U.S. Fish & Wildlife Service

Selawik National Wildlife Refuge

Newsletter *Spring 2018*

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Fun Fact

Did you eat caribou last year? If so, you may have indirectly nibbled a bit of Selawik Refuge! The majority of our region's caribou visit the refuge each fall and spring on their annual migrations, feeding as they go.

Providing space and habitat for the Western Arctic Caribou Herd is one of the reasons the Selawik Refuge was originally established.

For more on caribou, see page 6 of this newsletter.

photos this page: B. Sweeney/USFWS

Broad whitefish (qausriluk) ready to bake & salmonberries (aqpiks) ready to pick

Wild Places, Wild Foods, Healthy People - Celebrating *Niqipiaq*

Northwest Alaska is blessed with open spaces, free-flowing rivers, and natural beauty. It has millions of acres of protected lands, including the Selawik Refuge. How do these conservation areas benefit local people? One answer: through foods from the land (*niqipiaq*, "real food"). Northwest Alaska has strong local food traditions. Wild foods are not only a way of life, but also super healthy.

- Wild game meats like caribou, seal and moose have more protein and iron than beef, without added hormones and antibiotics.
- Fish, fish oil and fish livers provide vitamins A, B, D and E.
- Greens and berries have vitamins A and C, fiber, and tons of antioxidants.
- Wild foods have no added sodium, preservatives or artificial ingredients.
- Traditional foods are “comfort foods” with connections to culture, family, and identity.

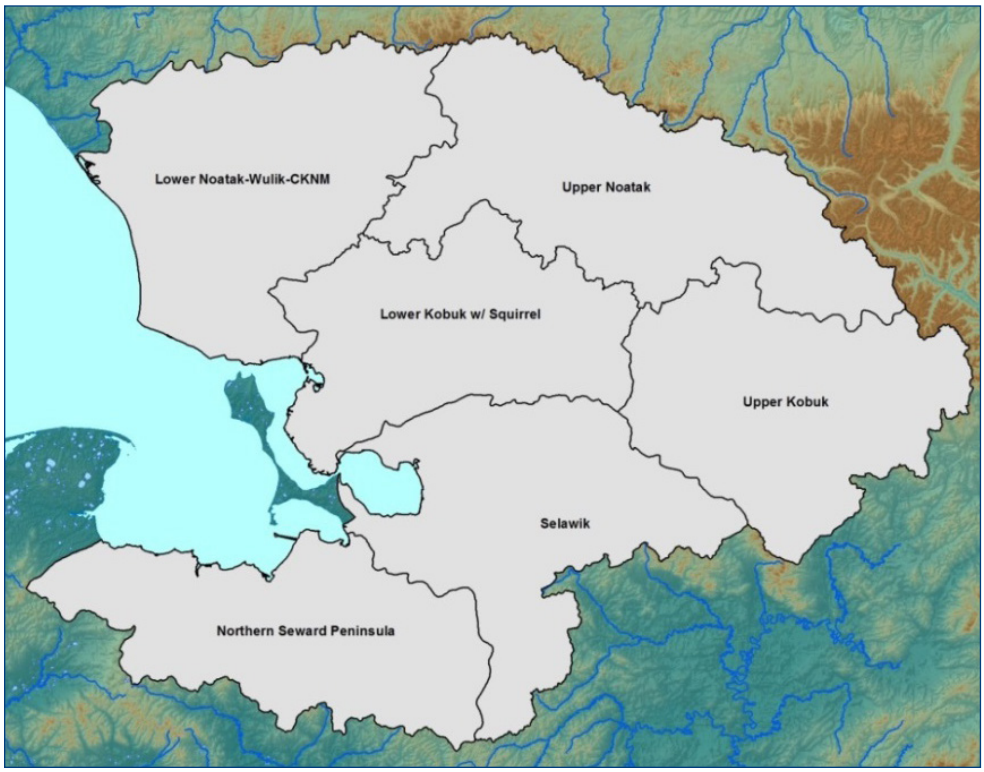
Without the wild places where critters grow, breed, and feed we would not have animals, fish, and plants to harvest.

Public lands are spaces where people can go to enjoy the natural world. Whether it’s cutting wood, picking berries, checking a net or hunting caribou, these activities keep our bodies and spirits strong. Spending time outdoors benefits mental health, providing stress relief and quality time with friends and family. Selawik Refuge is open for hunting and fishing, trapping, and camping… in other words, for people to enjoy!

