

Movements and behaviours of Kgalagadi lions

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Introduction

A photograph of a savanna landscape. The ground is reddish-brown soil with scattered green grasses and small shrubs. In the foreground, several dead animals, likely antelope, are lying on the ground. The scene is brightly lit, suggesting a sunny day.

100-200kg

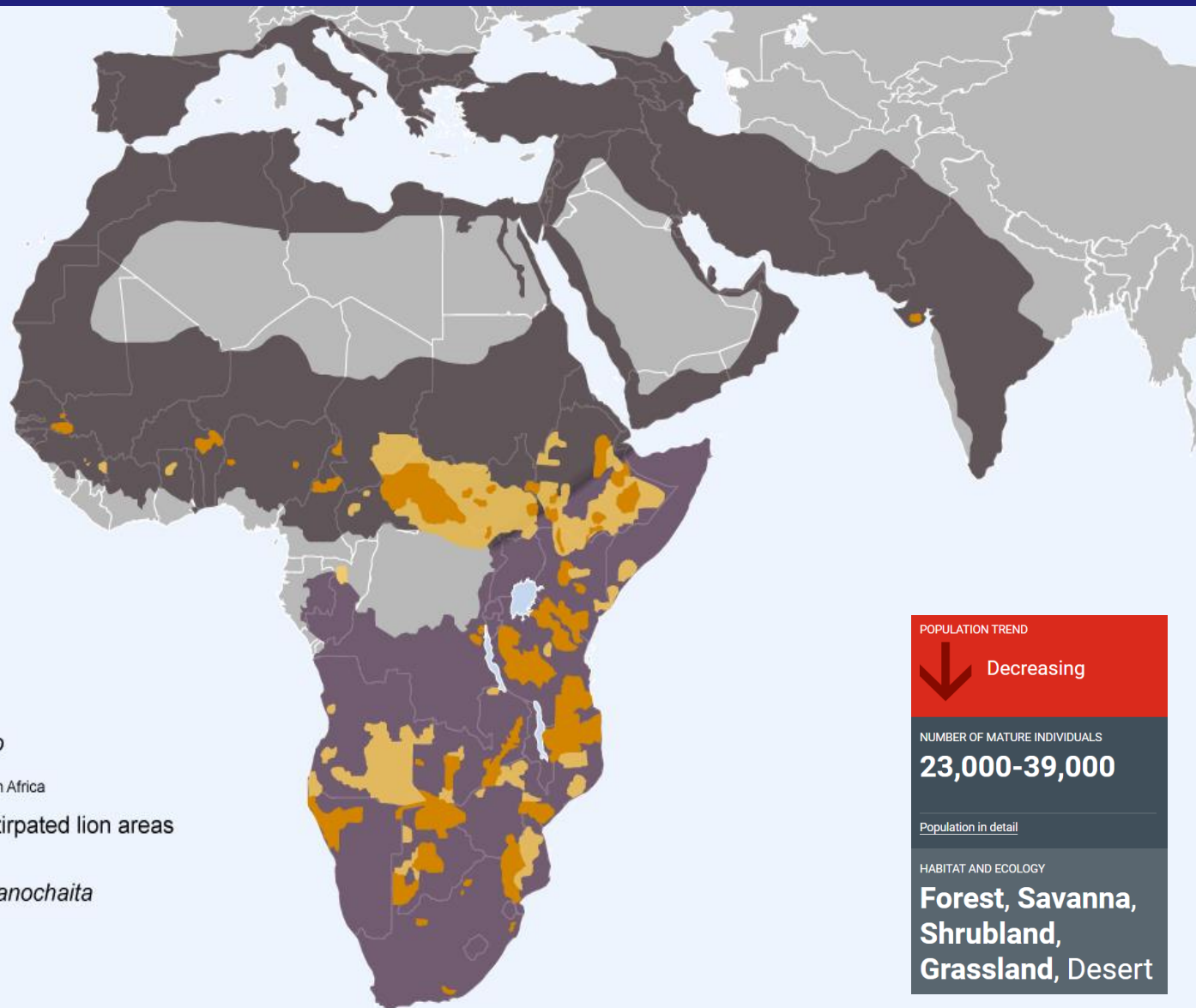
Social, male coalitions

Ecosystem regulation

Population decline



80% range and 90% population decline since 1900
43% population decrease since 1993
Marginalised



- Current distribution of *Panthera leo*
 - *Panthera leo melanochaita*: South and East Africa
 - *Panthera leo leo*: Asia and West, Central and North Africa
- Possible, temporary or recently extirpated lion areas
- Historic range of *Panthera leo melanochaita*
- Historic range of *Panthera leo leo*

POPULATION TREND
↓ Decreasing

NUMBER OF MATURE INDIVIDUALS
23,000-39,000

[Population in detail](#)

