

CARIBOU TRAILS

TUTTUT TUMAI (Inupiaq) BEDZEYH TENE (Koyukon Athabaskan) TUNTUT TUMAIT (Yup'ik)

NEWS FROM THE WESTERN ARCTIC CARIBOU HERD WORKING GROUP

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WESTERN ARCTIC CARIBOU HERD WORKING GROUP

The Western Arctic Caribou Herd Working Group (WACH WG) includes subsistence users, other Alaskan hunters, reindeer herders, hunting guides, transporters, conservationists, biologists, and natural resources managers. The group meets once or twice a year, with additional

sub-committee meetings throughout the year, as specific needs arise. During meetings, biologists report on the current health and population status, range condition, and other biological factors affecting the herd. Invited specialists present information on topics that may impact the herd, such as climate, statewide transportation, and public land use planning. Elders address the group, sharing knowledge passed down for generations. The group identifies concerns, requests information, and advocates for actions that will conserve and benefit the herd, including habitat studies or protections from the impacts of development. The group provides public information through this newsletter, *Caribou Trails*, and welcomes comments from the public.

The Working Group (WG) encourages you to involve yourself in issues surrounding the future of Western Arctic Herd (WAH) caribou. It is important to be involved and have an active voice in how caribou are managed to ensure long term conservation of this precious resource. Contact your local representative to see how you can voice your opinion, share your perspectives, or volunteer your time as a representative or alternate to your region.

WAH 2009 CENSUS REVISED

Caribou biologists at the Alaska Department of Fish and Game (ADF&G) recently revised the July 2009 census count of the WAH. The corrected 2009 WAH population estimate is 348,000 caribou.

Caribou herds fluctuate naturally due to a variety of factors. The WAH numbered 243,000 caribou in 1970 and then declined to 75,000 by 1976. The herd steadily increased until peaking at 490,000 animals around 2003, then fell to 377,000 caribou in 2007 which indicated the onset of a decline after more than 25 years of growth.

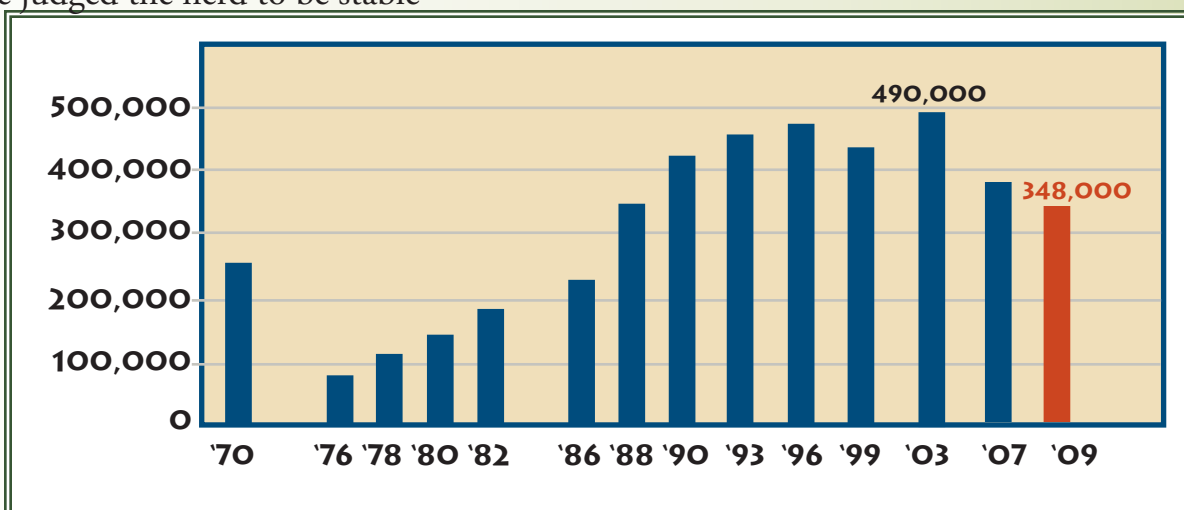
“Though our previously-announced 2009 estimate of 401,000 animals indicated a slight increase since 2007, we interpreted that as within the range of our ability to accurately count a herd of this size, and we judged the herd to be stable” said biologist Jim Dau.

The revised 2009 count of 348,000 caribou suggests the WAH was not stable from 2007 to 2009 as originally reported, but has

declined 4-6% annually since its peak of 490,000 caribou in 2003. The revised estimate will not result in any immediate changes to management activities or hunting opportunities. Over the past few years, biologists have intensified monitoring of this herd after the 2007 census suggested the onset of a decline.

“The herd is still very large, individual caribou appear to be healthy, the rate of decline is still modest, and harvests are not thought to be affecting its status,” Dau stated. “After exceeding a population size of 400,000 caribou for over 20 years, a period of slow decline is normal and probably preferable to continued growth and the possibility of an eventual, abrupt decline.”

Biologists will continue monitoring of the WAH, with the next census to occur in early July, 2011.



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MILDRED BLACK, SHUNGNAK ELDER

Invited Guest Elder at the December 2010 Caribou Working Group Meeting in Anchorage, Mildred shared stories of life and caribou.



Mildred skinning caribou legs for mukluks (right), demonstrating use of a skin scraper (bottom left), drying caribou meat in her home (bottom right).



Photos by M. Nedwick

GROWING UP ON THE KOBUK

Mildred Black has lived in the Kobuk River village of Shungnak since she was small. Mildred comes from a traditional family, and maintains a strong link to the Inupiaq culture by sharing and living a traditional life. She knows the Inupiat language and lifestyle of the past, and whether at the local school, sewing group, or in her home, spends much of her time teaching others.

Caribou were and still are important to the Inupiaq people, not only for food and warmth, but also in stories passed down through the generations.

HARD TIMES, MISSING CARIBOU

When Mildred was young, caribou were scarce. She heard elders talk about caribou and tell stories about hunting, but she doesn't remember seeing any until she was about 6. When caribou started to come back, she remembers one of her sisters seeing a lone caribou, grabbing the family .22 rifle and finding just one shell,

"That's how poor we were, she killed the caribou with one shot from the .22. We hadn't had meat in so long, we ate until we were really full."

LEARNING TO SEW

Sometime in the late 1940s caribou returned to the Kobuk. The girls learned how to skin caribou properly and how to sew well. Mildred remembers her mother teaching her to care for the sinew. Sinew from caribou was essential to use as thread in mukluks because sinew was waterproof. They were too poor to buy shoes from the store, and even if they had money, there weren't any shoes available in Shungnak to purchase.

"At Christmas children would get mukluks, this was a lot of shoe sewing. If caribou were either unavailable or skins not cared for properly, shoes couldn't be made and lives depended on proper footwear."



EATING CARIBOU

When harvesting caribou, virtually nothing went to waste. Every part of the caribou was eaten. Along with common methods of eating dried or cooked caribou meat,

people prepared caribou in other ways. Whole caribou were placed under the snow and the meat would 'cook' inside the caribou body, this method of preparing meat was so good that Mildred compared the taste to that of sugar. Caribou blood was also eaten and used to make a delicious ice cream dish. The second stomach sack was also used to 'cook' meat. Little pieces of muscle were placed inside the sack and the process of fermentation would also cook and tenderize the meat. Fat from the caribou bones was also a delicious treat. She remembers boiling bones slowly for 2-3 days, then smashing the bones with a "rock-hammer", this was a delicacy that the elders would eat and share amongst themselves.

CARIBOU STORIES

After the meat is eaten off the head, you can see "tears" on the side of the skull. These "tears" are there for a reason. Mildred remembers hearing this story from Robert Cleveland...



"A long time ago caribou were carnivores and ate people. Once, a little old lady and her son were living in the tundra by themselves. Her son went out hunting and was attacked by caribou. She saw the caribou eat her son. She was so saddened and full of mourning that she decided to get back at the caribou. She went cranberry picking and knew that the caribou would take her too, so she took her cranberries and smashed them over her body. The caribou ate her and the bitterness of the cranberries caused the caribou teeth to fall out making the "tear" pockets on each side of their nose. Someday the caribou will get all of their teeth back."

To Alaska's subsistence users caribou remain an essential component of life. Whether it is through sustenance or stories, caribou provide much of the cultural backbone for Inupiaq people of the Northwest.



BENEDICT JONES, KOYUKUK

A Working Group member, caribou hunter, and respected village leader shares information on snaring wolves.



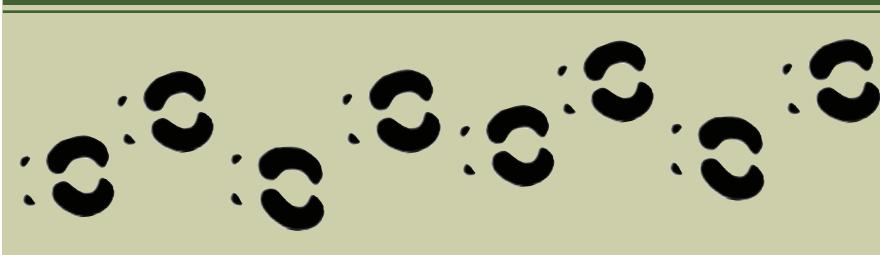
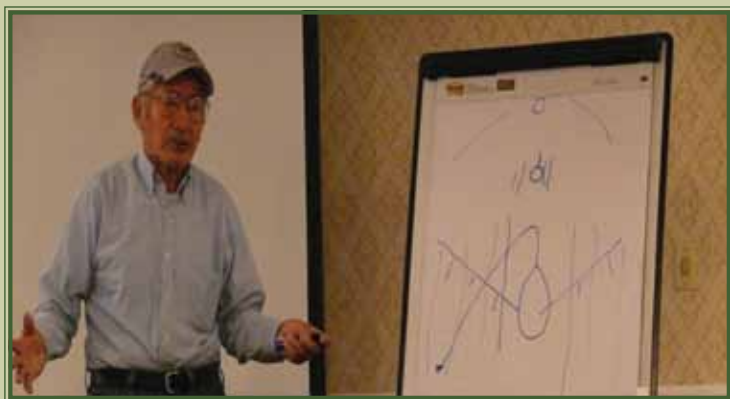
Benedict demonstrating setting technique (left), snare setting diagram and a snare set in the willows (below).

