



**Landcare Research**  
**Manaaki Whenua**

# Lures to monitor and control vertebrates at low densities: sex pheromone attractants

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# Introduction

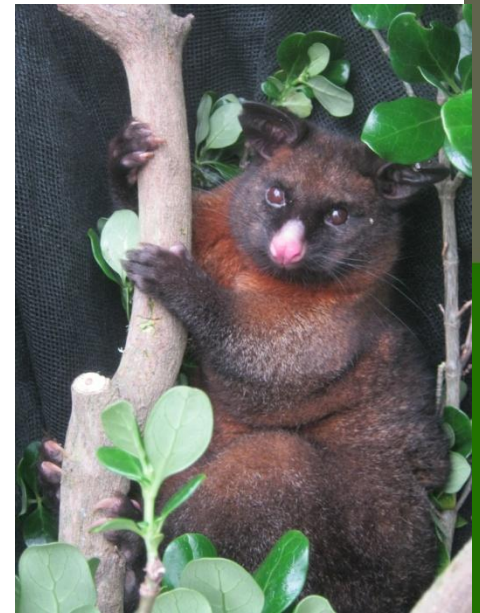


- Increasingly controlling pests at low population densities
  - island reinvasions, post-control maintenance
  - where food supply is not a limiting factor
  - role for non-food based lures and species specificity
- Solitary living species (stoats, possums) that are highly effective at finding suitable mates using pheromone cues
  - oestrus (when female receptive to male) is a rare event
  - anal and scent marking glands and urine secretions
  - bedding material as attractants to lure animals (eg. capture of stoat on Kapiti Island)
  - no one has looked at effect of reproductive state on the attractiveness of such pheromone lures

# Aims

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- Examine the ability of sex pheromone lures to increase encounter and interaction rates with traps or monitoring devices
- Evaluate effect of reproductive state of the source animal on attractiveness of secretions to male and female animals
  - Possums
  - Stoats



# Possum Pheromone Lures: Effect of reproductive state

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## Methods

- Lures used were:
  1. Saline (no urine control)
  2. Non-breeding female possum urine
  3. Male possum urine
  4. Oestrus female possum urine (24-72 hr prior to mating)
    - 50  $\mu$ l lure on swabs placed at 2 m spacing
- 9 male and 9 female possums tested (non-breeding season)
- Recorded interactions for 2 hrs
- Data analysed using Linear Mixed Effects procedure in R statistical package (log transformed)

