



Moose: Västerbotten Coastal Area, Sweden

Migration Description

Following a population bottleneck due to overhunting in the early 1900s, moose populations have rebounded across Sweden. Sweden is now home to the densest population of moose in the world. Moose in Sweden are partially migratory, with some animals remaining resident year round and others making migrations up to 200 km long. Their migration distance and duration vary in response to weather conditions, forage availability and the latitudinal or east-west gradients they travel across. The onset of spring migration is typically consistent across individuals in the same area, whereas fall migration is a more protracted process with moose leaving summer ranges at different times.


In the country's boreal coastal-inland, strong seasonality characterizes the moose's migratory range. The further inland they are, moose experience more seasonal conditions, and migrate moderate distances in variable directions. Moose near the coastline migrate north-west during spring, while inland migrants may travel in any direction. Migration routes are typically specific to the individual and are relatively predictable from year to year. This area is characterized by rotation forestry, mires, lakes, rivers, and arable land. A highway and parallel railway along the coastline are semi-permeable barriers for migratory moose. Because the mapped migrations predate the construction of a high-speed railway with increased fencing, it remains unknown if individuals are still able to cross the railway during migration.

Threats to Migration

In Sweden, moose encounter anthropogenic disturbance across their range, including forestry, roads, energy development and recreational activities. Busy roads can affect migration routes and cause vehicle-moose collisions. Climate change may also threaten moose migrations by altering precipitation patterns, temperature, and plant growth in moose habitat, though the extent of the cumulative impact on moose migration patterns, and the benefits of migrating, is unknown. Additionally, there is an increasing demand for wind energy, with forest areas cleared for wind infrastructure. More research is needed to understand if and how wind parks affect moose movement and their habitat utilization. Hunting may also impact migratory behavior. Browsing on Scots pine in winter generates conflicts with forest management, resulting in higher harvest quotas in areas with high browsing levels. Migratory moose usually return to their winter range once the annual hunt has concluded, adding to the number of animals using coniferous forest as winter range. To compensate for this, moose management adjusts harvest quotas across management units with migratory moose, using knowledge generated by research on area-specific proportion of migrants, average migration distance and dominant migration direction. Though the harvest targets both resident and migratory individuals, more research is needed to understand how harvest influences the ratio of these two strategies.

Local Population Facts

Migration

Seasonal 
Short 18 km (avg.)

Threats

-  Climate change
-  Energy dev.
-  Urban sprawl
-  Linear barriers
-  Agriculture
-  Livestock
-  Illegal killing
-  Other