Photos ADF&G and B. Jones



SNARE USE

Before people had access to traps, guns, and ammunition, snaring animals was common. Benedict has been hunting and trapping in Alaska all his life, and shares pointers for how to successfully snare animals. Snaring wolves is often done in areas where the population is high or they are threatening people, domestic animals, and subsistence resources. A snare, set appropriately, can kill a wolf almost instantly and will avoid accidental taking of caribou and moose.



TIPS FOR SNARING SUCCESS

Locate a moose or caribou that died of natural causes.

At the kill site, use number 9 wire with locks, a number 2 wire is too small. Number 9 wire will result in an instant kill where number 2 might cause an animal to struggle unnecessarily.

Avoid using a Thompson snare because the wolves can smell the oil in the snares and avoid it.

It is important to use clean gloves that do not have dog or human scent on them as well as to store the snaring materials in a clean garbage bag. This keeps them scent free, important for snaring wolf successfully.

Make a large loop at the bottom and set it 14-16" above the ground. The height of the snare is important so a larger animal is not accidentally captured. If the loop is too close to the ground, you are likely to get a fox or wolverine and if it too high, moose and caribou are at risk.

Make snow machine tracks all around the kill site. Wolves like to walk on snow machine trails. Set snares along the snow machine trails.

Based on the diagram you can have multiple snare sets, once the leader gets caught the other will flare out and the additional snare will catch those wolves. Wolves monitor their territory and every 10 days they make their circle and come back to their same area.

When checking your snares, get close enough to see them, but avoid close proximity to prevent scenting the area. If there aren't any wolf tracks, stay away, otherwise you'll scare them away. If you catch the leaders, the pups will stay in that area.

Use sour seal oil, rub it on the branch and snare. Wolves can smell that for a long ways away.

It takes patience to snare a wolf, and you might need to wait up to 10 days or longer.

GLOBAL CARIBOU: Population Dynamics

Recently, global conversations about caribou have been dominated by concerns regarding the decline of many of the largest herds. Of the 43 major caribou and reindeer herds that have been monitored in the last decade, at least 34 are declining (*Global Change Biology*, Vors 2009). Although some herds are increasing, and others don't have enough population data to determine their status, the majority of large caribou herds have significantly declined.

There are a number of studies worldwide attempting to understand factors responsible for these changes, but to date no single factor has been identified. Most caribou biologists agree that population declines are not caused by one single event, but a combination of factors.

FACTORS INFLUENCING CHANGE

Biologists generally agree that a combination of factors contribute to changes in caribou populations. A number of studies in the circumpolar north are looking at the cumulative effects of these factors as well as isolating specific events that might be causing changes in individual herds.

The declines in caribou numbers seem to be consistent with changes in arctic temperatures, landscape development, and the fact that many caribou populations were previously high. High population levels reduce resource availability for all animals. High numbers can also lead to an increase in the number of predators, and might make animals more susceptible to disease.

Factors such as climate, weather, and human changes to the landscape can also cause changes in population. These factors impact caribou regardless of their population size.

"A rain-on-snow event during mid-winter can create a killing coating of ice on the vegetation that would be fatal to many caribou regardless of whether their population was high, low, increasing, or decreasing," stated Jim Dau, ADF&G caribou biologist.

Caribou cow and calf swimming the Kobuk courtesy ADF&G. Caribou antler on the tundra, courtesy of Sue Steinacher.



CLIMATE

Linkages between large-scale climate patterns and caribou populations have been documented in Norway, Greenland, and Canada. Alaska scientist Kyle Joly, with the National Park Service (NPS), found similar linkages between caribou population growth rates across arctic Alaska (including the WAH) in relation to large-scale climate patterns. Studies indicate that there might be some correlation between caribou herd growth rates and climate patterns.

Increasing temperatures could affect the timing of spring and fall caribou migrations which in turn could affect the survival of calves and the success of hunters. Indeed, since about 2000, WAH caribou have begun the fall migration 2-6 weeks later than during the 1980s and 1990s. Also insects will thrive under warmer conditions and cause additional problems for caribou. Snow depths might increase as precipitation rates change, impeding movement from predators and decreasing access to forage.

Warming may however lengthen the growing season and enhance the growth of vascular plants, benefiting caribou. This might explain why a few herds are actually increasing. Obviously the interactions of caribou and climate are complex and it is difficult to predict how these factors may impact caribou.

DEVELOPMENT

Human related changes to the landscape can have cumulative negative impacts on caribou. Generally one project alone would not disrupt the health of the entire herd, but the combined impacts from mines, roads, wells, pipelines, railways, towns, and agriculture could

fragment the landscape, increase pollution and human access to caribou.

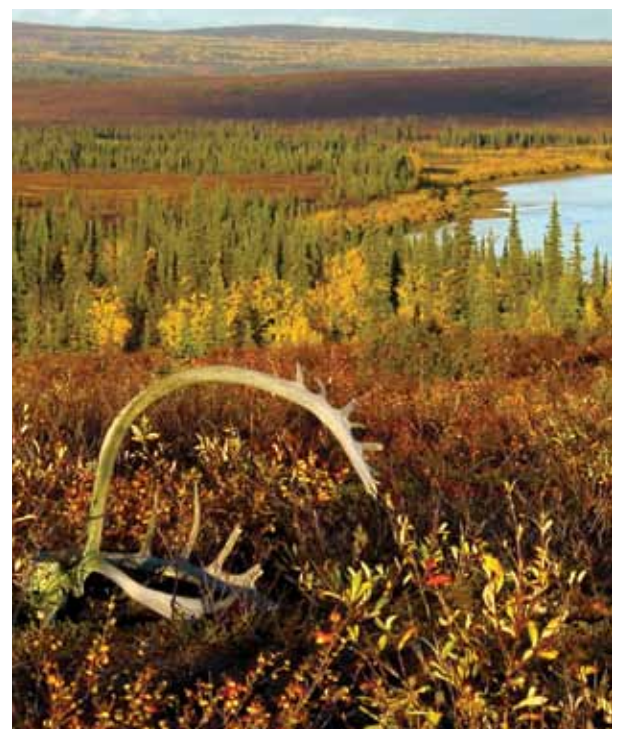
NATURAL CYCLES

Some researchers speculate that caribou populations may cycle, much like that of snowshoe hares and lynx. Today, scientists and managers monitor caribou using telemetry and aerial survey techniques, but these tools have only been around for 50 years. As a result, quantitative historical information regarding caribou population fluctuations is lacking.

SUMMARY

One thing most can agree upon is that the Earth's climate is changing, human uses of the landscape are increasing, and scientists are seeing changes in wildlife populations across the globe. Everyone should expect changes in caribou populations.

The best that wildlife managers can do is monitor the health of the herd, be aware and knowledgeable of human related landscape changes, and recommend protections to keep caribou healthy and their numbers strong.



CARIBOU HEALTH: Assessments Looking Positive

General Health Observations of Caribou in 2010:
WAH biologist Jim Dau and State Wildlife Veterinarian Dr. Kimberlee Beckman examined caribou health this year at Onion Portage. Although results are not yet final, preliminary results and direct observations indicated that WAH caribou are healthy. It appears that disease is not strongly affecting this herd.

“This year, we did see more tapeworms and blood serum levels indicating a higher level of viruses than we expected to see, however, at this point there is no obvious change from the health assessment completed in 2007. The percentage of WAH caribou positive for brucellosis from the 1960s is steadily declining. In general we are seeing fewer skinny animals and it appears that male calf weights are increasing. This suggests that even though we are seeing measurable changes in vegetation from many years of high caribou numbers and possible climate change, the range of this herd is still capable of supporting healthy caribou.”

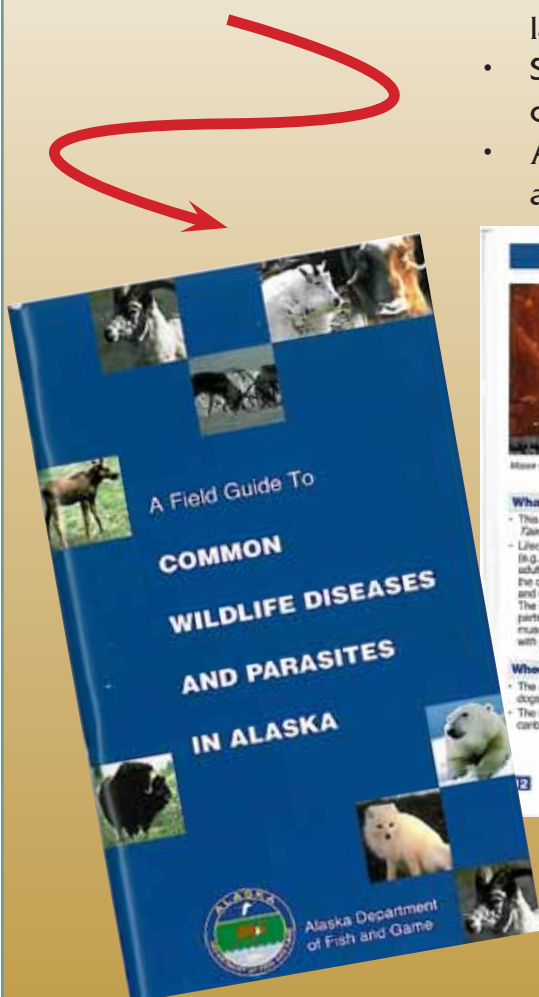
-Jim Dau



TIPS FOR SAFE HANDLING OF MEAT

Eating caribou is good for you and for you family... Following these tips help ensure your meat is at its best!

