# Where in Sydney should we place the Canid Pest Ejector to control urban foxes?

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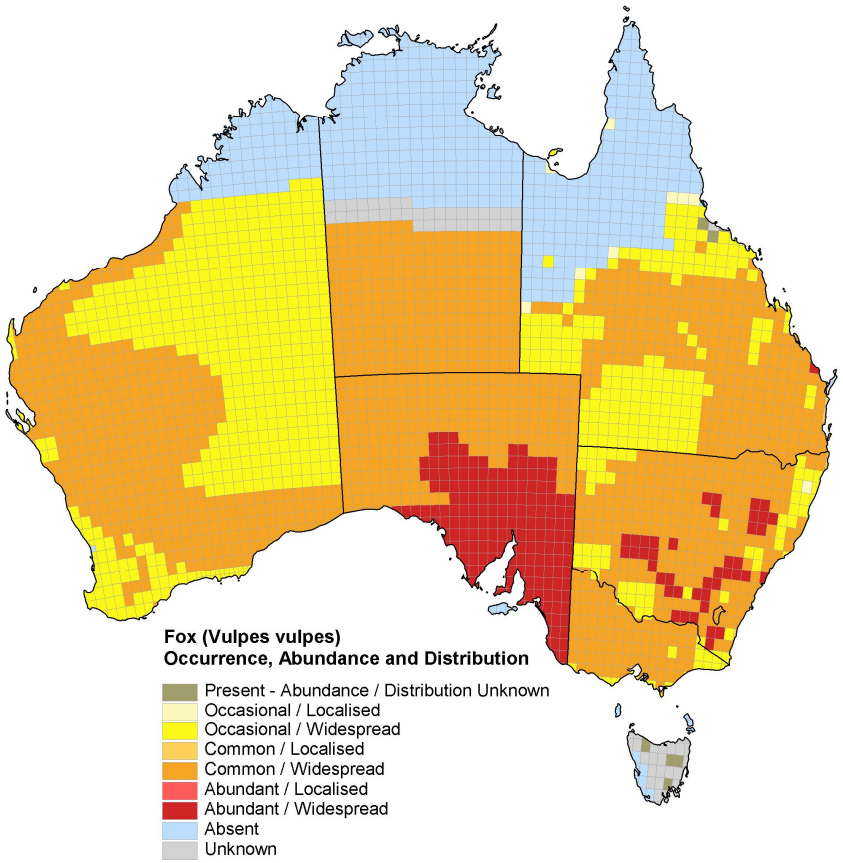
# The Red Fox (*Vulpes vulpes*)



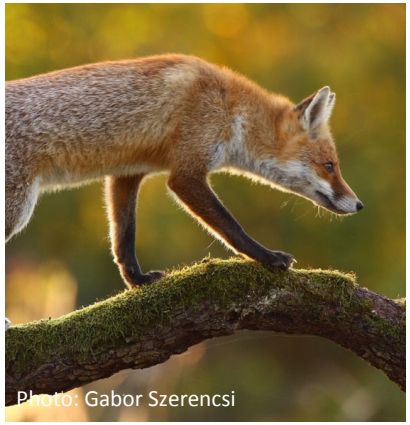
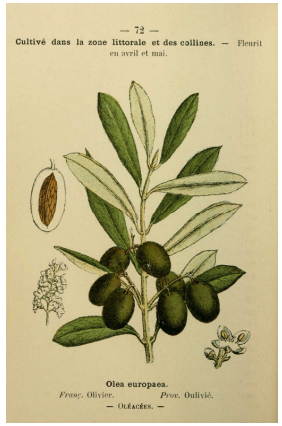



