

A Cattle-Zebra Playdate

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700+

60

3

2

1



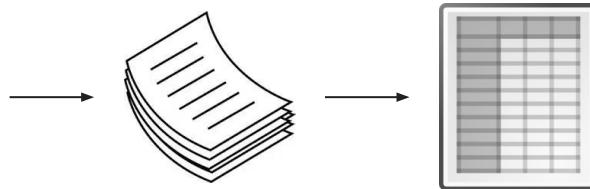
1. How do zebras make individual and collective decisions in this landscape?
2. Which factors (bottom-up or sideways) have a greater effect on each species?



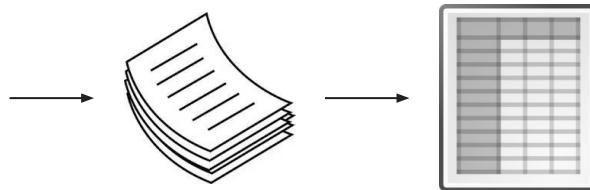
Grevy's zebra



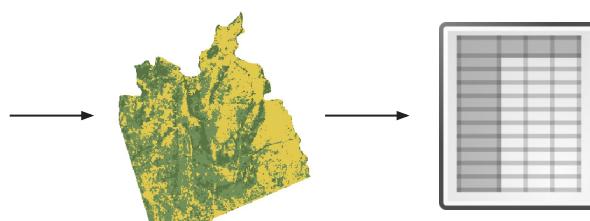
Plains zebra



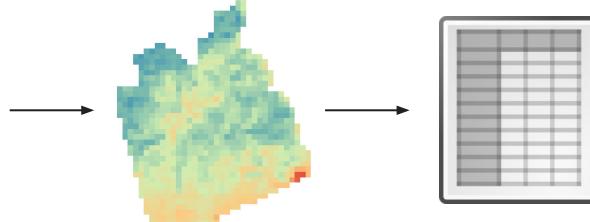
Photos and observations



Vegetation transects

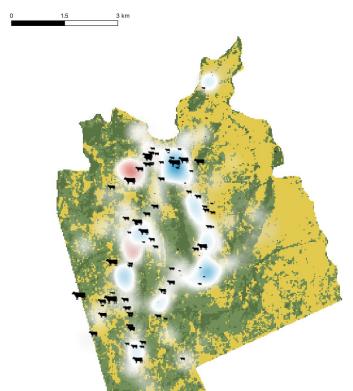
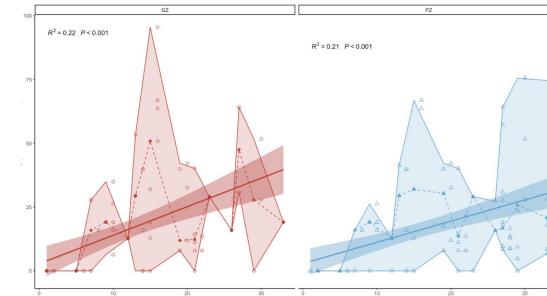
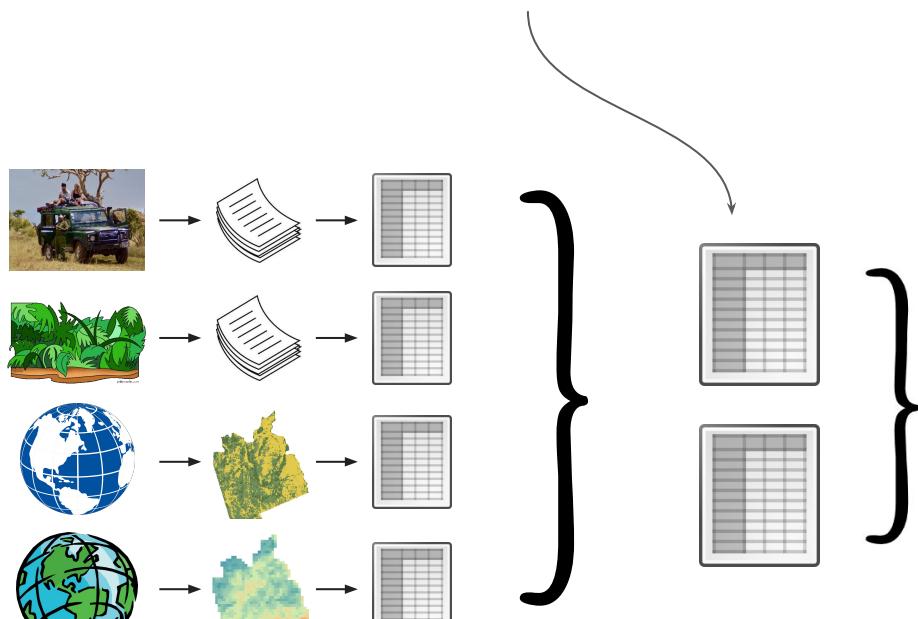


LANDSAT satellite data (inferred habitat)



MODIS satellite data (NDVI/EVI)

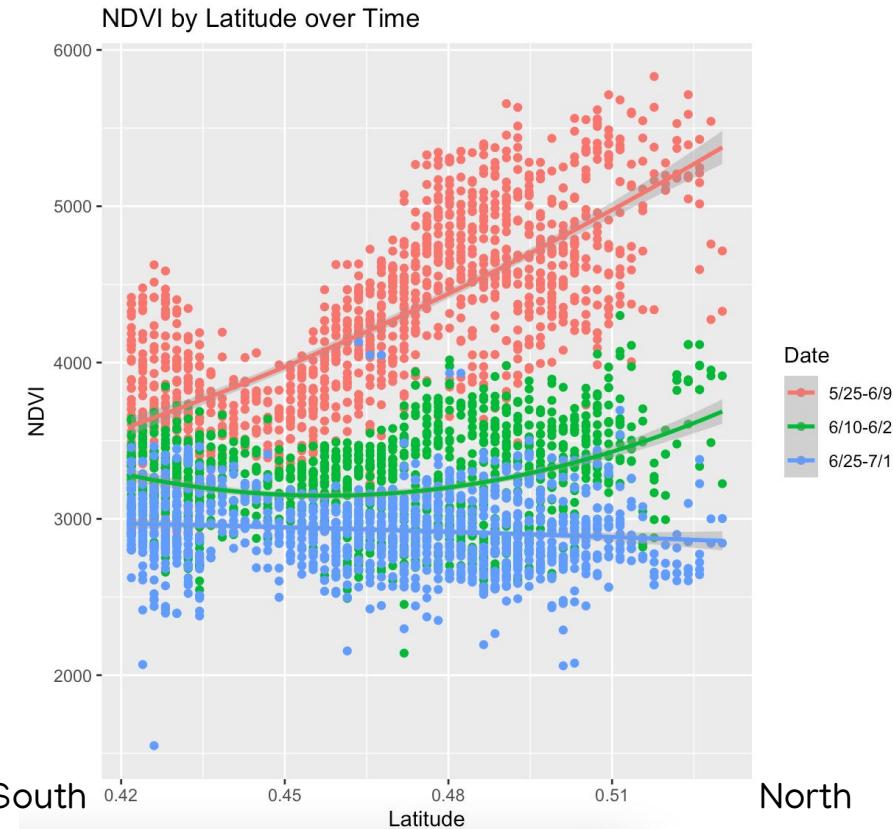
By-herd and by-day spreadsheets



Let's dig in

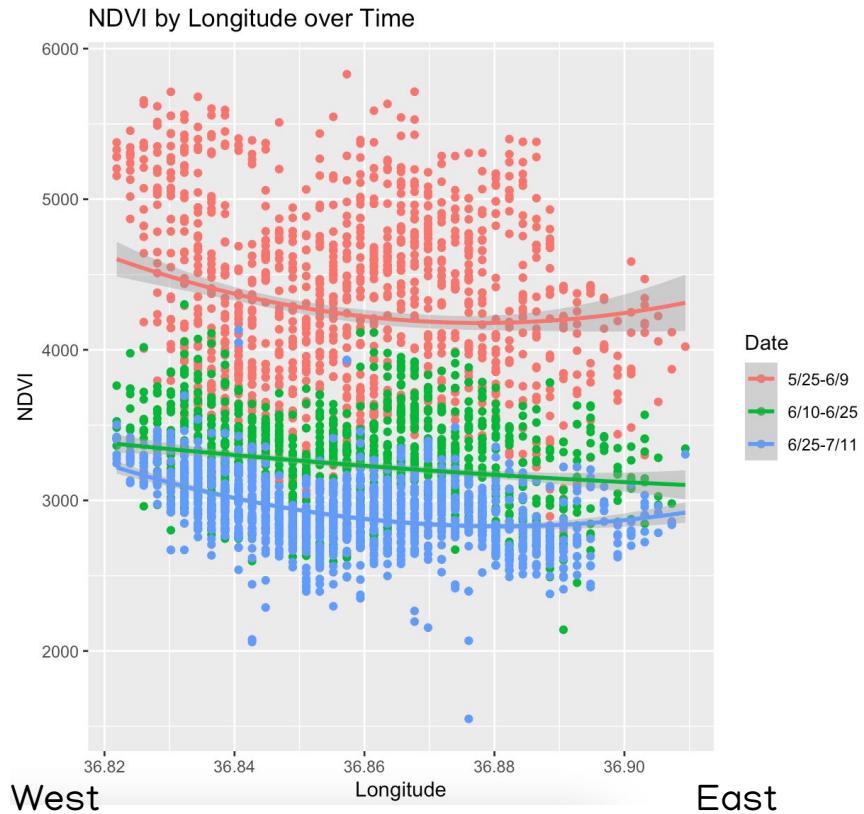
Drought & Effects: Latitude

- NDVI => greenness of vegetation
- Drops significantly from early June to early July
- North-south gradient