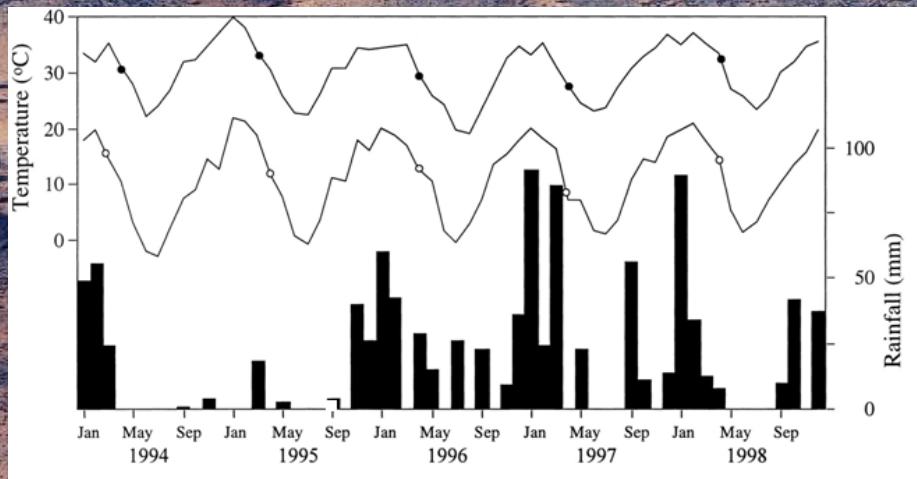
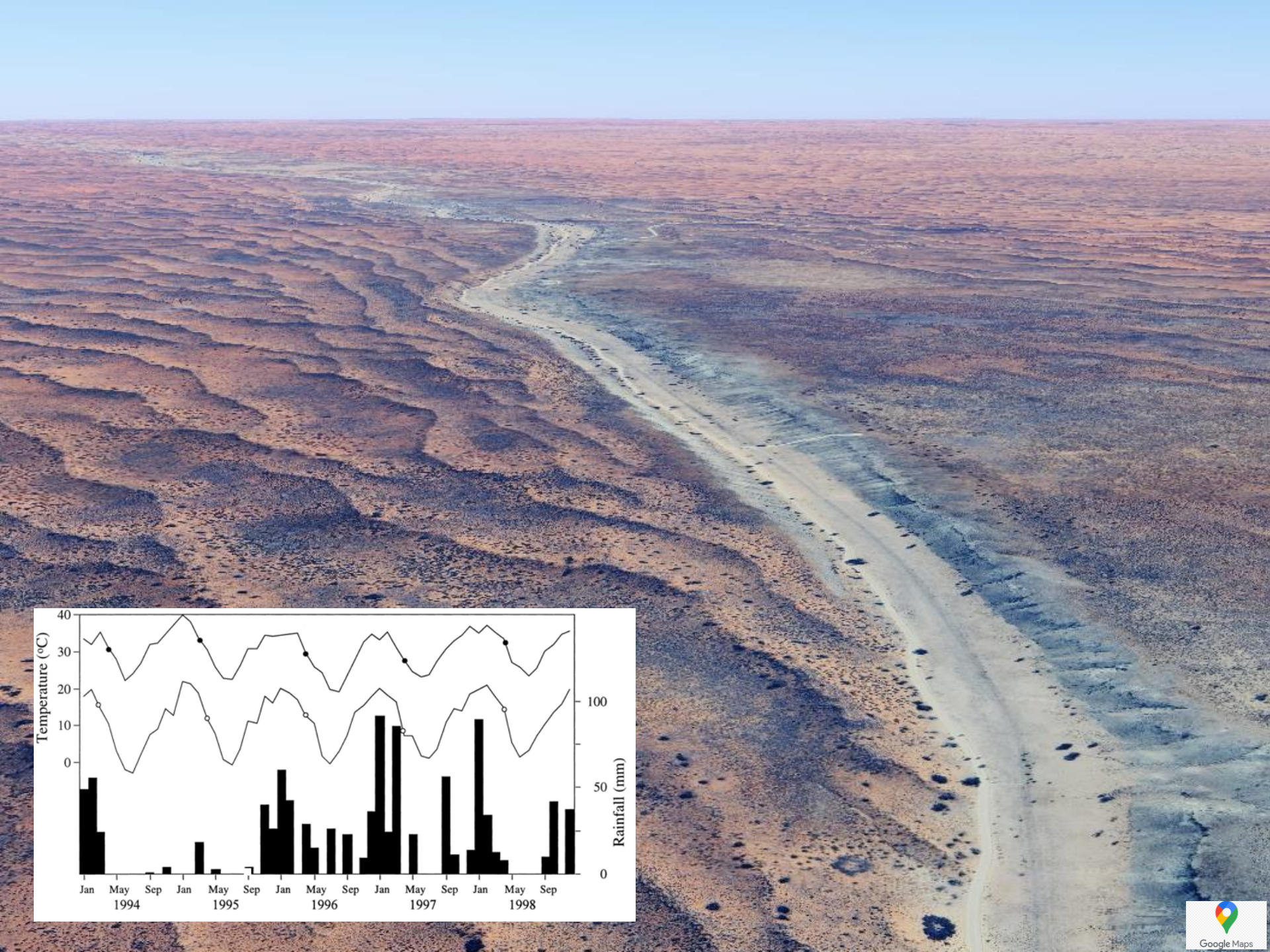
HABITAT AND ECOLOGY
Forest, Savanna, Shrubland, Grassland, Desert

Savanna grassland?

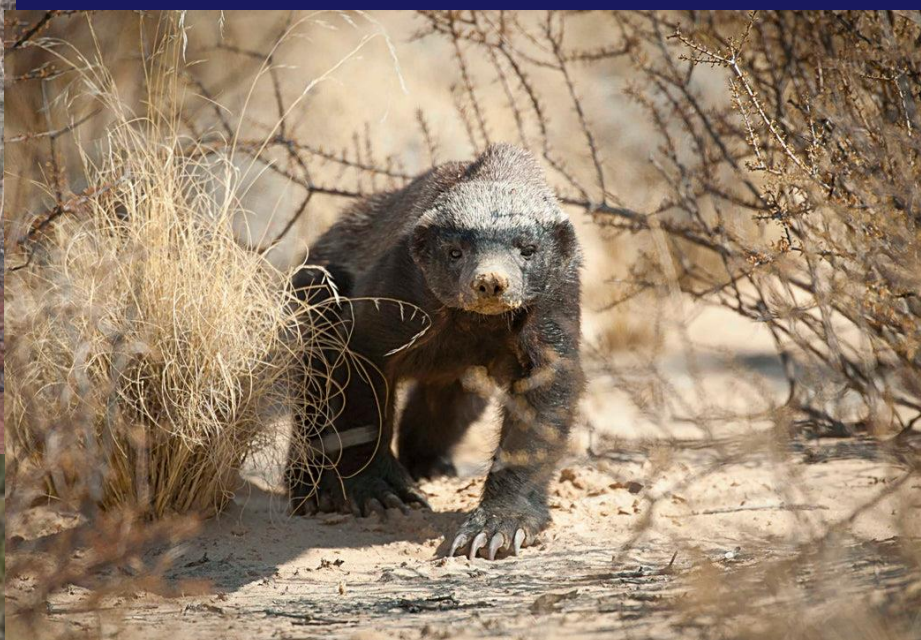


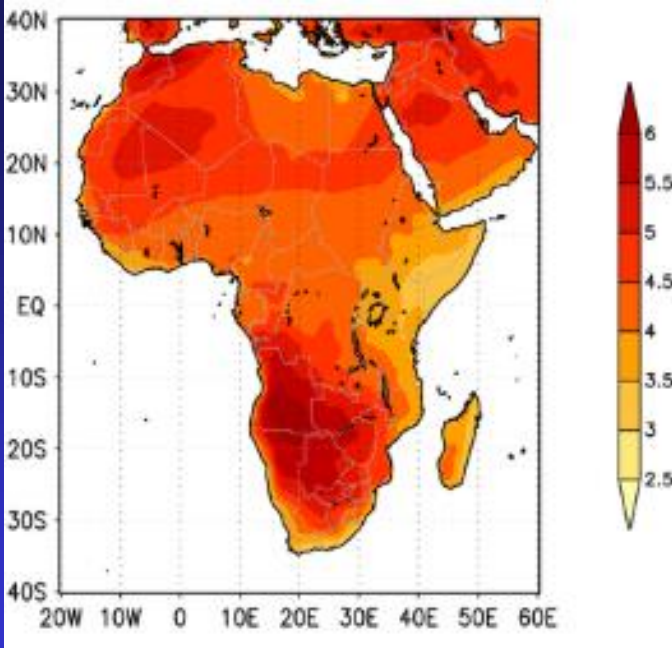
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image IBCAO
Image Landsat / Copernicus

Google Earth









Kalahari

Map Credit: CODEX Africa
<https://www.groundup.org.za/article/ambitious-plans-underway-homegrown-south-african-climate-change-model/>



- Barren, arid
- Subject to large future climate change/variation
- potential impact on lion population/ habitat suitability

Aims



- Examine lion movements, potential resource requirements
- Characterise behaviours
- Assess whether, how often, leave the park. Activities outside park

Methods



Two weeks intensive data collection

Movement:

GPS, speed, location

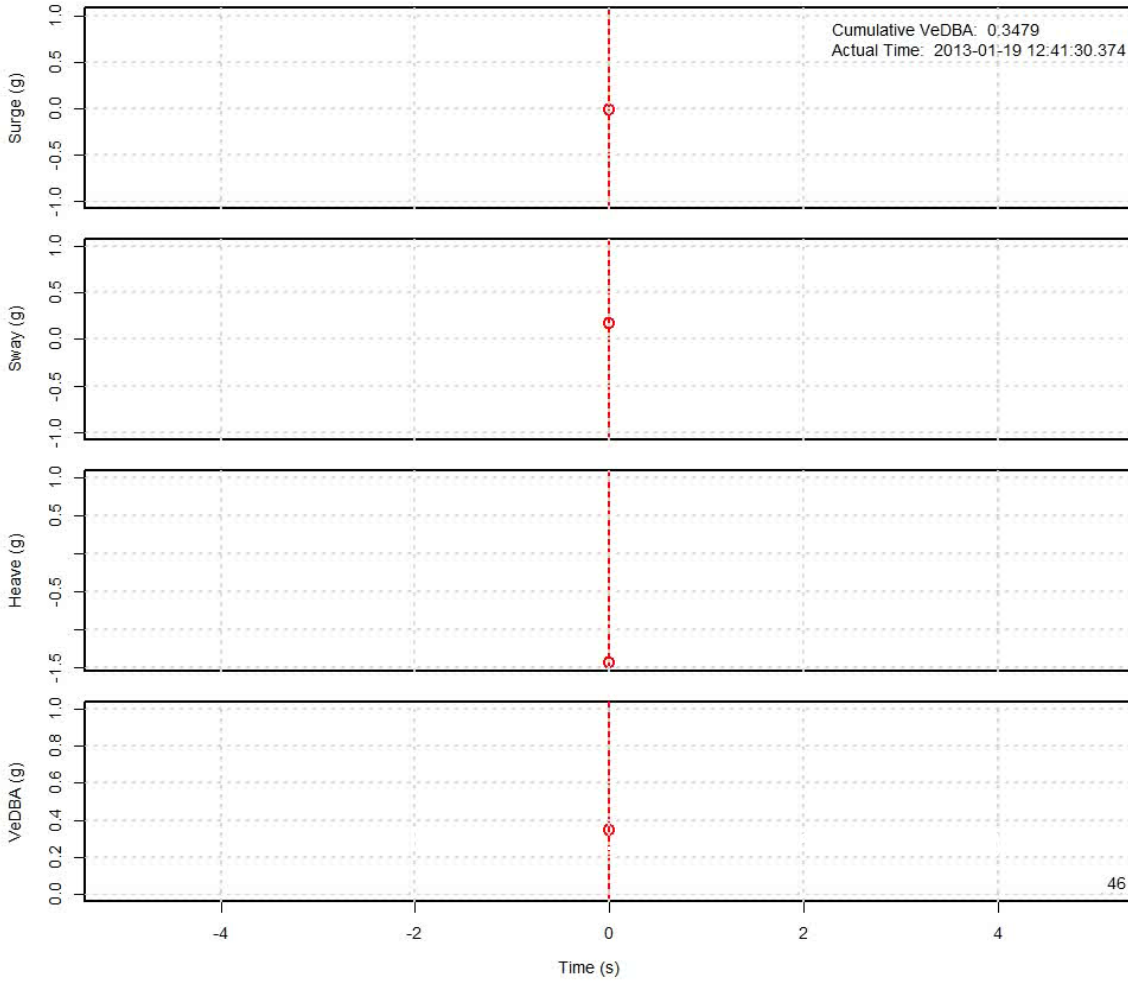
Accelerometry:

Behaviour

Posture/ body orientation

“Dead-reckoning”

