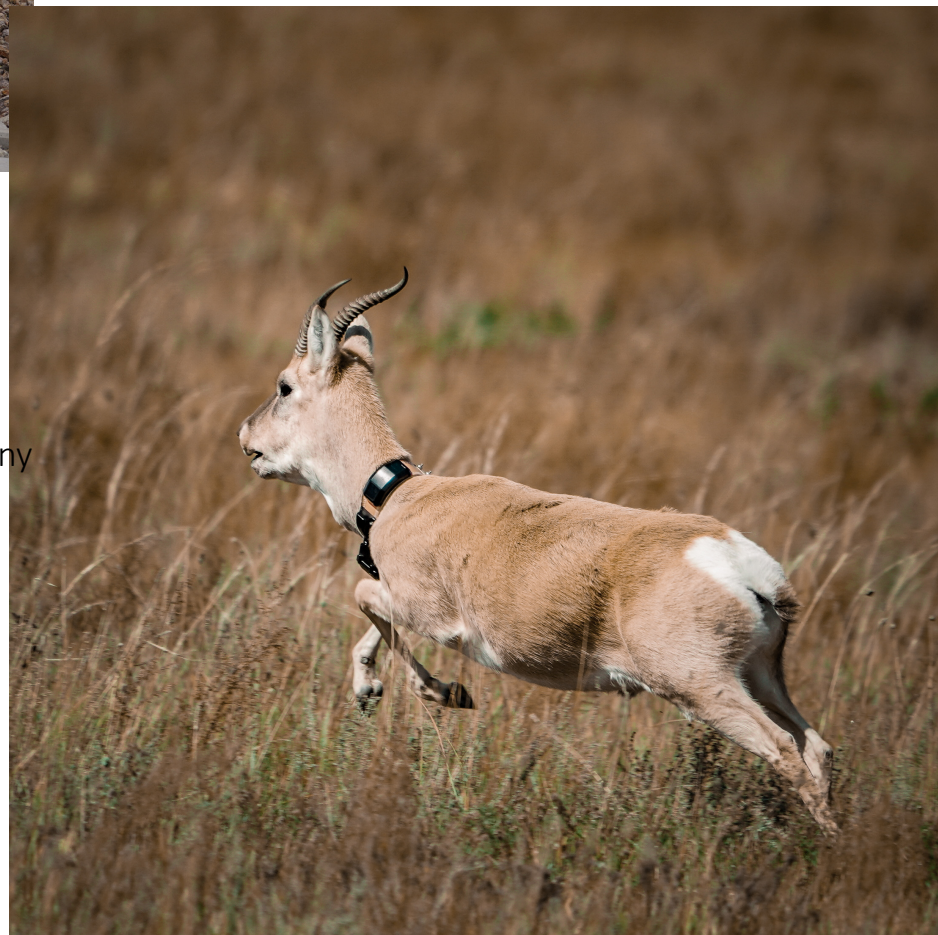
GLOBAL INITIATIVE ON UNGULATE MIGRATION (GIUM)



Nandintsetseg Dejid[1], Matthew Kauffman[2], Thomas Mueller[1,3]

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Global Initiative for Ungulate Migration

To create a Global Atlas of Ungulate Migration (an inventory) using tracking data and expert knowledge and to make corridor map files publicly available.

Global Initiative for Ungulate Migration

SCIENTIFIC ADVISORY GROUP

Francesca Cagnacci - Fondazione Edmund Mach, Italy
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Andrea Dekrout – Convention on Migratory Species (CMS), Germany
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Matthew Kauffman – USGS, University of Wyoming, USA
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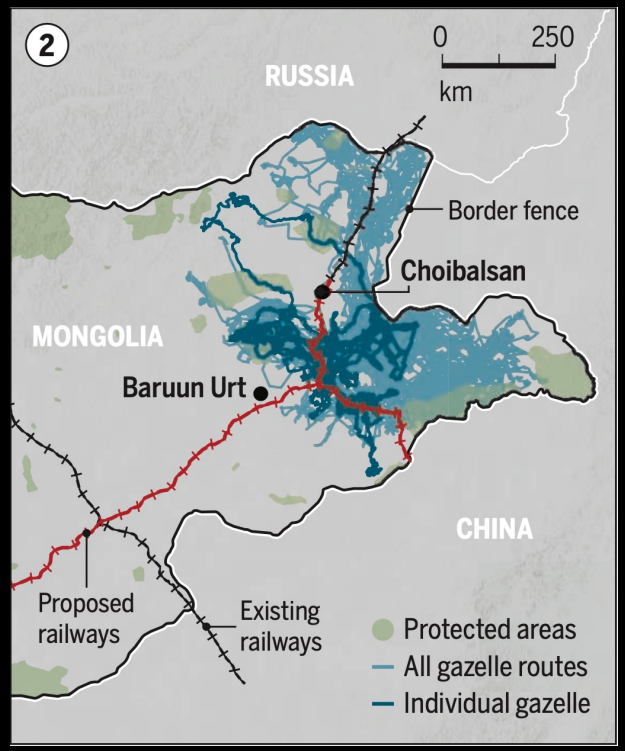
Atle Mysterud - University of Oslo, Norway
Wibke Peters - Bavarian State Institute of Forestry, Germany

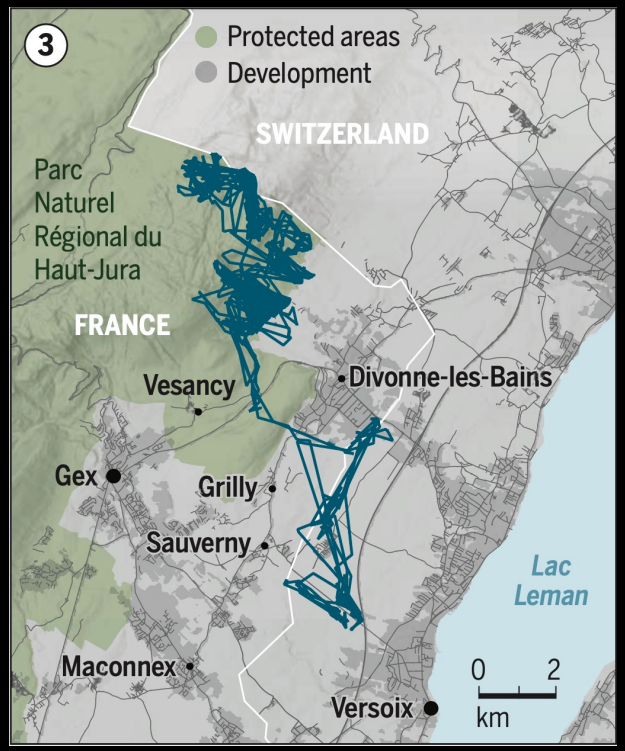
In partnership with:

Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals (UNEP/CMS)

GIUM participants (data providers) so far…

Better maps needed for global migrations






POLICY FORUM

CONSERVATION

Mapping out a future for ungulate migrations

Limited mapping of migrations hampers conservation

Global experts have come together to create the Global Initiative on Ungulate Migration. In partnership with the Convention on Migratory Species

https://www.cms.int/gium

GIUM's Big Idea

GPS data shared with "mapping team", or conducted in-house

2. Analyses conducted to estimate "derived corridors"

Derived corridors and metadata shared with Global Atlas

GPS data returned to researcher

1. GPS Tracking Studies

3. Global Atlas web portal

Migration maps used by:

- NGOs, federal, provincial, tribal agencies, development banks, policy makers, etc.

Global Atlas (coming soon….)

Migration Fact Sheets

Global Initiative on Ungulate Migration

Fact Sheet

Global Initiative on Ungulate Migration

RED DESERT MULE DEER MIGRATION

Pronk stott mule deer © Ben Kraushaar

Tracking Mule Deer In Wyoming

Biologists tracked 181 adult female mule deer with GPS collars between 2011 and 2019 to study their movements and any obstacles they encounter during their spring and fall migrations.

Winter Range

The Red Desert herd stays on their winter range for almost 100 days, between November 15 and April 15.

Spring Migration

Red Desert mule deer depart their winter range around April 25 and arrive at the summer range by May 22, traveling an average of 210 km. Some mule deer migrate as far as 410 km during their spring migration.

Fall Migration

The herd departs the summer range October 14 and arrives back to the winter range by November 16, following a similar path as the spring migration.

Migration Description

Mule deer within the Red Desert population, part of the larger Sublette herd in Wyoming, make the longest ungulate migration ever recorded in the continental United States. Here, mule deer travel a one-way distance of 240 km from the Red Desert in the south to the Hoback Basin and surrounding mountain ranges in the north. This migration originates in the desert sagebrush basins of the Red Desert/Steamboat Mountain area of southwest Wyoming where deer winter. In spring, an estimated 500 deer travel 80 km north across the desert to the west side of the Wind River Range. From there they merge with 4,000 to 5,000 other deer that winter in the foothills of the Wind River Range and then travel a narrow corridor along the base of the Winds for 100 km before crossing the upper Green River Basin. Deer must navigate several bottlenecks, one as narrow as 50 meters wide, at the outlets of Fremont, Willow, and Boulder Lakes. In the final leg of the journey, they travel another 50-80 km to individual summer ranges in the Hoback Basin.

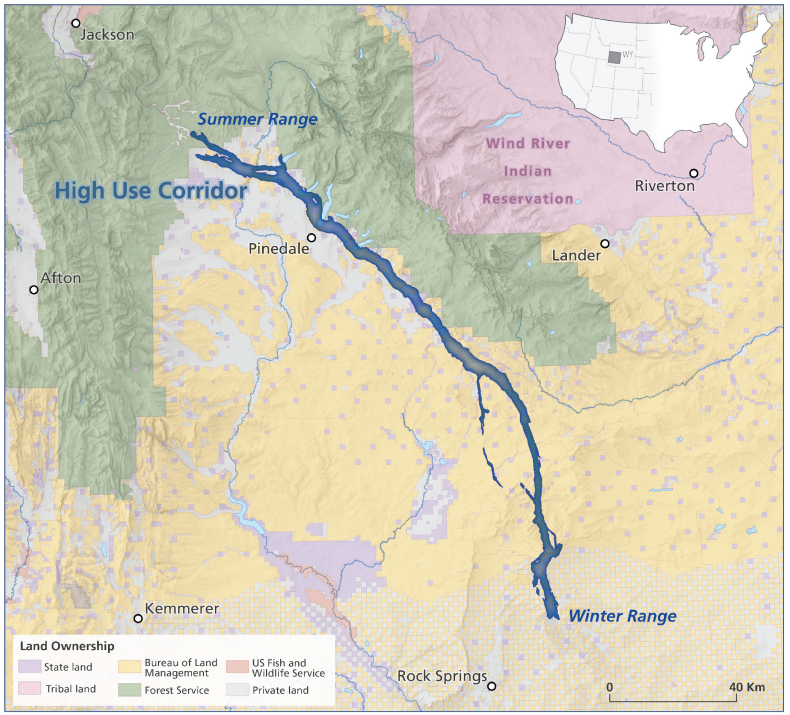
Main Threats to Mule Deer Migration

- Fencing, built to exclude elk from private land where they could damage hayfields or transmit disease
- High-traffic roads
- Energy infrastructure and subdivision development
- Rural development

Mule Deer Facts

Common Name: Mule deer
Species Name: *Odocoileus hemionus*
Range: Arid, rocky environments of the western United States
Diet: Herbaceous plants, and the leaves and twigs of woody shrubs
Global Population Size: Approx. 3.5 million deer
Status: Least Concern

RED DESERT MULE DEER MIGRATION



About GIUM

The Global Initiative on Ungulate Migration was created in 2020. The main aim of the initiative is to work collaboratively to: 1) create a Global Atlas of Ungulate Migration (an inventory) using tracking data and expert knowledge; and 2) stimulate research on drivers, mechanisms, threats and conservation solutions common to ungulate migration worldwide. Initiative participants include global experts representing the world's major terrestrial regions and most if not all of its longest migrations (e.g., Serengeti wildebeest, arctic caribou, Mongolian saiga, white-eared kob, African elephants, among many others). We seek to spark conservation efforts worldwide by sharing and discussing new, ongoing, and proven approaches to maintain migration corridors across large landscapes.

