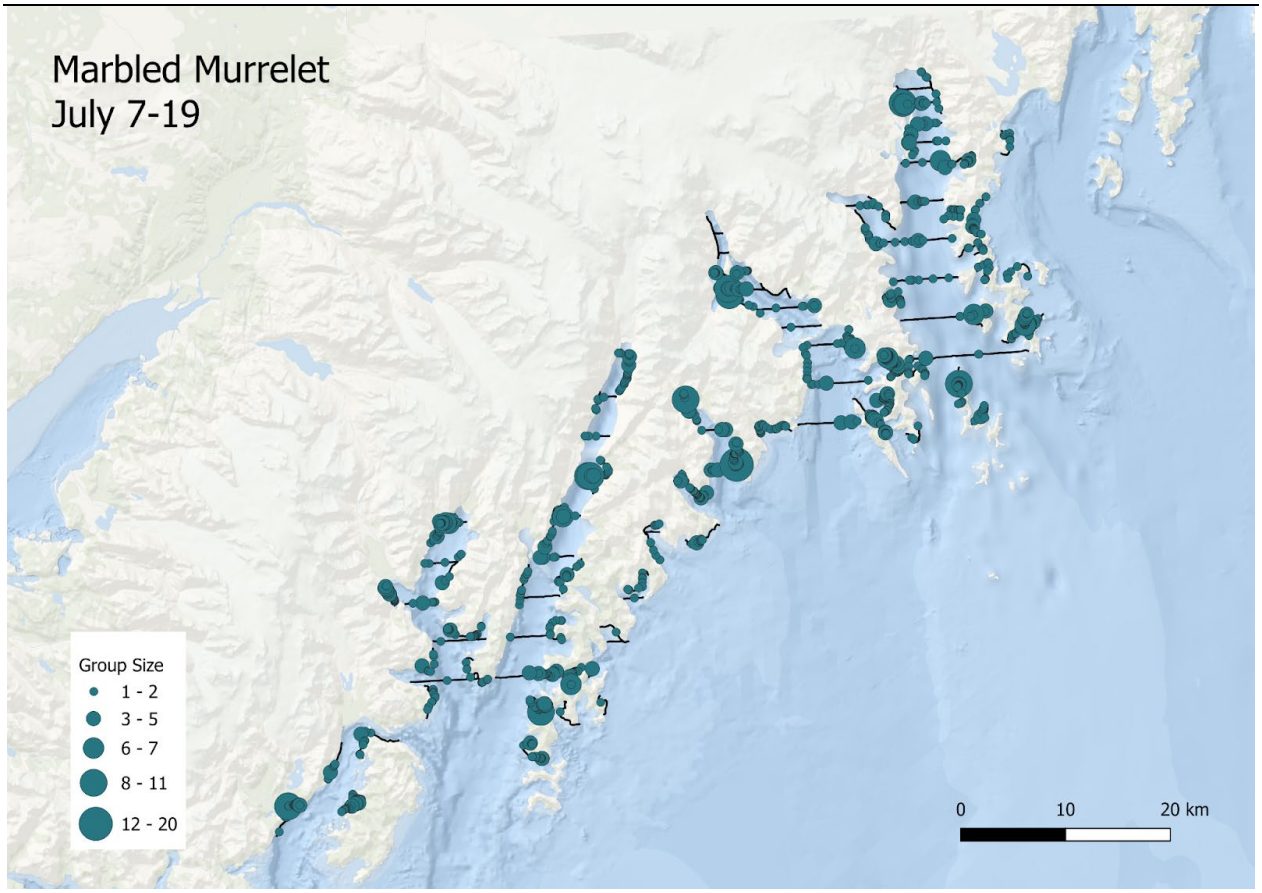


Figure 8. Distribution of marbled murrelet sightings during the July 2023 survey.

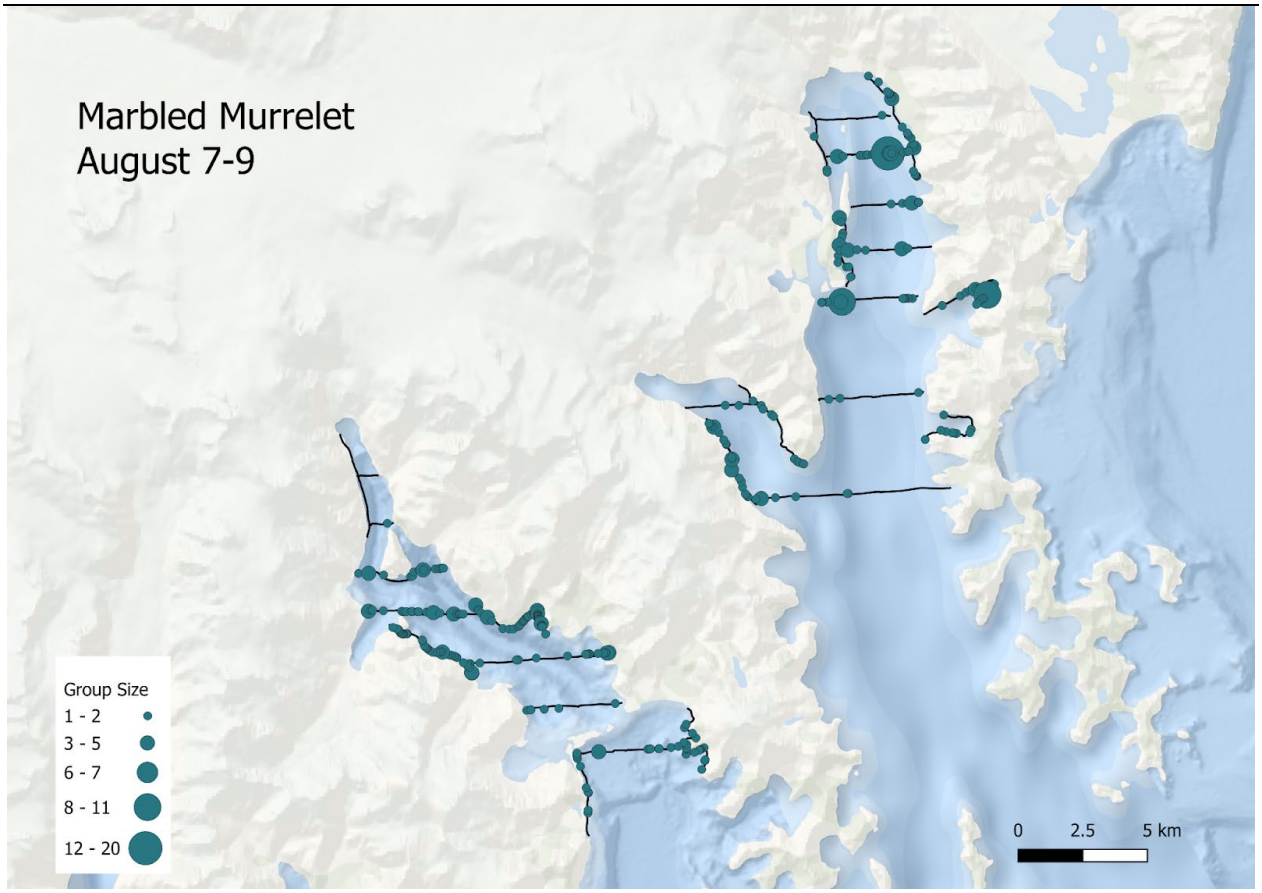


Figure 9. Distribution of marbled murrelet sightings during the August 2023 survey.

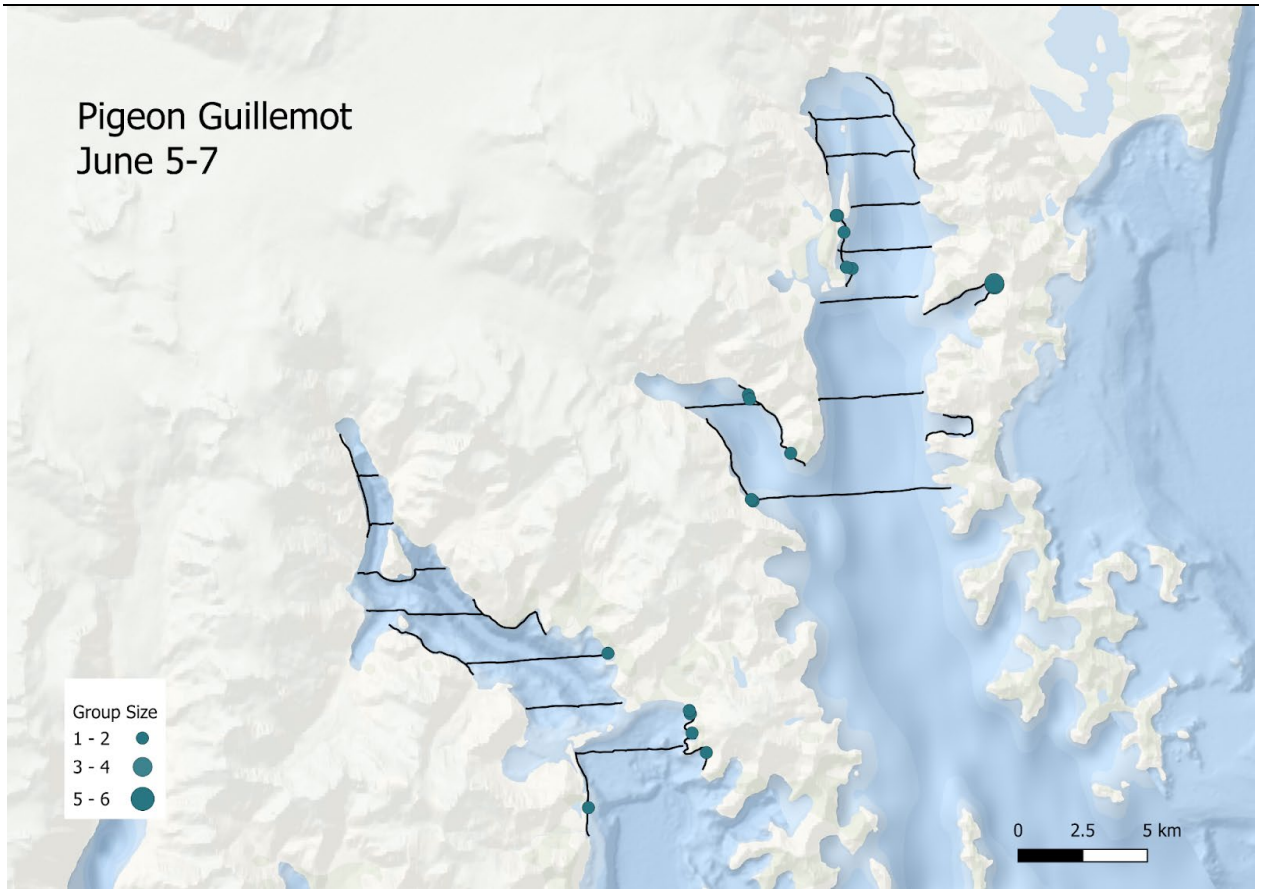


Figure 10. Distribution of pigeon guillemot sightings during the June 2023 survey.