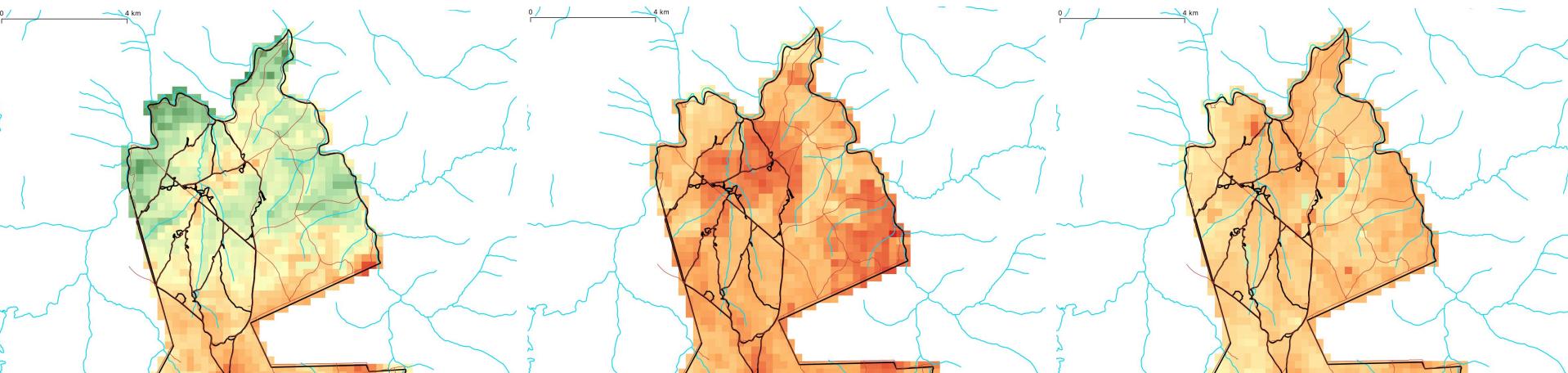


Drought & Effects: Longitude

- Slightly higher NDVI in the west
- Slight dip in the middle = dried up dam



Drought & Effects on the Landscape

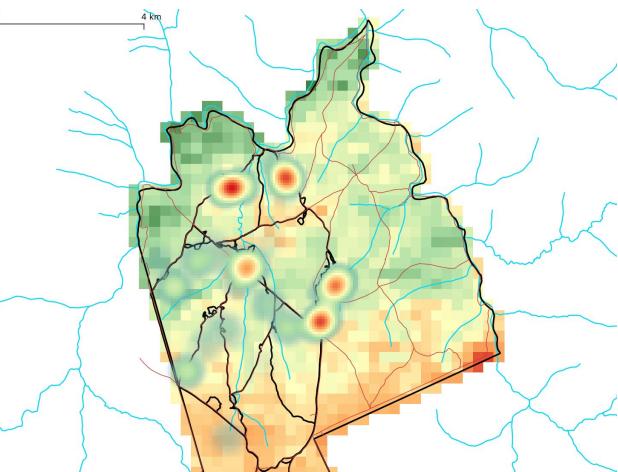


5/25–6/9

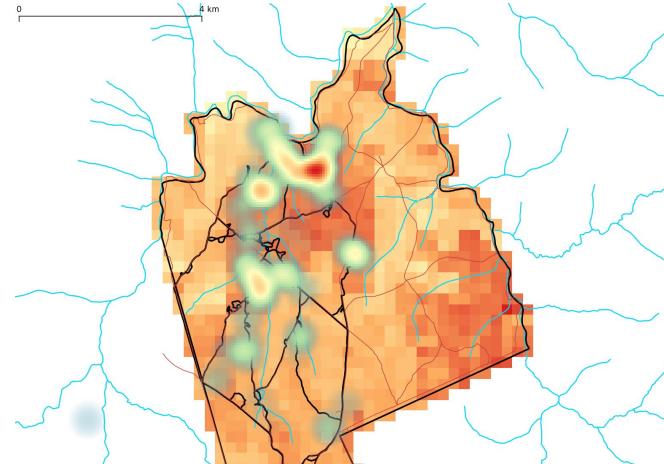
6/10–6/24

6/26–7/11

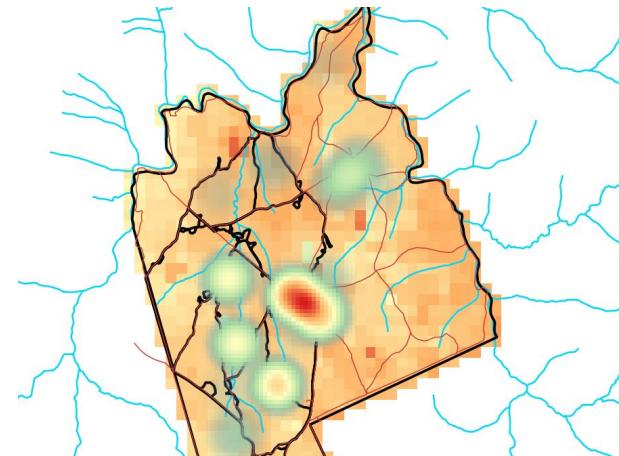
Drought & Effects on the Grevy's Zebras



5/25–6/9

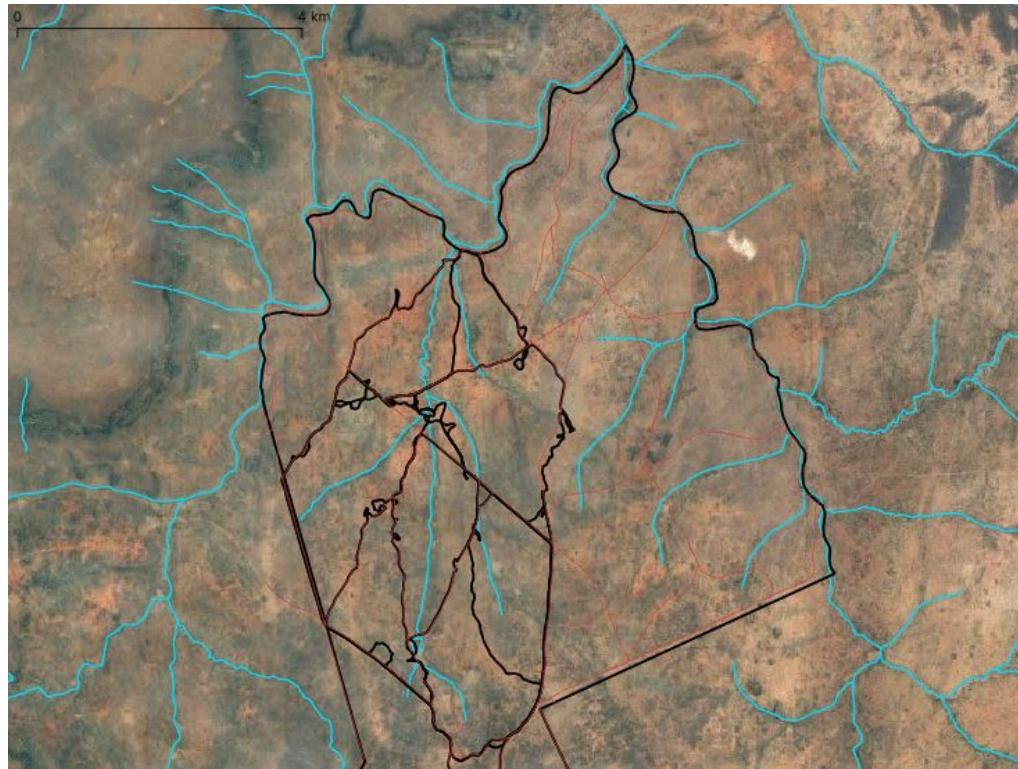


6/10–6/24

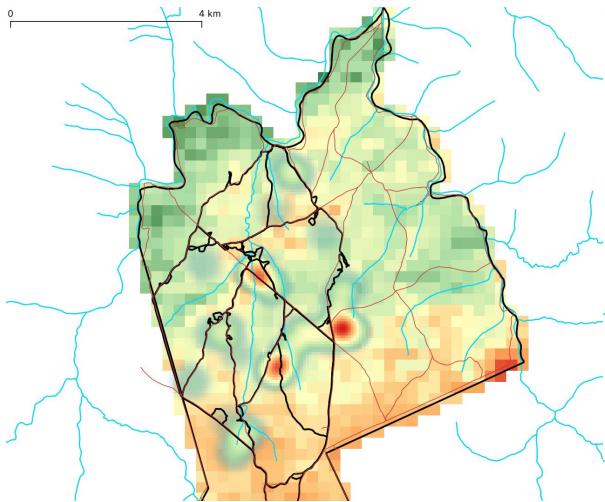


6/26–7/11

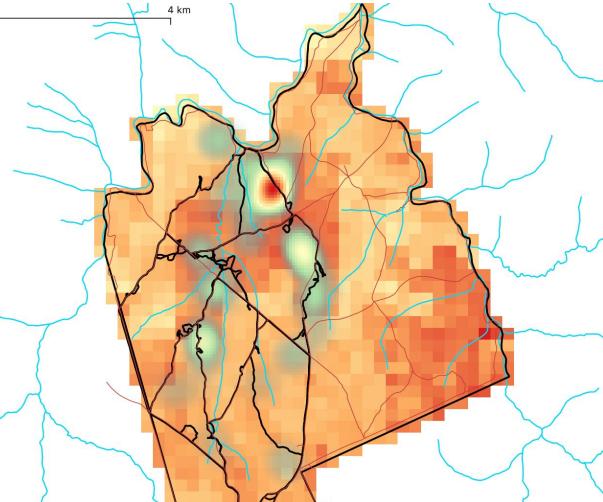
Drought & Effects on the Grevy's Zebras



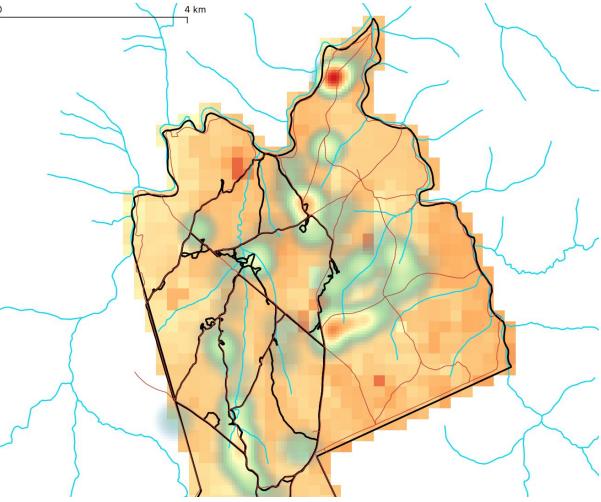
Drought & Effects on the Plains Zebras



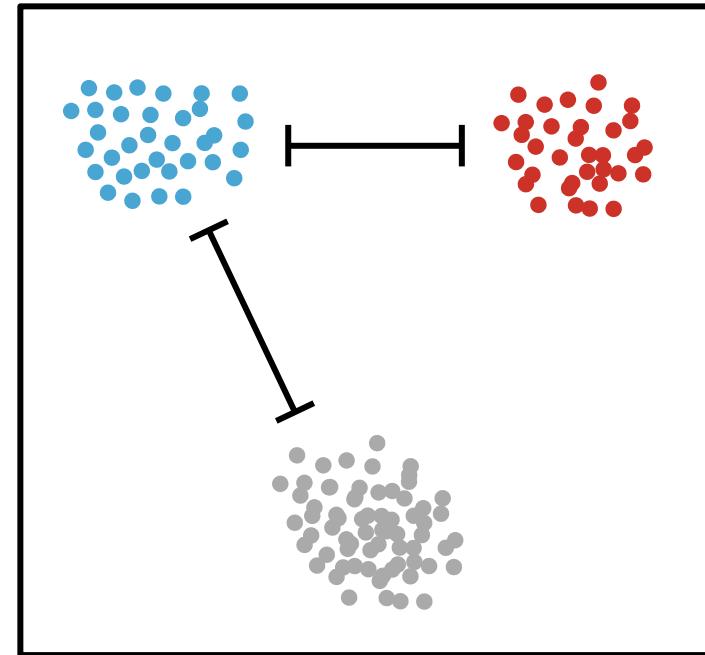
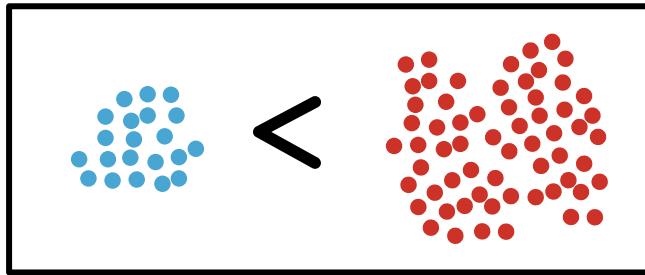
5/25–6/9



