

Dingo removal does not cause trophic cascades in Australian rangeland ecosystems

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Acknowledgements

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Carter, Peter Elsworth, Malcolm Kennedy

Mesopredator release debate, Circa 2015

“No objective person can be familiar with the literature and then honestly claim that there exists strong evidence for dingo control-induced trophic cascades”

“There is demonstrable absence of evidence and evidence of absence for dingo control-induced mesopredator release”

...at least in open systems.

So what next...?

- Stronger-inference manipulative experiments
 - Large scale fenced areas (inside vs outside)
 - Eradicate dingoes inside
 - Monitor mesopredator and prey responses

scientific reports

OPEN **Terrestrial mesopredators did not increase after top-predator removal in a large-scale experimental test of mesopredator release theory**

Geoff Castle¹, Deane Smith^{1,2}, Lee R. Allen³ & Benjamin L. Allen^{1,4,5}

 Check for updates

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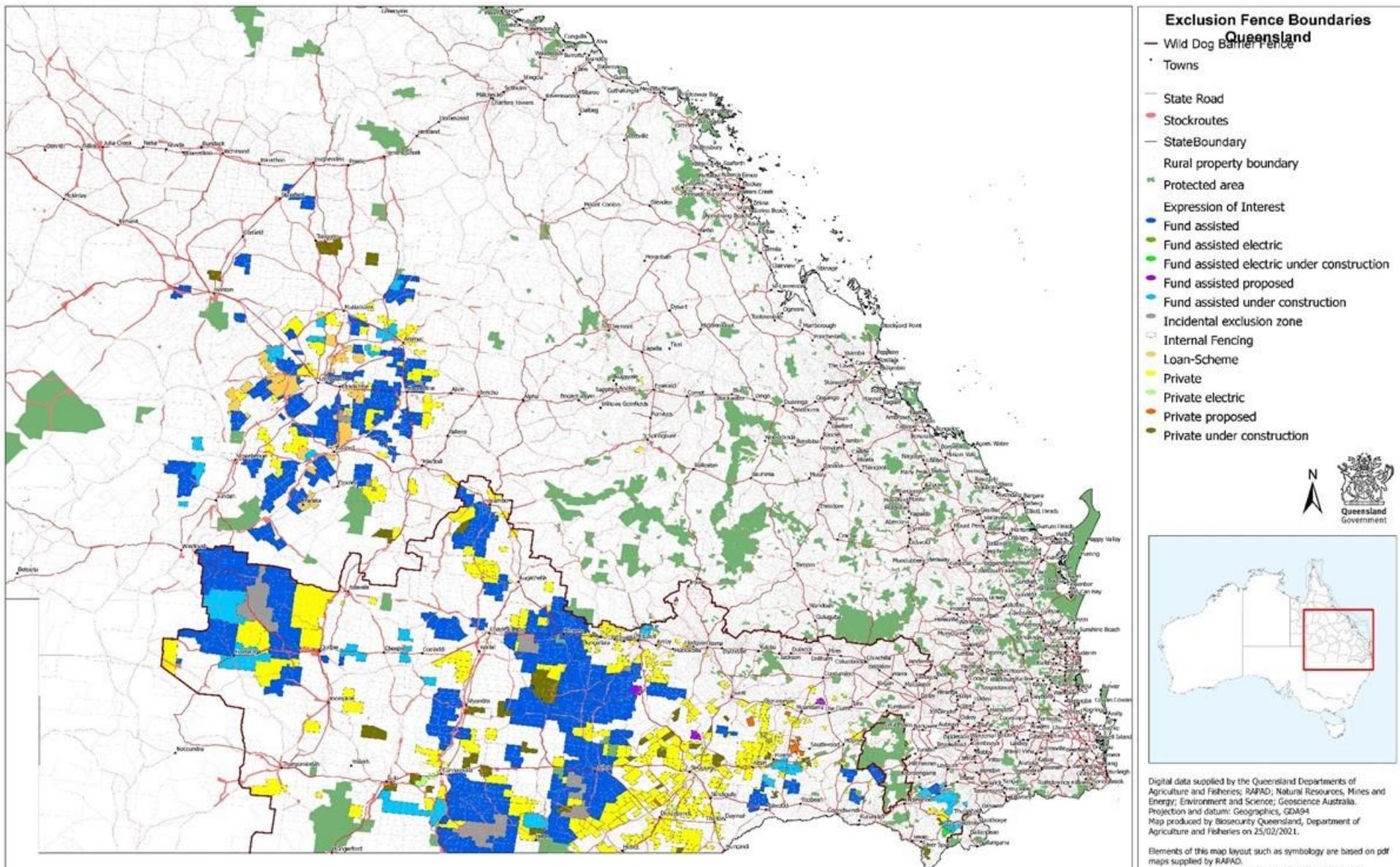
Top-predator removal does not cause trophic cascades in Australian rangeland ecosystems

Geoff Castle^a, Deane Smith^b, Lee R. Allen^c, John Carter^d, Peter Elsworth^c, Benjamin L. Allen^{a,e,*}

 Check for updates

- Castle, G., Smith, D., Allen, L.R., Allen, B.L. (2021). Terrestrial mesopredators did not increase after top-predator removal in a large-scale experimental test of mesopredator release theory. *Scientific Reports* 11, 18205.
- Castle, G., Smith, D., Allen, L.R., Carter, J., Elsworth, P., Allen, B.L. (2022). Top-predator removal does not cause trophic cascades in Australian rangeland ecosystems. *Food Webs* 31, e00229.

