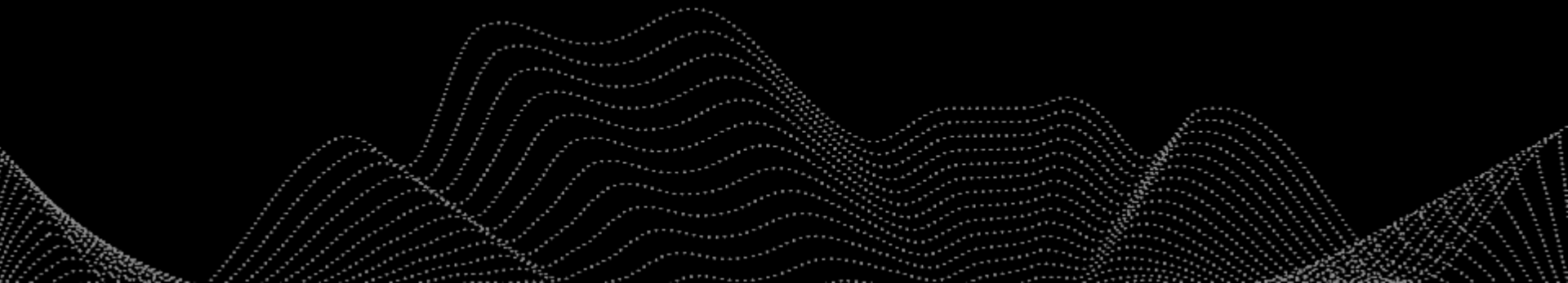




Bait stations for wallabies

Dr. Graham Hickling

Wildlife Ecology and Management





Introduction:



Dama wallaby

Notamacropus eugenii

Adult female 5kg
Rotorua area



Bennett's wallaby

Notamacropus rufogriseus

Adult female 11kg
South Canterbury



Introduction:

- Bait feeders are a well-established method for possum control
- But considered less effective for wallabies





Introduction:

- Bait feeders are a well-established method for possum control
- But considered less effective for wallabies
- Spring 2022 field trials with non-toxic bait to investigate wallaby bait feeder design



Methods:

- a) Marley hockey-stick
- b) Modified Philproof
- c) Raised strikers
- d) Ground strikers *

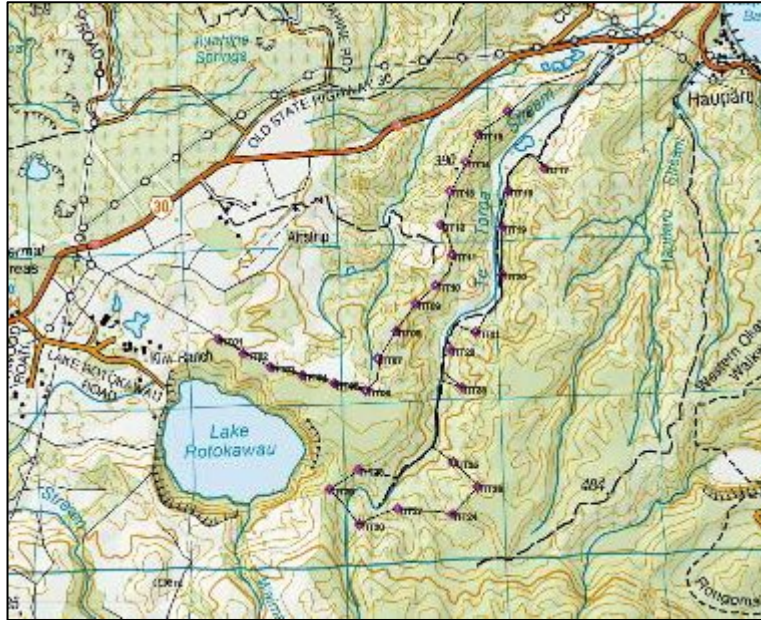


* Under current regulations, Feratox strikers cannot be deployed at ground level

Wallaby behaviour towards the four feeder designs was compared to their behaviour towards **RS5 pre-feed pellets on the ground**