TO LEARN MORE CHECK OUT THE FOLLOWING BOOKLET! AVAILABLE FREE AT ANY ADF&G OFFICE.



CARIBOU HEALTH

Although WAH caribou are healthy, disease and parasites still occur naturally in caribou.

If you harvest an animal you believe is sick or diseased, you are still required by Alaska law to salvage the meat as described in the hunting regulations. This means transporting all required meat from the field to fulfill salvage requirements even if you think the meat is not fit for consumption.

Whether the meat is diseased or not, it is a good idea to adhere to general safety precautions when cutting and eating caribou meat.

GENERAL PRECAUTIONS

Hunters should look for signs for sickness in animals before they shoot, such as the following:

- Poor condition (weak, sluggish, thin, or lame)
- Swellings or lumps, hair loss, blood, or discharges from the nose or mouth
- Abnormal behavior (loss of fear of people, aggressiveness)

IF YOU SHOOT A SICK ANIMAL

- Do not cut into the diseased parts.
- Wash your hands, knives and clothes in hot, soapy water after you finish butchering and disinfect them with a weak bleach solution.
- Cook meat thoroughly until it is no longer pink and juice from the meat is clear.
- Do not feed parts of infected animals to dogs.
- Send a sample of diseased meat to ADF&G

WHEN COLLECTING SAMPLES

- Wear rubber gloves to protect yourself.
- Place each sample in a separate plastic bag.
- Unless otherwise noted, keep samples frozen or cool.
- Record the following information:
 - Date and location collected
 - Type of animal
 - Sex and estimated age of the animal
 - Record any observations

HOW THE ALASKA DEPARTMENT OF FISH & GAME IS WORKING FOR YOU

Biologists and the state veterinarian are working hard to study the animals you eat. Biologists and veterinarians collect samples, conduct health assessments, observe wildlife, and listen when local caribou users share their observations about caribou health or see problems in their meat. Currently, studies show that WAH caribou are healthy, so enjoy your caribou meat. It is free range, all natural, free of pesticides and hormones, and a delicious source of lean protein!



QUESTIONS? YOU CAN CONTACT: Jim Dau
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jim.dau@alaska.gov

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WACH WORKING GROUP: Annual Meeting 2010

UPDATING THE WORKING GROUP'S MANAGEMENT PLAN

Brittany Sweeney, USFWS Kotzebue

One of the most important accomplishments of the WG is its Cooperative Management Plan for the WAH. Local managers and biologists look to the Plan for guidance in their work. In this way, local hunters and others interested in the herd have a direct say in how the herd is managed. The Plan covers topics such as habitat, regulations, population management, reindeer, traditional knowledge, and education.

It is now time to update the Plan. The original Plan was completed by the WG in 2003 and endorsed by all state and federal agencies working with the herd. Starting in 2009, the WG has been taking time at its annual meetings to come up with a revised version. It is important to keep the Plan up-to-date as issues and concerns change over time.

At the December 2009 meeting, members reviewed each of the seven Plan elements and shared ideas of how to improve the Plan. Some new issues, like Climate Change, have come up since the first Plan was developed. All these ideas, along with suggestions from agency staff, were compiled for the WG to review.

At the December 2010 meeting, the WG set aside half of one day to break into smaller groups and look over the proposed changes to each part of the Plan. Agency staff helped organize these sessions and took notes on the members' discussion and directions.

This summer a subcommittee will meet to pull all the comments and suggestions together into a draft Plan. This draft will be shared with the entire WG before the December 2011 annual meeting, when it will be presented for approval as the new Management Plan.



SUGGESTED MANAGEMENT PLAN UPDATES

HERD POPULATION

Add additional categories of population levels (very low to very high) as well as population trends (stable, increasing, or decreasing).

EDUCATION

Recognize that education is a two-way process between agency staff and the users.

Involve not just students in caribou programs, but entire communities.

COOPERATION

Encourage cooperation and exchange of information with international organizations involved with caribou and co-management with indigenous peoples.

Facilitate communication between members and communities with a special emphasis on engaging elders and youth.

KNOWLEDGE

Encourage all those interested in doing research on the WAH to discuss their ideas with the WG and local users before developing their research plans.

HABITAT

Evaluate the long-term effects of climate change on habitat, predicting how climate change could alter the habitat.

Consider the combined effects of exploration and development projects and how these may impact WAH habitat (mining, roads, and oil and gas drilling).

Monitor annual and seasonal effects of weather and snow conditions on caribou habitat.

Ensure that communities are consulted during the review and permitting process for all developmental activities within the range of the herd.

Photos: WACH Working Group (R), Working Group in breakout groups making suggested revisions to the Cooperative Management Plan (Top). Photos ADF&G



TAIKU

A big TAIKU to those who take time to fill out Harvest Reports, participate in harvest surveys, and provide information reports on body condition, disease, and caribou behavior. By providing this information you are helping caribou.

CONDUCTING SCIENCE IN THE RANGE OF THE WESTERN ARCTIC HERD

SUBSISTENCE SURVEY Jim Magdanz, ADF&G Subsistence Resource Specialist

In 2011, ADF&G completed caribou harvest surveys in Elim, Golovin, Kivalina, Koyuk, Noatak, and Wales. Division of Subsistence researchers Nikki Braem and Lisa Slayton directed the survey effort, contracting with 21 local residents to conduct 339 household surveys in the six communities.

“We had some very good surveyors this year,” Nikki said. “We appreciate the logistical help we received from the local traditional councils. We hadn’t gone to Wales in quite a long time. We had a really good group of surveyors in Wales. They got the job done very quickly, were very accurate, very mindful surveyors.”

For 2010, Noatak reported especially poor harvests. The final total estimate is expected to be less than 100 caribou, compared with an average of 547 caribou in previous years. Many of the caribou that Noatak harvested in 2010 were taken in the Selawik and Buckland areas.

Since 1980, harvest estimates have ranged from 0 caribou (Brevig Mission in 1989) to 2.3 caribou (Shungnak in 1998)

per person per year. While harvests vary from community to community and from year to year, overall subsistence caribou harvests seem to have been stable for the past 30 years, neither increasing nor decreasing. It will be especially important to document subsistence harvests in coming years, as the herd has begun to decline.

This was the 14th year of the WAH survey project. Financial support for the project comes from ADF&G Wildlife Conservation Division and Subsistence Division. With additional support from the National Park Service, ADF&G hopes to be able to survey 11 communities next year.

	Number of households		Percentage Surveyed
	Surveyed	Total	
Noatak	77	115	67%
Kivalina	63	90	70%
Wales	31	49	63%
Koyuk	64	80	80%
Elim	71	88	81%
Golovin	33	50	66%
TOTAL	339	472	72%

MONITORING SNOW AND WEATHER IN THE RANGE OF THE WAH

Brittany Sweeny, USFWS Environmental Education, Kotzebue

Subsistence hunters and others knowledgeable about the natural environment know that the health of caribou depends on many things, including plant growth, predators, insect activity, and of course the weather. Scientists are similarly aware of these connections and want to learn more about them. As suggested by Western Arctic Caribou Herd Working Group (WG) members and scientists, Selawik National Wildlife Refuge has started looking at weather and snow conditions in the winter range of the WAH. Documenting conditions “on the ground” for caribou will likely add to our understanding of what is going on with the health and population of these animals.

Last winter Anne Orlando and Brandon Saito, U.S. Fish & Wildlife Service (FWS) biologists based in Kotzebue, set up a system for measuring and recording information about weather and snow conditions. They field-tested a variety of tools in true arctic winter conditions to see what worked best. They also flew over areas where caribou had been digging for food under the snow to figure out how to measure the size of these “craters” from the air.

Fourteen sites across the winter range of the herd, from Koyuk to Kobuk, have been selected for snow and weather monitoring. Markers will be installed that will be checked monthly from aircraft to tell how deep the snow is. Stakes lined with temperature sensors will be buried in the ground to provide daily snow depth and temperature measurements.

Local residents will help to measure snow density, depth, and hardness layers at specific sites. Biologists will also collect information on caribou body condition, and will measure craters that caribou dig in the snow to feed, an indicator of how hard caribou must work to reach their food. Collected information should help give a well-rounded picture of what is happening.

Thanks to local hunters and to Jim Dau with ADF&G for their advice on this project. USFWS hopes the information collected will help give everyone a more complete picture of factors affecting the WAH, especially during these times of climate change.