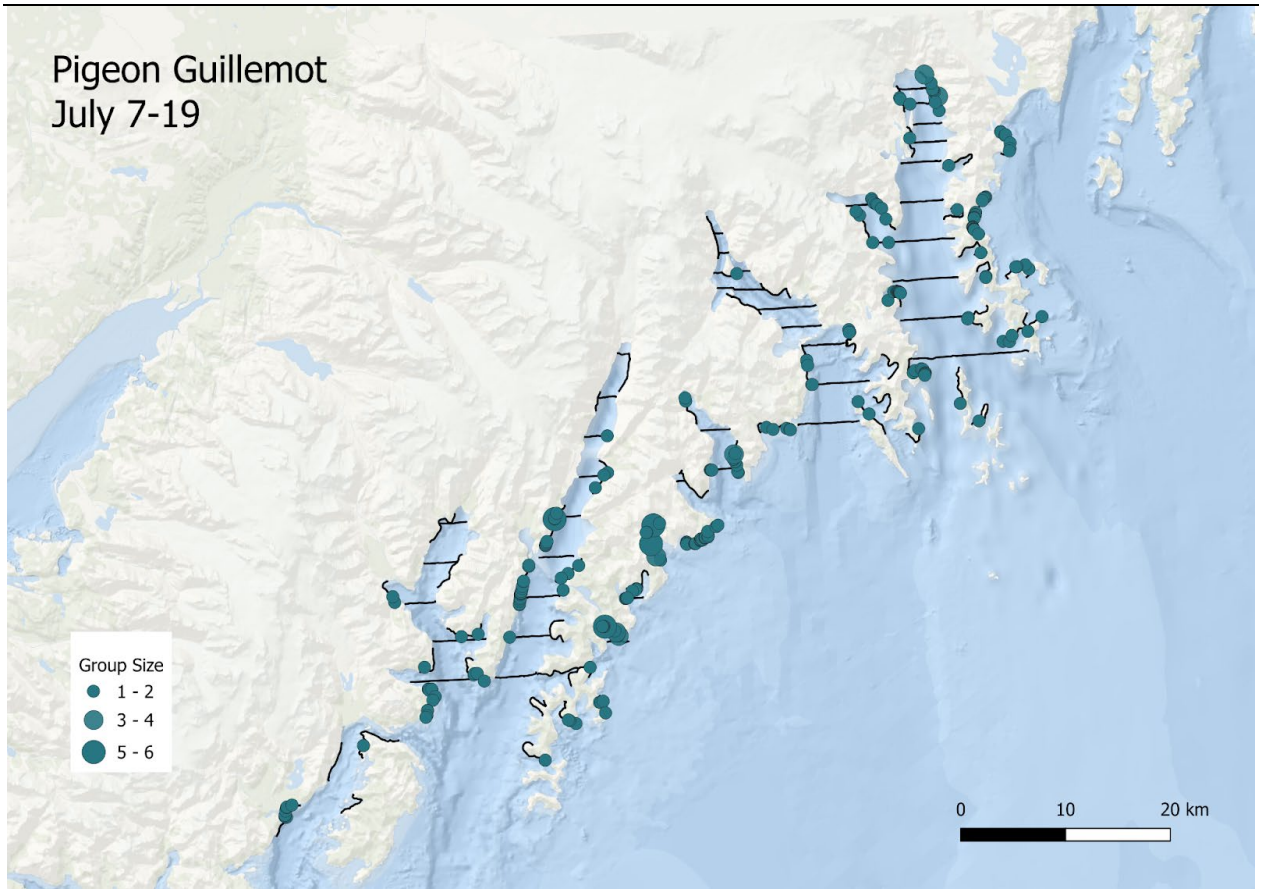


Figure 11. Distribution of pigeon guillemot sightings during the July 2023 survey.

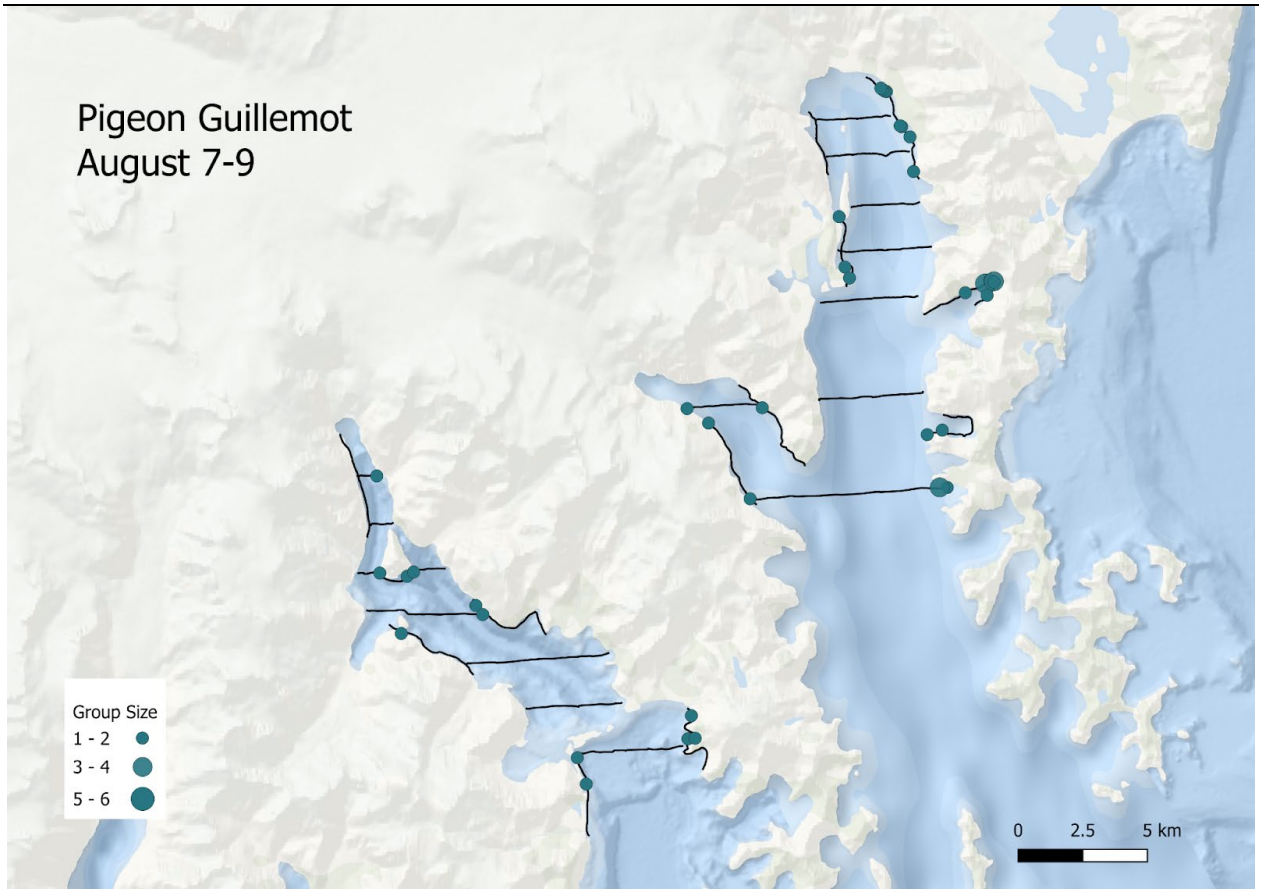


Figure 12. Distribution of pigeon guillemot sightings during the August 2023 survey.

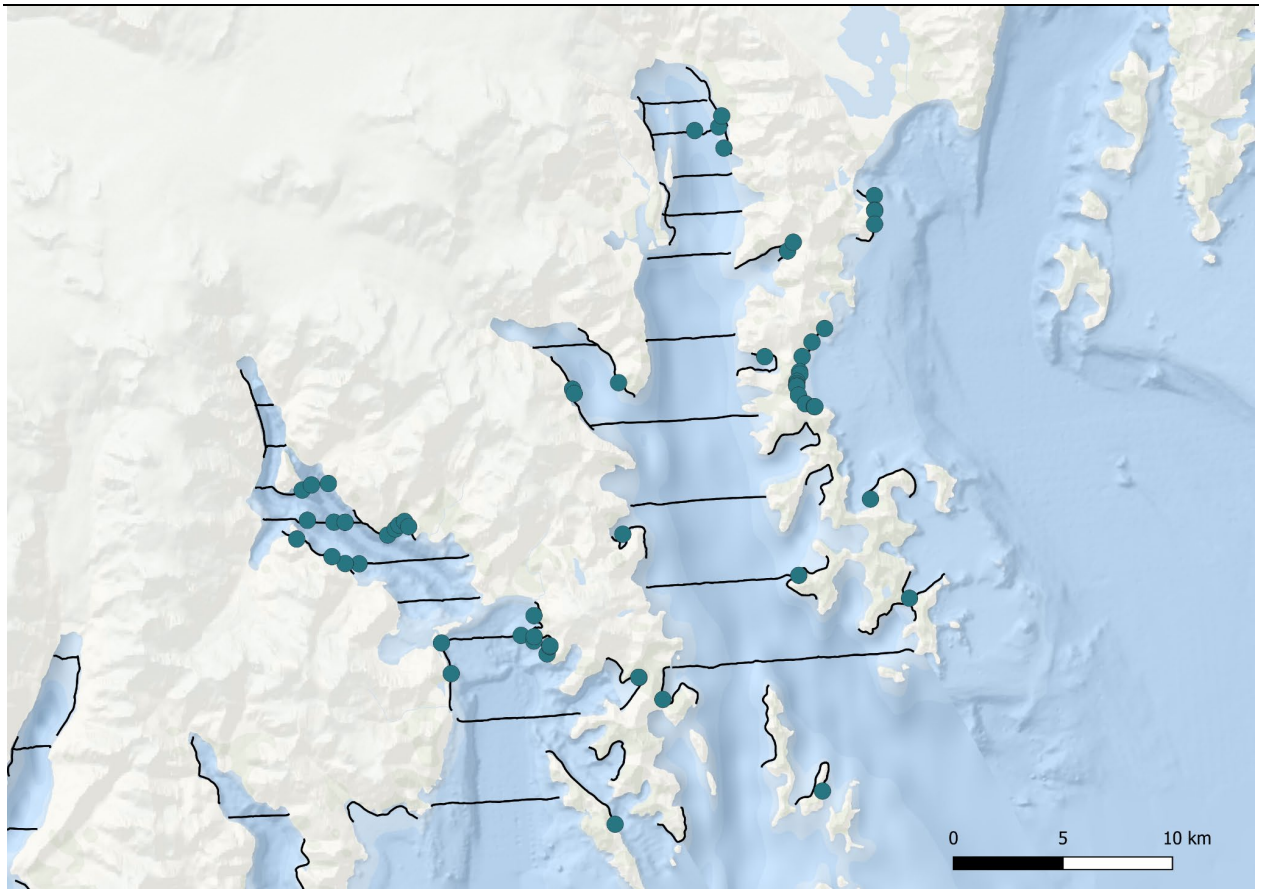


Figure 13. Locations of juvenile marbled murrelets in 2023. Juvenile marbled murrelets were observed during both the July and August surveys.