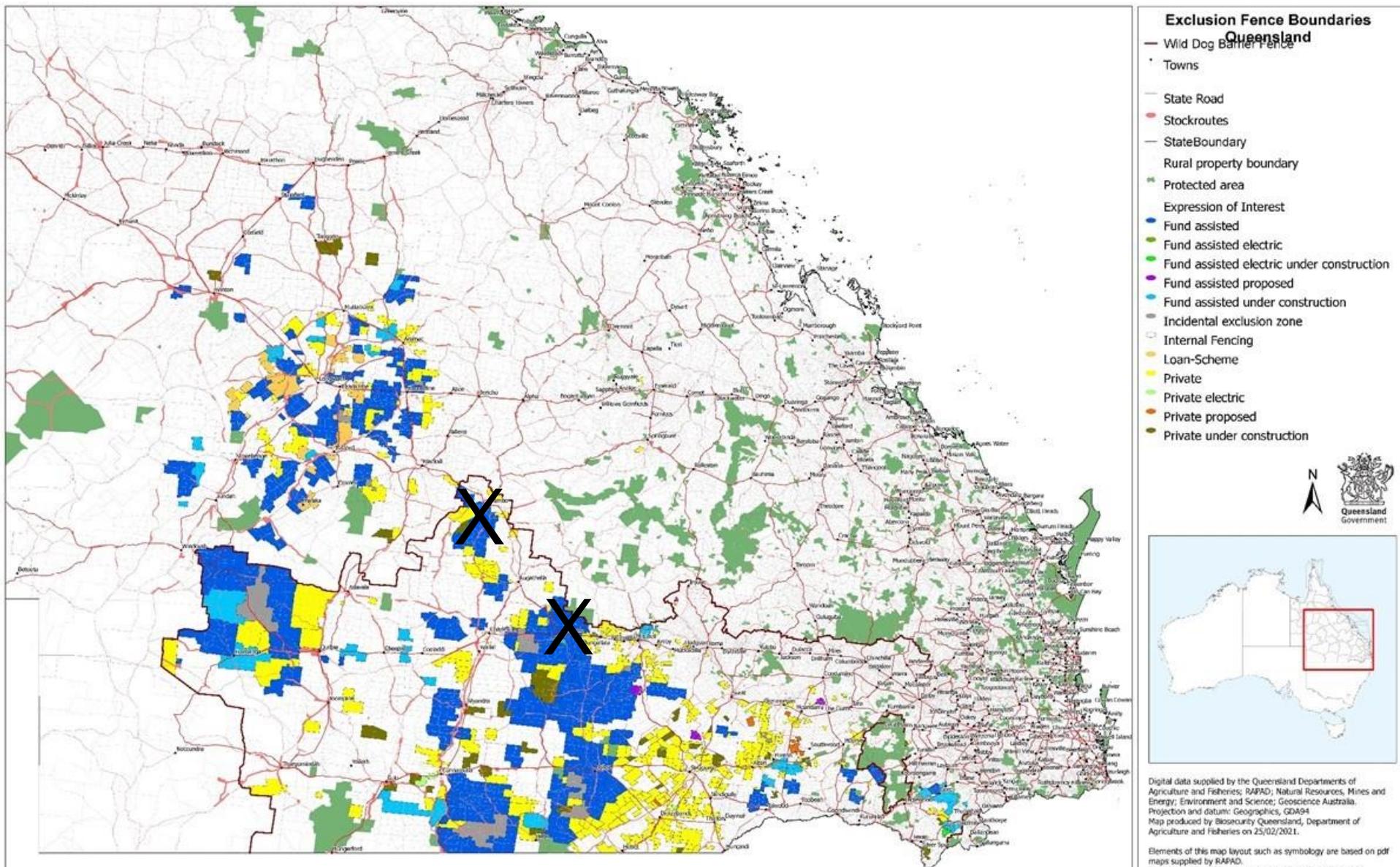
700+ fenced areas in <10 yrs, >150,000 km² protected, and >30,000 km of fencing



Digital data supplied by the Queensland Departments of Agriculture and Fisheries; RAPAD; Natural Resources, Mines and Energy; Environment and Science; Geoscience Australia. Projection and datum: Geographics, GDA94. Map produced by Geosourcery Queensland, Department of Agriculture and Fisheries on 23/02/2021.

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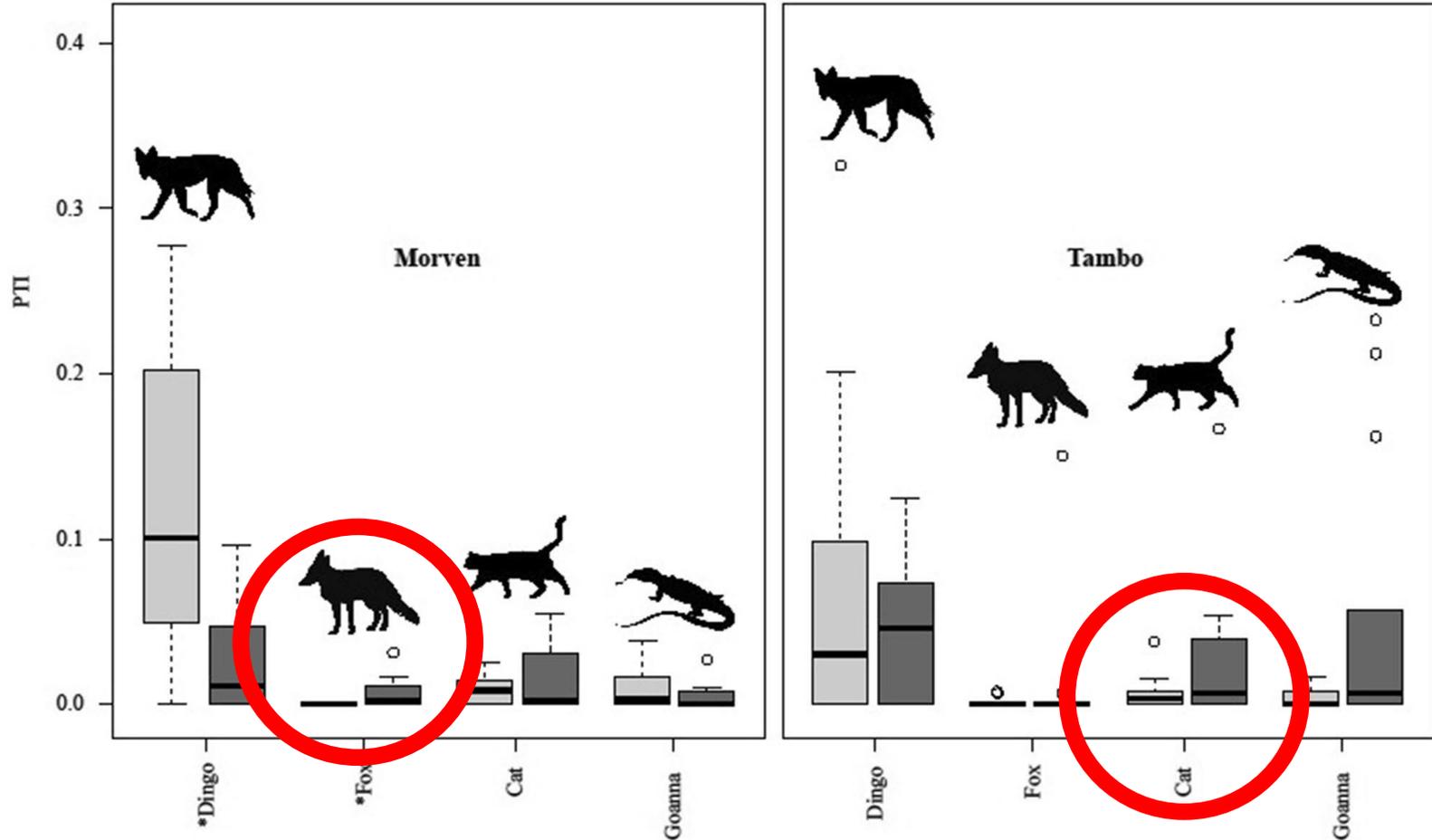
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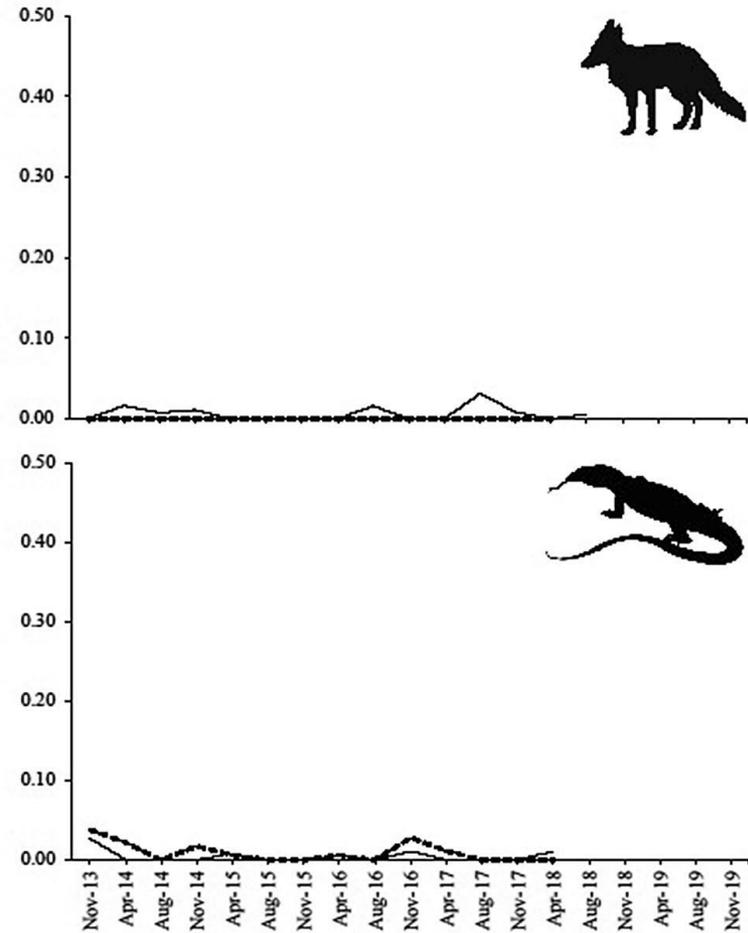
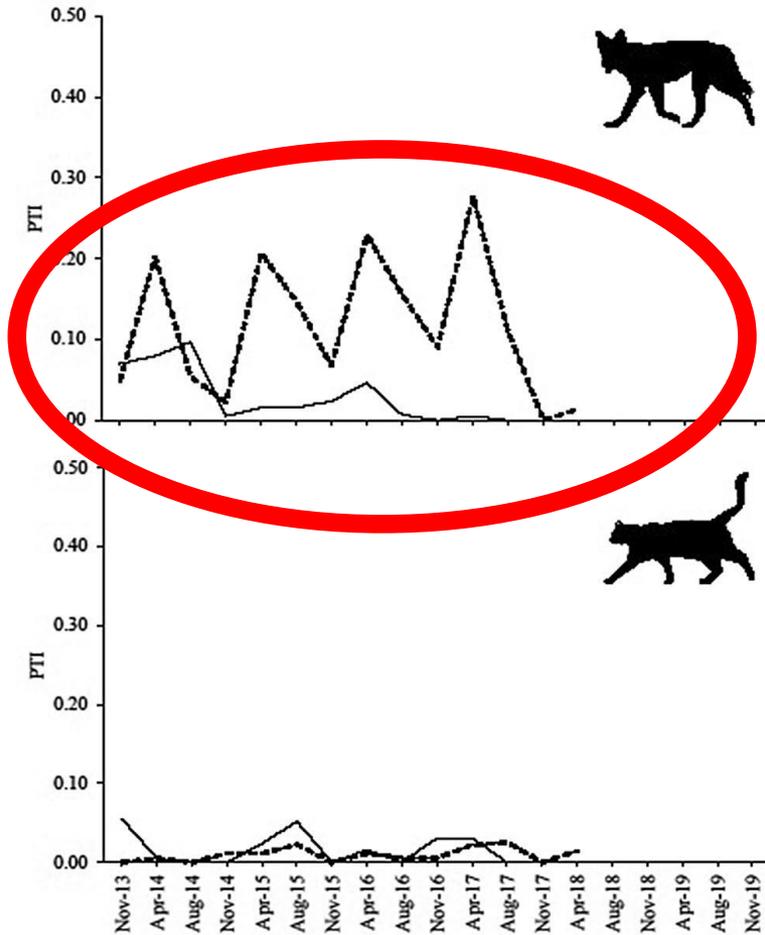
Overall mean PTI



