

Kenai Peninsula Moose News

Division of Wildlife Conservation
Spring 2023



Welcome to the Kenai Peninsula Moose News

Moose are a key part of the ecosystem of the Kenai Peninsula. Whether it is a glimpse of North America's largest deer fleeing into the wilderness, concern about their presence alongside the highway, or the awe inspired by a cow who gives birth in our backyard—we live among moose. For the better part of the 20th century, much of the Kenai Peninsula was designated as a National Moose Range thanks to early recognition that increased settlement could impact the moose population.

Beyond federal protection of moose habitat, the Alaska Department of Fish and Game (ADF&G) manages moose harvest in Game Management Units (Units) 7 and 15. Beginning in 1978, regulations restricted harvest of bulls to a specific antler size or configuration. Many moose are struck and killed by motor vehicles on Kenai Peninsula highways, adding to sources of natural mortality. Wildland fire periodically impacts moose habitat on a scale large enough to benefit the population. In the last 20 years, a half million acres have burned on the western Kenai Peninsula. ADF&G monitors how the moose population responds to these factors, conducts research, and enhances moose habitat. This newsletter provides an update on ADF&G efforts since 2013.

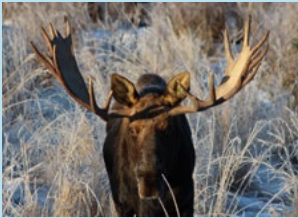


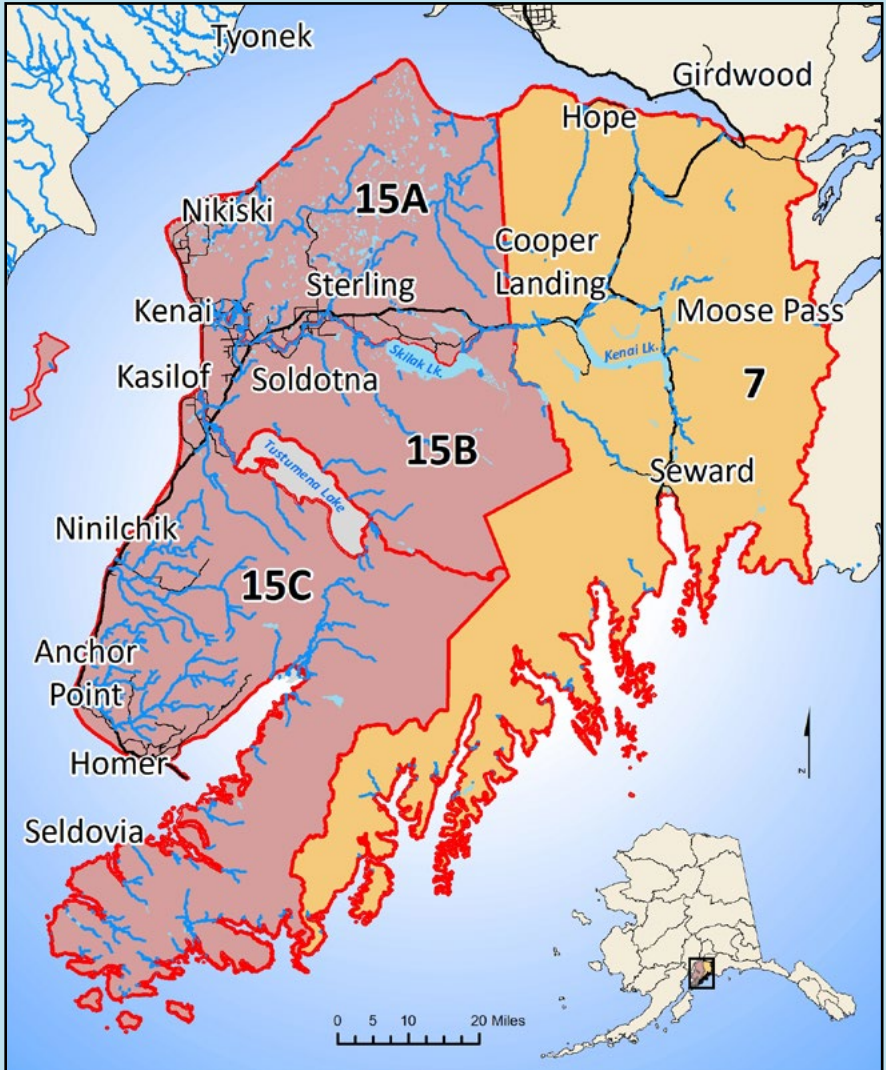
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Kenai Peninsula Moose
News 2013-2014