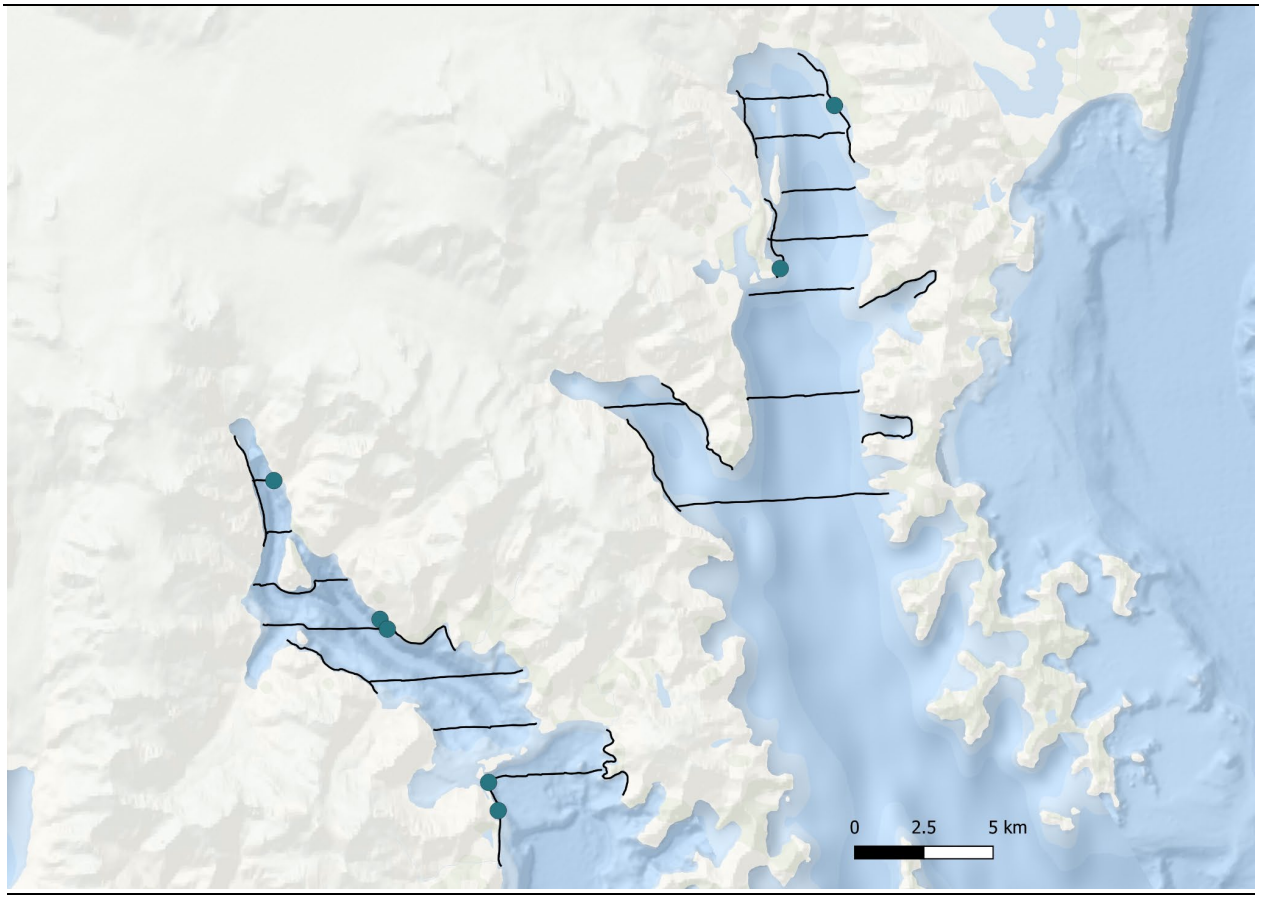


Figure 14. Locations of juvenile pigeon guillemots seen on August surveys in 2023.

Marbled murrelet and pigeon guillemot surveys were continued in upper and outer Resurrection Bay from July 20 - September 25, 2023 (Figure 15). Line 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 ($N = 9$) and outer Resurrection Bay ($N = 3$). Number, timing and distribution of observations are presented in Table 3.

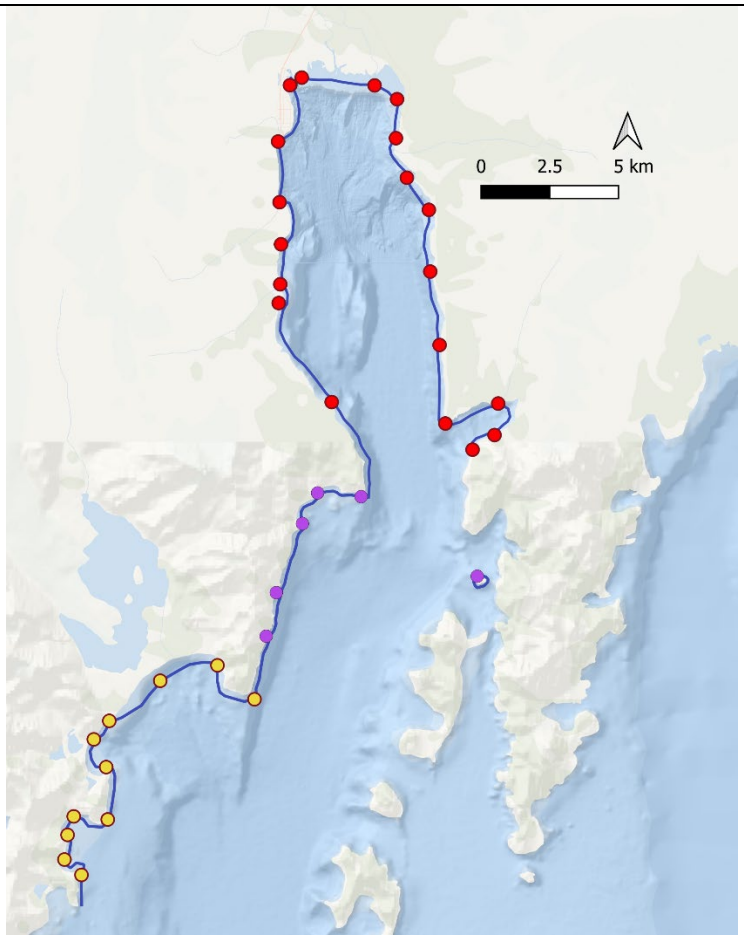


Figure 15. Survey route for marbled murrelets and pigeon guillemots in Resurrection Bay. Red points indicate beginning of upper bay transects and purple points are the beginning of an extended bay transect, these were conducted once every week from July 20 - September 25, 2023. The yellow points represent the beginning of outer bay transects which were surveyed once a month, two times total during July 20 - September 25, 2023

Table 3. Raw counts for murrelets and pigeon guillemots in Resurrection Bay surveys from July 20 - September 25, 2023 by age group.

Species	Adult	Juvenile	Unknown age
Marbled murrelet	1281	247	76
Kittlitz's murrelet	0	0	1
Unknown murrelet	1	0	0
Pigeon guillemot	361	21	4

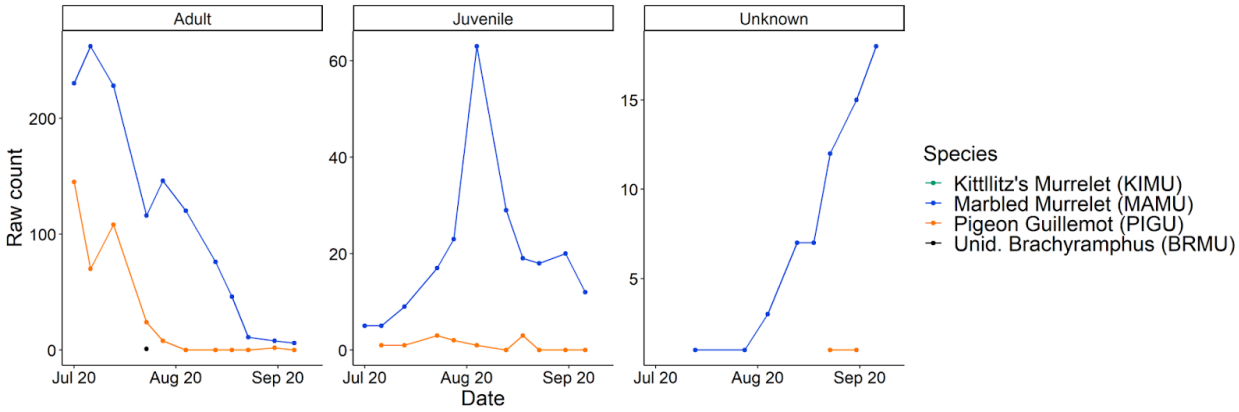


Figure 16. Timing of adult, juvenile, and unknown age murrelets and pigeon guillemots observations in surveys conducted during July 20 - September 25, 2023 in Resurrection Bay, Alaska. Observations include the upper bay and extended survey transects that were conducted weekly. One unknown age Kittlitz's murrelet was observed on August 18, and only one adult murrelet was unidentified.

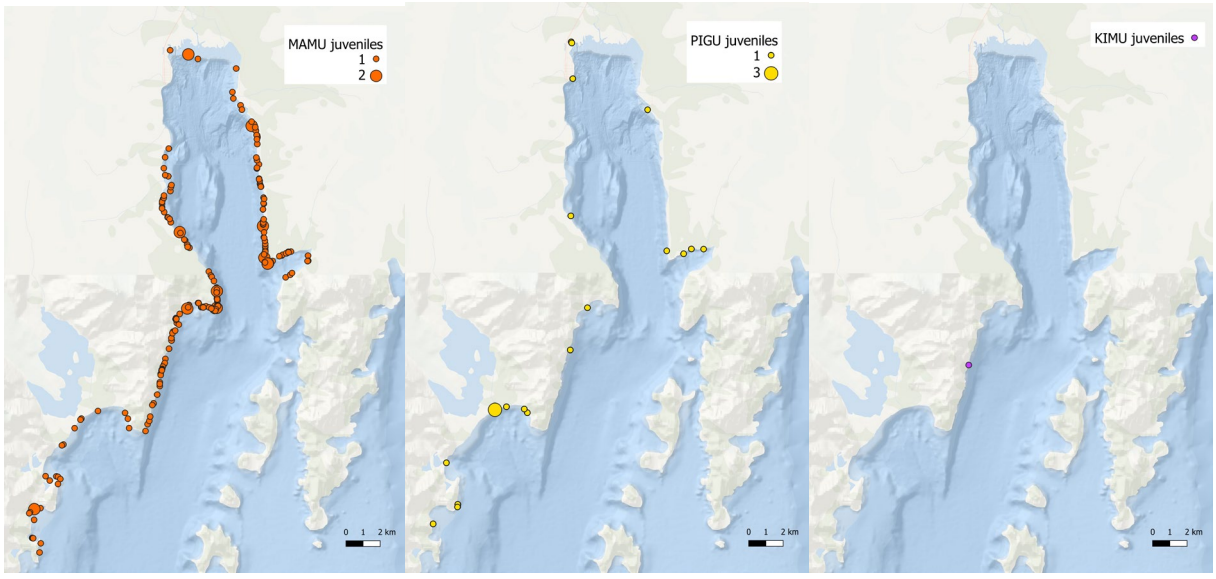


Figure 17. Observations of marbled murrelet, pigeon guillemot, and Kittlitz's murrelet juveniles in upper and outer Resurrection Bay from July 20 - September 25, 2023.

