United States Department of the Interior

FISH AND WILDLIFE SERVICE
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INFORMATION BULLETIN - September 2020

Cooperative Salmon Escapement Monitoring Projects. Contact: Pat Walsh
ADF&G has monitored Chinook, chum and sockeye salmon escapement on the Middle Fork Goodnews River since 1980. Togiak Refuge has worked with ADF&G since 1992 to assist in staffing the weir until 2017, after which reduced Refuge funding prevented providing staff assistance.

On the Kanektok River, ADF&G, Native Village of Kwinhagak, Coastal Villages and Togiak Refuge have worked cooperatively to monitor salmon and Dolly Varden runs since 2001. However, this project has been cancelled since 2016 due to lack of funding.

The Togiak Refuge fisheries biologist retired in 2017 and the position has not been refilled. However, the current Togiak Refuge manager has identified re-filling this position as a high priority, as well as re-engaging in cooperative salmon monitoring projects.

Mulchatna Caribou Contact: Andy Aderman
Togiak Refuge assisted ADF&G with telemetry and law enforcement flights, satellite data acquisition, data entry and database management. A July 2020 post-calving survey estimated the Mulchatna herd at approximately 13,500 caribou, similar to the 2019 estimate, and well below the population objective of 30,000-80,000 caribou (Joel Holyoak & Bruce Dale, ADF&G, 2020 Mulchatna Caribou population survey memo).

Togiak Refuge Manager Moos, under authority delegated by the Federal Subsistence Board, opened caribou hunting (Aug. 1-Sept. 20, 1 bull) and closed Federal public lands in the hunt area for caribou hunting except by federally qualified rural residents. The Federal hunt will run concurrently with the State of Alaska registration permit hunt **RC503** for Mulchatna caribou. Hunters must obtain an RC503 permit which is required for the following Game Management Units: 9A, 9B, 9C, 17A, 17B, 17C, 18, 19A, and 19B. Hunters should review the RC503 permit conditions before heading afield, as some portions of the open units remain closed to caribou hunting. The bag limit is **one bull** caribou across the entire hunt area with, a **5-day reporting**

requirement. No winter season will be announced. **Federal lands within the hunt area will only be open to federally qualified rural residents.**

Nushagak Peninsula Caribou Contact: Andy Aderman
Reported harvest for the 2019-2020 hunt was 307 caribou (132 bulls, 166 cows, 9 unknown sex), of which 288 were taken under the Federal FC1702 permit, 12 under the State RC501 permit, and 7 taken illegally. Over the last four seasons hunters have reported a total of 799 caribou. A photocensus of the Nushagak Peninsula Herd on July 7, 2020 found a minimum of 209 caribou in 2 groups which resulted in a total population estimate of 226 +/- 47 (209-273) caribou at the 95% confidence interval (Meg Inokuma, ADF&G, personal communication). A similar effort in 2019 found a minimum of 710 caribou in 5 groups resulting in an estimate of 822 +/- 164 (710-986) caribou. Hunting related mortality (reported and unreported harvest, wounding loss) accounted for the majority of the population decline. Predation on caribou occurs primarily by brown bears and wolves, however, other predators (coyotes, wolverine, lynx) occur on the Nushagak Peninsula that likely kill some caribou.

The Nushagak Peninsula Caribou Planning Committee met via teleconference July 28, 2020 and reviewed results of previous hunts, population and lichen monitoring and the harvest strategy changes made at the October 2019 meeting. Those changes included lowering both the population objective and optimum level to 200-600 and 400, respectively. Agency biologists agreed a limited harvest of bulls (ten or less) would not impact the growth of the herd. A majority of the Committee favored having a hunt with a total of 5 permits (bulls only), with all permits going to Manokotak. Refuge Manager Moos' decision was to open the Federal caribou hunt on the Nushagak Peninsula from August 1-September 20 with a harvest objective of 5 bulls and all 5 permits going to the Manokotak Village Council. As of September 3, 2020, no caribou have been reported harvested in the Federal permit hunt.

