Feral pig activity across Australia for integration into disease spread models

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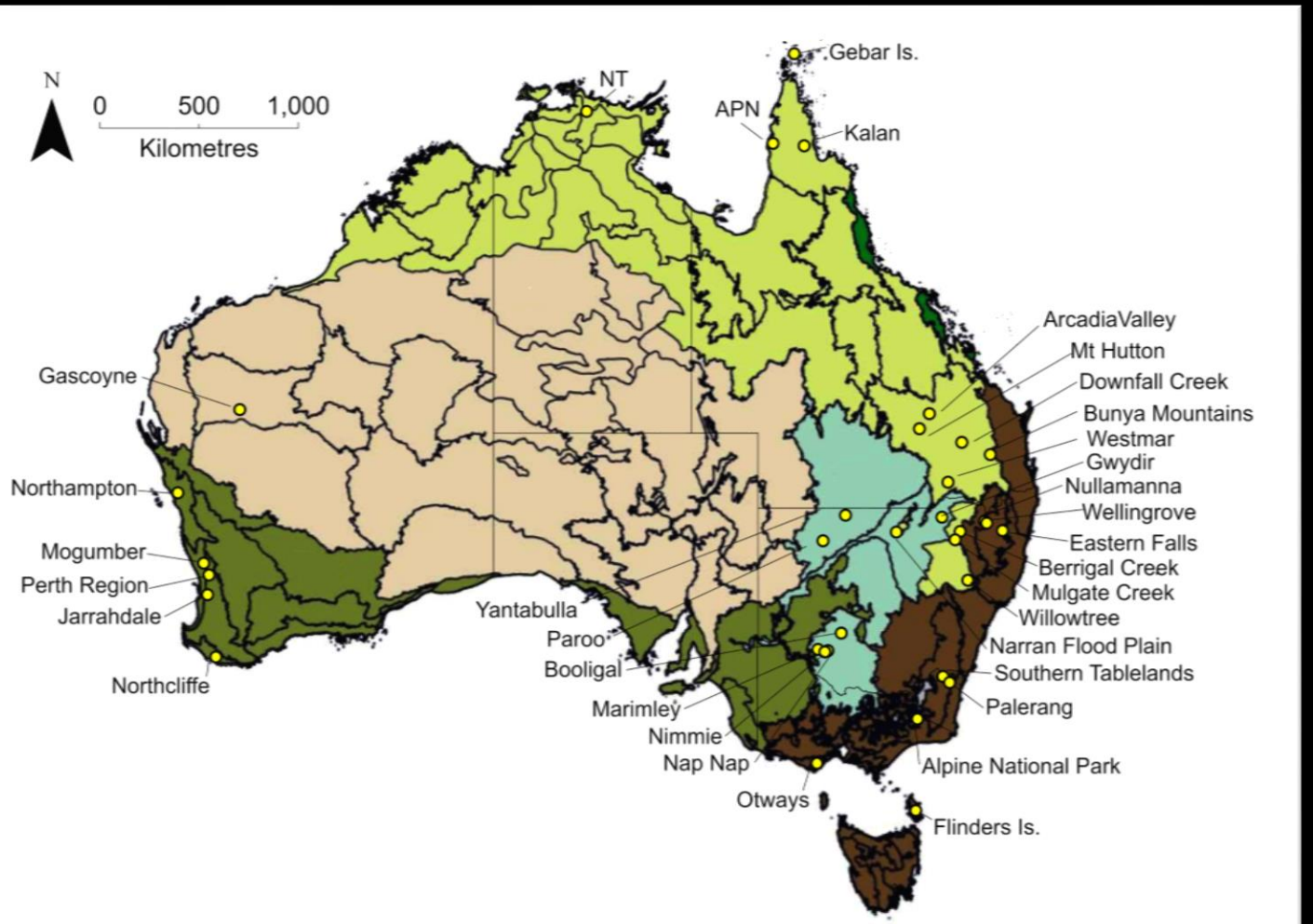
The Plan

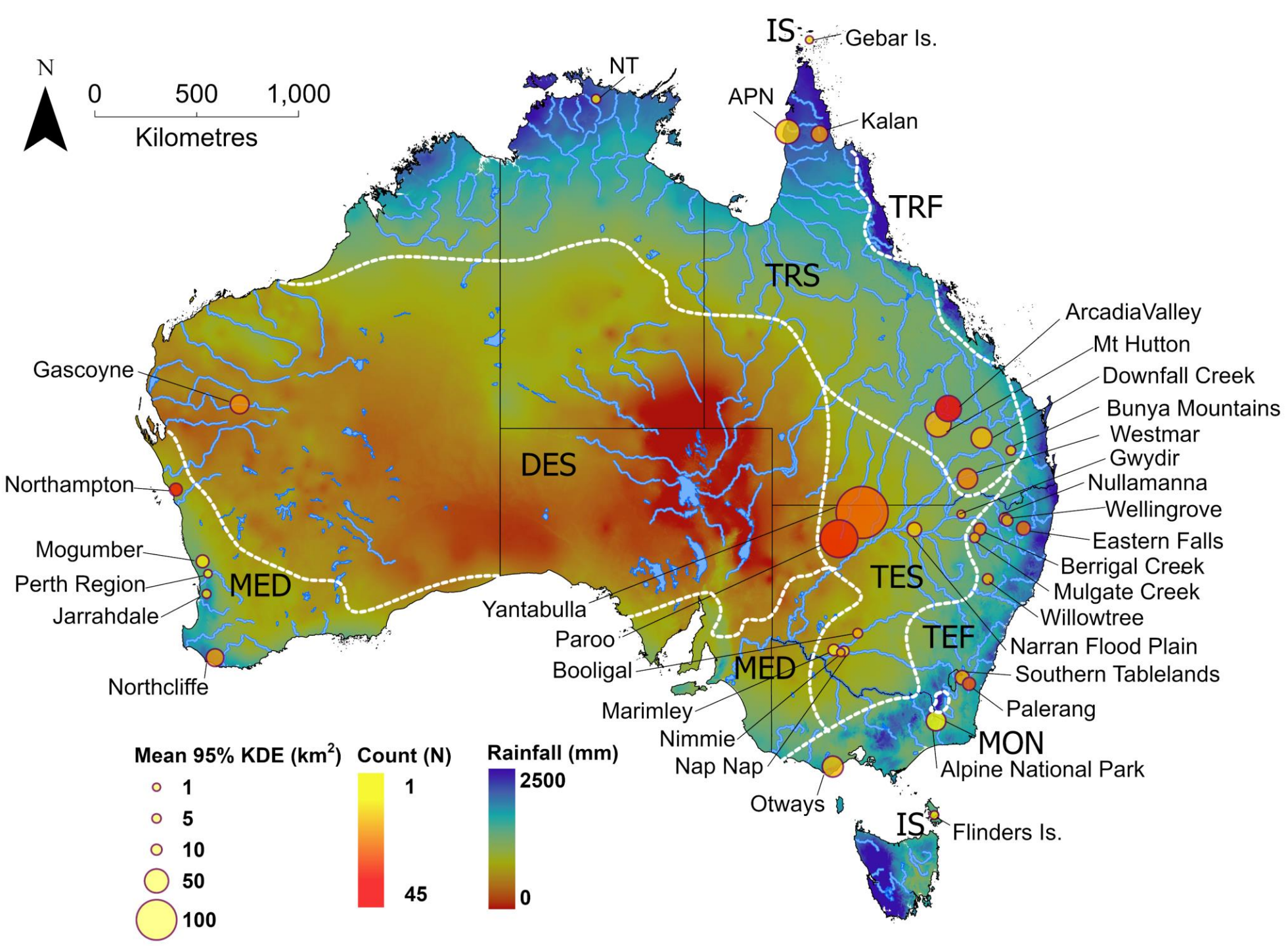
- Contact feral pig people (top left) from around Australia and ask for access to their feral pig GPS collar data
- Analyse that data in all the same way so that datasets could be compared
- Gain some insights into broader feral pig movement, and see what else we can learn from the data
- Talk to disease spread people (bottom right), how that can be more generally applied in disease spread simulations

