



## Factsheet #7 (two-page version)



# Ungulate movements across the red-line: A case study

How often do springbok, kudu and eland move across the Veterinary Cordon Fence and why?

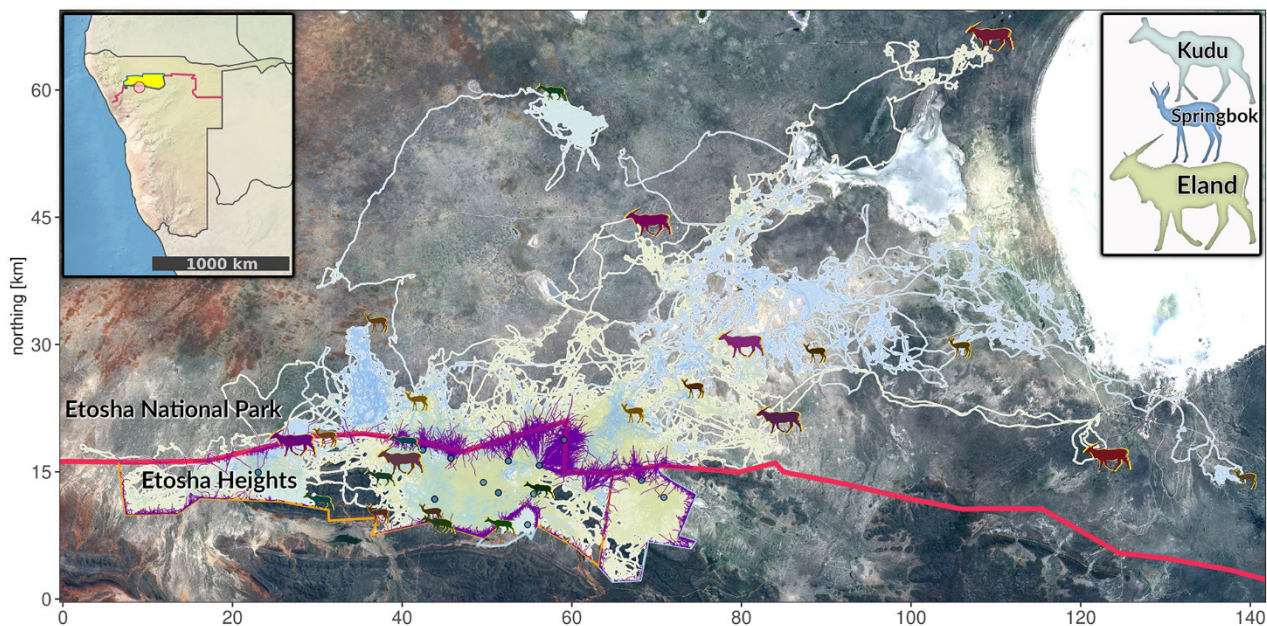
## Background

In the ORYCS study area, elephants often broke the Veterinary Cordon Fence (VCF, the “red-line”). More than 30 GPS-collared antelope frequently used the openings to travel between Etosha Heights Private Reserve and Etosha National Park. Since the GPS-data was very precise, detailed information on antelope behavior in relation to the fence became clear.

While the antelope collared in Etosha Heights remained stationary during the dry season and regularly visited the local water holes, they largely benefitted from access to high quality feeding areas in Etosha National Park during the wet season. Having access to this large area, they could move from one green patch to the next, thus consuming more and higher quality food.

## Key findings

More than 3,500 fence encounters, with over 2,500km of tracks along fence lines, were recorded in 2.5 years. Main crossing season was in October and November. Antelope increased their movement speed and energy expenditure along the fence lines by up to 60 %. They travelled up to 12km (springbok, kudu) or 32km (eland) per week along fences alone. On average kudu and springbok encountered a fence every 3<sup>rd</sup> and eland every 2<sup>nd</sup> day. In 2021, an animal crossed the VCF 50 times on average. Having crossed the fence antelope gained up to 40% in food quality. By travelling from patch to patch some animals extend their “green season” by starting at patches of early green-up and ending at patches of late dry-out.



