



Moose in willows © Ian Freeman

Moose: North-central Alaska, USA

Migration Description

Though moose are not commonly thought of as migratory, some populations have individuals that migrate more than 100 km between summer and winter ranges. In north-central Alaska, which includes Gates of the Arctic National Park and Preserve, Kanuti National Wildlife Refuge, and a mix of other federal, state, and private lands, moose migrate approximately 30 km between summer and winter ranges. Moose migrate in every direction, rather than a north to south movement that may be expected for this highly seasonal, Arctic environment. Indeed, in most of the fall migrations, moose move north for the winter. The durations of fall and spring migrations are very similar, 18-19 days long. Their seasonal migrations may be related to habitat preferences, snow conditions, elevation, and terrain. Bull moose exhibited a greater propensity to migrate than females. Compared to populations in other parts of central Alaska, fewer moose are migratory and individuals migrate shorter distances. Researchers are still working to understand these differences, but one explanation could be related to population density. In this region, moose densities tend to be low (0.1 moose/km²).

Threats to Migration

The Arctic is warming four times as fast as the global average. Climate change could affect moose migration in a number of ways. Increasing temperatures could lead to more frequent and intense wildfires, which could alter habitat quality and quantity as well as the permeability of the landscape for moose. Changes in precipitation related to climate change, especially snow depth, could also impact moose migration in the region. Currently, only a single road called the Dalton Highway connects the contiguous road system of North America to the oil fields of northern Alaska, which lies within the study area. Increasing traffic on this road or increasing harvest pressure may alter moose migrations. Furthermore, there is a proposal for a 211-mile industrial road which would extend westward from the Dalton Highway, running between Gates of the Arctic National Park and Preserve and the Kanuti National Wildlife Refuge. If built, this road may also impact moose migrations between these protected areas. Roads in Alaska are known to increase competition among hunter groups and reduce subsistence harvests of local hunters. Further reductions in moose population density related to harvest pressure may alter moose migrations in north-central Alaska.

Local Population Facts

Migration

Seasonal 
Medium 30.9 km (avg.)