The Sites


N
0
500
1,000
Kilometres
NT
Gebar Is.
APN
Kalan
ArcadiaValley
Mt Hutton
Downfall Creek
Bunya Mountains
Westmar
Gwydir
Nullamanna
Wellingrove
Eastern Falls
Berrigal Creek
Mulgate Creek
Willowtree
Narran Flood Plain
Southern Tablelands
Palerang
Alpine National Park
Flinders Is.
Otways
Nap Nap
Nimmie
Marimley
Booligal
Paroo
Yantabulla
Gascoyne
Northampton
Mogumber
Perth Region
Jarrahdale
Northcliffe

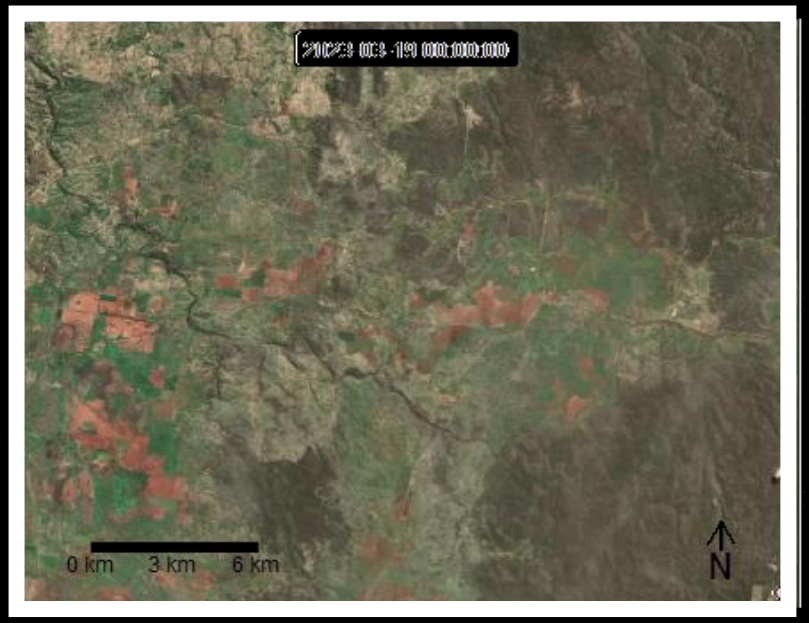
The Sites

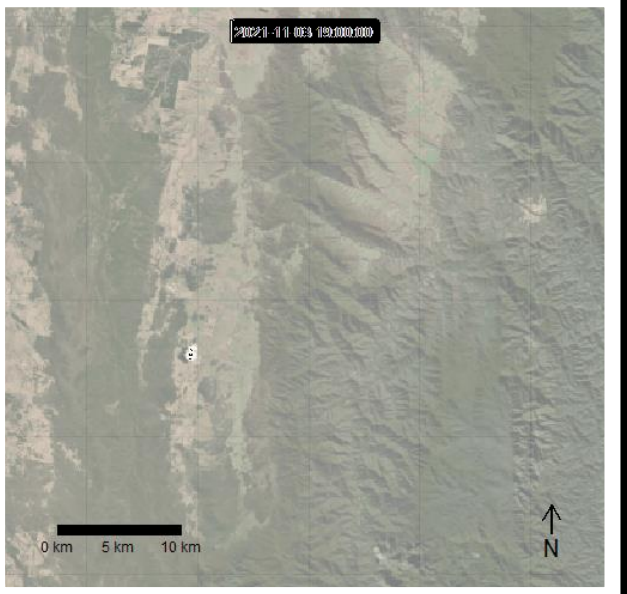
… again… but a bit different…



