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Moose: Northern Inland, Sweden

Migration Description


Following a population bottleneck due to overhunting in the early 1900s, moose populations have rebounded across Sweden. The country 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 use to travel. 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 mountainous interior, strong seasonality characterizes the moose's migratory range. Here, many moose migrate long distances, often traveling northwest from their winter range to their summer ranges. Some animals make altitudinal migrations. Migrants typically move between coniferous forests and highly productive deciduous forests in the mountains in the summer. Migration routes are typically specific to the individual and are relatively predictable from year to year. Major landmarks like rivers shape migration routes in this region. This area is characterized by rotation forestry, large wetland areas, rivers, and intensive mining activity. Additionally, a major railway cuts through the area from south to north (from Boden to Gällivare, Kiruna and further to Narvik at the Norwegian coast).

Threats to Migration

In Sweden, moose encounter anthropogenic disturbance across their range, such as 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, particularly in mountainous environments. More research is needed to understand how these changes may affect moose migration patterns and whether this may alter the benefits of migrating. 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 
 Medium 26 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: Northern hemisphere

Diet: Woody browse, broadleaf vegetation, herbaceous plants

Global population: Exceeding 1.5 million

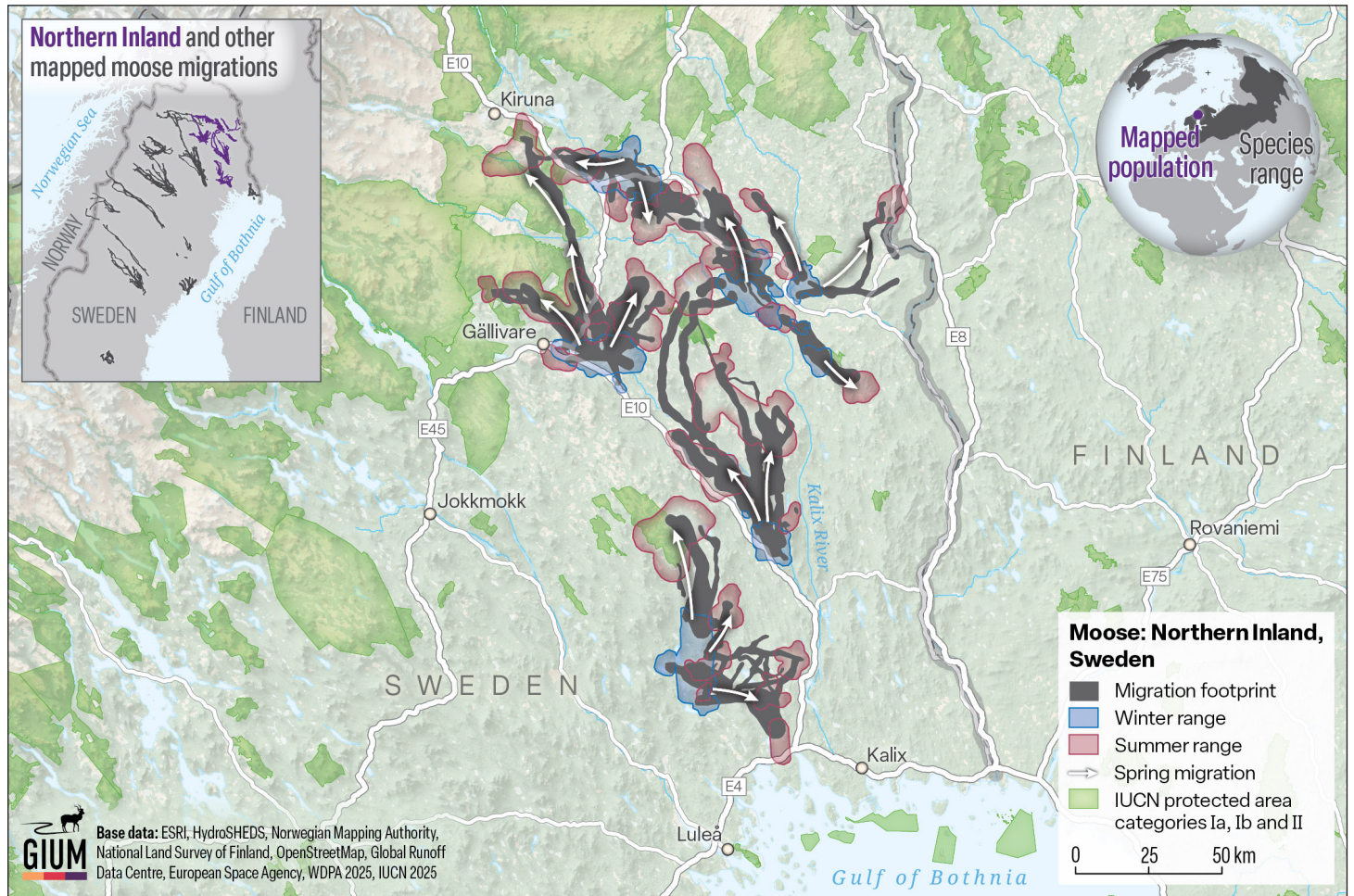
IUCN Conservation Status

LC Least concern

CMS Status

Not listed

Moose Migration



Study Information

Migratory Individuals Mapped

51

Relocation frequency

15 hour

Project duration

2013–2016

Data Analysis

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: 13 days
- Fall: 13 days

Average number of days migrating

- Spring: May 3–May 15
- Fall: November 24–December 10

Migration route length

- Min: 5 km
- Mean: 26 km
- Max: 86 km

In partnership with:



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 Program of Adaptive Management of Fish and Wildlife at the Swedish University of Agricultural Sciences (SLU), the Swedish Environmental Protection Agency, the EU Interreg II program Kvarken-MittSkandia, the Swedish Association for Hunting and Wildlife Management, the Kempe Foundation and the counties of Västerbotten and Norrbotten, and several land owners including Sveaskog, Norra Skogsägarna, SCA, the church of Sweden, the Swedish National Property Board, and others.



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

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