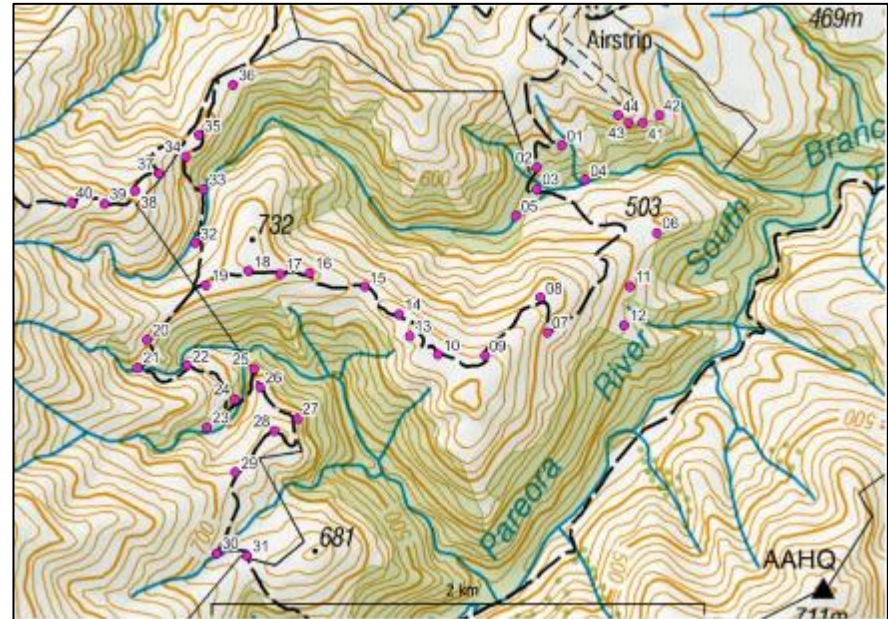


- 6 – 8 replicates of each feeder design placed along transects
- feeders spaced ~200m apart



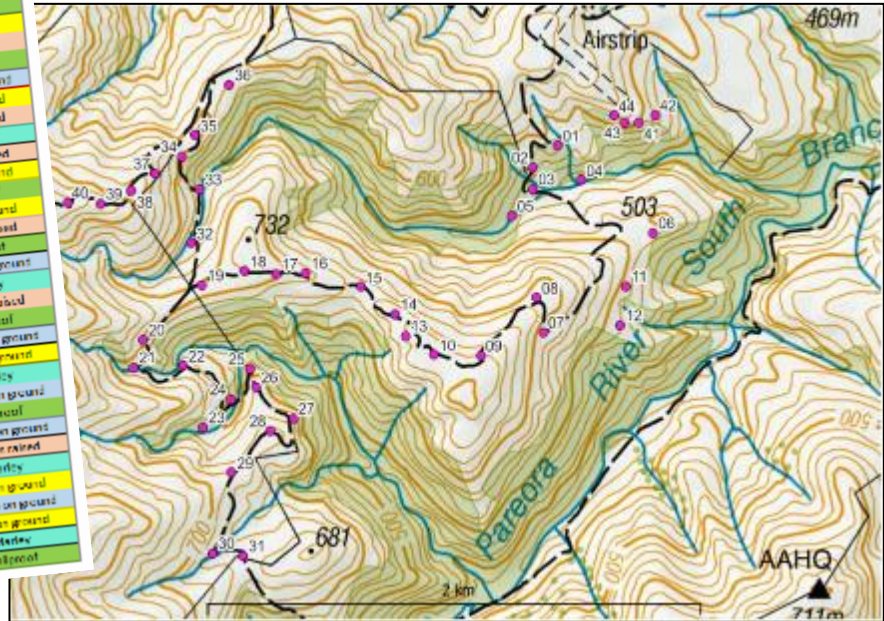
Rotorua District
(following pre-trial possum control)

South Canterbury



Habitat and wallaby abundance varied along the transects, so every two weeks we changed the feeder sequence

