# United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE
Kodiak National Wildlife Refuge
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**Federal Subsistence Activity Report**
**Kodiak National Wildlife Refuge, February – August 2023**

**Salmon Fisheries**
*Please note that results of salmon counts presented below, current through August 26, were provided by the Alaska Department of Fish and Game (ADF&G) Commercial Fisheries Division.*

Western Area

Sockeye salmon returns throughout the western area were strong. Karluk River returns met the lower escapement goal for both the early run (182,172 fish) and the late run (305,376 fish). Returns in the Ayakulik River were also strong: both the early run (200,143 fish) and the late run (117,956 fish) were within the escapement goal range. Upper Station (Olga Lakes) early run (63,129 fish) was strong, but the late run (91,720 fish) is below the lower escapement goal. Frazer Lake escapement (100,477 fish) was within the escapement goal.

The 2023 Chinook salmon returns to Karluk and Ayakulik Rivers continues to be weak: this year's return was the lowest of the last 10 years. The Chinook escapement in the Karluk River totaled 377 fish, and escapement in the Ayakulik River was 590 fish.

Northern Area

In the Afognak Lake (Litnik) drainage, the sockeye salmon return totaled 35,559 fish, whcih met the escapement goal (20,000 to 50,000 fish). In contrast, the return to the Buskin River system was very poor, totaling 1,754 fish. Due to this weak return, the Refuge and the ADF&G on June 17 issued an Emergency Special Action and Emergency Order, respectively, prohibiting sockeye salmon harvest. In response, subsistence users had to travel to other areas such as Litnik, Pasagshak, Saltery River, Ouzinkie, or Port Lions, to meet their subsistence sockeye needs.

Monitoring Water Temperature of Salmon Habitat

In 2023, we continued servicing eight stream and two lake monitoring sites in the Refuge. Additionally, we assisted staff of the Larsen Bay Tribal Council and the Alutiiq Tribe of Old Harbor with their monitoring. At the range of Refuge and network partner monitoring sites, the field objective has been collection of continuous hourly data on a year-round basis consistent with statewide protocol. Refuge data, 2015-2022, have been shared to the newly established, publicly accessible Alaska Water Temperature Database (AKTEMP), which is administered by the University of Alaska Anchorage. The AKTEMP website include tools for data upload,

review, exploratory analyses, and downloading. Consistent with the Kodiak Network's 2014 strategic plan, other partner organizations will be encouraged to annually upload their data.

**Brown Bear**

Population Assessment

During May of 2023 Kodiak Refuge and the ADF&G cooperatively surveyed the Spiridon survey area to monitor trend in bear abundance. Data are still being compiled, but preliminary results show that bear density was greater than recorded in previous surveys: in 1995, 120 independent bears/1000km$^2$ were observed and, in 2000, 125 independent bears/1000km$^2$ were observed. Apparently, the density of bears observed this year also exceeded the management target of 224 independent bears/1000km$^2$, suggesting that bear abundance in the Spiridon area is in good standing.

During July and August of 2023, the Refuge attempted to conduct stream surveys as part of traditional monitoring of bear abundance and composition in the Southwest portion of the Refuge. We completed four of seven weeks of surveys and noted high numbers of bears in the early season on Dog Salmon River, Upper Thumb River, and the O'Malley complex of streams, including many observations of cubs of the year. Observations along Red Lake River were lower than expected during the periods we surveyed. Late season surveys were not completed in part due to weather.

Bear-Berry Monitoring

We monitored fruit abundance of salmonberry, red elderberry, oval-leafed blueberry, and devilsclub—important bear food sources—between July 12 and August 8. Plots were sampled at study sites on-Refuge (Red Lake, Karluk Lake, Uganik Lake) and off-Refuge (Road System). In general, we observed moderate abundance of salmonberry fruit at mid mountain elevations, where most salmonberry stands and salmonberry monitoring plots are located. In contrast, elderberry fruit was in low abundance due apparently to continued deer overuse, which consists of girdling of live stems in winter, thereby eliminating fruit production. We noted slower growth and later availability of fruit in all monitored species and areas in 2023. This fall, we plan to establish cooperation on data analyses with other Alaska-based research institutions.

**Mountain Goat**

The Refuge attempted to conduct surveys of registration hunt unit RG480, located in southwestern Kodiak Island, but efforts were foiled primarily by persistent unsuitable aerial survey weather. The ADF&G completed surveys for the rest of Kodiak Island, which will enable assessment of trend in herd composition and distribution in that area.