Research Methods

Over the last two decades, advances in GPS technology have enabled a renaissance in the study of ungulate migration. A variety of humane capture methods allow researchers to attach GPS collars and track animal movement hourly for years at a time. The movement data from such studies are allowing researchers to document - and discover, in some cases - migrations in unprecedented scope and detail.

Join Us

Participation in the Global Initiative on Ungulate Migration is open to anyone who can contribute information, GPS data, or expert knowledge to help delineate current or historical ungulate migrations. The GIUM also includes conservation practitioners, working on-the-ground in countries around the world, to help the initiative identify the types of actionable maps that are necessary to catalyze global efforts to conserve ungulate migration.

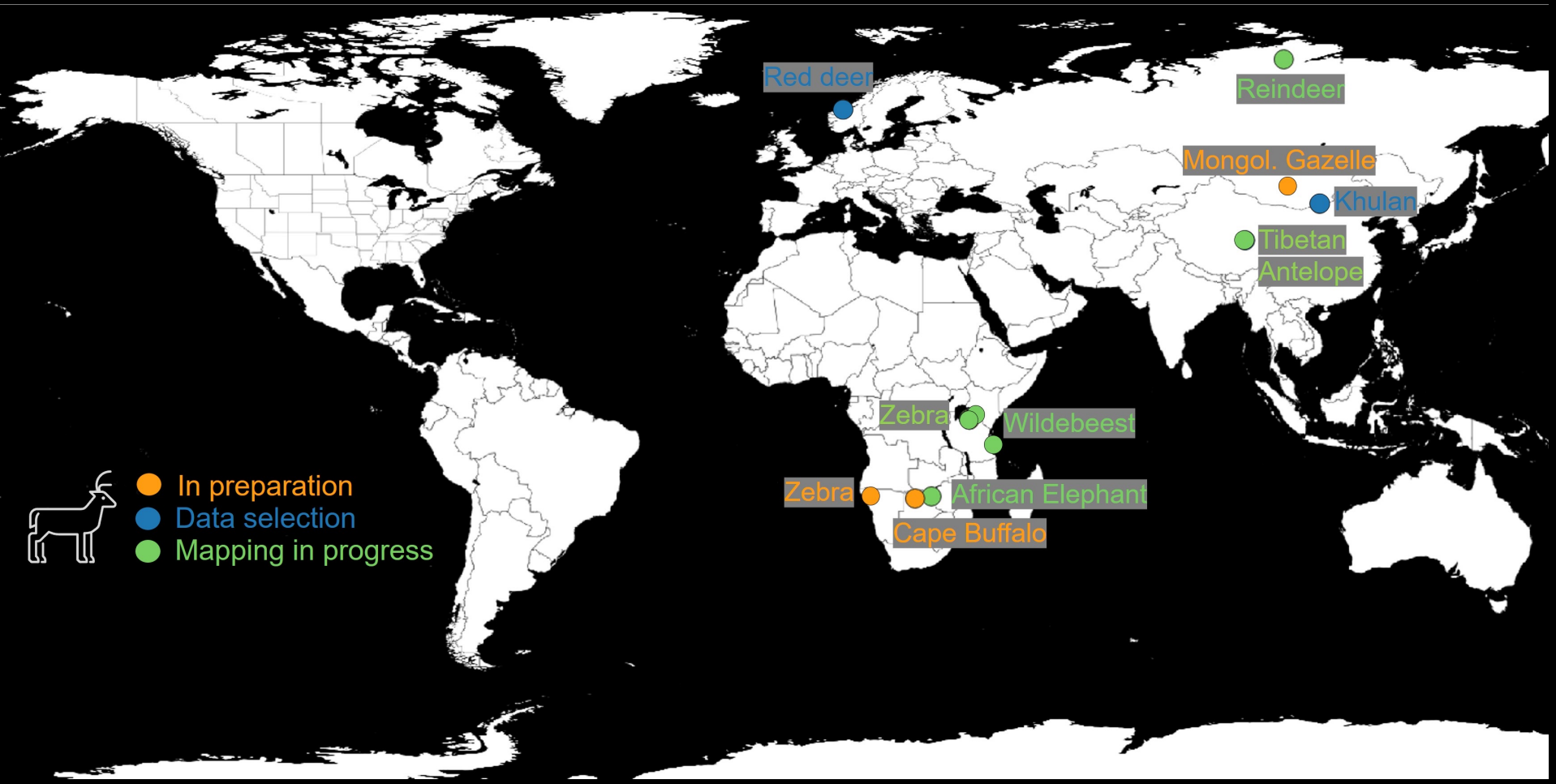
Global Initiative on Ungulate Migration

Email: global.ungulate.migration@gmail.com

https://www.facebook.com/migranthooves
https://www.twitter.com/migrantthooves

Scientifically reviewed, credible – best available science.