Moose Contact: Andy Aderman
In October 2019 a moose survey conducted in Unit 17A estimated 2139 +/-495 (1644-2634) moose at the 90% confidence interval (Meg Inokuma, ADF&G, personal communication). This was about a 10% decline from the March 2017 estimate 2370 +/- 564 (1806-2934) moose at the 90% confidence interval (Meg Inokuma, ADF&G, personal communication). Moose seen during the October 2019 survey (249 cows, 224 bulls, and 26 calves) resulted in estimates of 90 bulls and 10.4 calves per 100 cows.

During the 2019-2020 winter moose hunts in Unit 17A (RM 575 and RM 576), hunters reported harvesting 9 bulls and 36 cows (Eunice Dyasuk, ADF&G, personal communication). In the Goodnews area winter moose hunt (RM 621), hunters reported harvesting 2 moose (Keith Oster, ADF&G, personal communitcation).

Staff from the Togiak Refuge and ADF&G-Bethel conducted minimum count surveys in the Goodnews and Kanektok/Arolik moose hunt areas during February/March 2019 (Figure 1). In the Goodnews area a minimum of 450 moose (386 adults, 64 calves) were observed. The Goodnews area moose population has more than doubled since the last minimum count of 203 in March 2012. In the Kanektok/Arolik area a minimum of 236 moose (205 adults, 31 calves) were

observed. The Kankektok/Arolik moose population increased 35 percent since the last minimum count of 173 in March 2018. A moose population survey is planned for the combined Goodnews and Kanektok/Arolik areas during October 2020.

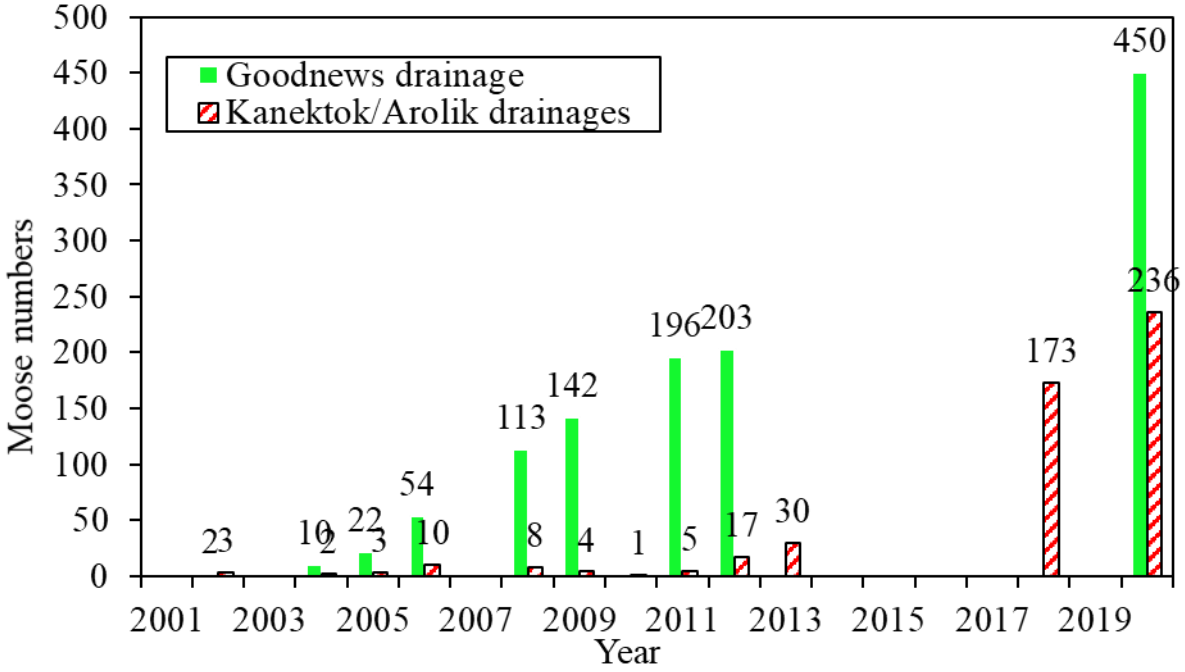

Figure 1. Moose minimum counts in the Goodnews and Kanektok/Arolik drainages, southern Unit 18, 2001-2020.