Moose Decline Continues Across the Region

Moose surveys in 2017 showed further evidence of declining moose populations across Northwest Alaska. In this vast region, biologists survey moose numbers each year in a different section of Unit 23. Each section is re-surveyed roughly every five to six years. The survey effort is led by the Alaska Department of Fish & Game (ADFG) with support from federal agencies. Last year survey crews worked in the Lower Kobuk and Squirrel River drainages.

With its good moose habitat, this area has typically had a higher density of moose than other parts of the region. Managers were watching to see if the recent drop in moose numbers in other areas, including the Selawik River drainage, would also be seen in the Lower Kobuk/Squirrel area.



Alaska Department of Fish & Game

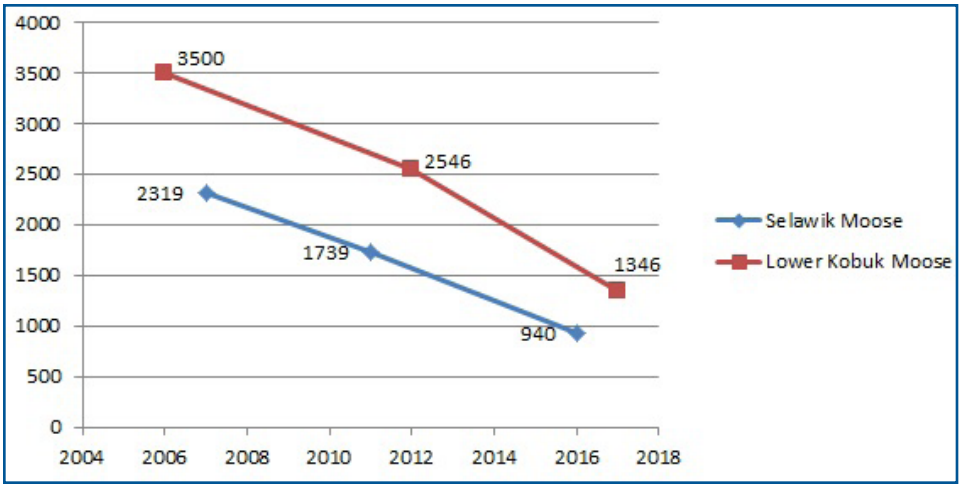
Moose survey areas in the Northwest Arctic (Unit 23). 2017-18 moose surveys will be in the Lower Noatak/Wulik area.

The April 2017 survey resulted in a population estimate of 1,346 moose in the Lower Kobuk/Squirrel. That is a big drop from the last count, in 2012, which estimated about 2,500 moose in the same area. In five years' time, the moose population in that area was cut roughly in half: a 47% decline. This works out to a 12% decline each year – very similar to the rate seen in the previous year's Selawik surveys.

In 2006, the Lower Kobuk/Squirrel area held around 3,500 moose. The moose population has been dropping for over a decade, but has declined more quickly in recent years. Again, the same pattern seen in the Selawik area in 2007, 2011 and 2016 surveys.

The region-wide drop in moose numbers has already brought changes in moose hunting rules. Alaska state hunting regulations no longer allow any harvest of cow moose. Protecting cows and their potential offspring is a first step in helping to slow a decline. ADFG has also eliminated non-resident moose hunting throughout GMU 23. Two regulatory proposals have been submitted requesting changes to Federal subsistence moose hunting regulations.

These proposals, to either shorten or eliminate the cow harvest season on federal lands in Unit 23, will come before the Federal Subsistence Board this spring. Any changes adopted will take effect in July 2018. We will share updated moose hunting fact sheets before fall hunting season begins.



Recent moose population estimates for the Lower Kobuk (red) and the Selawik (blue) areas follow similar trends. Selawik NWR graph from ADFG data.

Moose on a Diet?

One factor that can limit the number of moose able to live in an area is the availability of food. Biologists can measure willows and other plants for signs of branching and growth to better understand how well food preferred by moose is keeping up to the demands of the munching moose.

In April 2017, a crew from the Alaska Department of Fish & Game (ADFG) conducted a winter moose browse survey on the Kobuk River delta. They chose study locations based on information from previous spring moose abundance surveys, and using helicopters collected data on snow depth, willow species, willow growth rates and twig size/shape at multiple sites.

While the information collected is still being analyzed, it does not appear that food supply is limiting moose numbers in the lower Kobuk.

A June 2017 survey of moose twinning rates further supports this idea. ADFG, again working in the Lower Kobuk, reported a twinning rate of 41%, up from 18% in 2010. Moose cows seem to have sufficient nutrition available to produce twins. A future study may look into moose calf survival and causes of death.