In 2023, we collected data on fjord hydrography at oceanography stations established by Gay and Armato (1999) and used by Arimitsu et al. (2012) (Figure 18). We conducted a total of 60 CTD casts in Aialik, Northwestern, and McCarty fjords (Table 4). Data was collected using a RBR Concerto CTD equipped with a turbidity sensor deployed with an electric fishing reel from the survey vessel. Preliminary findings from 2023 are shown in Figures 19-24.

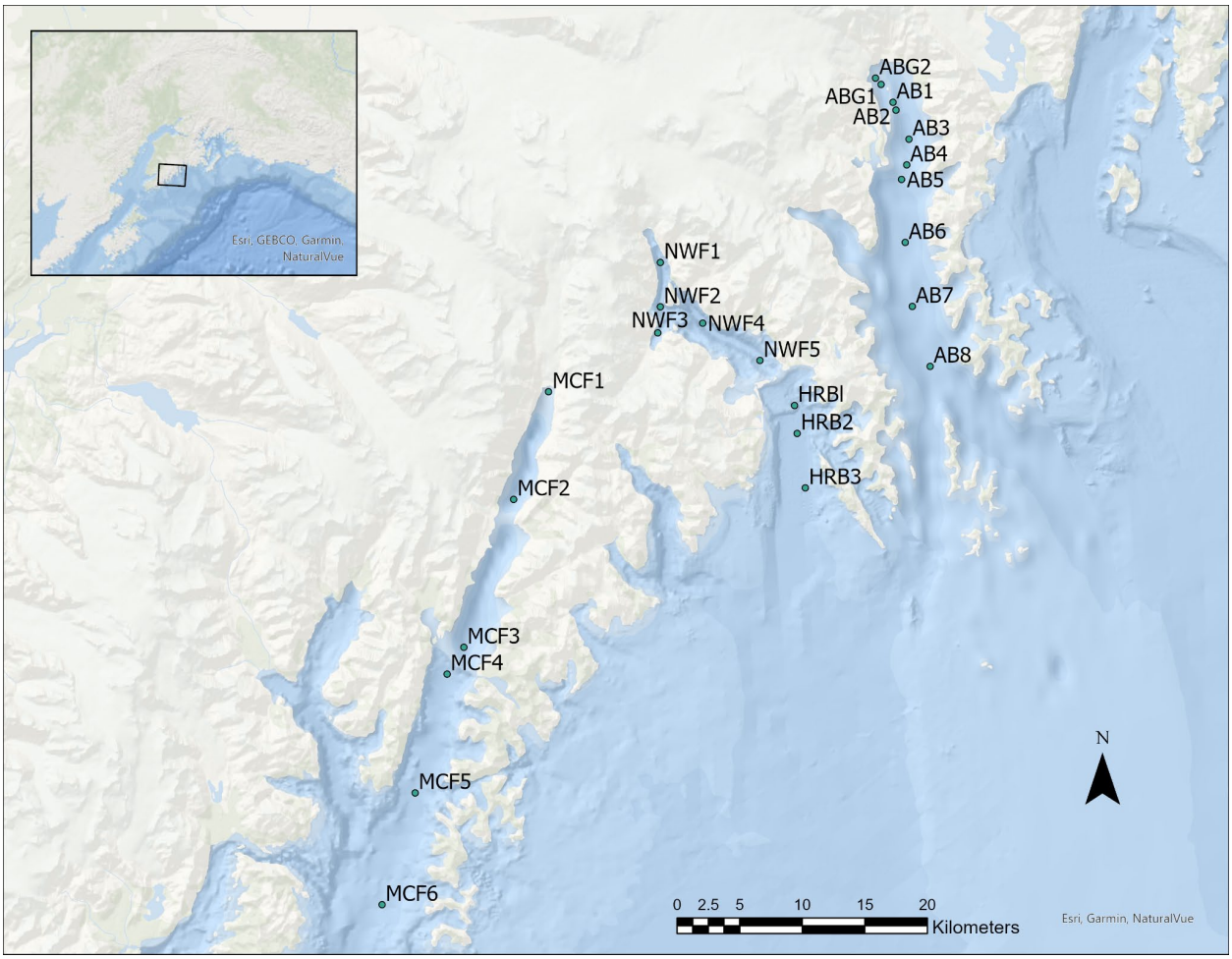


Figure 18. Map of oceanography stations surveyed in 2022. Stations were established by Gay and Armato (1999) and sampled by Arimitsu et al. (2012).

Table 4. Number of CTD casts in 2023 in the Kenai Fjords study area, by season and fjord.

	Early	Middle	Late
Aialik	10	10	10
Northwestern	8	8	8
McCarty	0	6	0

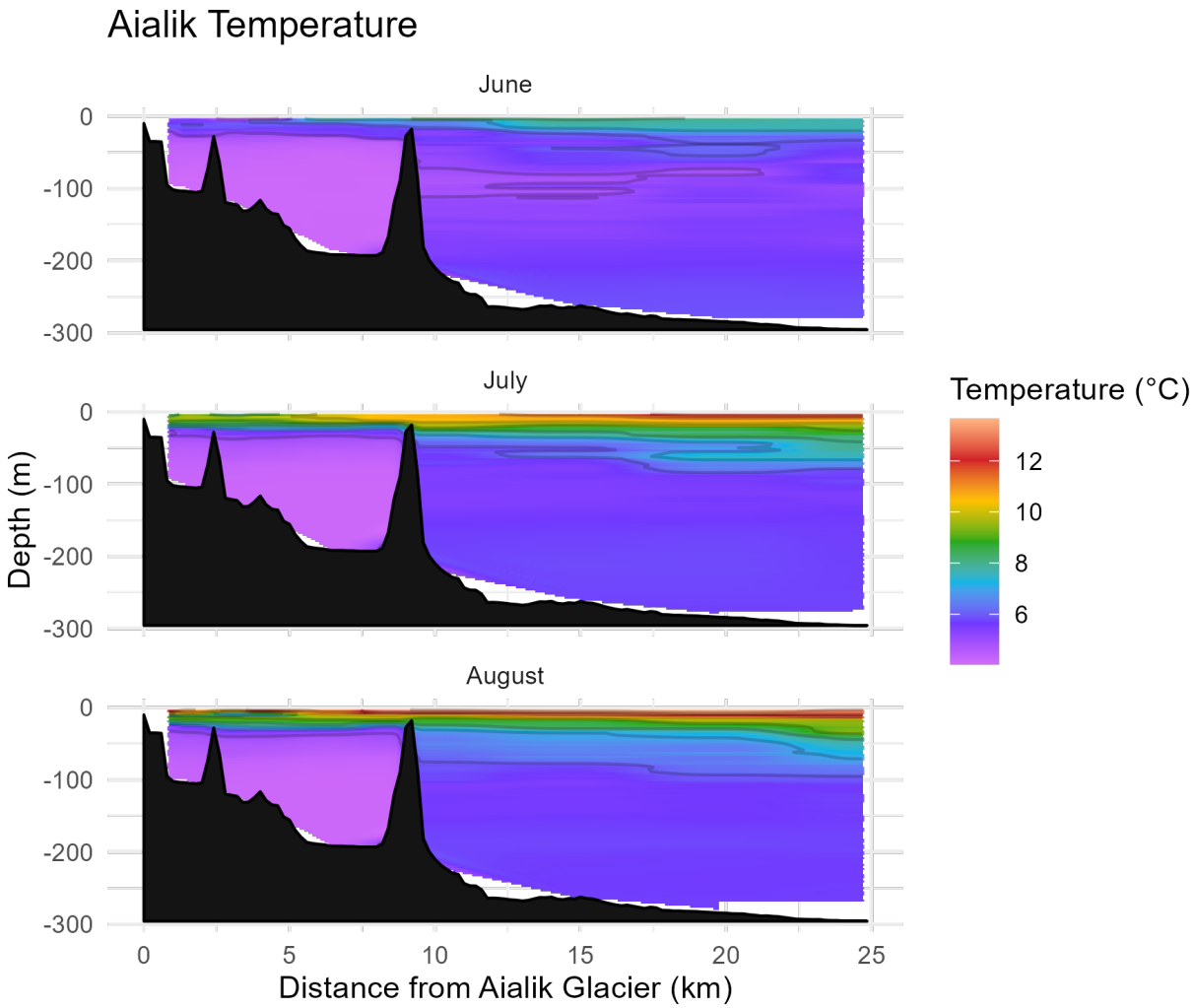


Figure 19. Latitudinal cross-section of water column temperature in Aialik Fjord during EVOSTC surveys in 2023. Measurements were taken using an RBR CTD.TU and interpolated using splines.