Threats



Species Facts

Common name: Moose

Species name: *Alces alces*

Range: Boreal forests of the northern hemisphere

Diet: Browser of deciduous shrubs

Global population: Exceeding 1.5 million

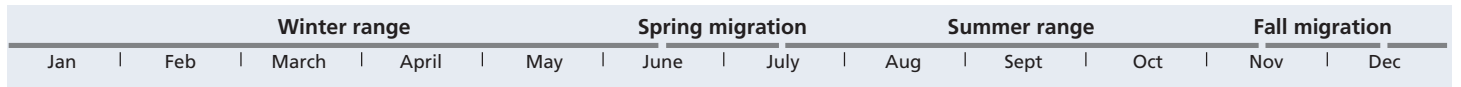
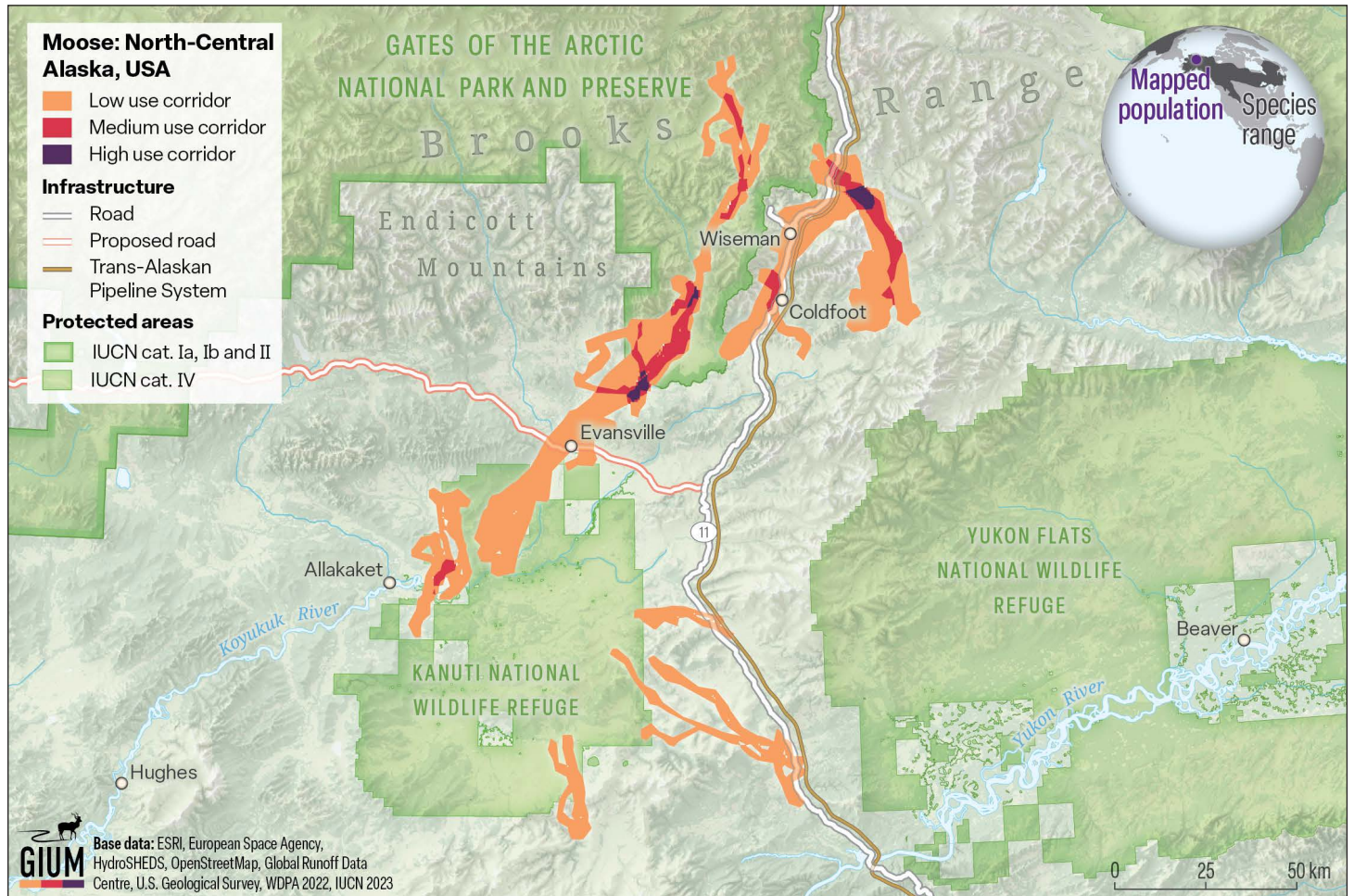
IUCN Conservation Status

LC Least concern

CMS Status

Not listed

Moose Migration



Study Information

Sample size

28 individuals

Relocation frequency

Primarily, 3/day (every 8 hours)

Project duration

5 years, 2008–2012

Data Analysis

Delineation of migration periods

Net squared displacement to delineate migration between winter and summer ranges

Models derived from

Brownian Bridge Movement Model

Route Summary

Migration start and end date (median)

- Spring: June 23–July 2
- Fall: November 13–December 13

Average number of days migrating

- Spring: 18.1 days
- Fall: 19.2 days

Migration route length

- Min: 5.5 km
- Mean: 30.9 km
- Max: 90.6 km

Data Providers

Data was collected as part of an inter-agency moose ecology study within and just south of the central Brooks Range in north-central Alaska. GPS collars were supplied by Gates of the Arctic National Park and Preserve (Kyle Joly), Kanuti National Wildlife Refuge (Mike Spindler), and the Central Yukon Field Office of the Bureau of Land Management (Tim Craig). The Alaska Department of Fish and Game (Glenn Stout) was also a key member of this collaborative project.

In partnership with:



The Convention on the Conservation of Migratory Species of Wild Animals (CMS), also known as the Bonn Convention, is an environmental treaty of the United Nations that provides a global platform for the conservation and sustainable use of terrestrial, aquatic and avian migratory animals and their habitats.



The Global Initiative on Ungulate Migration (GIUM) was created in 2020 to work collaboratively to: 1) create a Global Atlas of Ungulate Migration using tracking data and expert knowledge; and 2) stimulate research on drivers, mechanisms, threats and conservation solutions common to ungulate migration worldwide.



View and Download Map Data from the GIUM Migration Atlas

Joly, K. 2024. Moose: North-central Alaska (USA). Global Initiative on Ungulate Migration, editors. *Atlas of Ungulate Migration*. Convention on the Conservation of Migratory Species of Wild Animals.