Site	Weeks 1 & 2	Weeks 3 & 4	Weeks 5, 6	Weeks 7, 8
1	Bull on ground	Wallaby	Strikers on ground	Striker raised
2	Strikers on ground	Phlipoot	Wallaby	Bull on ground
3	Phlipoot	Strikers on ground	Strikers raised	Strikers on ground
4	Wallaby	Bull on ground	Hilomoni	Wallaby
5	Striker raised	Phlipoot	Strikers on ground	Strikers raised
6	Bull on ground	Wallaby	Phlipoot	Phlipoot
7	Striker raised	Strikers on ground	Wallaby	Wallaby
8	Bull on ground	Striker raised	Wall on ground	Striker on ground
9	Wallaby	Striker raised	Striker on ground	Striker on ground
10	Bull on ground	Bull on ground	Wallaby	Bull on ground
11	Strikers on ground	Striker raised	Hilomoni	Strikers raised
12	Wallaby	Wallaby	Bull on ground	Strikers on ground
13	Strikers on ground	Phlipoot	Wallaby	Striker on ground
14	Strikers raised	Wallaby	Striker raised	Strikers raised
15	Phlipoot	Strikers on ground	Bull on ground	Wallaby
16	Wallaby	Striker raised	Strikers on ground	Striker raised
17	Bull on ground	Bull on ground	Phlipoot	Striker raised
18	Wallaby	Wallaby	Strikers on ground	Bull on ground
19	Striker raised	Wallaby	Striker raised	Phlipoot
20	Bull on ground	Striker raised	Hilomoni	Bull on ground
21	Strikers on ground	Strikers on ground	Bull on ground	Striker raised
22	Wallaby	Strikers on ground	Striker raised	Phlipoot
23	Strikers on ground	Bull on ground	Wallaby	Strikers on ground
24	Phlipoot	Striker raised	Phlipoot	Wallaby
25	Striker raised	Bull on ground	Hilomoni	Striker raised
26	Striker raised	Strikers on ground	Bull on ground	Phlipoot
27	Strikers on ground	Phlipoot	Wallaby	Striker on ground
28	Striker raised	Wallaby	Striker raised	Bull on ground
29	Phlipoot	Phlipoot	Bull on ground	Wallaby
30	Striker raised	Wallaby	Strikers on ground	Striker on ground
31	Bull on ground	Striker raised	Strikers on ground	Striker on ground
32	Wallaby	Bull on ground	Hilomoni	Striker raised
33	Strikers on ground	Phlipoot	Wallaby	Wallaby
34	Phlipoot	Bull on ground	Striker raised	Bull on ground
35	Wallaby	Strikers on ground	Wallaby	Striker on ground
36	Phlipoot	Wallaby	Hilomoni	Bull on ground
37	Strikers on ground	Striker raised	Bull on ground	Wallaby
38	Striker raised	Phlipoot	Wall on ground	Phlipoot
39	Bull on ground	Strikers on ground	Striker raised	Phlipoot
40	Bull on ground	Strikers on ground	Striker raised	Phlipoot



Also, preliminary assessment of two additional feeder designs:



Rotoplas feeder

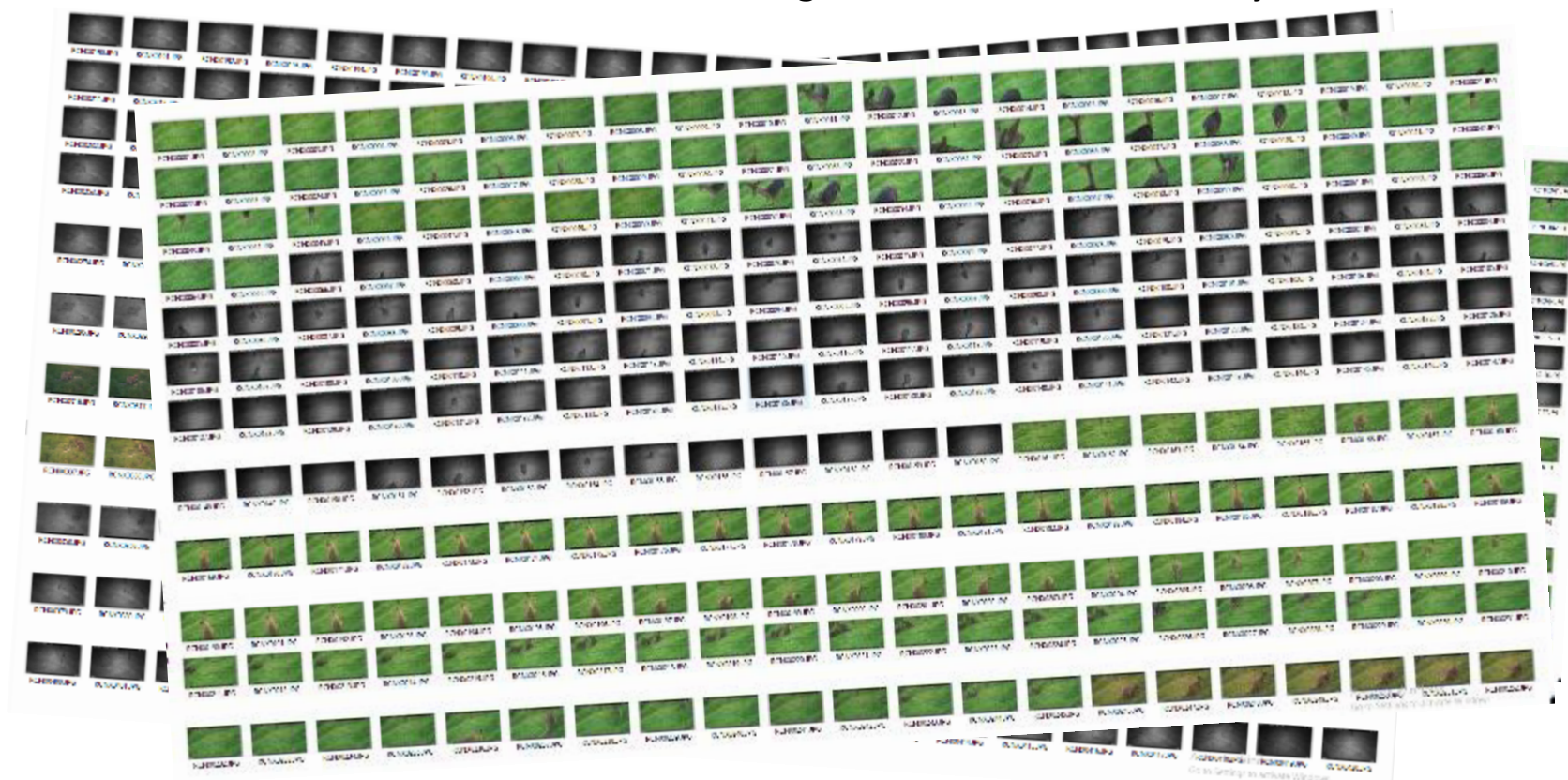


Spinner

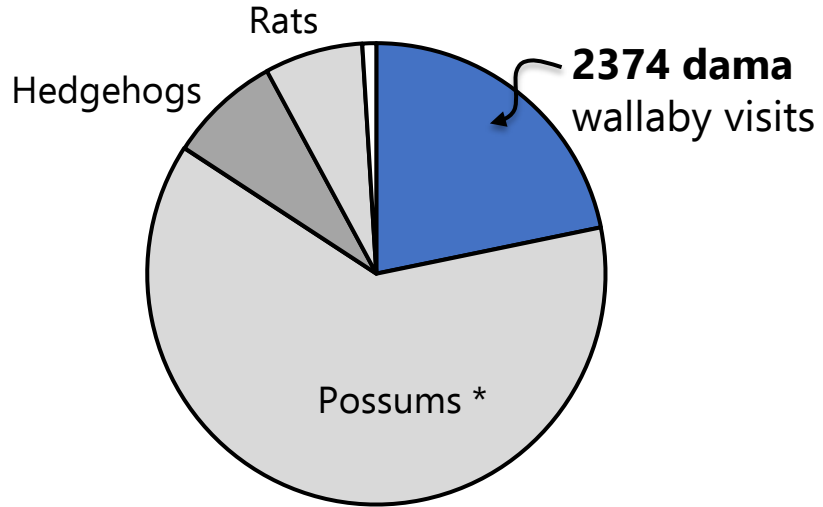
Results:

Lots of trailcam photos to process!

