Exxon Valdez **Oil Spill Trustee Council**

Long-Term Research and Monitoring, Mariculture, Education and Outreach

Annual Project Reporting Form

Project Number: 25120114-H

Project Title: Nearshore ecosystems in the Gulf of Alaska

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

Submission Date: March 16, 2026

Project Website: https://gulfwatchalaska.org/

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.**

FY25 brought significant personnel changes to the Federal agencies. Four permanent principal investigators (Esler, Lindeberg, Monson, and Weitzman) from the Nearshore Component left Federal service prior to the start of the field season. In addition, Federal hiring freezes (both for permanent and terms) continue into FY26. Staff shortages resulted in changes to operations in FY25. In addition to the recent losses, the U. S. Geological Survey has not been able to hire a

term biologist since the departure of Brian Robinson in 2023, nor will they be able to in the near term because Federal hiring freezes are ongoing. We used a combination of existing PIs, temporary staff, and university partners to complete tasks in 2025. With Dan Esler's departure, Sarah Traiger is now the U. S. Geological Survey co-lead for the Nearshore Component.

1. Summary of Work Performed:

We conducted nearshore marine ecosystem monitoring in four regions within the spill-affected area of the northern Gulf of Alaska (GOA): Western Prince William Sound (WPWS), Kenai Fjords National Park (KEFJ), Kachemak Bay (KBAY), and Katmai National Park and Preserve (KATM). The nearshore monitoring program focuses on sampling numerous ecosystem components in the GOA that are both numerically and functionally important, including kelps (and other marine algae), seagrasses (*Zostera* spp.), marine intertidal invertebrates, marine birds, black oystercatchers (*Haematopus bachmani)*, sea otters (*Enhydra lutris*), and physical properties. Our nearshore monitoring has been carefully designed, with coordinated sampling of all metrics, to detect changes and provide insights into drivers of change observed at different spatial and temporal scales. Our objectives are as follows:

- Determine status and detect patterns of change in a suite of nearshore species and communities.
- Identify temporal and spatial extent of observed changes.
- Identify potential causes of change in biological communities, including those related to climate change.
- Communicate observations to the public and resource managers to conserve and manage nearshore resources.
- Continue restoration efforts to evaluate the current status of spill-injured resources and identify factors potentially affecting present and future trends in population and ecosystem status.

The design features of the Nearshore Component include a rigorous site selection process that allows statistical inference over various spatial scales (e.g., GOA and regions within the GOA) as well as the capacity to evaluate potential effects from more localized sources, and especially those resulting from human activities, including lingering effects of the *Exxon Valdez* oil spill (EVOS). In addition to detecting change at various spatial scales, design features incorporate

both static (e.g., substrate, exposure, bathymetry) and dynamic (e.g., variation in oceanographic conditions, productivity, and predation) drivers as potential mechanisms responsible for change. More than 200 species dependent on nearshore habitats, many with well recognized ecological roles in the nearshore food web, are monitored annually within the four regions in the GOA. Evaluation of change in those species over time in relation to well defined drivers supports accurate measures of change, provides defensible conclusions related to causes, and supports management and policy needs regarding nearshore resources.

In 2025, we completed all aspects of the nearshore monitoring component across three of the four regions. Due to staffing shortages and logistical constraints, the full suite of nearshore sampling did not occur in KEFJ. However, the marine bird and mammal surveys were completed in 2025 in KEFJ. The status of *all* measured metrics was reported on recently (Coletti et al. 2023) through 2021. However, for the 2025 annual report, we report on intertidal water temperature and several intertidal indicators that represent key nearshore ecosystem processes, including primary production and prey abundance. As a prominent member of the nearshore marine bird community, we also report on trends in black oystercatcher nest density, productivity, and diet. As a top marine predator in the nearshore, we also report on several sea otter metrics such as trends in abundance and diet. We anticipate that with continued observable changes in prey availability, a response by upper-trophic level species may occur.

Nearshore water temperature across the GOA from Prince William Sound (PWS) to the Alaska Peninsula was elevated from 2014 through 2016 across all regions and into 2017 in WPWS and KEFJ (Danielson et al. 2022; Fig. 1). These results confirm that the 2014-2016 Pacific marine heatwave (PMH) in the GOA was expressed in intertidal zones in addition to known patterns in open ocean environments. While temperatures returned to cooler conditions in 2017, another heat spike was recorded in all regions in 2019. Temperatures then started to cool again the following year, although with higher among-region variability, than was observed prior to the heatwave. In 2025, at the time of collection (mid-summer), intertidal temperatures at the three regions surveyed were warmer than the average across the timeseries.

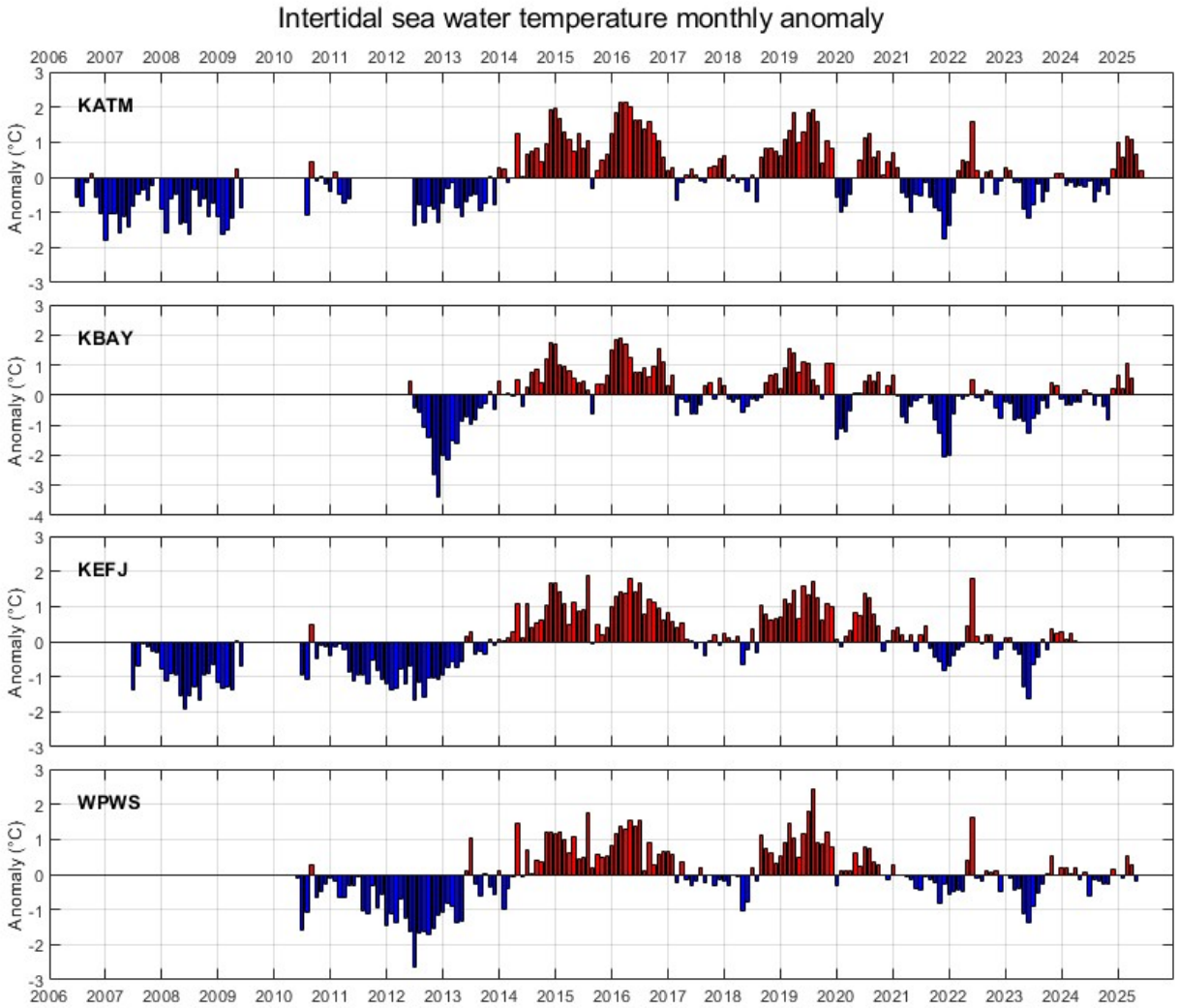

Figure 1. Monthly intertidal water temperature anomalies at the 0.5 m tide level four regions of the western Gulf of Alaska (west of 144°W), western Prince William Sound (WPWS; 2011-2025), Kenai Fjords National Park (KEFJ; 2008-2024), Kachemak Bay (KBAY; 2013-2025), and Katmai National Park adjacent to Shelikof Strait (KATM; 2006-2025). Tick marks indicate the start of the calendar year (January). Data sources are listed below under the Products section.

