EST. 2015 WILD HARVEST INITIATIVE®



We are delighted to welcome Wildlife Systems, Inc. to the Wild Harvest Initiative[®] Partnership Alliance!

QUARTERLY UPDATE

DECEMBER 2021

Recreational moose harvests generate approximately 81 million meals annually in the United States and Canada.

HARVEST PROFILE – MOOSE

History and Conservation

Moose (*Alces alces*) are a member of the Cervidae family, which also includes mule deer, white-tailed deer, elk, and caribou. As both the largest and heaviest member of the deer family, and the only living member of the Alces genus, the species is unique from an evolutionary perspective.

Moose have a circumboreal distribution, meaning they generally inhabit boreal forests south of the arctic circle and north of the 40th

parallel, all the way around the world. In Canada, they are found in 9 of 10 provinces (all except for Prince Edward Island) and all 3 territories. In the US, the species ranges over 18 states, near the Canada-US border (Figure 1).

Unlike caribou, mule deer, and white-tailed deer, which found a refuge from the last ice age in what is now North America, moose likely came to the continent via the Bering land bridge, following deglaciation, approximately 11,000-14,000 years ago. Interestingly, this may have been the very same mechanism that enabled the arrival of humans to North America.

Moose are historically important to many Indigenous Peoples and Local Communities (IPLCs) in Canada and the US. IPLCs traditionally harvested the animal, using its entirety to support the production of food, tools, clothing, and even ceremonial items. The Gwich'in – Athabaskan-speaking First Nations people of Canada and an Alaska Native people - for example, traditionally consume nearly every part of a moose, including ears, lungs,





Figure 1. Average number of moose harvested in Canada and the USA each year (2014-16).

nose, and eyes, while many cultures have used the stomachs as cooking and storage vessels and the hides for canoes. Many IPLCs also historically practiced wildlife conservation and management techniques to maintain the moose population, including selfimposed harvest quotas and setting aside land as wildlife refuges.

Despite this, European colonists initially reported very few moose, and moose may have been in low abundance in many parts of Canada and the US during the colonial period, at least until the 1800s. Possible explanations for this low abundance include the species having had an insufficient time to populate the continent, poor climate conditions, disease, predation, and hunting.

By the early 1800s, moose populations had generally increased.

This may have been thanks to land alterations by European colonists, which resulted in improved moose habitat. Moose, unlike caribou, thrive in new-growth forests.

Following this population increase, however, hunting pressure from colonists resulted in unsustainable harvest practices and moose numbers rapidly declined towards the end of the 19th century.

This decline was interrupted during the early 20th century with the birth of American the Conservation Movement, and moose populations were again restored. The Movement, led by hunters, would eventually lead development of the North to Model of Wildlife American Conservation, the uniquely successful system of wildlife management still practiced today in Canada and the US.



Following further improved harvest regulations, North American moose exhibited unprecedented population growth and an expanded range. Today, Canada and the US boast a combined total population of about 1 million animals. Impressively, and despite natural fluctuations, this

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number has remained steady since the early 1990s.

Moose are currently classified as species of "Least Concern" by the IUCN Red List of Threatened Species, the world's most comprehensive inventory of the global conservation status of plant and animal species. There is no forecasted risk of extinction.

Modern Relevance for Food Provisioning

During the 2014-2015 and 2015-2016 harvest seasons, a total of 171,321 moose were harvested in the US and Canada: 78,093 in 2014/15 and 93,228 in 2015/16. Of the combined total, 146,280 animals were harvested in Canada and 25,041 were harvested in the US.

The total live weight of this harvest between 2014 and 2016 was 166.2 million lb (75.4 million kg), which amounted to 60.7 million lb (27.5 million kg) of meat. This amount of food is equivalent to 161.8 million meals (based on a 6 oz. serving). These harvest quantities represent a significant contribution to the local diets, culinary traditions, and home food budgets of many North American families.