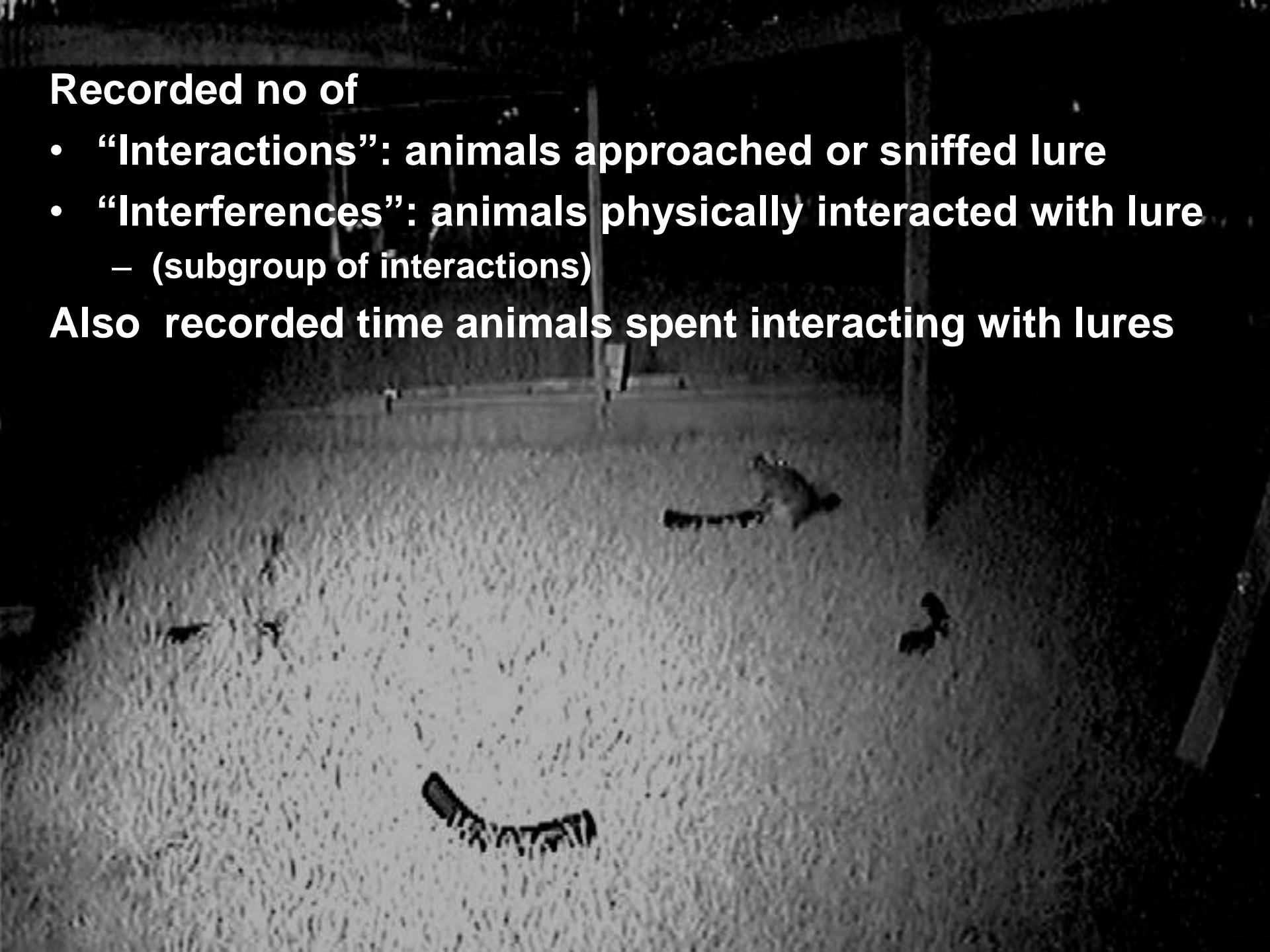




## **Recorded no of**

- **“Interactions”**: animals approached or sniffed lure
- **“Interferences”**: animals physically interacted with lure
  - (subgroup of interactions)