We examined rocky intertidal community structure at 21 sites across our four regions, spanning 1,200 km of coastline. Sites were monitored annually at mid and low tidal strata. During and after the PMH (2015-2019), we found that macroalgal foundation species (e.g., kelps and perennial seaweeds) declined across the study regions (Weitzman et al. 2021), which is evident here by the decline in *Fucus distichus* following the PMH at the 0.5 m (Fig. 2) and less evident at the 1.5 m tidal elevation (Fig. 3). The GOA-wide shift from a macroalgal dominated rocky intertidal to a filter-feeder dominated state concurrent with the changing environmental conditions associated with a marine heatwave event suggests the PMH had Gulf-wide impacts to the structure of rocky intertidal communities (Weitzman et al. 2021). Similarities in community structure increased across regions, leading to a greater homogenization of these communities and lower species diversity (Fig. 4). This was due to declines in macroalgal cover, driven mostly by a decline in the rockweed, *Fucus distichus*, and other fleshy red algae in 2015, followed by an increase in barnacle cover in 2016, and an increase in mussel cover in 2017 (Figs. 2 and 3). Increases in diversity were evident at the 0.5-m tidal elevation following the PMH and have stabilized in recent years (Fig. 4). Trends in diversity are less obvious at 1.5 m (Fig. 4). However, variability in community structure and increases in macroalgae following the PMH may be an indication of the ecosystem returning to one dominated by local-scale conditions compared to the large-scale effect of the PMH. In 2025, there were slight declines in kelp cover at both strata in KBAY compared to recent previous years (Figs. 2 and 3).

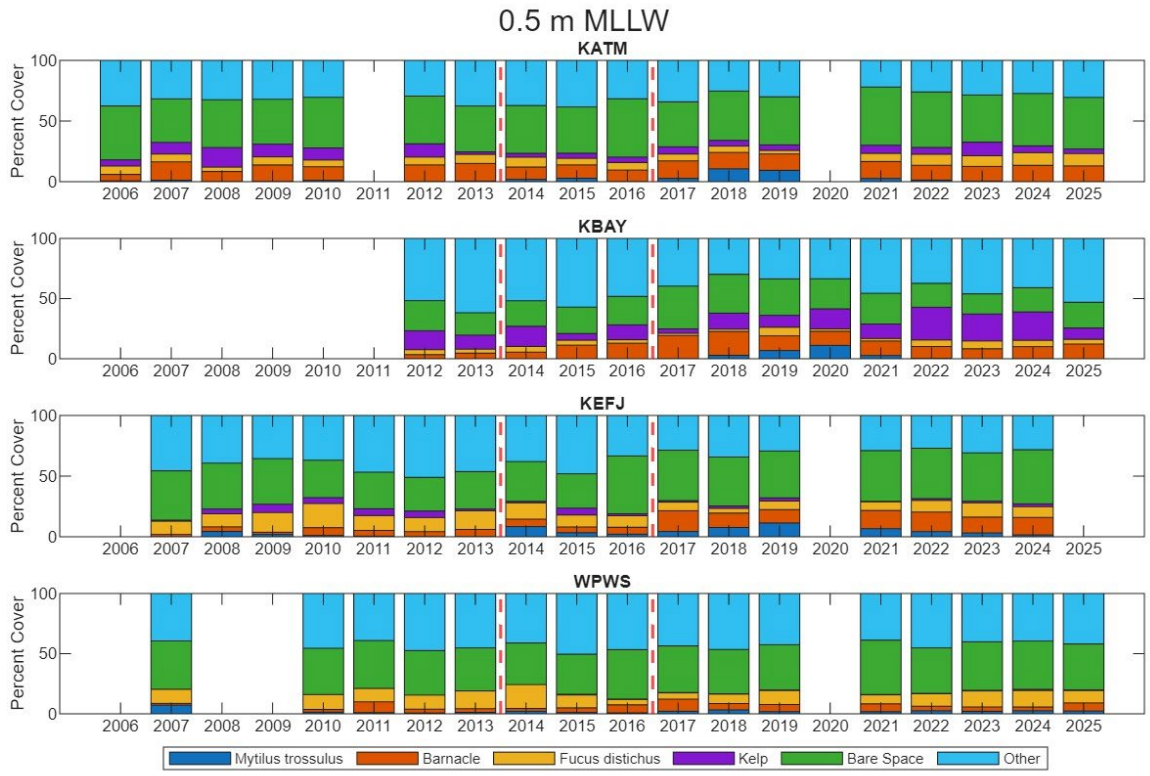

Figure 2. Percent cover of Mytilus trossulus, barnacles, Fucus distichus, kelps, bare substrate, and all other taxa at the 0.5 m tidal elevation relative to mean lower low water (MLLW) across the four Gulf Watch Alaska regions: Katmai National Park and Preserve (KATM), Kachemak Bay (KBAY), Kenai Fjords National Park (KEFJ), and Western Prince William Sound (WPWS), 2006-2025. "Other" includes all other macroalgae and sessile invertebrates. Dashed red line indicates the sampling years that fall within the Pacific marine heatwave. Note: 2020 intertidal was not sampled in all regions except KBAY because of the global pandemic. KEFJ was not sampled in 2025. Data sources are listed below under the Products section.

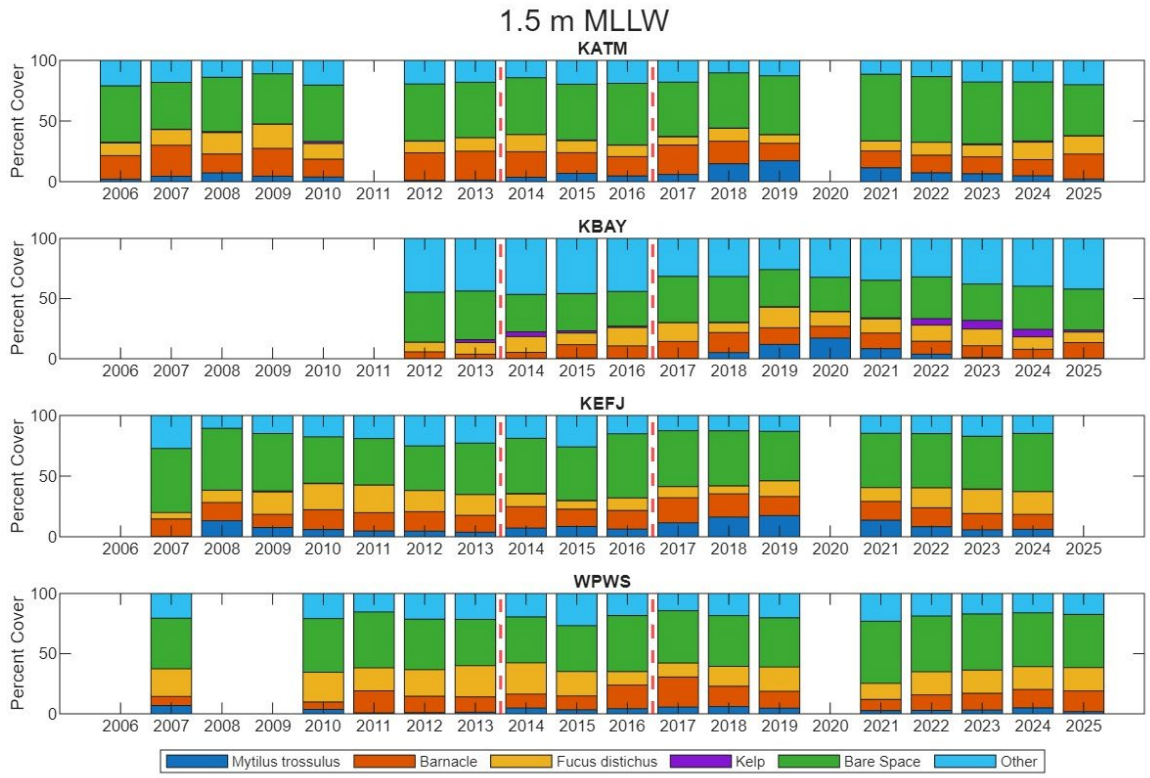

Figure 3. Percent cover of Mytilus trossulus, barnacles, Fucus distichus, kelps, bare substrate, and all other taxa at the 1.5 m tidal elevation relative to mean lower low water (MLLW) across the four Gulf Watch Alaska regions: Katmai National Park and Preserve (KATM), Kachemak Bay (KBAY), Kenai Fjords National Park (KEFJ), and Western Prince William Sound (WPWS), 2006-2025. "Other" includes all other macroalgae and sessile invertebrates. Dashed red line indicates the sampling years that fall within the Pacific marine heatwave. Note: 2020 intertidal was not sampled in all regions except KBAY because of the global pandemic. KEFJ was not sampled in 2025. Data sources are listed below under the Products section.