USFWS

Documenting Elders' First-Hand Knowledge of Selawik Refuge

N. Hanshaw/USFWS

Karen Brewster, UAF Oral History Program (L) and Selawik Refuge Manager Susan Georgette (R) interview elder Pauline Ramoth in Selawik, February 2018.

Local knowledge of the lands and resources in the Selawik River area go back much further than the 35 years since Selawik Refuge was established.

To help us expand our understanding of the refuge over a longer time scale, we've begun a multi-year oral history project titled *Early 20th Century Land Use and Environmental Conditions on Selawik National Wildlife Refuge*. We will be working with Selawik and Noorvik elders, community members & the University of Alaska Fairbanks Oral History Program to document this information.

The project will focus on areas within modern-day refuge lands (middle and upper Selawik River settlements such as Niliq, Nauyaqtuuq and Tagraġvik River) and subsistence activities at these locations including hunting of muskrats and other key resources.

What we hope to achieve with this project:

- Increase understanding of the natural and cultural resources of the Selawik Refuge (through both elder interviews and research into existing archival materials)
- Incorporate traditional knowledge into our understanding of changing ecological conditions over time
- Archive recorded interviews to be made available to the public through UAF

We humbly thank elders and other local experts for sharing their time and knowledge to make this project possible.

Sheefish Lifestyle Helps Them Overcome Challenges

The mighty sheefish: They only live in the far north. They grow to an impressive size: up to 60 pounds! Thousands are harvested for food in our region each year, yet elders don't remember a time when sheefish failed or crashed. How do sheefish do it? What's the secret to their success?

Several features of sheefish help them do well. One is their longevity: up to 40 years old! During their long life, sheefish can spawn multiple times, unlike salmon, who spawn once and die. When they do spawn, they "go big:" a large female can have as many as 400,000 eggs. Sheefish "broadcast" spawn near the surface of the water, and the eggs drift down and settle in the spaces between gravels to incubate or mature over winter. Sheefish head downriver after spawning in the fall, get back to the business of feeding and fattening up, and are ready to spawn again in a year or two.

Sheefish are not picky eaters, feeding on any type of fish they can fit into their mouths (including smaller sheefish). They move around seasonally to take advantage of various food sources, like herring, when they're available. These features combine to give sheefish resiliency to outlast short-term environmental challenges.

S. Georgette/USFWS

Sonny Berry Jr. and others make many hours-long boat trips to ensure all harvested sheefish are brought downriver and shared with Selawik residents.

Such challenges include the permafrost thaw slump which spewed mud and debris into the Selawik River above the sheefish spawning grounds, most noticeably from 2004-2010. Some of the mud likely settled in the spawning grounds, potentially changing the gravel habitat. Since 2011, US Fish & Wildlife Service biologists from Fairbanks have been teaming with Selawik Refuge and the Native Village of Selawik to study the impacts of this slump on sheefish. What did all that mud in the river mean for sheefish spawning habitat and long-term survival?

S. Georgette/USFWS

Ingram Clark and Partick Foster Sr. display several Selawik River sheefish.

Each fall, the research crew heads upriver about 45 river miles above "Second Forks" (the confluence of the Selawik and Tag rivers) to where sheefish spawn. They catch 200 male sheefish in order to collect otoliths (ear bones), with which they can determine each fish's age. A sonar system is then set up downstream of the spawning area to count sheefish moving downriver after spawning. After seven years, what information has this project yielded?

We now know that sheefish in the Selawik and Kobuk Rivers first come upriver to spawn at age 9. Compared to sheefish in the Yukon River or in Canada's Mackenzie River (which start to spawn at age 6), our fish take longer to mature. This slow growth is partly why this current research project has run from 2011-2018: the project needed to start early enough to get a baseline look at the look at the sheefish ages through time (for those fish that were hatched before and after the slump), and then continue to track their ages to see what year groups of fish returned to spawn.

This project has shown that sheefish hatched after the slump (after 2004) are showing up in reduced numbers on the Selawik River spawning grounds. In other words, it looks like the slump may have had a negative effect on sheefish survival. This is shown by sampling and recording the ages of Selawik fish (getting ages from otolith ear bones) and

S. Georgette/USFWS

Selawik's expert anglers: Patrick Foster Sr., Ingram Clark and Frank "Sonny" Berry Jr. fish for sheefish on the upper Selawik River. High water in September 2017 meant more fishing from the boat because many gravel bars were submerged.

