

Noteworthy

School closure at Adak and school enrollment trends

The school at Adak closed last year. Enrollment at small communities has been declining over time, with the exception of Akutan. Alaska requires public schools to have a minimum of 10 enrolled students to qualify for state funding. Communities in the Aleutians tend to have a significant portion of their economic activity dependent on fisheries. The community at Adak supports the only port for emergencies and supplies in the central and western Aleutians. However Adak lost one of its main economic activities and employers after the fish processing plant closed in 2020. Lack of schools pose a challenge for families to stay at or move to Adak (or other small communities), favoring temporary residents as opposed to year-round/permanent residents who can further support the local economy.

Gradients in Pacific cod diets and prey trends

Pacific cod diets (1991-2022) were used as a case study of prey availability to groundfish in the Aleutian chain from west to east. Both Atka mackerel and pollock are common prey of Pacific cod. The combined biomass of Atka mackerel and pollock by region (western, central, eastern AI, and southern Bering Sea), as estimated from survey data (1991-2024), was used to look for correspondence between their biomass in the ecosystem, their consumption by Pacific cod, the condition of P. cod, and bottom temperature. The combined biomass of pollock and Atka mackerel in the western and central Aleutians follows similar trends to those species in Pacific cod diets, but these increasingly differ towards the east. This highlights the relevance of other prey such as shelf demersal fish (e.g. poachers and sculpins), squids, and shrimps to Pacific cod. Survey estimates show an overall decreasing trend of miscellaneous benthic species: eelpouts, poachers, shrimp and sea stars, with eelpouts and shrimps decreasing particularly in the western Aleutian Islands. Pacific cod condition appears to increase when they eat at least 1% of their weight in fish prey, but not always – which suggests the caloric value of the prey varies and can offset lower consumption rates or vice versa.



Reference: Ortiz, I. and S. Zador. 2024. Ecosystem Status Report 2024: Aleutian Islands, Stock Assessment and Fishery Evaluation Report, North Pacific Fishery Management Council, 1007 West 3rd Ave., Suite 400, Anchorage, Alaska 99501. Contact: ivonne.ortiz@noaa.gov



More information on these and other topics can be found on the Ecosystem Status Report website.

Links to full reports from Large Marine Ecosystems are available here: <https://www.fisheries.noaa.gov/alaska/ecosystems/ecosystem-statusreports-gulf-alaska-bering-sea-and-aleutian-islands>

Management Uses

Ecosystem and stock assessment scientists worked together to account for the influence of environmental conditions on commercially-important fish stocks. They considered ecosystem information in 17 operational assessments for the Bering Sea and Aleutian Islands stocks plus the Alaska-wide sablefish stock in 2024. The Aleutian Islands Pacific cod and Atka mackerel assessments classified ecosystem dynamics at a risk level 2 Increased Concern (out of 3 levels ranging from level 1: Normal to level 3: Extreme Concern), based on warm winter temperatures, prey status, and lack of improvement in fish condition despite cooler bottom temperatures. In the Bering Sea, ecosystem dynamics for Pacific cod were also classified at a risk level 2 (see Bering Sea In Brief for details).

Following review of ecosystem information and stock assessments, the Scientific and Statistical Committee (SSC) did not reduce the acceptable biological catch (ABC) from the maximum permissible (max ABC) for any AI stock due to ecosystem concerns. The SSC did change the tier level of AI Pacific cod from Tier 5 to Tier 3 after reviewing and accepting a new Tier 3 age-structured stock assessment model. The newly-accepted model contains a time block on natural mortality, which explicitly accounts for the decreased survival of Pacific cod in the AI region since 2016 due to marine heatwave conditions.

Two additional BSAI stocks had recommended reductions from max ABC for 2024. Greenland turbot had a recommended reduction of 25% based on assessment-related concerns, population dynamics considerations, and fishery performance-derived information. No increased ecosystem concerns were noted. The shark complex had a full assessment in 2022 that was updated in 2024. A recommended reduction from maxABC of 13% in 2022 was carried forward for 2024.

The AK sablefish stock's ABC was reduced from maximum permissible by 5% due to elevated concern in the stock assessment and fishery-informed stock considerations.

For the remaining BSAI stocks managed, including Aleutian Islands pollock and Pacific ocean perch, no ecosystem-related reductions from maximum permissible ABC were recommended for 2024, as precautionary measures already incorporated into setting catch levels were considered sufficient to address uncertainty about ecosystem dynamics.