Kenai Peninsula Game Management Units



For wildlife management purposes, the Kenai Peninsula is divided into two primary Units covering 8,400 square miles. Unit 15 covers much of the Kenai Peninsula's western two-thirds and is further divided into Subunits 15A, 15B, and 15C. The eastern third of the Kenai Peninsula, from Hope south to Seward, falls into Unit 7.

Moose Management on the Kenai Peninsula

Moose are important to the ecology, culture, and economics of Alaska. ADF&G management efforts on the Kenai Peninsula aim to reflect the diverse values of user groups while promoting sustainable moose populations.



Kenai Moose Population Outlook

Unit 15A

The moose population in 15A peaked in the early 1980s following large scale wildfires in 1947 and 1969 and continued to decline since this peak. Moose harvest, which is influenced by density and hunting regulations, also declined during this time. Recent harvests are about 40-50 bulls per year. In 2019, the Swan Lake Fire burned just over 160,000 acres and engulfed the area with smoke. Small-scale prescribed fires, planned to occur in only the best of conditions, can improve moose habitat over the long-term, while allowing residents to plan ahead for smoke.

Unit 15B

Nearly 200,000 acres within 15B burned during the Funny River Fire in 2014. Though a population estimate has not been completed since the fire, the density of moose and proportions of calves seen during aerial surveys appear to be increasing. Higher densities will likely increase harvest, though much of 15B is not as accessible as other areas on the Kenai. Recent harvests are about 20-30 bulls per year.

Moose Management on the Kenai Peninsula

Unit 15C

Most of the moose harvest on the Kenai Peninsula occurs in 15C with a 5-year average of around 250 moose. This area is unique compared to 15A and 15B for having more variation in elevation and upland areas traversed by rivers. This area is the most accessible for hunters using the road network which likely influences moose harvest.

Unit 7

Historical high densities of moose in Unit 7 were likely the result of wildfires and land clearings associated with mining and road development in the early 1900s. Older forests have less food for moose and without landscape-level disturbances moose will likely remain at low densities.

Aerial and Transect Surveys

Biologists can estimate moose density, bull:cow ratios and calf:cow ratios, through a combination of grid surveys (dividing units into equal sized squares and selecting some to sample) and transect surveys (flying in straight lines across survey areas).

Regulatory Actions

In March 2023 the regulation requiring the sealing of moose antlers was removed by the Board of Game. Antler sealing was conducted from 2011 through 2022. A new archery season in Unit 15C will go into effect in the Fall of 2023.



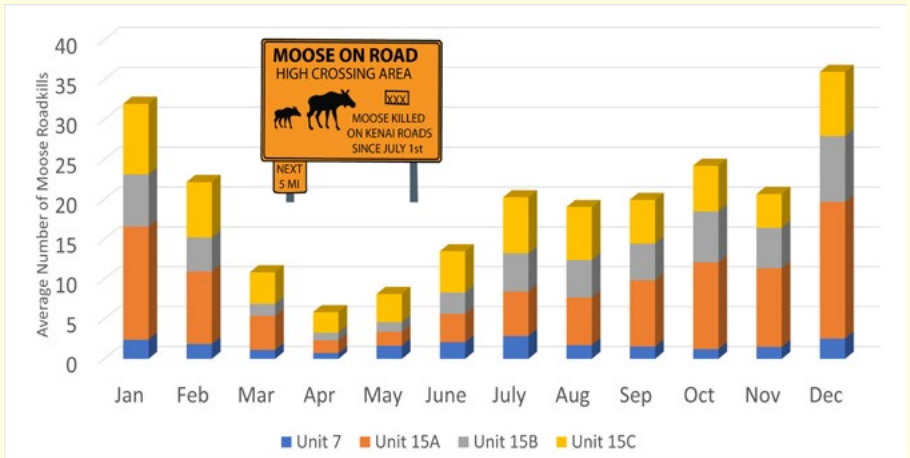
Moose Vehicle Collisions on the Kenai Peninsula