6/10–6/24



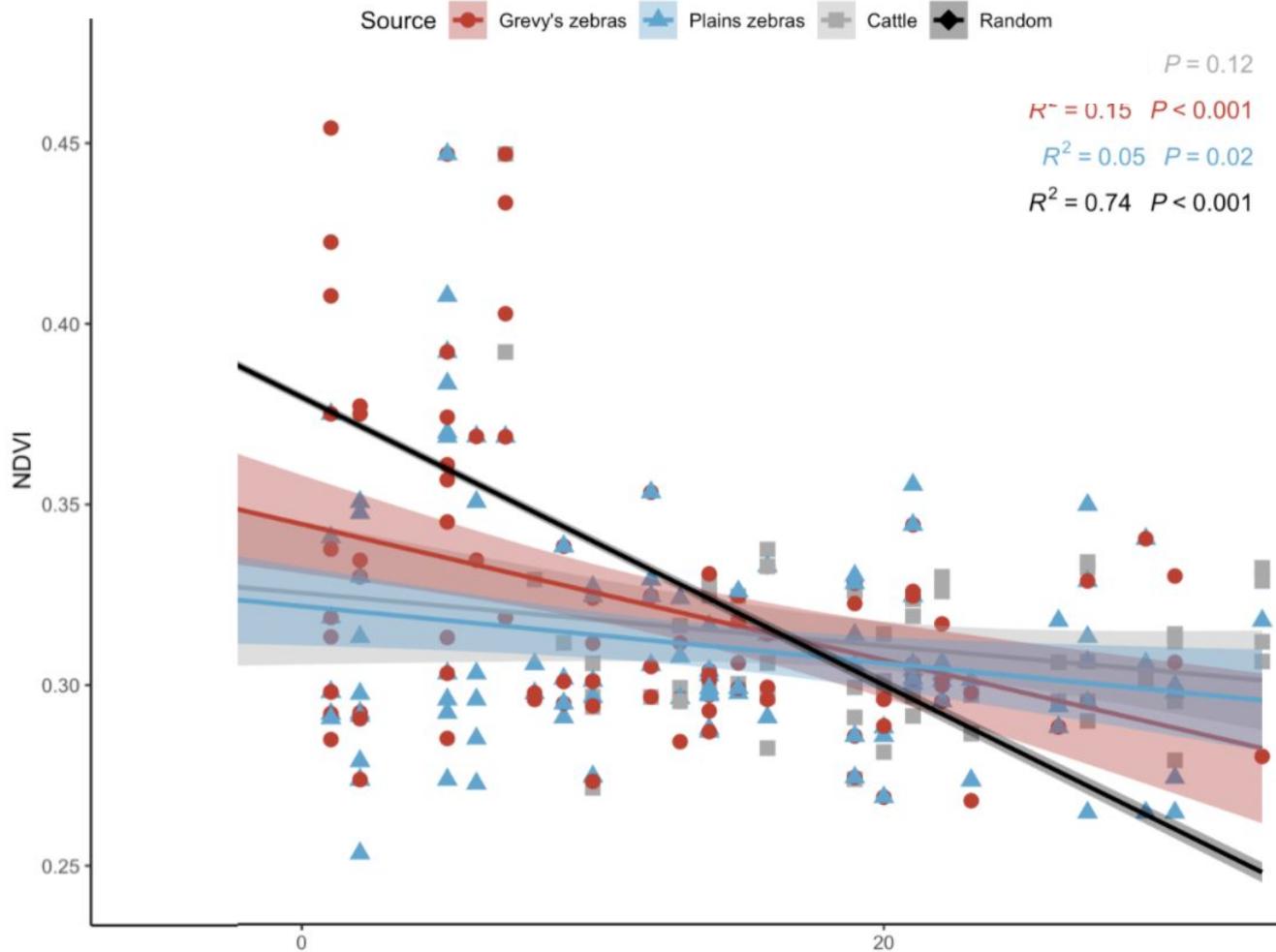
6/26–7/11



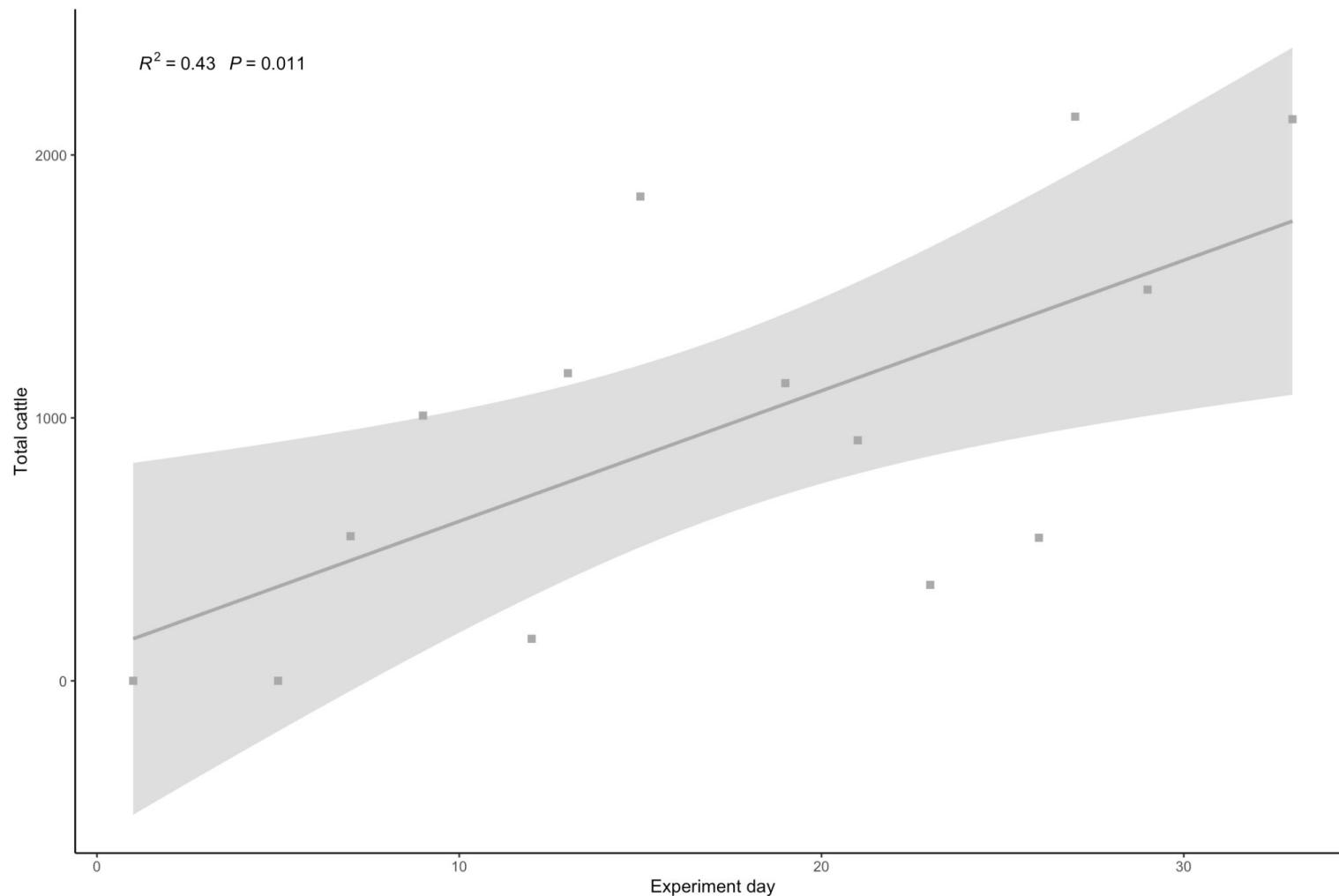


How did the landscape change?

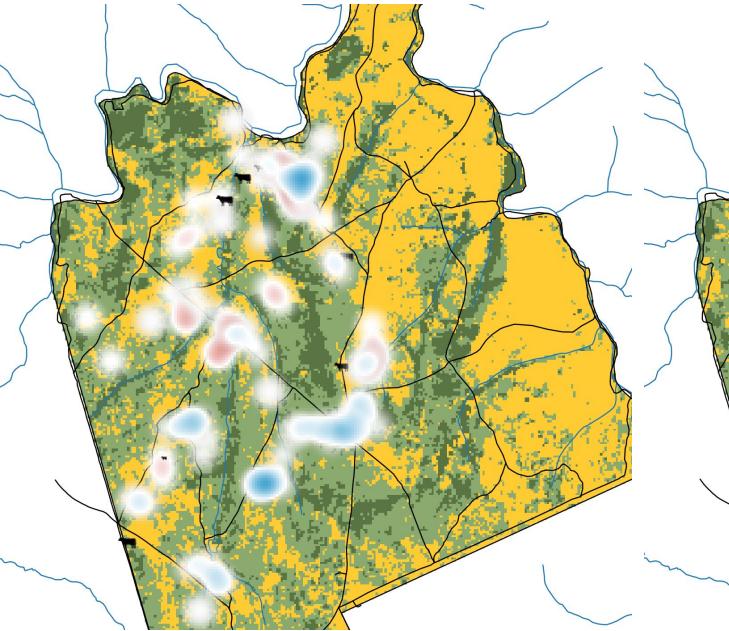
(1)



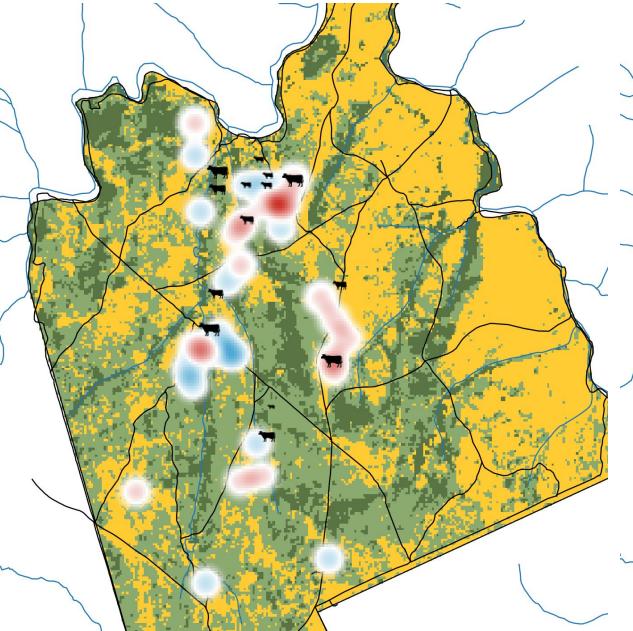
(2)