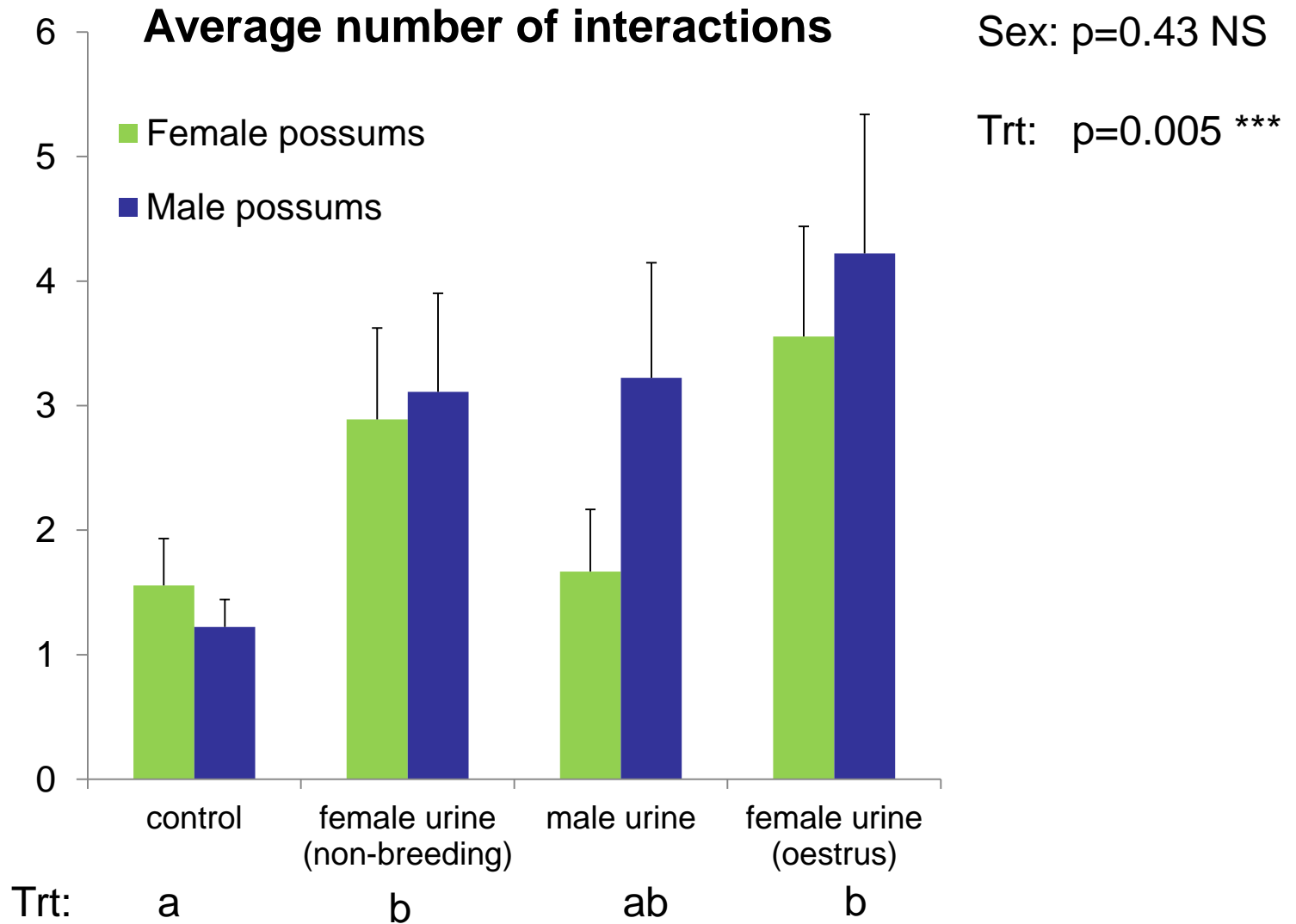
**Also recorded time animals spent interacting with lures**