In addition to natural causes and hunter harvest, Kenai Peninsula moose also die from vehicle collisions. An average of about 240 moose per year were killed on Kenai roads during 2000–2020. About 51% of moose collisions involved calves, 42% involved cows, and 7% involved bulls.

It is not uncommon for the number of moose killed by vehicle collisions to be more than half of the total number of moose harvested on the Kenai Peninsula. Calves killed by cars directly reduce moose available for harvest the following years and cows killed may reduce the production of future calves.

Though proportionately more moose vehicle collisions occur during certain times of the year, people should remain alert while driving in moose country regardless of the time of year. The following figure shows the average number of moose roadkills by month in each subunit on the Kenai Peninsula.



Have you ever wondered what happens to road kill moose? The Department of Public Safety maintains a list of salvage teams which recover animals for butchering and human consumption. To sign up and learn more, please use the QR code or the URL to the right.



Driving in Moose Road Kill Program
Country

<http://alaska.gov/go/T0EQ>

What Can We Learn From Roadkill Moose?

Nearly 1,000 moose killed by vehicles on the Kenai Peninsula have been sampled by ADF&G staff over the past decade. Data collected from these moose can provide valuable insights of their physical condition at the time of death. Determining the age of all adult moose killed is a way to assess the age structure of the living population which can predict population resilience and potential for growth.

Body fat reserves of a moose influence its ability to survive the winter and, for adult females, how healthy its calf will be when born the following spring. Bone marrow fat is the last to be metabolized and low measurements indicate severe malnutrition.

Bone marrow fat measurements from roadkill moose indicate that around 20% adult cows in Unit 15A show chronic malnutrition in late winter (Figure 1). About 75% of calves in both Units 15A and 15C show signs of chronic malnutrition in late winter (Figure 2). These are both signs that the amount of available forage is limiting these populations.

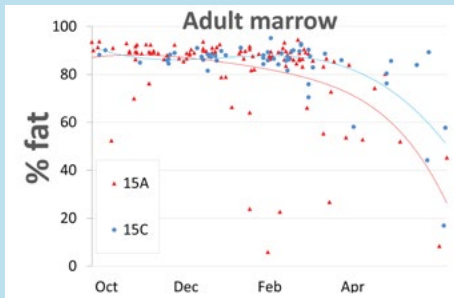


Figure 1. Fat measurements indicate that about 20% of adult cows in Unit 15A show chronic malnutrition in late winter.