Above: Movement tracks (2019–22) shown in light colors and tracks of fence encounters shown in purple. The Veterinary Cordon Fence is shown by the bold red line. Electrified fence lines shown in orange and game-proof fences in light blue. Blue points show favorite water holes. Position of individuals (kudu, springbok, eland) at locations furthest from the preferred waterhole of each animal.



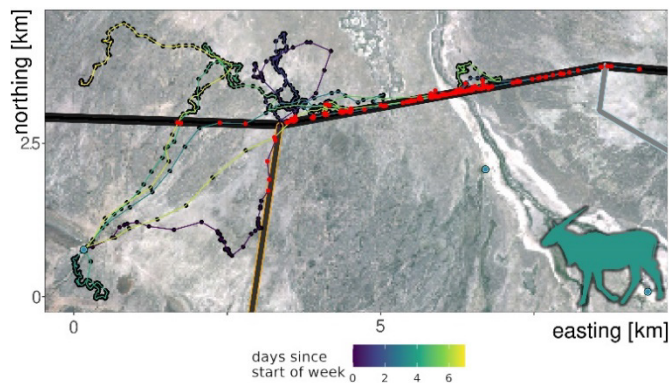


Figure 2

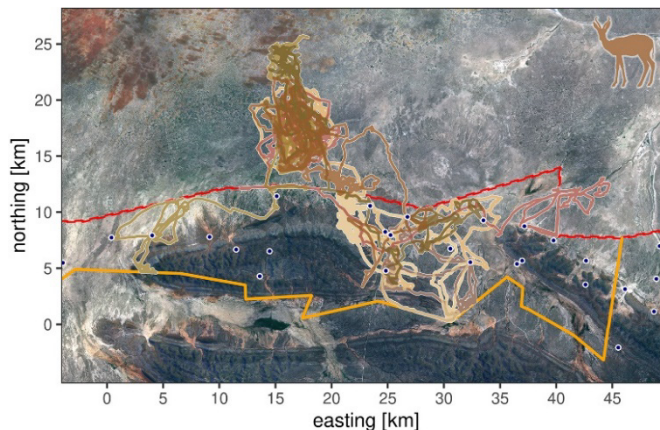


Figure 3

## Fence encounters

On average most of the tracked herds encountered the VCF several times a week. Between October and November they even crossed the VCF twice a day when they fed on gabbabos (*Catophractes alexandri*) and slapdoring (*Vachellia [Acacia] nebrownii*) in the National Park and drank at the water holes in the private reserve.

Often the herds spend large amounts of time and travelled long distances along the VCF to find a place to cross it, thereby wasting precious energy. An example is a herd of eland spending more than a day and in excess of one third of their total travelled distance only at the fence lines (Fig. 2).

## Reasons to cross

During green season and after crossing the VCF into the National Park the herds reached patches of quality food. Eland selected areas with higher amounts of green vegetation and springbok selected areas with freshly grown vegetation. In this way they gained valuable resources. During dry season the herds returned to Etosha Heights and often drank at the many water holes.

The example here shows how all springbok groups moved across the VCF to one specific area where a local rainfall event in October 2019 caused a special green-up (Fig. 3). All herds benefitted from this after a drought. This illustrates that the access to large areas is very important, because the animals can reach the best resources during the limited time of availability.

## References

- Hering, R., Hauptfleisch, M., Jago, M., Smith, T., Kramer-Schadt, S., Stiegler, J., Blaum, N. (2022a). Don't stop me now: Managed fence gaps could allow migratory ungulates to track dynamic resources and reduce fence related energy loss. *Frontiers in Ecology and Evolution*, 1–18. doi: 10.3389/fevo.2022.907079
- Hering, R., Hauptfleisch, M., Kramer-Schadt, S., Stiegler, J., Blaum, N. (2022b). Effects of fences and fence gaps on the movement behavior of three southern African antelope species. *Frontiers in Conservation Science*, 3, 1–19. doi: 10.3389/fcsc.2022.959423

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## The ORYCS Project

The German-Namibian research project "ORYCS – Options for sustainable land use adaptations in savanna systems" aims to assess the suitability of wildlife management strategies in Namibia as options for adapting land use to climate change in savanna ecosystems.

[www.orycs.org](http://www.orycs.org)

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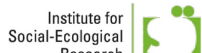
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