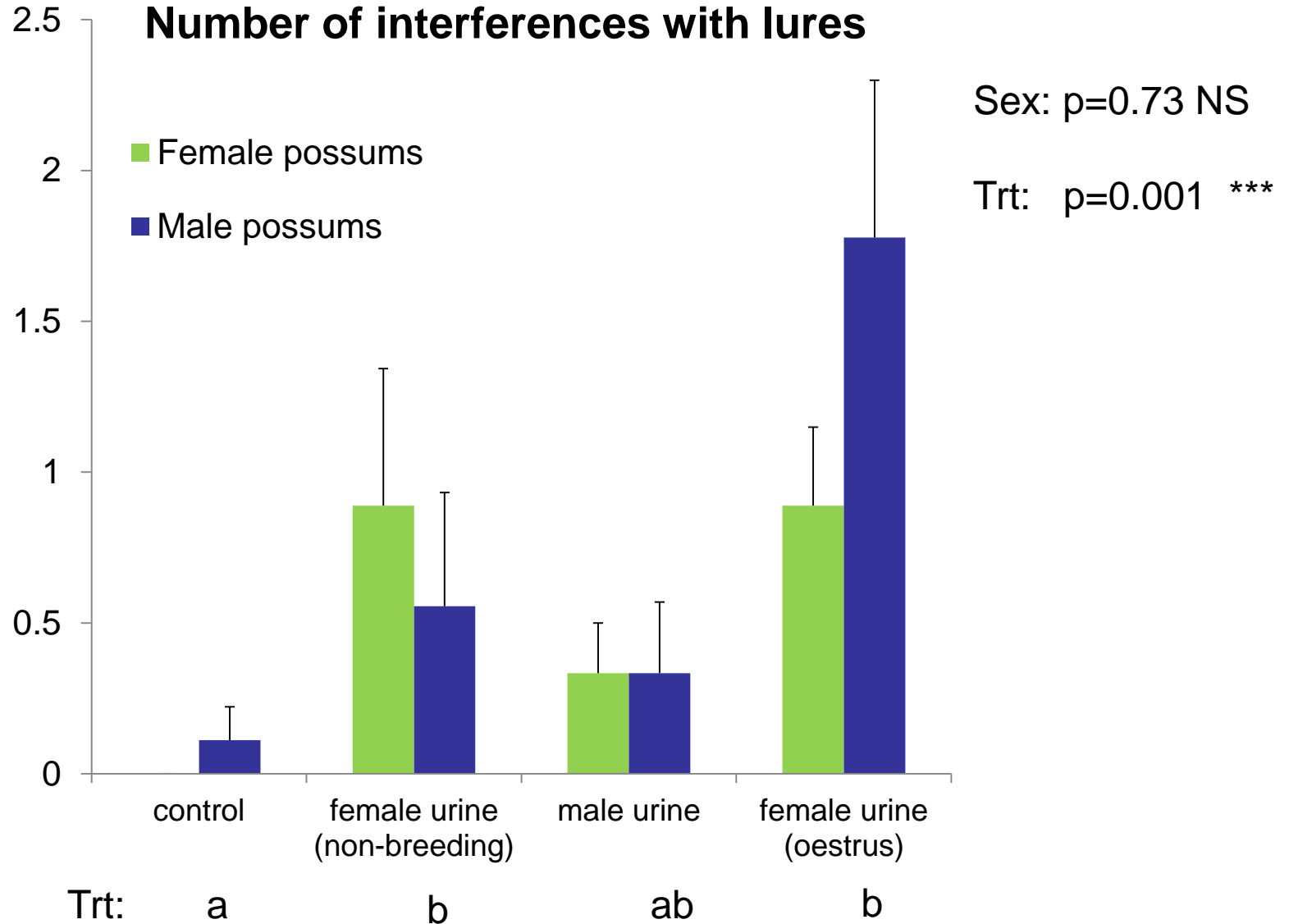
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# Results