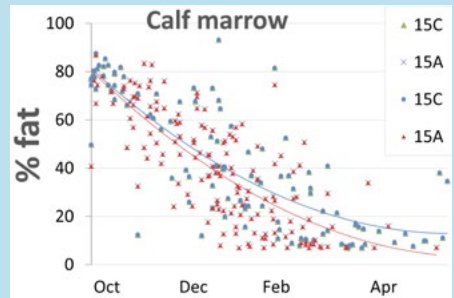
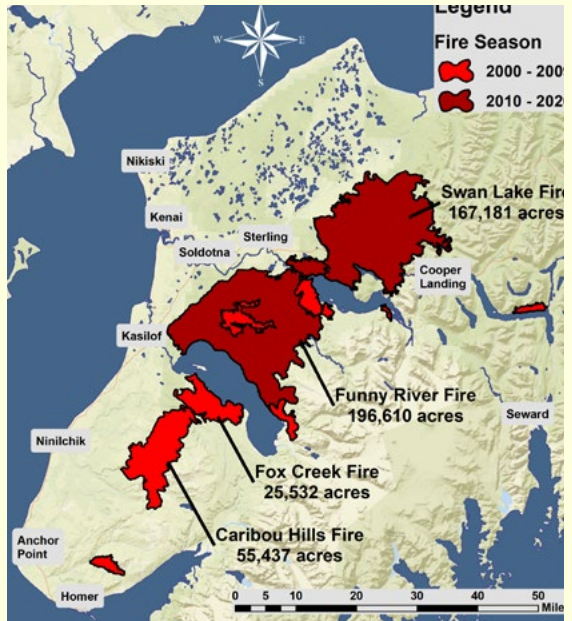


Figure 2. Fat measurements in calves in Units 15A and 15C show signs of chronic malnutrition in late winter.

Recent Fire on the Kenai Peninsula

Where forest fires burned in Unit 15, the forests have returned to early successional (young forest) stages that provide abundant forage for moose. Plant species like fireweed, rose, willows, birch, and aspen, known as pioneer species, have regenerated in these areas, and provide high quality forage in summer. Moose need these plants to replenish their body condition going into winter.



Two spruce beetle epidemics in recent decades have resulted in forest-to-grassland conversion in areas severely impacted by beetle infestation. Grassland cover types in Unit 15C limit regeneration of forage species.

Current studies include moose collared in Unit 15B after the Funny River Fire and in Unit 15A after the Swan Lake Fire. ADF&G biologists are studying the nutritional quality and amount of moose forage in these two burn areas compared to control sites in unburned areas.



Moose Research Post Fire



During the fall of 2014, ADF&G captured adult cows within the burned area of the Funny River Fire. Biologists use ultrasound to measure the thickness of the fat layer over the rump of immobilized moose to estimate total body fat. The more fat, the better the body condition. By using data from global positioning system (GPS) collars that track movement, biologists were able to determine if moose expanded into new areas. This data also helped to determine if a moose spent more or less time in certain habitats before and after the fire.



Every spring since 2018, ADF&G has weighed 10-month-old calves and fitted them with GPS collars. Their weight can show whether the calf received enough nutrition from the combination of milk from their mother and plants they ate during their first summer. Biologists are trying to determine if calves born in good habitat after a fire grow faster and begin reproducing at an earlier age compared to calves born in more mature forests of the northern Kenai Peninsula.

Biologists also track the antler growth of young bulls to determine the rate at which the bulls mature and the age at which they become legal for harvest.

Moose Habitat Enhancement Projects



Near Homer in Unit 15C, contractors 'mowed' heavily browsed willow on 117 acres at 3 sites in the Anchor River Fritz Creek Critical Habitat Area. Willows were not only browsed heavily by moose, they were also weakened by defoliating insects and were no longer providing enough winter food. Work was done in 2020-2021 when the ground was frozen.



Willow regeneration will provide more nutritious browse in winter as it continues to grow taller than the average snow depth.

Moose feed on the twigs of plants such as willow, birch, aspen, and cottonwoods during the winter. Heavy browsing can damage plants and the resulting "broomed" growth form is less appealing to moose. In time, intense browsing pressure can reduce the available nutrient content of moose winter foods.

To improve the quality and amount of moose forage available on the Kenai Peninsula, ADF&G works with other agencies and landowners to enhance habitat. Efforts include cutting mature spruce forests to encourage hardwood regeneration and mowing mature willow to stimulate new growth, among other options.

The fires of 1947 and 1969 provided substantial acreage of nutritious moose forage which led to an increase in the local populations. After these trees grew out of reach and the forest canopy shaded out the shrubs, the moose had little to eat and the population declined. ADF&G partnered with the Kenai National Wildlife Refuge and disturbed many acres through mechanical methods over several decades to replace the effects of fire. Fire has served its role in the more remote areas of the Peninsula during this time, but little burned in the northern areas of Unit 15A until 2019.