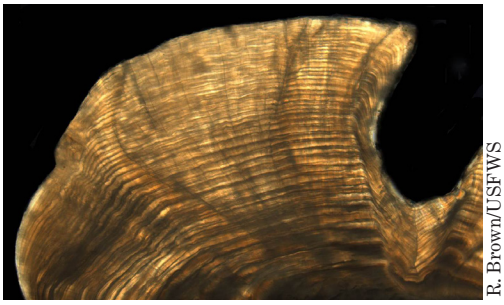
S. Georgette/USFWS

Above: The crew processing sheefish samples. Ray Hander measures and weighs each fish, Matt Larson removes the otoliths (close-up below), and Sonny Berry cuts the fish to hang and dry.

S. Georgette/USFWS

S. Georgette/USFWS

Above: Matt hands the otoliths off to Patrick Foster Sr., who places each in a separately numbered envelope.
Below: Yearly rings on each thinly ground otolith are counted under a microscope to learn a fish's age.



R. Brown/USFWS

then comparing the Selawik and Kobuk River age samples from the same years. The comparison with the Kobuk samples (provided by partners at ADFG) shows that the low number of younger fish is only seen on the Selawik, and not region-wide.

While sheefish in our region have been studied before, there were new elements to this USFWS project. This is the first study on sheefish population age structure in Northwest Alaska, shedding new light on life history and population dynamics. Also, this is the first project to use DIDSON sonar to estimate the number of spawning sheefish on the Selawik.

This updated method gives an estimate with a high degree of certainty (because researchers are watching and counting outmigrating fish on the sonar videos) and has shown about 21,000 spawning fish on the Selawik in recent years. So, although there are currently fewer younger aged fish, there are still many sheefish coming back to the Selawik River to reproduce.

This is not the first thaw slump that Selawik's sheefish have had to contend with. Geologists saw evidence of several old slump locations near the current crater. Despite this, enough sheefish have been in the area for a long enough time to warrant the naming of the river sii|vik, or "place of sheefish." These fish are resilient and should continue to survive and thrive in the Selawik River drainage.

What's next in sheefish research? The current project on the Selawik takes place for one more year (fall 2018). Longer term, unanswered questions about sheefish remain. For one, we do not have an estimate of the total sheefish population in the region, since not all mature fish travel to the spawning grounds in any given year. Another topic to look into further: identifying spawning areas and key habitat for fish that sheefish feed on, such as herring.

Although we've learned much about these mighty fish through research in recent years, there are still some "secrets of sheefish success" yet to be revealed.

Caribou Herd on the Upswing

The June 2017 count by Alaska Department of Fish & Game (ADFG) showed about 58,000 more caribou in the herd than in 2016. That is great news for the herd and those who depend on it! Caribou in our region are part of the Western Arctic herd, whose population is now estimated at 259,000 animals compared to 201,000 animals in 2016.

After several years of decline, the herd might now be stabilizing.

There are other positive signs: good survival rates in 2017, a high birth rate, and a healthy bull-to-cow ratio.

Because of these improvements, caribou hunting regulations will likely remain the same for the near future. Please continue to help the herd by taking only what you need and not wasting caribou.

The effects of this winter's deep snow and icing on caribou is not yet known. It might have been a tough winter for caribou survival.

In 2017 ADFG used a new digital camera system for the caribou count. Part of the increase in the herd estimate is due to this new technology, as biologists were able to more accurately count young calves.

All caribou hunters in Unit 23 should now have "RC907" state caribou harvest permits to record the date, location and sex of caribou they harvest. Call ADFG at 1-800-478-3420 with questions.

Iñupiat Iḷitqusiat Guidance on Winter Caribou Hunting

The Native Village of Kotzebue and Kotzebue Elders Council recently issued the following guidance on winter caribou hunting:

Tuttu are integral to our culture. In the past, local people had to work very hard and travel great distances to harvest caribou. They didn't take caribou for granted, but developed a deep respect for the animals.

Without the knowledge of our parents and grandparents, and their conservation of the caribou, we wouldn't be where we are today. Today's hunters need to carry on this conservation and respect so we will have caribou for future generations.

- Consider hunting with a partner or a group. You can work together to plan how to get close to the caribou or move them toward another hunter's position. Through sharing and cooperation everyone will get a portion of the harvest.

- Take your time. Observe caribou groups before you approach.

- Pick out the animals you want to harvest.

- Look for animals that are fat and in good shape before you shoot. The shape of the back, the color/quality of the hide, and the upward curve of the tail can be clues to look for.

  -When mature bulls are in rut, younger bulls and barren cows can still provide good meat.
  -Do not shoot cows with calves. If you want to take a cow, wait to see if it has a calf with it.
  -Avoid pregnant cows when possible, they are the breeding stock of the herd.

- Don't shoot aimlessly into a bunched up group of caribou. Wait until they separate, and target specific animals.