The relationships of wolf and brown bear predation with moose population density and growth at Togiak National Wildlife Refuge and BLM Goodnews Block, Alaska Contact: Pat Walsh
In summer 2014, Togiak Refuge, the USFWS Genetics Lab, ADF&G, and BLM initiated a study to understand the effects of wolf and brown bear predation in regulating the populations of moose. The study relies on radio telemetry and stable isotope analysis. Our approach is to relate the predation impact by wolves and bears on moose at varying levels of moose population density. We will use existing population estimates for brown bears, and through the use of radio telemetry, we will estimate the number and composition of wolf packs on the Refuge. We will model wolf and bear predation on moose based on the quantity of wolves and bears and diet composition of both species determined through analysis of carbon and nitrogen isotopes occurring in bear and wolf hair. Hair is being collected from wolves when captured during radio collaring operations, and has been collected from brown bears using break-away hair snares. So far, we have captured and radioed 41 wolves from seven packs. During summers 2014-2016, we deployed over 400 snares, and collected over 200 brown bear hair samples. Initial analysis in 2017 identified data gaps, so additional bear hair was collected in 2018. Lab analyses are ongoing.

Walrus Contact: Doug Holt

The Togiak Refuge has annually monitored the number and timing of Pacific walruses at haul-outs since 1985, using ground counts (1985-2008), aerial surveys (2003-2011) and time lapse photography (2010-2019). Overall, walrus numbers observed at haul-outs on Togiak Refuge have declined, with the greatest declines at Cape Peirce and Cape Newenham. Peak counts in the most current year when every day was counted (2016) were 401 at Cape Peirce, 897 on Hagemeister Island, and 454 at Cape Newenham. Walrus using haul-outs in Bristol Bay are typically recorded from late spring to late fall but were observed at Cape Newenham every month since cameras were deployed in fall of 2014 until February 2017. Data were recovered at all sites during summer 2019 and are currently being examined. In an effort to reduce potential spread of COVID-19 in the community travel to field sites was strictly limited and sites were not visited during 2020. The most recent report was completed in August 2019 and is available to the public at https://ecos.fws.gov/ServCat/DownloadFile/168185.

Seabirds Contact: Kara Hilwig
The abundance and reproductive success of black-legged kittiwakes, common murres, and pelagic cormorants was monitored annually at Cape Peirce from 1990-2014 and 2016-2019. Monitoring was postponed in 2020. In the past 29 years, the long-term average number of birds counted on study plots was 1,075 kittiwakes (range = 238-1,906), 2,595 murres (range = 53-4,563), and 80 cormorants (range = 15-123). Twenty-nine years of seabird monitoring at Cape Peirce has revealed high variation in nesting adult counts and reproductive success, but never four consecutive years of reproductive success as low as 2016-2019 for all three species. Population and productivity monitoring will continue in June 2021 at Cape Peirce.

Invasive Aquatic Plant Surveys Contact: Kara Hilwig
Elodea spp. is a highly invasive and difficult to control aquatic plant implicated in the degradation and loss of fish habitat across the world. It was confirmed present in Alaska in 2009 and is now found in several waterbodies across the State. In 2020, Refuge and Park staff cooperated to complete the third round of *Elodea* surveys within the Togiak Refuge, Wood-Tikchik State Park and the surrounding area. Twenty-five annual monitoring sites have been established in high use areas such as lodge docks, boat ramps, and popular float plane destinations. Thus far, no *Elodea* has been detected. Funding proposals are currently being submitted to continue this work in 2021.

Water Temperature Monitoring Contact: Doug Holt
Stream temperature monitoring has been conducted at 21 locations on 14 rivers in Togiak National Wildlife Refuge since August 2001. Continuous hourly water temperatures were recorded at each site. Over 2.4 million temperature records were collected, quality-graded, and digitally stored in a relational database through October 2019. The warmest month each year was July. The maximum recorded mean daily summer temperatures varied by location, with median values of 9.8–22.9°C across sites. The warmest temperatures were observed in the Kukaktlim Lake outlet and the coolest temperatures were observed in the Weary River. The most recent stream temperature monitoring report was completed in September 2018 and is available to the public at https://ecos.fws.gov/ServCat/DownloadFiles/169087. A report detailing measurements recorded through summer 2019 is currently under review and a link to that report will be provided when the report is finalized and posted.