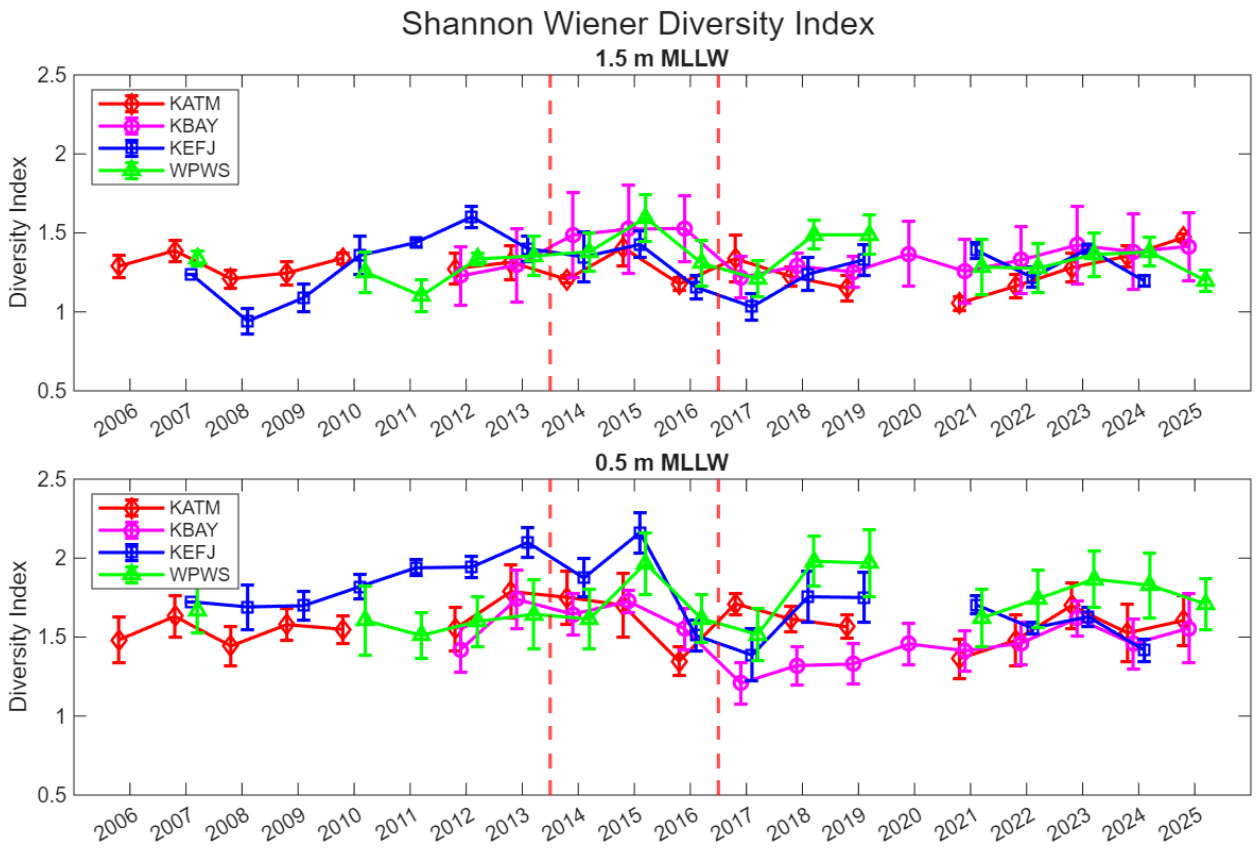

Figure 4. Shannon Wiener Diversity Index for all macroalgae and invertebrates at the 1.5 m and 0.5 m tidal elevation relative to mean lower low water (MLLW) across the four Gulf Watch Alaska regions: Katmai National Park and Preserve (KATM), Kachemak Bay (KBAY), Kenai Fjords National Park (KEFJ), and Western Prince William Sound (WPWS), 2006-2025. Error bars indicate ±1SE. Dashed red line indicates the sampling years that fall within the PMH. Note: 2020 intertidal was not sampled in all regions except KBAY because of the global pandemic. KEFJ was not sampled in 2025. Data sources are listed below under the Products section.

Specific mussel beds are sampled at each site within each region every year. Large mussel densities (≥ 20 mm) showed an overall positive trend across regions concurrent with timing of the PMH through 2019, although not consistent in timing across regions (Fig. 5). However, starting in 2022, KATM experienced declines in large mussel density, concurrent with positive trends in sea star abundance. This trend continued through 2025 (Figs. 5 and 6). Patterns in the

other three regions are less clear. KBAY had positive trends in large mussel density through 2023, but negative in 2024 and 2025. In 2025, large mussel density at WPWS remained at similarly low levels as in previous post-PMH years. As oceanographic conditions return to cooler temperatures, variability in mussel abundance at these regional spatial scales supports our conclusion that, in the absence of broad-scale perturbations like the PMH, other variables, including local conditions are more important drivers of mussel abundance (Bodkin et al. 2018, Traiger et al. 2022, LaBarre et al. 2023).

Variability in density and species composition of sea stars differed greatly among regions through 2015. Starting between 2015 and 2017, densities declined and remained strongly negative across all regions through 2019 (Fig. 6), with average to below average densities continuing through 2021. Declines were likely due to sea star wasting (Konar et al. 2019), possibly exacerbated by the PMH (Harvell et al. 2019). However, 2024 was the first year since monitoring began that all four regions exhibited positive star abundance trends, although to varying degrees. In 2025, sea star density at KATM was lower than in 2024, but still far above the long-term mean. Sea star density in KBAY in 2025 was the highest observed since sampling began, exceeding sea star density in 2016. Sea star density in WPWS in 2025 was slightly below the long-term mean. Data also indicated that variability in sea star species composition among (and within) regions has increased. In KATM in 2025, the proportion of *Evasterias* (46%) was only slightly higher than *Pisaster* (45%), in contrast to 2024 when *Evasterias* made up 66% of sea stars. In WPWS, *Dermasterias* continued to be the dominant species with 65% of sea stars, followed by *Pycnopodia* 26%, *Evasterias* at 6%, and *Pisaster* at 4%. In KBAY, the high star density observed in 2025 was mostly composed of *Evasterias* at 90%. Variability in the sea star assemblage (both by density and species composition) among regions and across years within regions may be an indication of the ecosystem returning to one dominated by local-scale conditions as opposed to driven by large-scale perturbations such as sea star wasting and the PMH.

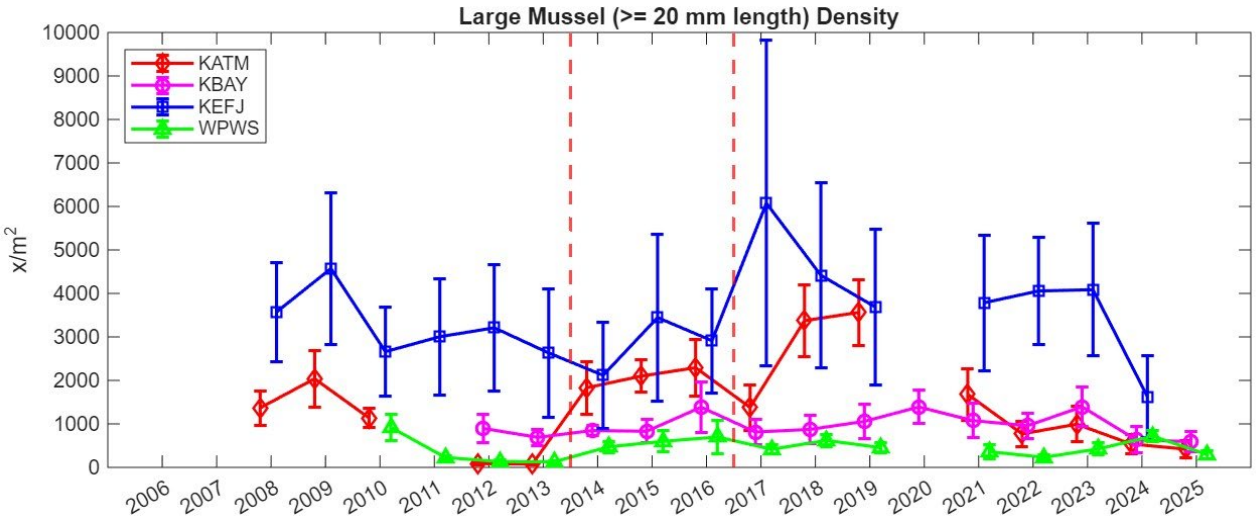

Figure 5. Large (>= 20 mm) mussel (Mytilus trossulus) density across four regions at mussel sites through 2025. Sampling started in 2008 in Kenai Fjords National Park (KEFJ) and Katmai National Park and Preserve (KATM), in 2010 in Western Prince William Sound (WPWS), and in 2012 in Kachemak Bay (KBAY). Error bars indicate ±1 SE. Dashed red line indicates sampling years that fall within the Pacific marine heatwave. Note: KEFJ was not sampled in 2025. Data sources are listed below under the Products section.