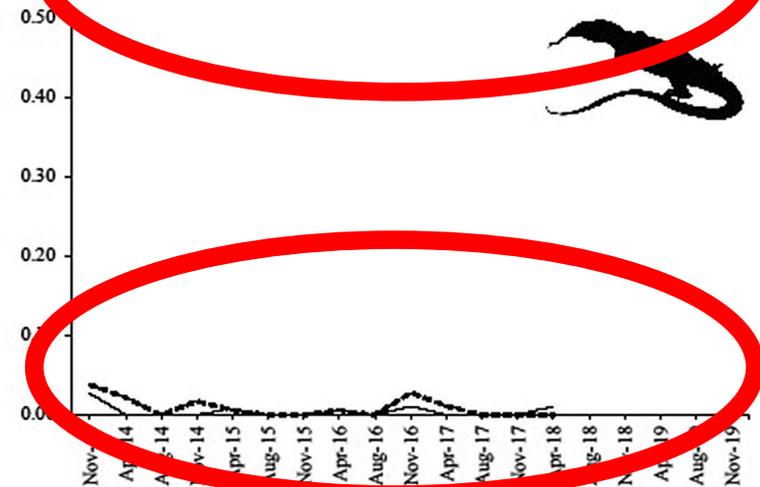
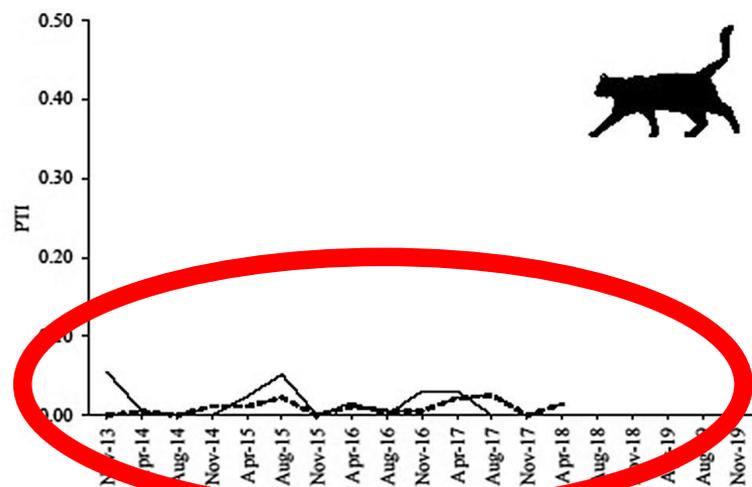
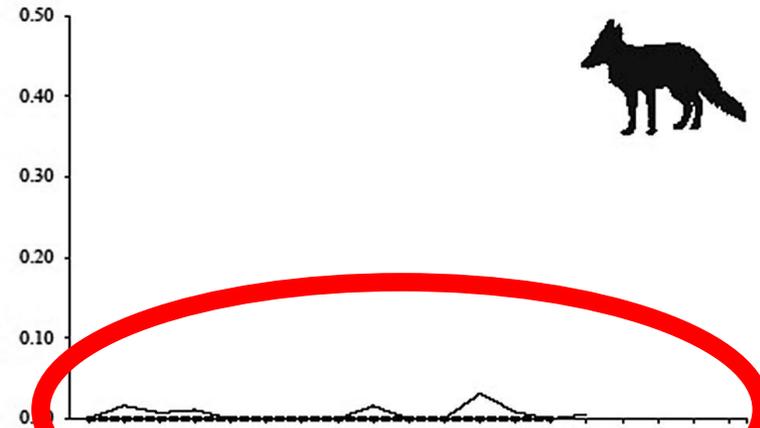
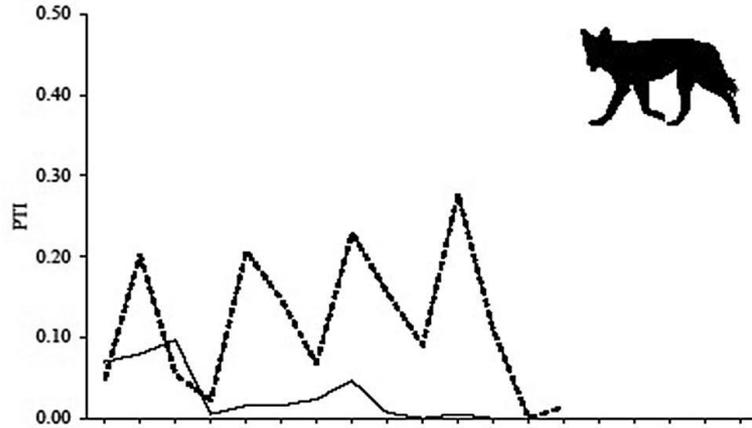
More than zero foxes (...duh)

Hold that thought...