Photo: Gabor Szerencsi


Photo: Angela Louwe



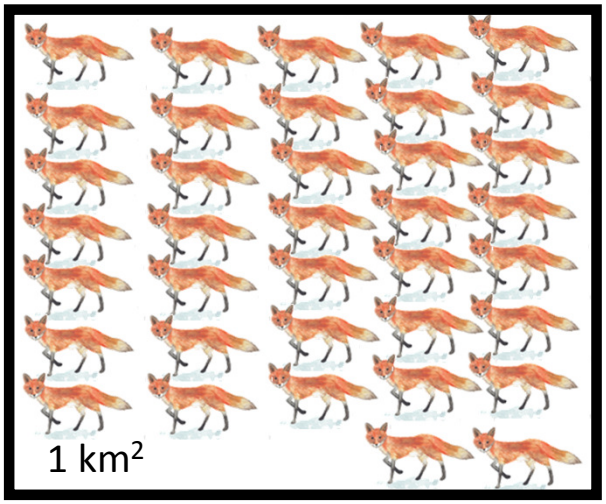


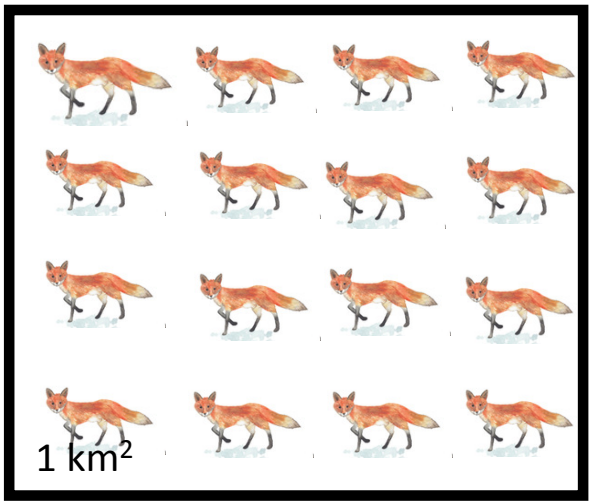
Source: https://i.imgur.com/uWate3M.jpg

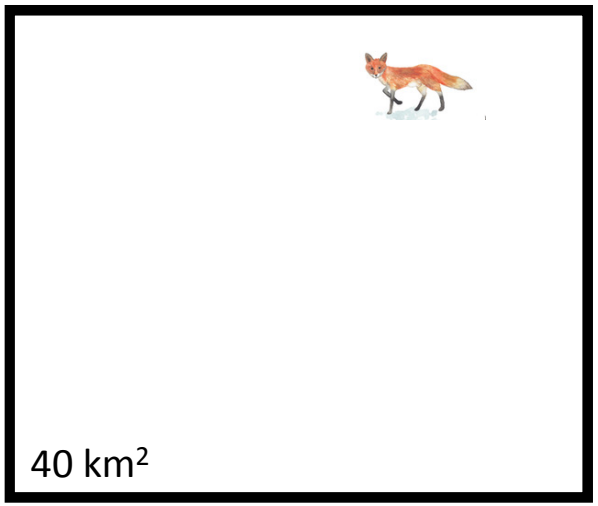
# Urban foxes are even more succesful…

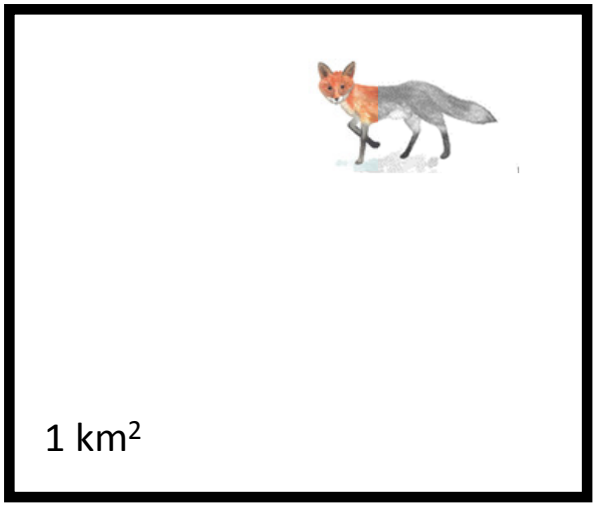
As **urban dwellers** foxes are:

- Diet generalist
- Medium body size
- Highly plastic behaviour
- Flexible activity patterns
- Pose a threat to native wildlife