The Data


0 km 3.5 km 7 km
N


0 km 3 km 6 km
N

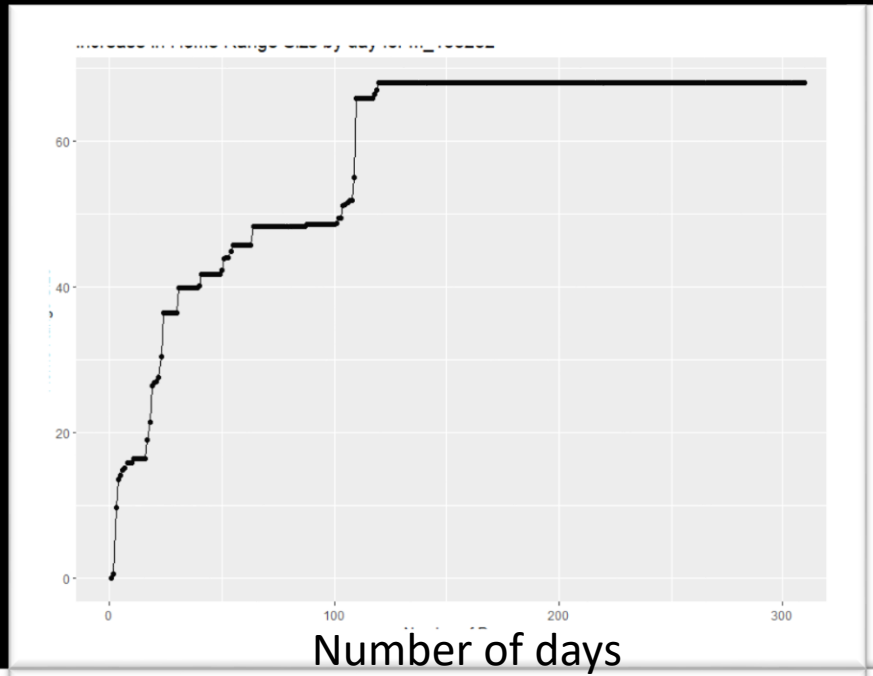

0 km 5 km 10 km
N

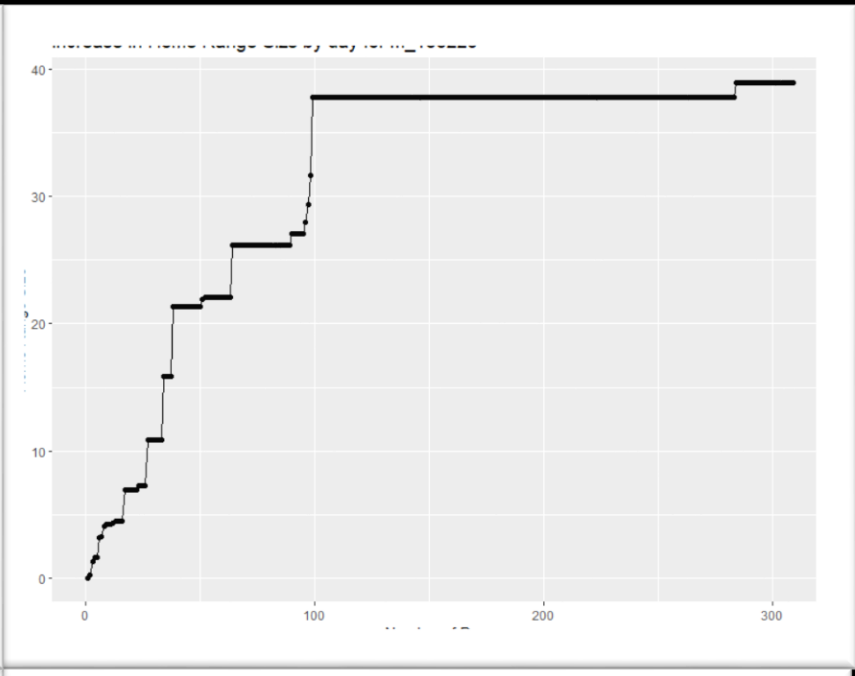

0 km 6 km 12 km
N


0 km 6 km 12 km
N

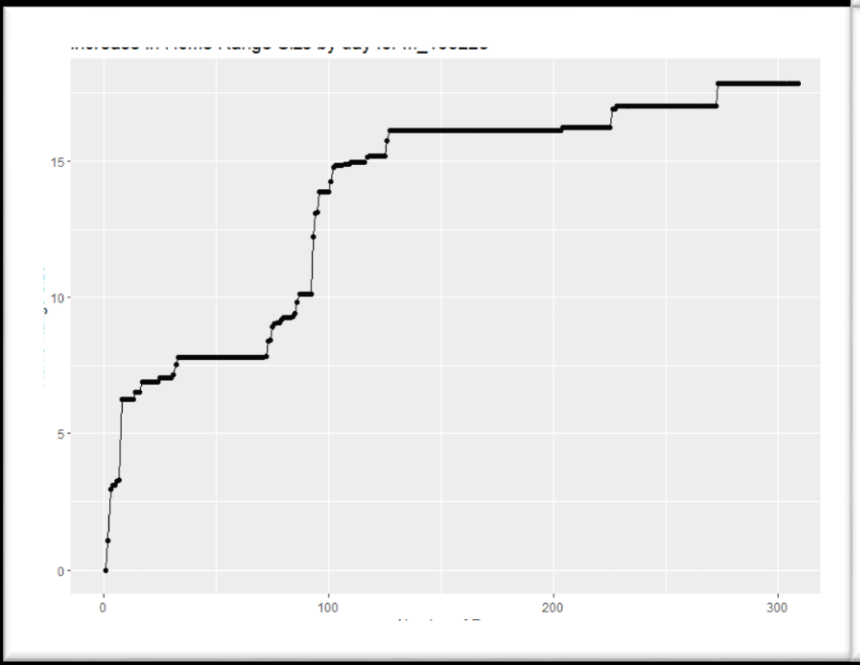
The Results

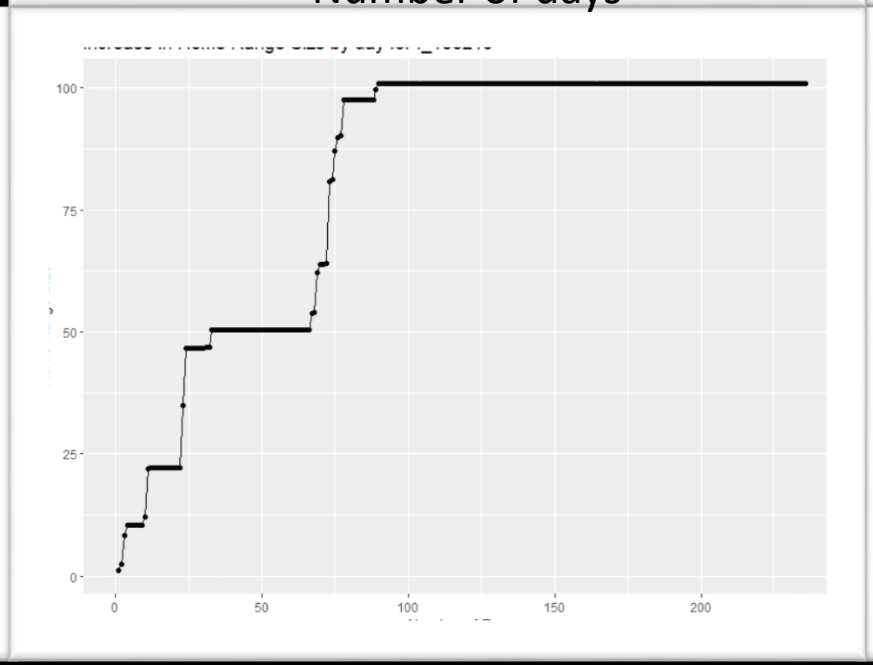
Size of Home Range

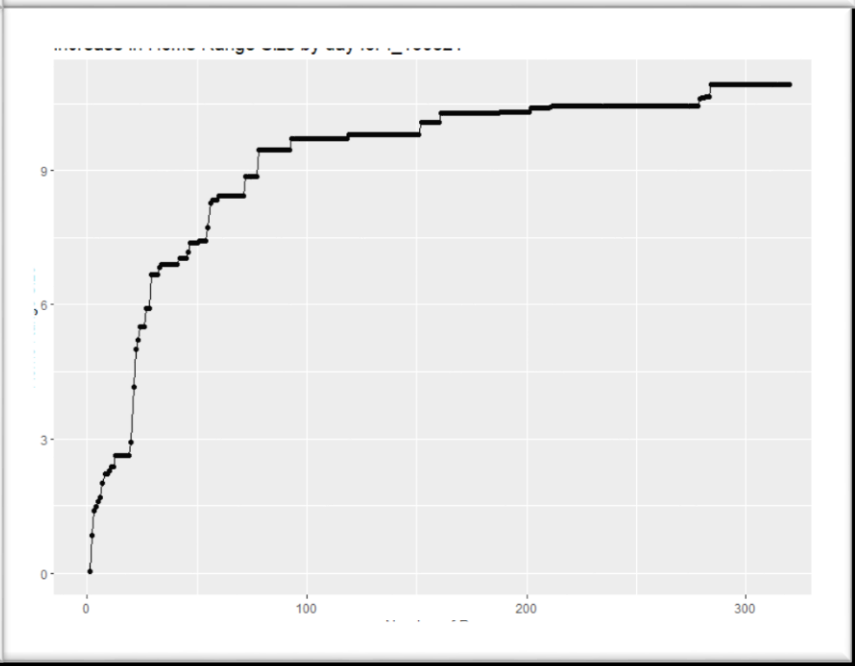


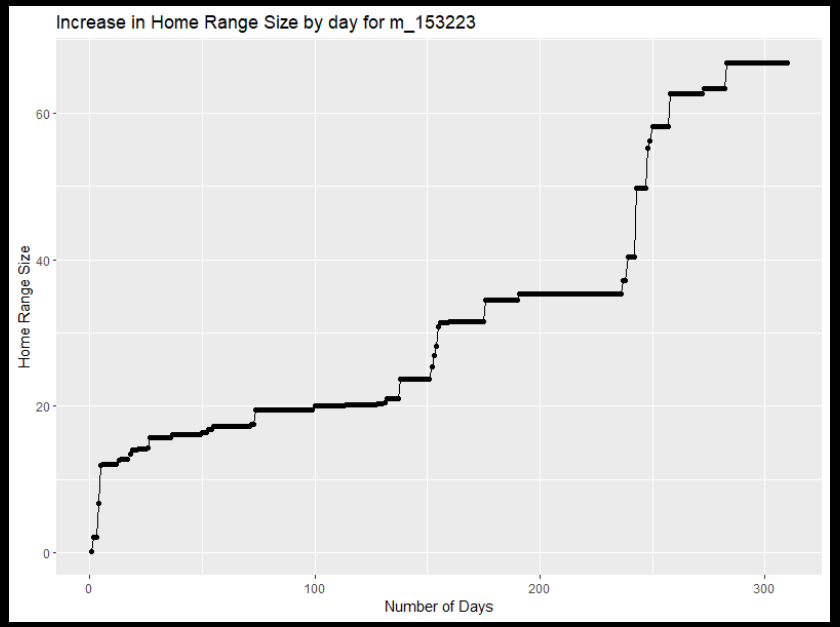


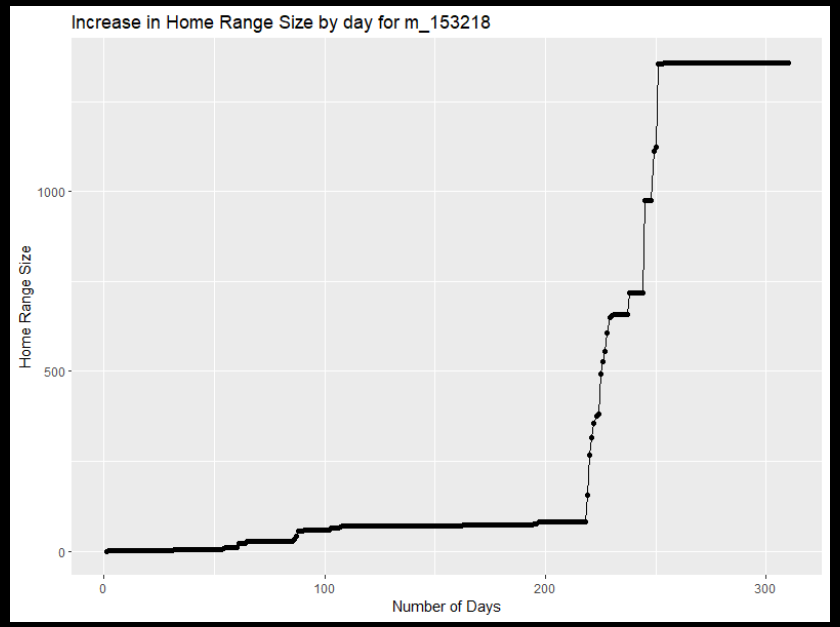
Number of days

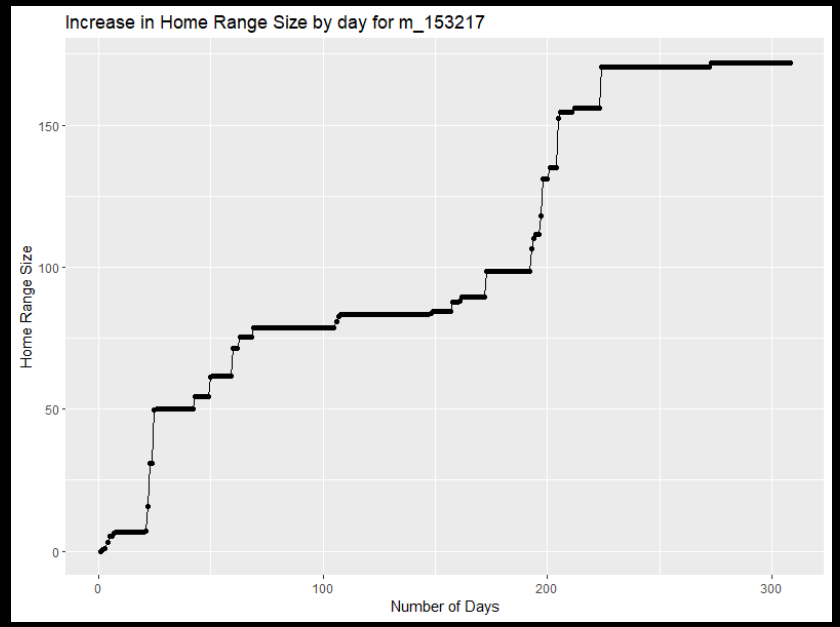


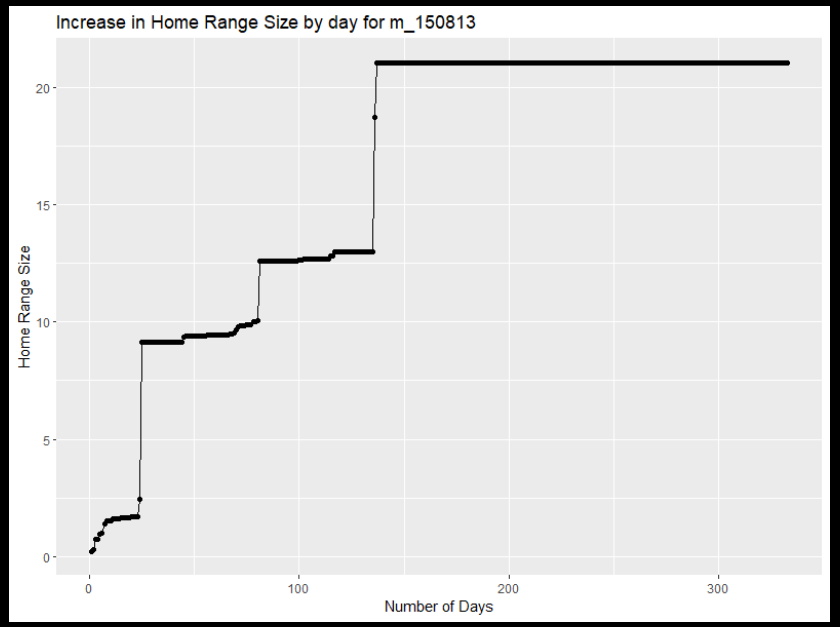