We used moored all-season temperature arrays to record hourly temperatures throughout the water column in 2 lakes on or near the Togiak National Wildlife Refuge 2011-2018. The lakes differed significantly in surface area, water volume, and elevation with Ongivinuk Lake being smaller and at higher elevation than Snake Lake. We observed variation in lake ice phenology and fewer days of ice cover on Snake Lake than on Ongivinuk Lake each winter when data were available for both lakes. We observed that both lakes were dimictic, exhibiting turnover events in spring and fall. We observed water temperatures in excess of standards for fish rearing and migration habitats during summer down to 12.5 m in Snake Lake and down to 5 m in Ongivinuk Lake. The most recent lake water temperature monitoring report was completed in March 2019 and is available to the public at https://ecos.fws.gov/ServCat/DownloadFile/169088.

In an effort to reduce potential spread of COVID-19 in the community travel to field sites was strictly limited and sites were not visited during 2020.

Quantifying River Discharge Contact: Pat Walsh
Togiak Refuge and the USFWS Water Resources Branch have worked cooperatively since 1999 to acquire baseline hydrologic data of the flow regime (magnitude, duration, timing, frequency, and rate of change) and water quality. A network of stream discharge gages collected stream flow data from 1999-2005 at 20 locations. A subset of five of these stations continued to collect data through fall 2009, after which three of the five stations were removed. We will monitor discharge in the Togiak and Kulukak Rivers indefinitely, although due to Covid-19 travel restrictions, no field work occurred in 2020.

Education and Outreach Contact: Terry Fuller and Jon Dyazuk
Togiak Refuge has an active education and outreach program, conducting an average of 60+ classroom visits throughout 12 Bristol Bay villages annually, during a normal school year. That total was cut short for the end of the 2019-2020 calendar year due to covid-19. Classroom visits include lessons about the Migratory Bird Calendar, National Wildlife Refuge Week, careers in natural resource conservation, and numerous teacher requested classroom presentations. The refuge works with several school districts and private schools including the Southwest Region, Lower Kuskokwim, Dillingham City school districts and the Dillingham 7th Day Adventist School. Some topics often include bird walks, wilderness survival skills, archery, salmon life cycles, aquatic resources and bear safety. The refuge website is also an education tool and is available at http://togiak.fws.gov.

The refuge, in partnership with Alaska Department of Fish and Game and the Southwest Region School District, also conducts hunter safety courses throughout western Bristol Bay Villages. Classes have impacted more than 100 students in Manokotak, Dillingham, Twin Hills, Togiak, Aleknagik and Quinhagak. The refuge plans to continue these courses, as requested, in 2020 and is in the planning stages to add a National Archery in School Program to its offerings in the future.

The refuge education program also produces Bristol Bay Field Notes, an award-winning weekly radio program on KDLG 670 AM that covers an array of outdoor-related topics (past episodes

can be found on KDLG's website. Togiak Refuge has an active and heavily followed Facebook page which disseminates information on a daily basis to a rapidly growing global audience. These outreach efforts have not been affected by covid-19 and are available for public consumption at their regular rate of production.

The refuge hosted its annual Open House at the Refuge Headquarters on Saturday, October 5, 2019 and over 100 people were in attendance and took part in a number of "hands on" activities.

Togiak Refuge staff continues to work with the Alaska Migratory Bird Co-Management Council and the Alaska Department of Fish and Game to conduct household subsistence waterfowl surveys. Refuge staff and volunteers conducted surveys in a number of southwest Alaska communities, Aleknagik, Dillingham, Togiak, Clark's Point, Newhalen, Nondalton, Chignik Lake and Chignik Lagoon.

Also, the refuge partners with others to conduct three environmental education camps. As with other Service sponsored education camps, those camps were cancelled for 2020, due to covid-19 related concerns. The descriptions that follow are from the 2019 camps.