Moose Habitat Enhancement Projects

Moose require access to high quality habitat to survive in winter. The best winter habitat is found at lower elevations, often in the same areas that people like to build communities. As the urban footprint increases moose habitat typically decreases.

While moose are currently plentiful in Unit 15C and recent harvests have been high, a lot of the forage is mature and its nutritional quality is declining. Lack of high-quality forage can lead to fewer calves born and fewer moose surviving the winter preventing population growth.

Areas around the Anchor River and Fritz Creek Critical Habitat Areas in Unit 15C have not had many recent large-scale natural disturbances that could start new growth of woody plants important to moose. Spruce bark beetle outbreaks in the late 1990s and the last decade killed many spruce trees, which changed forested areas to open grasslands.

Growth of moose browse generally declines as forests mature. Meanwhile, the increased fuel loads will likely cause more intense fire. Disturbances such as fires, floods, and mechanical cutting can help the regeneration of nutritious plant communities.



Moose habitat enhancement using a mechanical treatment.

ADF&G collaborates with many landowners on fire, forest, and wildlife habitat planning through the Kenai Peninsula's All Lands All Hands interagency group. Also, working with private landowners is a way to expand on habitat benefits where public land access is limited.



Wildlife Habitat
Enhancement Projects

Moose Hunting Regulations on the Kenai Peninsula

Moose populations change over time, and hunting regulations also change to better manage moose and provide hunting opportunity. The Alaska Board of Game considers and votes on proposals to change restrictions and implementation of hunts.



Board of Game

In many units, regulations restrict the harvest of bulls to a specific antler size or configuration. Moose antlers vary considerably. Each hunter is responsible for determining if a moose is legal before attempting to take it.



Identifying legal moose in antler restricted hunts

Antlerless moose hunts are reviewed annually and must be approved by a majority of Fish and Game Advisory Committees in that unit and the Alaska Board of Game.



Cow hunts

Moose hunters in Units 7 & 15 are required to complete moose hunter orientation. Starting in 2023, antlers are no longer required to be sealed by ADF&G.

