Arctic Network Newsletter

Alaska Region Inventory & Monitoring Program

National Park Service

Arctic Network Inventory and Monitoring Program (ARCN) Our mission is to collect scientifically sound information through natural resource monitoring to contribute to park management and facilitate park preservation for future generations. We work in Bering Land Bridge National Preserve (BELA), Cape Krusenstern National Monument (CAKR), Gates of the Arctic National Park and Preserve (GAAR), Kobuk Valley National Park (KOVA), and Noatak National Preserve (NOAT).

In this issue

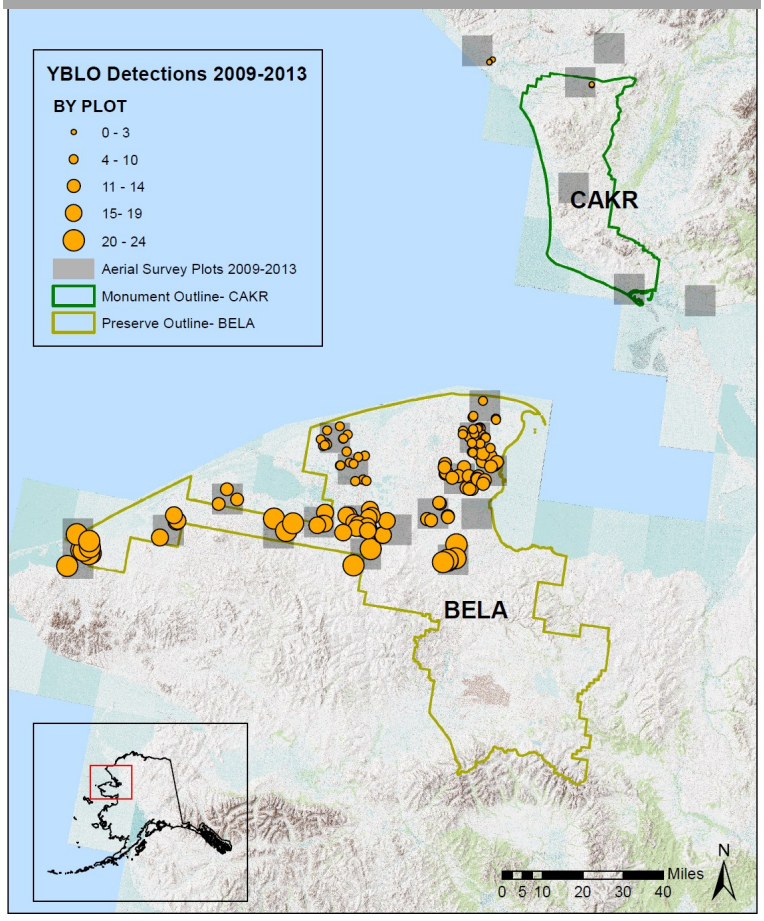
Our Network is Alaska's 5 northern National Parks

Other Acronyms used: USFWS– US Fish and Wildlife Service, ADF&G– Alaska Department of Fish and Game

Considering yellow-billed loon conservation–

Last summer, ARCN completed its fifth year of breeding population surveys and contaminants sampling for yellow-billed loons on the Seward Peninsula in Bering Land Bridge National Preserve (BELA), assisted by USFWS. Results from the aerial surveys (right) and contaminants sampling will be considered, with data from other breeding populations—occurring mostly in the National Petroleum Reserve-Alaska—in the upcoming decision for listing the birds under the Endangered Species Act (ESA). After the 2004 petition for listing the species, USFWS published a 12-month finding on March 25, 2009 concluding there was sufficient information to designate the yellow-billed loon as a candidate for listing under the ESA (74 FR 12932). Each year since then, USFWS has assessed the species' status, including population trends, historic and current distribution, and current threats to their survival. As part of a settlement agreement, USFWS is required to submit a proposed rule to the Federal Register by September 30, 2014 to either list the yellow-billed loon as endangered or threatened, or as not-warranted—lifting its candidate designation. ARCN partners with Bureau of Land Management, USFWS, and Wildlife Conservation Society to share information about loon ecology and conservation with communities in northern Alaska. Please contact Melanie_Flamme@nps.gov, 907.455.0627 for more information.