While relatively few moose are harvested each year, compared to other popular game species, the food value of these harvests is proportionally very high due to the extraordinarily large size of moose (moose are the largest of all antlered game animals). For example, while, on average, 306,050 more mule deer are harvested each year than moose, recreational mule deer and moose harvests result in a similar amount of food (mule deer = ~ 81.6 million meals annually / moose = ~ 80.9 million meals annually).

Moose Subspecies in North America: Nature or Nurture?

In North America, there are four subspecies of moose. The range of *Alces alces gigas* is limited to Alaska, western Yukon and northern British Columbia; that of *A. a. andersoni* extends south from the range of *A. a. gigas* to the Canada-US border, and east to central Ontario; that of *A. a. americana* extends east from the range of *A. a. andersoni*; and the range of *A. a. shirasi* is relatively small and extends further south than other subspecies, roughly from Washington state southeast to Colorado.

While these 4 moose subspecies are widely recognized in North America, the scientific community has not yet reached consensus. There is strong evidence that moose subspecies differ in terms of physical traits, such as fur coloration, body size, and antler size. For example, *A. a. gigas* is the largest and *A. a. shirasi* is the smallest subspecies in terms of body and antler size. However, scientists conducting studies on moose genetics often do not find significant genetic differences between subspecies.

Body size, fur coloration, and antler size are influenced by genetics, but they also influenced by the environment. For example, when food is scarce, moose exhibit smaller body size and antler size. Therefore, some scientists suggest that differences among "subspecies" may not be due to genetic differences between the groups of animals, but to differences in the environment the occupy.

Recently, scientists have linked the warmer winter temperatures associated with climate change to declines in moose body size along the southern edge of the species' North American range. Populations at the southern range limit are thought to be most susceptible to climate change because moose are poorly adapted to heat stress, as well as to increasing winter tick infections.





Figure 2. Average amount of wild meat generated from moose harvests in Canada and the USA each year (2014-16).

PROGRESS REPORTING

Recreational Fishing in Canada

A technical paper focusing on the food value of Canada's recreational fishery is nearly complete and is currently in the revision stage. In this report, we summarize new findings surrounding recreational fishing in Canada, with important conclusions regarding the relevance of recreational fishing as a food provisioning system.

Wild Harvest Initiative[®] Database

Wild Harvest Data Collection

To date, WHI analyses have focused on the study periods 2014-15 and 2015-16. New data collection efforts, however, are nearly complete and harvest records for all 63 jurisdictions are currently being compiled for 2016-17, 2017-18, and 2018-19. While efforts have been delayed in some instances due to COVID resurgences, we are very close to having a full five years' of data in our database. Quality assurance testing is ongoing.

Economic Valuation - Hunting

Research and consultations related to an economic evaluation of recreational hunting harvests are ongoing.

Database Updates

The WHI Database has now been migrated to a cloud-based server and is currently undergoing quality testing. It is scheduled to deploy during the first week of January 2022. The new database structure will improve remote access to the data and facilitate collaboration, complex data analyses, and interdisciplinary research.

Wild Meat Sharing and Consumption Index

Initial analyses of Wyoming's Wild Meat Sharing and Consumption Survey are complete and a formal report is under review by Wyoming Game and Fish Department., We expect to publish and promote findings during the next quarter.

Initial analyses of the Nevada and Arizona surveys have also been completed and reports are being drafted.

We hope to launch the survey in Alaska before spring 2022.

Comparative analyses of all survey results, including the Texas survey, will follow.

We remain in discussions with other US States concerning subsequent



surveys and hope to launch a Canadian survey in 2022.

Additionally, we continue to investigate the possibility of expanding this program initiative to administer surveys in other parts of the world, thus potentially documenting the true universality of the wild meat sharing phenomenon.

Wild Harvest Initiative[®] Partnership Alliance

Exploring New Partnerships

We warmly welcome Wildlife Systems, Inc. to the Wild Harvest Initiative® Partnership Alliance. Wildlife Systems, Inc. was formed by wildlife biologist, Greg Simons, in 1987. The company's core mission remains the same today, as it did when it began, which is to offer quality hunting services on private lands, while also providing various wildlife management services to private landowners and others who desire technical assistance with wildliferelated matters.