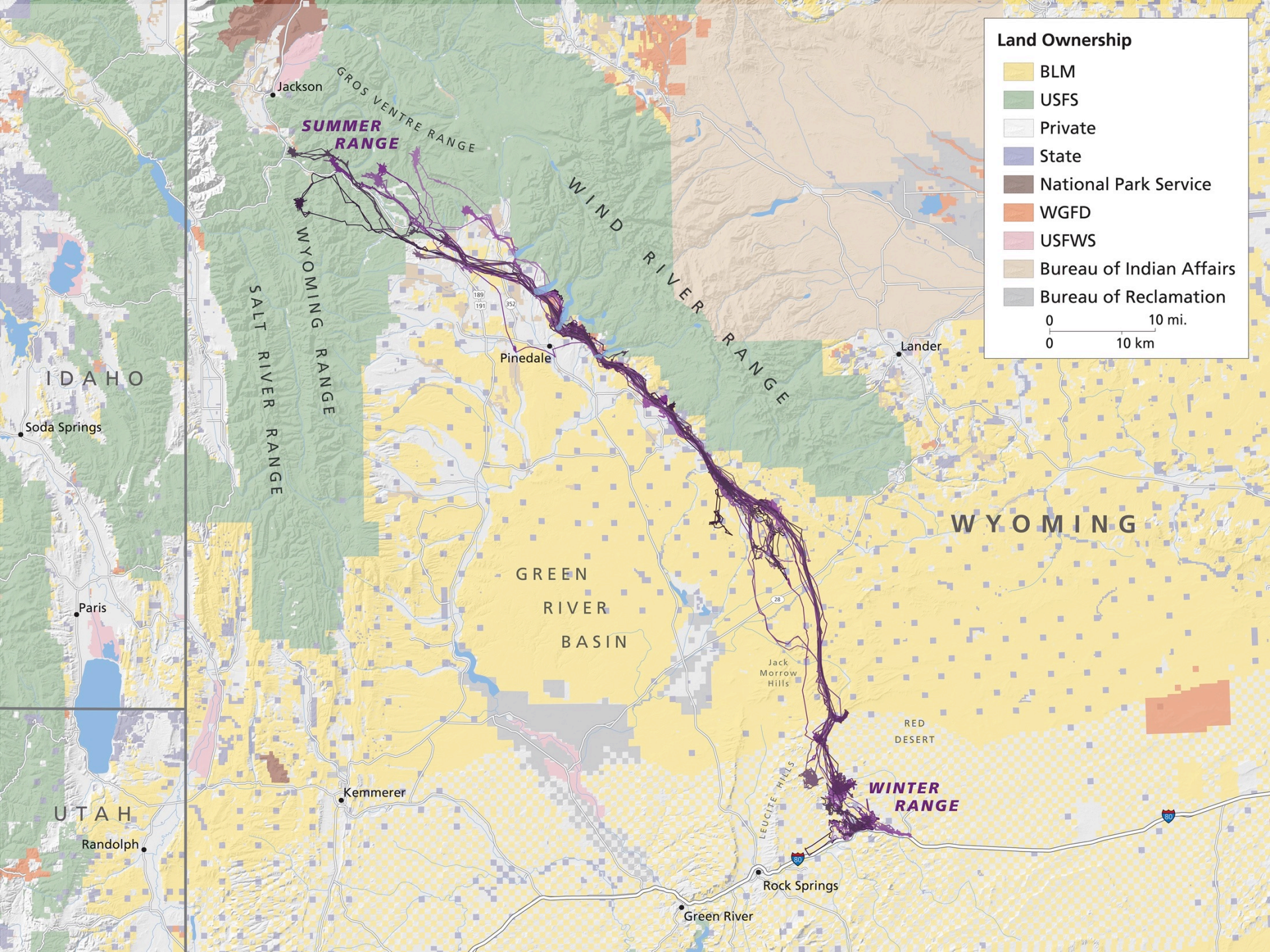
Current mapping progress



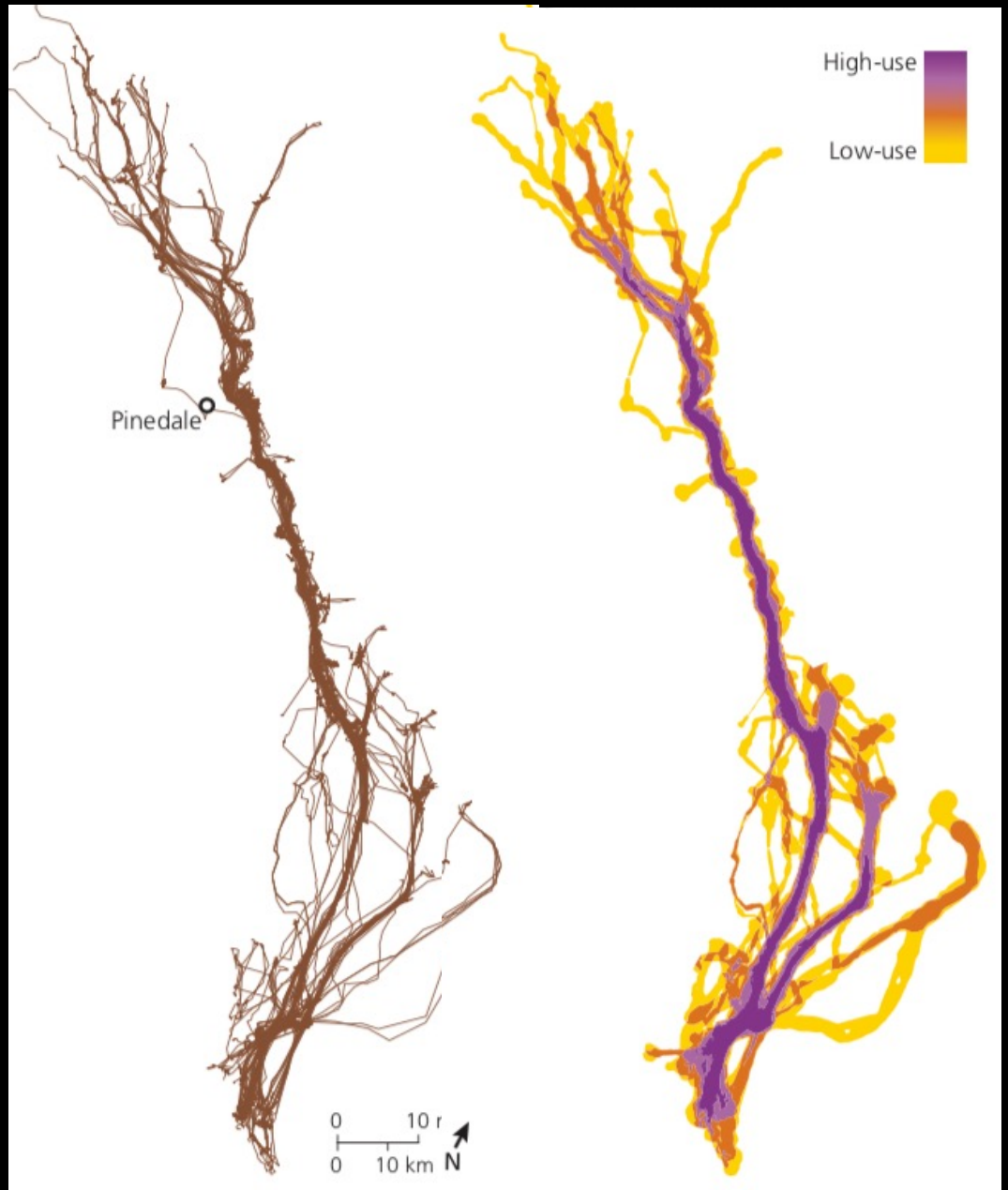
How better maps help:

World's longest mule deer migration

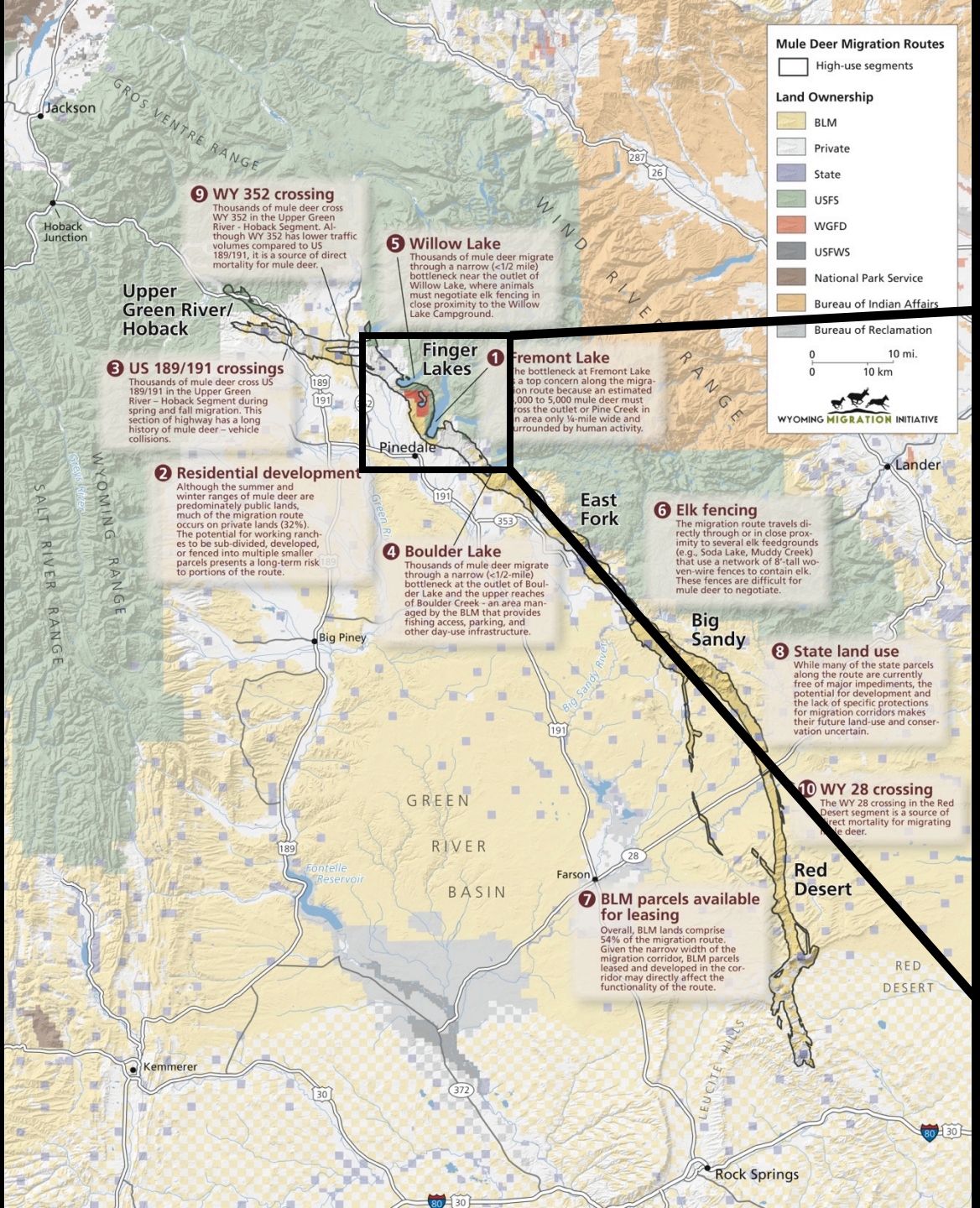

How better maps help:
World's longest mule deer migration
Jackson
SUMMER RANGE
GROS VENTRE RANGE
WIND RIVER RANGE
Pinedale
Lander
IDAHO
Soda Springs
SALT RIVER RANGE
WYOMING RANGE
WYOMING
GREEN RIVER BASIN
Paris
RED DESERT
WINTER RANGE
Kemmerer
UTAH
Randolph
Rock Springs
Green River
80
0 10 mi.
0 10 km


Land Ownership
BLM
USFS
Private
State
National Park Service
WGFD
USFWS
Bureau of Indian Affairs
Bureau of Reclamation
0
10 mi.
0
10 km
SUMMER RANGE
WINTER RANGE
GROS VENTRE RANGE
WIND RIVER RANGE
WYOMING RANGE
SALT RIVER RANGE
GREEN RIVER BASIN
Jack Morrow Hills
RED DESERT
LEUCITE HILLS
IDAHO
WYOMING
UTAH
Jackson
Pinedale
Lander
Soda Springs
Paris
Kemmerer
Randolph
Rock Springs
Green River

