

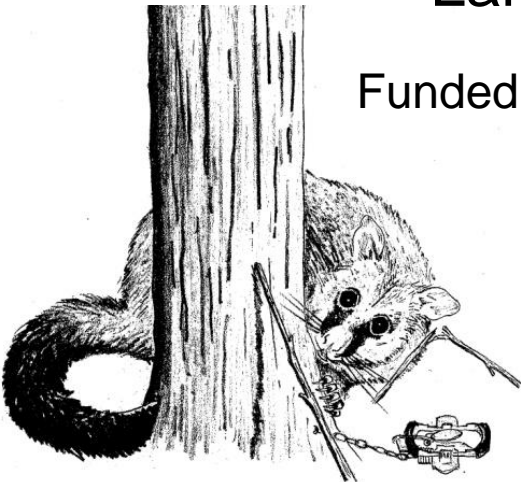


Landcare Research
Manaaki Whenua

Possum encounter and interaction rates

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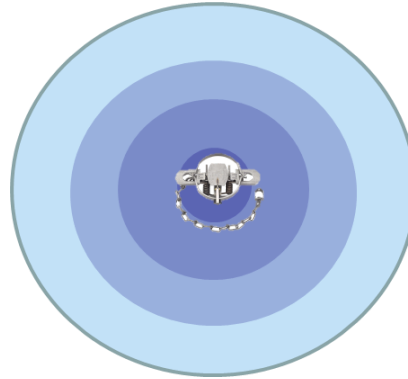
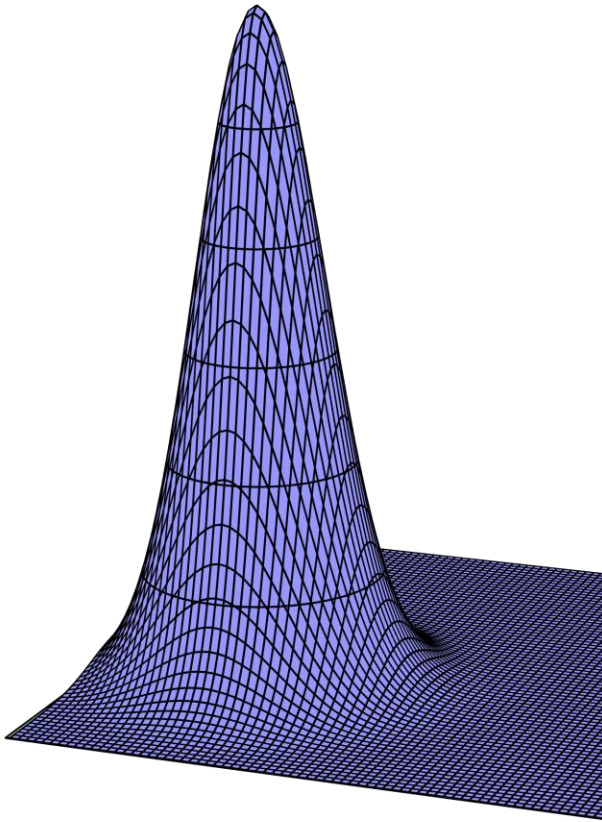
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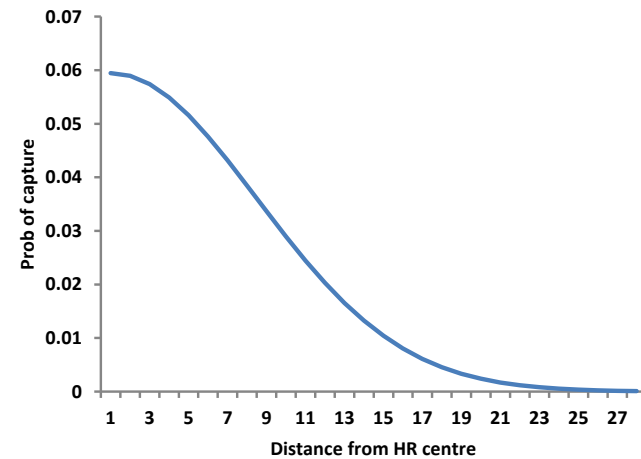
Outline

- Background
- Current research trials
- Preliminary results
- Conclusions

Background theory... 1



Probability of catching or detecting an animal at the centre of its home range on one night = g_0