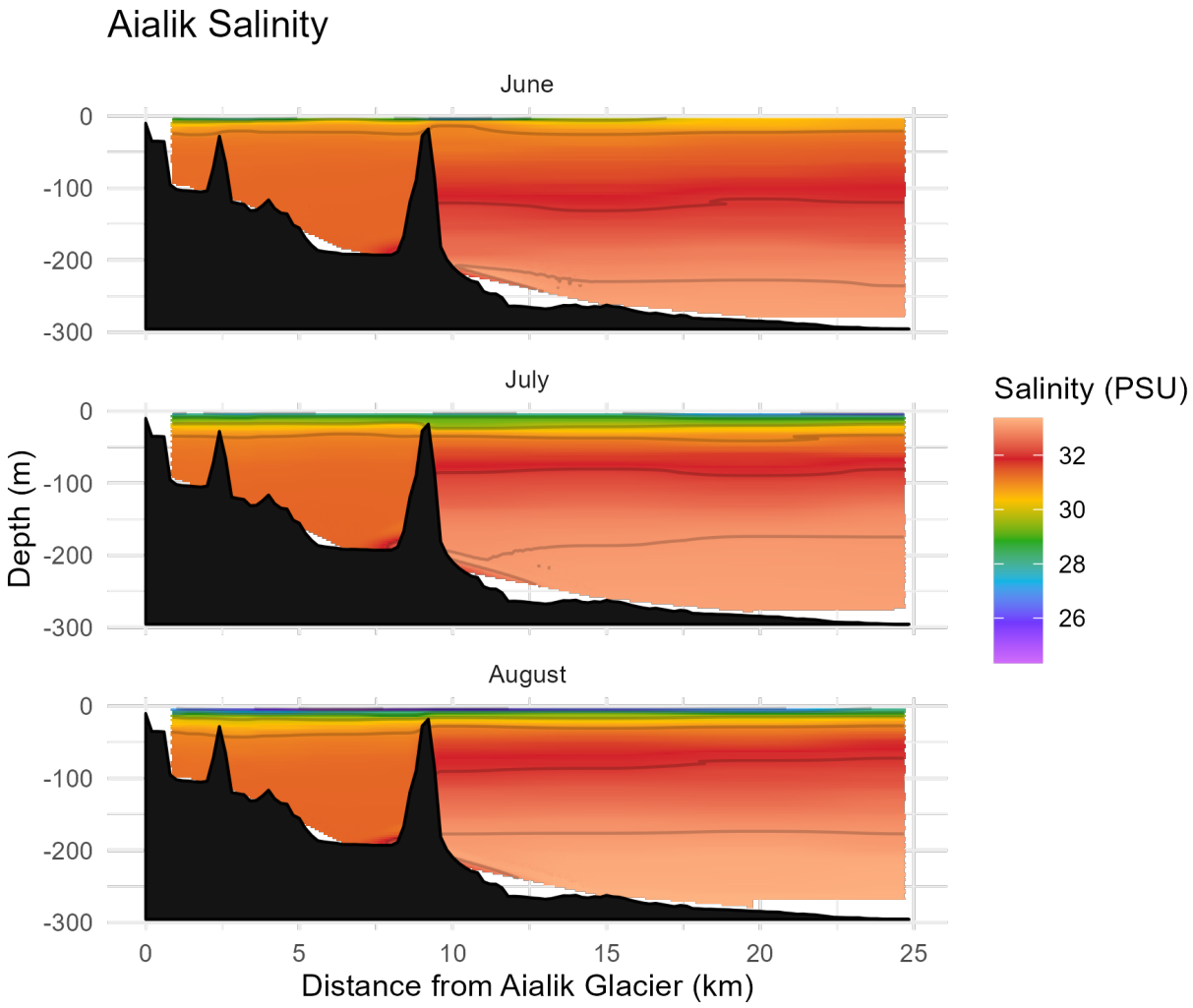


Figure 20. Latitudinal cross-section of water column salinity in Aialik Fjord during EVOSTC surveys in 2023. Measurements were taken using an RBR CTD.TU and interpolated using splines.

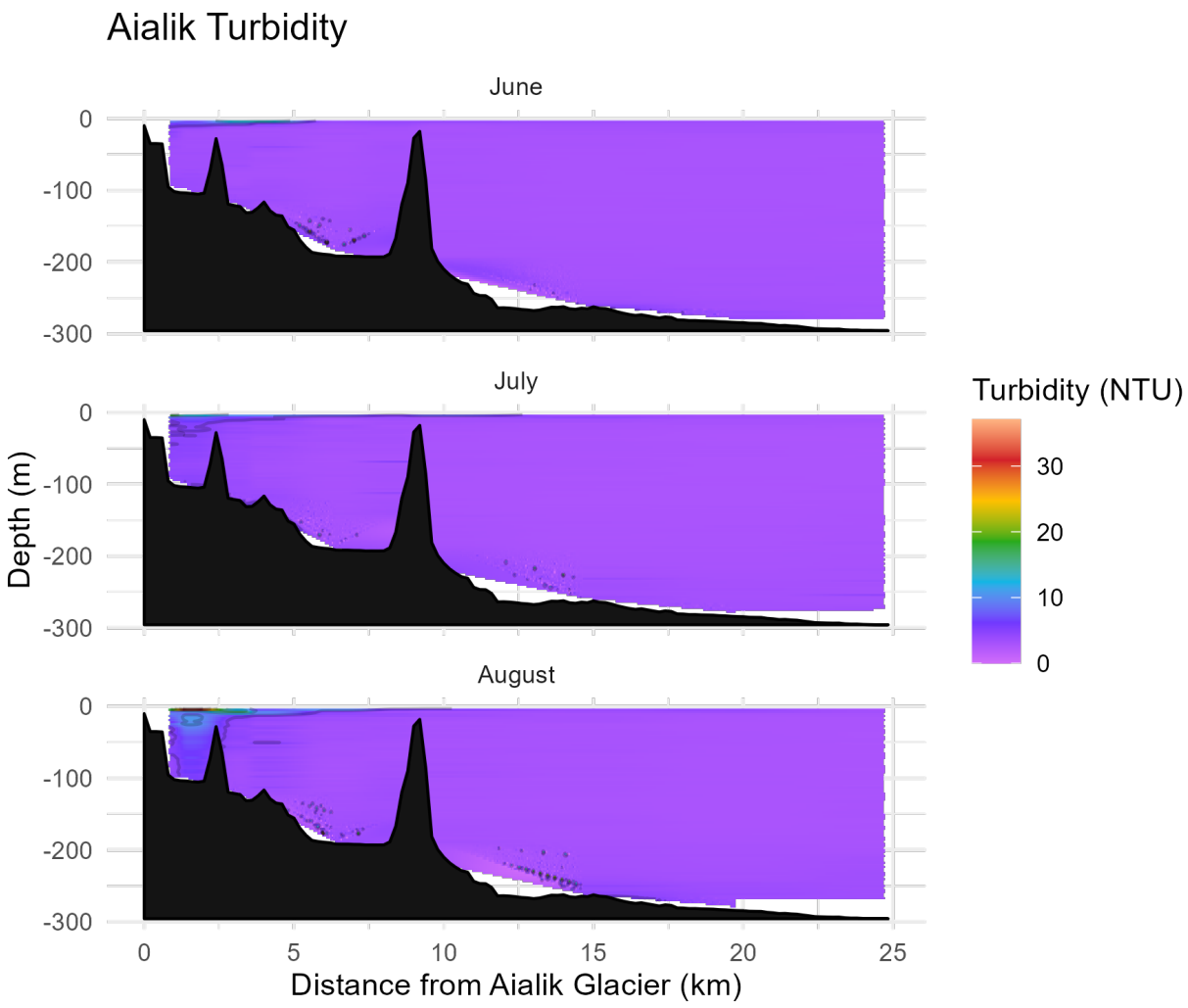


Figure 21. Latitudinal cross-section of water column turbidity in Aialik Fjord during EVOSTC surveys in 2023. Measurements were taken using an RBR CTD.TU and interpolated using splines.

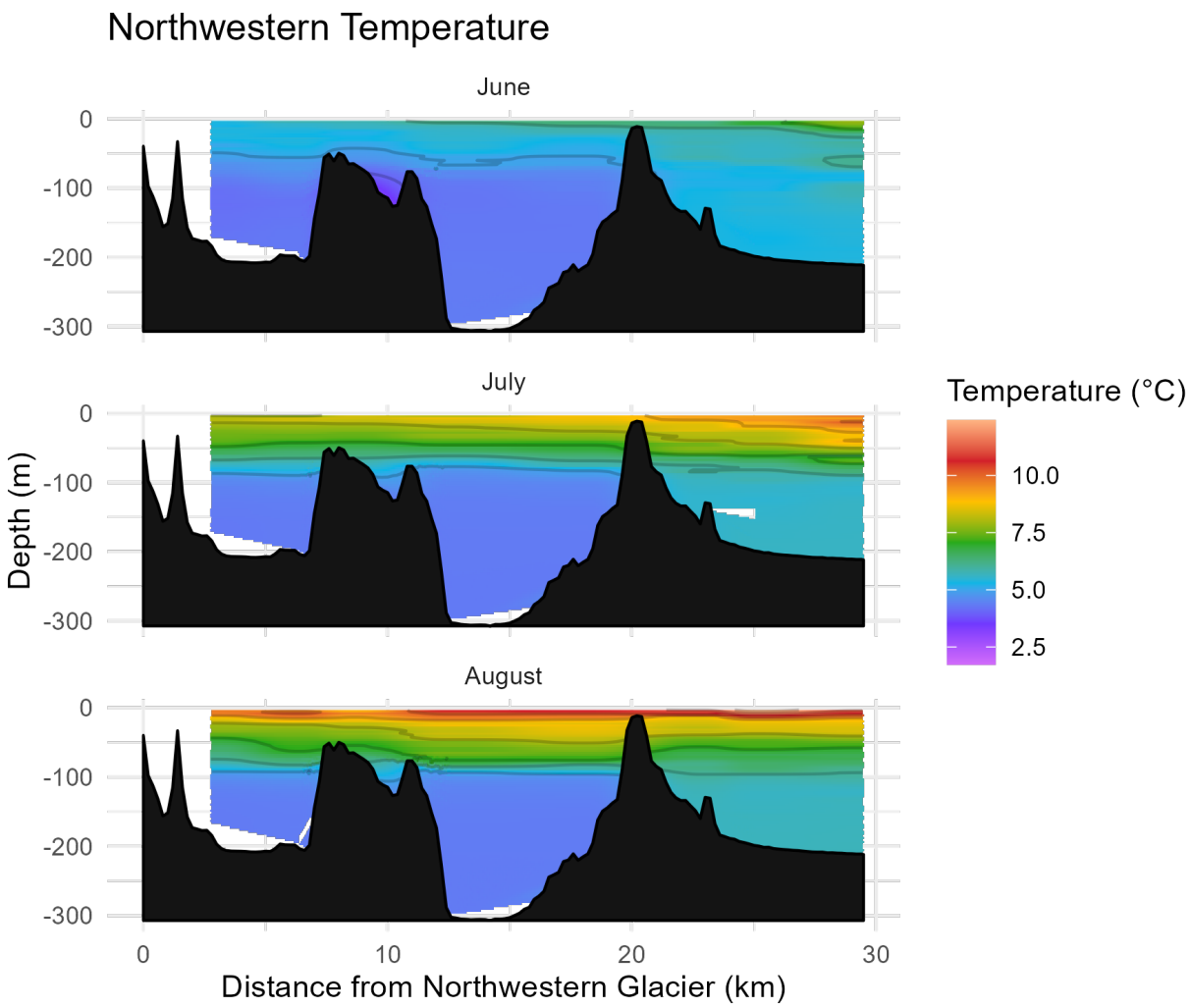


Figure 22. Latitudinal cross-section of water column temperature in Northwestern Fjord during EVOSTC surveys in 2023. Measurements were taken using an RBR CTD.TU and interpolated using splines.