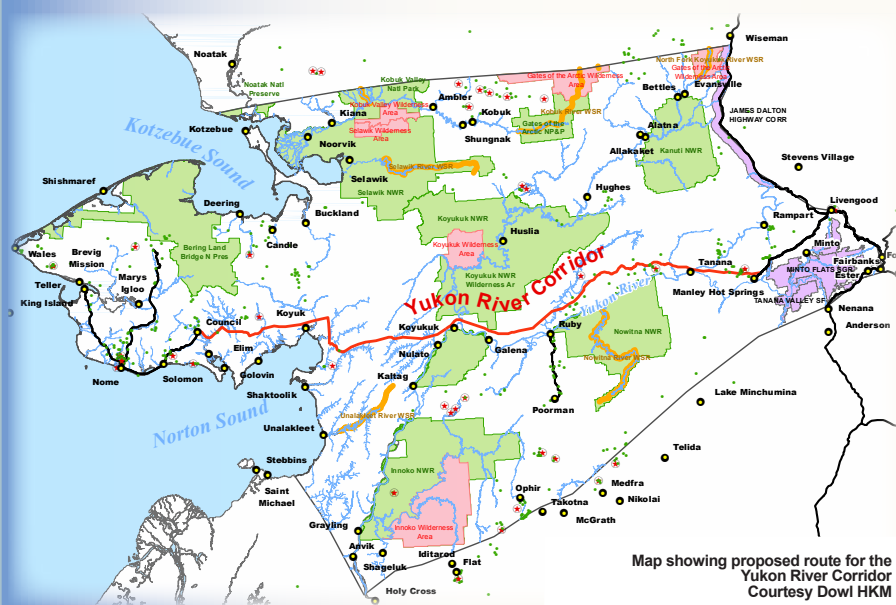
USFWS Biologists Brandon Saito (L) and Anne Orlando (R) measuring snow depth at one of the snow monitoring sites. Photo USFWS

ACCESS TO WESTERN ALASKA WACH WG Resource Development Committee

In Alaska, new roads and associated developments are on the horizon for many remote locations throughout the state. Roads are a vital component of civilization because they provide access for recreation, services to people in need, jobs to those without, access to resources for human consumption, and statewide economic development. Northwest Alaska is still largely road free. As a result, it is an area with restricted access to many modern supplies and services, yet rich with abundant natural resources. Roads may bring many social and economic benefits, and they may also bring undesirable consequences to local subsistence users and the wildlife resources they depend on.

ECONOMIC AND SOCIAL BENEFITS OF ROADS

Road construction projects considered by The Alaska Department of Transportation (DOT) in North and Western Alaska are: 1) The Yukon Corridor which consists of a road from the Dalton Highway along the Yukon River to Nome; 2) a road to the Ambler Mining District that could eventually extend to Nome and connect to the Red Dog Road; 3) Road from Dalton Highway to Umiat and 4) a large number of



other inter-village secondary roads that would link to the larger, primary roads. DOT plans to begin conducting field work this summer (2011) for the Ambler Road project.

In Northwest Alaska jobs are scarce, fuel and heating costs are high, and people rely on airplanes to travel. Roads are an important part of the State’s economic development plan and could provide needed financial relief to the people of Northwest Alaska. According to DOT, new roads would lower passenger transportation costs, lower fuel delivery costs, lower freight and mail delivery costs, lower mining and resource development costs, lower energy and power infrastructure costs, increase numbers of jobs, increase income, and provide better access to essential services. Roads would also increase access to remote wilderness areas for scientific research, nature enthusiasts, and hunters.

ECONOMIC AND SOCIAL COSTS OF ROADS

In addition to the economic benefits of roads, they also impose short and long-term costs on the land, people, and wildlife. In remote areas, roads may be very expensive. The state estimates the cost for the Yukon Corridor to be around \$2.5 billion,

or about \$5 million per mile. After this road is built, the maintenance costs are estimated to be about \$40 million per year. Along with the monetary costs are other important issues related to land ownership, pollution, interference with wildlife populations, and an increase in human access to an otherwise remote and untouched environment.

“Although roads may be good for economic development, not everyone here is pro-road,” says Pete Schaeffer chair of Federal Regional Advisory Council (RAC) and Kotzebue Sound Fish & Game Advisory Committee (AC).

“The legislature has done a good job of silencing people in Northwest Alaska who are opposed to roads. Everything from increased human access, garbage, fuel spills, diverting wildlife, and introducing exotics (species) will create negative impacts in an area we are so proud to call home.”

ECOLOGICAL IMPLICATIONS OF ROADS

Because roads are so common throughout much of the contiguous states, well-documented studies on the effects roads have on the environment exist. This includes aspects of the physical, chemical, biological, social, and economic impacts roads have in wild areas and the people living in or near them (USDA Forest Roads: A Synthesis of Scientific Information, USFS 2001). If the benefits of new roads outweigh their costs, significant care should be given to research, development, and placement of new roads and infrastructure to minimize negative impacts on people, wildlife, and habitat.

In 2000, *The Society for Conservation Biology* published a summary, “Review of Ecological Effect of Roads on Terrestrial and Aquatic Communities” by Trombulak and Frissell. Some of their findings are summarized below.

Roads can cause modification to wildlife behavior. Research shows that shifts in animals range, changes to movement and migration, altered reproductive success, altered responses to stress, and shifts in physiology can occur when roads are established within key wildlife habitats. A number of studies have been conducted in Alaska regarding the effects of the Trans Alaska Pipeline and road network, on caribou. One particular study by Dau and Cameron, “The Effects of a Road System on Caribou Distribution During Calving” *Rangifer* 1986, shows that caribou respond to roads differently with regard to season of year, whether or not they are accompanied by a newborn calf, and the presence of other sources of disturbance, such as insects or traffic. The authors observed changes in foraging and animals responding to roads during calving. Maternal cows avoided roads even when there was little traffic during calving, while bulls and non-maternal cows showed little avoidance. During the summer insect season, caribou – including cows with calves – take advantage of elevated gravel roads as insect relief habitat. Caribou that reside near oil field roads can eventually become habituated to traffic and select the nearby ‘dust shadow’ of roads to feed on exposed vegetation when surrounding areas are still covered in snow. The responses of caribou to roads are variable and complex.

Increased hunter access from roads can stress the animals especially in winter when energy reserves need to be conserved. Last winter while out traveling on the temporary ice road between Kotzebue and Noorvik, Pete Schaeffer made observations about some caribou that were also using the road. “Caribou along the road were highly susceptible to hunting pressure from the road travelers.” He watched caribou become agitated and run in the opposite direction than where they were originally headed. The increase of hunters and traffic make it easier to access caribou.

Because caribou respond to roads, it is possible that if the road does not lead in the direction of migration, caribou may be diverted to new areas or arrive late to calving or wintering grounds. Historically, people have used a caribou’s natural sense of aversion of linear structures on the landscape to their advantage when hunting. It is said that caribou will naturally follow trails and paths. Rock “lines” were made on the tundra and used to filter caribou into natural corrals for hunting purposes. The impact that a variety of roads would have on caribou is unclear, but traditional observations indicate that caribou are indeed sensitive to such linear structures and may cause caribou routes of migration to alter permanently.

Roads can also impact wildlife indirectly. Roads can cause a disruption of the physical and chemical environment in the surrounding area. Impacting the health of lichen can be detrimental to caribou as it is an essential food component for caribou in the winter. Roads and traffic spread dust that can settle on plants blocking photosynthesis, respiration and transpiration and can cause physical injuries to plants, especially in communities dominated by lichens and mosses (Auerbach 1997, *Ecological Applications* “Effects of Road-Side Disturbance on Substrate and Vegetation Properties in Arctic Tundra”). Roads can also impact plants by heavy metal deposition, salt accumulation, and by introducing organic molecules, ozone and nutrients into the environment. In a study conducted by the National Park Service in 2004 on cadmium and lead deposition on lands near Red Dog Mine, heavy metal levels in plants were highest immediately adjacent to the Red Dog Haul Road and decreased at sampling locations furthest from the road. Lead concentrations were high relative to concentrations previously reported from other Arctic Alaska sites and studies indicated the presence of heavy metals throughout the study area. Heavy metals can accumulate in the plants and then be incorporated into the tissue of caribou eating those plants, and eventually into tissue of the human consuming the caribou.

SUBSISTENCE RESOURCES

Roads facilitate use of areas by humans by increasing the ease of access and efficiency with which natural resources can be exported from an area. Road access can result in competition for wildlife resources, perhaps leading to more complex hunting regulations, with possibly reduced hunting opportunities for subsistence users. In 1987 Wolfe and Walker published a paper in *Arctic Anthropology* that describes subsistence economies in Alaska. Their findings indicate that the presence of roads are significantly associated with reduced

subsistence productivity. The authors state that, “construction of roads and settlement entry into roaded areas produce changes associated with lower subsistence harvest, including increased competition for wild resources, increased habitat alteration, and changing community economic orientations away from mixed, subsistence-market adaptations.” They found that harvest levels at the time were 69% less in road network communities when compared to those away from a road network or marine highway in Alaska. Additionally, when more people have access to remote areas, there may be increases in harassment of animals, trash, human waste, and road related accidents. By increasing access to previously inaccessible areas, other developments can impact wildlife including logging, agriculture, mining, housing developments and industry. Caribou in Alaska have demonstrated that they can co-exist with roads. However, the same is not necessarily true for people competing over access to resources.

“There is nothing on the horizon that will affect subsistence users and the wildlife they depend on more quickly or significantly than road access into traditional hunting areas,” said Phil Driver, Vice-Chairman of the WG and long-time guide and resident in NW Alaska. “Residents of Kotzebue Sound have been frustrated with what they feel are excessive numbers of non-local hunters and commercial operators here since the early 1980s. Establishing road access into this region would greatly intensify that.”

IN SUMMARY

Although the economic benefits would be substantial, it is important to look closely at the benefits and the drawbacks that roads would bring. Worldwide, road-less areas are hard to find. Although roads provide a number of economic benefits, it is not clear whether these benefits outweigh the costs. It is essential that as residents of Northwest Alaska, we educate ourselves about the proposed road projects and make informed decisions that will benefit the people and wildlife that live here.