1 km²

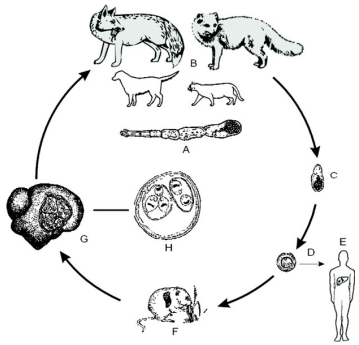

1 km²


40 km²

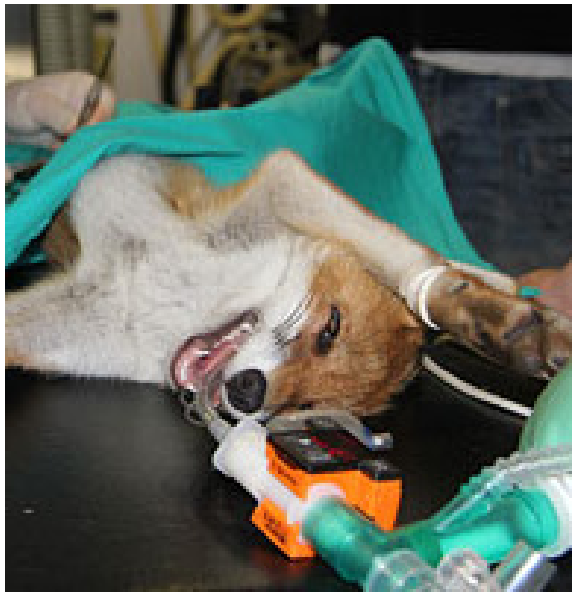

1 km²

# Impacts of foxes

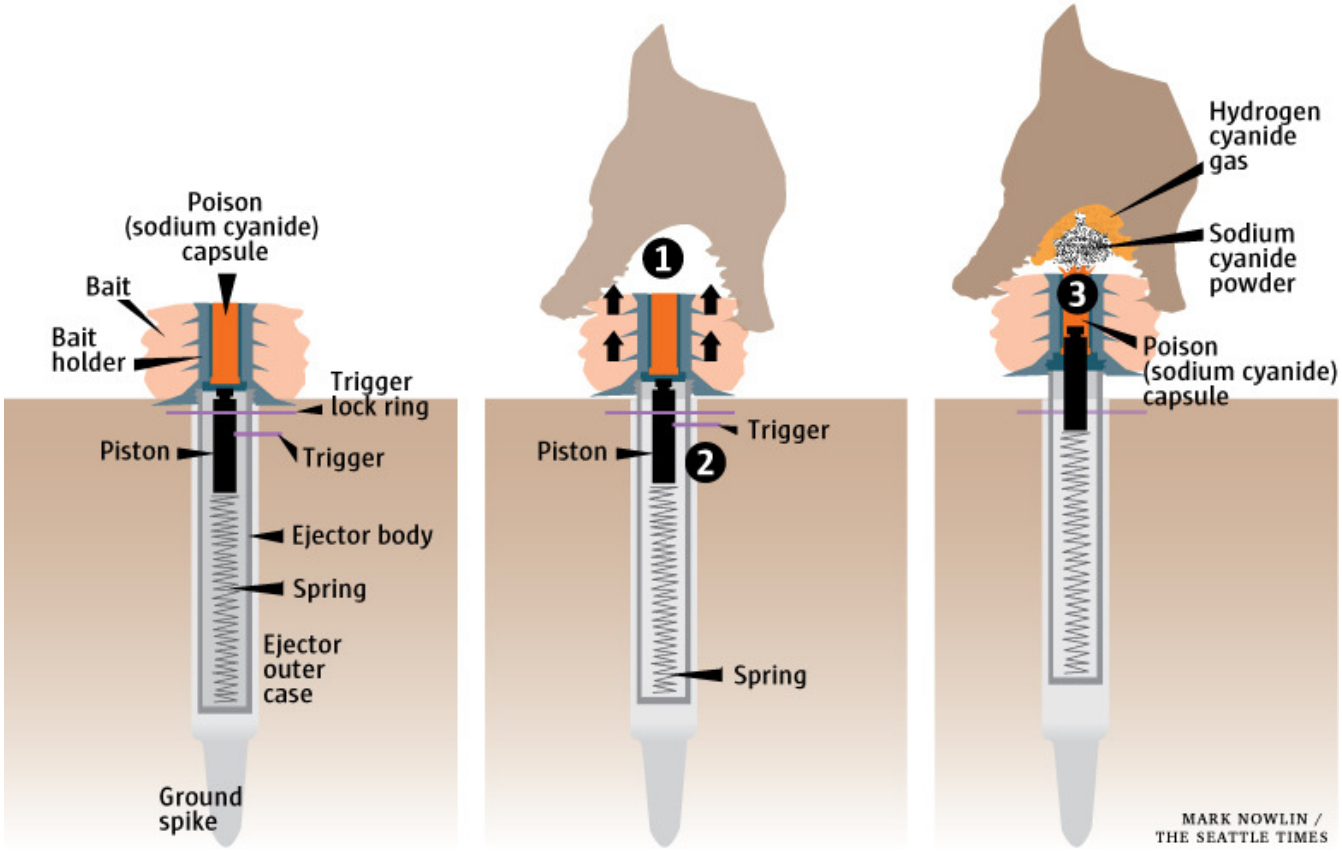


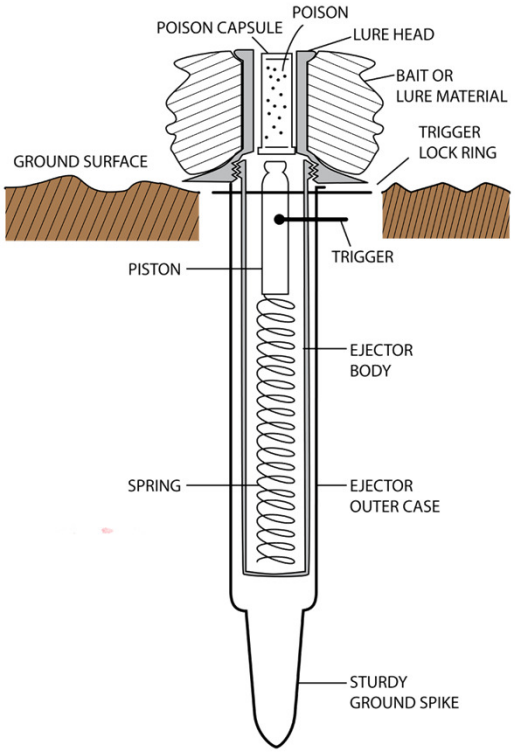




# Control methods

# Canid Pest Ejector (ejector)



# Ejectors

Pros:

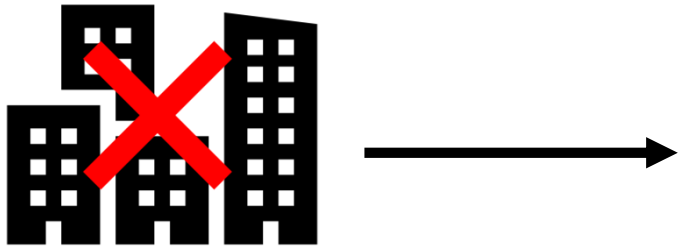
- Toxicant protected
- Target specific
- Can’t be moved

Contras:

- Risk for domestic dogs
- Risk for humans


CPE devices and capsules now in stock and available!