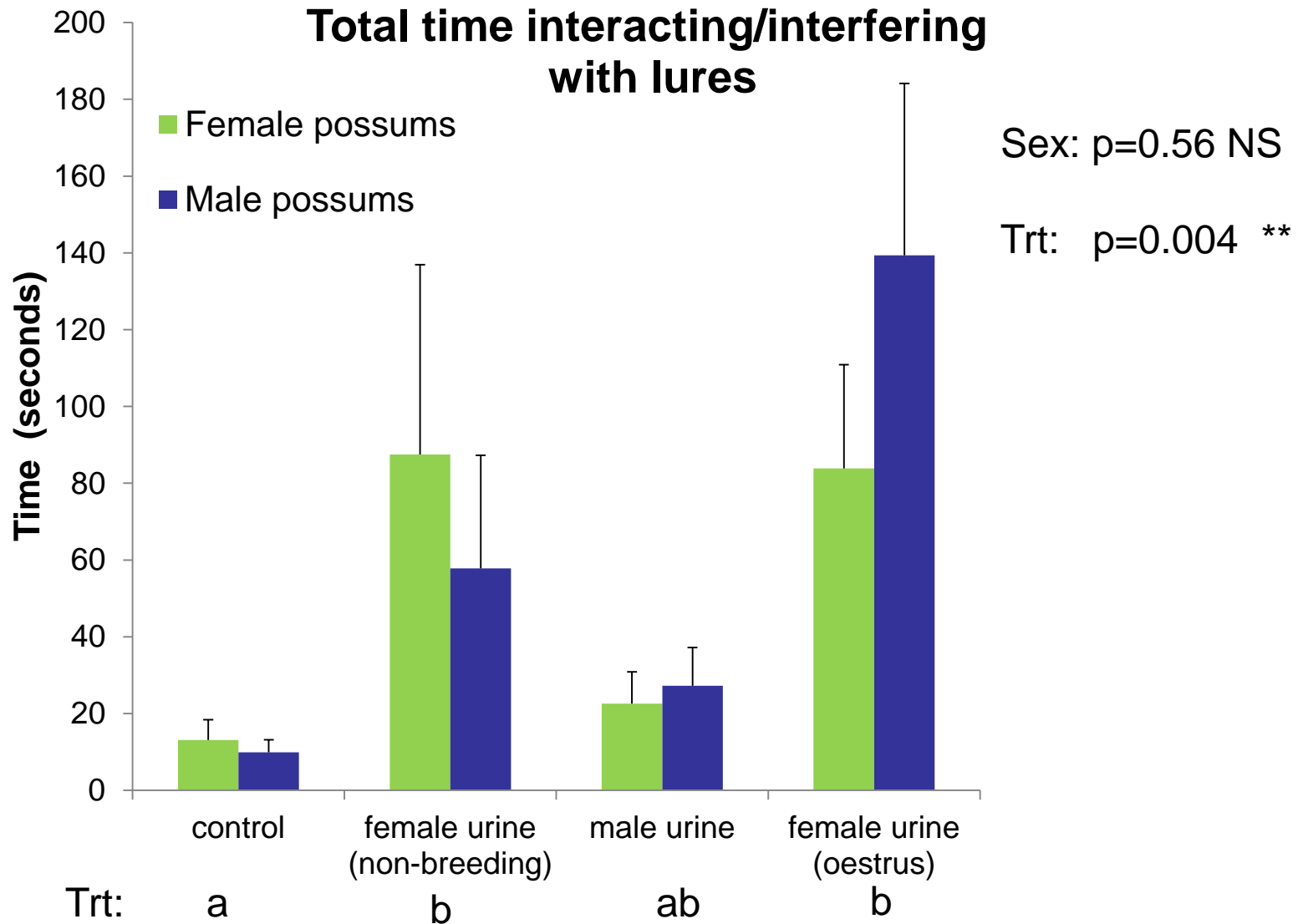




# Results



# Results



# Conclusions

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During the non-breeding season:

- Possums interacted more often and for longer with lures derived from urine from female possums (non-breeding and oestrous)
- Both male and female possums were attracted to the female-based attractants
- Neither sex was interested in male urine and there was no indication of avoidance

Sex pheromone attractants show potential to increase the interaction rates of possums with traps and monitoring devices

Next step:

AHB Field Study in possums to assess both encounter and interaction rates  
(Autumn 2013 )

# Field Study – AHB

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- Each trap site set with:
  - Standard flour blaze plus a lure station containing gauze treated with:
    - Control: 100  $\mu$ l saline OR
    - Treated lure: 100  $\mu$ l attractant (oestrous possum urine)
- Trap sites >50 m apart, monitored for 3-7 days and moved between changing in lures
- Assess effects of lure type on encounter and interaction rates responses in 10 males and 10 female possums