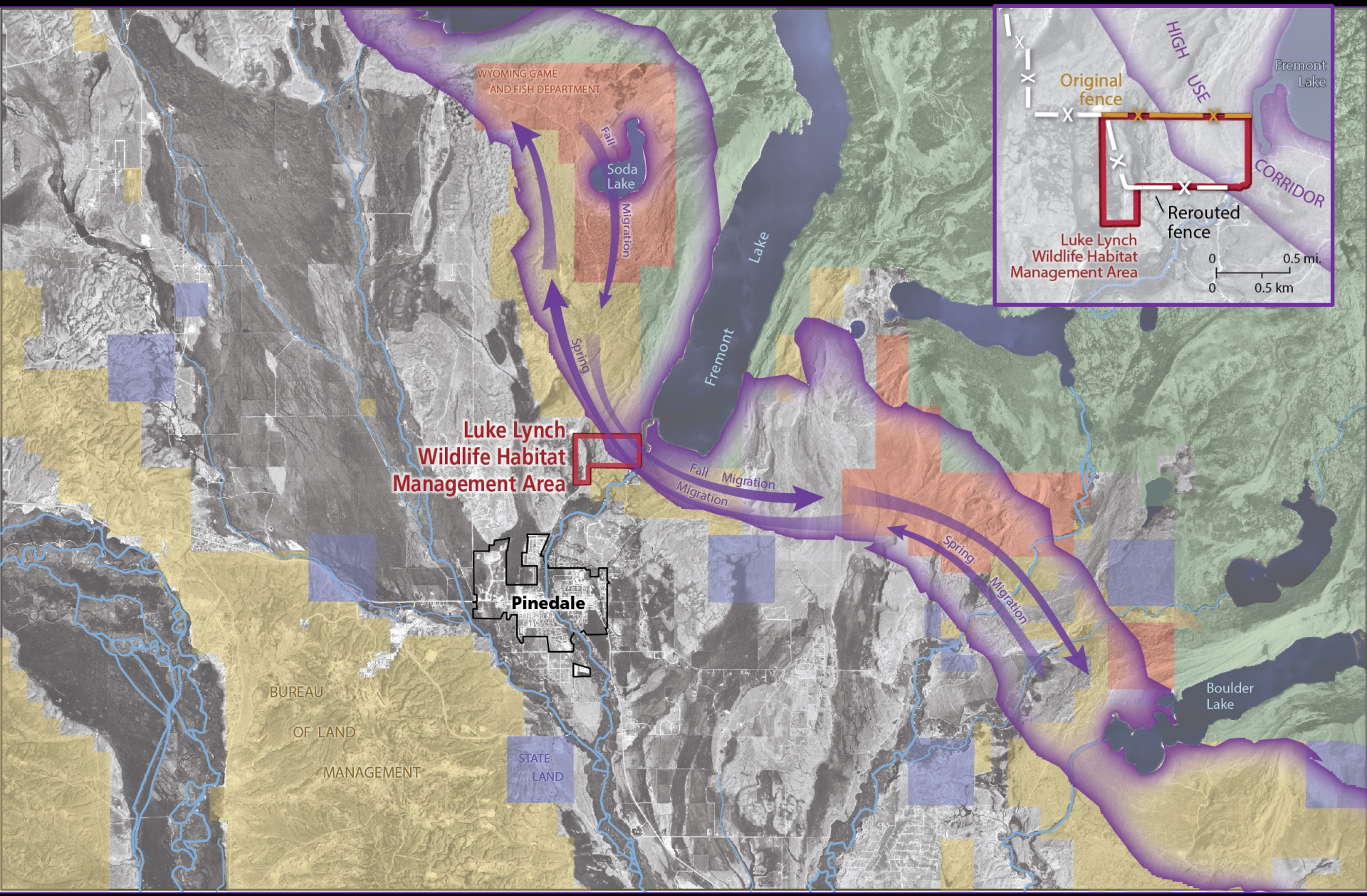
Mapping Corridors



The Fremont Lake Bottleneck



The Fremont Lake Bottleneck

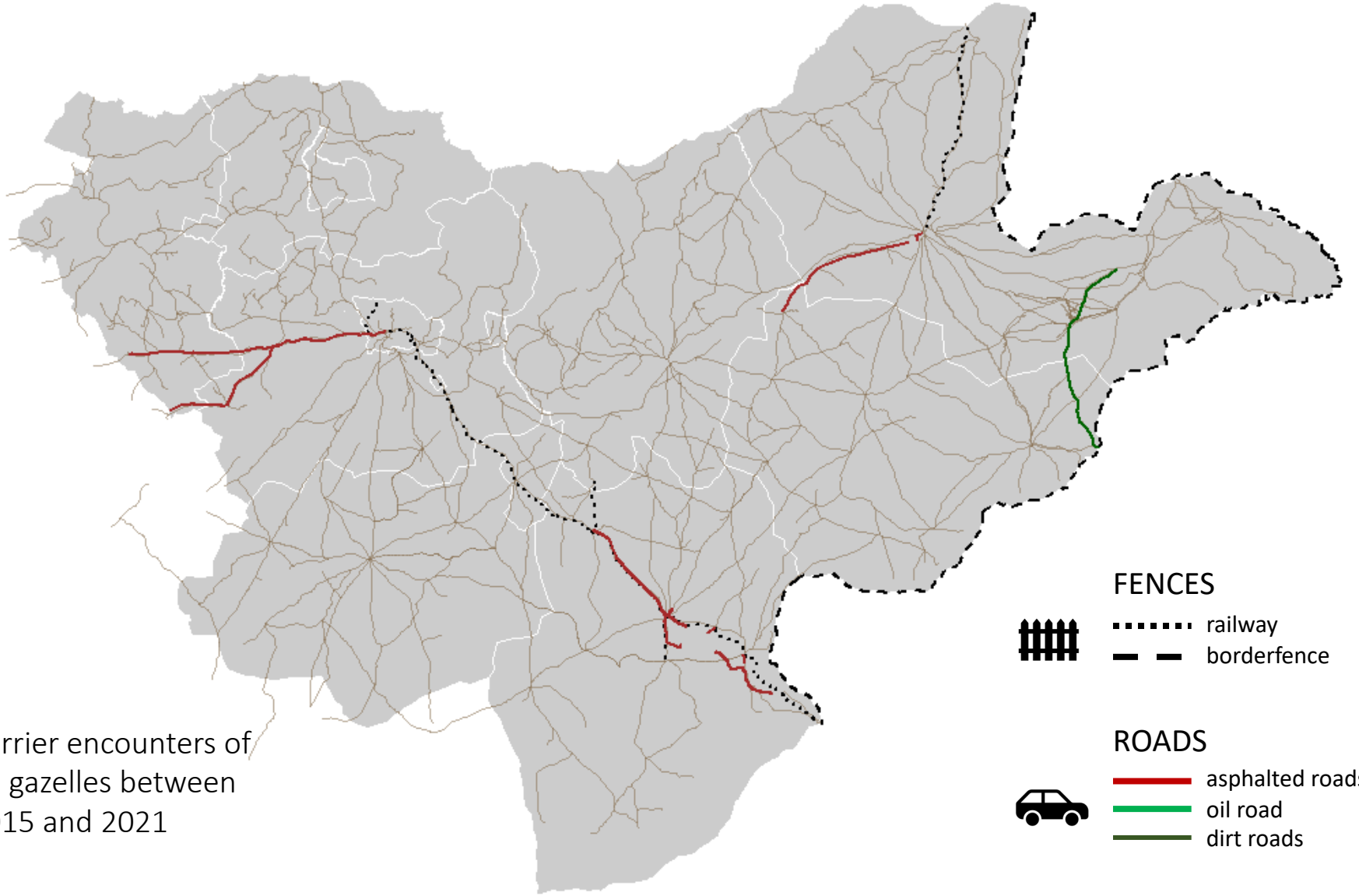


