Moose Management and Research Plan
Progress Report

Minnesota Department of Natural Resources
January 14, 2009

Cost

Pursuant to Minnesota Statutes, Section 3.197, we estimate it cost approximately $475.00 to produce this report. This includes staff time for drafting and reviewing this report. These costs do not include preceding research, planning, and public participation efforts by the Department of Natural Resources prior to the requirement of this report being prepared.

Introduction

This report fulfills the requirements of Laws 2008, Chapter 368, Article 2, Section 76 which requires: "*The commissioner of natural resources shall consult with research scientists, wildlife managers, tribal interests, other agencies with moose research and management expertise, and other key stakeholder groups on the development of a moose management and research plan for Minnesota. The plan shall address moose populations and habitats, including, but not limited to, the northwest Minnesota herd; likely causes of observed changes and trends; moose habitat and hunting management; and monitoring, research, and evaluation needs. The plan shall establish future moose management and research goals and strategies within the context of habitat and climate trends in Minnesota. By January 15, 2009, the commissioner shall provide a progress report on the plan to the senate and house of representatives committees with jurisdiction over natural resource policy.*"

Background

Moose are only found in the northern areas of North America, Europe, and Eurasia and are generally associated with northern boreal and near boreal forests (see Figure 1). Minnesota is at the southern edge of the range of both near boreal forest and moose.

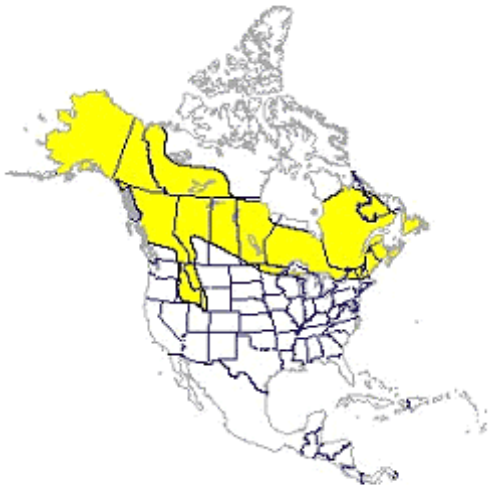

Figure 1. Moose distribution in North America

Minnesota has two disjunct populations of moose – one occurs in the northwestern part of the state and the other in the northeast "arrowhead" region. The population of moose in northwestern Minnesota has been in decline for over fifteen years, during which time DNR intensified moose research efforts and habitat management. In northwestern Minnesota the moose population has declined from of an estimated 4,000 animals in 1985 to fewer than 100 today. This collapse occurred despite intensive habitat management of tens of thousands of acres by the DNR for more than two decades, and a complete closure of hunting after 1996.

Population estimates in northeastern Minnesota have fluctuated between 6,500 and 8,500 animals since 2004, when a more accurate aerial survey method was begun (population estimates in years prior to 2004 are not comparable to the new estimates). Although the number of moose is roughly stable, a declining calf to cow ratio (indicating recruitment of young moose into population) declining hunter success rate, and high adult mortality compared to moose populations in other areas of North America all indicate a potential declining population, and are cause for concern.

In northwest Minnesota, hunting was ended in the Beltrami State Forest area in 1984 and then ceased entirely in 1997. Hunting in northeast Minnesota has continued, but only by a limited numbers of permits at a low level (the harvest represents less than 3% of the estimated population) that is not a significant factor driving moose population trends. Total state and tribal harvest accounted for an average of 204 moose each year (2001-2007). The past two years the State and the Fond du Lac band of Lake Superior Chippewa have limited the harvest to bulls only as a precautionary measure. Native American bands belonging to the 1854 Treaty Authority have continued to harvest a limited number of cows (8 in 2007 and 3 in 2008).

There are many known direct causes of moose mortality including, but not limited to hunting, poaching, winter ticks (*Dermicenter albipictus*), brainworm *(Parelaphostrongylus tenuis)*, liver flukes, vehicle and train collisions, starvation, and predation. Any of these factors could be exacerbated by heat stress that interferes with normal foraging behavior or that causes additional stress on the animal. Increasing development pressures, land parcelization, and forestry practices can also influence moose habitat and resulting population size. The current issue is complex, and there are likely no simple answers. The goal is to bring the best current understanding of moose biology and populations to this planning process to identify the highest priority research and management needs.

Process Overview

To receive focused public input on its moose management and research plan, the DNR assembled a group of moose experts and stakeholders to carefully consider the status of moose populations, harvest, management, and research and to represent the cross section of knowledge and interests associated with moose in Minnesota. This group, the Moose Advisory Committee ("MAC" or "Committee"), will make recommendations to the DNR on the direction of the management and research plan.