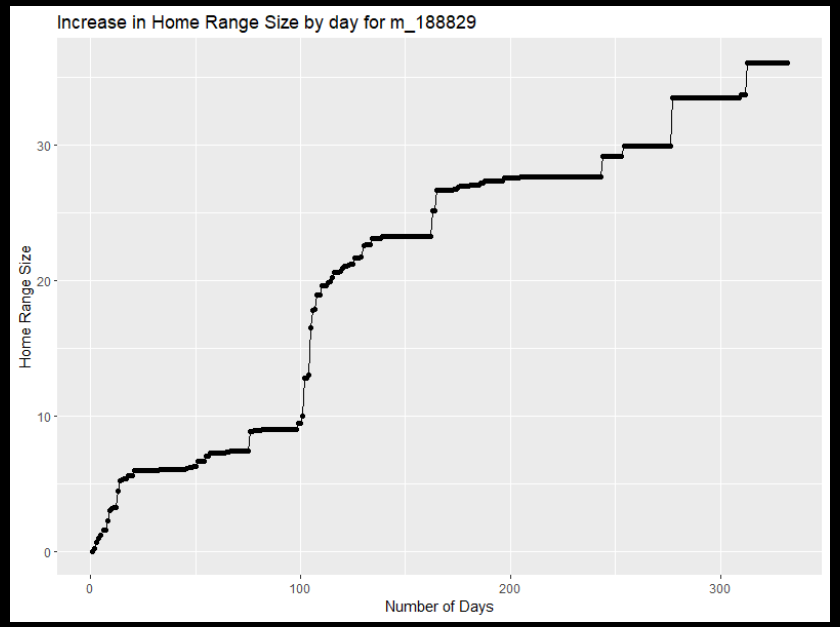


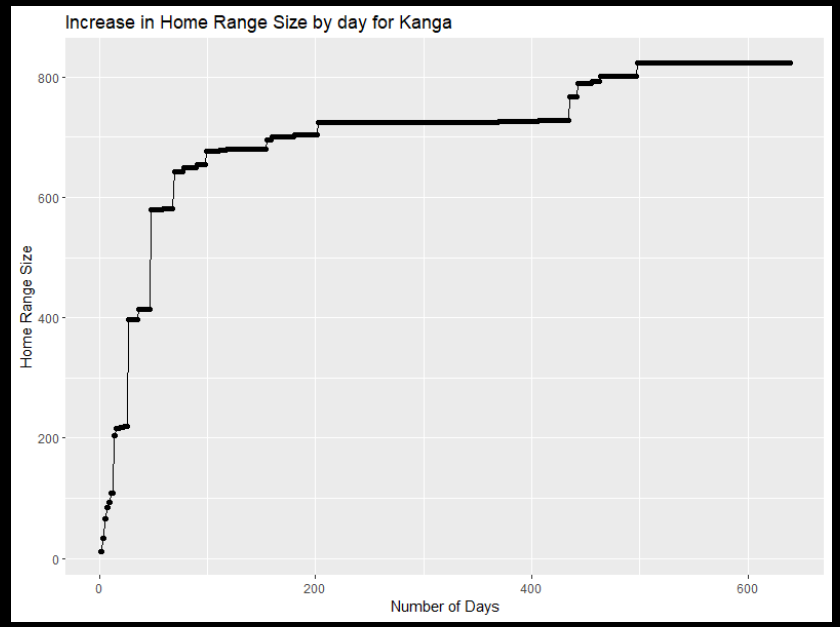

Increase in Home Range Size by day for m_153223
Home Range Size
Number of Days
0
20
40
60
0
100
200
300


Increase in Home Range Size by day for m_153218
Home Range Size
Number of Days
0
500
1000
0
100
200
300


Increase in Home Range Size by day for m_153217
Home Range Size
Number of Days
0
50
100
150
0
100
200
300

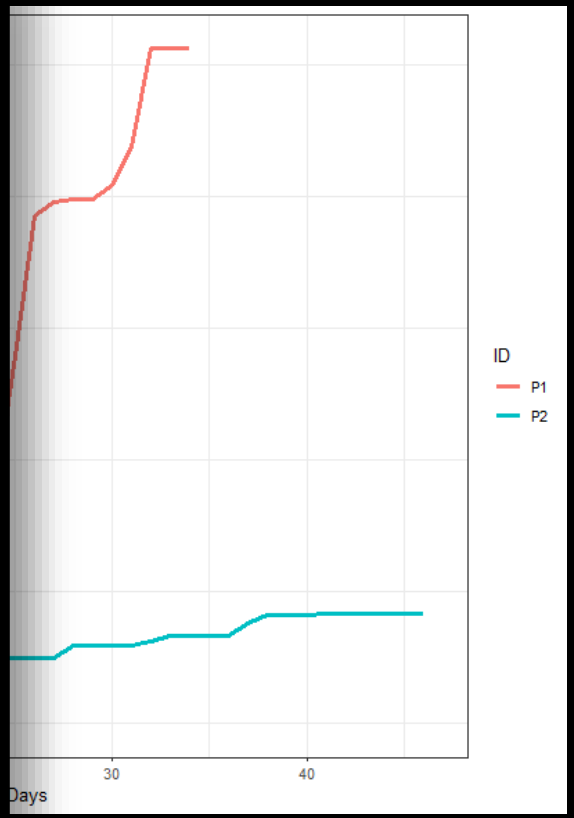

Increase in Home Range Size by day for m_150813
Home Range Size
Number of Days
0
5
10
15
20
0
100
200
300