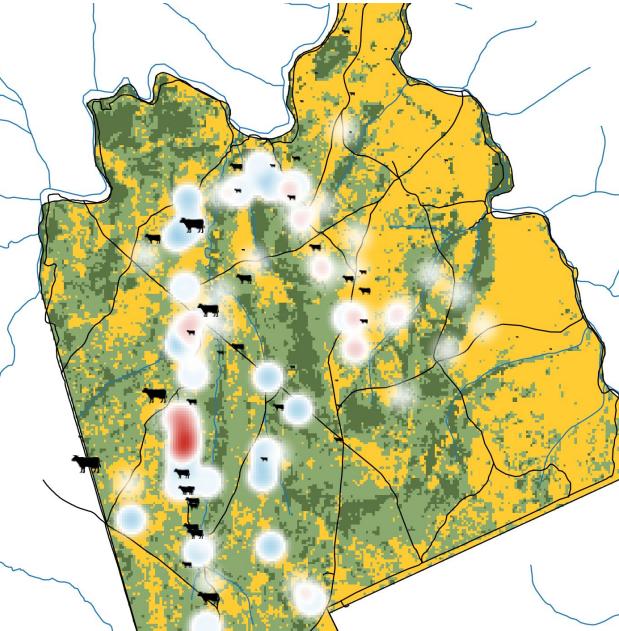
Before cattle arrive
Control conditions



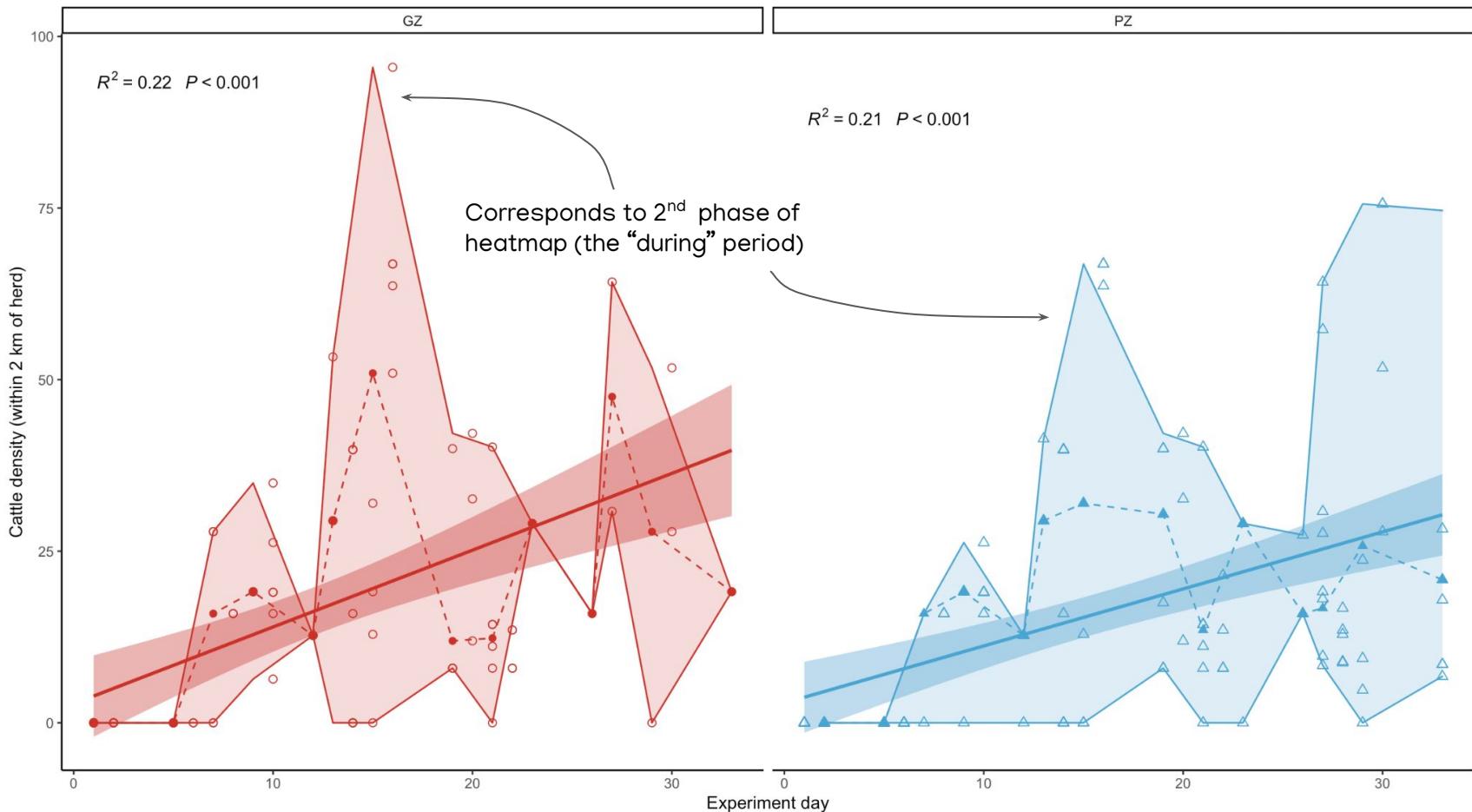
As cattle arrive
Disruption



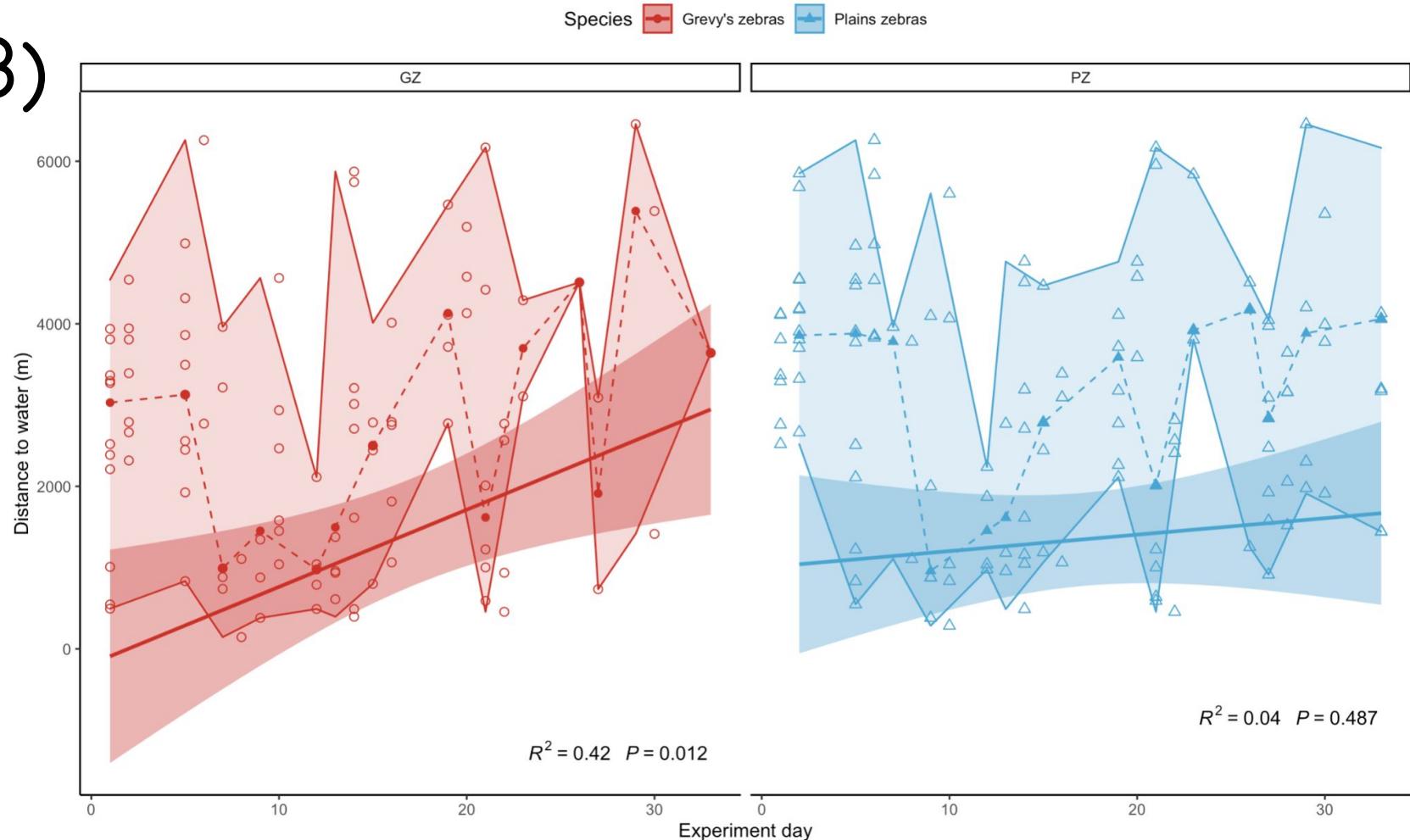
After cattle arrive
Equilibrium is reached



