CMS GIUM

Global Initiative on Ungulate Migration

FACT SHEET

Alpine Ibex: Belledonne massif, France

Migration Description

Alpine ibex within the Belledonne population migrate from steep south-facing rocky cliffs in low-altitude winter ranges (~1,860 m) to high-altitude alpine pastures for summer ranges (~2,360 m). The ibex use steep south-facing snow-free corridors distributed 50 km along the Belledonne massif and generally avoid crossing roads, even to access other mountain ranges on the opposite side (Oisans and Arvan-Villards mountain ranges). In spring, migratory individuals jump the green wave of vegetation as it progresses up in elevation with snowmelt, arriving just before vegetation reaches peak maturity. In autumn, vegetation senescence and the first snowfalls trigger the return migration to their winter range. This population exhibits a diversity of migration tactics, with some individuals performing relatively short, altitudinal movements while others travel up to several dozen kilometers. Each year, around two-thirds of the population migrate, while the other remain resident. However, nearly half of the ibex switch between migration and residency each year, depending on the timing and speed of spring green-up and the benefits of migration in terms of access to high-quality vegetation.

Threats to Migration

Mountain ranges are among the last areas where ungulate migration persists in Europe outside Scandinavia, mostly because they provide intact habitat compared to lowlands. However, elevational movements have long been overlooked in migration ecology and conservation, owing primarily to their short distance. Yet, these short migrations are crucial for ibex to survive extreme seasonal variations in climate, among the most extreme on Earth. The warmer and earlier springs expected in the Alps as a consequence of climate change — which is warming two to three times faster in mountains than elsewhere — may decrease the benefits of migration for ibex and alter their propensity to migrate. Climate change may also redistribute human recreational activities, bringing infrastructure higher in the mountains. In Belledonne, the Alpine ibex's range is already bordered by roads, ski infrastructure and urbanized valleys. Any further development could threaten the existing migration, especially since only 12% of the high-use corridor occurs in a protected area (the Belledonne National Hunting and Wildlife Reserve).

Local Population Facts

Migration

Elevational 500 m

Short 14.1 km (avg.)