# Field Study

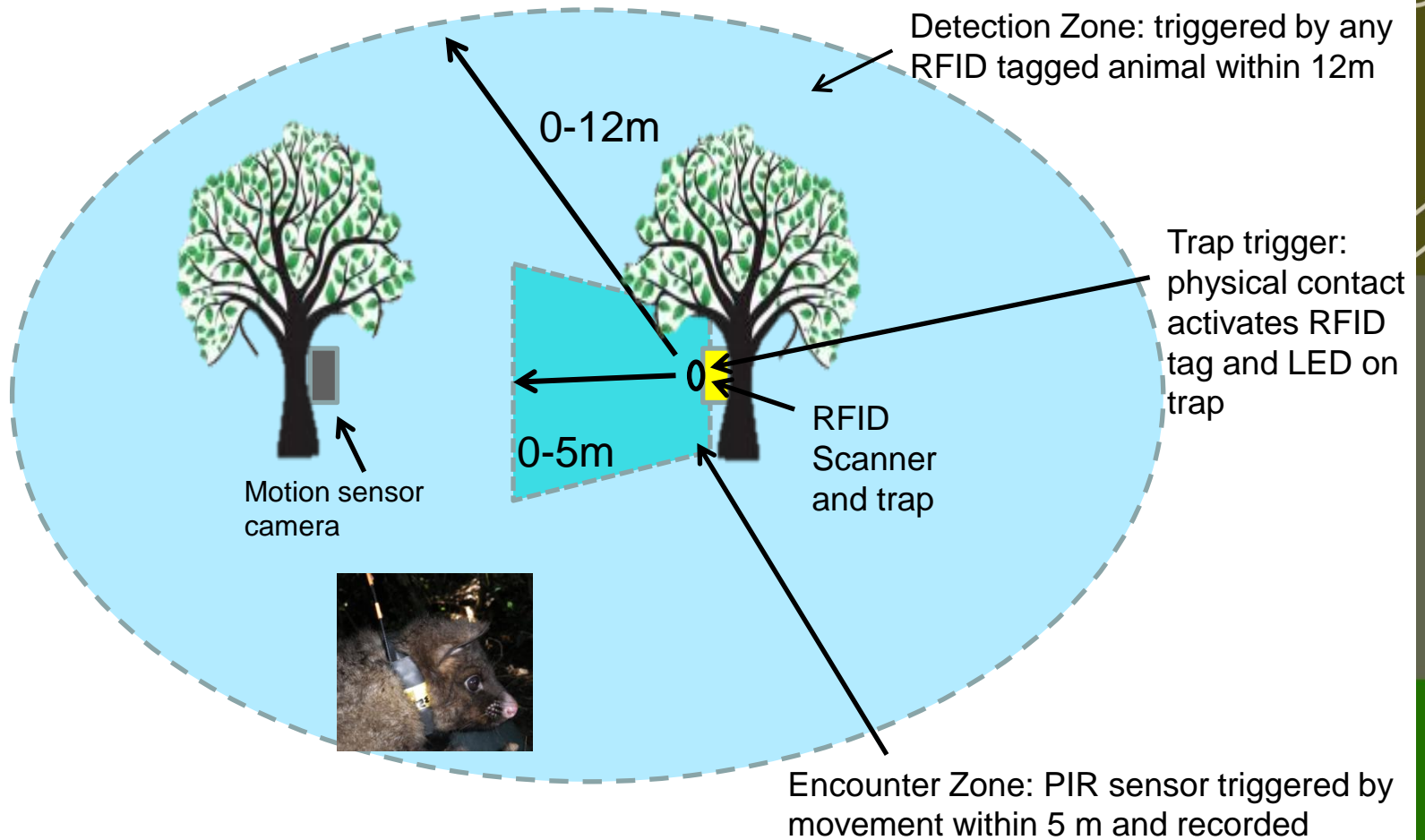
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Study Site: McQueen's Valley, Banks Peninsula

- A total of 22 possums had active RFID tags attached (18 had GPS collars).
- Each trap site had:
  - RFID sensor (12 m and 5 m)
  - Motion sensing camera (trail camera)
  - Each trap site included a trap, fixed open, with the trigger linked to a RFID tag and a LED to record when a possum “triggered” a trap



# Detection System



*Bruce Warburton, Jagath Ekanayake and Sam Brown*

# Next Step

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- GC-MS analysis of volatiles
  - Males vs females
  - oestrous females vs non-breeding females
- Source synthetic analogues
- Pen studies to assess potential attractants/combinations
  - High throughput screening
- Test promising synthetic lure combinations in field trials
  
- Parallel work in other species



# Acknowledgements

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- Susie Scobie, Mike Wehner, Grant Morriss for captive animal work
- Guy Forrester for statistical analysis
- Other Landcare Research colleagues

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Trail camera



RFID detector & trap