**Migratory Birds**

Nearshore Marine Bird and Mammal Surveys

Robin Corcoran, Refuge Bird Biologist, is a coauthor on a recent publication using data from the Refuge-run nearshore marine bird surveys to illustrate increased density of marbled murrelet at-sea in Alaska in late summer. See: *Bertram, D.F., C.A. MacDonald, P.D. O'Hara, J. L. Cragg, R. Corcoran, R. Greene, P. Vincent, and K.J. Woo. 2023. Summer movements of marbled murrelets from Canada to Alaska. Endangered Species Research. Vol. 51: 215–225.* https://www.int-res.com/articles/esr2023/51/n051p215.pdf

## Aleutian Tern Colony Monitoring & Satellite Tagging

In June and July 2023 we conducted an Aleutian tern colony census of the Kodiak Archipelago using the Ursa Major II, the Refuge's research boat. In June eight colonies in the Afognak-Shuyak Island region were censused and, in July, nine colonies along the east side of Kodiak Island from east Sitkalidak Straits to Olga Bay were censused. In addition to censusing existing colonies, we also searched for new tern nesting locations. Accessible tern colonies in the vicinity of the Kodiak road system were counted on a weekly basis. Aleutian terns were listed as a *Species of Greatest Conservation Need* in the 2015 Alaska Wildlife Action Plan due to a 93% decline in nesting populations in the state from 1960-2012. Results will be summarized in a Refuge report to be finalized by the end of the year.

This summer we also completed a cooperative project funded by the National Fish and Wildlife Foundation examining transfer between breeding colonies by Aleutian terns. This project began in 2019 when 10 Aleutian terns were tagged with satellite transmitters on Kodiak Island and continued in 2022 with the tagging of eight Aleutian terns in Nome, AK. In June 2023 we were able to deploy the last two satellite tags on terns nesting at the Middle Bay colony on Kodiak Island. Both adult Aleutian terns continued nesting at Middle Bay for several weeks after tagging but spent time visiting both active and inactive colony sites nearby later in the summer. Information on breeding season movements will be used to inform Alaska statewide surveys for the species. Satellite tags on both terns have continued to transmit during their post breeding migration and, as of late August, one bird was in the Sea of Japan and the second bird was in the Taiwan Strait, East China Sea, heading to the wintering grounds in southeast Asia.

## Tufted and Horned Puffin Research

The Refuge continued its second year of research as part of a multi-year graduate student dissertation, "Inferring mechanisms of population regulation through comparative studies of tufted and horned puffins breeding in the Kodiak Archipelago" in cooperation with Oregon State University Department of Fisheries, Wildlife, and Conservation Sciences (PhD student Katie Stoner working with advisor Dr. Don Lyons). Population and trend assessments will be supported with assessments and comparisons of *Fratercula* puffin gillnet bycatch risk, non-breeding distributions, breeding and non-breeding stable isotopic diets, and offspring saxitoxin exposure. Cooperators include USFWS Kodiak Refuge, USFWS Ecological Services, USFWS Pacific Seabird Program, and USGS Alaska Science Center.

A key component of this research is deploying geolocators, tiny devices that fit on bands, which can be placed on the legs of adult puffins during the summer nesting season. Geolocators record and store light levels from which locations can be derived. The devices do not transmit data but must be retrieved and downloaded the following breeding season. In summer 2023 researchers retrieved 15 geolocators deployed in summer 2022 on tufted puffins, and three deployed on horned puffins, providing valuable data on overwintering locations for these two species. This is only the third study of its kind examining overwinter locations of tufted puffins and is the first study to document horned puffin wintering sites. In 2023 an additional 28 tufted and 12 horned puffins were tagged with geolocators. Katie Stoner plans to present preliminary results at the December 2023 at the Alaska Bird Conference in Anchorage, and at the annual Pacific Seabird Conference in February 2024.

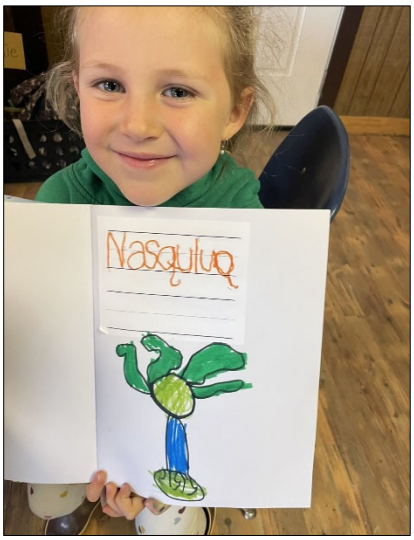
**Education, Outreach, and Other Noteworthy Activity**