WGFD Creates Luke Lynch Wildlife Habitat Management Area

Photo: The Conservation Fund

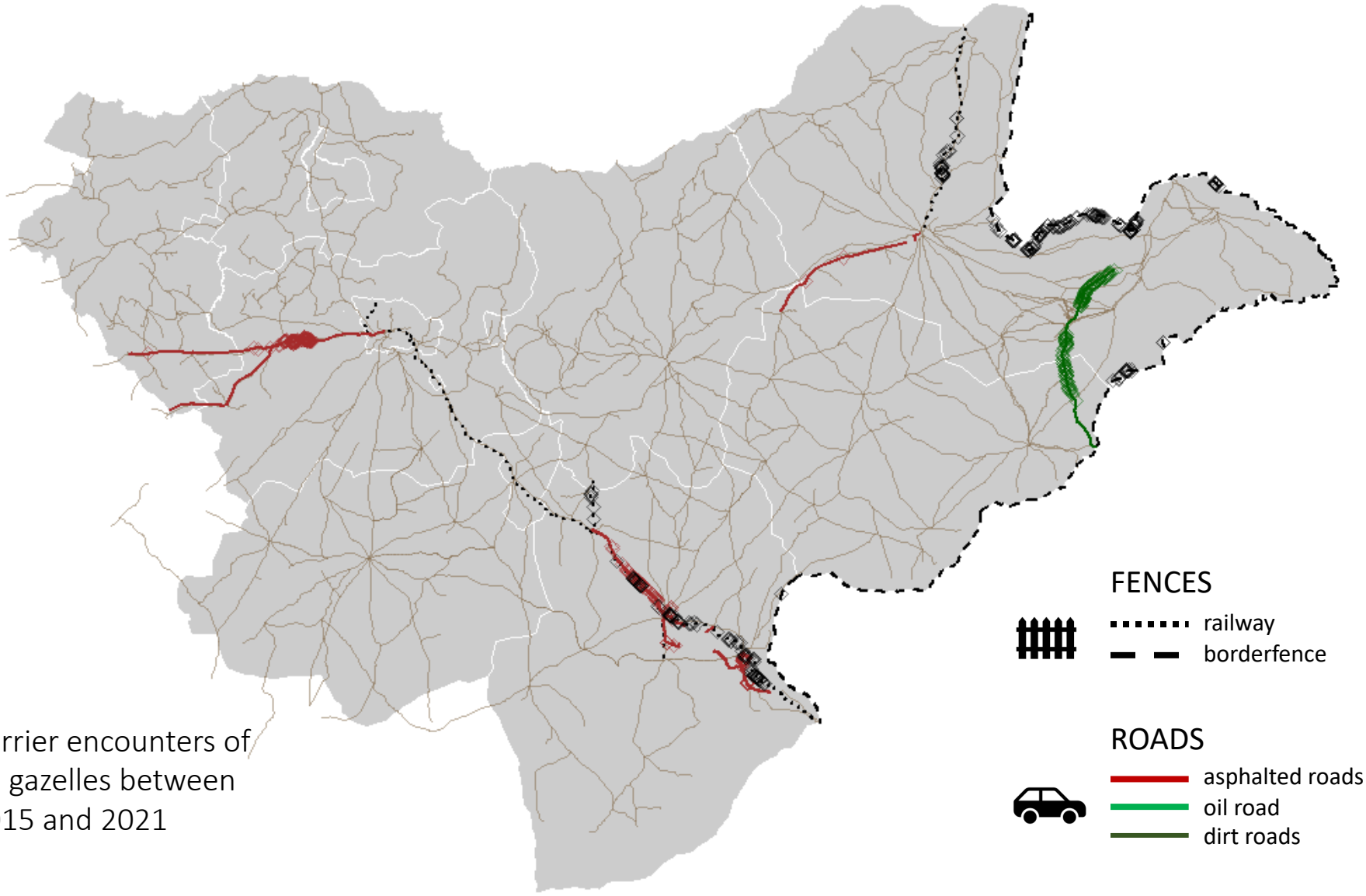
MAP: Mongolian Gazelle (*Procapra gutturosa*) || Fences