Caribou Trails on Red Dog Haul Road. Looking closely, you can see that caribou will parallel the road and funnel into a bend before crossing, courtesy of Jim Dau.

TO MAKE COMMENTS OR LEARN MORE:

Contact:

- Roy Ashenfelter, Western Arctic Caribou Herd Working Group Chairman
- DOT regional Area Planner Alexa Greene (907) 451-2388, alexa.greene@alaska.gov
- Your Alaska State Senator or Representative

Visit:

http://www.dot.state.ak.us/stwdplng/cjp_stip/Projects/projects_index.shtml

CONTRIBUTIONS: Taiku - Quyanna - Baasee - Thank You



John Schoen, Audubon Alaska Senior Scientist and recent Conservation Chair of the Western Arctic Caribou Herd Working Group (WG), is retiring this year from Audubon and from his chair with the WG.

John has been a part of the WG since its beginnings in 2000. Since then, John made significant contributions to the WG, including chairing the planning group for the first Cooperative Management Plan and more recently chairing the Resource Development Committee. Taking a lead role in the development of the Plan was a monumental task and a cornerstone for the development of the group.

John said, “we worked very hard to put the Plan together, and its completion was an incredibly rewarding experience. The original Plan still stands, with some new revisions, and serves as an organizational tool to evaluate what actions should be taken as caribou population levels change. The Plan is a good focal point for coordination among people from different backgrounds and is a great opportunity for conservation to work across jurisdictions.”

As Chair of the Resource Development Committee, John helped bring forward science based evaluation and comments on how developments within the range of the herd may impact caribou, caribou habitat, and in turn the people depending on caribou.

Although members of the WG are people with different perspectives, everyone in the group shares one common interest and that is simply conserving caribou.

John really values his experience with the WG and the people of Northwest Alaska.

“Being a part of this group has been the most gratifying and rewarding experience of my professional career. The Western Arctic Caribou Herd Working Group is one of the most effective groups I have ever seen and/or worked with, the trust and cooperation between all is remarkable. I am proud of the effort in this shared vision and really value my experience with people of Northwest Alaska,” John stated.

Although John is leaving the WG, he hopes to maintain contact with the WG and plans to participate in meetings as a member of the public. His hope for the future of the

group is to continue to see people volunteer their time and to maintain the tradition of open and respectful discussions among members and agencies. “Respectful dialog is a fundamental reason for the group’s success!” John will miss being an integral part of the WG and sends his best wishes to partners and friends on the WG. “It has been my honor and privilege to work with you to conserve caribou.”

Roy Ashenfelter, Chairman of the WG expressed his appreciation to the hard work John dedicated to the WG when he said,

“John’s contributions to the WG have been monumental and exceedingly helpful. Having a respected scientist such as John take a lead with the creation of the Cooperative Management Plan and heading the Resource Development Committee has given the WG an impressive track record. Above all, John kept the view of caribou in his sights for the benefit of all and that is one of the most rewarding things about what he has contributed to the WG. John’s attitude and demeanor gained the respect of our members when it was obvious he was a minority in our group. We will miss his attendance at meetings and contributions to tasks completed by the WG and it has been a pleasure to work with him. On behalf of all the WG members, I would like to thank John for all that he has done.”



CARIBOU BITS: News and Information

NEW SUPERINTENDENT FOR WESTERN ARCTIC PARKLANDS, KOTZEBUE

Frank Hays is the new Superintendent of the Western Arctic Parklands including Cape Krusenstern National Monument, Kobuk Valley National Park and Preserve, and the Noatak National Preserve. He will work with Bering Land Bridge Preserve Superintendent, Jeanette Pomrenke, to oversee its management. Before arriving in Alaska, Frank served as the Pacific Area Director for the NPS. He oversaw the operation of the NPS's Pacific West Regional Office in Honolulu. Before that, Frank was superintendent of Manzanar National Historic Site, where he oversaw operations of that national historic site that preserves and interprets the cultural and natural resources associated with the internment of Japanese-Americans during World War II.

He began his career with NPS in 1980 as a seasonal park ranger at Zion National Park. Frank also had assignments as park ranger and resource manager at Zion National Park, Chaco Culture National Historical Park, Saguaro National Park, Dinosaur National Monument and Grand Canyon National Park.



He received his Bachelor of Science in Renewable Natural Resources from the University of Arizona in 1980 and a Master's in Public Administration from Northern Arizona University in 1999.

REDUCING HUNTING CONFLICTS

Formed in 2008, the Game Management Unit 23 Working Group (GMU 23 WG) meets each year to reduce conflicts between local hunters and visiting hunters. The group makes advisory recommendations to regulatory agencies and boards that manage hunting, land use and wildlife, and promotes non-regulatory solutions to conflicts, such as hunter education and improved communication between local and visiting hunters, commercial services, and agencies. The GMU 23 WG met most recently in May 2011 in Kotzebue.



OUTCOMES INCLUDE THE FOLLOWING:

- New state regulations effective in 2010 extended the dates of the Noatak Controlled Use Area (CUA) to August 15 – September 30, and now require a one-time mandatory orientation session for all pilots flying in GMU 23 for the purpose of transporting big game beyond state maintained airports.
- Federal and State agencies that manage land, wildlife, hunting, and guide and transporter services coordinate closely with each other in their planning, management and enforcement activities – and also coordinate with the NANA Trespass Program and local communities.
- A State investigator worked in GMU 23 during the 2010 hunting season to focus on transporter activity and ensure compliance with regulations under the authority of the Big Game Commercial Services Board.
- Education for visiting hunters regarding ways to avoid conflicts, proper meat care, and land status.
- The State is working to make data regarding hunting activity more available to support management and enforcement actions.

For more information visit:

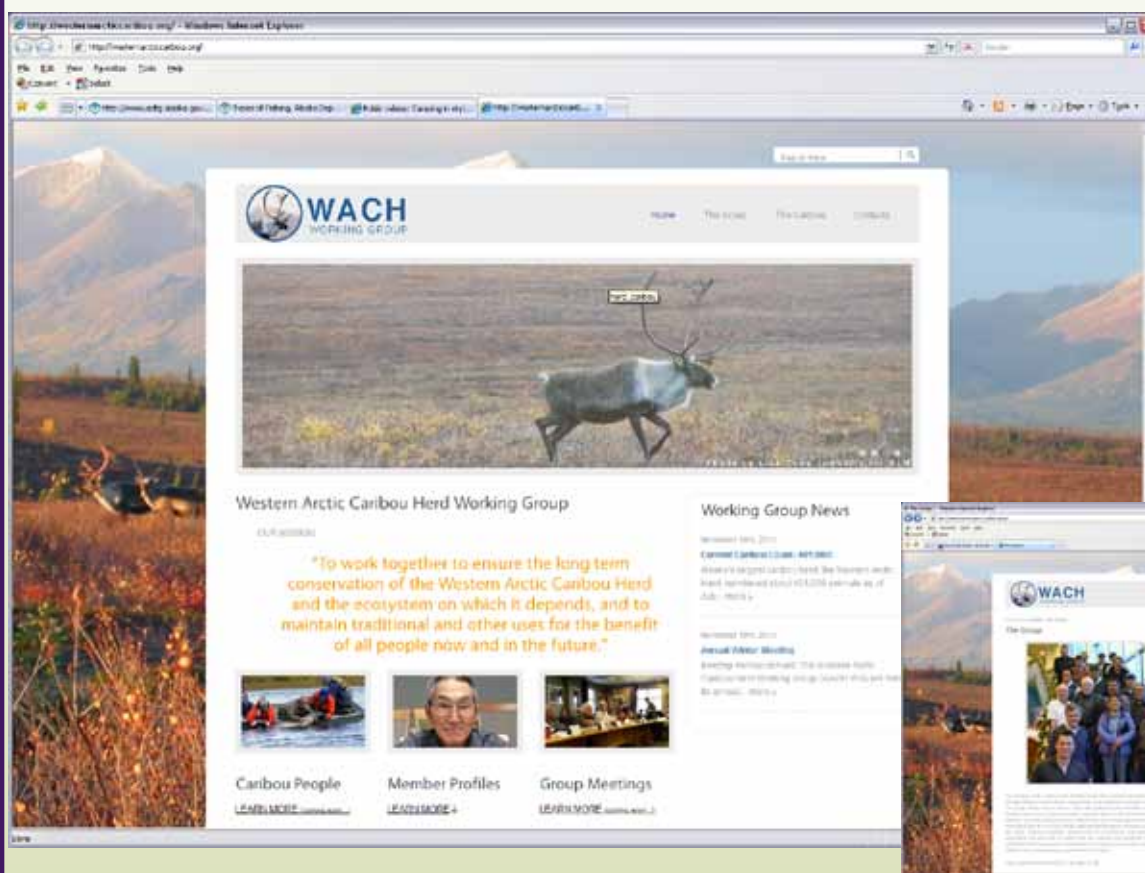
<http://www.adfg.alaska.gov/index.cfm?adfg=wildlifeplanning.unit23>

Or contact Jan Caulfield, at janc@gci.net

or 907-523-4610 to send a comment to the Working Group.

WESTERN ARCTIC HERD WORKING GROUP LAUNCHES A WEBSITE!

www.westernarcticcaribou.org



Looking for more information regarding the WAH or the WG?