# Current restrictions



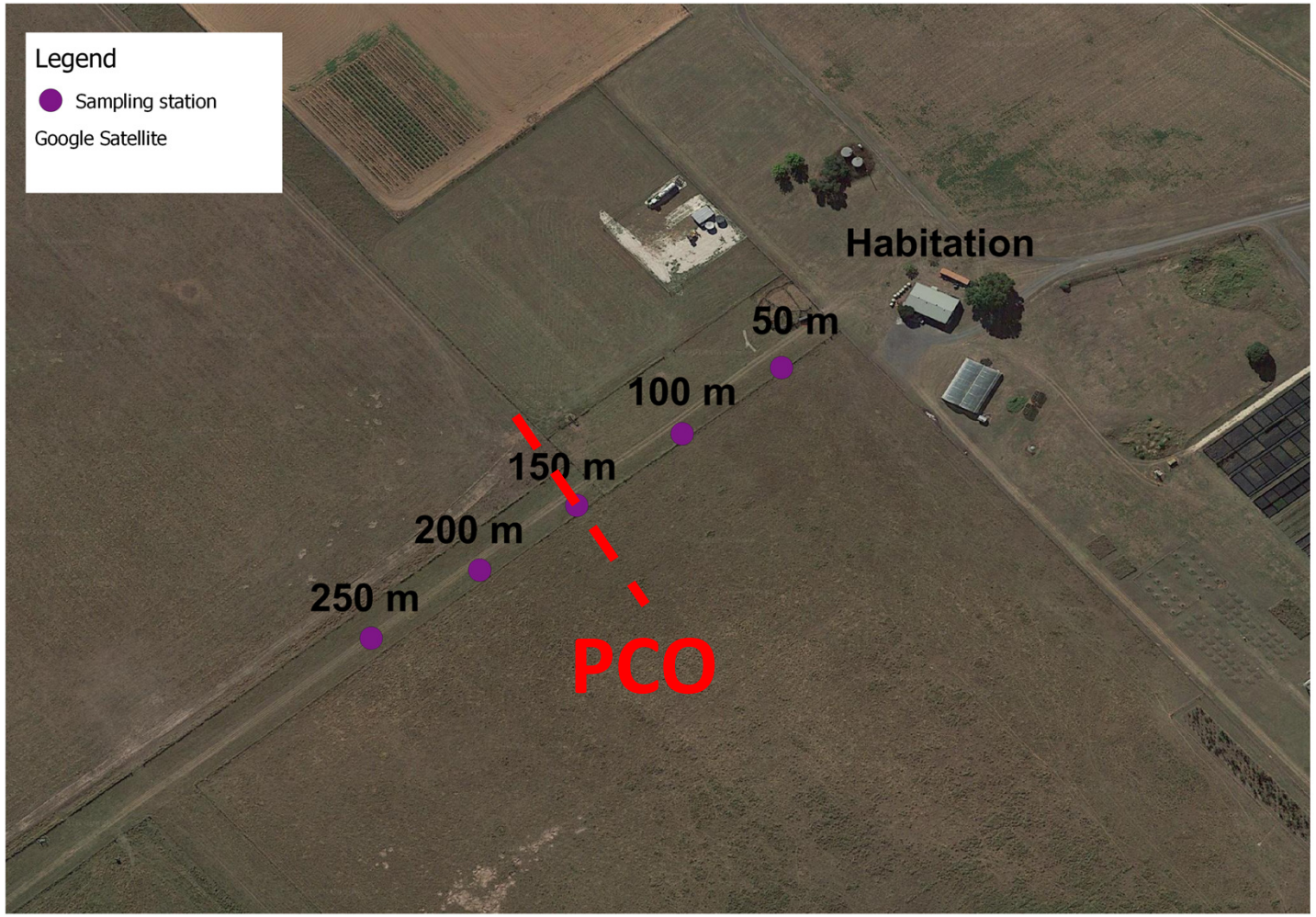

150 m

# Aims

- Compare **fox behaviour and visitation** between urban and peri-urban areas of Sydney by analyzing its response to the ejector.
- Determine how to **minimise risk to dogs** if ejector were to be deployed in peri-urban and urban areas.
- Test the efficacy of the current **distance from habitation** restrictions imposed by the Pest Control Order.
- **Non-canid species** visits and behaviour to the ejector.

# Methods

# Study area and sampling design




# Fox behaviour toward the ejector

- GLMM: vegetation cover, moon phase, site type, and others.
- Time that the foxes spent in the CPE area: Kruskal-Wallis rank sum test.

