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Red deer: Berchtesgaden National Park, Germany

Migration Description

In the 19th century, hunting led to a reduction of red deer in many areas in Europe, including southern Germany. Red deer today exist as metapopulations in several parts of central Europe and connectivity between subpopulations is a management concern. In Berchtesgaden National Park, located along the border with Austria in southeastern Germany, red deer migrate between winter habitats in forested valley bottoms around the lake Königssee and summer ranges in the alpine pastures and subalpine forests near the park's southern terminus. As they travel along short but steep migratory routes, they move along pronounced altitudinal gradients, e.g. in vegetation phenology and snow depth, allowing animals to move relatively small distances but gain access to a variety of different habitats. Forest dynamics driven by wind throw and insect outbreaks also play an important role for the red deer movements, with naturally disturbed sites offering shelter and forage opportunities.

Threats to Migration

Several factors alter the migration behaviour of red deer in Berchtesgaden National Park. The national park is an important tourist destination with around 1.6 million visitors each year and the highly frequented trail and hut system overlaps in parts with the migratory routes of red deer in the area. Linear infrastructure such as roads and housing developments has also blocked movements to wintering areas that the deer used in the past, beyond park borders. Consequently, many animals now overwinter at higher elevations than they did historically. To reduce conflicts with adjacent managed forests, supplementary feeding is provided at designated feeding sites during winter. Because there are no natural predators, population size is regulated through hunting in the park's intervention zone. Ongoing climate change is expected to further alter migration patterns by reducing snow cover and advancing snowmelt, thereby affecting the timing and extent of seasonal movements.

Local Population Facts

Migration

Seasonal 

Elevational  863 m

Short 6.0 km (avg.)

Threats



Species Facts

Common name: Red deer

Species name: *Cervus elaphus*

Range: Eurasia

Diet: Mixed-feeder herbivore

Global population: unknown; Europe: ~2 million

IUCN Conservation Status

LC Least concern

CMS Status

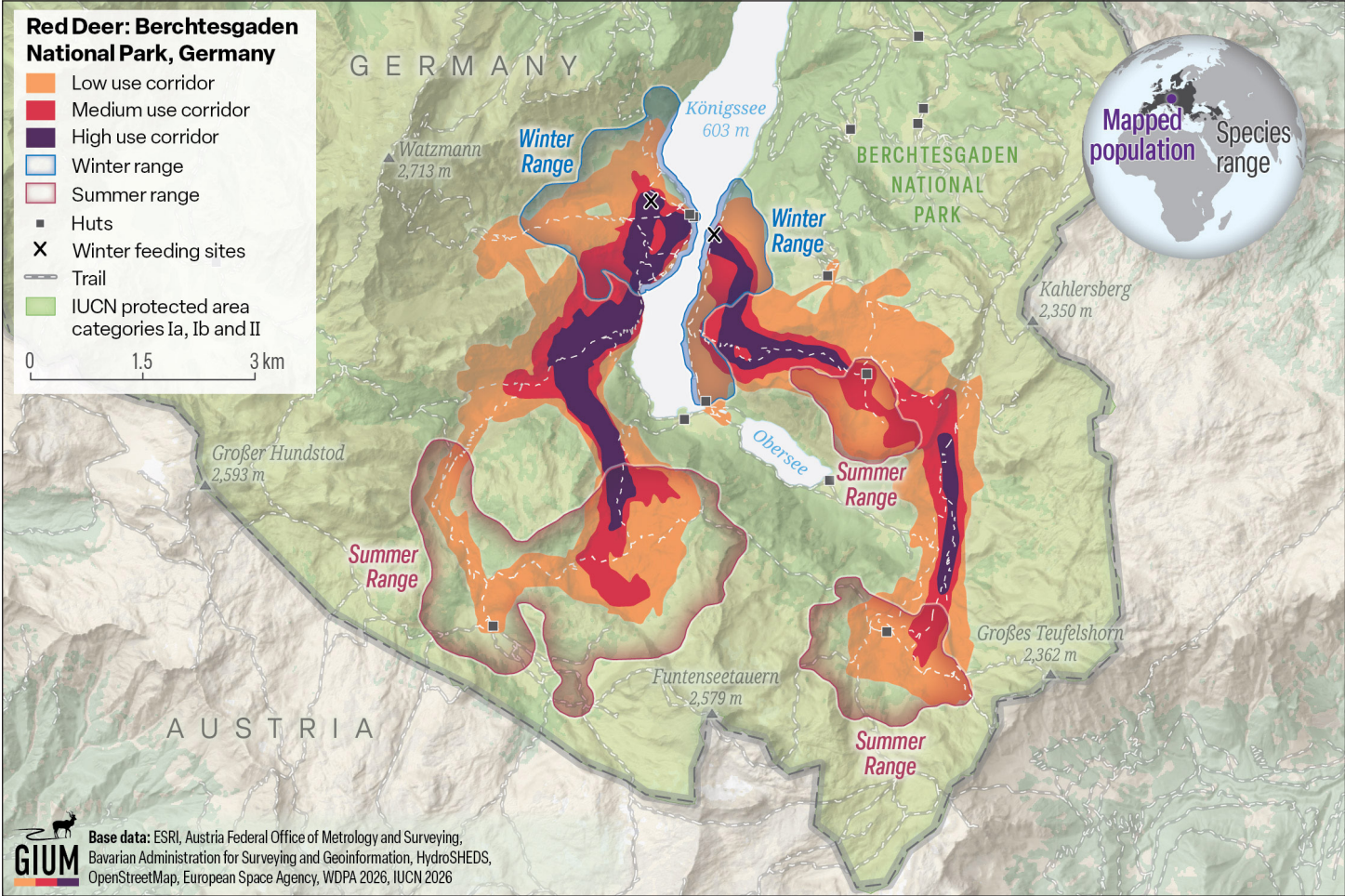
Not listed



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Red Deer Migration



Winter range			Spring migration			Summer range			Fall migration		Winter range	
Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	

Study Information

Relocation frequency

1 hour

Years mapped

2022–2024

Data Analysis

Migratory individuals mapped

42

Delineation of migration periods

Net squared displacement to delineate migration between seasonal ranges.

Models derived from

Line buffer method (250m width); Kernel densities to delineate winter and summer ranges

Route Summary

Migration start and end date (median)

- Spring: May 11–May 14
- Fall: September 24–October 01

Average number of days migrating

- Spring: 2.3 ($\pm$ 2.7) days
- Fall: 2.3 ($\pm$ 2.9) days

Migration route length

- Min: 1.7 km
- Mean: 6.0 km
- Max: 9.3 km
- Elevation gap: 863m (winter: 799 masl, summer: 1662 masl)

Data Providers

Data were collected through the efforts of Rudolf Reiner from the Berchtesgaden National Park and Juliana Eggers with the Technische Universität München (TUM). Data collection was funded by the Bavarian State Ministry for Environment and Consumer Production through the project 'Ungulate dynamics and management at Berchtesgaden Nationalpark in a multi-trophic context'.

In partnership with:



www.cms.int

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

All fact sheets, maps, and geospatial products are made available under a CC-BY 4.0 license.

Reiner, R., Eggers, J., Mumme, S. 2026. Red deer: Berchtesgaden National Park, Germany. Global Initiative on Ungulate Migration, editors. *Atlas of Ungulate Migration*. Convention on the Conservation of Migratory Species of Wild Animals. <https://doi.org/10.5281/zenodo.22309499>