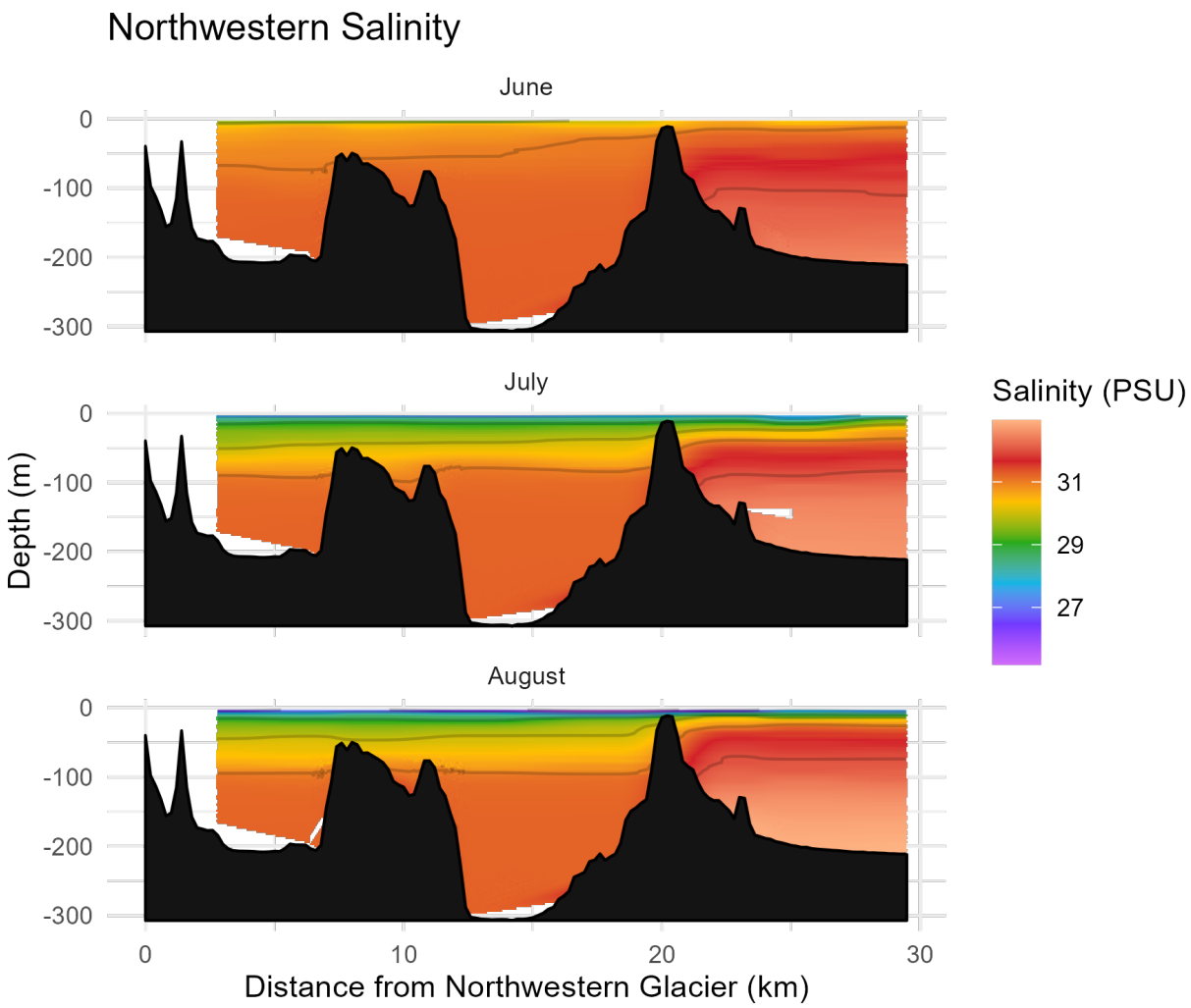


Figure 23. Latitudinal cross-section of water column salinity in Northwestern Fjord during EVOSTC surveys in 2023. Measurements were taken using an RBR CTD.TU and interpolated using splines.

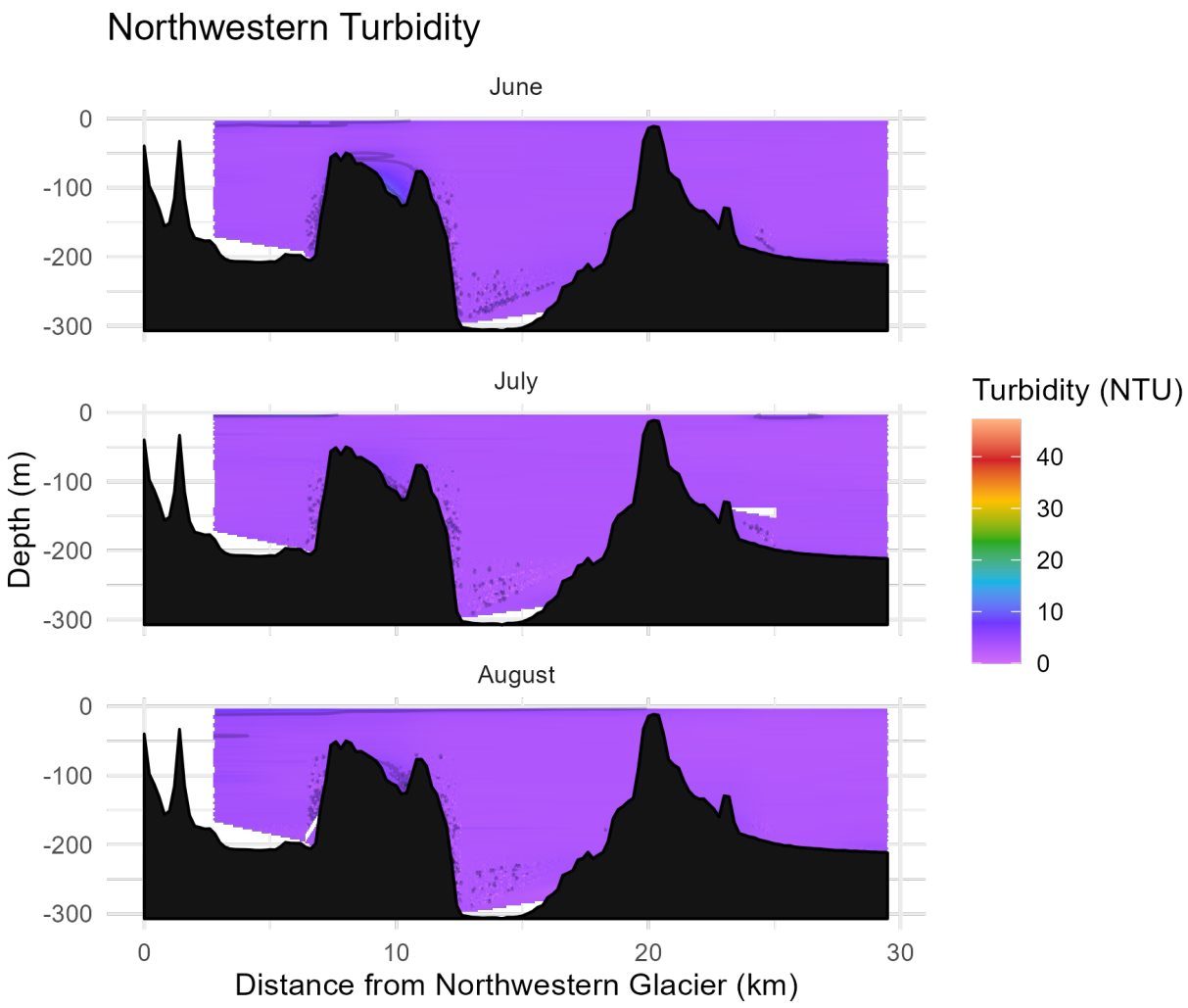


Figure 24. Latitudinal cross-section of water column turbidity in Northwestern Fjord during EVOSTC surveys in 2023. Measurements were taken using an RBR CTD.TU and interpolated using splines.

Kachemak Bay Component

The Kachemak Bay component in 2023 conducted the third field season in coordination with the Kenai Peninsula Coast component. The third year of this study aimed to derive a robust population estimate for injured marine bird species that have not recovered following the *Exxon Valdez* oil spill, including *Brachyramphus* murrelets, in Kachemak Bay, Alaska.

In 2023 we successfully completed our primary set of transects in Kachemak Bay and additional historic transects that parallel the inner bay (Figure 25). Surveys were conducted in Kachemak Bay during July 13- July 23, 2023. Twenty-four line transects bisecting the bay (north/south) were surveyed in July totaling ~435 km in Kachemak Bay. In additional we surveyed four historic transects parallel to the shore at the head of the bay totaling ~24 km allowing us to compare our results to historic data collected in the region dating back to 1988. We detected a total of 3493 marine birds and 800 marine mammals during the July surveys in Kachemak Bay (Table 5).

Kittlitz's murrelet observations (*N*=30) were generally low in Kachemak Bay (Table 5). Birds were primarily observed at the head of the bay, and in the outer bay along the northern shore (Figure 26). Marbled murrelets (*N*=475) were observed in larger numbers overall and were more widely distributed in Kachemak Bay. Core areas included the coastal waters in the far inner and outer bay regions (Figure 26). We also documented a total of 163 pigeon guillemots during the survey. The birds were mostly observed in the shallower nearshore waters along both coastlines. No guillemots were recorded in the deeper waters in the middle of the bay (Figure 26).

Marine mammals were also recorded during this survey with sea otters being the predominate marine mammal observed (Table 5, Figure 26). In addition, we recorded harbor porpoise, harbor seals, humpback whales, and killer whales in the bay (Table 5).