Background theory...2

Capture or detection probability can be partitioned into encounter and interaction probabilities.

$$P(\text{capture}) = P(\text{encounter}) * P(\text{interaction}|\text{encounter})$$

Background theory...3

- Steve Ball et al, 2005.
 - Prob encounter = 0.12
 - Prob interaction|encounter = 0.44
 - $g_0 = 0.05$

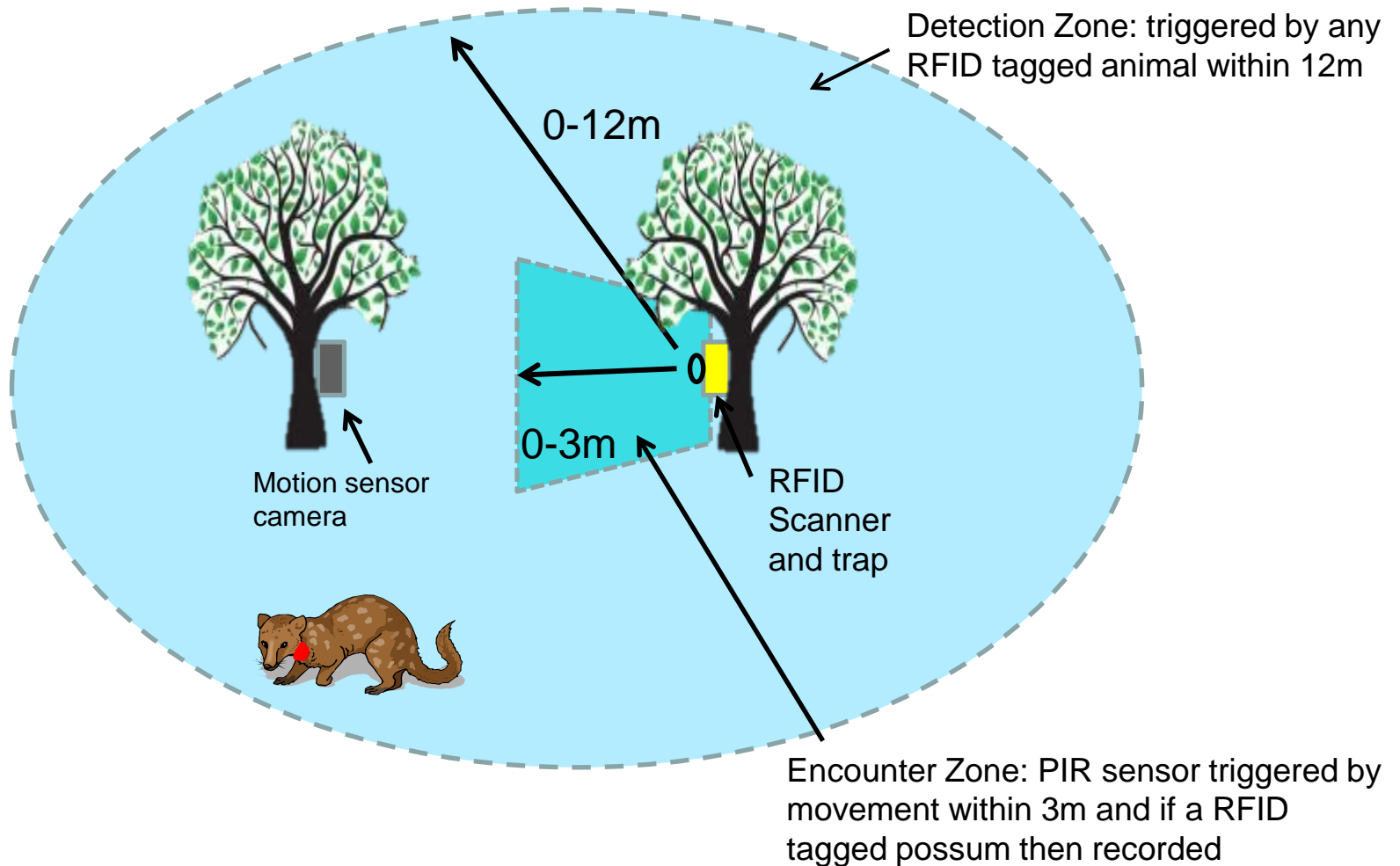
That is: if a trap is set at the centre of a possums home range there is only a 5% chance of catching it on any one night.