Species Grevy's zebras Plains zebras

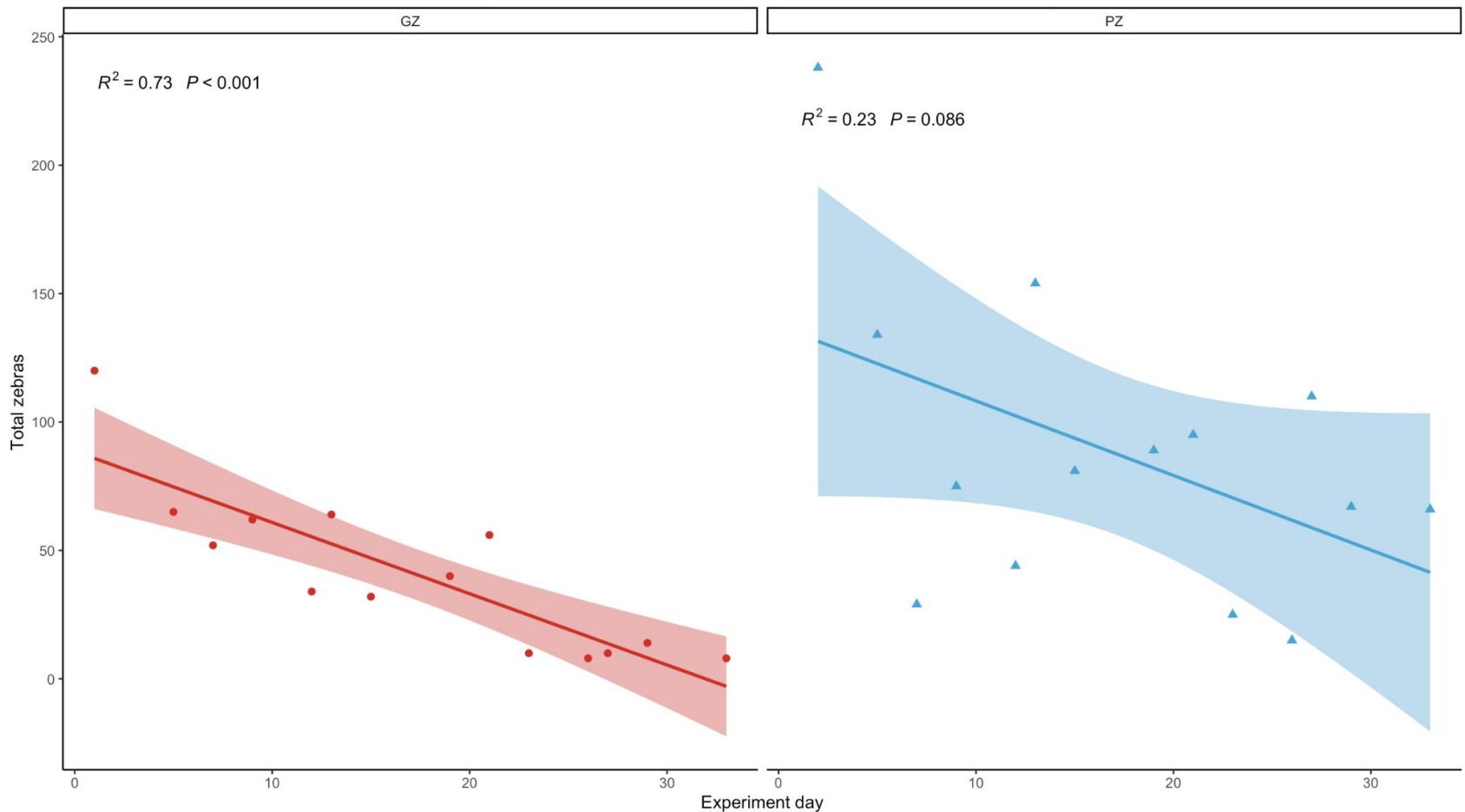


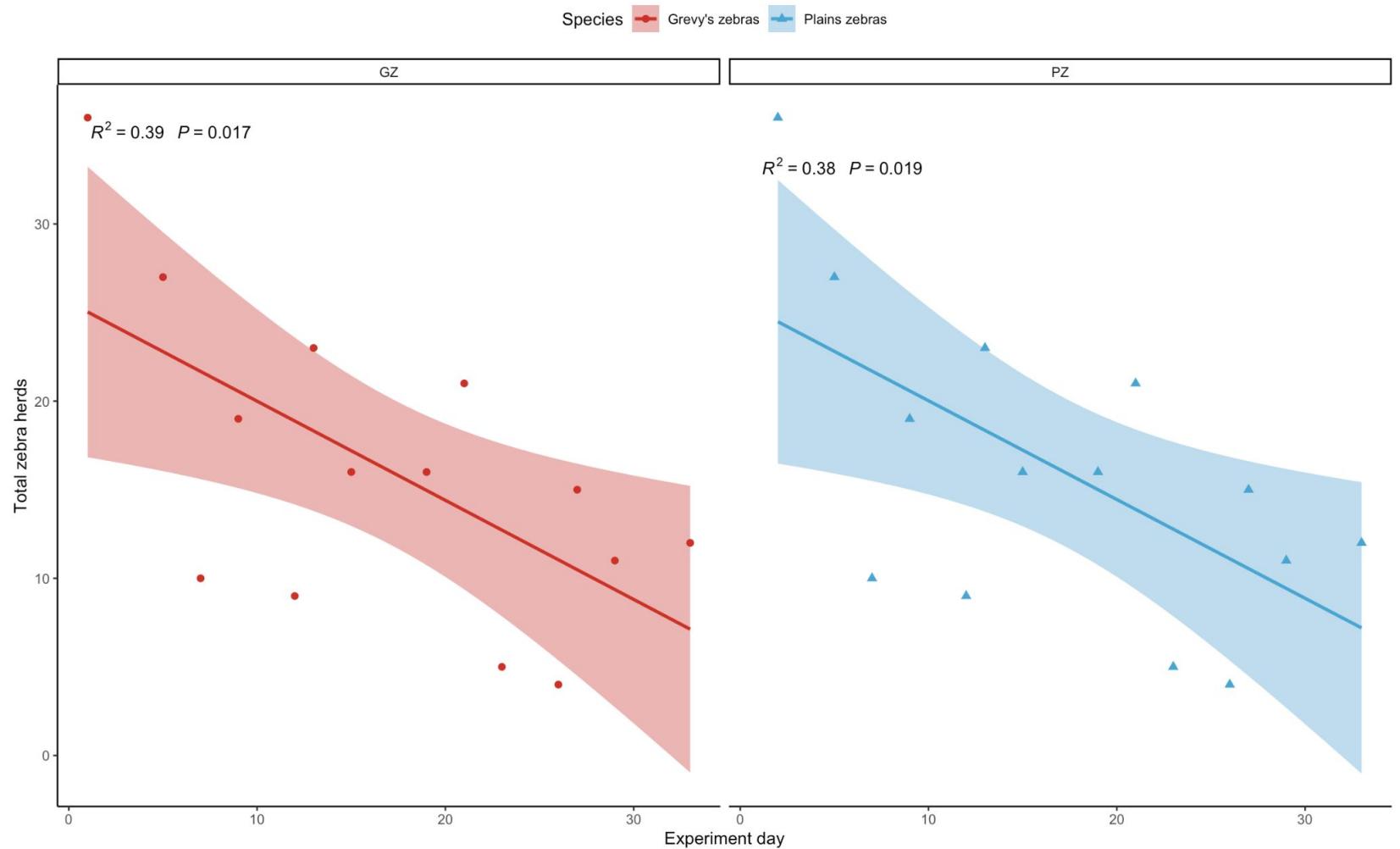
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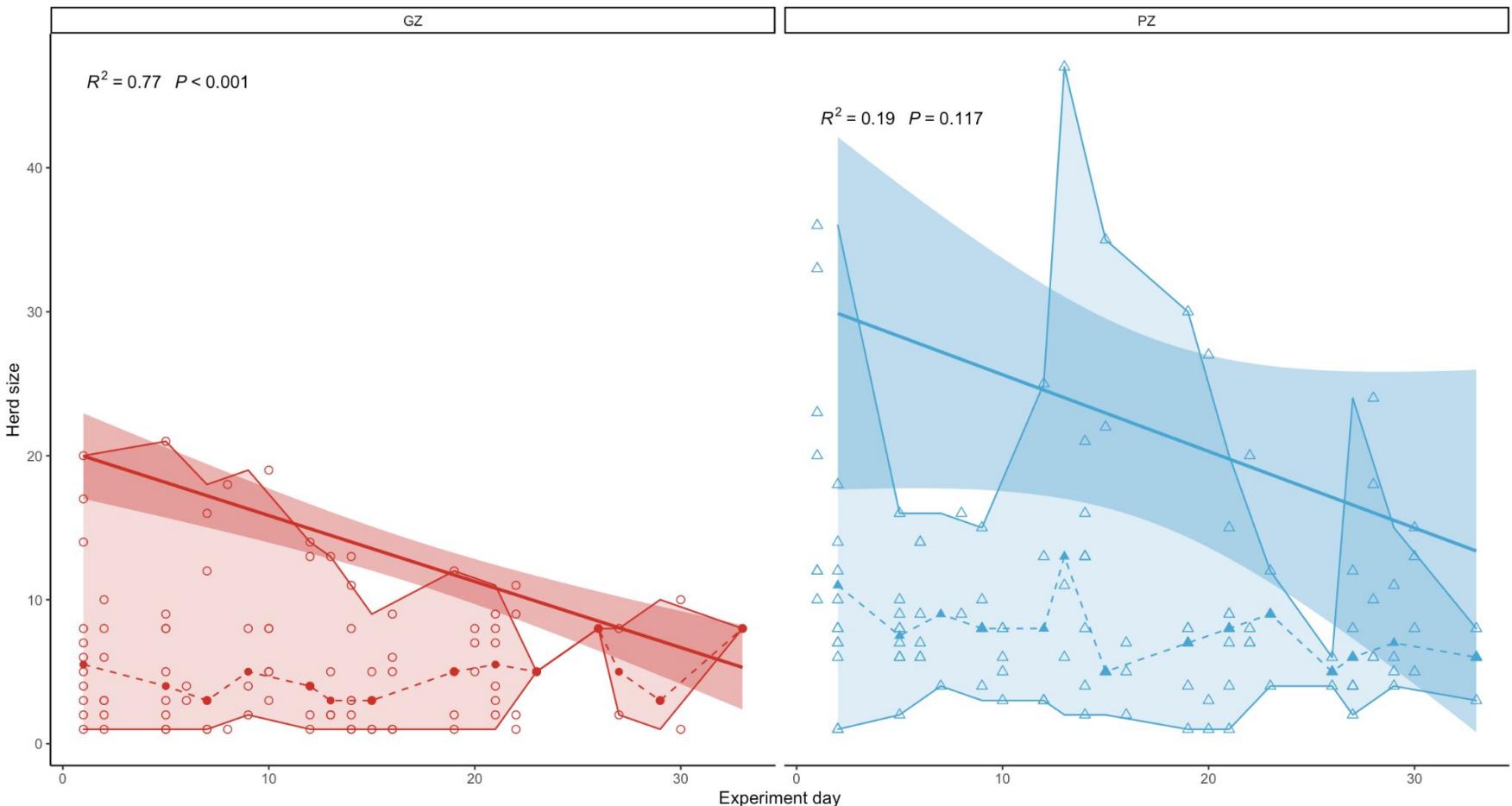
What did the zebras do in response?