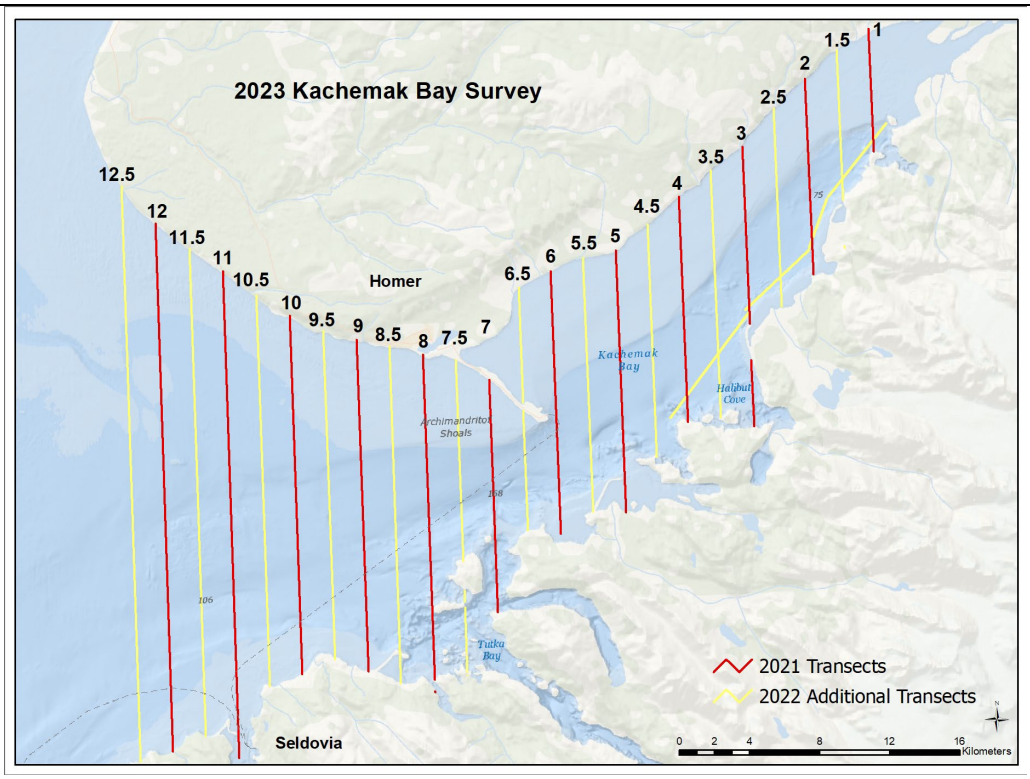
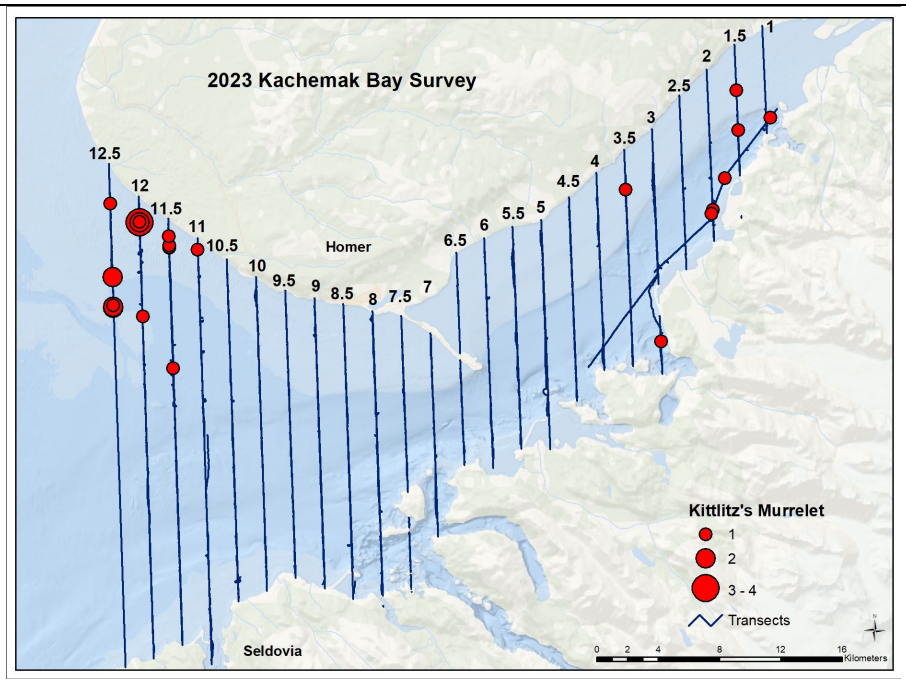


Figure 25. Transects surveyed in Kachemak Bay, Alaska, July 13 – July 23, 2023. Red lines represent the original set of transects surveyed in 2021. Yellow lines represent additional transects added and surveyed in 2022 and 2023.


2023 Kachemak Bay Survey
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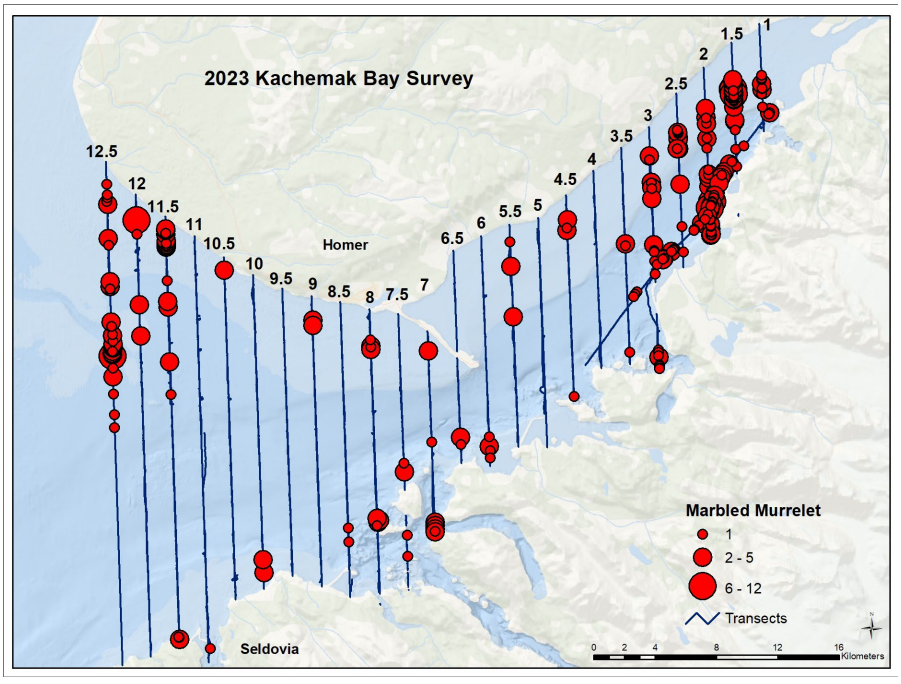
2023 Kachemak Bay Survey
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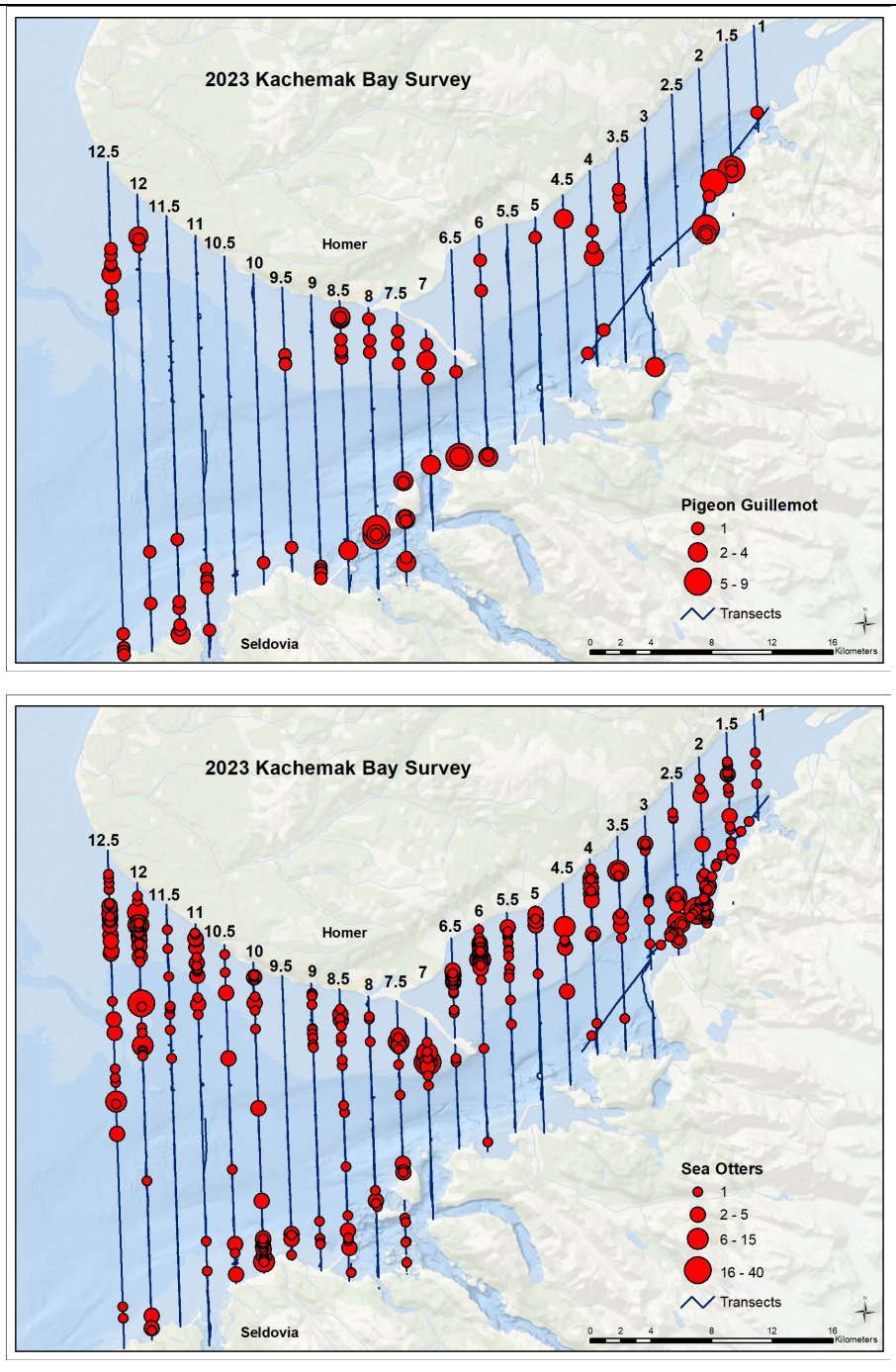

Figure 26. Species distribution maps for selected marine birds and sea otters in Kachemak Bay, Alaska, July 13 – July 23, 2023.

Table 5. Marine bird and mammal observations recorded on the water and in the air during surveys in Kachemak Bay, Alaska, July 13 – July 23, 2023.

English Name	Scientific Name	Number
Ancient Murrelet	*Synthliboramphus antiquus*	18
Arctic Tern	*Sterna paradisaea*	33
Bald Eagle	*Haliaeetus leucocephalus*	19
Black-legged Kittiwake	*Rissa tridactyla*	230
Brachyramphus Murrelet	*Brachyramphus spp.*	95
Common Loon	*Gavia immer*	46
Common Murre	*Uria aalge*	398
Dovekie	*Alle alle*	1
Fork-tailed Storm-petrel	*Hydrobates furcatus*	3
Glaucous-winged Gull	*Larus glaucescens*	84
Harlequin Duck	*Histrionicus histrionicus*	42
Harbor Porpoise	*Phocoena phocoena*	5
Harbor Seal	*Phoca vitulina*	29
Humpback Whale	*Megaptera novaeangliae*	4
Herring gull	*Larus argentatus*	6
Horned Puffin	*Fratercula corniculata*	19
Killer Whale	*Orcinus orca*	11
Kittlitz's Murrelet	*Brachyramphus brevirostris*	30
Marbled Murrelet	*Brachyramphus marmoratus*	475
Mew Gull	*Larus brachyrhynchus*	2
Northwestern Crow	*Corvus brachyrhynchos*	18
Northern Fulmar	*Fulmarus glacialis*	1
Parasitic Jaeger	*Stercorarius parasiticus*	1
Pacific Loon	*Gavia pacifica*	7
Pelagic Cormorant	*Urile pelagicus*	9
Pigeon Guillemot	*Cepphus columba*	163
Pomarine Jaeger	*Stercorarius pomarinus*	1
Red-necked Grebe	*Podiceps grisegena*	4
Red-necked Phalarope	*Phalaropus lobatus*	116
Sea Otter	*Enhydra lutris*	751
Surf Scoter	*Melanitta perspicillata*	145
Tufted Puffin	*Fratercula cirrhata*	8
Sooty Shearwater	*Ardenna grisea*	240
White-winged Scoter	*Melanitta deglandi*	50
Unid. Alcid	*Alcidae (Family)*	2

Unid. Bird	*Aves*	37
Unid. Cormorant	*Urile spp.*	2
Unid. Gull	*Larus spp.*	197
Unid. Loon	*Gavia spp.*	14
Unid. Murre	*Uria spp.*	1
Unid. Phalarope	*Phalaropus Spp.*	6
Unid. Scoter	*Melanitta spp.*	970

Integration Component

Data collection methods were coordinated between the two component areas by joint training in distance sampling methods, coordination of survey data entry systems, coordination of field work plans, and holding regular meetings among the team of investigators. Prior to the field season, we held a team meeting to review and coordinate field plans. Data management was coordinated by the development of a joint data management plan. To support integration, the joint project continued to standardize survey methods and protocols to facilitate future integrated data analysis between the two regions. Before the start of the surveys, we conducted test surveys, distance sampling tests, and coordinated the types of data to be collected during our respective surveys.