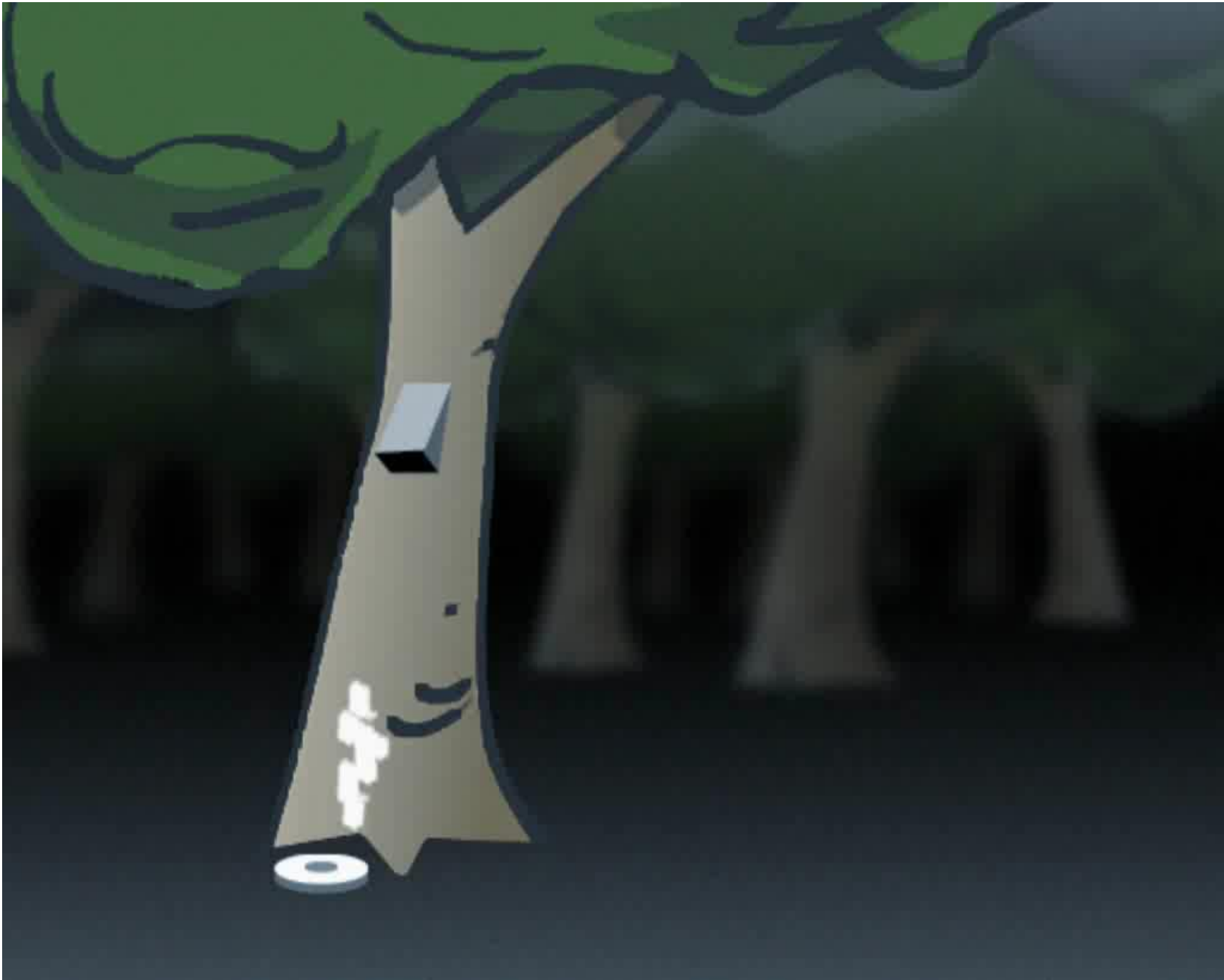
Methods

- 16 possums had active RFID tags attached (10 of these had GPS collars).
- Each trap site (11) had:
 - RFID sensor
 - Motion sensing camera (trail camera)
 - Each trap was fixed open with the trigger linked to a RFID tag and a LED to record when a possum “triggered” a trap.