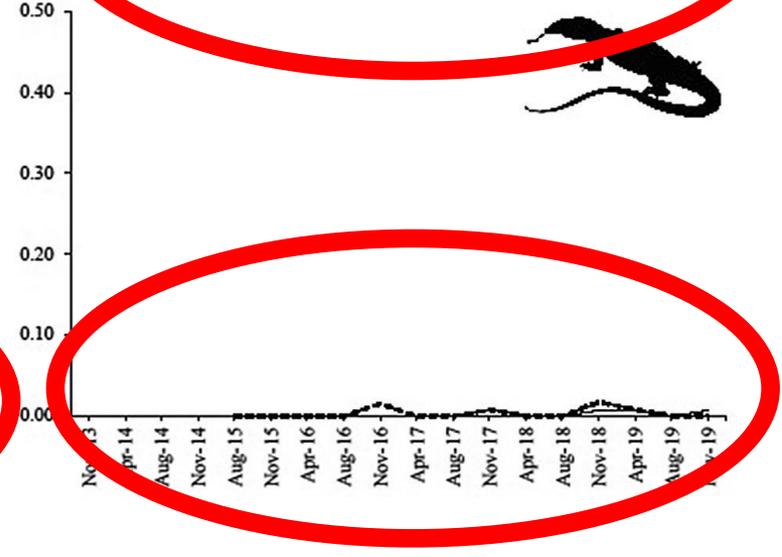
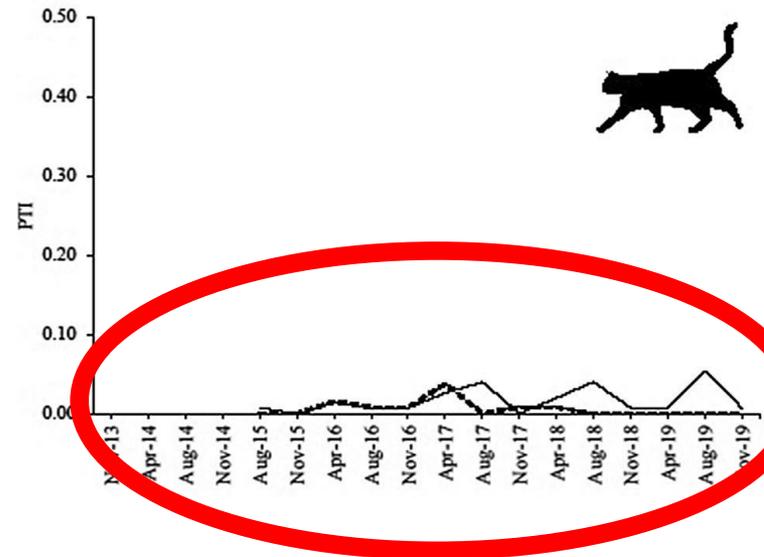
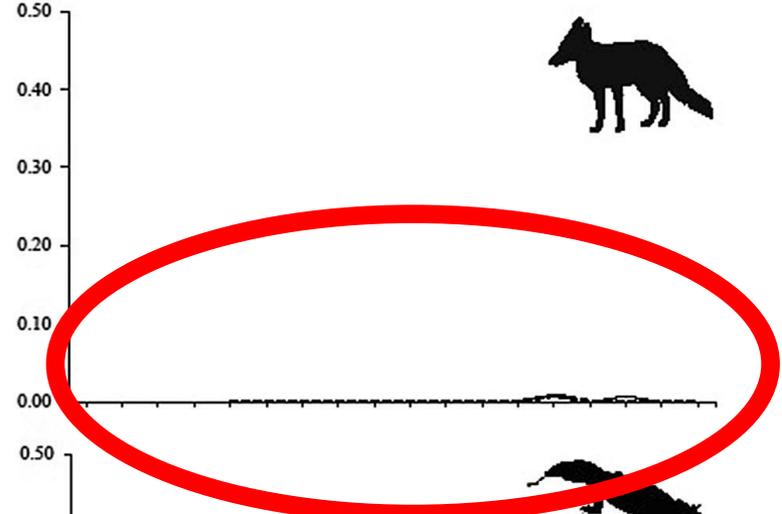
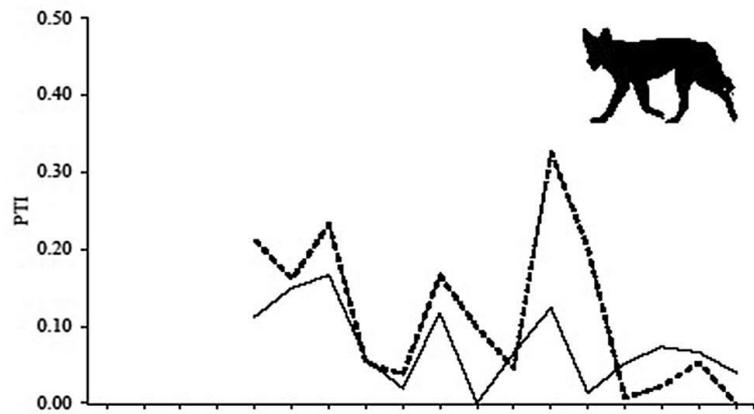
Morven PTI trends