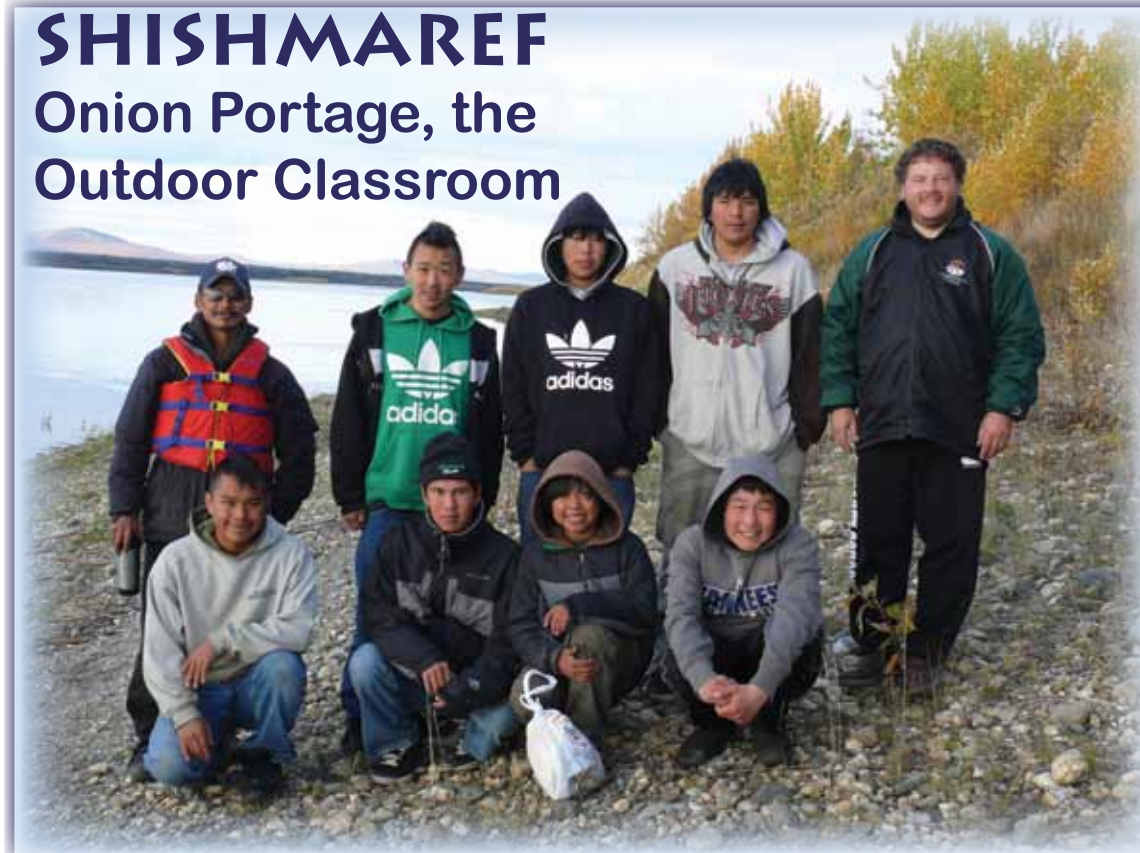
Visit us at our new website! The website is a work in progress and changes all the time so be sure to visit frequently.

On the site you can find

information regarding the herd, users, meeting updates, digital copies of *Caribou Trails* and much more.

SHISHMAREF

Onion Portage, the Outdoor Classroom



VERNE ONGOTWASRUK

Standing L-R: Terry Nayokpuk, Verne Ongtawasruk, Mike Eutuk, Norman Olanna, Ken Stenek
 Kneeling L-R: Henry Jones, Leonard Kuzuguk Jr, Henry Ahgupuk, Clarence Weyiouanna
 Photos courtesy Ken Stenek



HENRY AHGUPUK

Henry enjoyed spending time in the boats and learning from the biologists. “Onion Portage was neat, we cut down a spruce tree to hang our caribou meat so bears didn’t get it. We saw birds that we’ve never seen before, even a bald eagle and some ravens feeding on a gut pile.” When Henry was out in the cow boat, he ended up with a tough female, “I wrestled with caribou and ended up with one of the wildest females, I took an antler to the face and forearm but I tried to keep a positive attitude.”



CLARENCE WEYIOUANNA

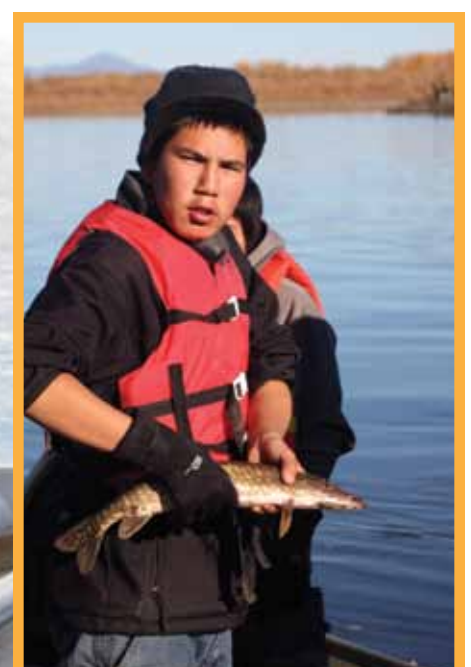
Clarence enjoyed watching Kimberlee (Beckmen) spin blood in a centrifuge and do different tests on the caribou and especially liked learning about the special microscope slides. He also appreciates the time that all staff spent to explain the science they were conducting and its importance. One of the trip highlights was, “taking a quick dip in the water, it was cold!”



HENRY JONES

“It is best to let the leaders that go into the water pass first, then select the next group to collar. With feisty caribou, if you control the tail, you control the caribou. It was neat that Jim (Dau) gave me the responsibility of putting a collar on by myself.”

**LEFT TO RIGHT:
 HENRY AHGUPUK, CLARENCE WEYIOUANNA, NORMAN OLANNA, HENRY JONES**



LEONARD KUZUGUK JR.

GOLOVIN

Having a Blast Collaring Caribou



Student photos courtesy Nick Burrell and ADF&G, caribou on the river courtesy of Ken Stenek.



ROBERT MOSES

“We traveled above the Arctic Circle to the Kobuk River to learn about caribou. We collared caribou, took blood samples, and during free time would walk or relax. While waiting to collar caribou, we would quickly and quietly load up the boats and then head out to capture a caribou. Some caribou were good for a necropsy so Jim would get one with his .22 and then scientists would analyze caribou.”



THOMAS AMAKTOOLIK

We learned how far the caribou migrate and that biologists collect jaws to see how healthy the caribou are. We also learned about caribou anatomy; the stomach parts, and how the body is designed to run from predators, and how you can use bone marrow to see how fat animals are. “It was a good experience seeing another part of the country. This was the first time that I grabbed a bull by the antlers. This is a good program and it was so cool to be that close to a wild animal.”



MICHELLE NINGELOOK



ALICE AMAKTOOLIK, AMANDA MOSES



GOLOVIN GIRLS



MOLLY MOSES AND MICHELLE NINGELOOK

GOLOVIN STUDENTS AND BIOLOGISTS WORKING TOGETHER



KEISHA OLANNA (LEFT) AND MICHELLE NINGELOOK (RIGHT)



CARIBOU JAWS: What Do They Tell Us?

Jim Dau, ADF&G WAH caribou biologist

Biologists have collected caribou jaws from the WAH several times since the 1950s. The teeth and bone from jaws provides information on trends in body size, body condition, and general caribou health. In 2009, ADF&G resumed collecting jaws from WAH Caribou.

CARIBOU JAWS CAN TELL US SEVERAL THINGS

Jaws can be measured to reflect the skeletal body size of individual animals. A large-framed caribou is big all over, and its jaws reflect that. This is important because caribou body size varies in relation to population size and trend. When caribou numbers are low, caribou tend to be large because there is less competition for and impact on vegetation. Therefore, biologists can use jaw measurements to complement other types of survey data, such as census estimates, calf survival and adult mortality, to assess the status of the herd. When jaw size declines, it could mean the animals are not getting enough food on their range. Figure 1 shows jaw size in relation to caribou age for bull caribou.

Teeth have growth rings just like trees. Biologists determine the age of caribou at the time of death by removing a tooth and sending it to a lab to be sliced very thin and stained. They then read the 'rings' on the tooth to determine its age. When the ages of hundreds of caribou are collected, they collectively show what biologists term the 'age structure' of the population. A population that has a large proportion of old individuals can be vulnerable to bad weather conditions.

Figure 2 shows numbers of cows by age in jaw samples. The relatively low numbers of two and three year old cows shows that hunters avoid taking small individuals. Because the graph shows a relatively high number of one-year-old caribou and we know that hunters are not targeting this age group, it shows that caribou in their first year are more susceptible to natural mortality.

Finally, fresh, uncooked jaws have bone marrow in them that can show the body condition of the caribou when it died. This marrow is removed from the jaw and weighed, then dried and re-weighed. The difference in weight is used to estimate the amount of fat present in the caribou when it died.

JAW DONATIONS ARE APPRECIATED

ADF&G would greatly appreciate any fresh caribou jaws. **For each set of jaws, please include information regarding where and when the caribou died, what killed it, and the sex of the animal. If hunters do not want to remove the jaws and don't want the head, you can send them to the Kotzebue ADF&G office freight collect.** Please call 1-800-478-3420 if you have caribou jaws you are willing to contribute to this project or questions.

Thank you to Verne Cleveland and Cyrus Harris for donating many jaws to the project and to everyone else who made contributions. This project is only as useful as hunters make it!