Increase in Home Range Size by day for m_188829
Home Range Size
Number of Days
0
10
20
30
0
100
200
300


Increase in Home Range Size by day for Kanga
Home Range Size
Number of Days
0
200
400
600
800
0
200
400
600

The Extremes

g one -



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RESEARCH NOTE

Atypical Movement Behaviour of a Translocated Feral Pig (*Sus scrofa*)

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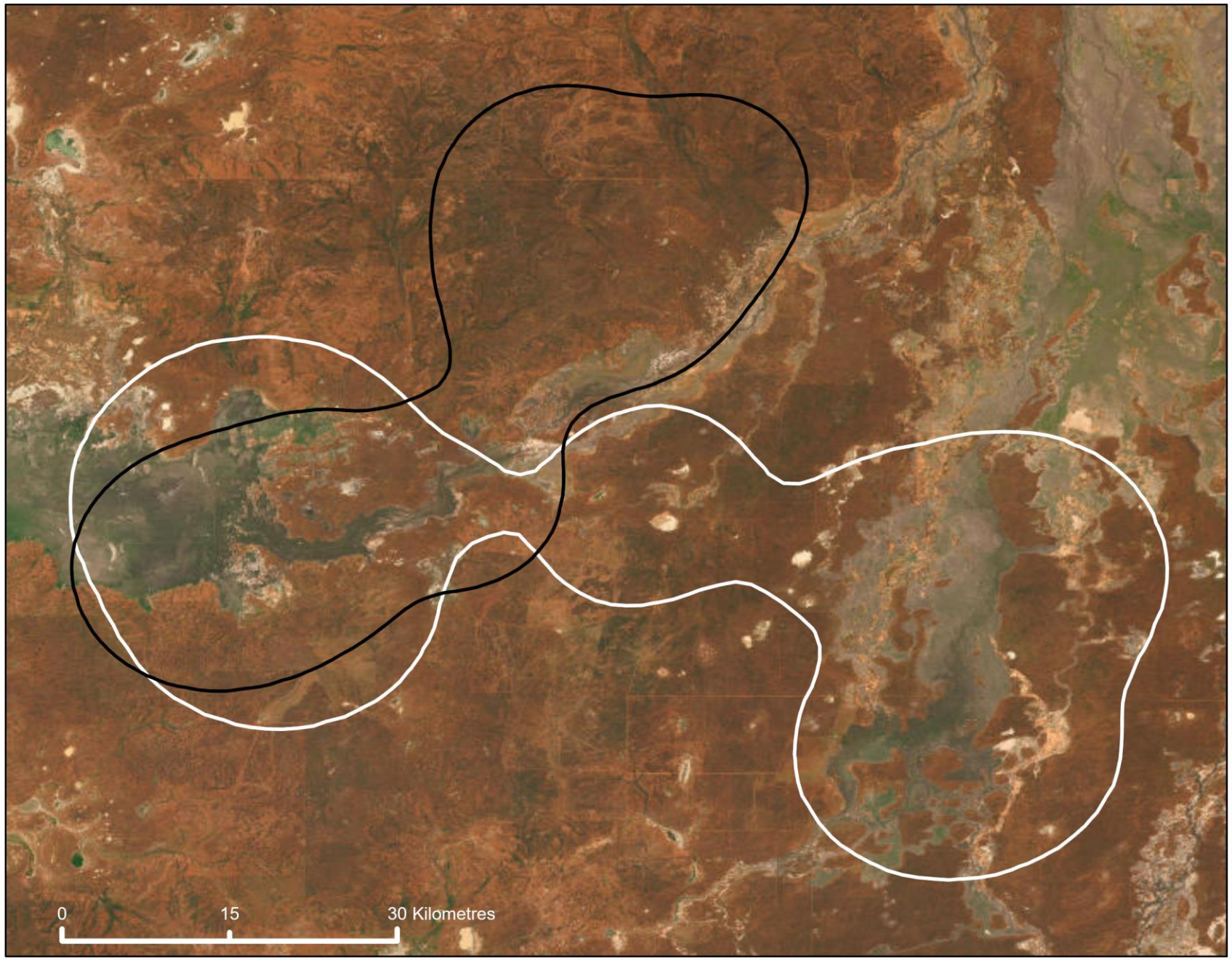
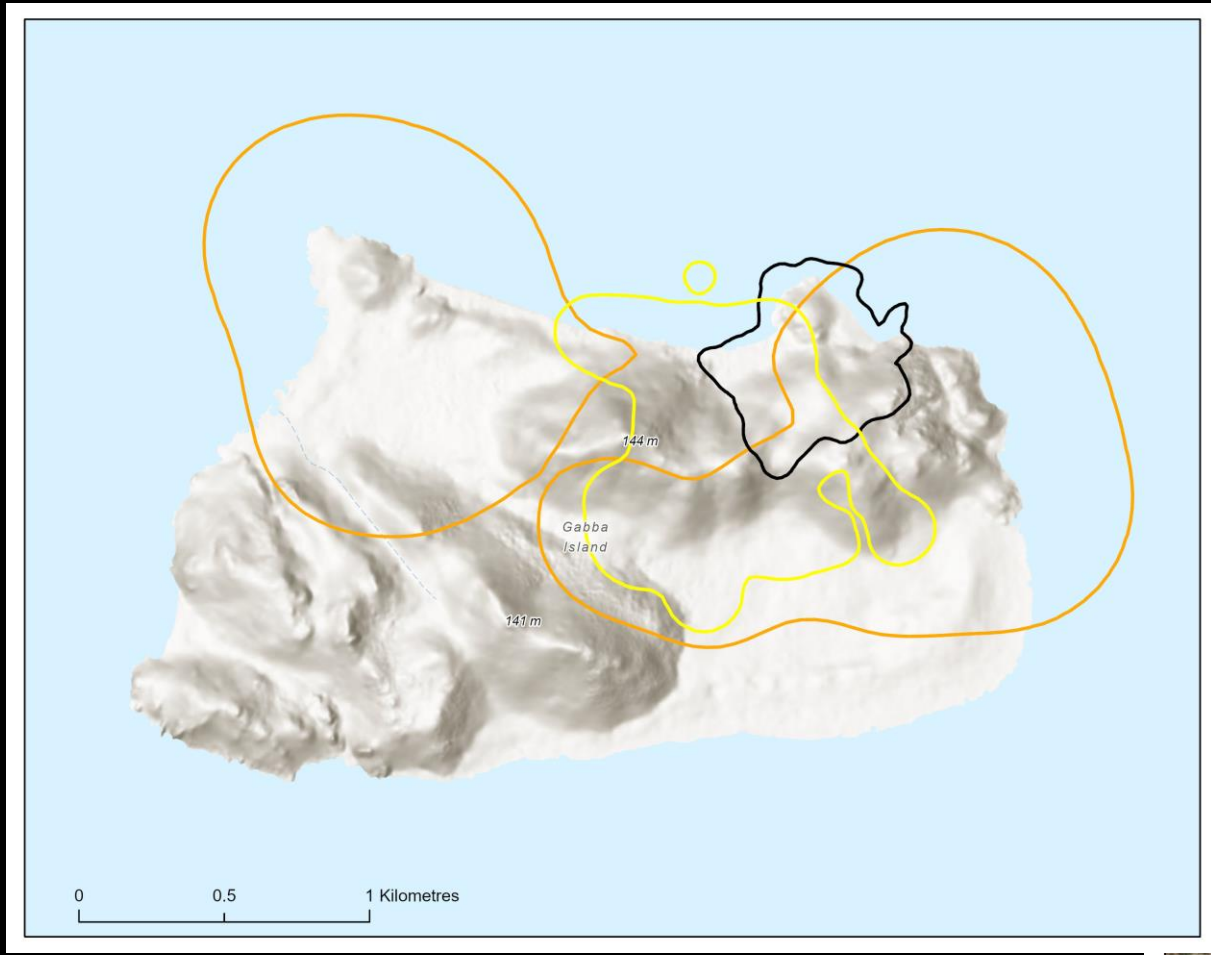
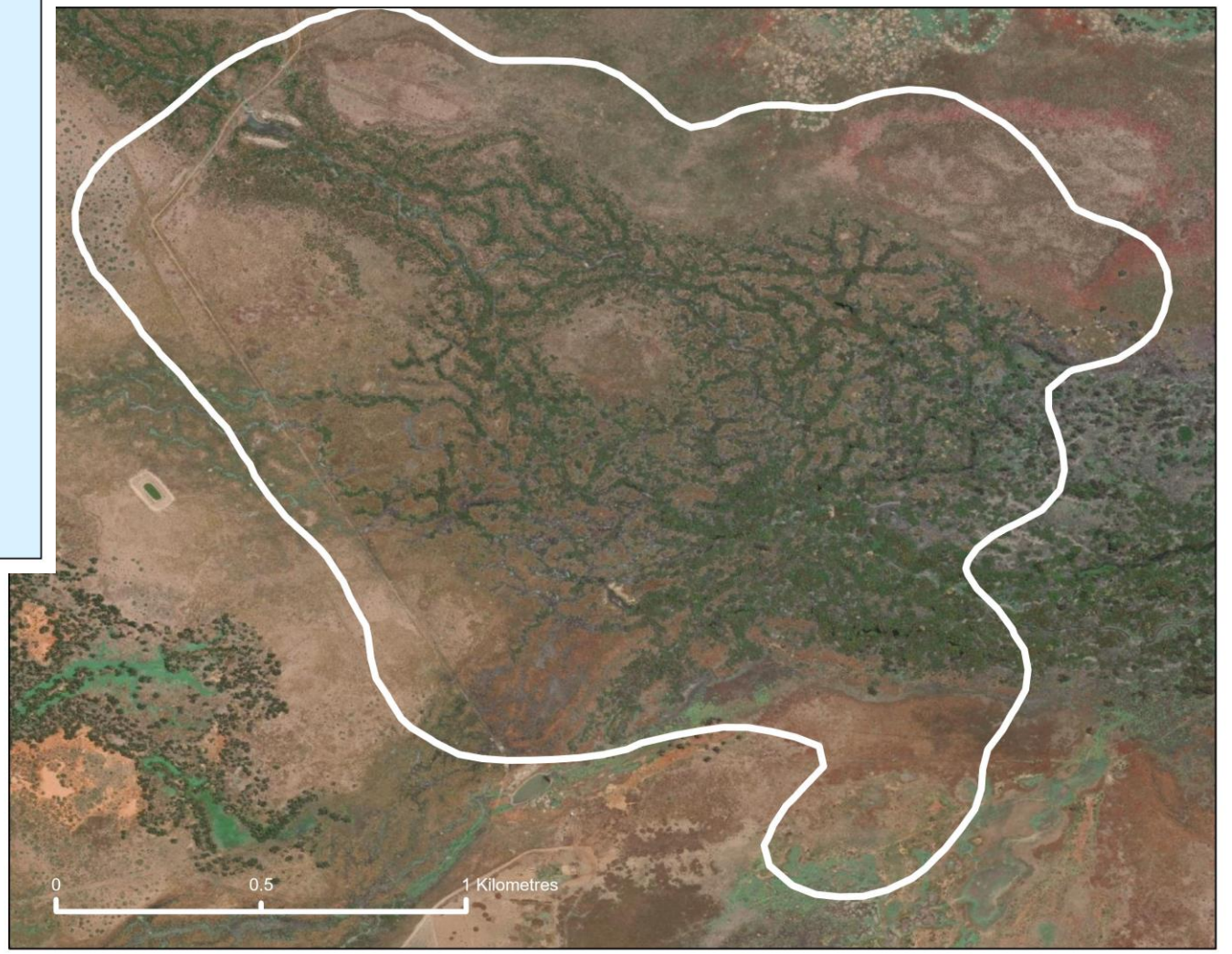