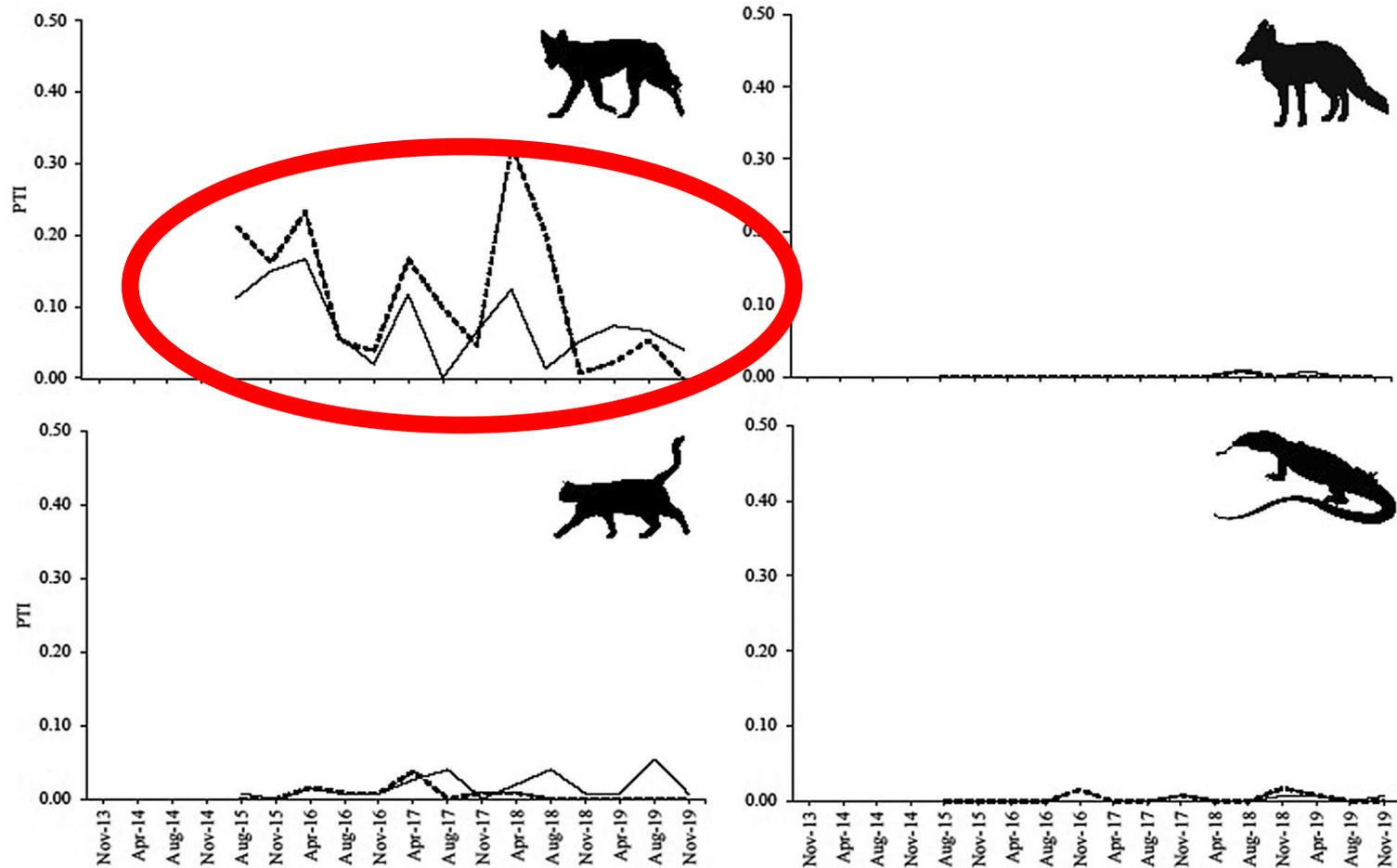
Morven PTI trends



Tambo PTI trends

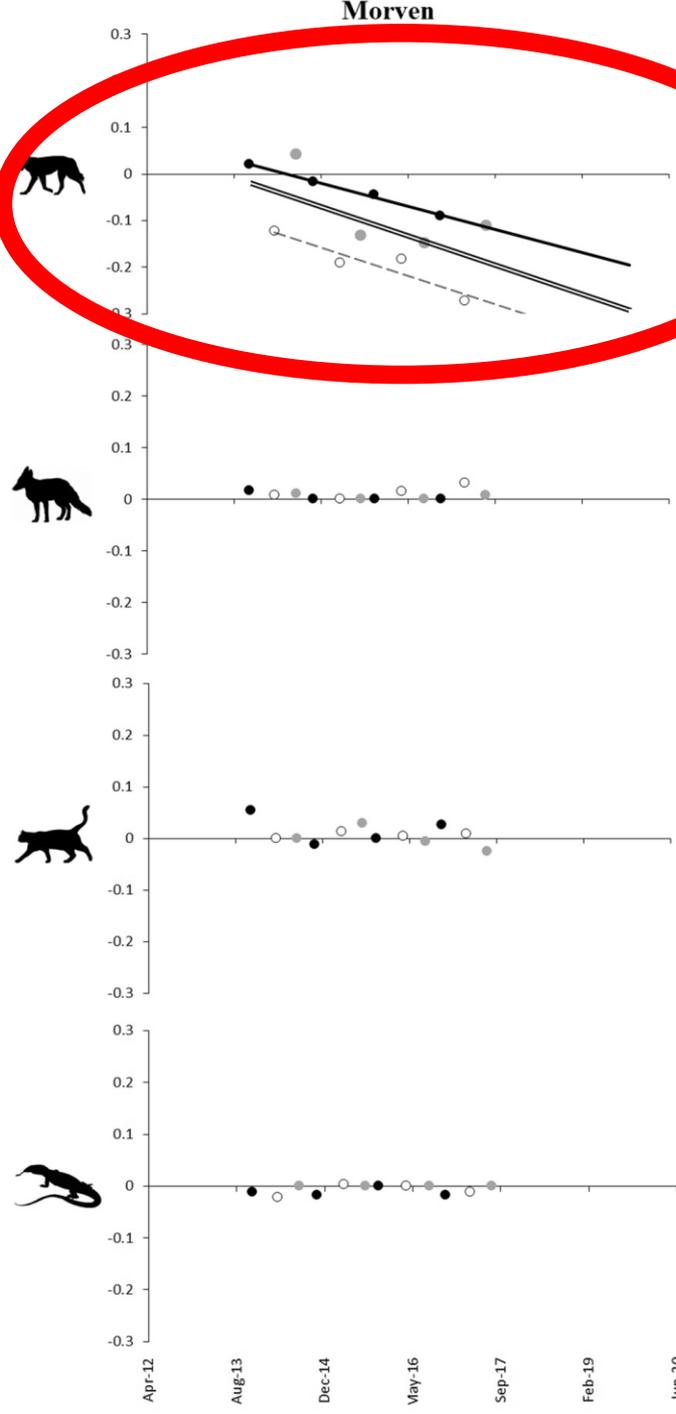
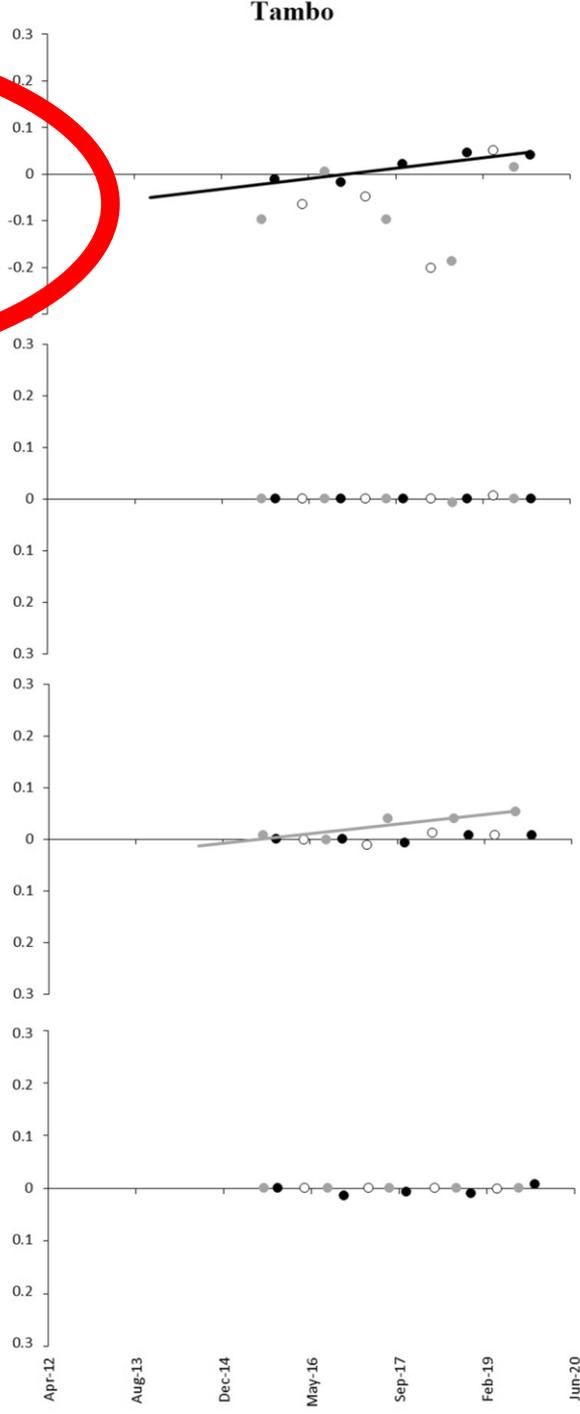