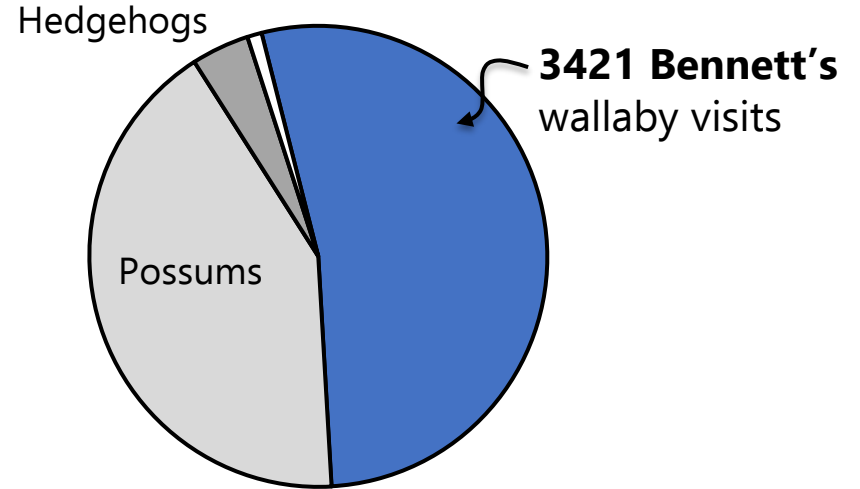
- 2.2 million images from Rotorua District
- 1.8 million images from South Canterbury



Wild mammal 'visits' to the feeders



Rotorua district
10605 visits in 10 weeks

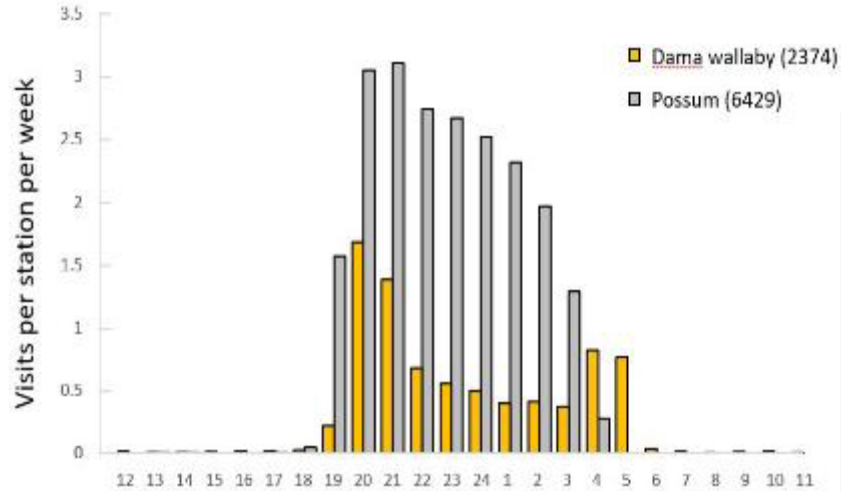


North Canterbury
6548 visits in 4 weeks

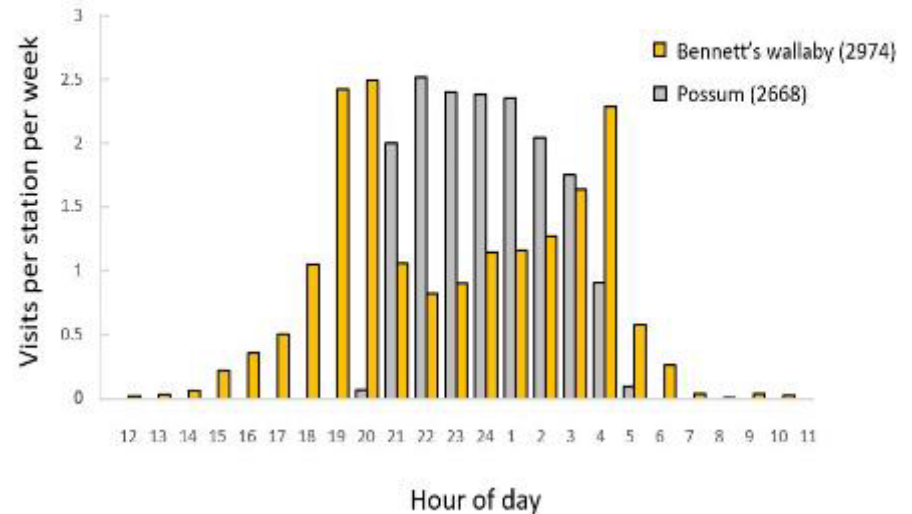
* Despite control efforts

- Wallaby activity at the stations was highest at dusk
- Their activity declined once possums became active