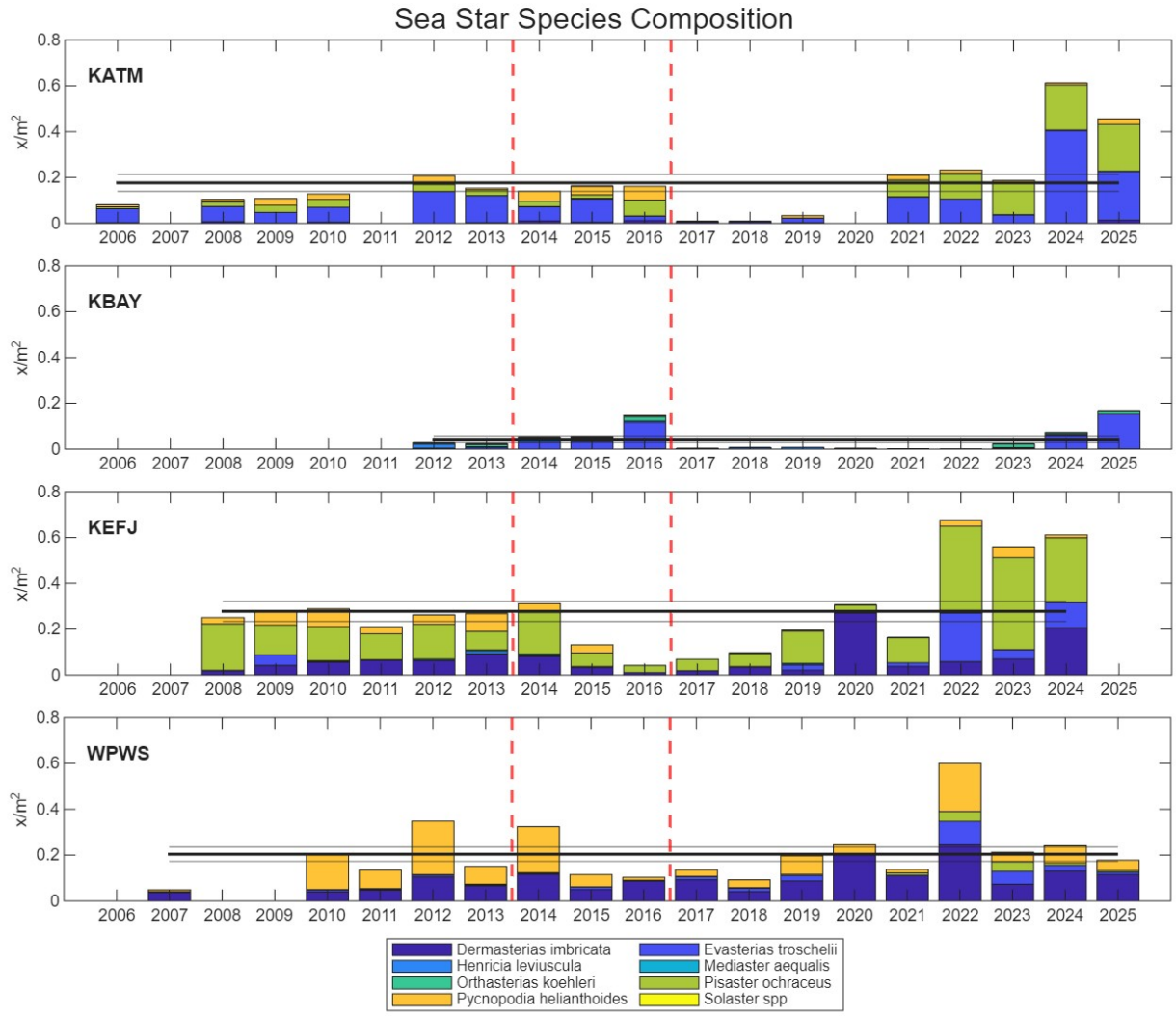

Figure 6. Sea star species composition and density across all four Gulf Watch Alaska regions through 2025: Katmai National Park and Preserve (KATM), Kachemak Bay (KBAY), Kenai Fjords National Park (KEFJ), and Western Prince William Sound (WPWS). The black horizontal line shows regional long-term mean total sea star density and the grey lines show ±1 SE. Dashed red line indicates sampling years that fall within the Pacific marine heatwave. Note: KEFJ was not sampled in 2025. Data sources are listed below under the Products section.

Infaunal bivalves are sampled in intertidal mixed sediment habitats every other year in all regions. Overall clam density and biomass were slightly lower in 2025 than the regional long-term means (Figs. 7 and 8). Clam biomass in KBAY increased in 2025 after having declined at each sampling since 2017. There was not a clear effect of the PMH on clam density or biomass (Figs. 7 and 8) (Robinson et al. 2023).

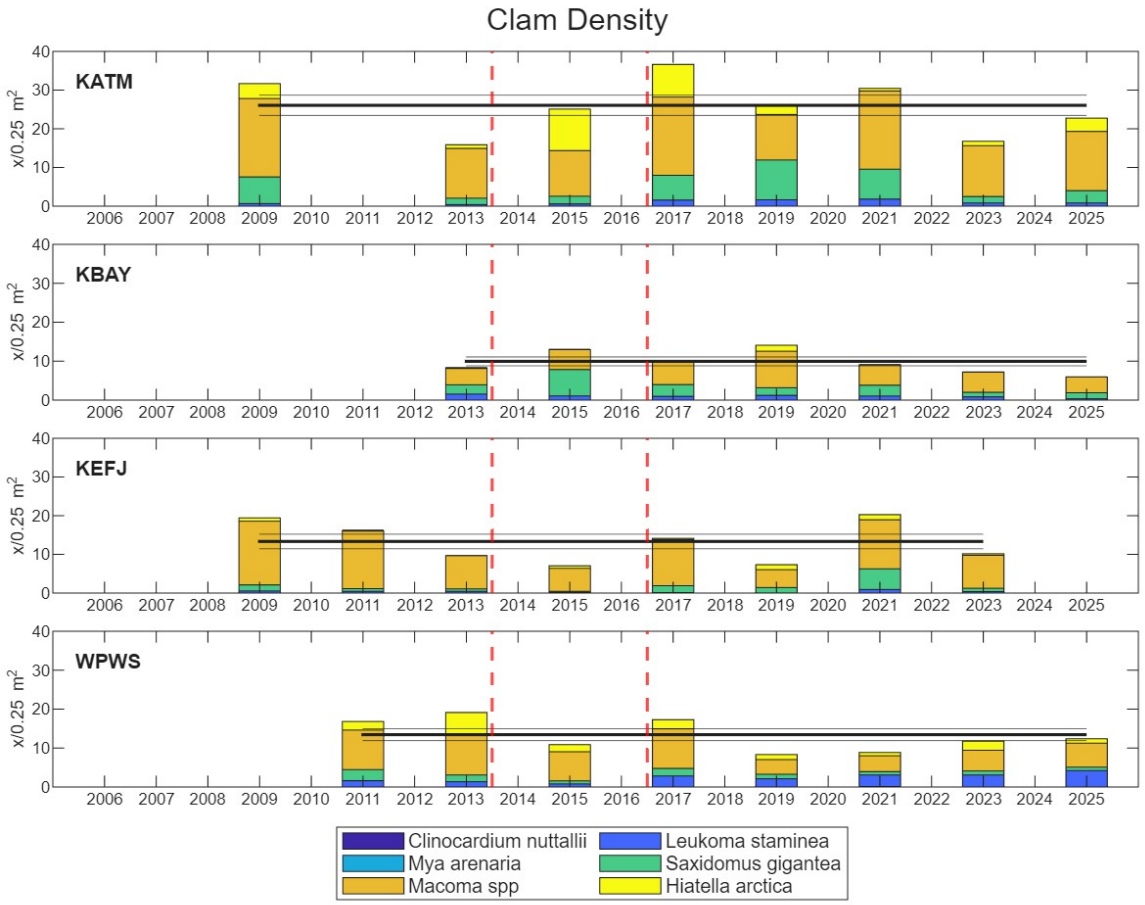

Figure 7. Clam density at the 0.0 m tidal elevation relative to mean lower low water (MLLW) across the four Gulf Watch Alaska regions: Katmai National Park and preserve (KATM), Kachemak Bay (KBAY), Kenai Fjords National Park (KEFJ), and Western Prince William Sound (WPWS). Sampling is done every other year and began in 2009 in KATM and KEFJ (KATM was not sampled in 2011, KEFJ was not sampled in 2025), in 2011 in WPWS and 2013 in KBAY. The black horizontal line shows regional long-term mean total clam density and the grey lines show ±1 SE. Dashed red line indicates sampling years that fall within the Pacific marine heatwave.