Tambo PTI trends



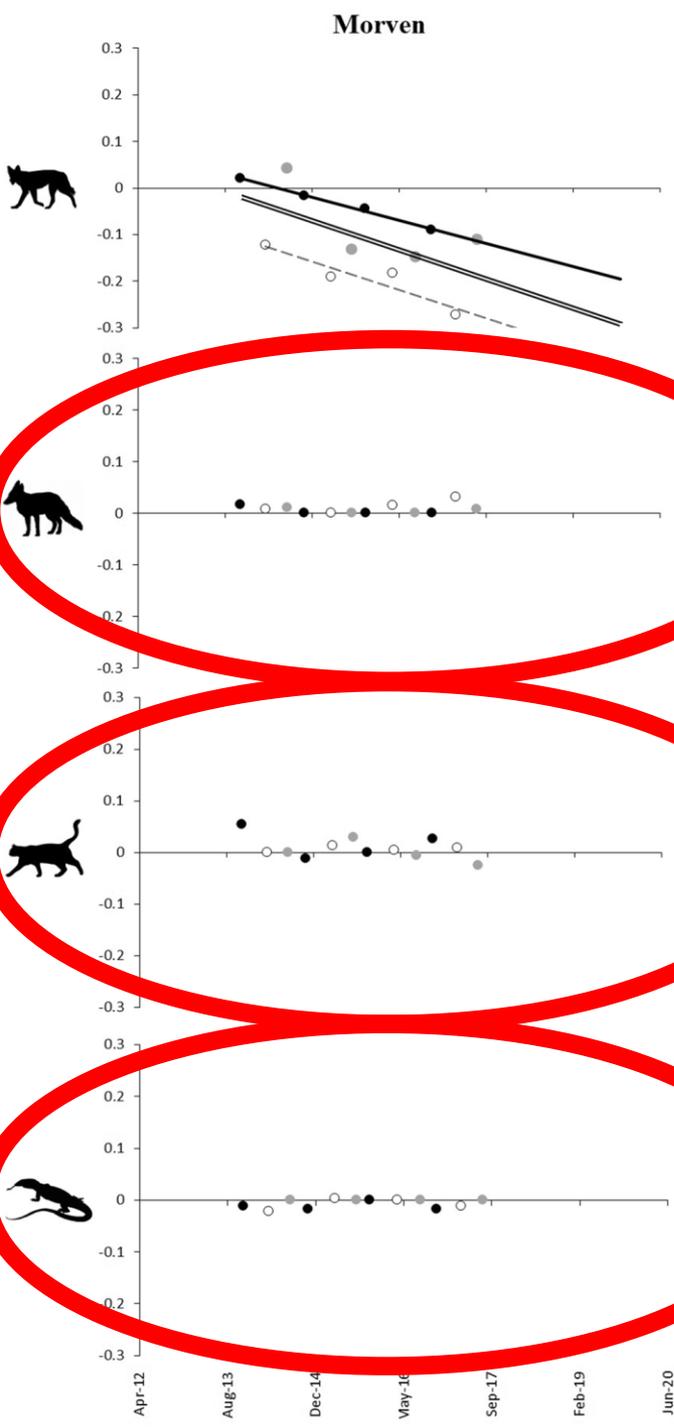
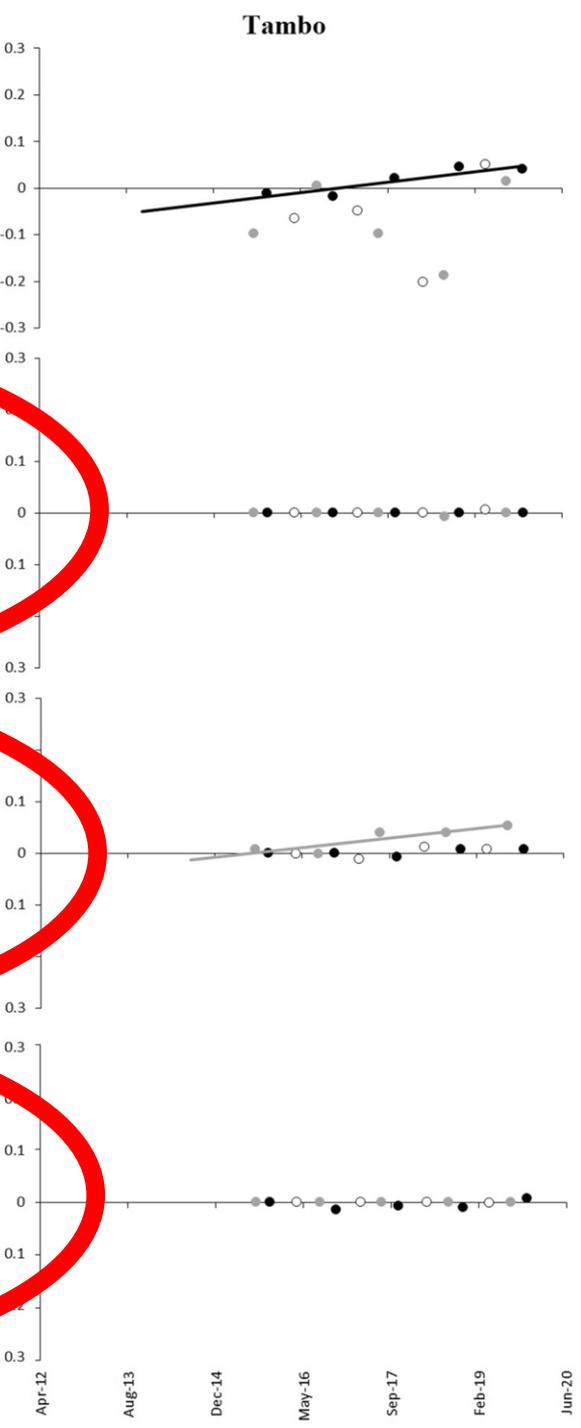
Treatment effect?

Dingoes suppressed?