Badger accelerometer traces









4x4

200

3

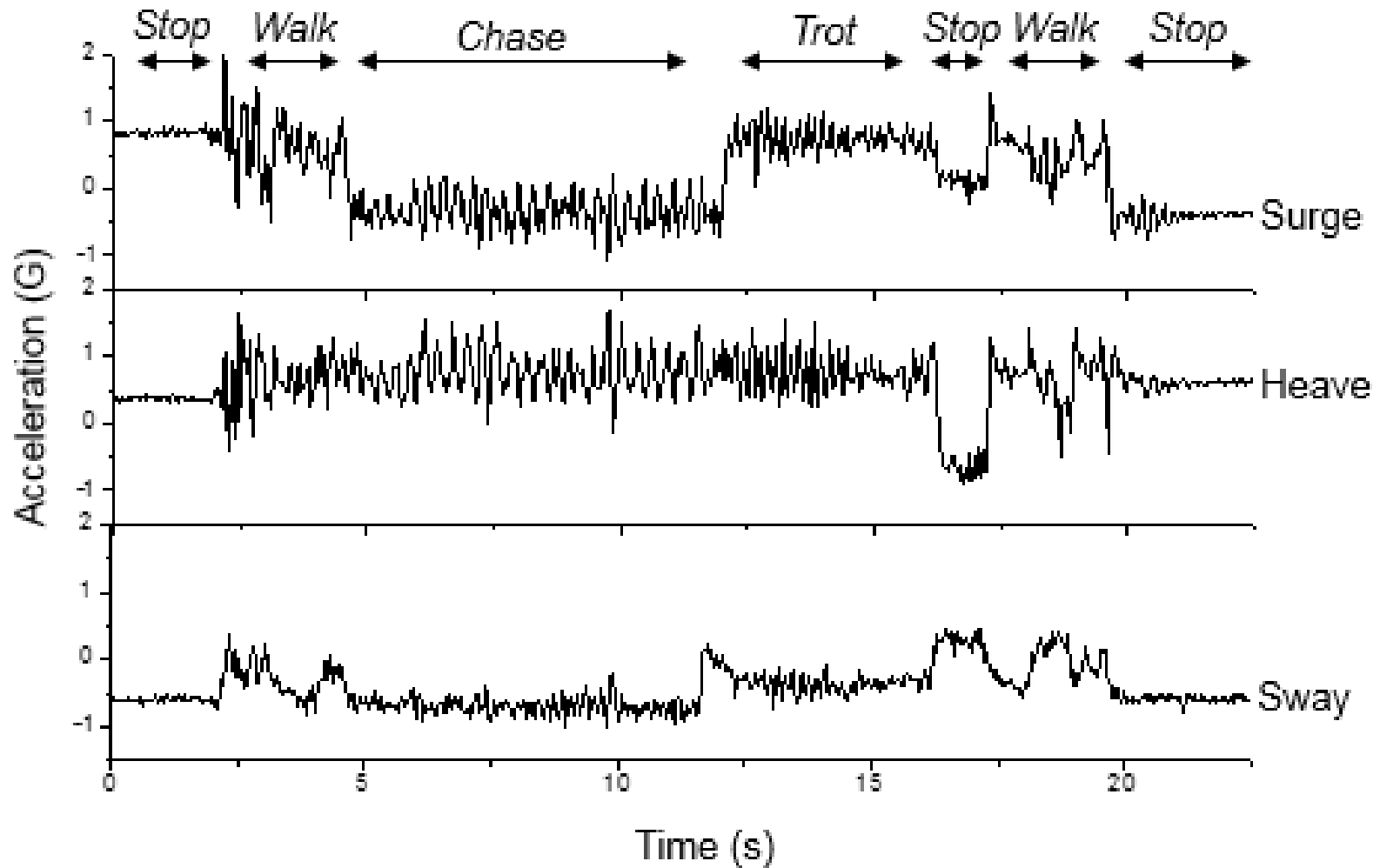




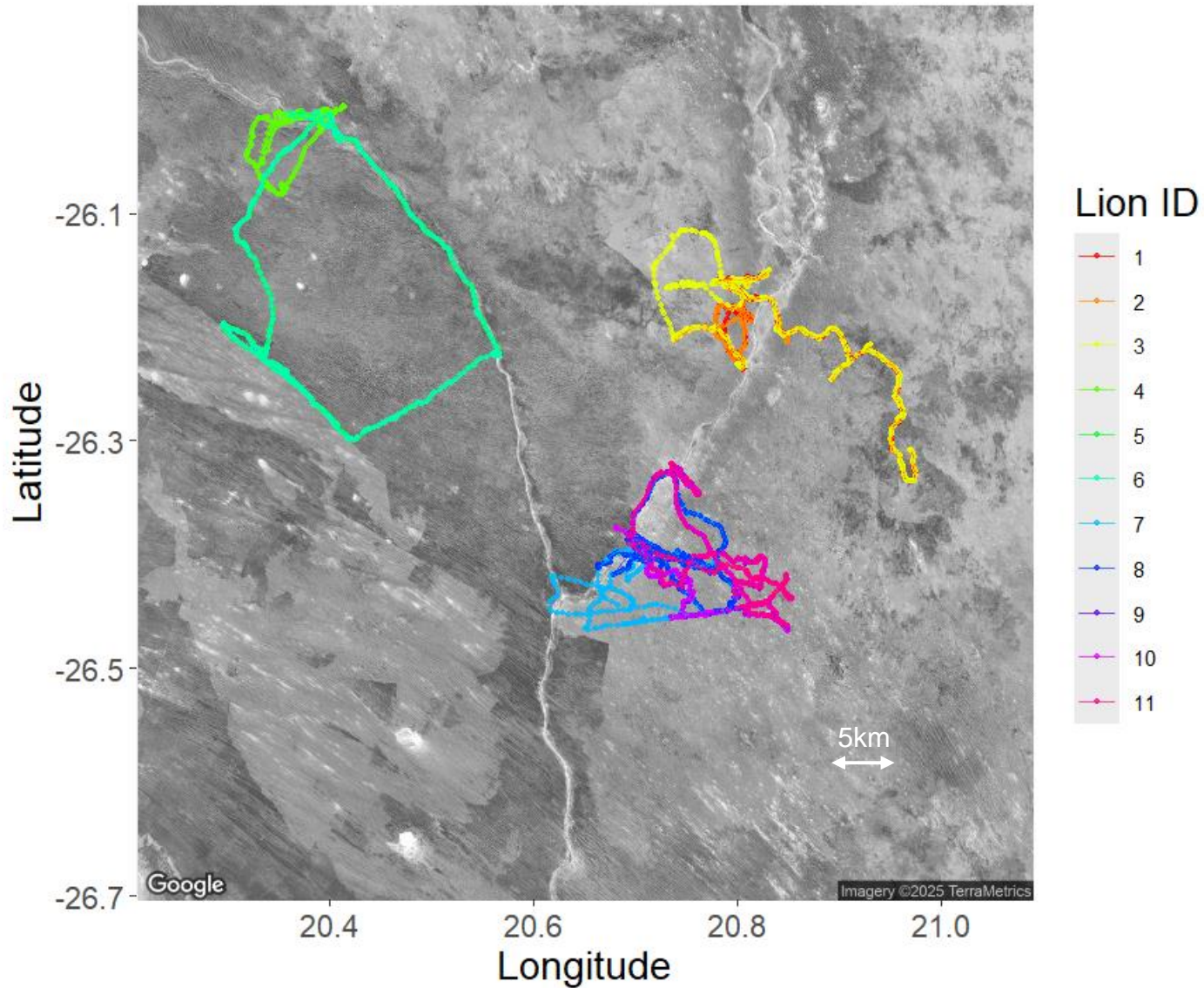


Results

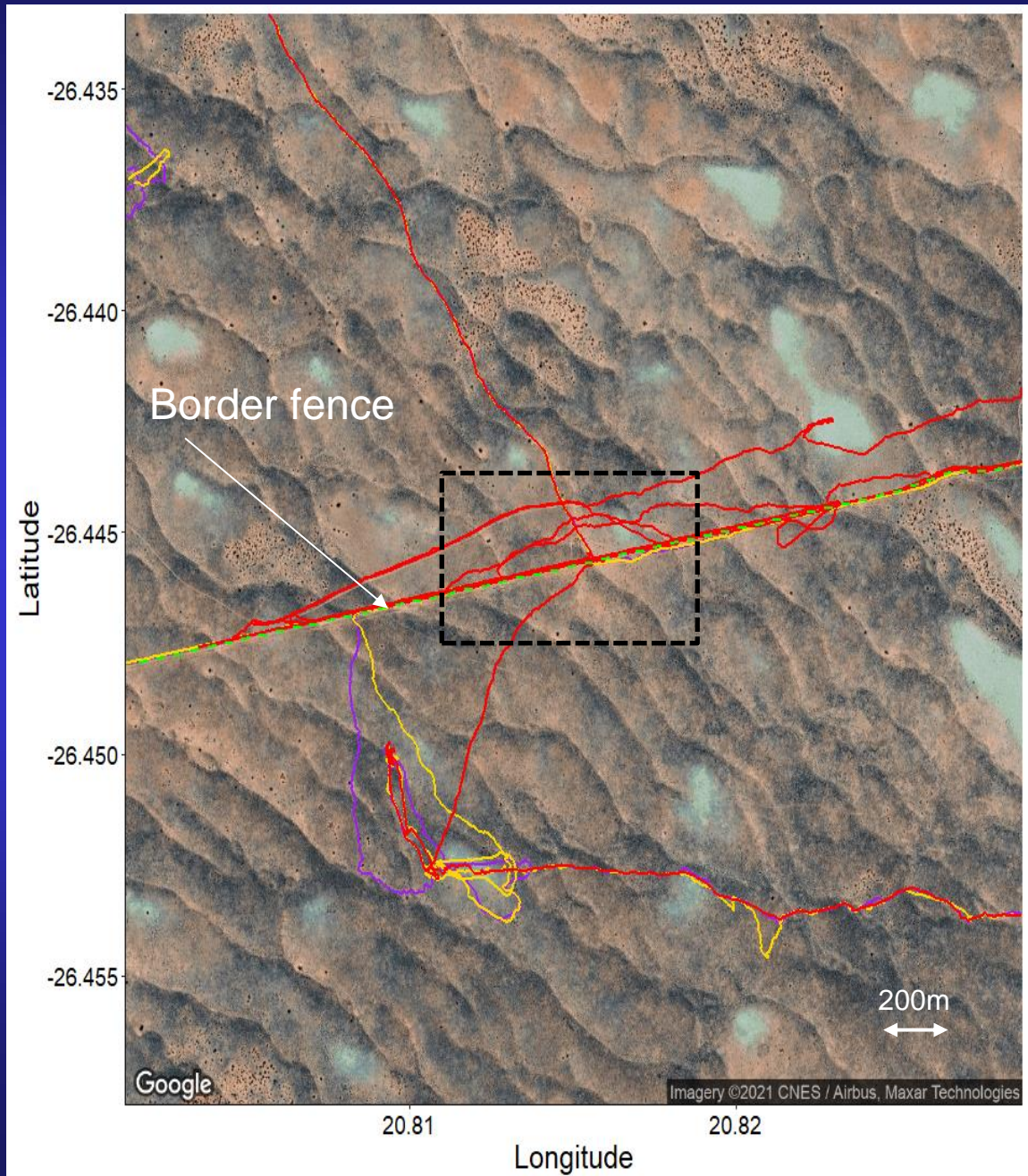
Behaviour



Movement



Fine-scale reveals precise detail of border transgression

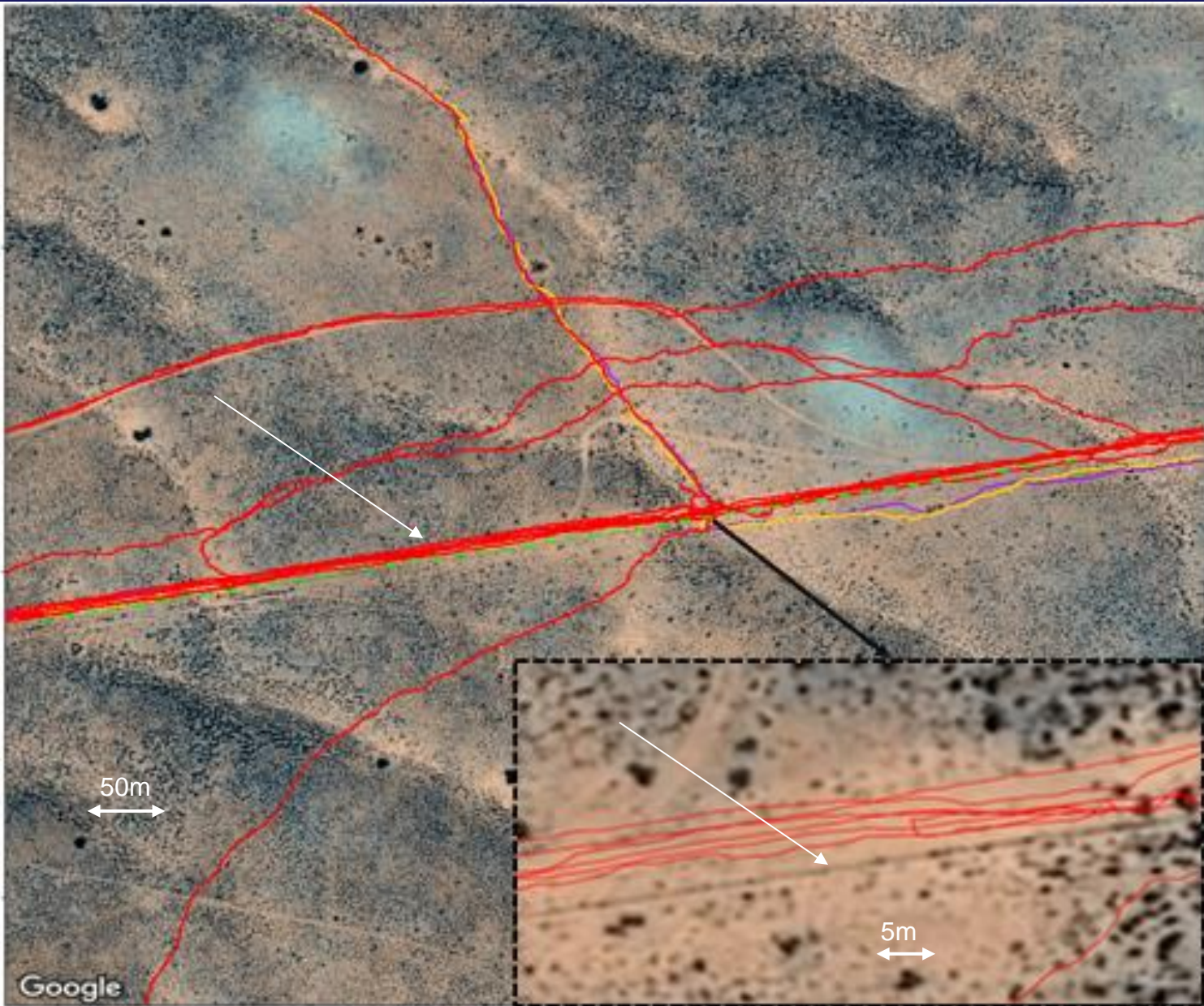


Latitude

-26.444