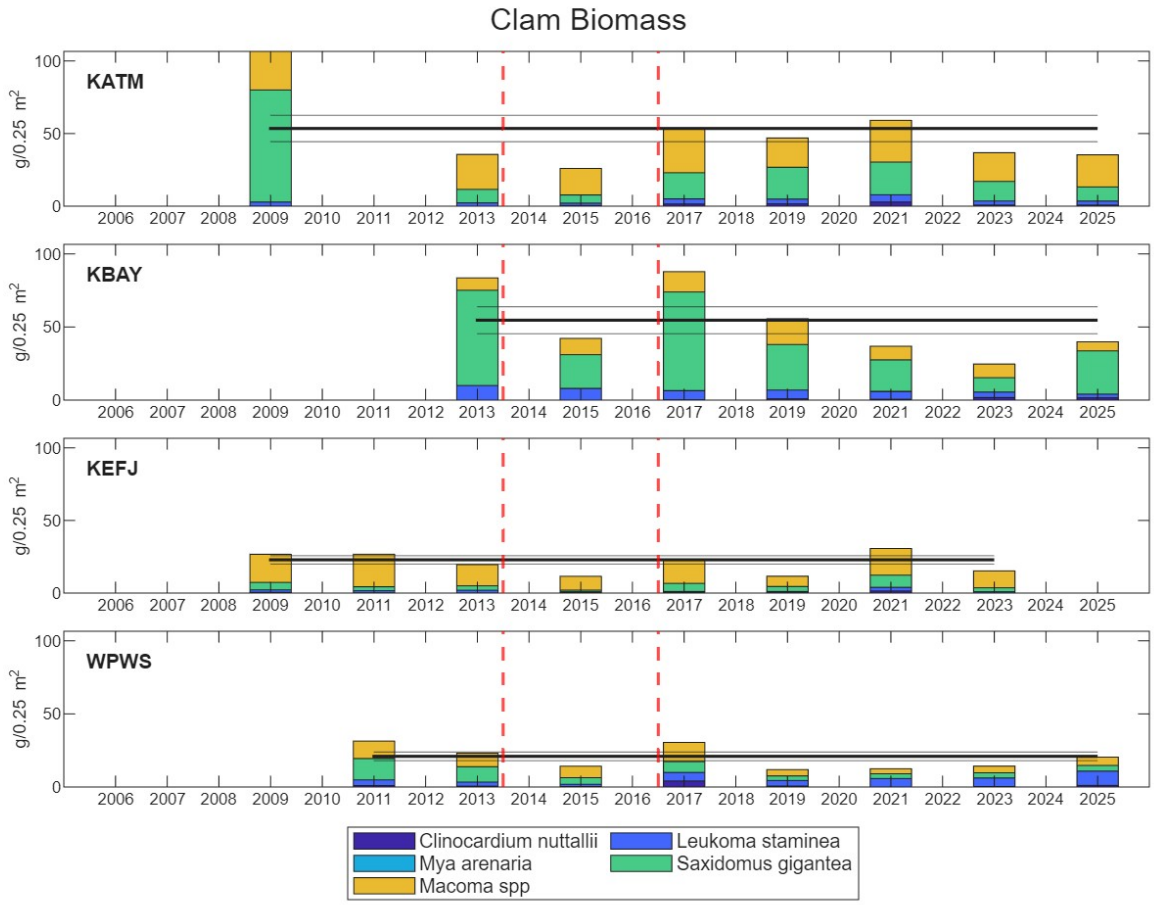

Figure 8. Clam biomass (grams of wet weight per 0.25 m^2) at the 0.0 m tidal elevation relative to mean lower low water (MLLW) across the four Gulf Watch Alaska regions: Katmai National Park and Preserve (KATM), Kachemak Bay (KBAY), Kenai Fjords National Park (KEFJ), and Western Prince William Sound (WPWS). Sampling is done every other year and began in 2009 in KATM and KEFJ (KATM was not sampled in 2011, KEFJ was not sampled in 2025), in 2011 in WPWS, and 2013 in KBAY. The black horizontal line shows regional long-term mean total clam biomass and the grey lines show ±1 SE. Dashed red line indicates sampling years that fall within the Pacific marine heatwave.

Collectively, these indicators demonstrate that consistent, broad-scale responses in nearshore ecosystems occurred coincident with the PMH throughout much of the northern GOA, including

both inland (WPWS, KBAY) and outer coast (KEFJ and KATM) sites. A comprehensive analysis of rocky intertidal community structure indicated a change of autotroph-macroalgal dominated communities to heterotroph-filter-feeder communities, ultimately resulting in homogenization of community structure across all four regions (Weitzman et al. 2021). During this same period, we found that the loss of sea stars allowed for the increase in mussel density due to a decline in predation pressure (Traiger et al. 2022). In addition, we note that the decline in *Fucus* observed across our study regions opened space in the intertidal for mussels to settle, further allowing for the increase in mussels across the Gulf. However, other factors such as predation pressure from nearshore vertebrates, shifts in primary productivity, and changes in environmental variables (salinity) may also influence mussel density (Traiger et al. 2022).

With these shifts in lower-trophic community structure, we hypothesized that responses to the PMH and sea star wasting (SSW) by upper-trophic level species, such as sea ducks and sea otters, would likely occur. For example, we examined the response in relative abundance of marine bird benthivores, like sea ducks, to the change in prey availability documented by the Nearshore Component. In general, marine bird species reliant on benthic marine invertebrates fared better than their piscivorous counterparts foraging on the pelagic marine ecosystem, indicating the food availability for benthivores mediated negative responses to the PMH (Robinson et al. 2023). This was particularly evident for Barrow's goldeneye (*Bucephala islandica*) and the black oystercatcher, both of which rely on mussels in their diet. As of 2025, the winter density estimate of Barrow's goldeneye remains stable in KATM and KEFJ following increases that started in 2016 in KATM and 2017 in KEFJ with no negative response to the PMH (Robinson et al. 2023; Fig. 9.).

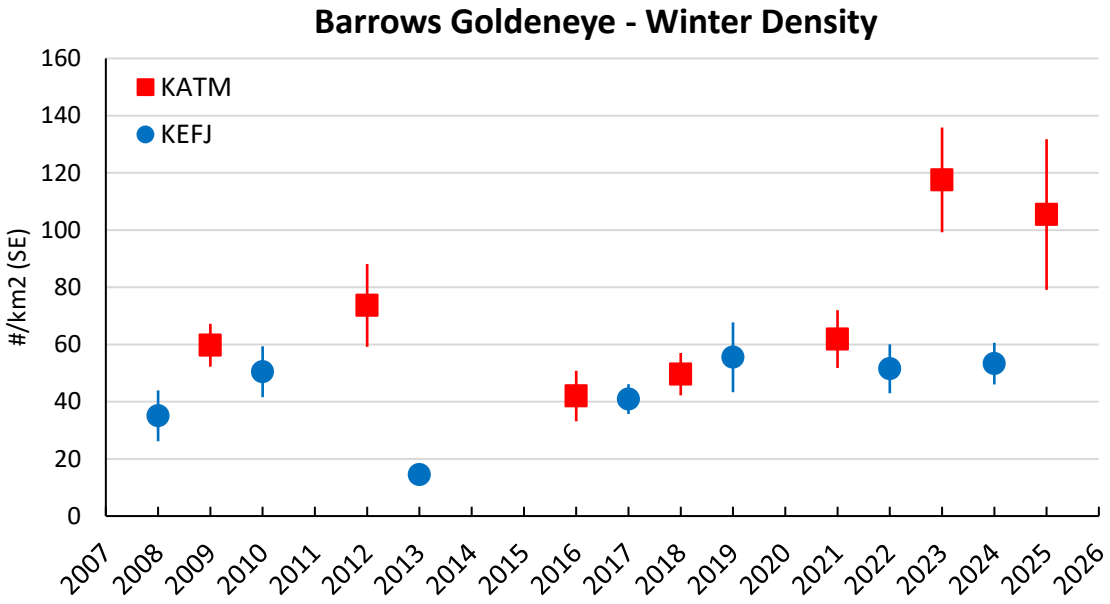

Figure 9. Barrow's goldeneye winter density (#/km²) estimates across two of the four Gulf Watch Alaska regions: Katmai National Park and Preserve (KATM) and Kenai Fjords National Park (KEFJ). Surveys in each region are carried out every other year as opposed to annually due to logistical and personnel constraints. Error bars indicate ±1 SE. KBAY and WPWS are not surveyed in the winter.

In addition to abundance (Robinson et al. 2023), black oystercatcher nest density (# of nests/linear km) showed increases following the heatwave in KEFJ that persisted through 2024 (KEFJ was not sampled in 2025) and KBAY through 2025. Nest density has been variable but stable in KATM. WPWS nest density increased through 2024 but declined in 2025 (Fig. 10). During nest density surveys, prey remains are also collected at black oystercatcher nest sites to assess chick diet. Across all regions and years, the prey remains observed have been numerically dominated by limpets (*Lottia* spp.). Mussels, in general, are the second most observed prey item. Although black oystercatcher chick consumption of mussels was highest in KATM in 2017, mussel consumption was low in the following years (Fig. 11). Black oystercatcher chick consumption of *Katharina tunicata* at KATM increased in 2024 and 2025 (Figure 11). Patterns in other regions are difficult to ascertain with little indication that diet was negatively impacted by the PMH (Fig. 11).

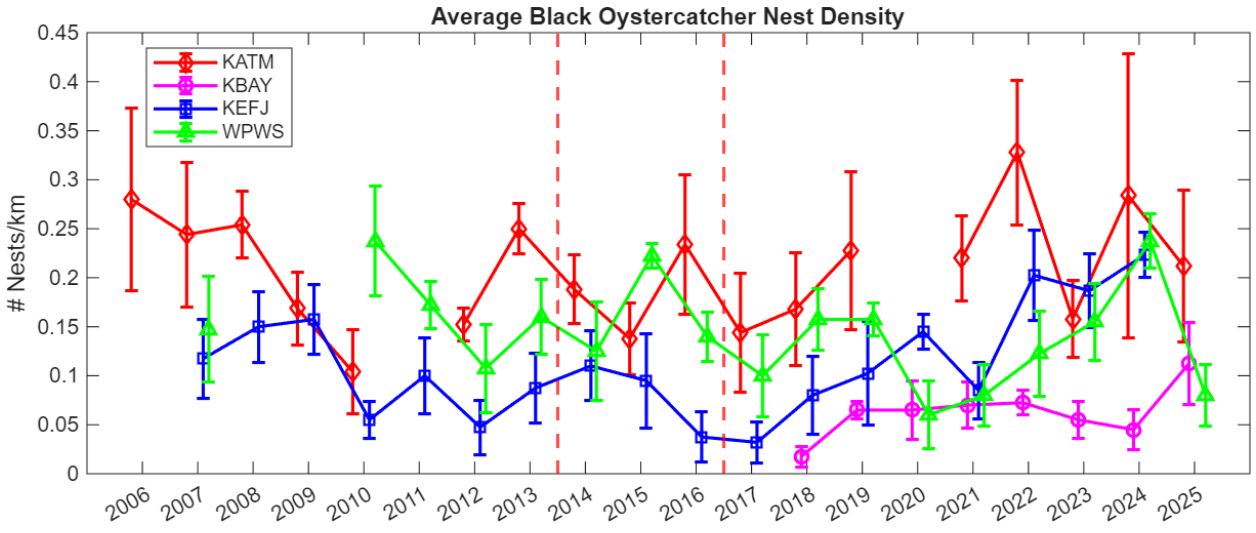

Figure 10. Black oystercatcher nest density (# of nests/linear km) across the four Gulf Watch Alaska regions: Katmai National Park and Preserve (KATM) (2006-2010; 2012-2019; 2021-2025), Kachemak Bay (KBAY) (2018-2025), Kenai Fjords National Park (KEFJ) (2007-2024), and Western Prince William Sound (WPWS) (2007; 2010-2025). Error bars indicate ±1 SE. Dashed red line indicates sampling years that fall within the Pacific marine heatwave.