Species Grevy's zebras Plains zebras

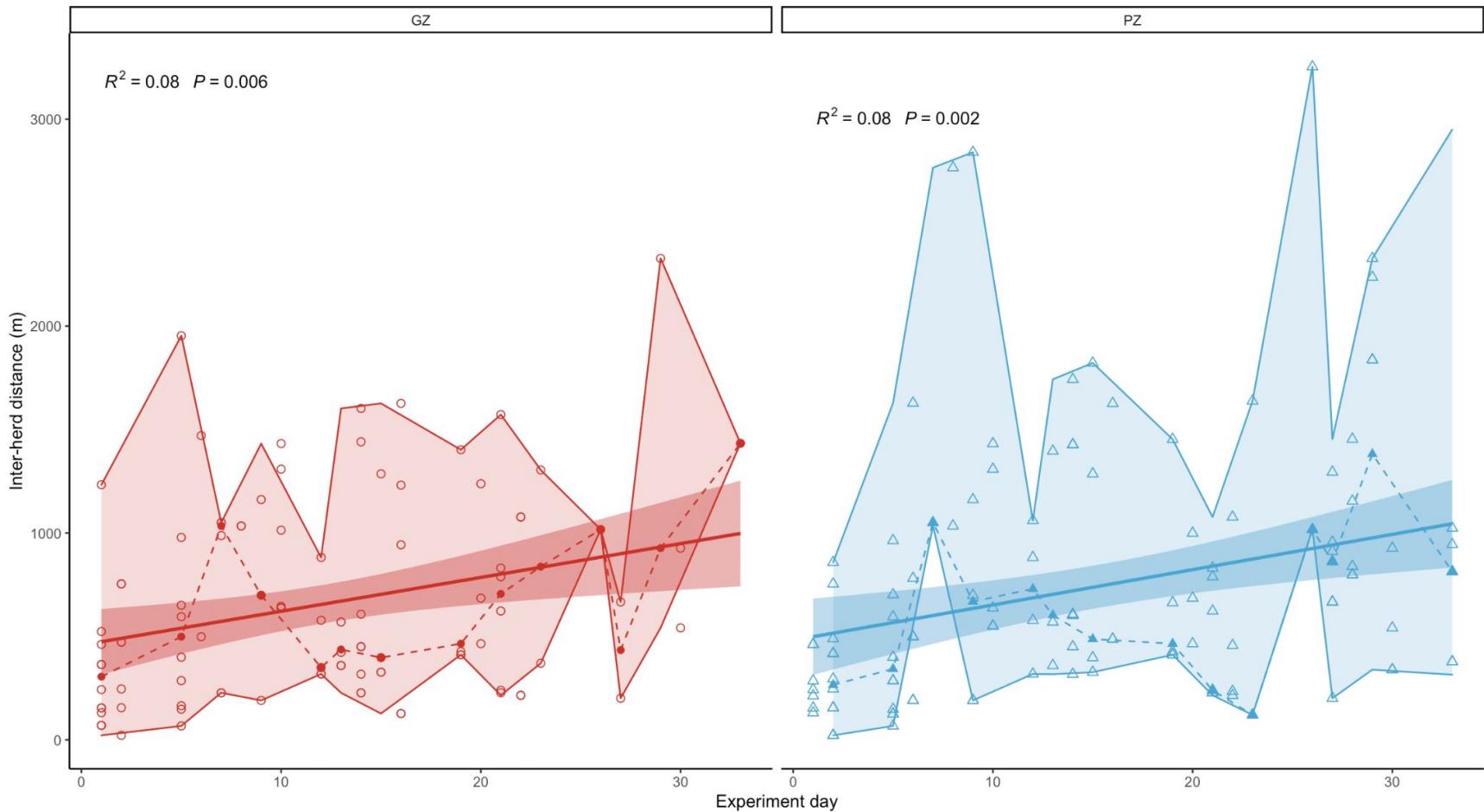




Species Grevy's zebras Plains zebras

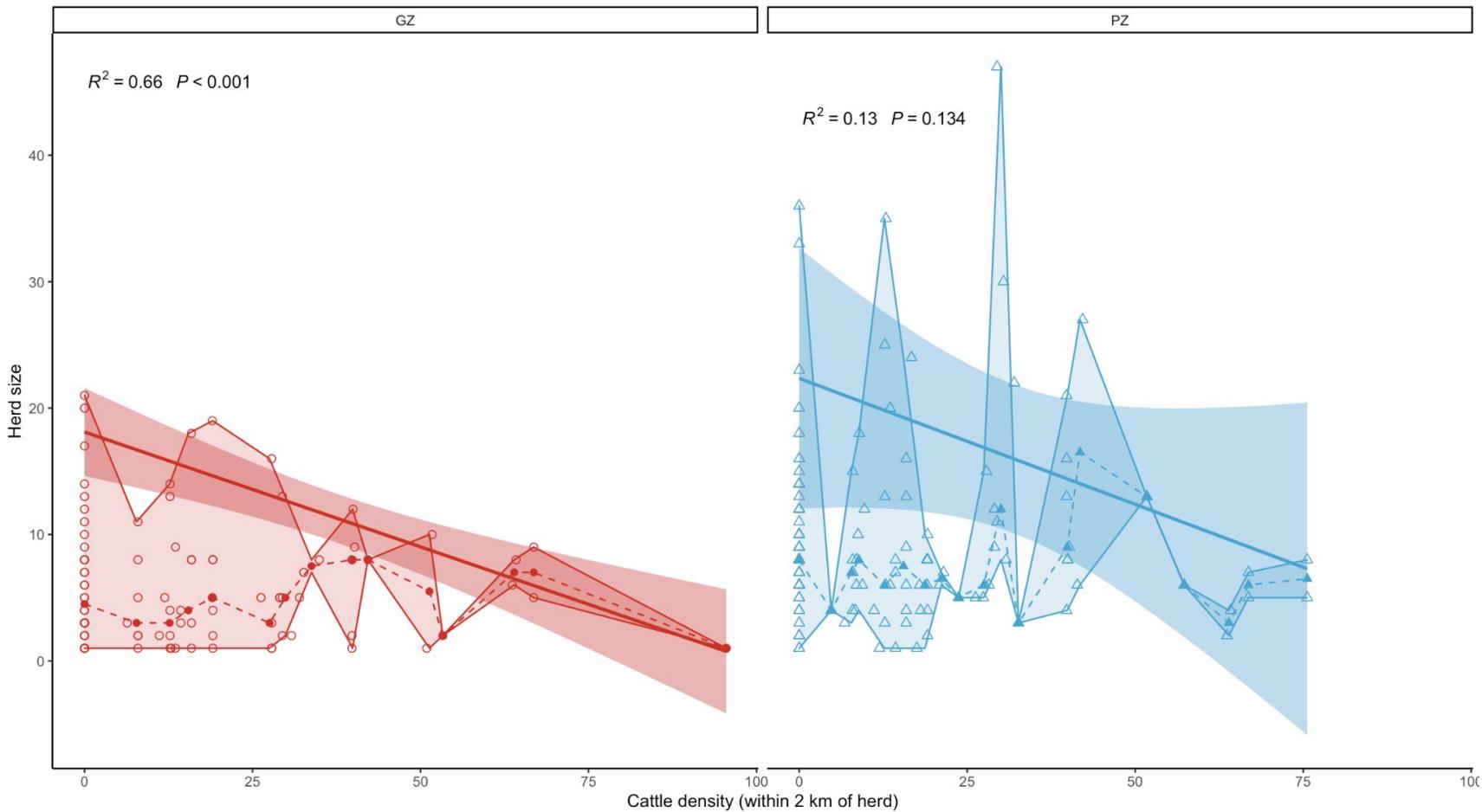


Species  Grevy's zebras  Plains zebras

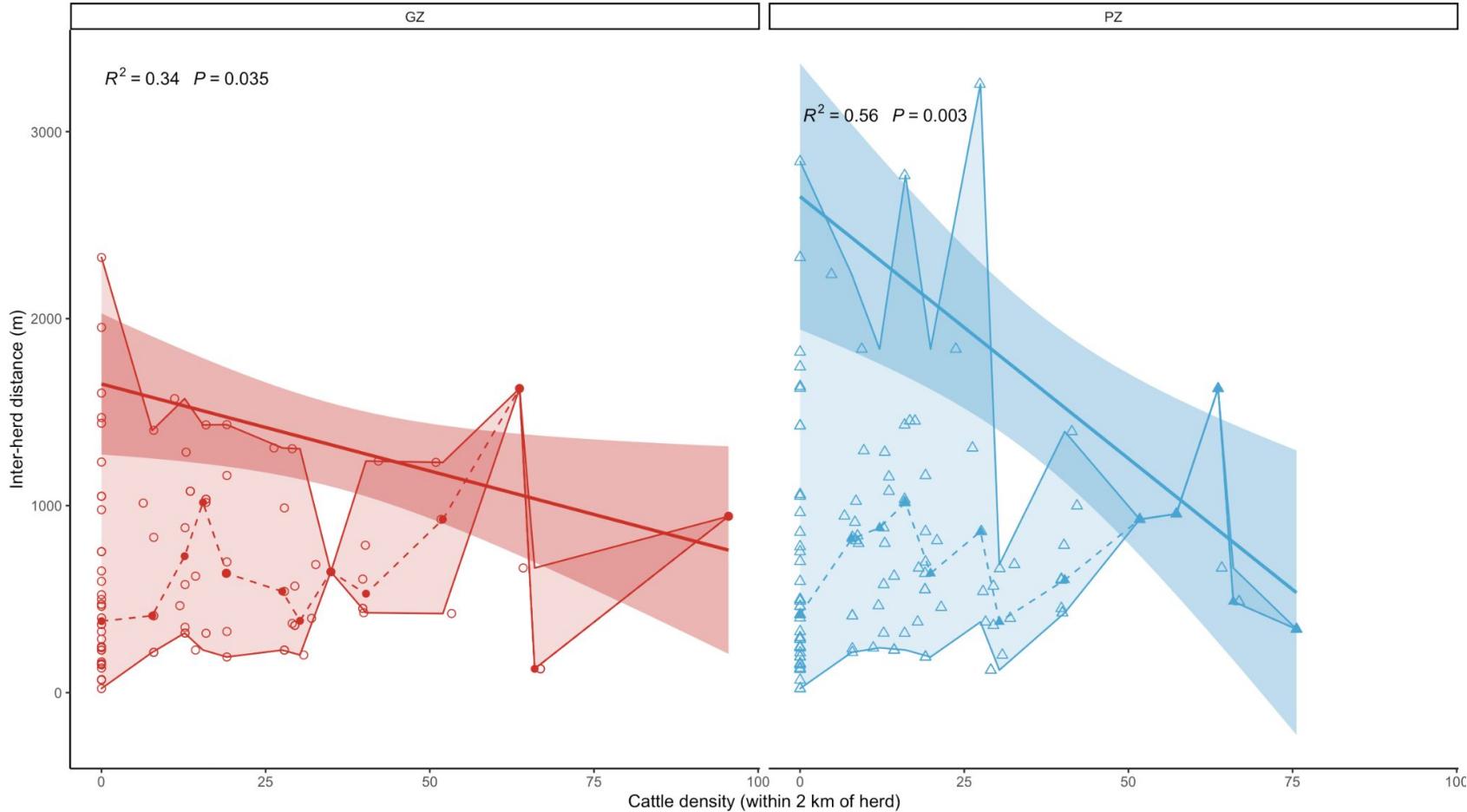


Let's piece it together

Species  Grevy's zebras  Plains zebras



Species  Grevy's zebras  Plains zebras



Summary

- Grevy's able to spread out and get away from cattle, find good pasture, because not attached to water
- Plains anchored to drinking spot, had to find a way to live with the cattle, clumped together, more of an enigma
- Hopeful enigma
- Can we transfer this from plains to Grevy's?

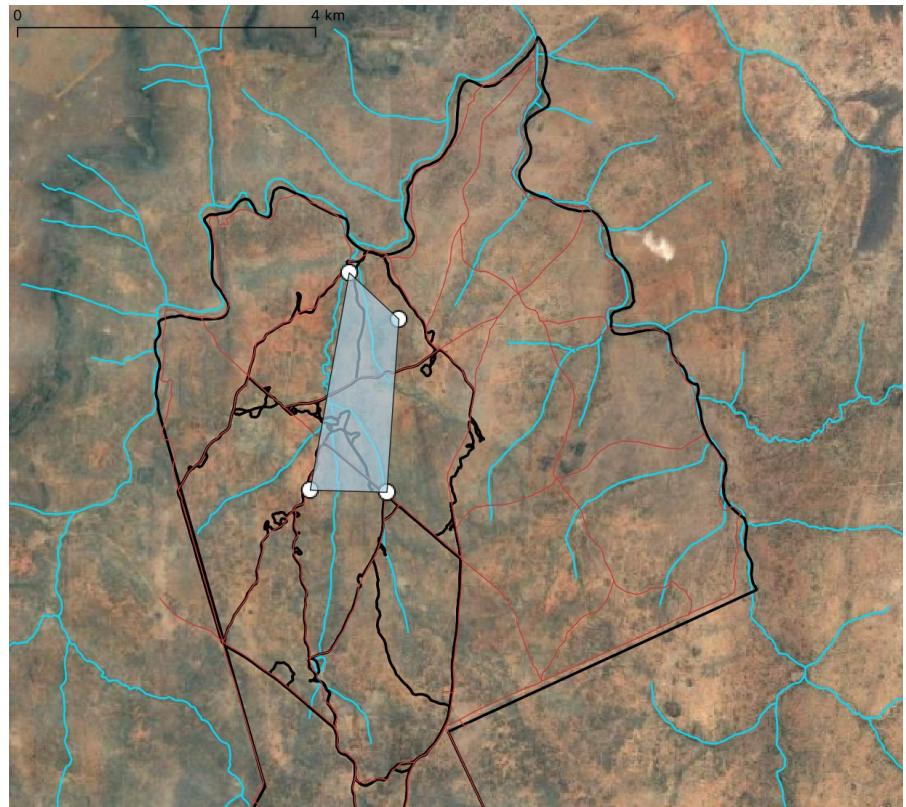
Individual Decision Making in Grevy's

- What are the individual zebras doing?
- Picked 11 individuals that were sighted 3+ times
 1. Tracked movement
 2. Created home ranges

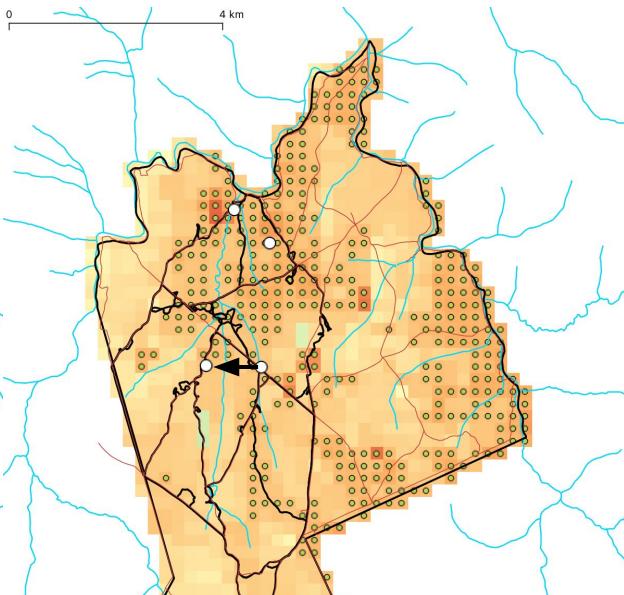
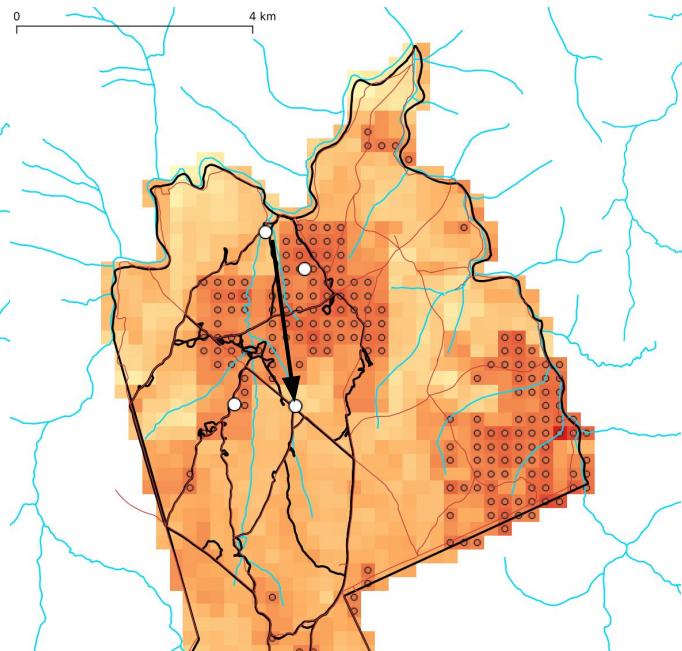
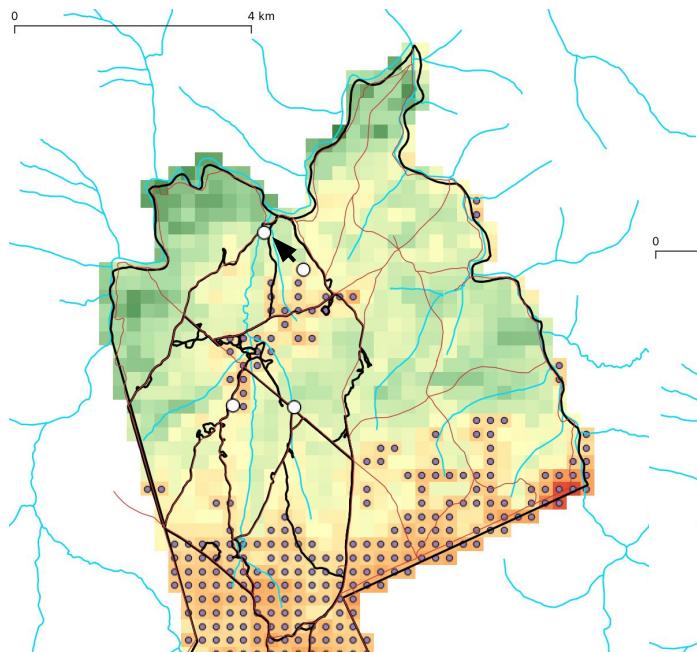