The Extremes

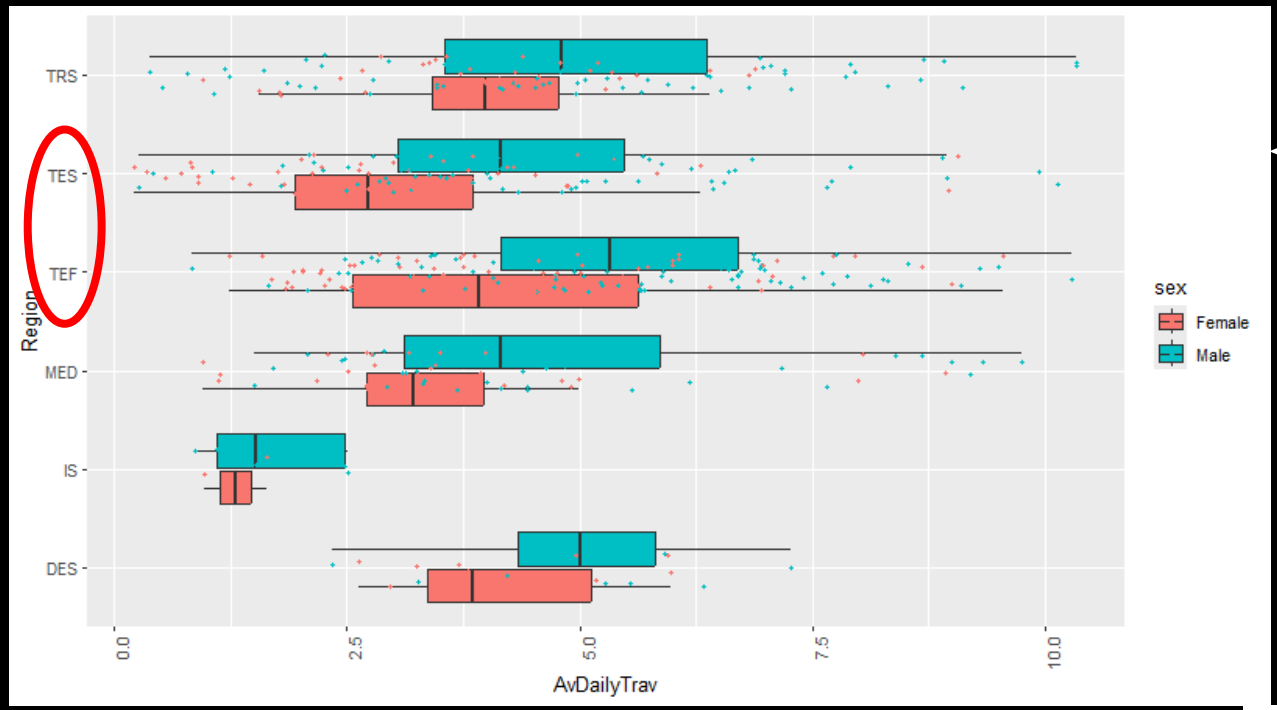
- a couple of other big ones -

The Extremes





- the lil ones -

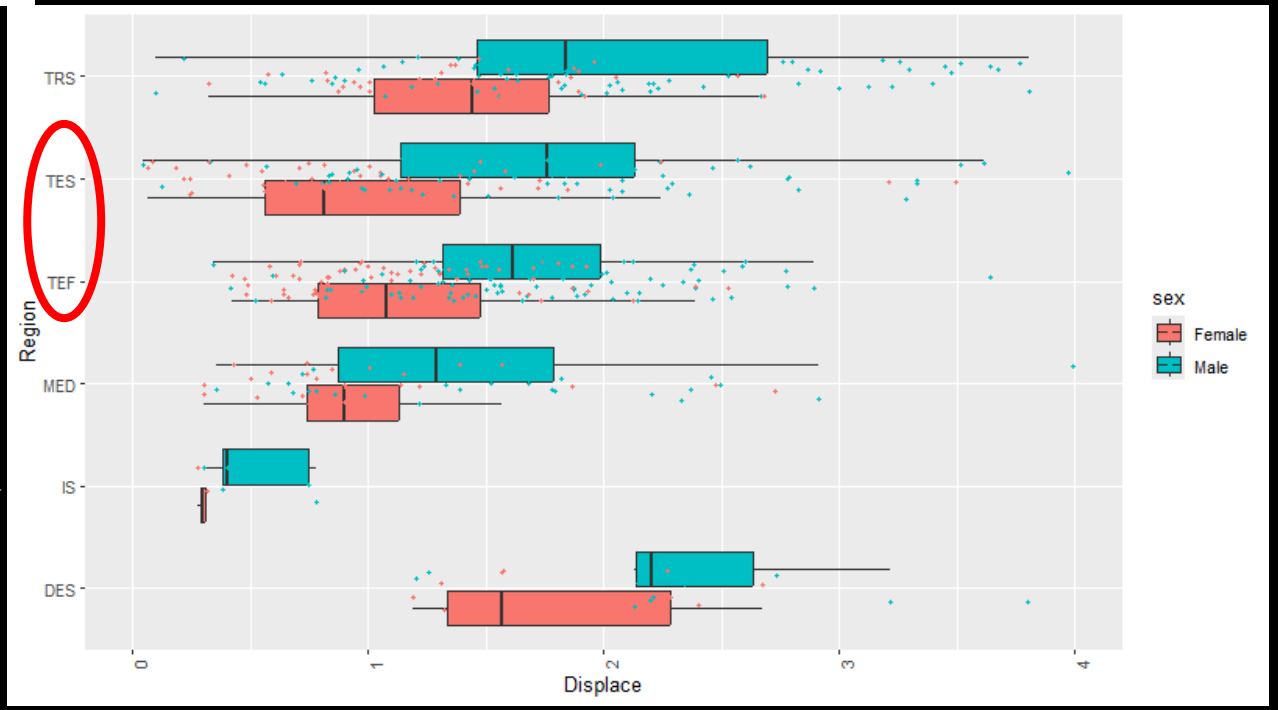


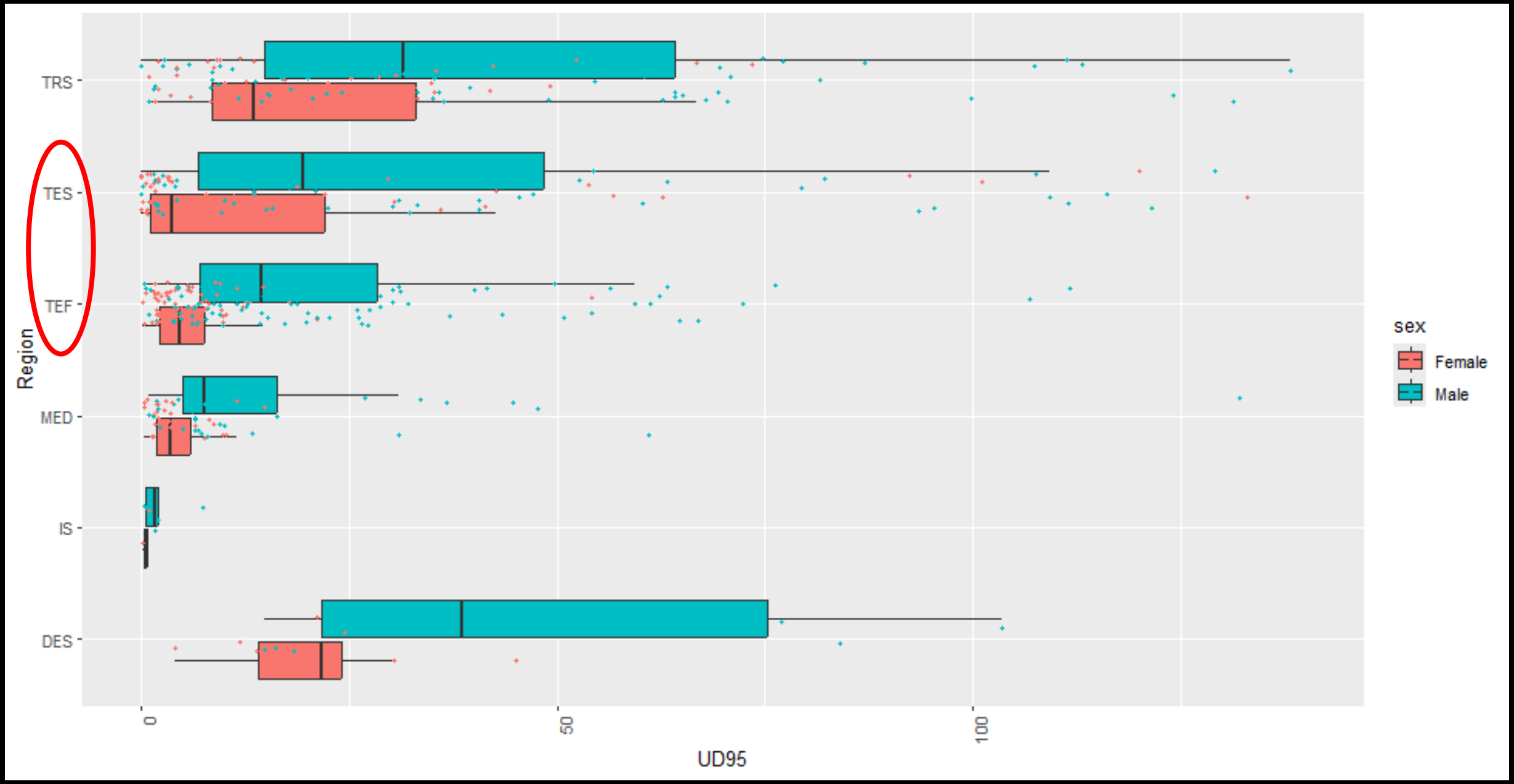
Average Daily Travel