a) Rotorua district

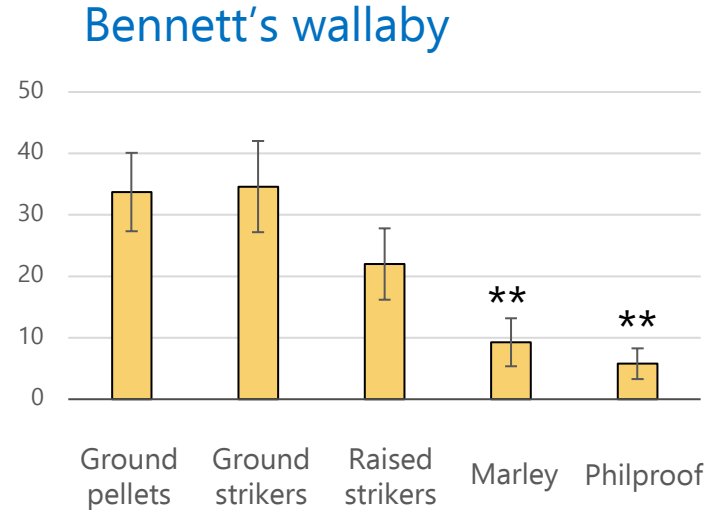
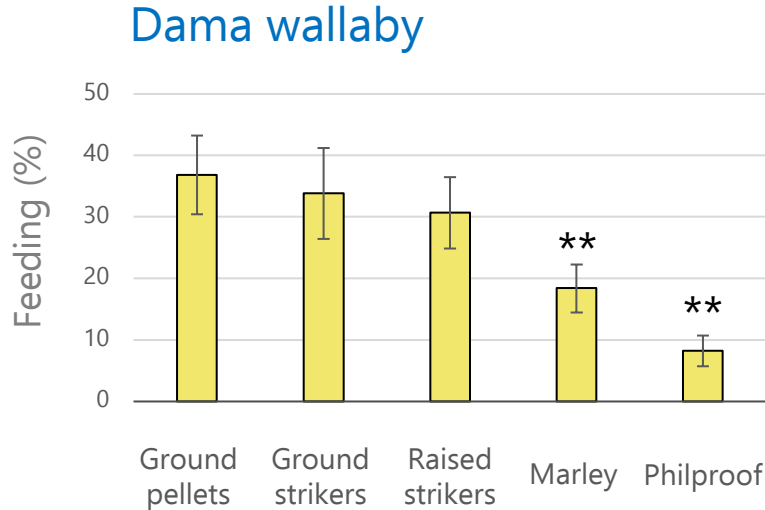


b) South Canterbury



- Possums are behaviourally dominant over both wallaby species (despite the Bennett's larger size)

- Similar proportions of visting wallabies fed at raised strikers, ground strikers and pellets on the ground
- Lower percentages fed at Marley and Philproof
- Feeders were often emptied by non-target species