# Fox behaviour toward the ejector: timid response

# Fox behaviour toward the ejector: confident response

# Domestic dog visitation to the ejector

- GLMM
- Distance and dog restrictions



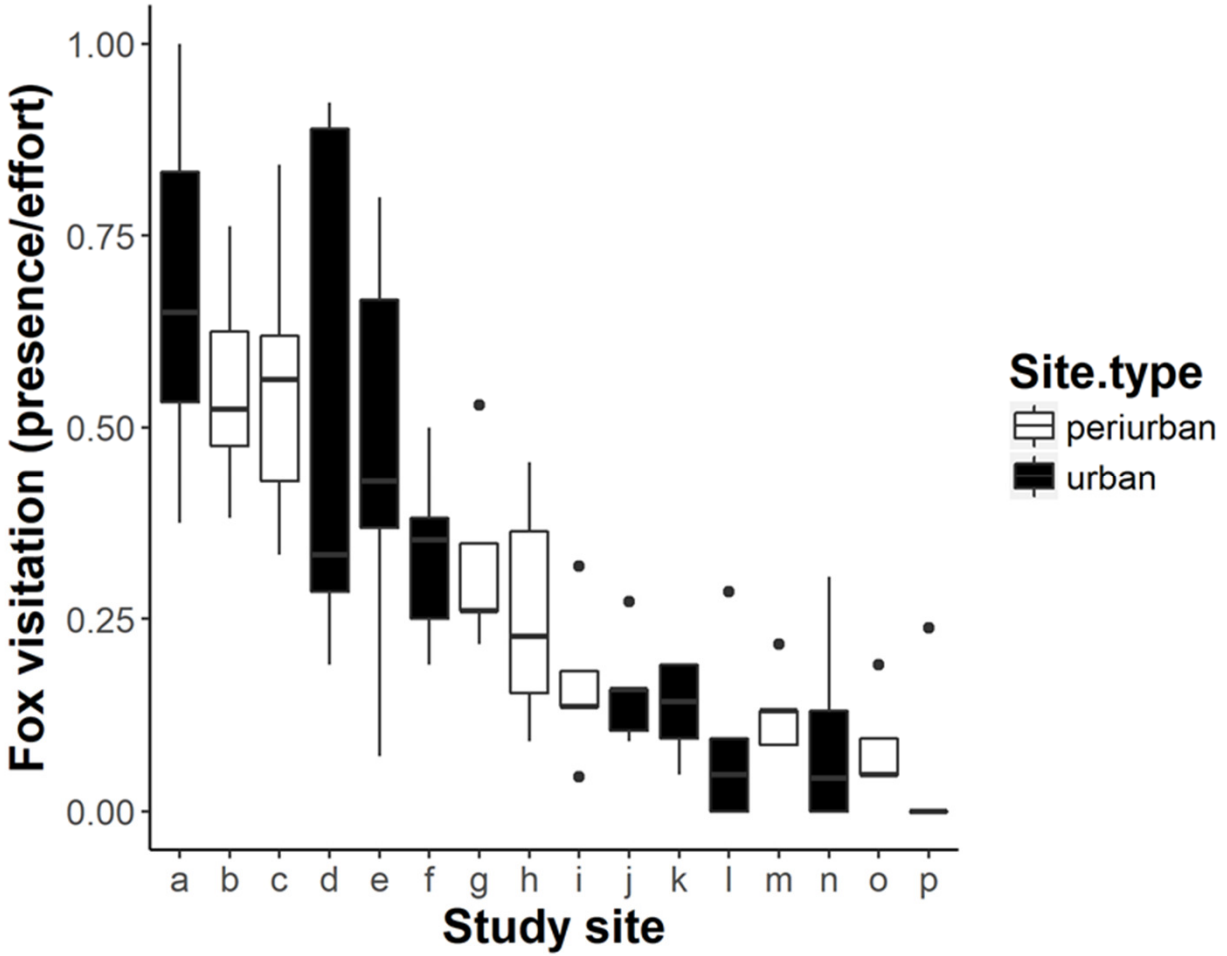
# Non-target visits to the ejector




# Results & Discussion

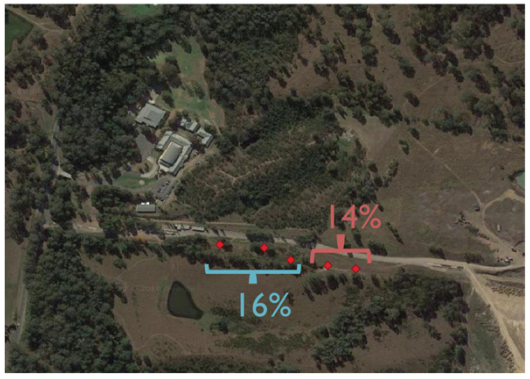
# Fox visitation rate

- 1,472 camera trap nights.
- 409 independent visits of foxes
- 72 of 80 sampling stations had foxes
- Warwick Farm Racecourse: 49 independent visits