- Measured point to point each day
- Average of all days, for each pig

Average Daily Displacement

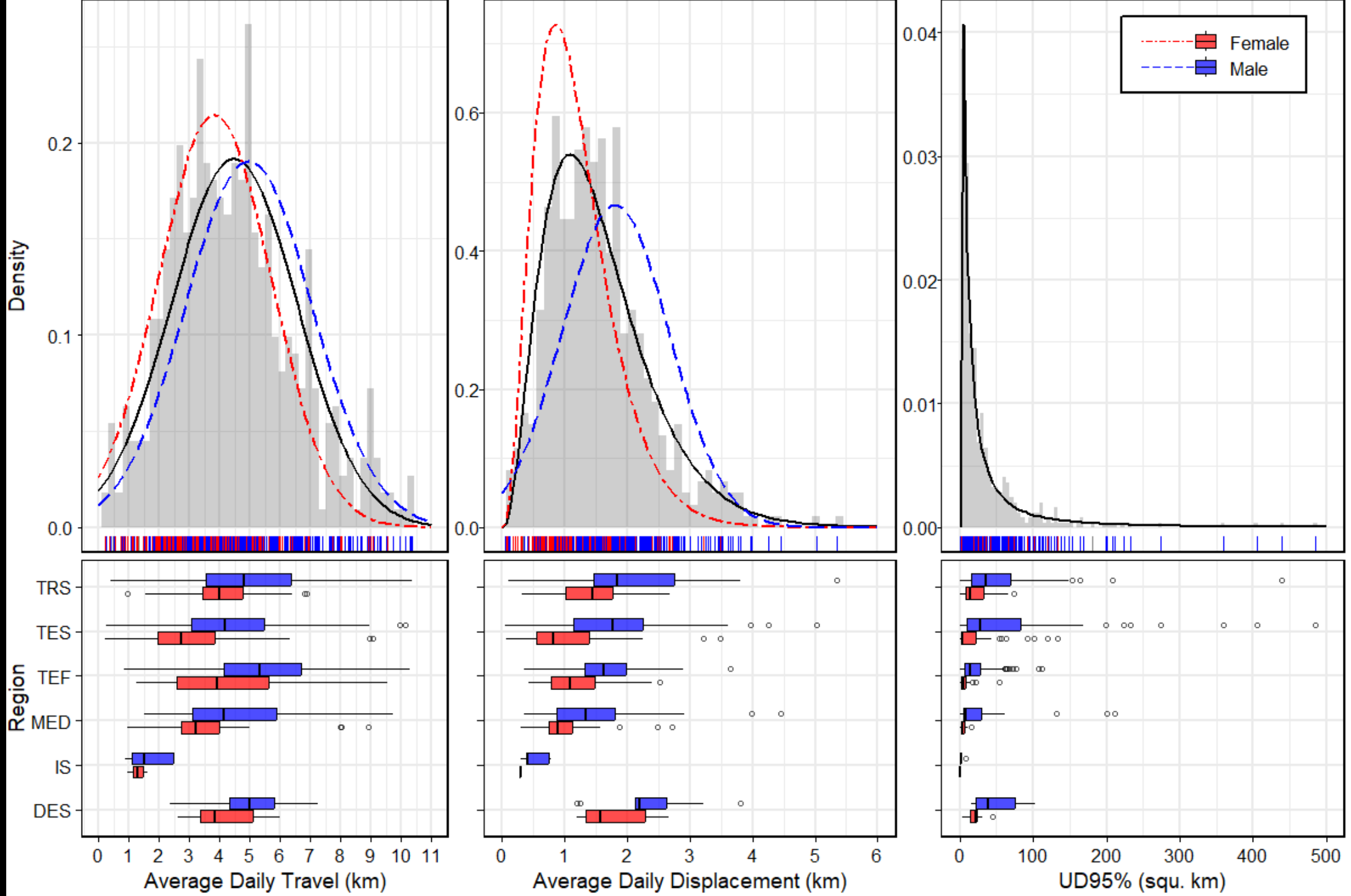
- Measured furthest 2 points apart each day
- Average of all days, for each pig