Means \pm SE; ** = $P < 0.01$

Wallabies do not use their forepaws to extract bait

⇒ reduced feeding success at Marley / Philproof designs



- Wallabies were unable to extract pellets from the Rotoplas feeders



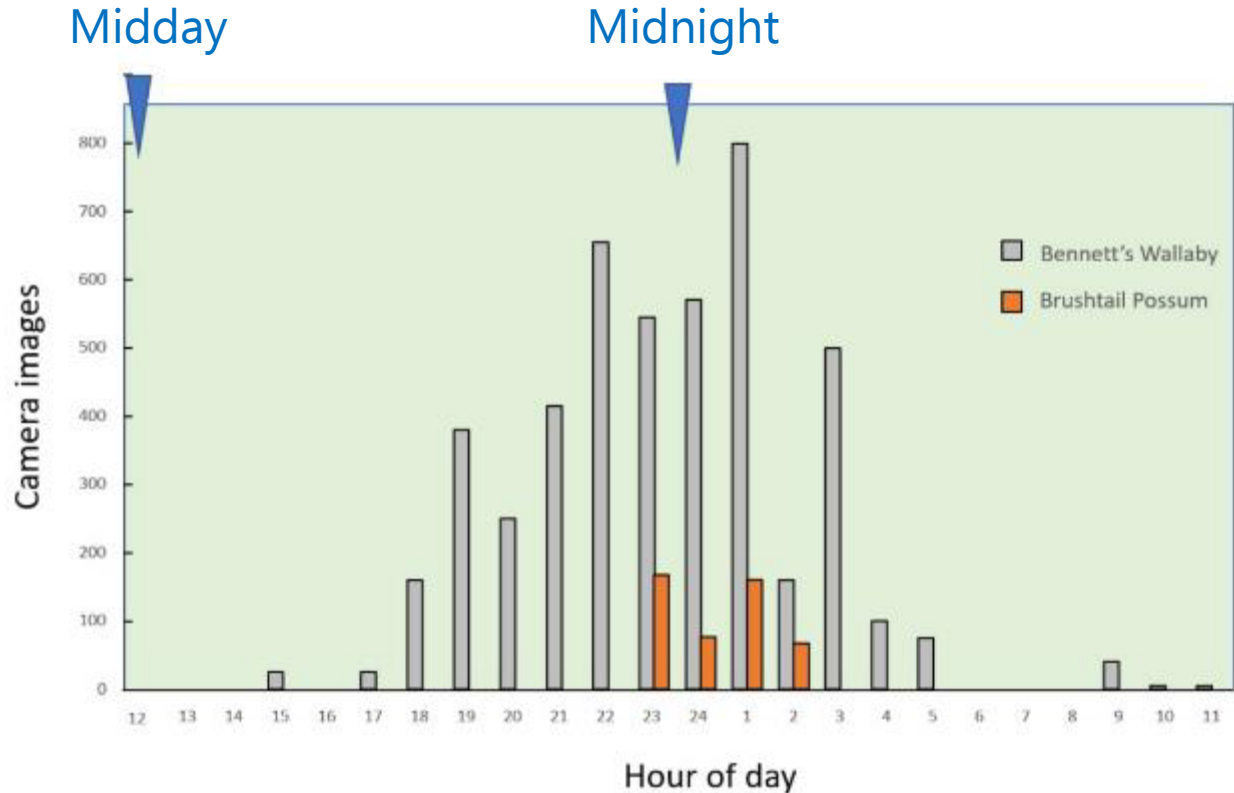
- Wallabies were unable to extract pellets from the Rotoplas feeders



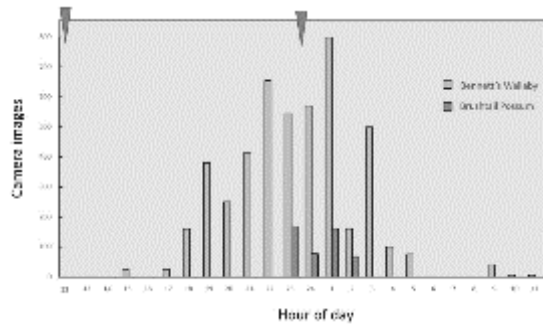
- Bennett's wallabies fed readily at baits dispensed by the Spinner, provided it was mounted on waratahs



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- Bennett's wallabies were deterred by possum carcasses (although in warm weather the effect was short-lived)