We are also working to renew all partnerships and expand the partnership in 2022. We remain engaged in partnership discussions with several organizations, including state agencies, an alternative energy company, and a land trust. We also expect to sign an agreement with the US Forest Service in early 2022.

Communications

Films

We expect to launch a new film, "Cowboys and Conservationists" with Wyoming Game and Fish Department in early 2022. This film portrays the cultural importance of the ranching tradition in Wyoming and demonstrates how private lands culture promotes conservation to create a system where ranching and nature can coexist.

Other films currently under production include "Hunting, Fishing, and Food" and a longer, twelveminute production, entitled "Hunting and the Art of Human Existence". Both films will be released in2022.

New Communications Platform

In the last quarter, the WHI purchased a corporate subscription to Outdoor Wire, Hunting Wire, and Archery Wire. We will begin to distribute WHI press releases using these platforms, in addition to our traditional distribution methods, in 2022.

Wild Harvest Relevant Conferences and Global Conservation Outreach

From September 26-27, Shane Mahoney participated in the 3rd CPW (Collaborative Partnership on Wildlife Wildlife Management) Forum. The CPW brings together of the most fourteen widely recognized international conservation organizations to promote sustainable use activities on the international level. During this meeting, Shane spoke about "Landscapes as Food Provision Systems," and used WHI data to showcase sustainable wildlife harvesting in North America as a best

practice example that can be implemented abroad.

In October, Conservation Visions participated in the latest technical review of IPBES' (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) Nature Futures Framework and Methodology Guidance (https://ipbes.net/scenarios-

models). This important document will help inform policy decisions at multiple scales around the globe. It reflects a paradigm shift, encouraging policy decisions to focus not on the impact of human society on nature, but on the interdependence and interconnectedness of human society and nature. We offered significant commentary regarding the linkages between wild harvested food, wildlife, and human conservation, land wellbeing. In this review, the WHI was further recommended as an indicator of the direct benefits of sustainable use in a temperate region.

October From 11-15, Shane participated in part 1 of the 15th Conference of the Parties to the Convention on Biological Diversity (CBD CoP15) as the delegate from the International Union for Conservation of Nature (IUCN) responsible for agenda items related to sustainable use and livelihoods. The WHI consistently serves in these discussions as a vehicle to deliver North American best practices concerning sustainable wildlife use and nature conservation to the international community.



On October 28th, Conservation Visions hosted a Special Event Webinar featuring two WHI Partners, "Public Lands, Wildlife, and The North American Model: А Conversation with Shane Mahoney, Land Tawney, and Gray Thornton." Land Tawney, CEO of Both Backcountry Hunters & Anglers, and Gray Thornton, President and CEO of the Wild Sheep Foundation, joined Shane to discuss sustainable use, biodiversity conservation, and a shared outdoor heritage. The event, planned as the first of a series, was very well-attended and received. .

From November 1-5, Conservation Visions participated in The Wildlife Society's Annual Conference. During this conference, Shane mave a presentation, "What are Fish Worth? A Food-based Cost Valuation of Canada's Recreational Fishery," which shared preliminary results concerning the amount of food generated from recreational fishing in Canada between 1985 and 2015. The presentation showcased the food value of the Canadian recreational fishery, as well as its relevance as a food provisioning system.

On November 10, Shane virtually African attended Wildlife the Consultative Forum (held in Botswana), where he made a presentation highlighting the merits of wild food harvests in Africa for food security, human livelihoods, and wildlife conservation. The linkages between Indigenous Peoples and Local Communities (IPLCs) and

wildlife harvests were also discussed, as well as perceptions by non-hunters.



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THE WILD HARVEST INITIATIVE® PARTNERSHIP ALLIANCE



Not pictured is Richard A. "Dick" Corbett