Moose Advisory Committee

Committee members were selected in June of 2008 by an ad hoc steering committee composed of staff from DNR, Native American natural resource agencies, and the United States Forest Service, along with stakeholders. A group of 18 individuals (Table 1) was selected reflecting geographic distribution of moose in the state, wildlife management authorities, land management responsibility, stakeholder interest, and related academic

and private interests. Another list was created of additional experts and stakeholders who might serve as ad hoc resources for the Committee.

The DNR charged the MAC to: "*Create recommendations to inform the Wildlife Management Section of the Minnesota Department of Natural Resources (DNR) in development of a moose management and research plan (Plan).*" The DNR has asked the MAC to specifically address certain items in its recommendations, including identifying what in their opinion are the highest priorities for research and management, thoughts on when to end harvest in the northeast if the population continues to decline, and important messages to convey to the public.

Table 1 - Moose Advisory Committee (MAC) Members

Name	Position	Affiliation
Bob Baker	Owner	Gunflint Pines Resort
Dr. Dennis Becker	Assistant Professor	UMN Forest Resources
Lou Cornicelli	Big Game Programs Consultant	DNR FAW - Wildlife Management Section
** Michael DonCarlos	Research and Policy Manager	DNR FAW - Wildlife Management Section
Andy Edwards	Division Director	1854 Tribal Authority Resource Management
Dr. Lee Frelich	Research Associate and Director	UMN Forest Resources
Gary Huschle	MN Representative	The Wildlife Society
Mark Johnson	Executive Director	Minnesota Deer Hunters Association
Alan Jones	Silviculture, Lands & Roads Supervisor	DNR Division of Forestry
Dr. Mark Lenarz	Wildlife Research Group Leader	DNR FAW - Wildlife Management Section
Jeff Lightfoot	Region 2 Manager	DNR FAW - Wildlife Management Section
Tom Martinson	Land Commissioner	Lake County Land Department
Gretchen Mehmel	Red Lake Area Manager	DNR FAW - Wildlife Management Section
** Steve Merchant	Programs Manager	DNR FAW - Wildlife Management Section
Dr. Ron Moen	Research Associate	Natural Resources Research Institute
Shawn Perich	Member	Minnesota Forest Resources Council
* Dr. Rolf Peterson	Professor	Michigan Technological University
Daniel Ryan	Wildlife Biologist	United States Forest Service
Mike Schrage	Wildlife Biologist	Fond du Lac Resource Management Division
Doug Thompson	Northeast Minnesota Program Director	The Nature Conservancy

* denotes Chair

** denotes Committee Advisors

Timeline

The Committee is meeting seven times between September 2008 and June 2009, and will deliver a recommendations document to the DNR in July of 2009. Ad hoc subcommittees may be formed and meet additional dates and/or times to ensure the committee's work is finished on schedule.

Table 2 – Moose Process Important Dates

September 22, 2008	MAC Meeting 1
December 8, 2008	Moose Summit
December 9, 2008	MAC Meeting 2
January 26, 2009	MAC Meeting 3
March date TBD, 2009	MAC Meeting 4
April date TBD, 2009	MAC Meeting 5
May date TBD, 2009	MAC Meeting 6
June date TBD, 2009	MAC Meeting 7
July 2009	MAC delivers recommendations to DNR
July – November 2009	DNR writing moose management and research plan
December 2009	Plan first draft complete, reviewed and edited
January 2010	Public comment on plan draft
February 2010	Plan edited based on public comment
March 2010	Moose management and research plan is finalized

Moose Summit

The DNR held a Minnesota Moose Summit on December 8, 2008 in Duluth for the MAC to hear from moose experts (Table 3) from other North American states and provinces, and to gain collective knowledge on moose threats and challenges. Guests identified by the MAC and DNR as potential contributors to the discussion also attended, but the focus was on the Committee's work. Six presentations were given on the "state of moose" in Manitoba, Michigan, Minnesota, North Dakota, and Ontario, and the experts answered questions and participated in MAC discussions at their meeting the next day.

Table 3 – Moose Summit Presenters

Name	Position
Dr. Dean Beyer	Michigan DNR
Dr. Erika Butler	Minnesota DNR
Dr. Vince Crichton	Manitoba Conservation
Dr. Bill Jensen	North Dakota Game and Fish
Dr. Mark Lenarz	Minnesota DNR
Dr. James Maskey	Ph D. student, University of North Dakota
Dr. Art Rodgers	Ontario Ministry of Natural Resources

Management and Research Plan

The DNR will develop a moose management and research plan that sets future goals and strategies in the context of habitat and climate trends. The MAC process will provide a systematic method for consulting with research scientists, wildlife managers, tribal interests, other agencies with moose research and management expertise, and other key stakeholder groups. The DNR will consider the MAC's recommendations along with supporting data and wider public input in development of the final plan.