- Chasing caribou and running them too much is bad for the health of the animals and results in poor quality meat. If you must chase, pick out one animal to harvest and move it away from the rest of the group.

- Use the terrain: look for high ground, hills or cover, or deep snow. Caribou will often go to high ground if they are being approached. You can make a plan to take advantage of this. Or you can try to move caribou toward deep snow, which will allow you to get closer to them.

- Show respect for the caribou after it is harvested. You're responsible for the caribou you shoot. Take good care of the meat and all the parts. This is how we give thanks to the animal that gives itself to us. Not only is waste of caribou disrespectful, it is illegal.

- In the wintertime, an effective way to tenderize the meat is not to butcher the animal too soon. You may gut the animal out in the country, but keep the skin on and don't take the animal apart. Then, bury it in the snow for a few days. The hide will keep the meat from freezing, and the retained heat will tenderize your meat.

Who We Are

Selawik Refuge Staff

- Susan Georgette
  Refuge Manager
- David Zabriskie
  Assistant Refuge Manager
- Bill Carter
  Fish Biologist
- Brittany Sweeney
  Outreach Specialist
- Siikauraq Martha Whiting
  Environmental Education Specialist
- Nichole Hanshaw
  Refuge Information Technician
- Shawn Nelson
  Maintenance Worker
- Frank "Sonny" Berry, Jr.
  Maintenance Worker

How to Contact Us

Phone: 907/442 3799 or 800/492 8848 toll-free

Email: selawik@fws.gov

Mail: PO Box 270
Kotzebue, AK 99752

Our Office:
160 2nd Avenue in Kotzebue
(around the corner from the Borough office)

On the web:
www.fws.gov/refuge/selawik

Facebook:
Selawik National Wildlife Refuge

Project Updates:

Water Chemistry and Permafrost Thaw

Is increasing permafrost thaw changing the chemistry of the Selawik River and altering the food web? During the summer of 2017 we wrapped up field work for a multi-year water chemistry project investigating this issue.

Selawik Refuge cooperated with researcher Robert Stottlemyer and Michigan Tech University to fund, design, and complete this project. Sonny Berry was key in getting the field work done, teaming with two seasonal research technicians to collect samples from water and soil sites throughout the Selawik River.

Collected samples are still going through lab testing, with a detailed report to come. We are hoping to learn more about the relationships between soil thaw, daylight, water flows and productivity of the aquatic system. This project should give us a clearer picture of the river system's nutrient and chemical processes, and provide a baseline to compare with future studies.

Ice Thickness

This winter we have been measuring ice thickness at two locations: on a lake near Kotzebue and on the Selawik River above the village. The measurements are collected monthly and submitted to the National Weather Service's Alaska-Pacific River Forecast Center (APRFC). Ice thickness measurements are used by the APRFC to make predictions about breakup and flooding potential in the spring.

We had noticed there were no measurements from northwest Alaska and decided to contribute. The sites need to be in freshwater locations, so that's why we selected the ones we did.

An interactive ice thickness map which includes our data, numbers from across the state, and historic data is online at www.weather.gov/aprfc/IceThickness.

If you live in the Northwest Arctic Borough and would like to volunteer to take ice measurements in your village, contact Bill Carter at our office (or email bill_carter@fws.gov).

Scenery along the Kugaraq River, a tributary of the Selawik, July 2017.

S. Georgette/USFWS

U.S. Fish & Wildlife Service
Selawik National Wildlife Refuge
P.O. Box 270
Kotzebue, AK 99752

Phone: 907/442 3799
800/492 8848
Fax: 907/442 3124
Web: http://selawik.fws.gov/

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Know the Land

The Iñupiat have long inhabited the Selawik River valley, an area that Congress designated a national wildlife refuge in 1980. Many places throughout northwest Alaska hold deep meaning and tradition for local residents. Standard maps bear few of the Iñupiaq names for these places. Here are two river channels in the Selawik area.

J. Magdanz/USFWS

Tuqłumaaġruum Paaŋa

The mouth of the Tuqłumaaġruq River, which flows from Tuqłumaaġruq (Tuklomarak) Lake into Selawik Lake. A location rich in fish, including sheefish, with several camps and archaeological sites. Also known for dangerous ice during the winter months; caution is recommended.

B. Sweeney/USFWS

Qanisugruk

A winding channel connecting Selawik and Tagraġvik rivers. Qanisugruk branches off the Tag about six miles above its mouth, and joins the Selawik below the Tag mouth. Qanisugruk is mostly narrow with steep banks; there are also wide, grassy sections. This channel and nearby lakes are used for waterfowl and moose hunting.