2024 Aleutian Islands Ecosystem Status Report:

IN BRIEF

Current Conditions

- Winter sea surface temperature in early 2024 was among the ten warmest winters since 1900.
- Strong winds and storminess from winter through spring cooled temperatures to average during late spring and summer and resulted in a deeper mixed layer. This potentially impacted the vertical distribution and availability of prey throughout the water column.
- The ecosystem showed signs of a gradient of poor productivity in the west to high productivity in the east, largely based on counts of Steller sea lions and seabird reproductive success.

- Eastern Kamchatka pink salmon abundance was low. This is typical in even-numbered years. However, the corresponding estimated biomass to this “low” abundance is ~60,000 tons, which is similar to what was considered high abundance in the 1970s and 1980s. Recently, the biomass of pink salmon during high abundance years is similar to Pacific cod's highest biomass of ~250,000 tons.
- Groundfish condition remained poor across the ecosystem despite the relaxation of the multi-year warm conditions and a low abundance year in the biennial eastern Kamchatka pink salmon cycle. The condition of Pacific cod, northern rockfish, and Pacific ocean perch have been below the long-term average since 2012. The decline in fish condition may be indicative of several interacting factors including poor prey quality, low availability of prey, competition, and increased energetic cost of living.



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Regional Highlights

Western Aleutians: Moderate heatwave at times during last winter, with average temperatures in spring and early summer, and then a return to warmer temperatures. Bottom temperature was slightly below-average, and eddy kinetic energy was above average early in the year, then slowed. This suggests higher transport of heat and nutrients through the passes early in the year, which subsequently decreased.

Bottom trawl survey estimates of apex predator biomass decreased 16% overall relative to the last survey in 2022. This was driven by a decrease in Pacific cod and arrowtooth flounder. Pelagic foragers groundfish biomass increased 6%. This was driven by northern rockfish and pollock. The persistent decline in fish condition observed in the region may be due to a variety of factors, such as poor prey quality, competition, and/or low availability of prey. The stormier conditions potentially had a

negative impact on seabirds nesting at Buldir Island. Most species (8 of 12) had below-average reproductive success and later-than-average hatch timing. This suggests that overall zooplankton and fish prey availability was not sufficient to support seabird reproductive success. It also may indicate poor foraging conditions for plankton or fish-eating commercial groundfish species. Steller sea lion numbers have continued to decline and show no signs of recovery.

Central Aleutians: Warm temperatures in winter but no marine heat wave conditions. Eddy kinetic energy dropped below the long-term average in early 2023 and has stayed there. This indicates that there is potentially below-average flux of nutrients and heat across the passes from the Pacific Ocean to the Bering Sea. Groundfish survey biomass estimates for apex predators increased 7% in 2024 compared to 2022 with notable increases in Kamchatka flounder and rougheye/blackspotted rockfish. In

contrast, the biomass estimate of groundfish pelagic foragers decreased 13%, driven by Atka mackerel and northern rockfish. There are no seabird surveys in this area. Steller sea lion counts in the central Aleutians were stable overall but had mixed trajectories, with counts declining in the west and stable or increasing towards the east.

School enrollment continued a decreasing trend (see Noteworthy). Amid rising operating costs and flat funding in general, other small schools like the one at Atka are at increasing risk of closure.

Eastern Aleutians: As in the central Aleutians, sea surface temperatures in the eastern Aleutians during 2024 were not as high during winter as in recent years. There were no significant changes in the overall biomass of pelagic foragers. However, there was a notable increase in Atka mackerel, while the rest of the species in the complex decreased. Apex predator biomass decreased 24% in

the eastern Aleutians, driven by a 55% decrease in arrowtooth flounder. Steller sea lion counts increased.

This summer continues a successful trend for seabirds breeding at Aiktak Island since 2019. Fish-eating seabirds, such as murre, puffins and gulls, had above-average reproductive success. Capelin comprised 50% (by weight) of the forage fish in tufted puffin chick meals, while pollock comprised 34%. The continued overall high seabird reproductive success suggests that there was uniformly high prey availability for both nearshore and offshore foragers, including surface feeders and divers feeding on a broad spectrum of zooplankton to forage fish prey. This may indicate that there were favorable foraging conditions for some species of groundfish.

Blue mussels sampled in June had toxins 7 times above the regulatory level, indicating potential danger for consumers. School enrollment showed a slight increase in Akutan and Unalaska. However, the small school at False Pass is at risk of closure.