Detection System





Trail camera



RFID detector & trap



Trap treatments



Standard
NPCA protocol



Hazed
(fenced)



Covered

Results... 1

Probability of an encounter
given a detection at 12m



0.66 (79/119)



0.63 (95/151)



0.60 (73/121)

Results...2

Probability of a capture
given an encounter



0.21 (6/29)



0.34 (10/29)



0.40 (10/25)

Results...3

Probability of a capture given one or more encounters/night



0.33 (6/18)

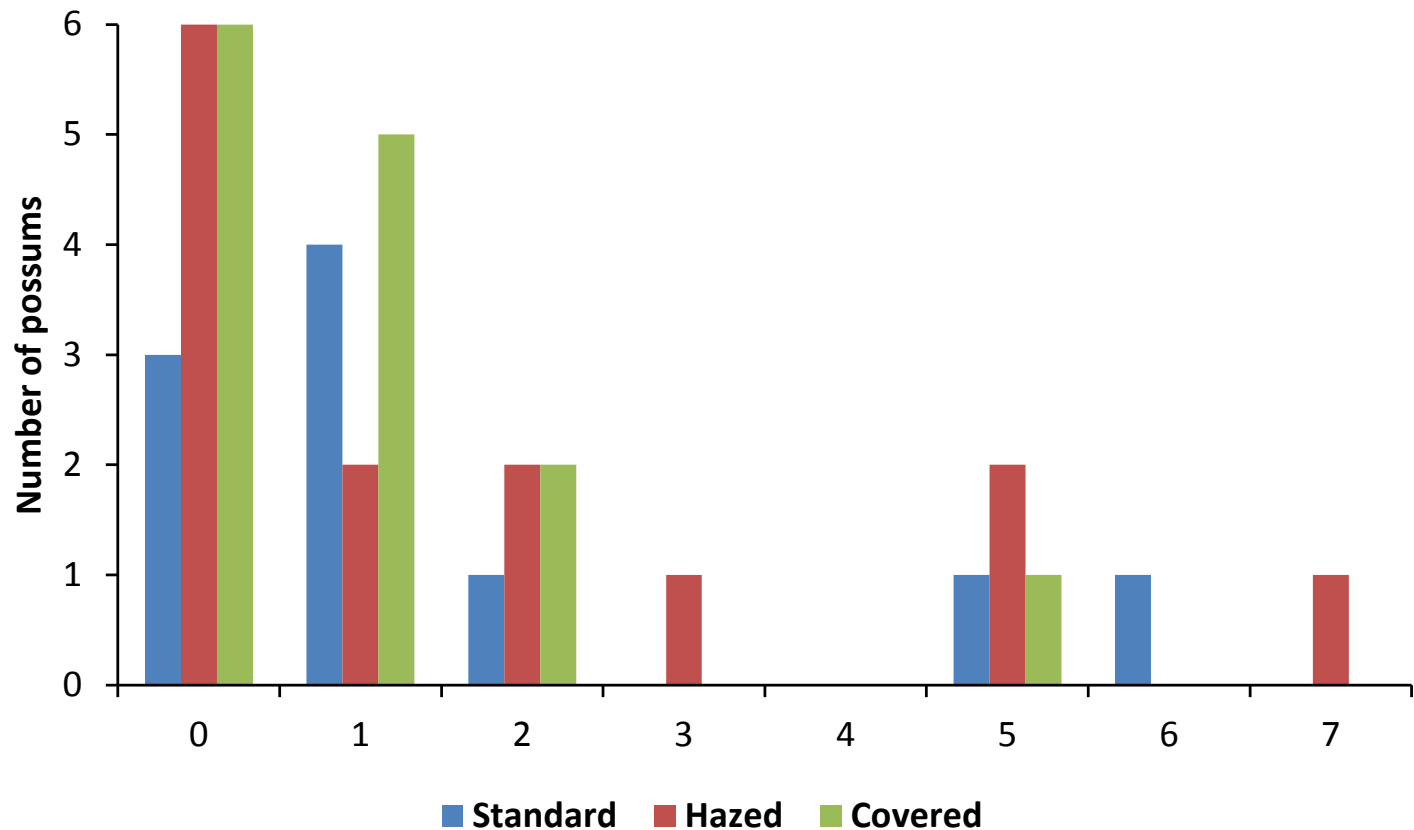


0.43 (10/23)