2. Products:

Peer-reviewed publications:

None at this time

Reports:

Annual EVOSTC Reports 2021 and 2022.

Popular articles:

None at this time

Conferences and workshops:

Higgins, B. A project overview at the Pacific Seabird Group Kittlitz's and Marbled Murrelet Technical Committee meeting, 2023.

Hollmen, T. Student scientists monitor Seabirds in Seward: Engaging community in observations of our bay, Seward Marine Science Symposium, 2023.

Labunski, E. A project overview at the Pacific Seabird Group Kittlitz's and Marbled Murrelet Technical Committee meeting, 2023.

Labunski, E., Kaler, R. A project update at the Fall Gulf Watch Alaska PI Meeting, 2023.

Schlener, J., Hollmen, T. SeeBird 2022-2023: A year engaging students in observations of our bay, Seward Marine Science Symposium, 2023.

Public presentations:

Hollmen, T. Project outreach presentations, ASLC Education and Public Outreach Programs, 2023

Labunski, E., Kaler, R., How are Kittlitz's Murrelets Coping with Melting Glaciers and Warming Oceans? Kachemak Bay Shorebird Festival, May 2023.

Schlener, J., Neiblum, S. Project outreach presentations at Seward Seabird Festival, June 2023.

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

Produced species summary tables and distribution maps for Resurrection Bay and Kenai Fjords.

Generated water column temperature, salinity and turbidity profiles for Kenai Fjords study sites.

Produced species summary tables and select species distribution maps for Kachemak Bay.

Data files from the 2023 field season are finalized and made available on the Research Workspace.

Data sets and associated metadata:

We are coordinating with Axiom Data Science to archive transect location information, survey data, analysis output, and associated metadata for the project. We have created a joint data management plan and a research workspace to archive subsequent data sets to ensure

comprehensive data sharing between the two project components. 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 US 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 and outreach aspects of our integrated project have been closely coordinated throughout the duration of our project. Prior to surveys, project PIs from both components conducted a field test in Seward, Alaska to coordinate survey methods between the two components of the project to ensure the standardization of data collection methods, and test distance sampling protocols. The team of investigators meets throughout the year to continue close coordination of integrated efforts.

EVOSTC Long-Term Research and Monitoring Projects

PI Labunski has participated in annual meetings of the EVOSTC LTRM program, presenting updates and facilitating coordination efforts between the projects. Future discussions will explore opportunities to share and integrate data for further region-wide analysis on trends and distribution of focal species, including sea otters. We attended the fall 2023 Gulf Watch Alaska PI meeting and presented an update to the group highlighting our projects objects and sampling schedule to seek collaborative opportunities. Marine bird and mammal data collected in this study will be available to researchers on the Northern Gulf of Alaska Long Term Ecological Research (NGA-LTER) projects. The Kenai Peninsula components coordinated shared efforts with NGA-LTER project PIs. Our project will provide marine bird and mammal distribution data and population estimates to the following projects to contribute to interpreting regionwide results: Project 22120114-M, Prince William Sound Marine Bird Population Trends and Offshore Surveys; Project 22110853, Pigeon Guillemot Restoration Research in Prince William Sound; Project 22120114-C, Long-term Changes in Forage Fish, Abundance, and Body Condition in PWS; and Project 22120114-H, Nearshore Ecosystem in the Gulf of Alaska.

EVOSTC Mariculture Projects

Data collected during our surveys will be made available to the mariculture projects in the region to assist in the development process. We have been in contact with Anne Schaefer (PWSSC) to discuss plans to coordinate marine bird and mammal surveys in Kachemak Bay to support the mariculture ReCon program (Project 22220302). We have shared information on the timing of our surveys in Kachemak Bay, discussed historic transects that have been conducted over the years in Kachemak Bay, and agreed to collaborate on data sharing in the future. Finalized datasets will be archived at the Project Workspace and the publicly available North Pacific Pelagic Seabird Database.

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.

The Kenai Peninsula Coast component participated with a booth in the Seward Seabird Festival in 2023, sharing information about our project with the public.

Co-PIs Elizabeth Labunski and Robb Kaler conducted a community presentation on Kittlitz's murrelets during the 31st Annual Shorebird Festival.

Trustee or Management Agencies

Several investigators in our project team are from the US Fish and Wildlife Service, facilitating close coordination of efforts between our project and the agency. Marine bird data collected during the project supports the USFWS-MBM mission to advance the conservation of migratory birds.

In addition to informing the EVOSTC regarding recovery of impacted resources, the project will inform other management agencies (ADF&G, AMNWR, BOEM, NPS, and USGS) with lands and waters in the Gulf of Alaska region. We also continue coordinating field and outreach efforts closely with our partners in the Kenai Fjords National Park.

Native and Local Communities

The Resurrection Bay survey is closely linked to a community science project established in Seward in 2018, engaging local high school students in marine bird observations thought the school year and lead by PI Hollmen. The student science education program is continuing during the school year of 2023-2024.

In Kachemak Bay, we presented at the annual Kachemak Bay Shorebird Festival in May 2023. We are currently in the planning process to present information at the 2024 Seabird Festival in Seward, Alaska.

We also look forward to coordinating future outreach opportunities in native and local communities by coordinating with the CORaL network to assist in facilitating additional outreach opportunities.

4. Response to EVOSTC Review, Recommendations and Comments:

Previous review recommendations have been incorporated into our study plan.

5. Budget:

Kenai Peninsula Coast Component

Budget Category:	Proposed FY 21	Proposed FY22	Proposed FY23	Proposed FY24	Proposed FY25	TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	$29,263.0	$30,141.0	$31,045.0	$31,977.0	$32,935.0	$155,361.0	$ 83,695
Travel	$595.0	$0.0	$0.0	$0.0	$670.0	$1,265.0	$ 473
Contractual	$72,300.0	$80,469.0	$76,702.0	$49,500.0	$50,985.0	$329,956.0	$ 68,426
Commodities	$5,000.0	$0.0	$0.0	$0.0	$0.0	$5,000.0	$ 17,250
Equipment	$5,000.0	$0.0	$0.0	$0.0	$0.0	$5,000.0	$ 13,118
Indirect Costs (*will vary by proposer*)	$34,291.0	$35,395.0	$34,479.0	$26,073.0	$27,069.0	$157,307.0	$ 54,350
SUBTOTAL	$146,449.0	$146,005.0	$142,226.0	$107,550.0	$111,659.0	$653,889.0	$ 237,311
General Administration (9% of subtotal)	$13,180	$13,140	$12,800	$9,680	$10,049	$58,850	$21,358
PROJECT TOTAL	**$159,629**	**$159,145**	**$155,026**	**$117,230**	**$121,708**	**$712,739**	**$ 258,669**
Other Resources (Cost Share Funds)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	N/A

COMMENTS:
This summary page provides an five-year overview of proposed 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, and preparation of data summaries.

Travel: Costs were as anticipated.

Contractual: Contractual costs included vessel charters, intern housing, and PI time. Due to the COVID-19 related delay in starting the coast wide surveys (start year for three-year surveys was moved from FY21 to FY22), the current cumulative costs are lower than originally anticipated at this time, but are as anticipated overall.

Commodities: Commodities costs were higher than originally anticipated, due to increased supply and shipping costs. Vessel fuel and food for fieldwork are also included in commodities.

Equipment: Oceanographic instrument cost was higher than originally anticipated.

Kachemak Bay Component

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	$65,767.2
Travel	$7,440.0	$15,300.1	$15,696.8	$16,105.9	$9,773.0	$64,315.8	$22,227.0
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	$0.0	$42,221.2	$19,985.5
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	$47,477.9	$511,461.7	$130,568.6
General Administration (9% of subtotal)	$8,427.2	$10,698.1	$11,456.3	$11,177.0	$4,273.0	$46,031.6	
PROJECT TOTAL	**$102,062.3**	**$129,566.2**	**$138,748.4**	**$135,365.3**	**$51,750.9**	**$557,493.2**	
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 FY23. Spending deviated more than 10% below projected amounts for FY23. Unspent funds will be rolled over to FY24. Additional details provide for each spending category in the budget section of the annual report. 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 cost were lower than the approved budget in FY23. Two seasonal employee's GS-7 salary was charged for the time that was allocated to prepare for the field study and associated time conducting surveys in Kachemak Bay in addition to FTE staff. Extra time was allotted to finalize QA/QC data edits.

Travel: Travel costs were slightly lower than the approved budget. In the original budget we planned on having crewmember switch out during the survey. COVID-19 mitigation policies prevented us from switching crewmembers out to lessen potential COVID-19 exposure risk. The survey crew traveled to Homer, AK by government vehicle and formed a "bubble environment" to minimize potential COVID-19 exposure. Airline travel was only utilized to travel to/from the Kachemak Bay Shorebird Festival during the outreach event.

Contractual: We anticipate procuring contractual obligations in FY24 once all field seasons are complete and are ready for analysis and integration.

Commodities: Commodities costs were lower than budgeted. We were able to maximize available FWS survey supplies to offset and minimize costs.

Equipment: In 2023 the survey vessel Sand lance underwent annual mechanical maintenance inspection, and it was determined that only minor repairs and maintenance measures were required as part of the annual operations. The in addition to the minor repairs, it was determined that the vessel required the replacement of canvas wall covers that are used in the outer part of the vessel to protect occupants from inclement weather while the vessel is underway. In FY23 we were also able to complete the planned purchase of 2 survey laptops as originally outlined in our proposal. Supply chain issues in FY21 & FY22 prevented us from buying laptops earlier than originally planned given the purchase needed to go through the FWS purchasing supply chain for IT equipment.

Literature Cited

Arimitsu, M. L., Piatt, J. F., Madison, E. N., Conaway, J. S., 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

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., Labunski, E. A., 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.