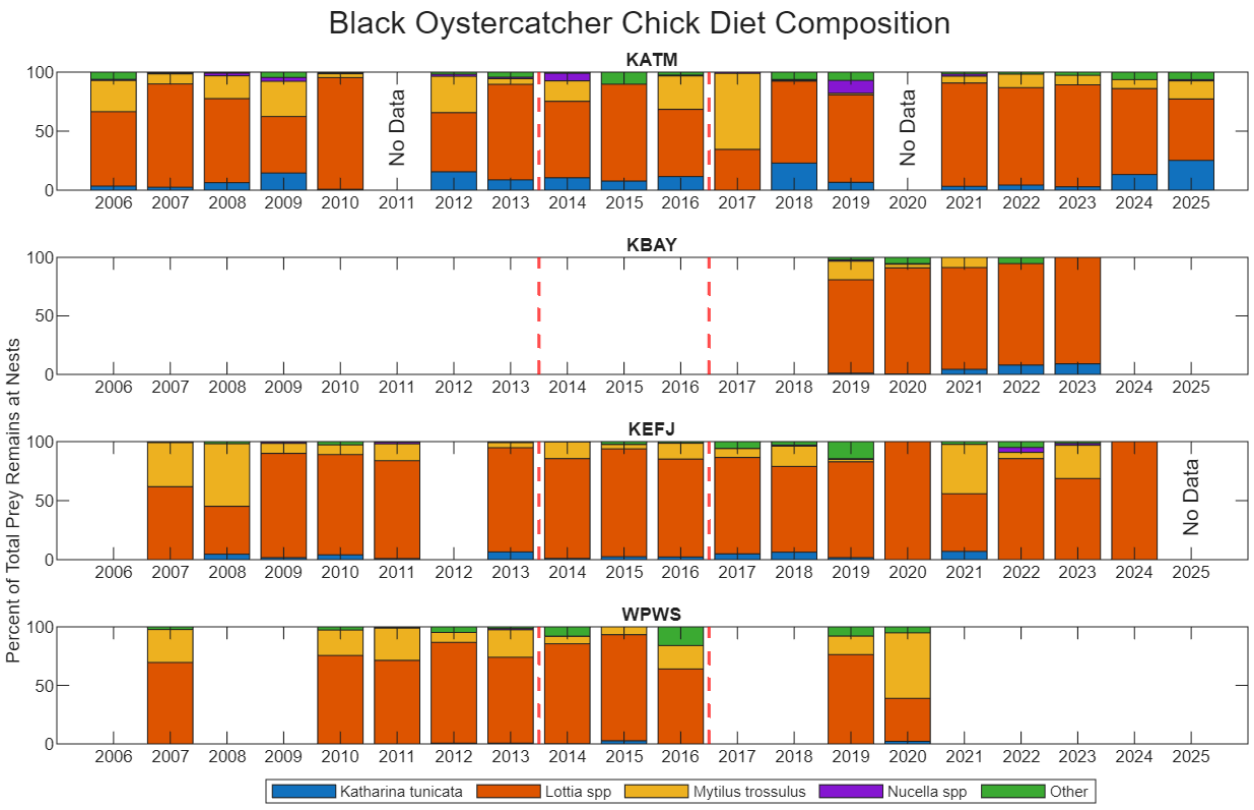

Figure 11. Black oystercatcher chick diet composition as determined from prey remains at nests. Sampling began in 2006 in Katmai National Park and Preserve (KATM), 2018 in Kachemak Bay (KBAY), 2007 in Kenai Fjords National Park (KEFJ), and 2007 in western Prince William Sound (WPWS). Gaps indicate that no prey was observed and collected during productivity surveys in a given year, while gaps with the notation 'No Data' indicate that productivity surveys were not conducted. Dashed red line indicates sampling years that fall within the Pacific marine heatwave.

Sea otters are an important predator in nearshore communities, and several metrics are measured that can provide insights on their population dynamics in each region. To assess overall abundance, we conducted sea otter aerial surveys. In June and July of 2025, aerial surveys were conducted throughout Prince William Sound and along the KATM coast using a high resolution cooled-infrared imaging sensor mounted in the belly of a twin-engine airplane. Detection-adjusted population size estimates indicate continued growth in WPWS and stable or declining

numbers in KATM (Fig. 12). Aerial photograph surveys conducted in 2024 in KBAY and KEFJ are still being analyzed and may help clarify population trends in these regions. While total estimated abundance among regions differs (Fig. 12), there was no apparent response to the PMH in any region surveyed (Coletti et al. 2024).

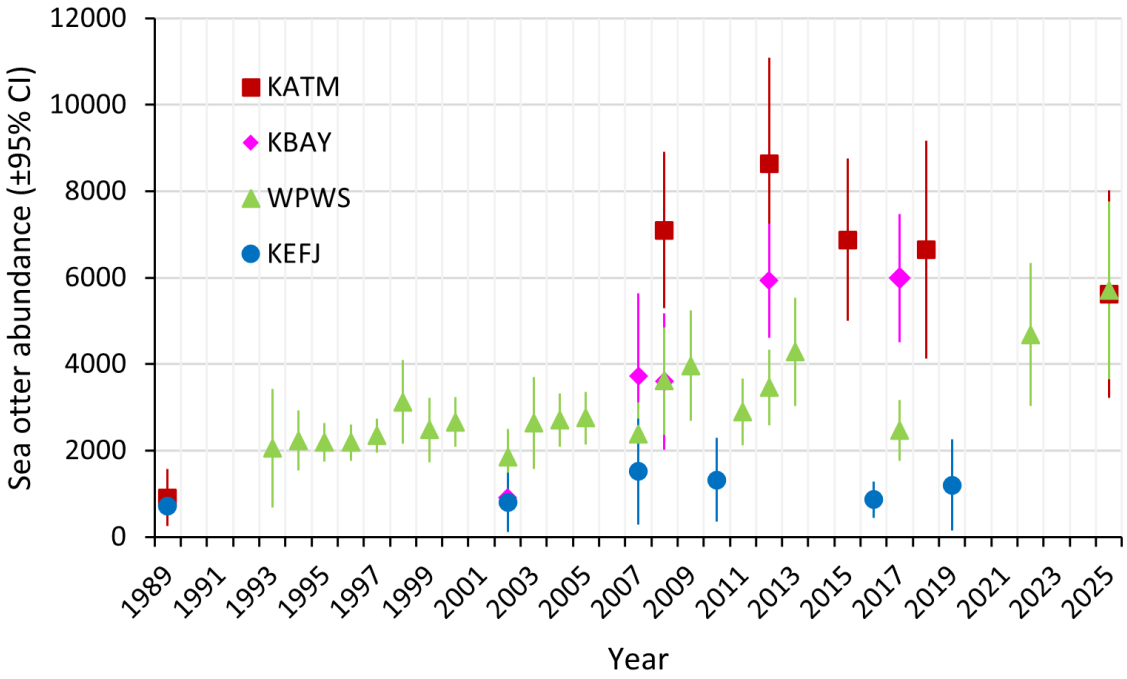

Figure 12. Mean estimated sea otter abundance (±95 confidence interval, CI) by year for Katmai (KATM red), Kachemak Bay (KBAY purple), Kenai Fjords (KEFJ blue), and Western Prince William Sound (WPWS green). Data sources are listed below under the Products section.

Sea otter spraints are surveyed in KATM, KEFJ, and WPWS annually. The prey type that makes up the greatest portion of the spraint is recorded as the predominant prey (Fig.13). In KATM, clams were the most common predominant prey type in spraints up until the PMH and onset of SSW, when spraints with mussels as the predominant became more common. Spraint with other prey items as predominant (e.g., scallops, snails) also became more common in KATM after the PMH. In KEFJ, mussels are the most common predominant taxa in spraint. Effects of the PMH cannot be determined in KEFJ because very few spraints were observed in the years before and during the PMH. KEFJ was not sampled in 2025. In WPWS, spraints with urchins observed as

predominant were more common from 2021 to 2024 (following the PMH and 2019 marine heatwave) than in previous years (Fig. 13).