Gazelles encounter different types of barriers in the steppe



Barrier encounters of
61 gazelles between
2015 and 2021

Gazelles encounter different types of barriers in the steppe



Barrier encounters of
61 gazelles between
2015 and 2021

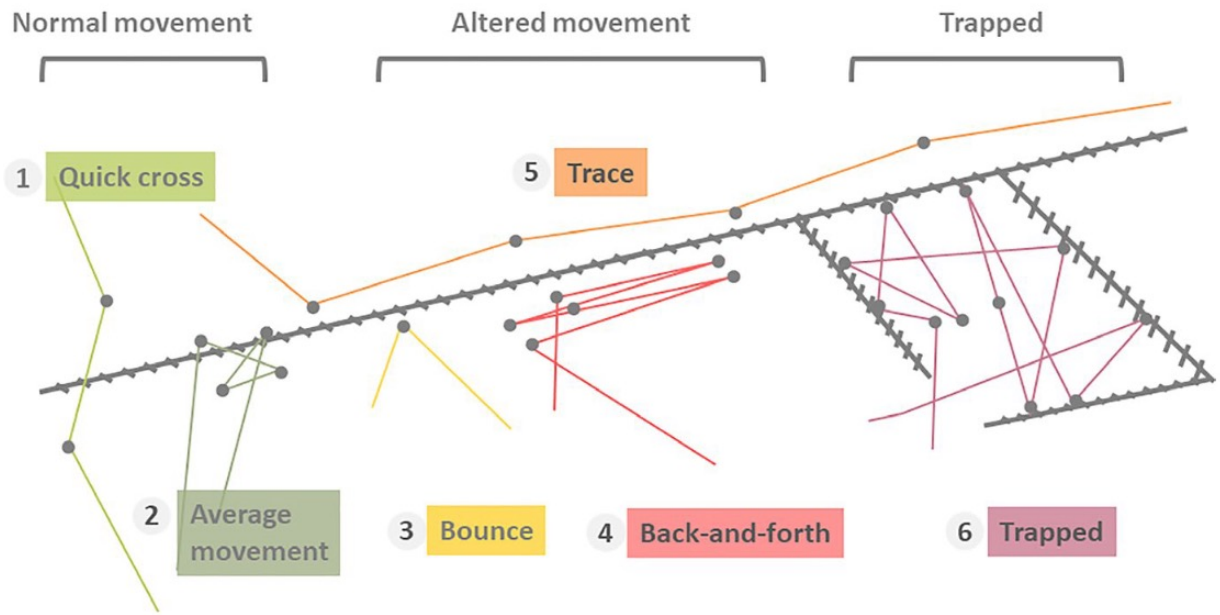
Received: 6 July 2020 | Accepted: 19 November 2020
DOI: 10.1111/1365-2664.13806

RESEARCH ARTICLE

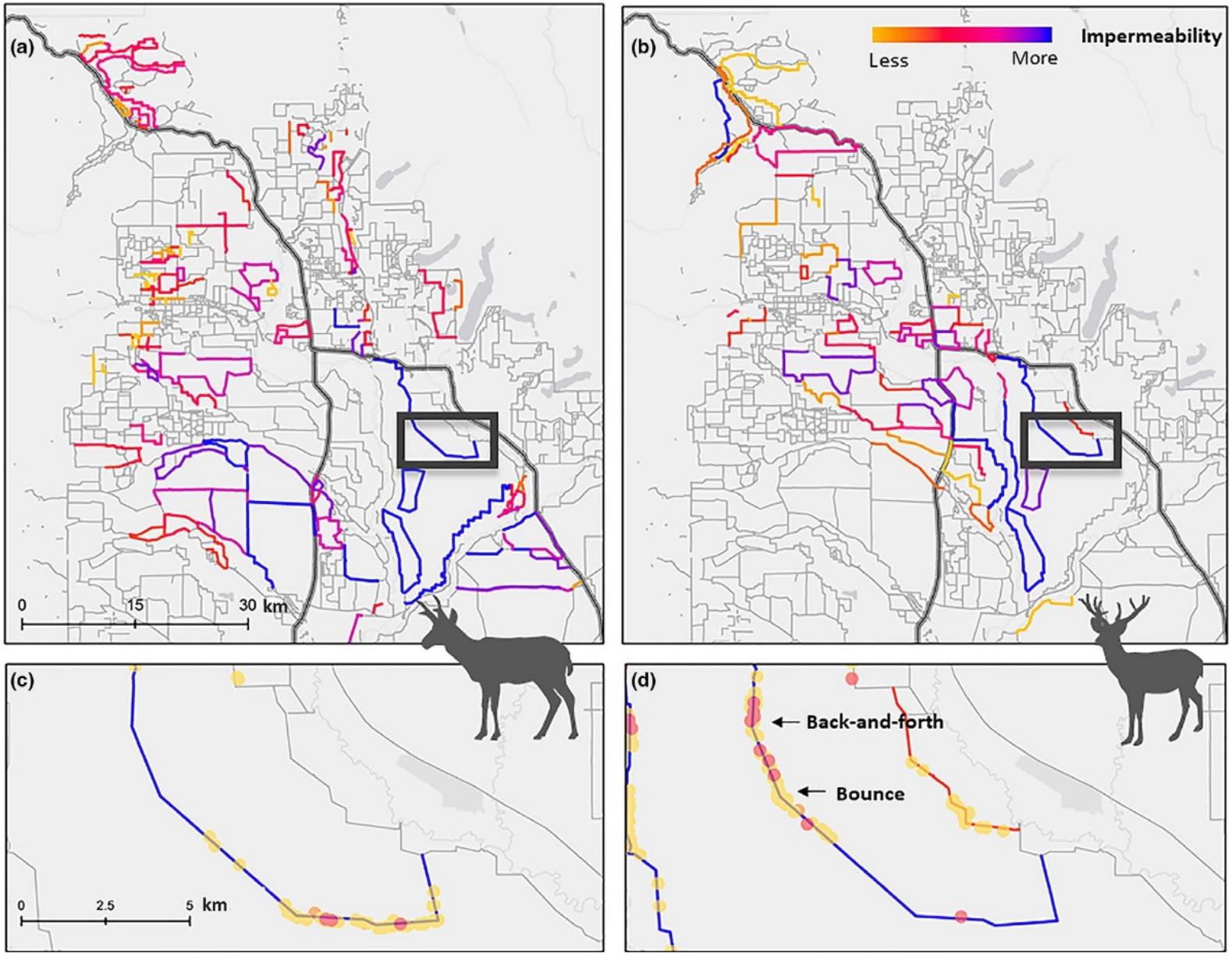
Journal of Applied Ecology

Barrier Behaviour Analysis (BaBA) reveals extensive effects of fencing on wide-ranging ungulates

Wenjing Xu[1] | Nandintsetseg Dejid[2] | Valentine Herrmann[3] | Hall Sawyer[4] | Arthur D. Middleton[1]



The six behavioural types identified in Barrier Behaviour Analysis. When a fence does not represent a significant barrier to movement, an animal can conduct *normal movement*, including (1) quick cross and (2) average movement. Otherwise, animals may (3) bounce away from fences or (4) move back-and-forth and (5) trace along the fence to seek a potential crossing. In some cases, an animal may become (6) trapped in a fenced area and forced to remain in proximity to fences for a prolonged period



Fencing mitigation prioritization for (a) pronghorn and (b) mule deer movement. Only fence lines that had more than 10 total encounters are highlighted in colours. (c and d) show the zoom-in view of the boxed area in the top panels overlaid with classified fence encounter events


Thank you