Yellow-billed Loon Distribution in BELA 2009 - 2013

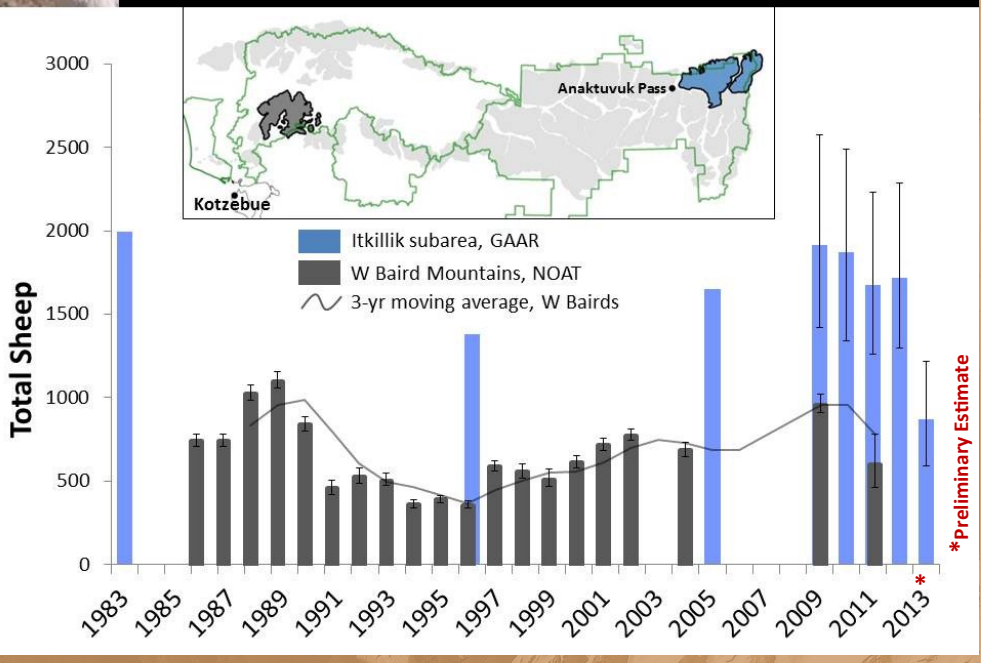


Dall's sheep numbers down after long winter

Last winter and spring appear to have been hard on Dall's sheep in the rugged mountains of the Itkillik subarea of northeastern GAAR. Their numbers from 2005-2012 were stable (~1700-1900 total sheep), and not different from counts in the early 1980s. However, preliminary estimates from the 2013 survey show as much as a 50% decline in total numbers and ewe-like sheep (ewes, yearlings, < 1/2 curl rams) and very low lamb productivity. Numbers of rams with greater than ½ curl horns show little change from 2009-2013. We presented these results last September at a community meeting in Anaktuvuk Pass.

Other surveys conducted by ADF&G, BLM and USFWS in the Brooks Range, Alaska Range and Kenai Peninsula also show declines in total sheep and/or lambs in 2013. The long winter and very cold May are considered contributing factors to low lamb productivity across the state and higher winter mortality of adult ewes and yearlings in the Itkillik. We expect, and local observations indicate, similar trends in the Baird and DeLong Mountains, NOAT. Weather postponed the Baird Mountain survey in 2013, but the 2011 estimate already showed 30% fewer sheep there compared with 2009. Prior to 2013, surveys conducted in ARCN and CAKN parks showed Dall's sheep numbers had recovered from the large-scale decline of the 1990s. We plan to survey the Itkillik subarea and NOAT in 2014.

ARCN Dall's sheep numbers



To read more about the surveys, Schmidt, J. H., and K.L. Rattenbury. 2013. Reducing effort while improving inference: Estimating Dall's sheep abundance and composition in small areas. *Journal of Wildlife Management.* 77:1048-1058.

The Power of Pellets– Fresh and frozen fecal pellets of Dall's sheep can provide information about their diet, genetics, parasites and hormone levels. We are monitoring sheep diet composition and quality because these factors influence productivity and recruitment in sheep populations, and vegetation communities (forage availability and quality) may change drastically with climate change. Pellets collected from the upper Itkillik River valley in April 2012 and 2013 are currently being analyzed for winter diet composition. We are working with the USGS Alaska Science Center to identify individual sheep sampled and to compare genetics with other sheep populations elsewhere in Alaska parks. For more information, contact kumi_rattenbury@nps.gov , 907.455.0673.

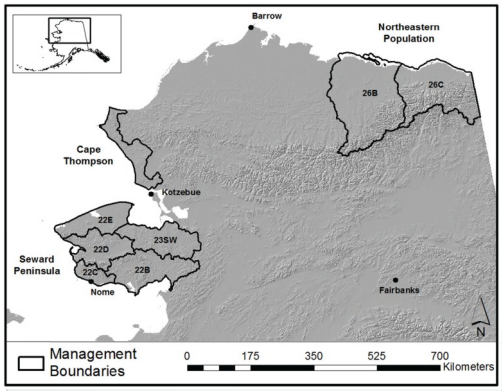
Thank you to volunteer Monty Garroutte!

ARCN parks are home to approximately 12-13% of the world's Dall's sheep. Dall's sheep can consume between 50-120 species of vegetation, primarily forbs, grasses, and sedges during summer.