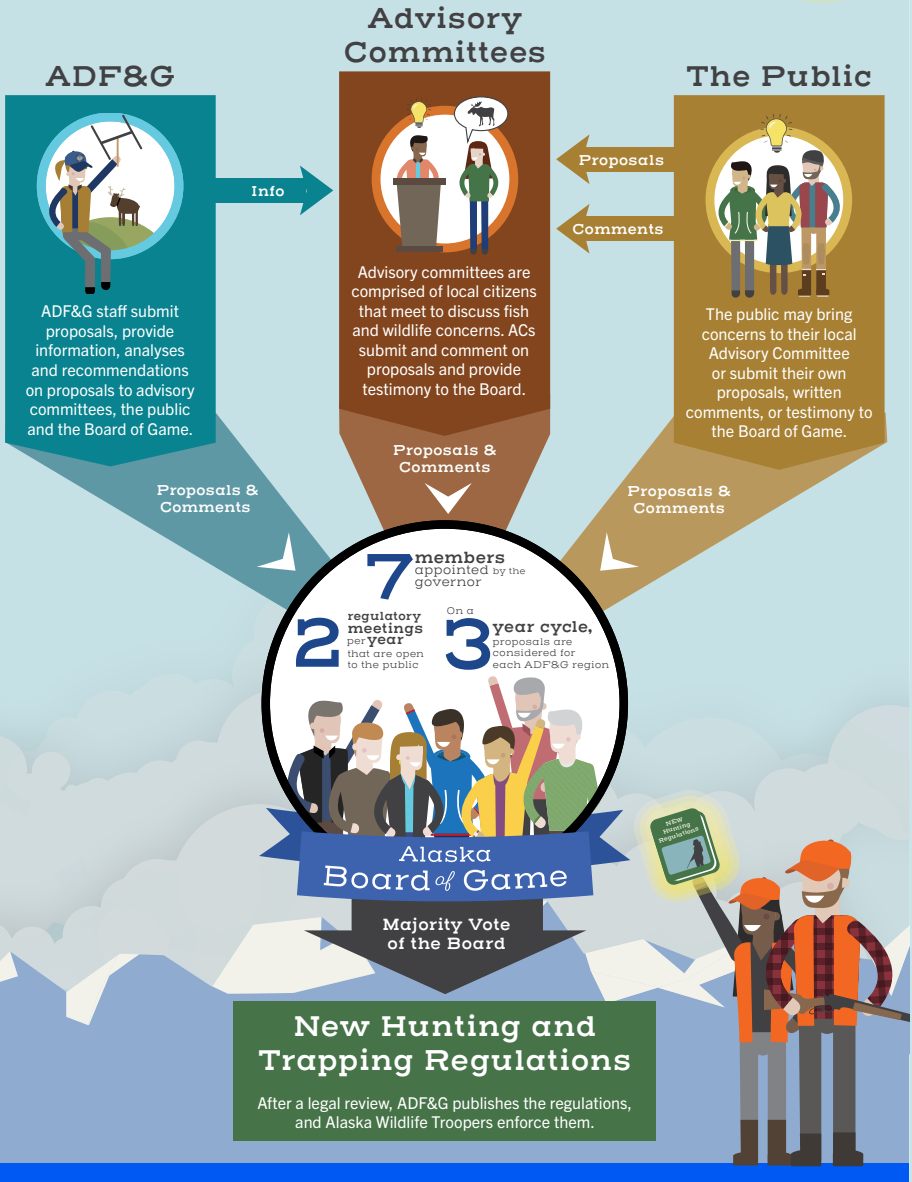


Moose hunter orientation

Board of Game Process

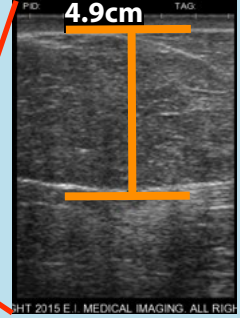
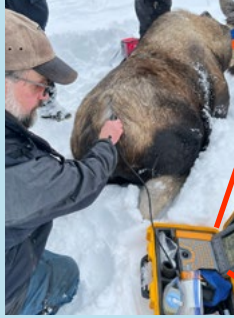


It often comes as a surprise to many Alaskans to learn that the state's hunting and trapping regulations are not made by the Alaska Department of Fish and Game. This job falls to the Alaska Board of Game. While the Board makes final decisions, There are several ways for Alaska residents to participate.



