



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

# **Utility of Pigs as Sentinels for TB and as Judas Animals in the northern South Island High Country**

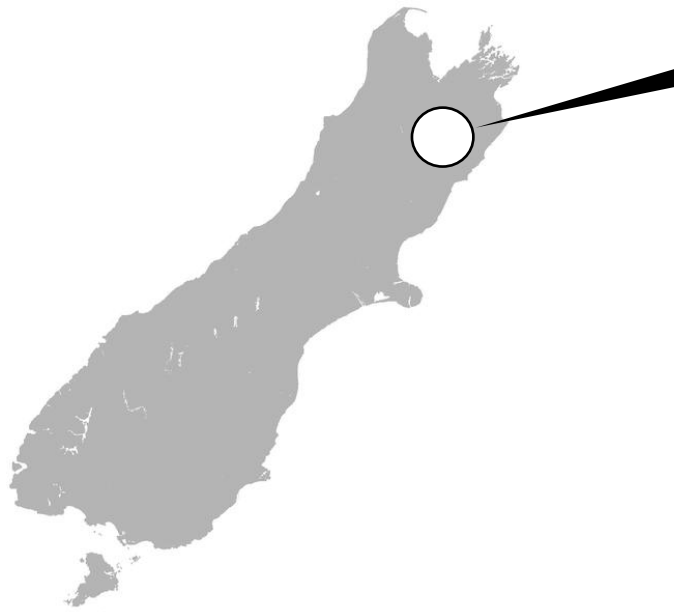
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# Northern South Island high country: Molesworth & Muzzle Stations and Clarence Reserve

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- Bovine tuberculosis (TB) recurrent in the area since 1980s
- Low density possum population ( $< 1/\text{ha}$ ) with large home ranges ( $> 10\text{ha}$ )
- Molesworth region controlled for possums in 2008 using semi-intensive aerial 1080

# Sympatric TB hosts in the northern South Island high country



Spillover



Maintenance



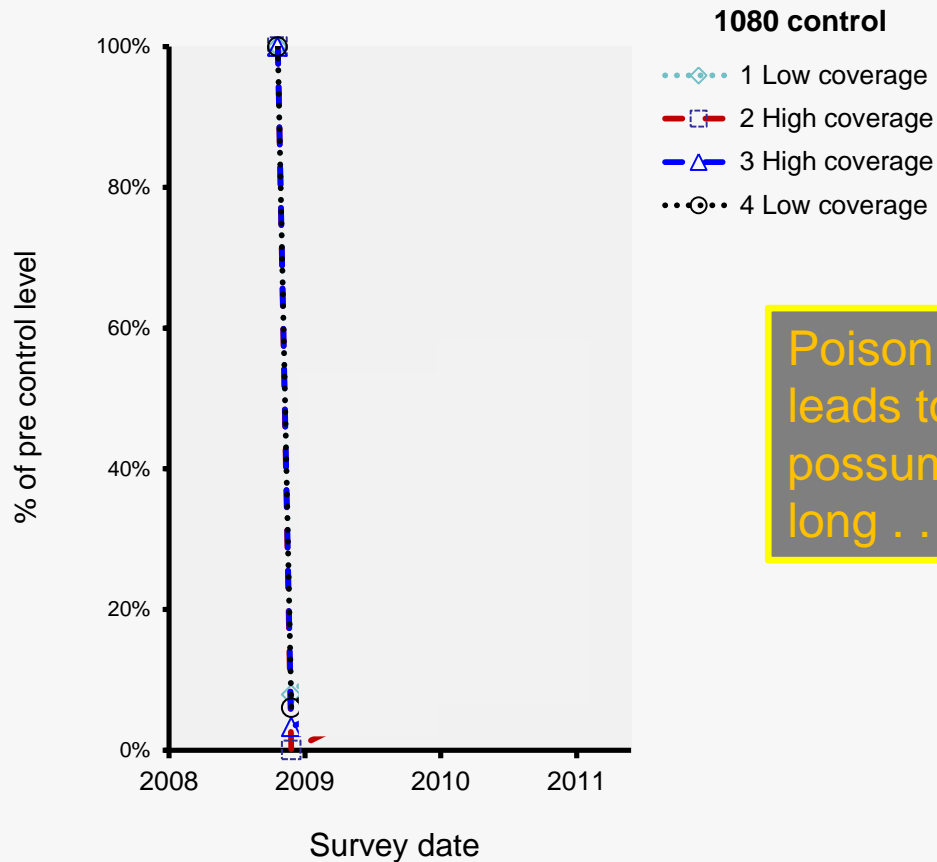
- Sentinel pigs acquire TB from scavenging possum carcasses
- Pigs cover far more ground, hence represent “searchers” for the few tuberculous possums that remain