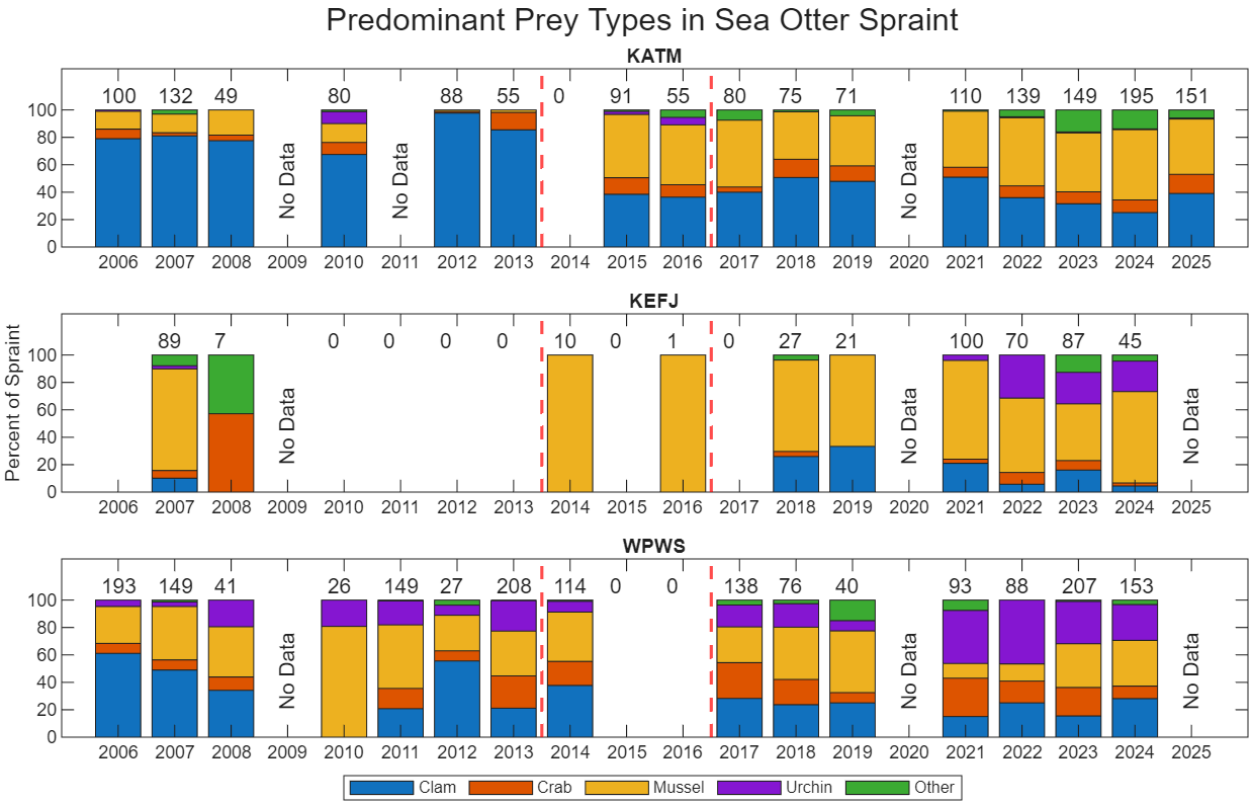

Figure 13. Proportion of spraint with clam, crab, mussel, urchin, or other as the predominant prey. Numbers above the bar are the annual sample size of spraint in each region. Dashed red line indicates sampling years that fall within the Pacific marine heatwave.

The proportion of prey items in sea otter diets based on foraging observations varies across regions and over time (Fig. 14). As with spraint, in KATM, the proportion of mussels consumed by sea otters increased in some years during and after the PMH, replacing clams as the most abundant prey item, although this trend is not consistent and warrants further analysis. Other prey types, such as snails, sea urchins, and fish, were occasionally observed in higher numbers in some years prior to the PMH. In KBAY, the most common prey item is mussels in most years,

although clams were the most common in 2016 and 2020. In KEFJ, mussels are the most common prey item in every year surveyed. In WPWS, mussels or clams were the most commonly observed prey types in most years. However, in some years scallops were observed being consumed in higher proportions, particularly in 2008, 2012, and 2016 through 2019. A higher proportion of consumption of sea urchins was observed in 2021 but was lower in the following years (Fig. 14).

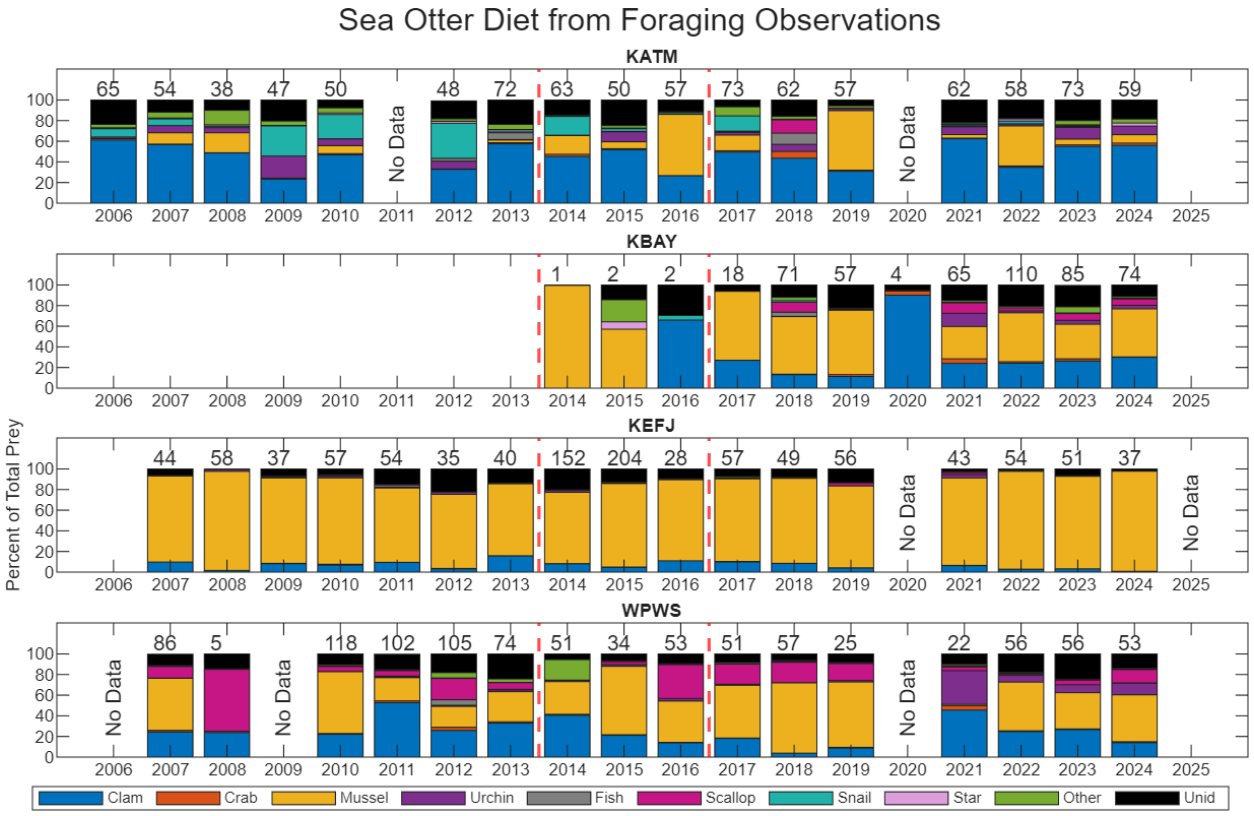

Figure 14. Proportion of total prey items observed being consumed by sea otters during foraging observation surveys. Numbers above the bars are the number of foraging bouts observed. Data collected at Katmai National Park and Preserve (KATM), Kachemak Bay (KBAY), and western Prince William Sound (WPWS) in 2025 are currently being processed and are not shown here. Dashed red line indicates sampling years that fall within the Pacific marine heatwave.

Intertidal and nearshore ecosystems provide valuable habitat for EVOS injured resources including Pacific herring (*Clupea pallasii*) and pigeon guillemots (*Cepphus columba*), as well as early life stages of various commercially important species in the GOA, including Dungeness crab (*Metacarcinus magister*), Pacific cod (*Gadus macrocephalus*), salmonids (*Oncorhynchus spp.*) and several species of rockfish (*Sebastes* spp.). These same nearshore ecosystems provide essential habitat for numerous marine birds (e.g., sea ducks and shore birds) and mammals (e.g., sea otters and harbor seals [*Phoca vitulina*]) that are of conservation and management concern. Our indicators suggest that some nearshore biological responses to the PMH appeared to continue into 2021 in some regions and could have affected recruitment and survival of species whose life stages rely on nearshore habitat. For some metrics, evidence of return to more average conditions in nearshore habitats suggests that PMH and SSW effects, both positive and negative, continue to dissipate (Coletti et al. 2025, Coletti et al. 2026). A major pattern that is emerging; however, is that the variability of biological indicators across regions is larger than it was before the PMH. Marine heatwaves are expected to become more common and widespread as a consequence of climate change (Frölicher et al. 2018). From primary producers to upper trophic-level consumers, our studies offer insight as to the varying extent of species' responses to these wide-scale perturbations and the timescales over which effects are expressed. Further, we also will continue to document responses of nearshore-reliant, upper trophic level species (such as sea otters and sea ducks) to shifts in prey availability that may be driven by changing ocean conditions. With warming again evident in 2025 across all regions sampled, we may observe consistent community responses across the GOA.

Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

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Bodkin, J. L., H. A. Coletti, B. E. Ballachey, D. H. Monson, D. Esler, and T. A. Dean. 2018. Variation in abundance of Pacific Blue Mussel (*Mytilus trossulus*) in the Northern Gulf of Alaska, 2006–2015. Deep Sea Research Part II: Topical Studies in Oceanography 147:87-97.

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None to report.

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None to report.

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

A listing of citations of archived data is below.

Data sets and associated metadata:

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Additional Products not listed above:

None to report.

3. Coordination and Collaboration:

The Alaska SeaLife Center or Prince William Sound Science Center

The nearshore project works with Prince William Sound Science Center (PWSSC) on a regular basis. Principal investigators (PIs) Iken and Konar, University of Alaska Fairbanks (UAF), are subawardees on the National Oceanic and Atmospheric Administration (NOAA) grant for EVOSTC funds administered by PWSSC. Nearshore team members also coordinate meetings, reporting, and other activities through PWSSC. PIs from the Nearshore component have given

presentations on Gulf Watch Alaska-Long Term Research and Monitoring (GWA-LTRM) at teacher workshops hosted by the Alaska SeaLife Center.