Species Facts

Common name: Moose

Species name: *Alces alces*

Range: Boreal forests of the northern hemisphere

Diet: Woody browse, broadleaf vegetation, herbaceous plants

Global population: Exceeding 1.5 million

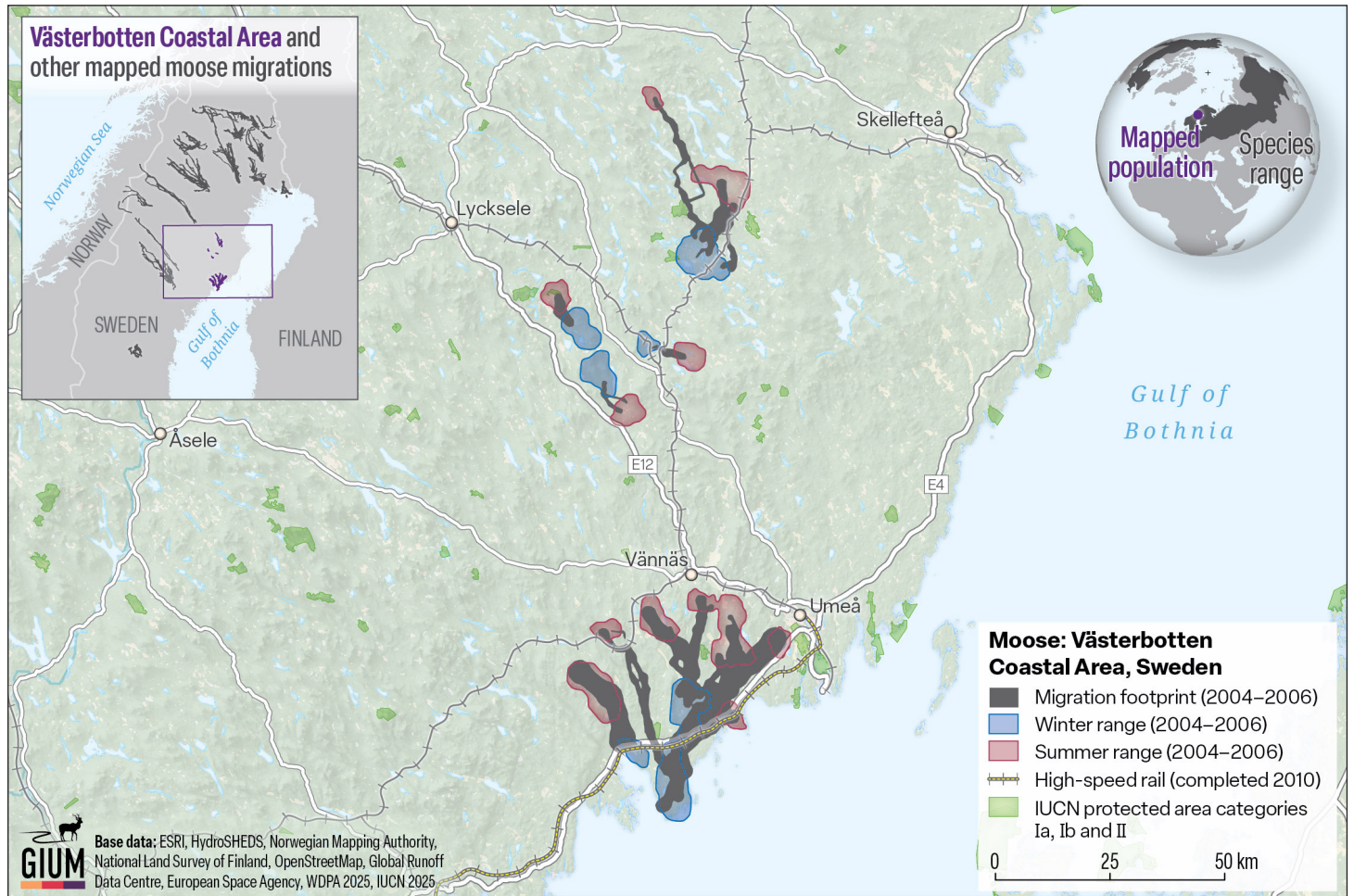
IUCN Conservation Status

LC Least concern

CMS Status

Not listed

Moose Migration



Study Information

Relocation frequency

3 hour

Project duration

2004–2006

Data Analysis

Migratory Individuals Mapped

14

Delineation of migration periods

Net squared displacement to delineate migration between seasonal ranges.

Models derived from

Brownian Bridge Movement Model; Kernel densities used to derive winter and summer ranges.

Route Summary

Migration start and end date (median)

- Spring: 9 days
- Fall: 8 days

Average number of days migrating

- Spring: April 27–May 05
- Fall: December 26–January 06

Migration route length

- Min: 11 km
- Mean: 18 km
- Max: 38 km

Data Providers

Data were collected through the efforts of Göran Ericsson and Wiebke Neumann of the Swedish University of Agricultural Sciences. Data collection was funded by the Swedish County Administrative Board of Västerbotten, the Swedish Association for Hunting and Wildlife Management, and different landowners.

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.



www.cms.int/gium

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

Neumann, W. and G. Ericsson. 2026. Moose: Västerbotten Coastal Area, Sweden. Global Initiative on Ungulate Migration, editors. *Atlas of Ungulate Migration*. Convention on the Conservation of Migratory Species of Wild Animals.