Kodiak Refuge Summer Science and Salmon Camp

Habitat was the theme for the annual Kodiak Refuge Summer Science and Salmon Camp (Salmon Camp) this year. Lessons and activities focused on the diverse habitats throughout the Kodiak Archipelago as well as stewardship education to connect youth with ways in which they can contribute to helping maintain healthy habitats and be stewards of the land. Kodiak Refuge, partners, and volunteers facilitated five camp sessions on the road system of Kodiak, AK for grades K-8$^{th}$ as well as camps in the communities of Old Harbor, Ouzinkie, Port Lions, and Larsen Bay.The Salmon Camp trip to Akhiok was cancelled due to weather and the Refuge's education team hope to visit in early September 2023. The Salmon Camp staff consisted of Nate Weber, Salmon Camp Director, who was hired through Alaska Geographic, a non-profit organization, and three full-time volunteers: Colette Bennett, Brooke Clifton, and John Mark Polk, all college level students utilizing the experience as an internship. Many additional volunteers and partners supported Salmon Camp this year.

Highlights from Salmon Camp:

- Salmon Campers had the opportunity to go fishing, with some campers as young as four years of age taking their first casts with a fishing rod.
- Camp hosted a lesson and art show recognizing the 50$^{th}$ anniversaries of the Endangered Species and Marine Mammal Protection Acts. Campers also learned about the protection of subsistence rights for a way of life connected to the land and water and for protection of family traditions, sustenance, food security, and cultural integrity.
- Amy Peterson, Koniag Community Affairs Liaison, joined camp staff for village trips to Ouzinkie, Port Lions, and Old Harbor.
- Seven students in 7$^{th}$ through 12$^{th}$ grades were part of our Kodiak Refuge Youth Leadership program, volunteering at camp as camp counselors.
- Campers learned about the long history of, and continued stewardship by, the Alutiiq People. Alutiiq/Sugpiaq language and culture were integrated into camp lessons. Campers created art cards that featured Alutiiq words for plants and animals, which enabled campers to make their own memory card games. Alutiiq words of the day are featured daily at camp, primarily for campers to write and draw about in their camp journals.




A young camper showcasing her nasquluq entry with a beautiful bull kelp. Photo: Shelly Lawson



Campers playing with their Alutiiq Words Memory Card Game. Photo: Shelly Lawson




Kuik journal entry.
Photo: Shelly Lawson

## Kodiak Refuge Visitor Center

Local Alutiiq artist Hanna Sholl designed a stunning mural celebrating the nature of Kodiak that is displayed inside the Refuge's Visitor Center. The Refuge will host a celebration for the installation during the community First Friday Art Walk scheduled on October 6, 2023. In Hanna's words: "This vibrant mural captures the beauty and rich wildlife of Kodiak Island, showcasing the animals that surround us. Nestled within the mural are numerous Alutiiq elements, serving as a heartfelt tribute to the Sugpiaq people, our island's original caretakers. These hidden elements honor our people's profound connection to this land, providing a delightful surprise for keen-eyed observers." Sholl is an artist, educator, and culture bearer who merges traditional and modern-day Alutiiq art. Kodiak Refuge is honored to collaborate with her on this project.

## Koniag Rangers

Koniag Inc., in partnership with the Refuge, hired two new seasonal employee positions, entitled Koniag Rangers, to promote Alaska Native culture and awareness of Kodiak Refuge, and support visitor engagement at the Refuge Visitor Center. Koniag Rangers Patricia Prince and Freya Larionoff joined the team in mid-July. In addition to working at the Refuge Visitor Center, rangers assisted Salmon Camp, working with youth and/or sharing Alutiiq cultural information with 4$^{th}$-6$^{th}$ graders, and are supporting public programing. Koniag Ranger Patricia Prince is a natural storyteller, which was revealed in the Refuge's weekly Families Understanding Nature (FUN) program for pre-K students and their families. The students were absolutely focused and attentive whenever Patricia shared a story!

## Outreach

Kodiak Refuge, in collaboration with the ADF&G and the Koniag Community Affairs Liaison, released four quick-reference Federal subsistence hunting guidance tear-sheets. These two-page publications, which present regulations in conversational english, are available on the Refuge's website and in print at its administrative office, visitor center, or digitally as a .pdf.

## Training

Kodiak Refuge seasonal employees and volunteers participate in a variety of trainings annually that are focused on learning how to connect Refuge outreach and learning outcomes with Alutiiq Culture. These trainings may include a Timeline of Alutiiq History for the area; Culturally Responsible Programs, Integrating Alutiiq Culture into lessons; presentations and training provided by Patrick Saltonstall and Leda Ferranti of the Alutiiq Museum, and hands-on education and experiential learning provided by Coral Chernoff about the year-round/ seasonal connection of culture with nature and so much more.