EVOSTC Long-Term Research and Monitoring Projects

The Nearshore component is inextricably linked with the Lingering Oil component (project 25200114-P). In FY24, as prescribed by an update to the Lingering Oil proposal, mussels were collected from all Nearshore component sampling sites across the spill affected region for inclusion in NOAA's Mussel Watch program (https://coastalscience.noaa.gov/science-areas/pollution/mussel-watch/). Mussel Watch analyzes a large number of contaminants in mussels, including polycyclic aromatic hydrocarbons (PAHs), which are of most relevance as a contribution to the Lingering Oil proposal. In addition, a team of Nearshore component PIs conducted sampling in September 2024 at Lingering Oil sites known to retain oil; this work included sediment excavation and oil sample archiving, as well as collection of mussels for inclusion in Mussel Watch. Gear, personnel, and vessels are shared between Nearshore and Lingering Oil components. Laboratory results from 2024 collections are forthcoming. In addition, the Nearshore Component has worked closely with the GWA-LTRM Environmental Drivers and Pelagic components on process studies related to variability in ecosystem response to the PMH. These collaborative studies have resulted in several peer reviewed journal articles and contributed to the Synthesis Reports. We expect these productive collaborations to continue into the future.

EVOSTC Mariculture Projects

Mariculture Research and Restoration Consortium (Mariculture ReCon) is a multiyear program funded by the EVOSTC with overlapping researchers and study regions with the Nearshore component of GWA-LTRM. Within Kachemak Bay, Mariculture ReCon and GWA-LTRM share logistics and field crews.

EVOSTC Education and Outreach Projects

The Nearshore component supports a "Floating teacher workshop" every summer during the sampling period in Kenai Fjords National Park. The program is supported by the National Park Service (NPS) Ocean Alaska Science and Learning Center and Alaska Geographic with the goal of bringing teachers and scientists together in the field. Teachers learn about field sampling methods and create appropriate curriculum. Due to uncertainties in staffing and funding from our Federal agencies, the Floating Teacher Workshop was cancelled in 2025.

PIs from the Nearshore component have given presentations on GWA-LTRM at teacher workshops hosted by the Alaska SeaLife Center. Similar to the Floating Teacher Workshops, the goal is for teachers to learn from scientists and others while building appropriate curriculum to take back to their classrooms.

Synthesis Nearshore component and Environmental Drivers component research was highlighted in an episode of Field Notes (https://pwssc.org/education/field-notes/, episode "Barnacle Connections").

Individual EVOSTC Projects

Nearshore PIs coordinate with the Data Management program to ensure data are reviewed for quality control and assurance and posted to the Gulf of Alaska Data Portal (gulf-of-alaska.portal.aoos.org) annually within required timeframes. The Nearshore component under GWA-LTRM does not currently coordinate with other individually funded EVOSTC projects.

Trustee or Management Agencies

In addition to the logistical, administrative, and in-kind support that the NPS, U.S. Geological Survey (USGS), NOAA, and UAF have provided to ensure success of the GWA-LTRM Nearshore component, there are several additional projects with Trustee and management agencies that the Nearshore component of GWA-LTRM has collaborated with. Below are several recent examples. We expect to continue these kinds of related projects in the future.

NOAA Fisheries

The Nearshore component (all PIs) contributed nearshore indices to NOAA Fisheries for the annual GOA Ecosystems Status Report to the North Pacific Fisheries Management Council. The health of nearshore ecosystems informs managers on fish habitat and sensitive early life stages of federally managed fish species mandated through the Magnuson-Stevens Act (16 U.S.C. §§ 1801–1891d).

National Park Service

Nearshore GWA-LTRM PIs (Ballachey, Bodkin, Monson [retired], Kloecker, and Coletti) are working with NPS and others to examine linkages between terrestrial and marine ecosystems, and this work is funded by the National Park Foundation. Field work was initiated in July 2015 with in-kind support from our GWA-LTRM KATM vessel charter. National Parks in southwest

Alaska are facing a myriad of management concerns that were previously unknown for these remote coasts, including increasing visitation, expanded commercial and industrial development, and environmental changes due to natural and anthropogenic forces. These are concerns because of their potential to degrade and impair resources in coastal systems. There are several components which include (but are not limited to): (1) brown bear (*Ursus arctos*) fitness and use of marine resources, (2) status of bivalves (clams and mussels), (3) wolf (*Canis lupus*) use of marine resources, (4) sea otter diet and abundance and (5) an integrated outreach program. We (GWA-LTRM Nearshore component) assisted with the collection of a variety of samples from the coast of KATM and support sea otter forage data collection in and outside KBAY. This project will increase our understanding of how various stressors may affect both marine intertidal invertebrates and bear populations at multiple spatial and temporal scales.

Bureau of Ocean Energy Management

GWA-LTRM PIs (Kloecker, USGS ASC; Monson, retired) completed an Alaska Science Center Nearshore Marine Ecosystems project funded by the Bureau of Ocean Energy Management that conducted sea otter research in Cook Inlet. This Cook Inlet Sea Otter Research (CISOR) project focused on quantifying sea otter abundance, distribution and habitat use in lower Cook Inlet (LCI). Specific CISOR activities that correlated with GWA-LTRM nearshore studies include seasonal aerial sea otter surveys in LCI, LCI benthic habitat surveys and sea otter foraging, and activity observation along the east side of LCI. All these activities intersect and overlap to various degrees at Kachemak Bay while also providing additional data outside the GWA-LTRM study areas that will aid in interpreting and contrasting GWA-LTRM data sets. The CISOR final report was submitted to BOEM in May 2025 and publication of datasets from the work is ongoing.

U.S. Fish and Wildlife Service Marine Mammals Management

The Nearshore component (all PIs) contributed sea otter abundance data to U.S. Fish and Wildlife Service, Marine Mammals Management for incorporation into updated Stock Assessment Reports (SARs) for the Southcentral and Southeast Alaska stocks of northern sea otters. The updated SARs provide managers with minimum population estimates and suggested harvest management limits of sea otters, based on the population status and regional harvest patterns over recent history.

Alaska Native and Local Communities

Nearshore PIs and U.S. Fish and Wildlife Service are collaborating with CRRC on research across the Chugach region to promote consistency and comparability of data collection by CRRC and available baseline information provided by GWA-LTRM. Should survey efforts be undertaken, CRRC and Nearshore PIs are coordinating to develop complementary survey designs that can all be incorporated into future Stock Assessment Reports.

PI Traiger continues to be a mentor to high school students throughout the year (including 2025) as part of the Sealaska Heritage Institute Mentorship Program.

4. Response to EVOSTC Review, Recommendations and Comments:

No review, recommendations, or comments were provided in 2025. This project responded to comments in the FY24 annual report.

5. Budget:

The Nearshore Component was underspent in FY25 relative to the proposed budget because: (1) significant personnel changes within the Federal Agencies allowed for base funds to be allocated to support GWA efforts (2) delayed arrival of funds required coverage from elsewhere in FY24, and (3) funds carried over from FY17-21 were used to cover a significant proportion of FY22 costs within all Nearshore Component entities. Nearshore Component residual funds from FY17-21 (resulting from a reduction in field efforts during the COVID-19 global pandemic) were EVOSTC-approved for carry-over and expenditure during FY22. Unspent funding from FY22-25 will continue to support staffing and field operations for nearshore monitoring activities for the duration of the program.

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

Budget Category:	Proposed FY 22	Proposed FY 23	Proposed FY 24	Proposed FY 25	Proposed FY 26	5-YR TOTAL PROPOSED	ACTUAL CUMULATIVE
Personnel	$354,453	$367,215	$377,899	$264,718	$271,730	$1,636,014	$791,180
Travel	$14,837	$14,895	$14,955	$15,017	$15,080	$74,784	$90,927
Contractual	$170,600	$173,400	$191,065	$191,600	$189,600	$916,265	$422,099
Commodities	$26,000	$26,975	$27,999	$22,730	$21,000	$124,704	$95,728
Equipment	$25,937	$37,247	$38,417	$33,645	$34,935	$170,181	$75,886
Indirect Co Than	$21,670	$22,897	$23,507	$24,137	$24,788	$116,999	$48,176
SUBTOTAL	$613,497	$642,629	$673,842	$551,847	$557,133	$3,038,947	$1,523,996
General Administration (9% of subtotal)	$55,215	$57,837	$60,646	$49,666	$50,142	$273,505	N/A
PROJECT TOTAL	$668,712	$700,465	$734,488	$601,513	$607,275	$3,312,453	
Other Resources (In-Kind Funds)	$572,400	$577,500	$567,700	$573,100	$578,700	$2,869,400	

COMMENTS:
This is the combined budget for the individual Coletti/Esler and Iken/Konar budgets that follow.

The Nearshore Component was underspent in FY25 relative to the proposed budget because: (1) significant personnel changes within the Federal Agencies allowed for base funds to be allocated to support GWA efforts, (2) delayed arrival of funds required coverage from elsewhere in FY24, and (3) funds carried over from FY17-21 were used to cover a significant proportion of FY22 costs within all Nearshore Component entities. Nearshore Component residual funds from FY17- 21 (resulting from a reduction in field efforts during the COVID-19 global pandemic) were EVOSTC-approved for carry-over and expenditure during FY22. Unspent funding from FY22-25 will continue to support staffing and field operations for nearshore monitoring activities for the duration of the program.

FY22-26	**Project Number: 25120114-H** **Project Title: Nearshore** **PI(s): Coletti (NPS), Esler (USGS), & Iken & Konar (UAF)**	**SUMMARY TABLE**