Cape Peirce Marine Science and Yup'ik Culture Camp Contact: Terry Fuller
In July 2019 an enthusiastic group of seven area junior high students representing three villages (Dillingham, Togiak and Platinum) traveled to Cape Peirce for this camp. Students were able to observe seabirds, marine mammals, and learn how field work is conducted, as well as learning about the food webs and ecological relationships found at the Cape Peirce area. Students also learned about traditional Yup'ik uses of animals and plants and about Native survival skills. This camp is designed to help students gain a better understanding of the biological diversity of a marine ecosystem. It also strengthens their sense of stewardship for local natural resources. Other topics at this camp included tide pools, wilderness survival skills, archery, bear safety, Leave No Trace camping practices and careers with USFWS. Refuge Interpreter Jon Dyasuk spoke with students about traditional resource uses. A special offering for this year's camp was the chance for the students to try their hand drawing with Colorado pastel artist Penny Creasy. Traditional councils and school districts from throughout western Bristol Bay are cooperators with this camp.

Southwest Alaska Science Academy (Salmon Camp) Contact: Terry Fuller
In July 2019, Togiak Refuge helped with the 19th year of a summer camp aimed at teaching middle and high school students about fisheries science and the importance of salmon to our ecosystem. Students were selected from the Bristol Bay region. During the camp students worked in the field alongside fisheries professionals. Cooperators with the refuge on this project included the Bristol Bay Economic Development Corporation, Bristol Bay Science and Research Institute, University of Alaska, University of Washington School of Fisheries, the Dillingham City and Southwest Region school districts, and ADF&G.

Summer Outdoor Skills and River Ecology Float Camp Contact: Terry Fuller
The 2019 Float Camp took place on the Togiak River early August. At this camp, four high school students learned about river ecosystems and how to enjoy them safely and responsibly

while taking part in a float trip conducted on a refuge river. Students observed and learned about the many fish, wildlife and plant species found on the Togiak and its tributaries. Rafting skills, water safety, different angling practices (Catch and Release), Leave No Trace camping practices and bear safety were topics during the trip. Students also participated in other outdoor activities such as wilderness survival skills. This camp helps students grasp the biological diversity of riparian ecosystems and the importance of salmon as a nutrient source, while developing a deeper sense of stewardship for local natural resources. Montana Artist Mara Menahan was along as an "Artist-in-Residence" and all of the students had an opportunity to work with Mara on natural history illustration while in the field. Traditional councils and school districts in western Bristol Bay are cooperators with this camp.

Division of Refuge Law Enforcement Contact: Derek Thompson
Federal Wildlife Officers work to protect wildlife and habitat and make refuges safe places for visitors and staff. Senior Federal Wildlife Officer (SFWO) Derek Thompson is stationed in Dillingham, AK. He is the Officer responsible for patrolling Togiak National Wildlife Refuge (TNWR) and managing TNWR's law enforcement program.

2020 has been a unique year. SFWO Thompson saw a decrease in commercial activity in TNWR and steady use from local users. Many patrols were focused on caribou. Caribou enforcement patrols will continue to be a priority for SFWO Thompson. SFWO Thompson routinely works with other state and federal agencies to achieve efficient and effective law enforcement. This year SFWO Thompson teamed with law enforcement Ranger's from the Bureau of Land Management to patrol the Mulchatna Caribou herd.

SFWO Thompson encourages anyone with questions regarding US FWS law enforcement to contact him; and reminds all who enjoy and rely upon the resources in the Bristol Bay Region that the US FWS Division of Refuge Law Enforcement is here to help protect those resources for future generations.

Staff Update
New hires to announce:

Yong Ellis, Budget technician, reported to work Dec. 10 and we are excited to have her on board.

Kenton Moos, Refuge Manager. Kenton was promoted from the Deputy Manager position.

Jannelle Trowbridge, Wildlife Biologist. Jannelle is a recent graduate from UAA and is from Nome.

Stan Cullings, Deputy Manager. Stan is due to arrive in October from Arizona.

We still have a couple vacancies and hope to fill them in the near future.