**Pigs can be radio-collared & tracked**



# Molesworth Station: effect of semi-intensive aerial 1080 control on possum populations

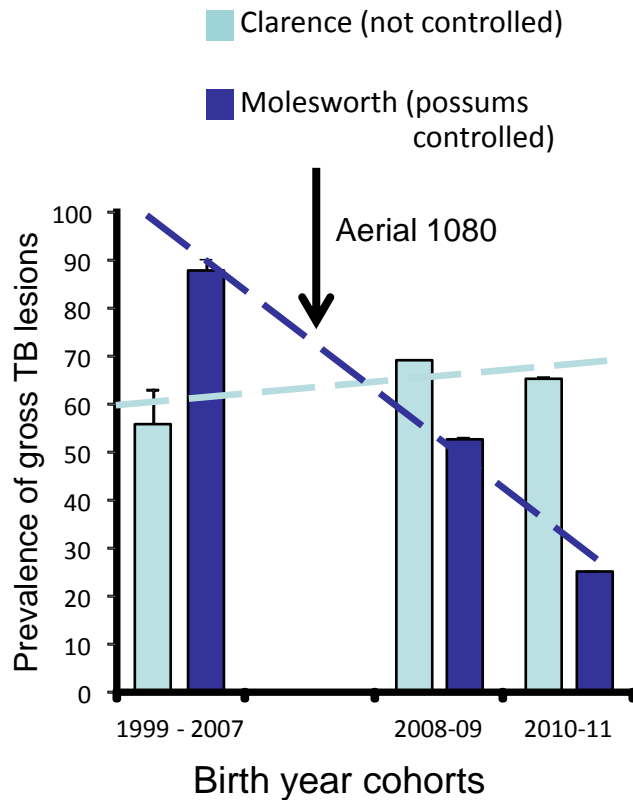
Chew Card index of possum relative abundance



Poison control of possums leads to a sharp decline in possum numbers; but not for long . . .

# Effect of semi-intensive aerial 1080 possum control on TB in sentinels (wild pigs)

## TB prevalence



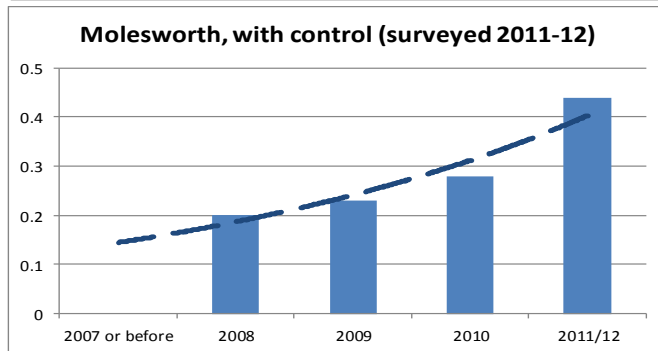
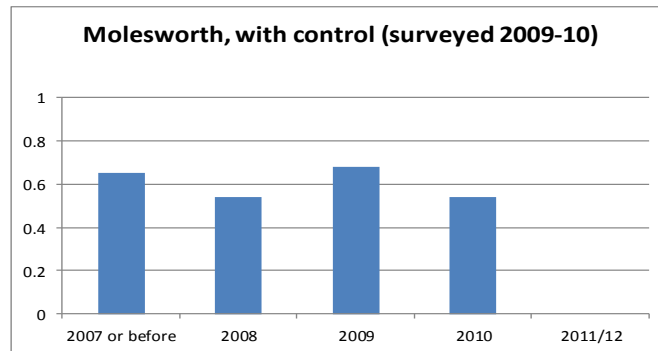
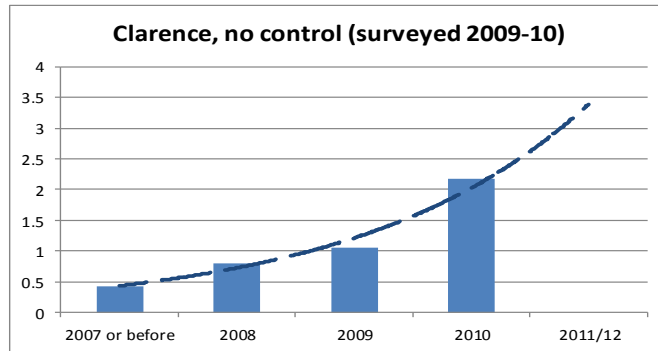
Poison control of possums leads to a sharp decline in TB prevalence in pigs