Figure 1 Jaw Length by Age in Bull Jaw Samples

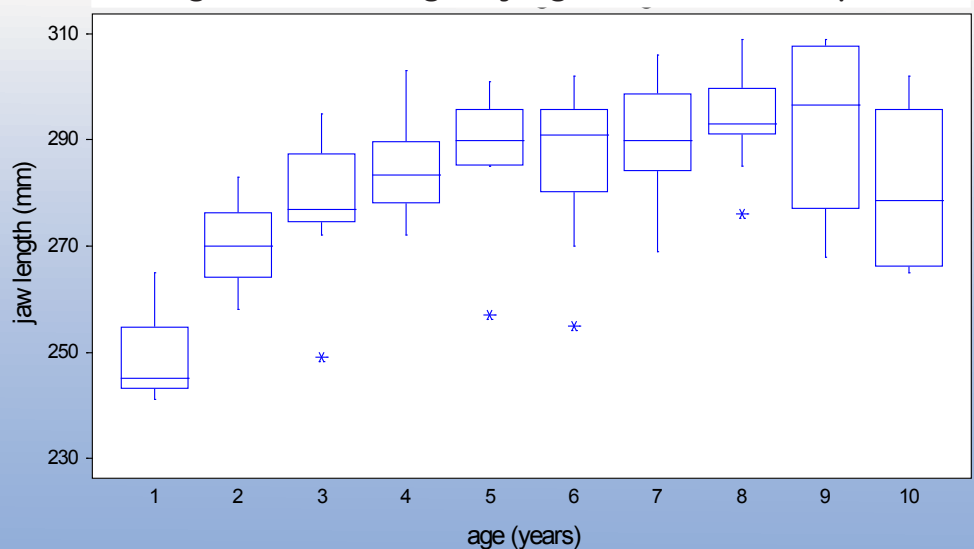
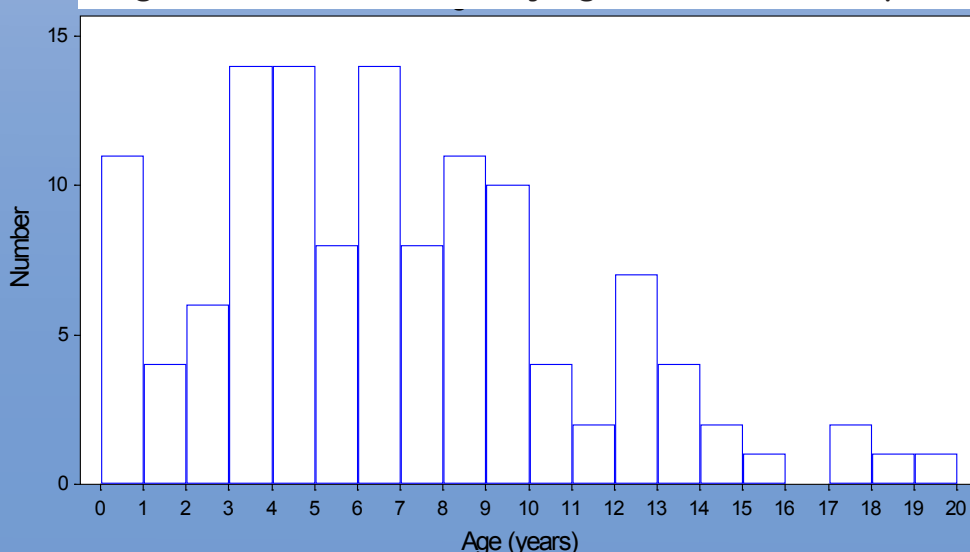


Figure 2 Number of Cows by Age in WAH Jaw Samples



Photos: Top jaw is normal but incomplete and bottom jaw exhibits "lumpy jaw". It causes severe lesions that can result in extensive tooth loss (top left). Caribou jaw sample (bottom right). Photos courtesy of Jim Dau

CARIBOU: Education

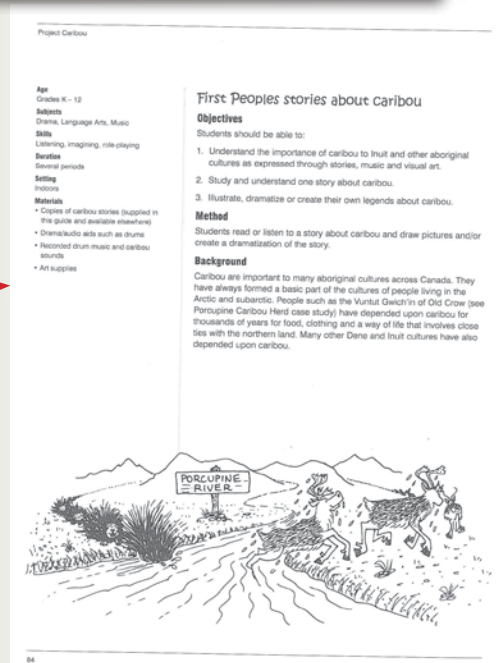
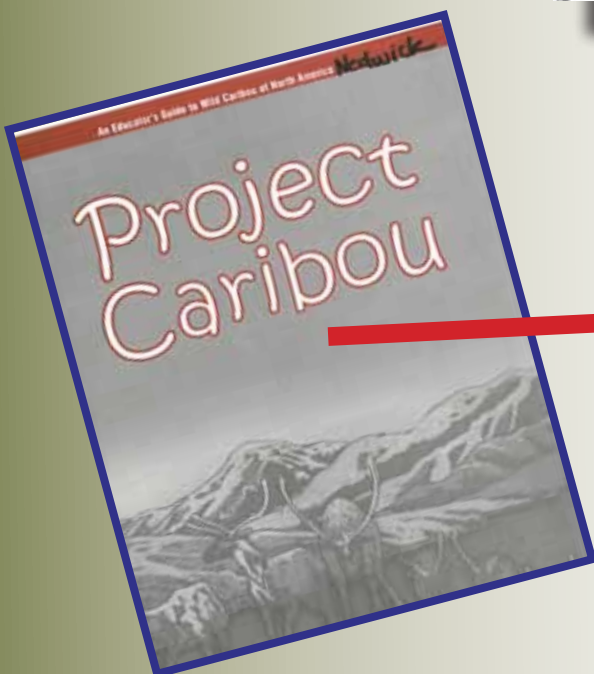
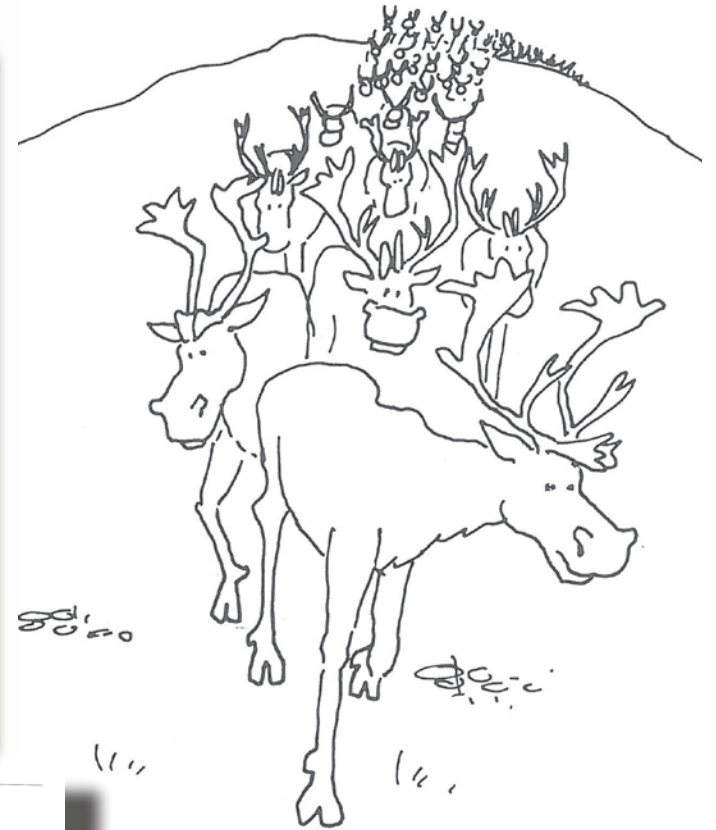
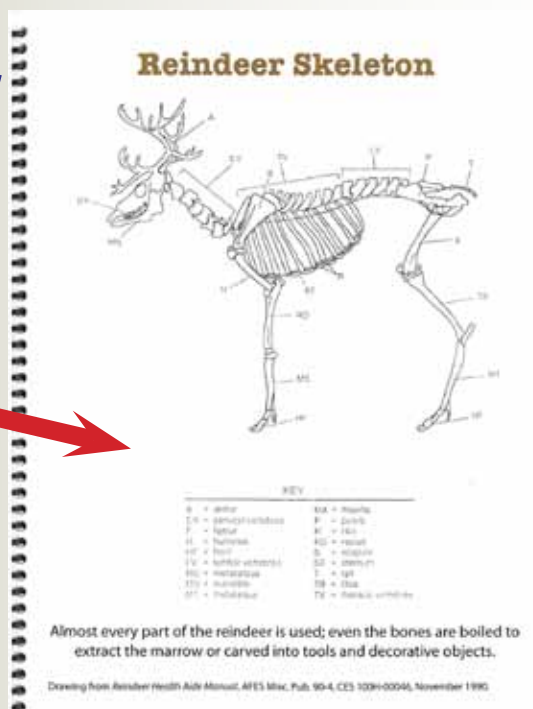
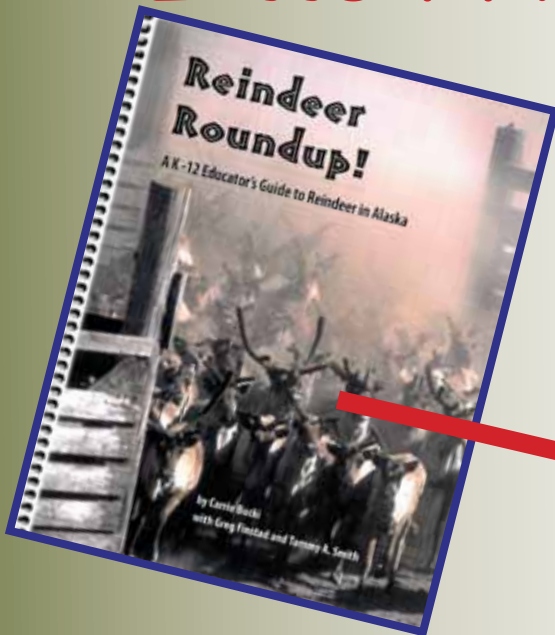
Whether you are a formal educator or just interested in caribou educational materials, there are a number of good resources available to you.