-26.446

-26.448



Google

20.812

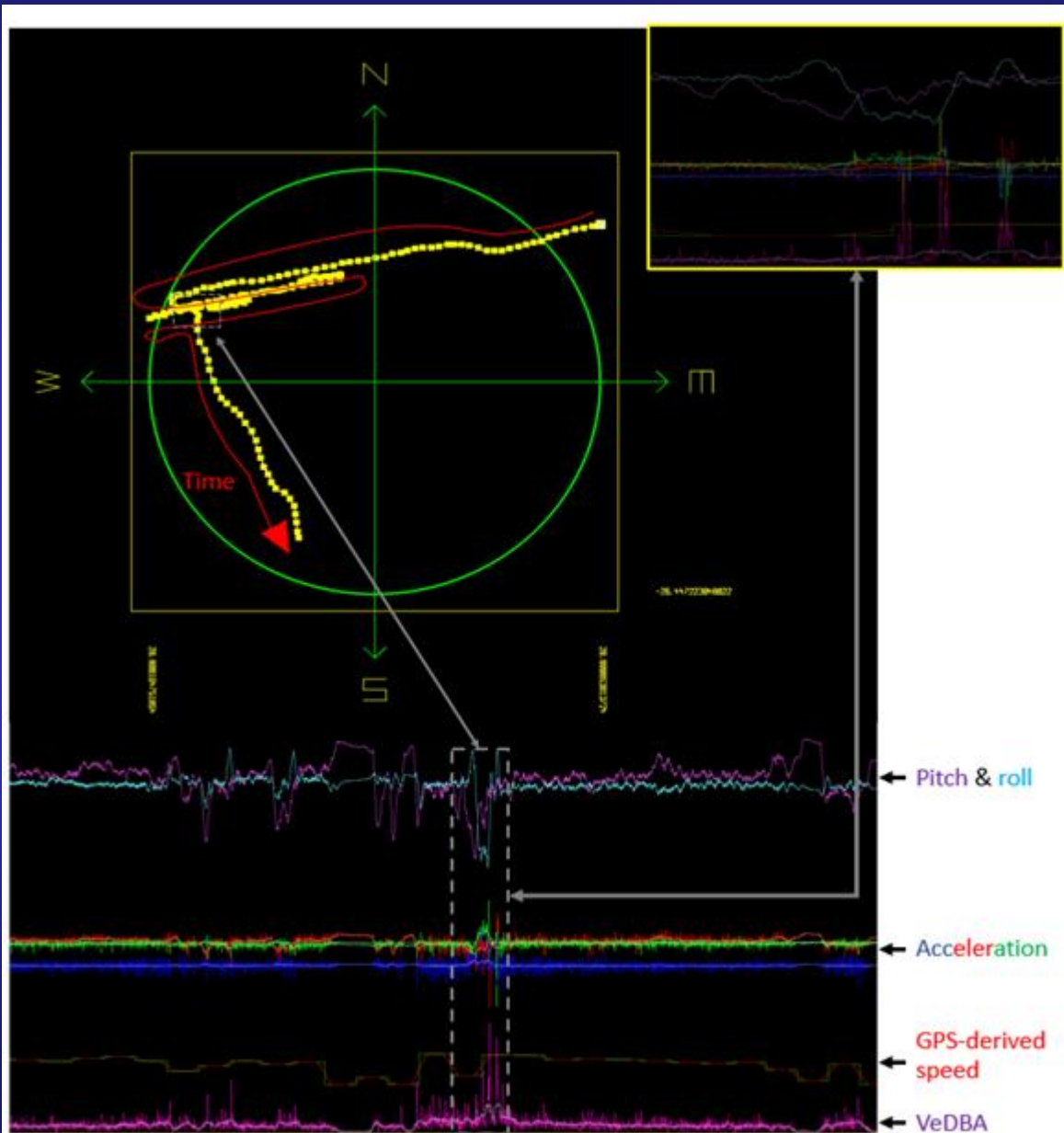
20.814

Longitude

20.816

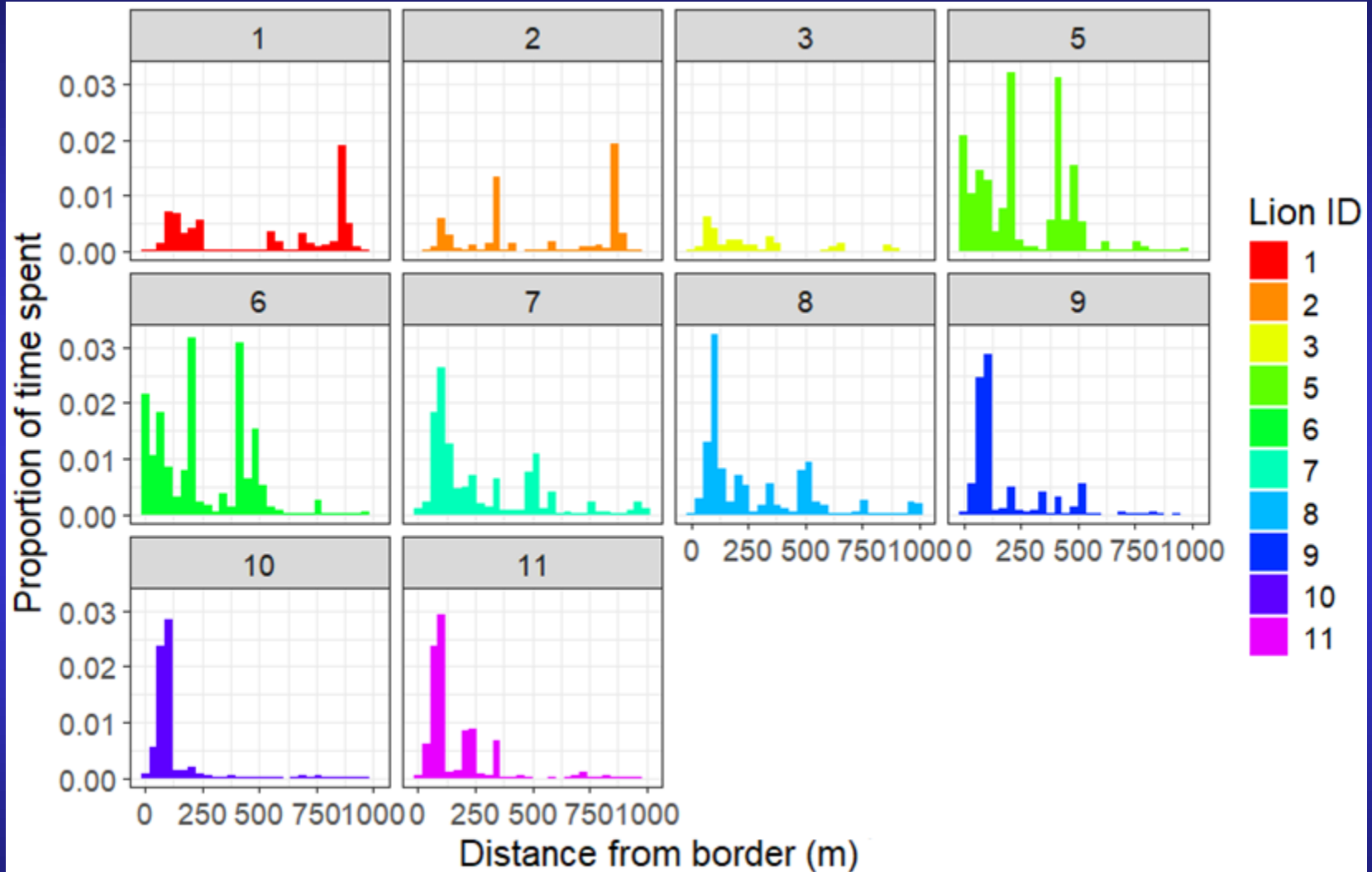
20.818

Behaviour associated with crossing fence

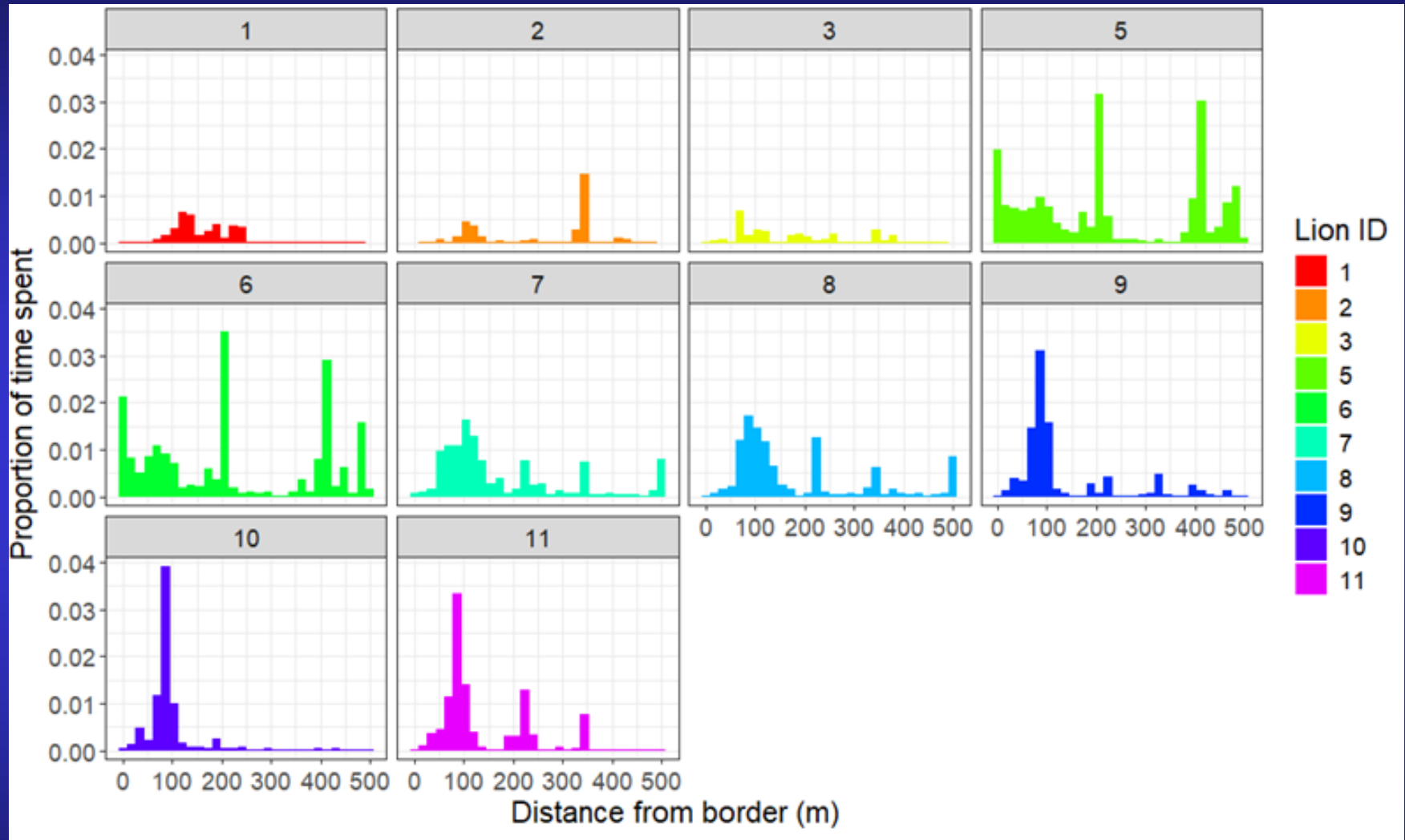


Body pitch and roll, indicative of “crawling” under fence

Time associated with fence