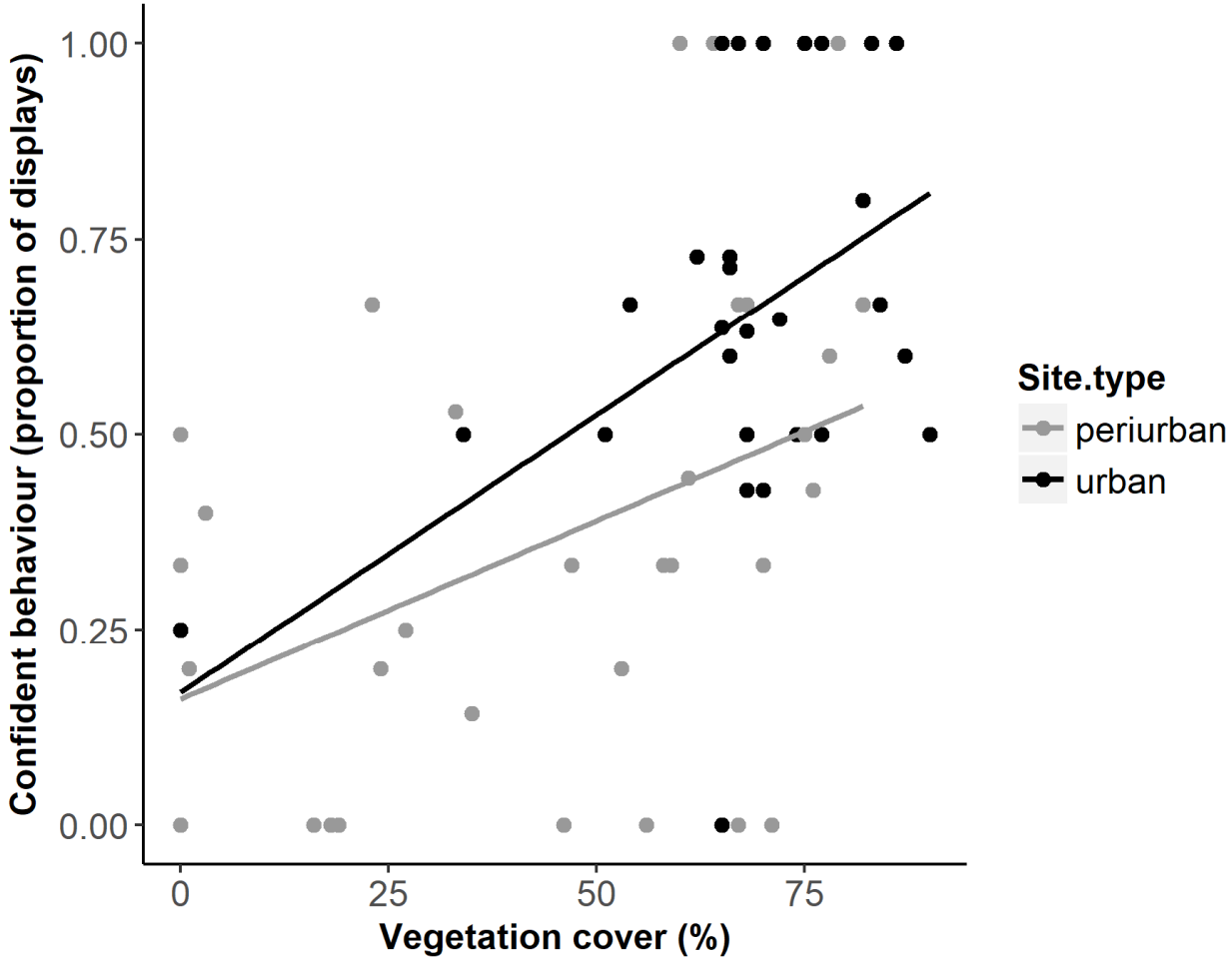


# Fox visitation rate

- Stations with high vegetation cover had higher probability of visit (8% higher).