Threats

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

Species Facts

Common name: Alpine ibex

Species name: *Capra ibex*

Range: Mountain environments of the European Alpine arc

Diet: Mostly grass and herbs, woody plants and cryptogams in low quantities

Global population: >55,000 in 2015

IUCN Conservation Status

LC Least concern

CMS Status

Not listed

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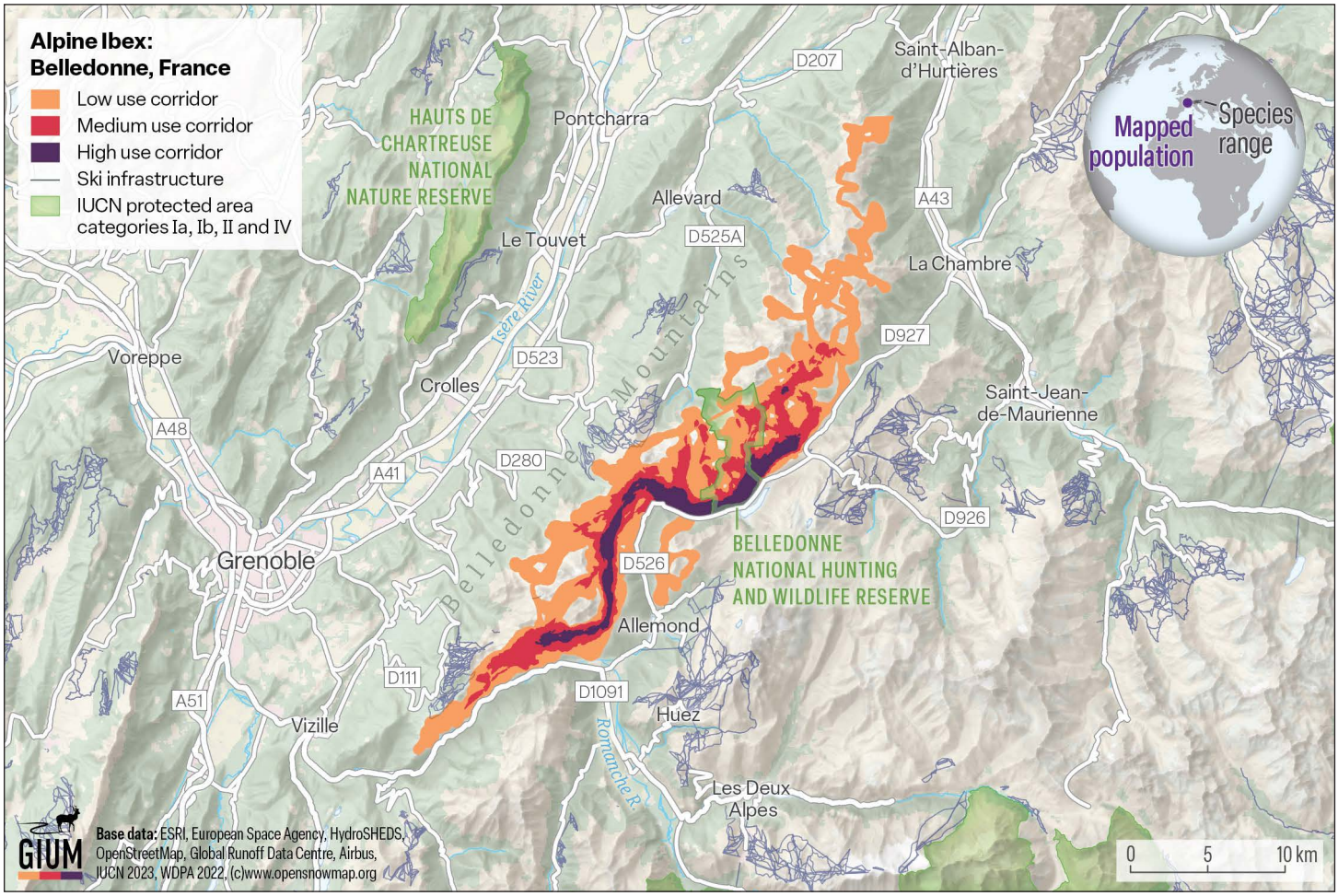
Alpine Ibex Migration



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

Study Information

Sample size
71 individuals

Relocation frequency
1–2 hours

Project duration
6 years, 2017–2022

Data Analysis

Delineation of migration periods
Net squared displacement to delineate migration between winter and summer ranges

Models derived from
Brownian Bridge Movement Models (fixed motion variance, 750)

Route Summary

Migration start and end date (median)
- Spring: June 4–June 8
- Fall: October 5–October 8

Average number of days migrating
- Spring: 4.0 days
- Fall: 5.3 days

Migration route length
- Min: 1.8 km
- Mean: 14.1 km
- Max: 31.3 km

Data Providers

Data was collected through the efforts of Mathieu Beurier, Carole Toïgo, Mathieu Garel and Pascal Marchand in the Office Français de la Biodiversité (grant numbers SD38 and SD73).

In partnership with:

OFB Office Français de la Biodiversité

LECA Laboratoire d'Ecologie Alpine

UMR 5175 Centre d'Écologie Fonctionnelle & Evolutive

CESCO Centre d'Écologie et des Sciences de la Conservation

CMS 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.

GIUM 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

Marchand, P., V. Chauveau, M. Beurier, A. Coulon. C. Toïgo, A. Loison. and M. Garel. 2024. Alpine Ibex: Belledonne massif, France. Global Initiative on Ungulate Migration, editors. *Atlas of Ungulate Migration*. Convention on the Conservation of Migratory Species of Wild Animals.