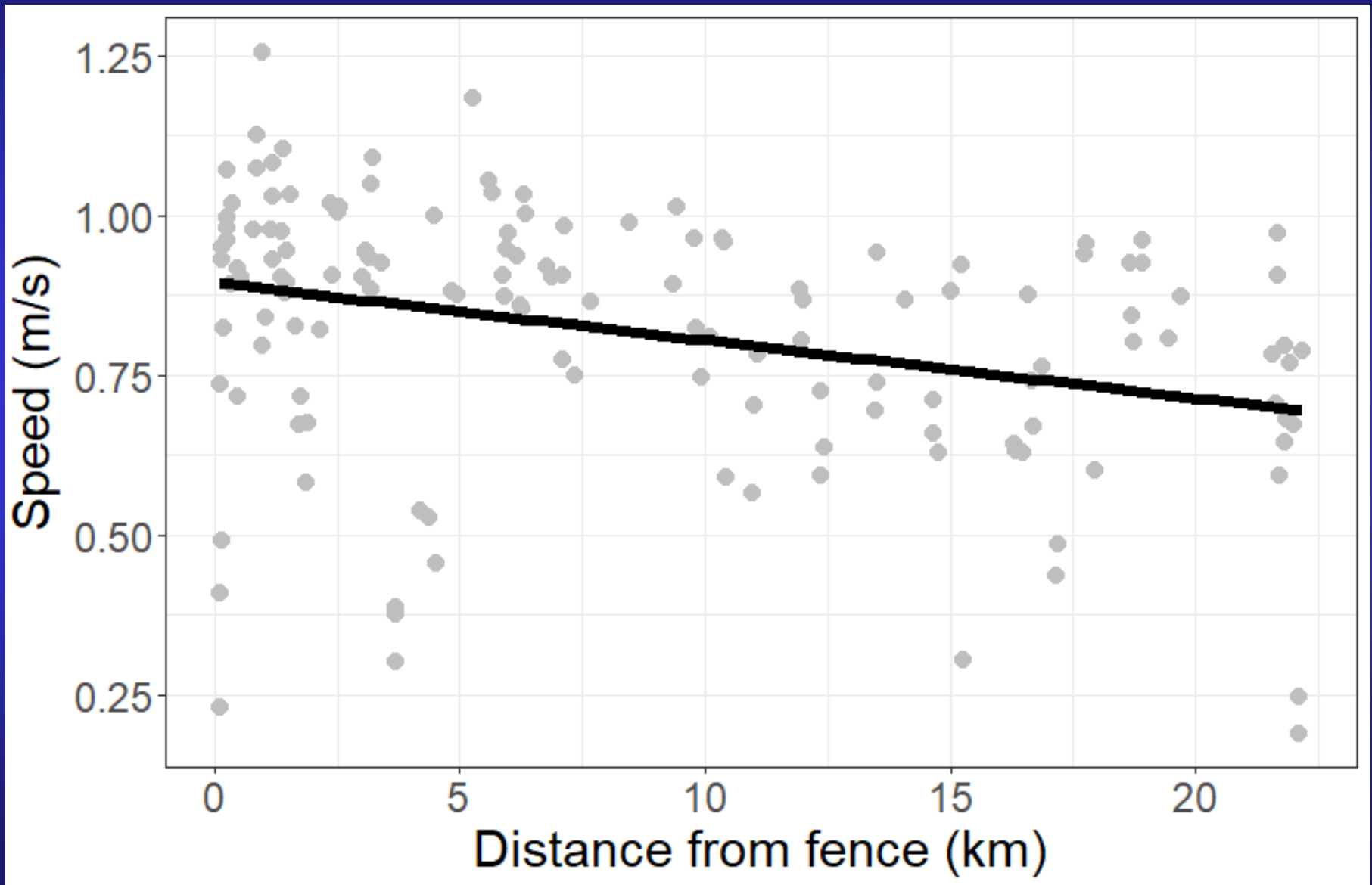


Time spent within 500m of fence



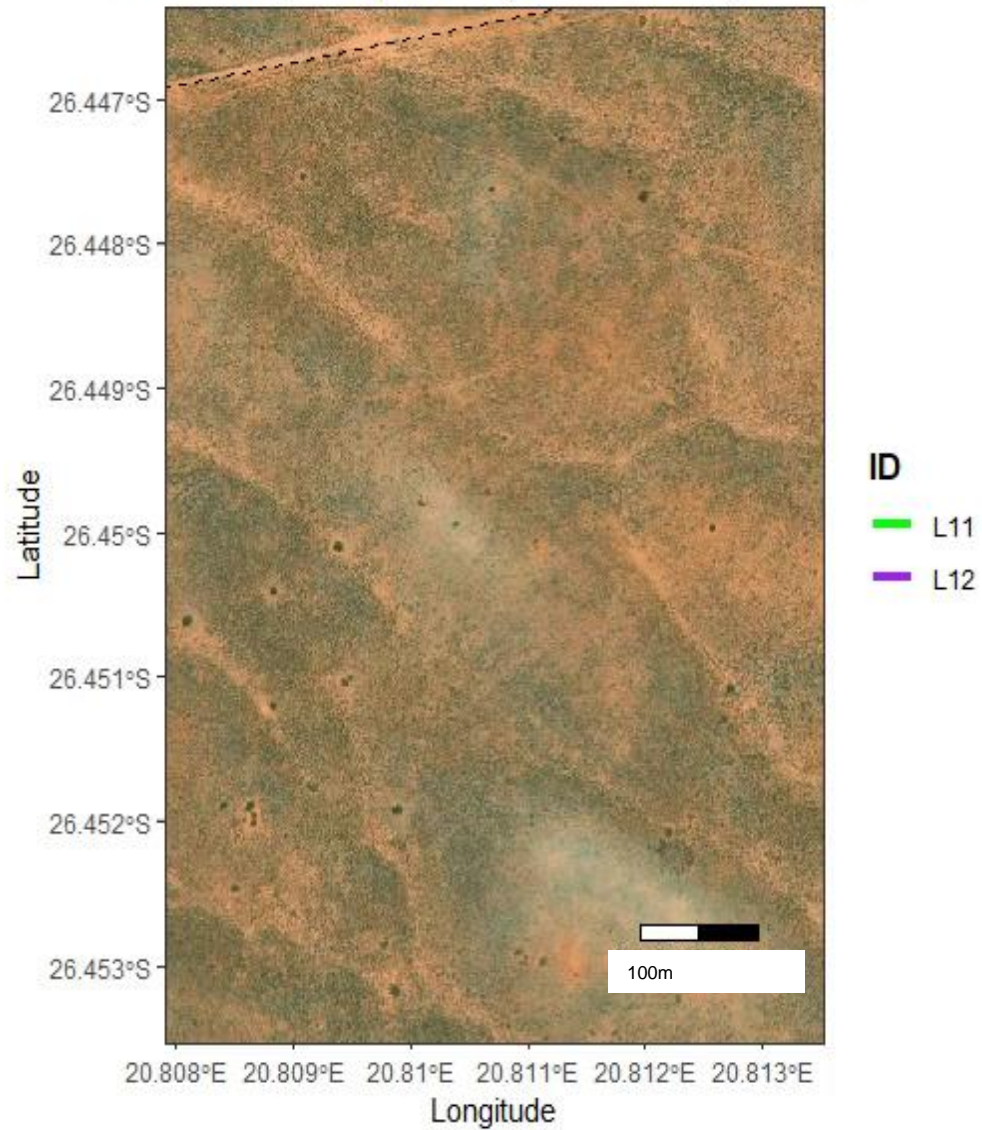
Significantly increased time spent along fence – for lions with border within their territory

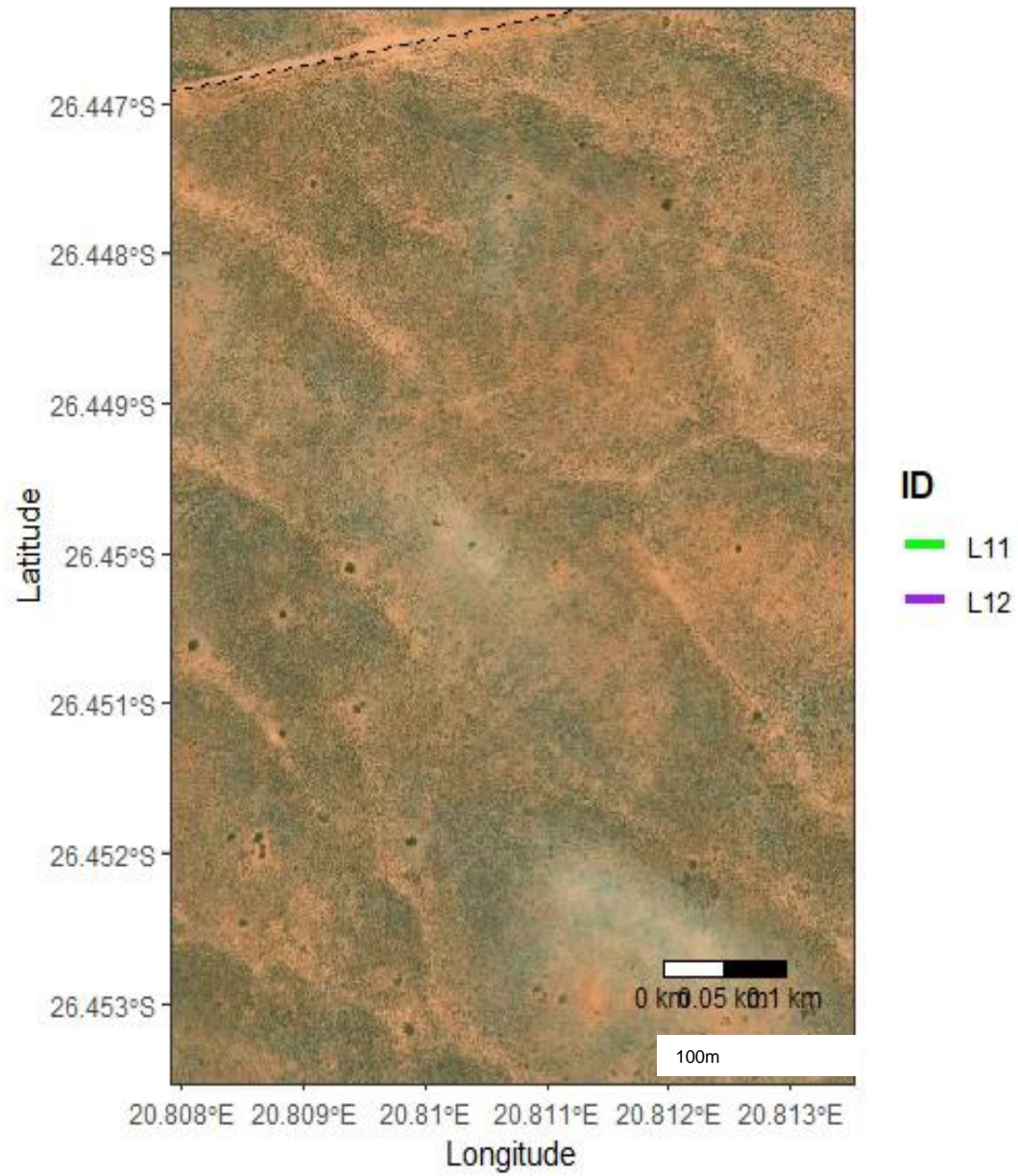
Faster travel speeds closer to fence



3. Hunting beyond the fence

40 min





Future work

- Only reporting on 2 weeks for 11 individuals
- Brief, but important encounters with fencelines.
Questions arise:
 - (i) How easy is it to cross? Where? Why?
 - (ii) Same locations?
 - (iii) Increased prey capture?
 - (iv) Do “groups” cross fences? (learn)
 - (v) How long spent “outside”?
 - (vi) Behaviours different on the outside?

Management – lions, game, livestock ...

Collaborators

Rich Gunner, James Redcliffe, Paul Juan Jacobs, Dan Hart, Stephen Bell, Phil Hopkins, Aoife Goppert, Delmar Diesel, Martin van Rooyen, Angela Daly, Danny Govender, Sam Ferreira, Pauli Viljoen, Louis van Schalkwyk, Corera Links, Wayne Oppel, Nikki Marks, Rory Wilson, Nigel Bennett