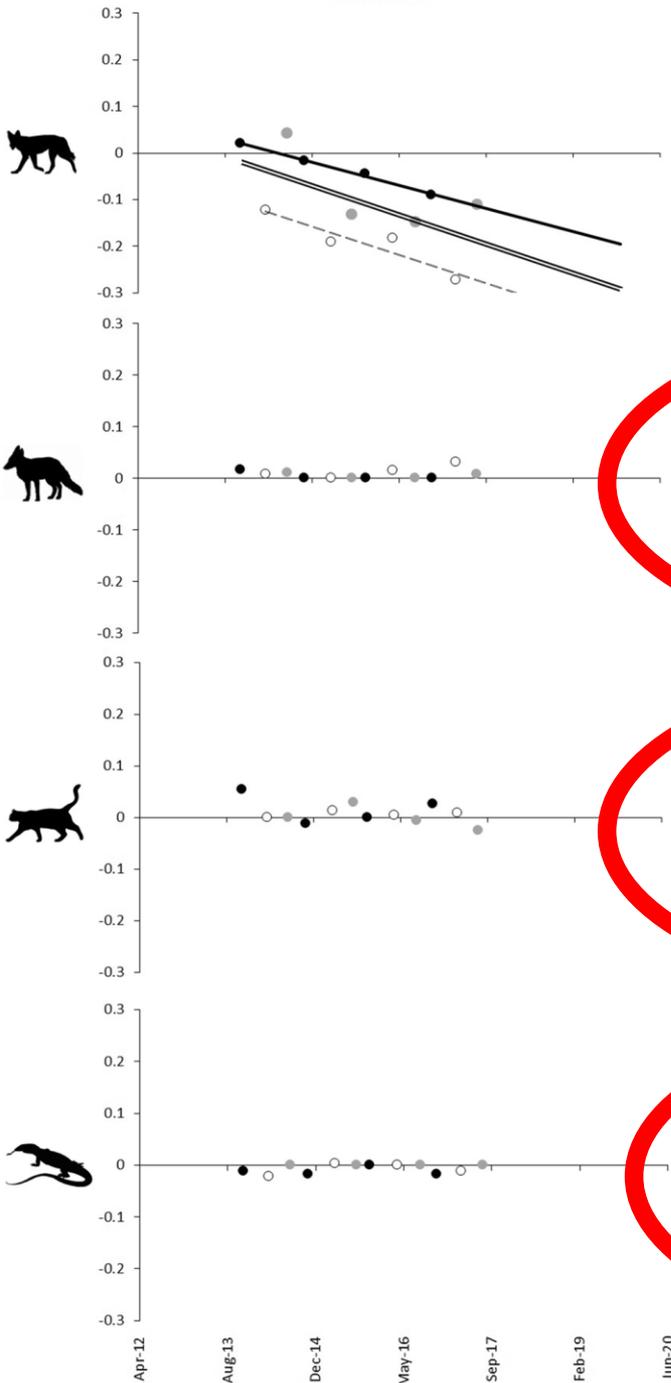
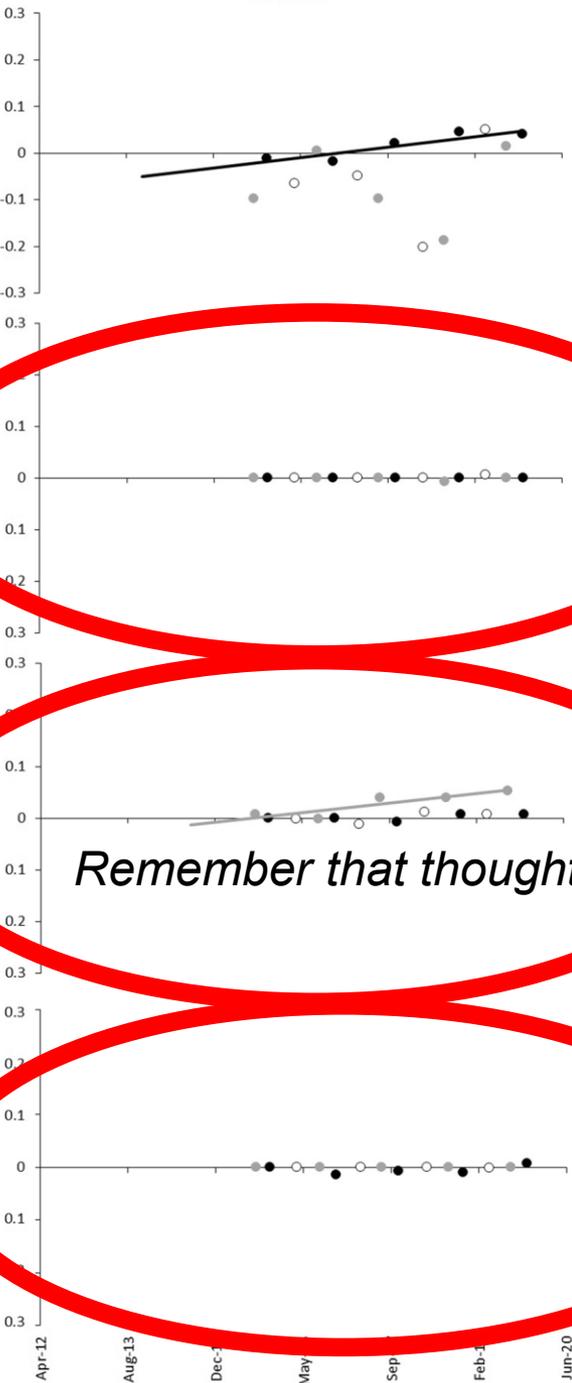
Response observed?

Mesopredators released?



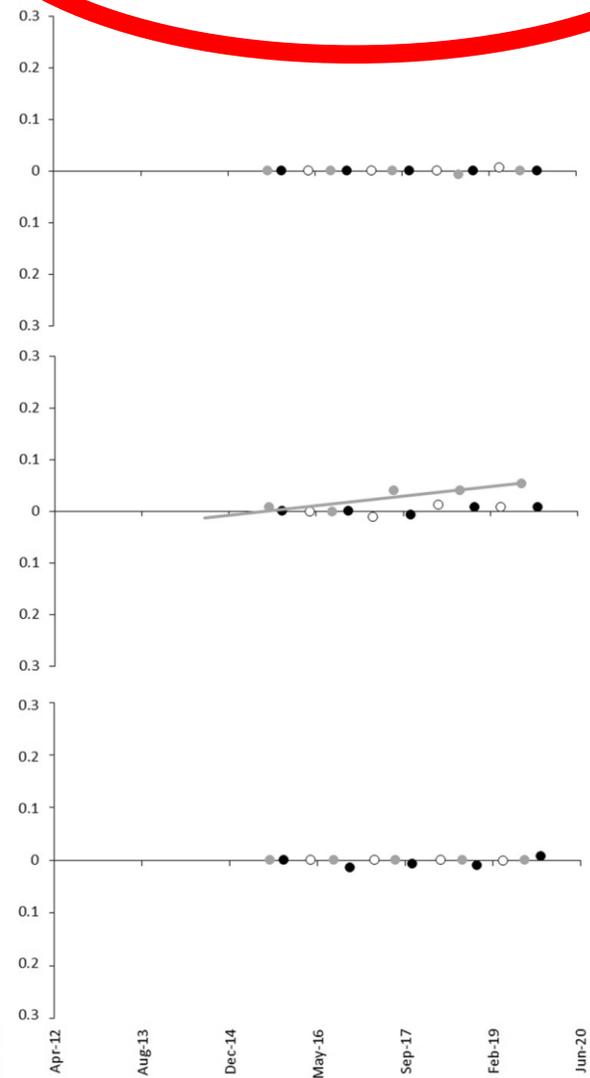
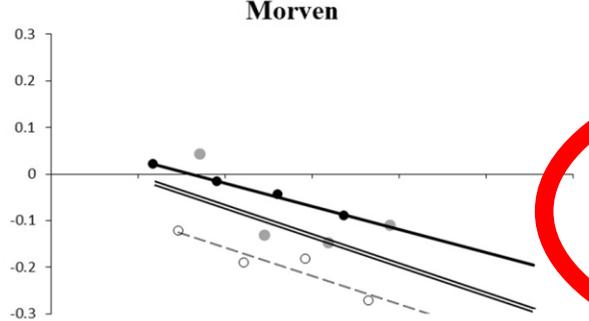
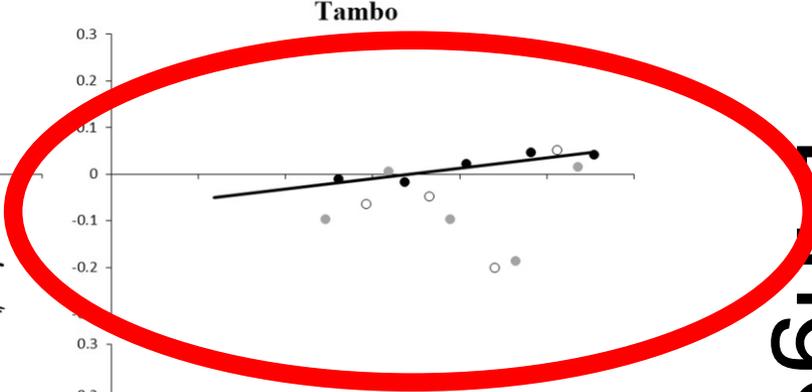
Response observed?