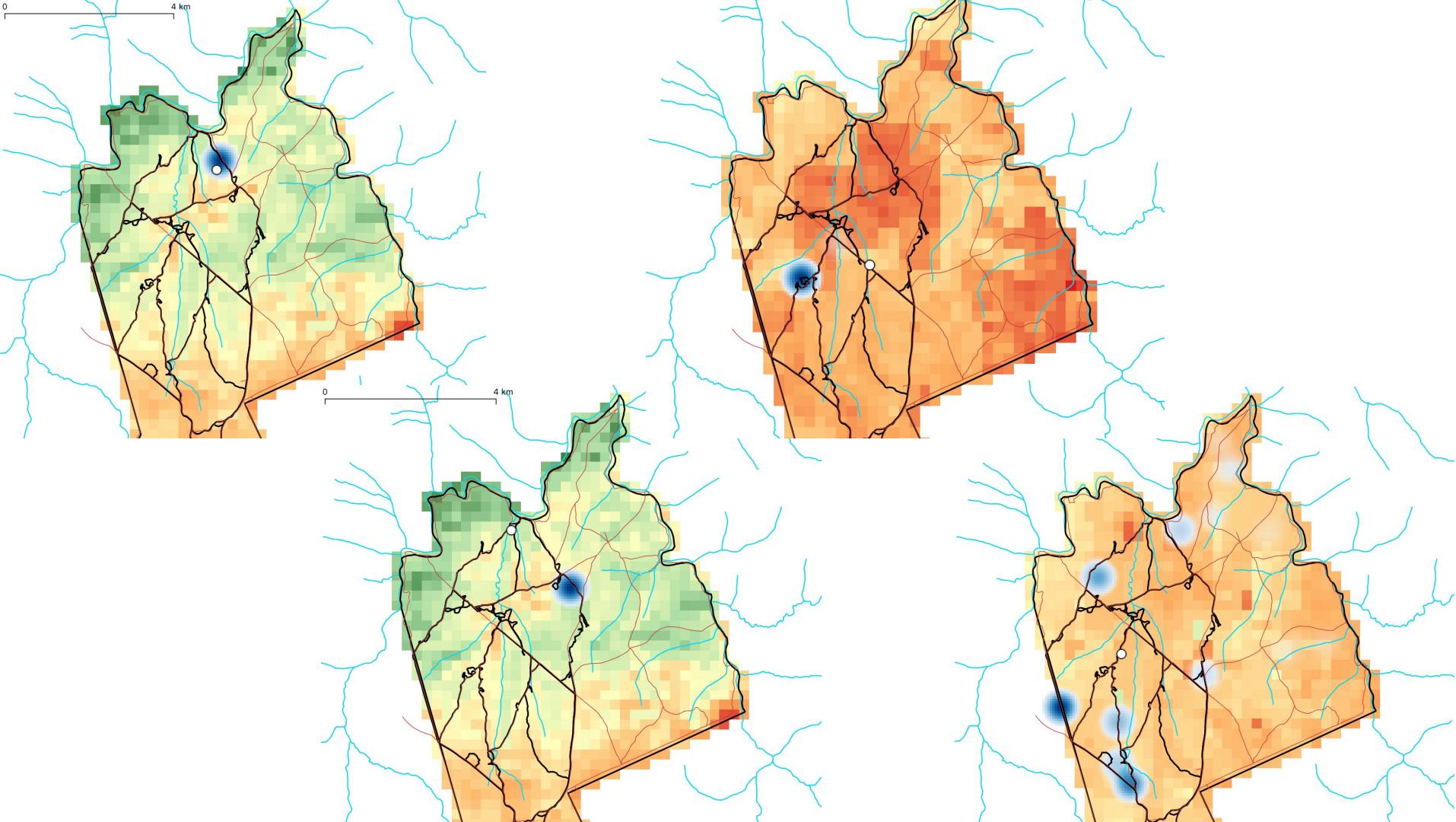
M21_012 Home Range

- Female
- Seen throughout June and July



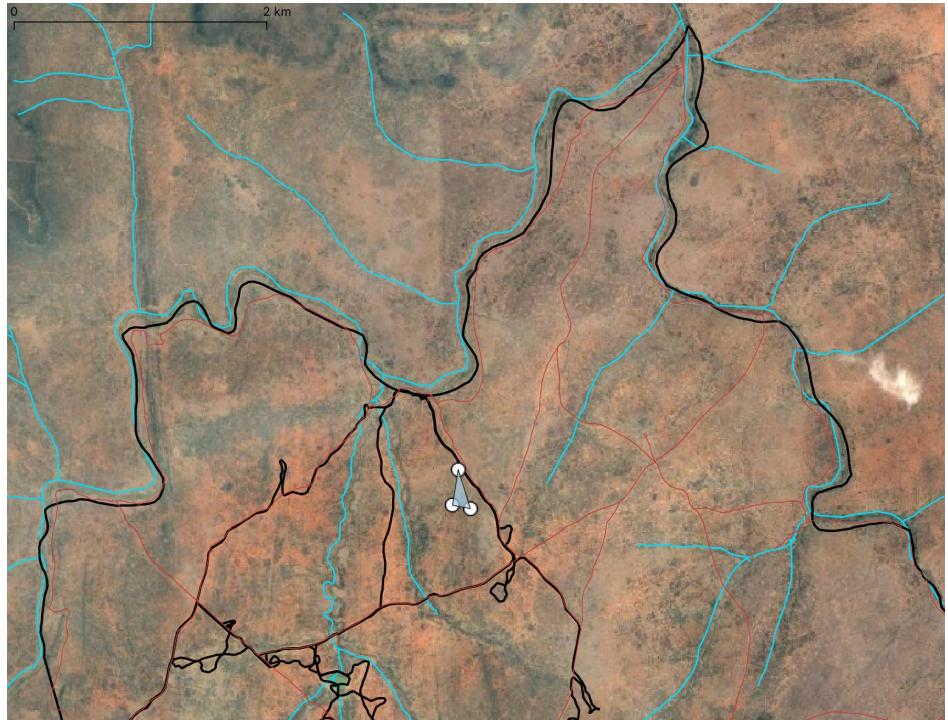
M21_012 Movement



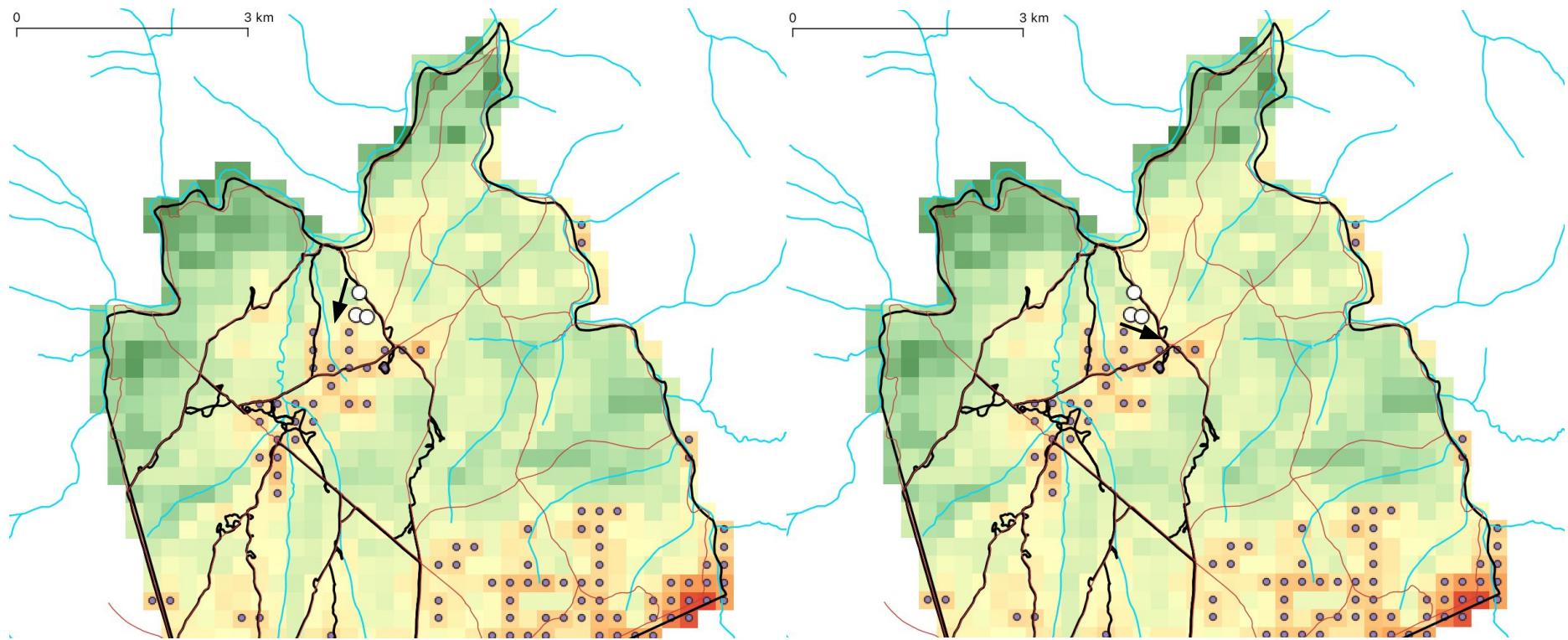


M21_001 Home Range

- Territorial male
- Seen in early June
 - Guards land that has good resources and mates with females that enter area