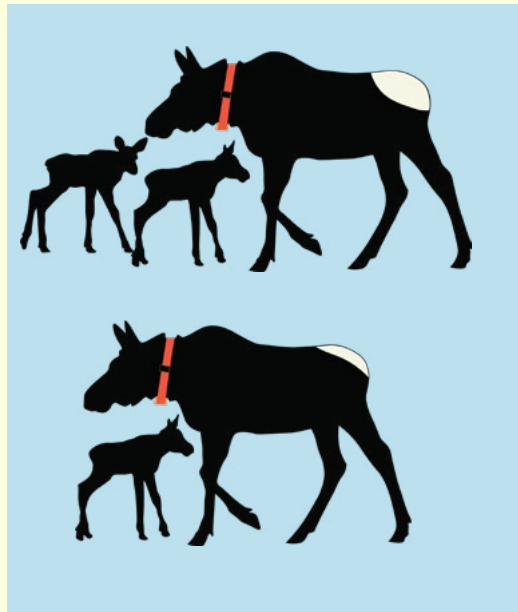
Cow Moose Research

Measure body fat with ultrasound



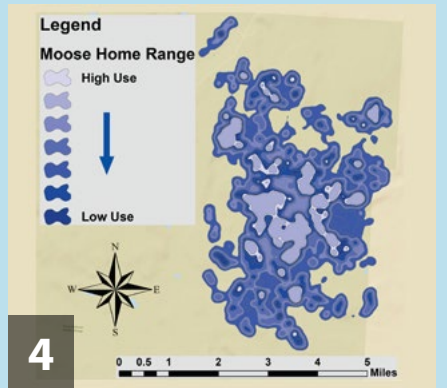
Body fat is an important way that moose store energy to survive the winter months. Researchers use a portable ultrasound to measure the amount of fat on a moose's rump to estimate body condition. From 2012-2018, researchers compared cow body condition, average 10-month old calf survival rate, and moose densities between Units 15A and 15C. Cows in 15A have 10-14% less body fat compared to 15C cows. The calf survival rate is 16% in 15A compared to 28% in 15C. Moose densities are three times higher in 15C. The plant communities are very different between these units. Moose in 15A mostly eat birch which is less nutritious than many of the plants in 15C. Moose in 15C mostly eat willow in the winter and often have access to more plant species. Lower densities and recent fires in 15A are likely helping moose condition and reproduction.

Moose research on the Kenai Peninsula have found that cows lose about 46% of their body fat over the winter. Cows that raise a calf through the summer had 15% less body fat going into winter compared to cows with no calf present in the fall. In November, cows with higher body fat are more likely to have twins, while moose with lower body fat are more likely to give birth to a single calf. If body fat is lower than 7% in late winter, the cow may have lower reproductive success.

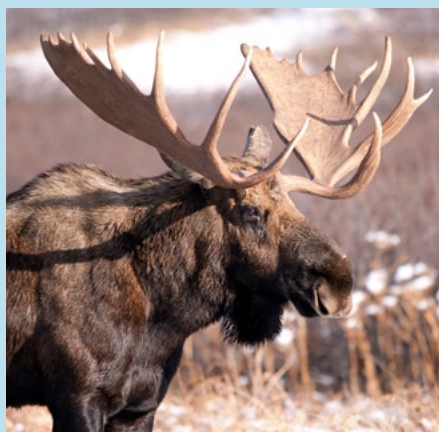


Bull Moose Research

ADF&G is also looking at how fires may influence antler growth of bulls. Because antler development relative to age forms the basis of our current harvest strategy, it is important to understand what influences this relationship. Antler size tends to increase with age in ungulates, however, improved nutritional condition may increase the rate of antler development resulting in bulls attaining legal antler size at a younger age. ADF&G is using a new approach to study this interaction in wild bulls by using photographs taken from a helicopter.



1) Using hunter harvested antlers, biologists establish a ratio between the pedicle (base of the antlers) and antler width. 2) Biologists capture 10-month-old bull calves and fit them with GPS collars. 3) In autumn, bulls with GPS collars are photographed from a helicopter to estimate antler metrics. 4) GPS locations are used to determine habitat use associated with nutrition and antler size.



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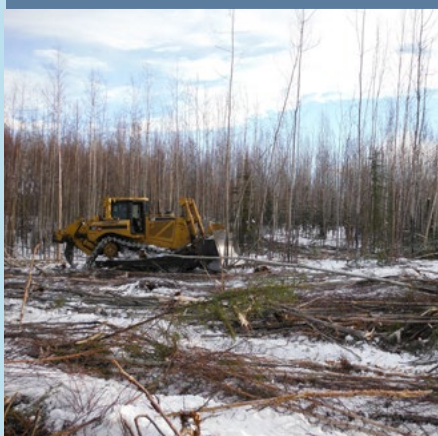


*** Picture taken on Nov. 1st 2022**

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Hunters founded the modern wildlife conservation movement. They, along with trappers and sport shooters, provided funding for this publication through payment of federal taxes on firearms, ammunition, and archery equipment, and through state hunting license and tag fees.