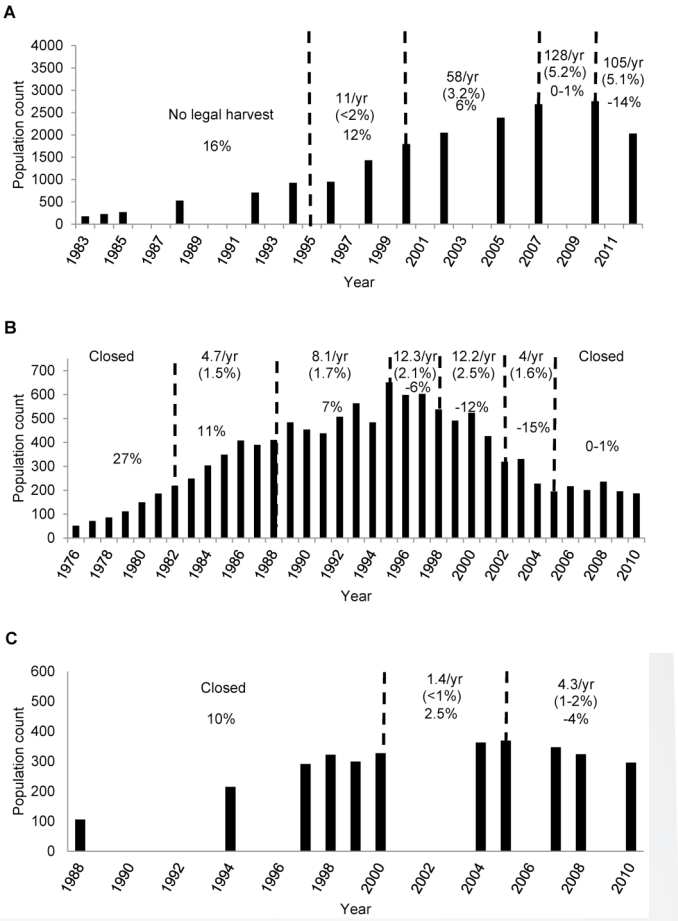
Managing for healthy muskoxen populations:

Reconsidering male-biased harvest management.

Harvest of large, mature male muskoxen appears to affect Alaska's muskox populations. A recent publication by NPS Biometrician Josh Schmidt and ADF&G Area Biologist Tony Gorn, showed that mature bull to adult cow ratios declined 4-12% year and short-yearling to adult cow ratios– or recruitment of young into the population— declined 8-9% year in most heavily harvested areas from 2002-2012 . Growth rates of all three Alaska mainland, muskox populations (Seward Peninsula, Cape Thompson, Northeastern) decreased disproportionately after increased harvest of bulls and calf to cow ratios declined in the Northeastern population as bull harvest increased.



Periods of population decline followed harvest of large males, possibly as a consequence of predation. Muskoxen live in social groups of mixed sex and age individuals— a structure that is important for warding off predators. When threatened, large mature bulls tend to place themselves between the perceived threat and the rest of the group that forms an outward facing circle. Another possibility is a lack of large, mature males in herds, may reduce recruitment since younger and smaller males may be unable to maintain a harem. Additional research on birth rates, health, and survival is needed to fully understand the declines in harvested populations. Until more is known, male-biased harvest regimes should receive careful consideration in managing muskox populations.



Population counts for the Seward Peninsula (A), Northeastern (B) and Cape Thompson (C) muskox populations in Alaska. Dashed lines delineate periods with substantial changes in harvest. Values indicate the average number of bulls harvested annually during each period, the average annual overall harvest rate as a proportion of the total population (in parentheses), and the exponential rate of growth during each period. In http://www.plosone.org/article/info:doi/10.1371/journal.pone.0067493

Photo courtesy of Quintin Slade

ARCN works with ADF&G to conduct population surveys and group composition surveys. Population counts are conducted from fixed-wing aircraft, and prior to 2010 were flown over all known muskoxen habitat. Now transect lines spaced at 4.8 km intervals are flown to cover Game Management Units. Helicopters are used to survey sex and age composition of muskox groups during March and April, before calving. Contact Jim Lawler, jim_lawler@nps.gov, 907.455.0624 for more information.

Engaging Alaska's youth in yellow-billed loon conservation: Youth videography in Bering Land Bridge National Preserve.

Photo courtesy of Cameron Rutt/WCS

Eighteen year-old Max Dan (left) of Anchorage and 14 year-old Sam Tocktoo (below) of Shishmaref travelled to BELA last June to film NPS monitoring activities for yellow-billed loons. Both students were part of a collaborative project with NPS, Alaska Geographic, Wildlife Conservation Society, and Alaska Teen Media Institute (ATMI) focused on engaging youth in long-term monitoring efforts of yellow-billed loons (an ARCN vital sign) in BELA through video storytelling. Unfortunately, the late thaw of lakes on the Seward Peninsula and poor weather in Kotzebue hampered the pair's videography efforts. Despite these limitations, the pair produced a story in just four days at ATMI using footage Max collected in Kotzebue and from a Cessna 206. Max and Sam are hoping for another chance to film yellow-billed loons in order to communicate the species conservation status and challenges. Check out their story about trying to film nesting yellow-billed loons in BELA at http://youtu.be/EbRmNLWNvAc and Spirit of Youth interview at http://www.spiritofyouth.org/mediaradio/882013114828AM~~Track08.mp3. For more information, contact Melanie Flamme (melanie_flamme @nps.gov, 907.455.0627) or Stacia Backensto (stacia_backensto@nps.gov, 907.455.0669).

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Science for the stewardship of Arctic Parklands

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