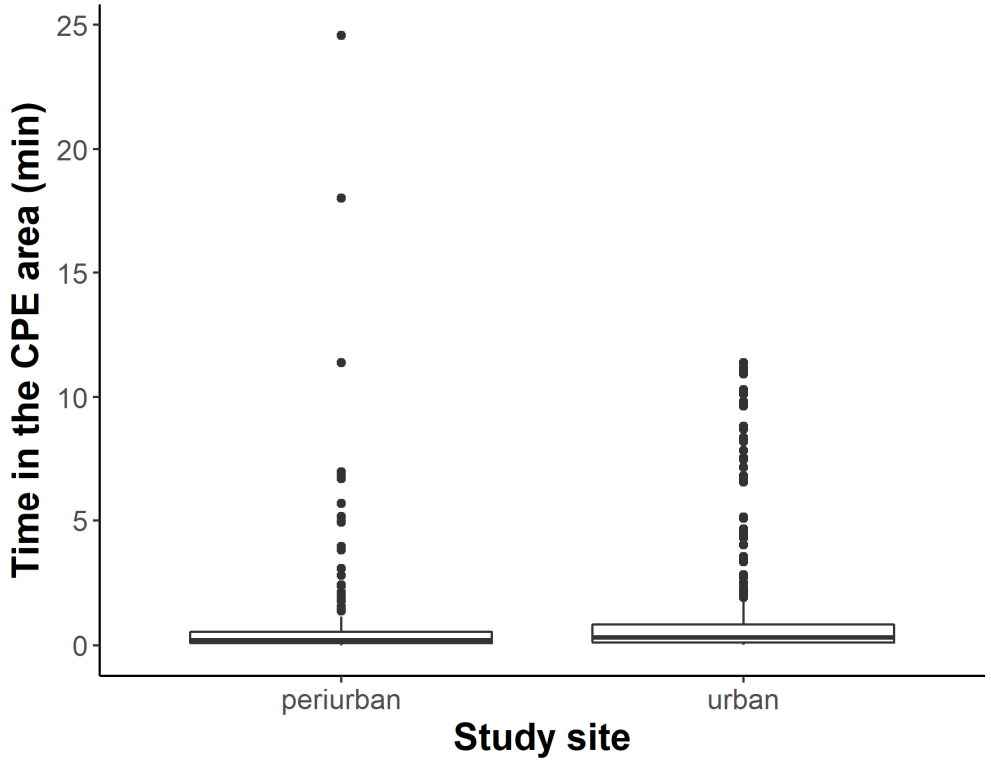



# Fox behaviour toward novel object



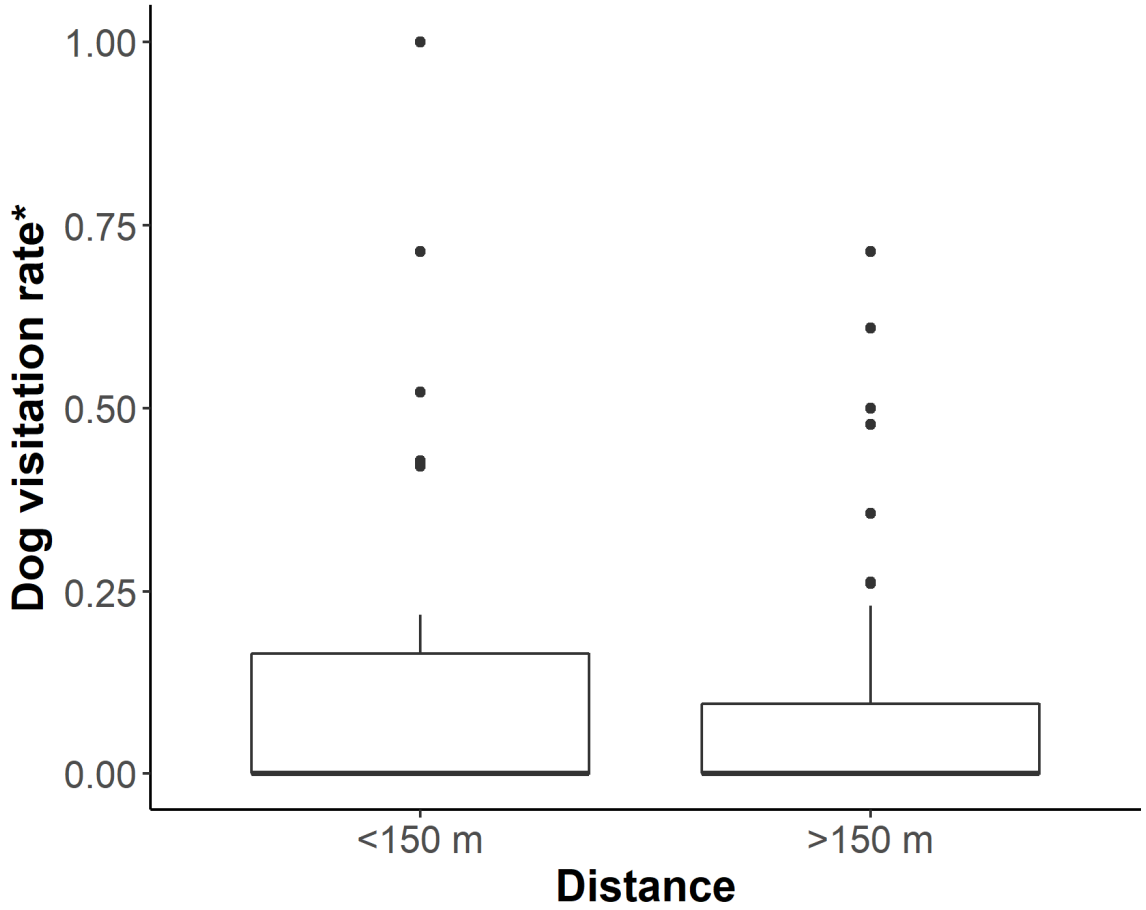
# Fox behaviour toward novel object

- Foxes in urban areas spent significantly more time in the CPE area ($\chi^2 = 12.34$, $p < 0.01$).



# Domestic dog visitation to CPEs

- 38 of 80 sampling stations.
- Visitation lower in sites with presence of dog restrictions (0.03% vs 12%).
- No influence of the distance from habitation.



# Non-canid species visitation and behaviour




We detected 51 species of vertebrates; 34 birds, 15 mammals, and two species of reptiles in the ejector area

# Conclusions

# Conclusions

1. Fox visitation to the ejector was higher in high cover sites.
2. Foxes in urban areas behaved more confidently towards the ejector.

Foxes modify their behaviour to adapt to urban areas.

# Conclusions

1. Domestic dog visitation was almost non-existent in places with dog restrictions.
2. Domestic dog visitation is not related to the distance from human habitation.

There are places within urban areas where the ejectors could be deployed safely. The distance restrictions should be revisited in the PCO.

# Conclusions

1. Only two non-canid species were recorded pulling up the ejector.
2. One corvid released the piston, with the bait head, from the metal stake.

The ejector is highly target-specific for canids.

# Where in Sydney should we place the Canid Pest Ejector to control urban foxes?

- **In cities**: The use of ejectors in cities could be effective due to the more confident behaviour of urban foxes.
- **Under high vegetation cover**: Selecting sites with high vegetation cover could increase the bait uptake for foxes.
- **Sites with effective dog restrictions**: There are many places in cities where the risk of non-target casualties would be minimum.
- **At any distance from habitation**: Distance restrictions in the PCO should be revisited.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# Acknowledgements

Thank you!