Mesopredators released?



Treatment effect?

Dingoes suppressed?



Morven

Tambo

Apr-12

Aug-13

Dec-14

May-16

Sep-17

Feb-19

Jun-20

Apr-12

Aug-13

Dec-14

May-16

Sep-17

Feb-19

Jun-20

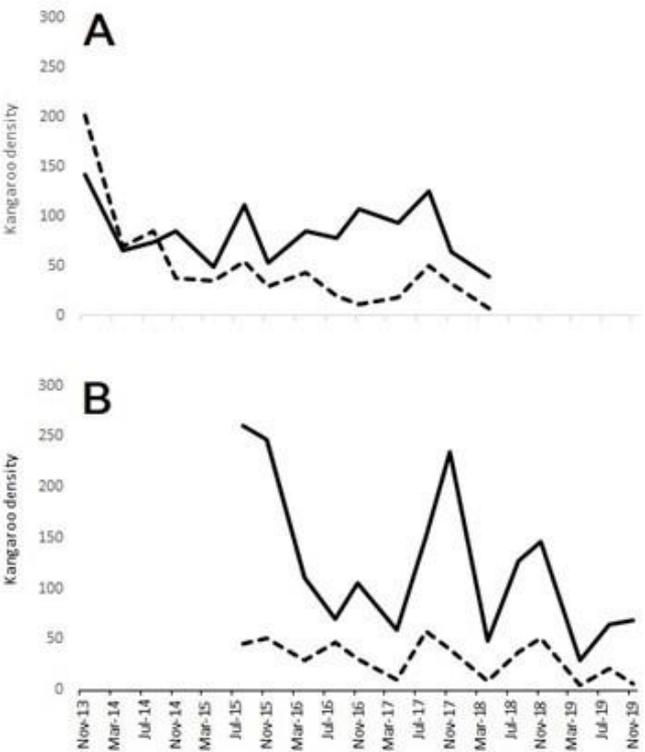
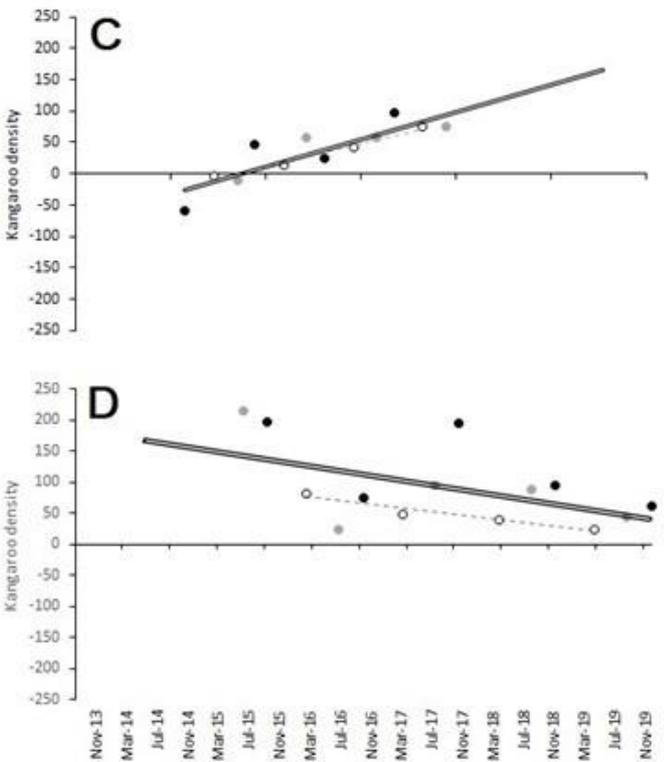
Treatment effect?

Trophic cascades?

Site	Species/Group	r2	df	resid	f	p
Morven	Bird	0.0002	1	12	0.0022	0.9631
	Bustard	0.0015	1	12	0.0176	0.8967
	Echidna	0.0513	1	12	0.6488	0.4362
	Emu	0.0113	1	12	0.1371	0.7176
	Kangaroo	0.1064	1	12	1.4293	0.2550
	Lizard	0.1051	1	12	1.4092	0.2582
	Pig	0.0096	1	12	0.1158	0.7396
	Possum	0.0239	1	12	0.2940	0.5976
	Rabbit	0.0368	1	12	0.4589	0.5110
	Rodent	0.0025	1	12	0.0301	0.8651
	Snake	0.1444	1	12	2.0254	0.1802
Tambo	Bird	0.0075	1	12	0.0905	0.7687
	Bustard	0.0029	1	12	0.0350	0.8547
	Echidna	0.0186	1	12	0.2269	0.6424
	Emu	0.0063	1	12	0.0765	0.7867
	Kangaroo	0.0262	1	12	0.3230	0.5803
	Lizard	0.0567	1	12	0.7210	0.4124
	Pig	0.0000	1	12	0.0000	0.9997
	Possum	0.0170	1	12	0.2081	0.6564
	Rabbit	0.0929	1	12	1.2284	0.2894
	Rodent	0.0837	1	12	1.0960	0.3158
	Snake	0.2139	1	12	3.2648	0.0959

Treatment effect?

Trophic cascades?



But that's just one study, right?

Key outcomes

1. To date there is still **not a single published study** that reports a measured decline of foxes or cats in response to measured increase in dingoes, or a measured increase in foxes or cats in response to a measured decrease in dingoes;
2. The **repeated lethal control** of dingoes in large open areas has **never been observed** to produce mesopredator release effects for foxes, cats or goannas;
3. The **sustained removal or eradication** of dingoes from large fenced areas has **never been observed** to produce mesopredator release effects for foxes, cats or goannas;
4. Dingoes may kill or suppress foxes and cats at small spatial scales (i.e. interference competition at an individual level), but **these processes** have **never been observed to scale-up** to produce population-level or regional-level mesopredator suppression effects; and
5. **Dingo control-induced trophic cascades** have **never been observed** to occur through mesopredator release effects.

Mesopredator release debate, Circa 2023

“Claims that dingoes suppress mesopredators and initiate trophic cascades are unavoidably and demonstrably based entirely on a body of correlative and observational studies with no capacity to reliably describe such causal processes, and claiming otherwise is overt science denialism”