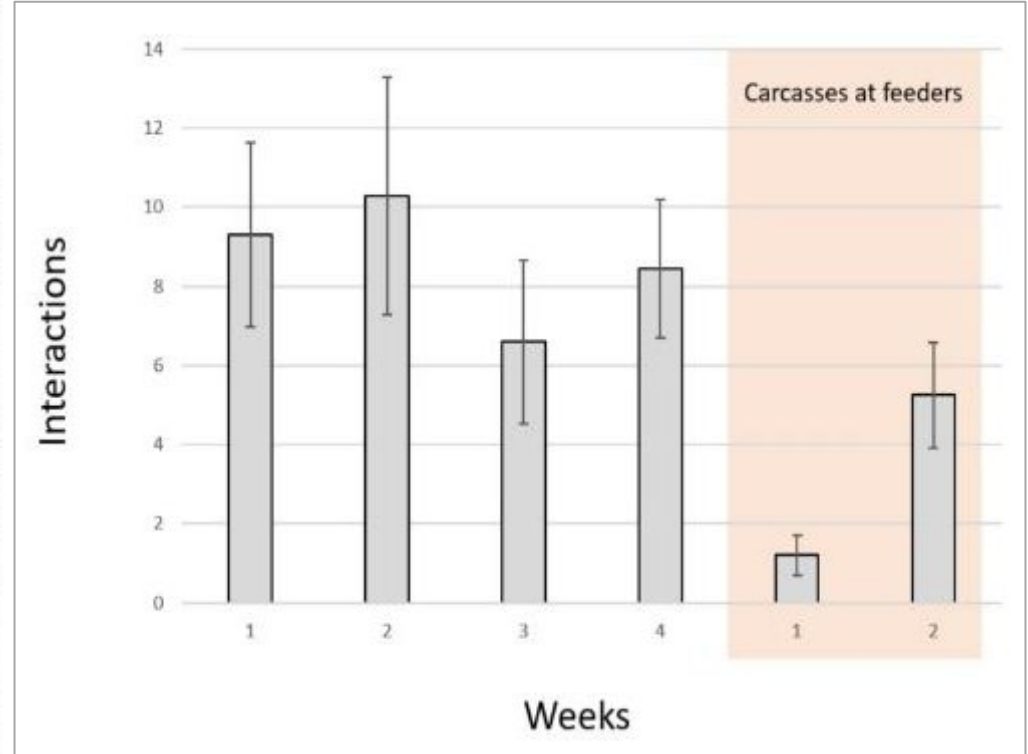
Week 0



Week 1



Week 2



Pros and cons of various feeder designs:

Table 3. Characteristics of the feeder designs evaluated in the trial. BG = bait on ground; SG = strikers on ground; SR = raised strikers; M = Marley; P = modified Philproof; Ro = Rotoplas; Sp = Spinner.

Design factor	BG	SG	SR	M	P	Ro	Sp
Wallabies' willingness to feed	High	High	Medium-high	Lower	Lower	Nil	High
Wallaby learning curve	Low	Low	Low	High	High	--	Medium ¹
Refill interval	Short ²	Short	Short	Long	Long	--	Long ²
Weatherproof	None	Good	Good	Medium ³	Good	Good	Prototype was poor
Livestock protection	Nil	Poor	Poor	Good	Good	Good	Poor
Hedgehog-proof	No	No	Mostly ⁴	Yes	Yes	Yes	No
Portability	High	High	Medium	Lower	Lower	Medium	Lower ⁵
Robust/low maintenance	Good	Good	Good	Good	Good	Good	Prototype was poor
Cost per station	Low	Medium ²	Medium ²	Medium	Medium	Medium	High

High feeding rate

Bait is available for longer

Less portable

Not hedgehog-proof

¹ Wallabies need to learn the time of day the Spinner is set to dispense pellets
² Depending on the volume of bait applied
³ Wind plus rain can lead to wet, clogged pellets in the mouth of Marley feeders
⁴ Raised strikers were sometimes dropped by possums and wallabies
⁵ Our prototype required two waratahs

Where to next?

- Unlikely to be a measurable difference in kill rate between raised and ground Feratox strikers.



Where to next?

- Unlikely to be a measurable difference in kill rate between raised and ground Feratox strikers.
- A follow-on trial of feeder designs will incorporate pulses of toxic bait to suppress feeding by non-targets.





Acknowledgements:

- Tim Day, Richard Guest and Jessica Day ('Day In The Bush') ran the dama wallaby field trial
- Emily Lawrence (MWLR) ran the Bennett's wallaby field trial with assistance from Grant Morriss and Bruce Warburton
- We thank the landowners in South Canterbury and Rotorua District for access to the field sites
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Questions or comments?