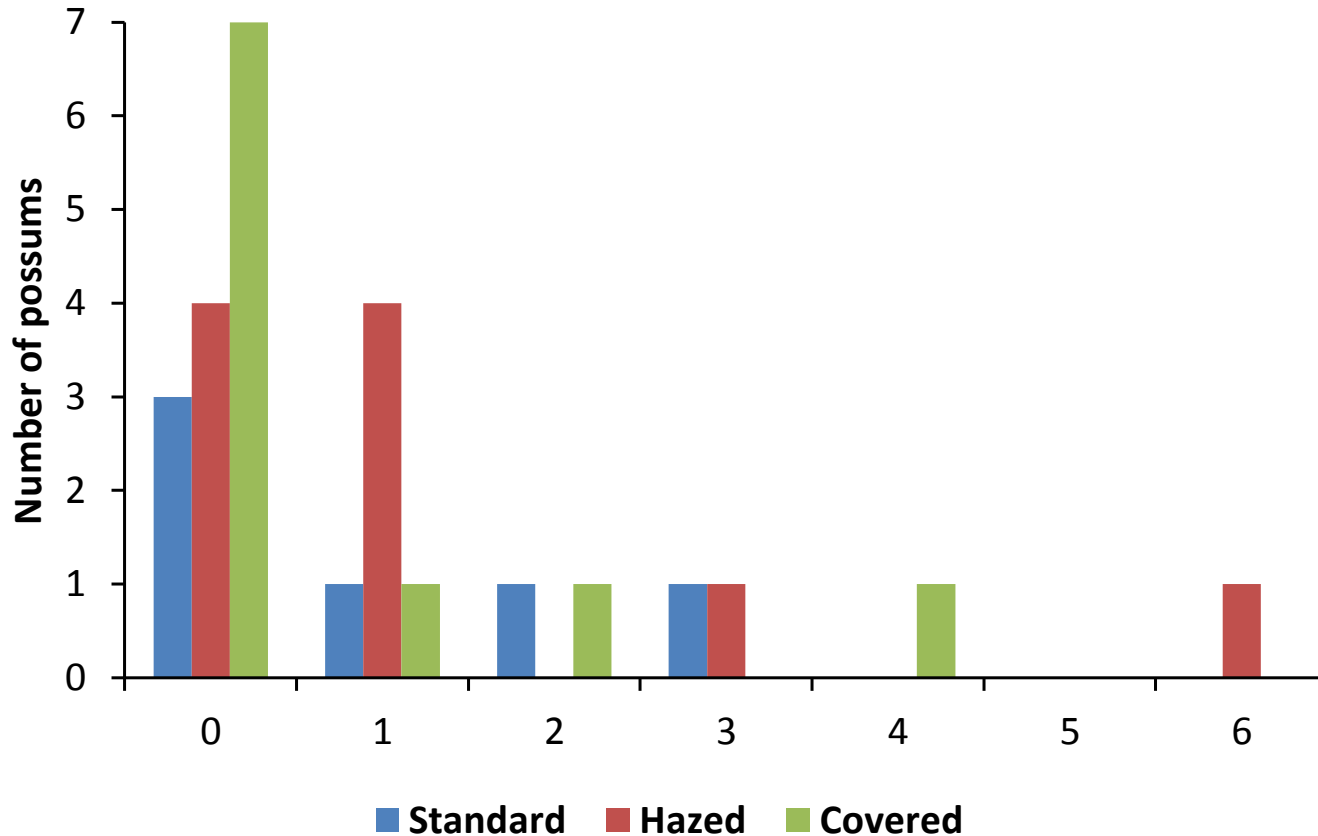


0.48 (10/21)

Number of nights to first encounter



Number of nights between first encounter & first capture



Conclusions...1

- Many possum visits to trap sites did not result in a capture.
- Nights between first encounter and first capture varied between 0 and 6.
- Hazing and covering traps increased the probability of an interaction given an encounter.

Conclusion...2

- Statistics still to be done and g_0 generated from GPS data.
- Future trials to look at density effect – i.e. do encounter and interaction probabilities change when possum densities are reduced?
- Helen Nathan (PhD student – Auckland Uni) starting similar trials on ship rats – tracking tunnels, trap tunnels, bait stations.

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