M21_001 Movement

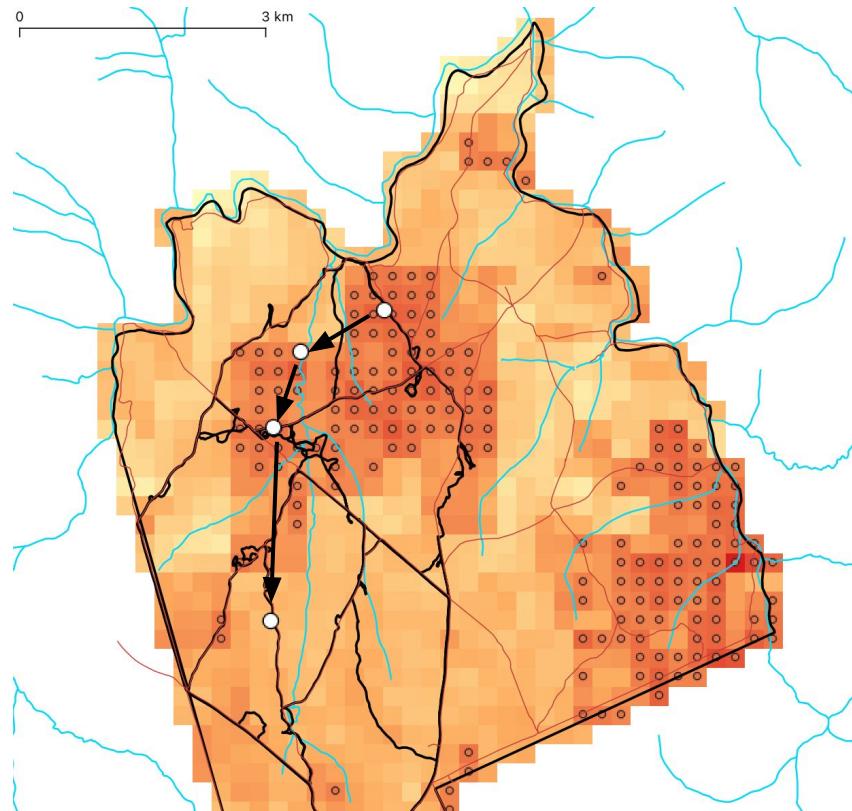
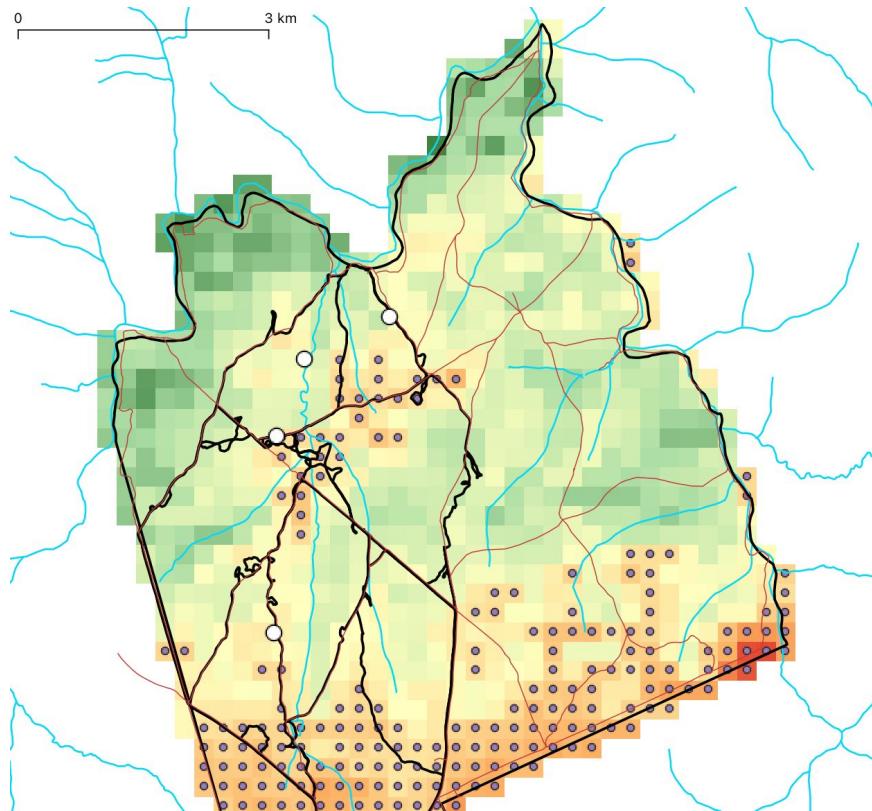


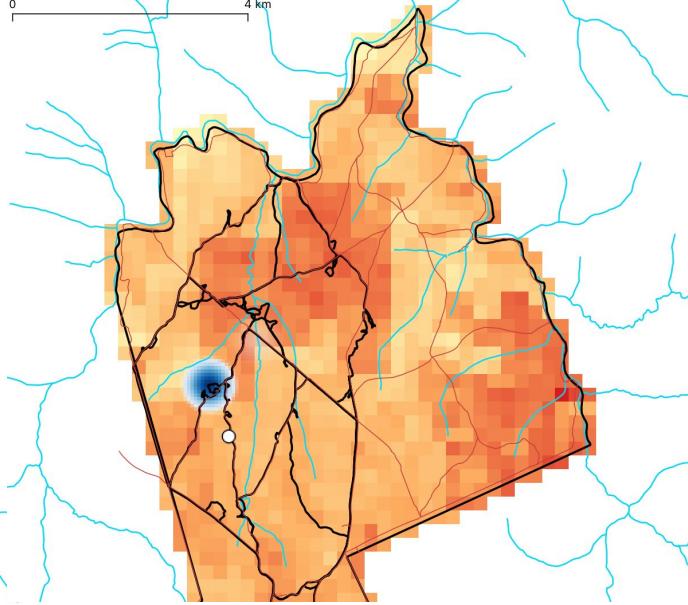
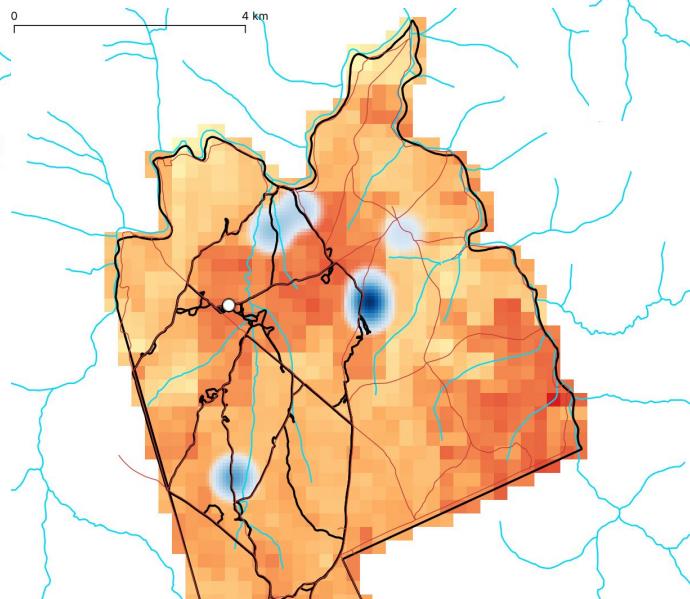
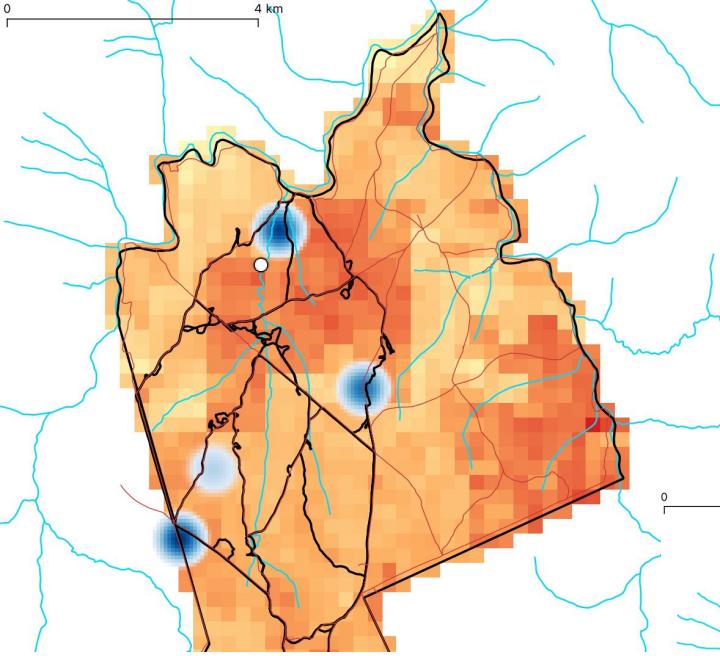
M21_078 Home Range

- Bachelor male
- Seen throughout June
- Similar movement to a female rather than a territorial male

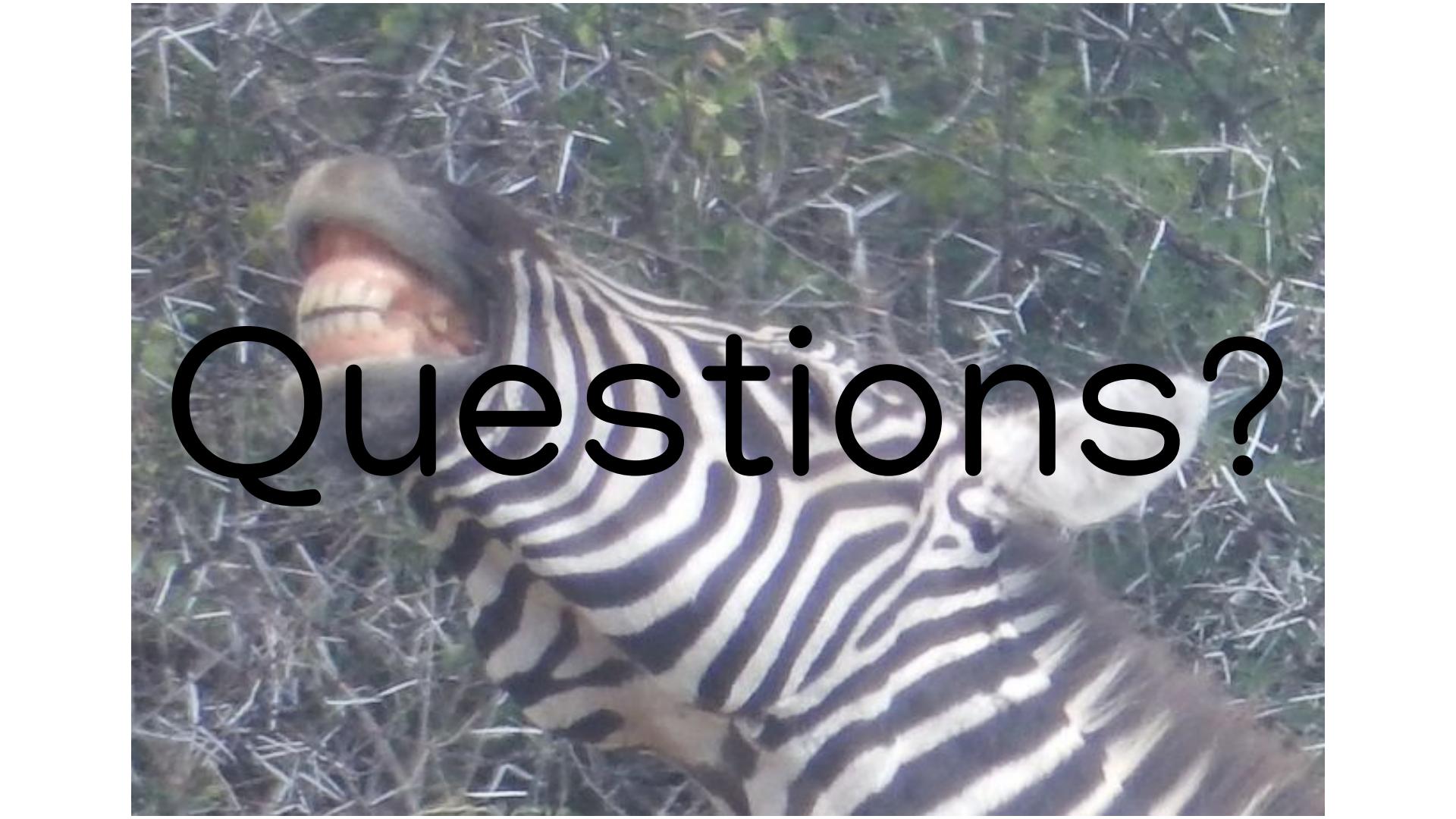


M21_078 Movement





A massive thank you to Prof. Rubenstein,
everyone at Mpala doing research, and all of
our teachers and guest lecturers!

A close-up photograph of a zebra's head and neck. The zebra has a light brown mane and a white blaze on its forehead. Its stripes are dark brown or black. It is standing in a field of tall, dry, brown grass. The background is slightly blurred.

Questions?