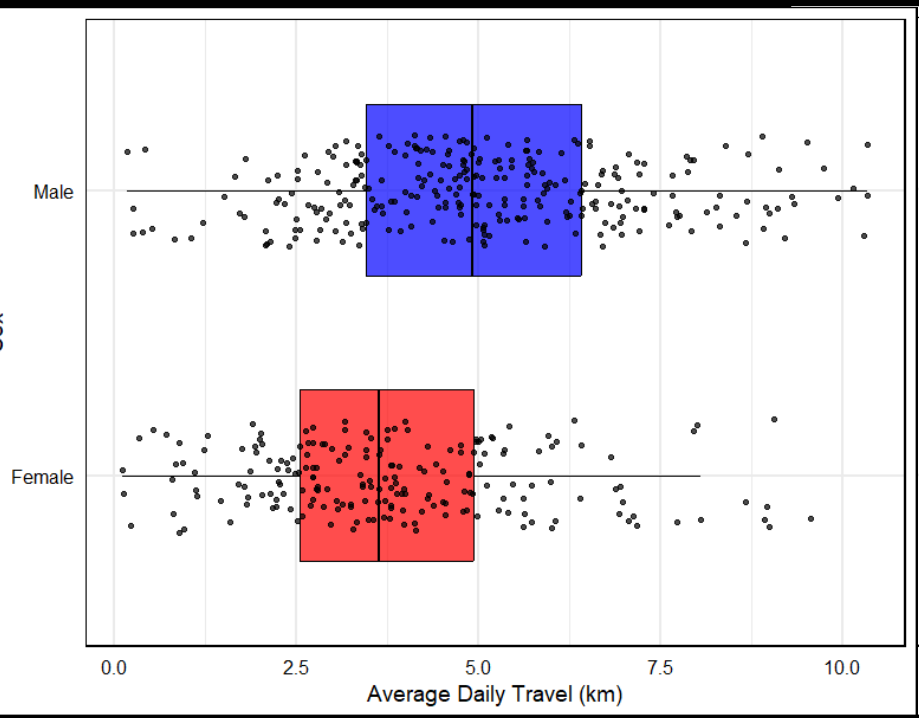


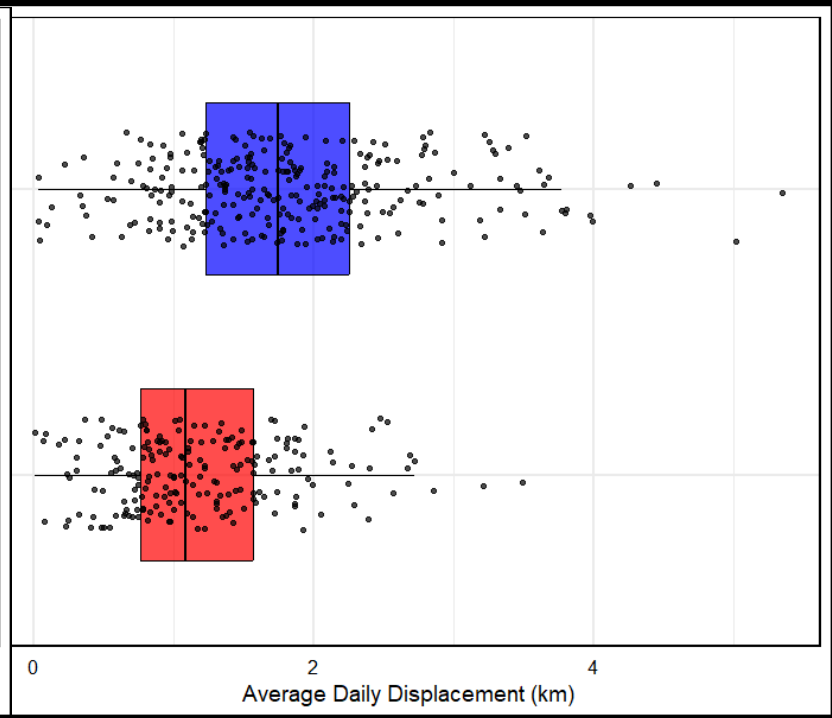


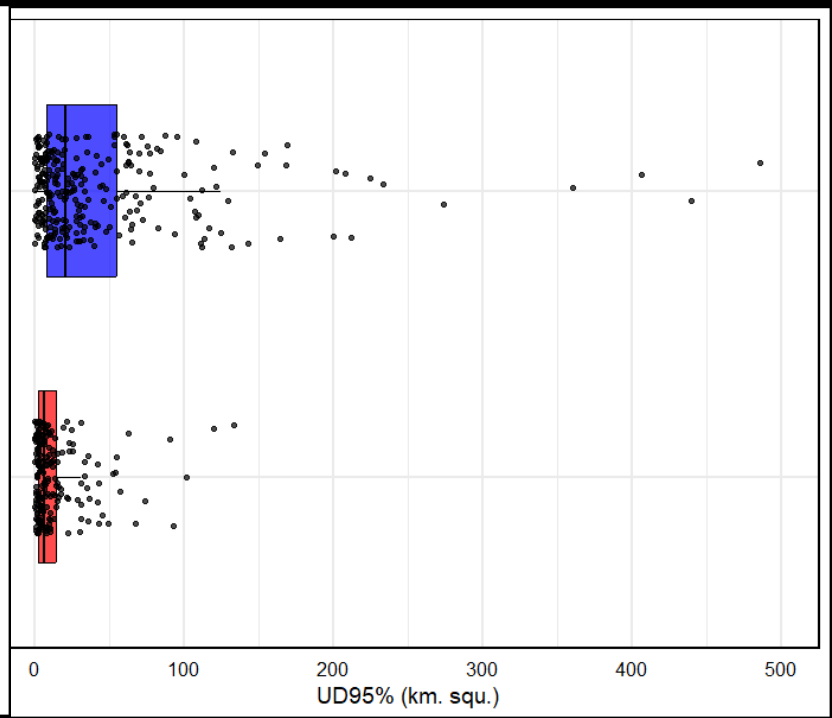
95% Kernel Density Activity Areas – basically, the 95% of points produces the smallest area

The Curves


Female
Male
Density
0.0
0.1
0.2
0.2
0.4
0.6
0.00
0.01
0.02
0.03
0.04
Region
TRS
TES
TEF
MED
IS
DES
0 1 2 3 4 5 6 7 8 9 10 11
Average Daily Travel (km)
0 1 2 3 4 5 6
Average Daily Displacement (km)
0 100 200 300 400 500
UD95% (squ. km)







	Avg. of UD50% (km²)	Avg. of UD95% (km²)	Avg. of UD99% (km²)	Avg. of Displacement (km)	Average of Travel (km)
Female	2.46	13.25	20.39	1.18	3.79
Male	10.39	54.64	83.12	1.82	5.01
Ratio	4.23	4.12	4.08	1.54	1.32
Pop Avg.	**7.10**	**37.46**	**57.08**	**1.55**	**4.50**

The Next Steps

- Identify avenues of movement/barriers of movement that might influence disease spread
- Evaluate intraspecific contact rates
- Assess likely contact points and rates with livestock/other susceptible feral ungulates
- Understand habitat preference to advise effective control
- Use outcomes to inform more complex epidemiological models of disease spread
- Use movement distances to produce pig density estimates

Thanks

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