*But is this the whole picture?*

# Effect of semi-intensive aerial 1080 possum control on TB in sentinels (wild pigs)

## Incidence of new infections

Apparent annual incidence of new infections



Birth year cohorts

As possum populations recover, so does the acquisition of new TB infections in young pigs

*Without even monitoring TB in possums, pigs have shown both the decline and subsequent recovery of TB in possums*



# Released sentinel pigs

- Purpose bred, reared on site, tested TB free
- Radio/GPS tracker implanted
- Released to wild, radio-tracked monthly
- Recovered and necropsied ~ 6 months later

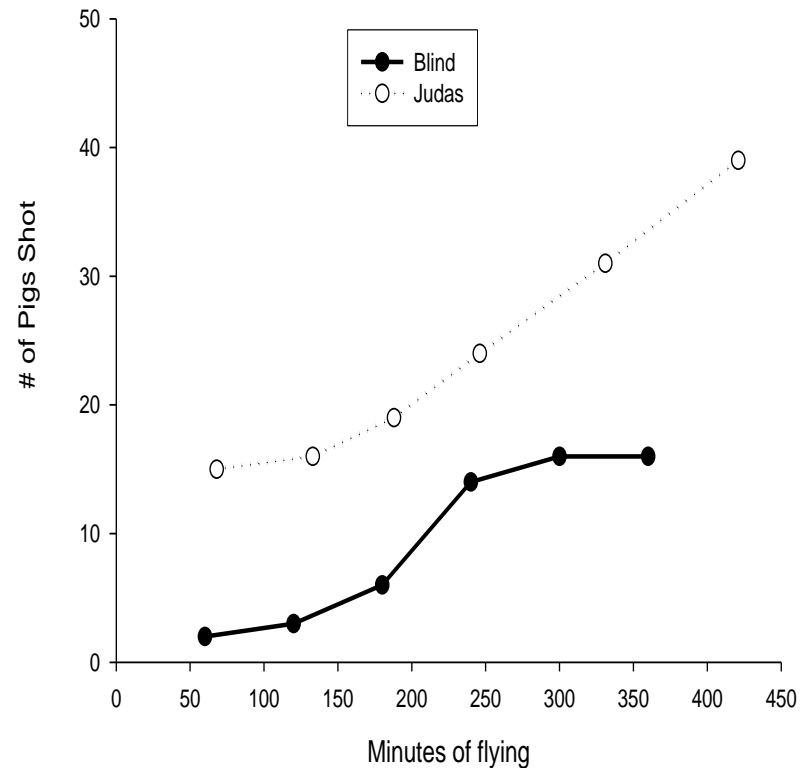


# An additional benefit of released sentinel pigs

- Judas hunting = use radio-collared/implanted pigs to help locate mobs of wild pigs
- Overall, twice as many resident pigs were shot during Judas hunts as during unaided hunts
- Most useful for wild pigs in dense cover



Cumulative number of pigs shot per minute of hunting





# Summary

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- Pigs can tell us a lot about disease patterns in possums
- For widely-spread possum populations, sympatric pigs can perform a useful disease surveillance role
- At Molesworth, pigs cover ~20x the range of possums = cost-effective TB sentinels, especially at low disease levels
- Can use resident wild pigs or purpose-reared/GPS-implanted pigs; if the latter, an additional benefit is increased wild pig location at kill-out
- Planned 2014 TB Proof of Freedom work in deep forested parts of Hauhungaroa range includes continuous release of implanted sentinel pigs/removal of resident pigs

Missing  
member of 60s  
rock group  
"Herman's  
Hermits"