Add the following resources to your classroom, school library, home, day care, pre-school, summer camp, or agency; they are interactive, appeal to a variety of learning levels and abilities, and are aligned to the Alaska State Standards and Grade Level Expectations.

Educators with the ADF&G, FWS, NPS and University of Alaska (UAA/ UAF) have lots of ideas for you! Educators are also available to come and teach in your school, offer workshops in your community, or direct you to a variety of web and non-web based educational resources.

Lesson Highlights



CONTACT AN EDUCATOR FOR MORE INFORMATION

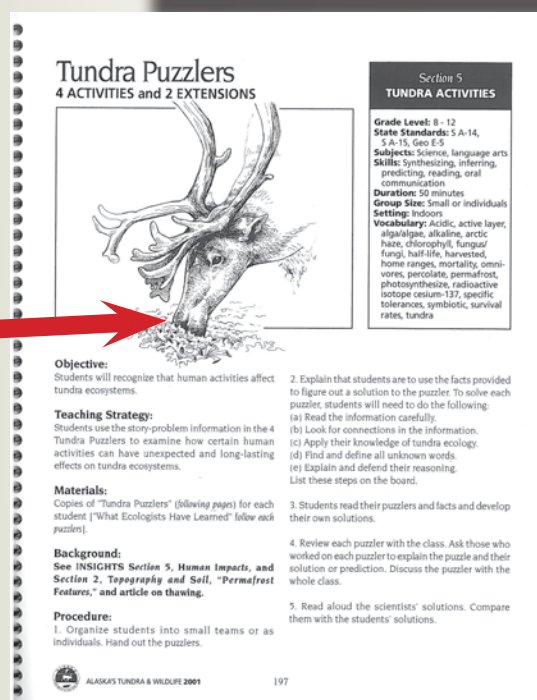
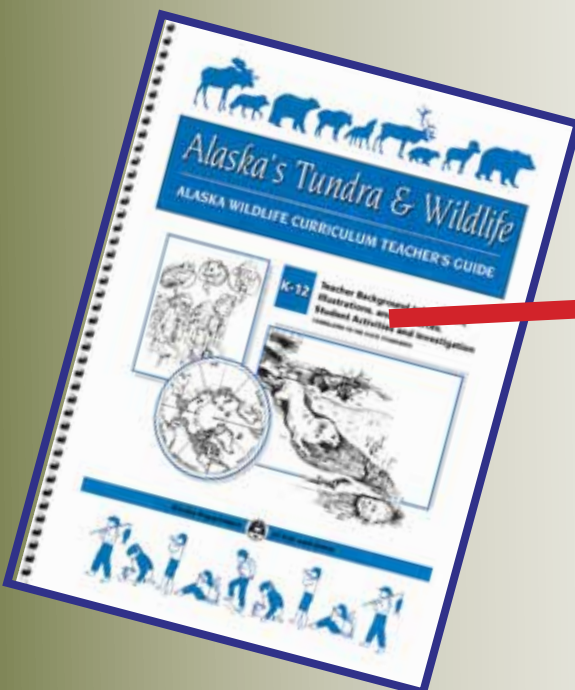
Meghan Nedwick
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Gina Hernandez
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UAF Cooperative Extension Service,
Nome
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WESTERN ARCTIC CARIBOU HERD WORKING GROUP 2011

**CONTACT YOUR LOCAL REPRESENTATIVE OR ONE OF THE AGENCIES TO
SHARE COMMENTS AND CONCERNS OR BECOME INVOLVED!
ALTERNATES NEEDED.**

VOTING CHAIRS

Anchorage
Buckland, Deering, Selawik
Nuiqsut & Anaktuvuk
Elim, Golovin, White Mountain
Fairbanks Hunters
Hunting Guides
Kivalina & Noatak
Kotzebue
Koyukuk River
Lower Kobuk River
Middle Yukon River
Point Hope & Point Lay
Nome
Conservationists
Northern Seward Peninsula
Southern Seward Peninsula
Reindeer Herders Association
Transporters
Upper Kobuk River
Atqasuk, Barrow, and Wainwright

REPRESENTATIVES

Steve Flory
Ron Moto
Isaac Kaigelak
Charles Saccheus
Larry Bartlett
Phil Driver (vice-chairman)
Raymond Hawley
Willie Goodwin
Pollock Simon Sr.
Verne Cleveland Sr.
Benedict Jones
Ted Frankson
Roy Ashenfelter (chairman)
Wendy Loya (acting)
Elmer Seetot
Frank Kavairlook
Tom Gray
Jared Cummings (nominated)
Sally Custer
Enoch Oktollik

ALTERNATES

Grant Klotz
Roger Clark
Esther Hugo
Morris Nakaruk
Rod Arno/Dick Bishop
Bob Hannon
Mike Adams
Cyrus Harris
Jack Reakoff
Robert Sampson Jr
vacant
Steve Oomittuk
Ralph Anungazuk
vacant
Christine Komanaseak
Herb Karmun
Al Unok
Judy Jespersen (nominated)
William Bernhardt
Oliver Peetok

THE FOLLOWING AGENCIES SUPPORT THE CARIBOU WORKING GROUP, BUT ARE NOT VOTING MEMBERS:

Alaska Dept. of Fish and Game, Steve Machida, 1-800-560-2271 or 267-2421, steve.machida@alaska.gov

US Bureau of Land Management, Fairbanks Shelly Jacobson, 1-800-437-7021 or 474-2200, shelly_jacobson@blm.gov

US Natl. Park Service, Kotzebue, Frank Hayes, 1-800-478-7252 or 442-3809, frank_hays@nps.gov

US Fish & Wildlife, Kotzebue, Lee Anne Ayres, 1-800-492.8848 or 442-3799, leeanne_ayres@fws.gov

PLEASE BRING QUESTIONS REGARDING THE WORKING GROUP TO:

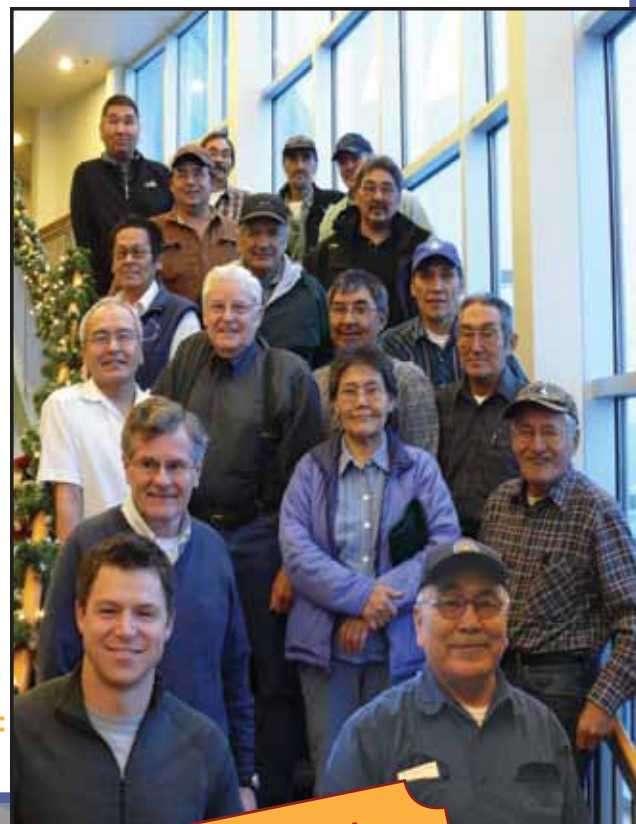
Roy Ashenfelter, Chair, 907-304-1776, roy@nsedc.com

Phil Driver, Vice-Chair, 664-4524 or 442-0379, wulikchar@ak.net

Peter Bente, ADF&G, Agency Rep. 443-2271, peter.bente@alaska.gov

PLEASE SEND QUESTIONS REGARDING CARIBOU TRAILS TO:

Meghan Nedwick, ADF&G, 442-1714, megan.nedwick@alaska.gov



**KEEP UP TO DATE ON
CARIBOU NEWS, MEETINGS
AND CONTACT MEMBERS
BY VISITING THE WEBSITE:
www.westernarcticcaribou.org**



Western Arctic Caribou Herd Working Group:
(Beginning at the top and moving left to right)
Verne Cleveland Sr, Cyrus Harris, Ted Frankson, Mike Adams,
Tom Gray, Enoch Oktollik,
Ron Moto, Pollock Simon Sr
Roy Ashenfelter, Phil Driver, Elmer Seetot, Charles Saccheus
John Schoen, Sally Custer, Benedict Jones
Larry Bartlett, Willie Goodwin

Buckland Boys enjoying *Caribou Trails*, Kotzebue Career Fair
Photos: ADF&G