Evaluating the effectiveness of crossing structures for arboreal mammals: is use evidence for effectiveness?



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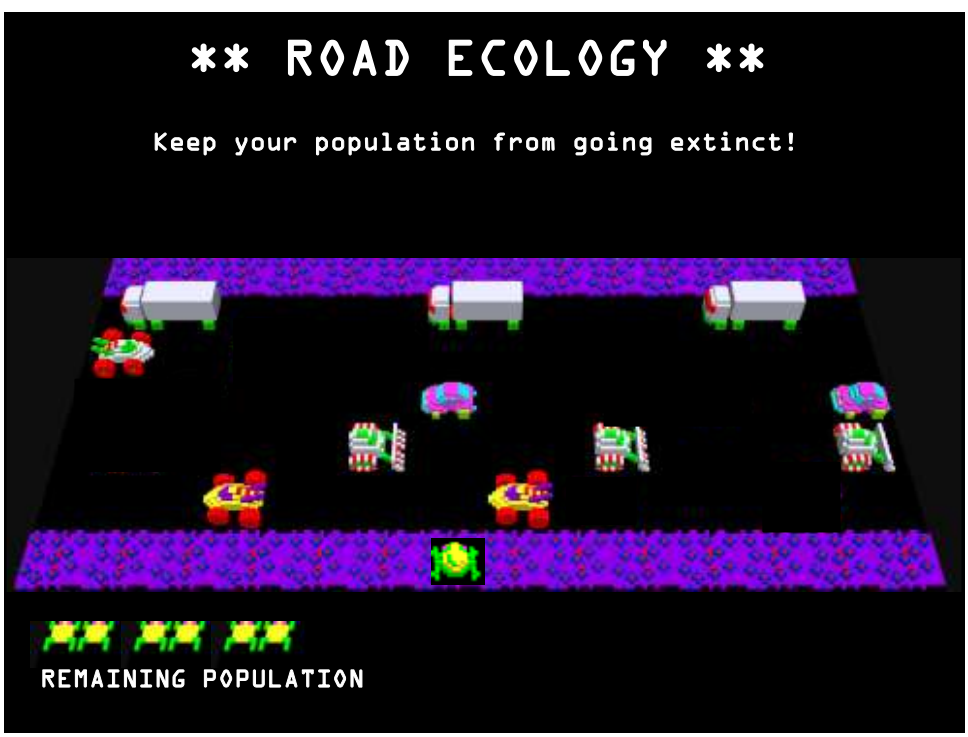

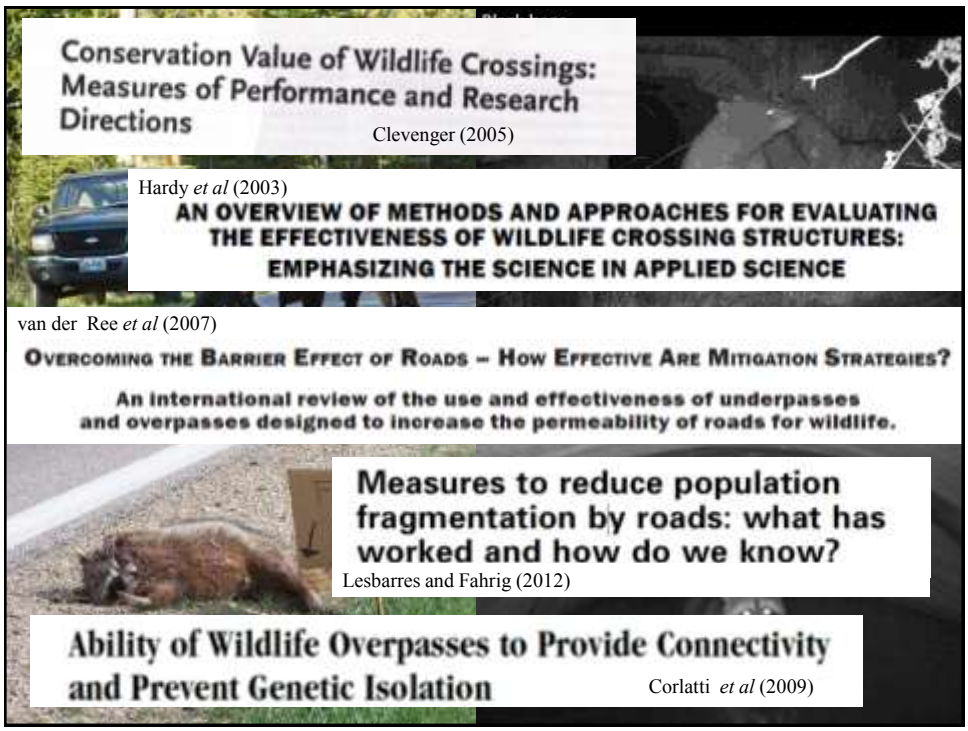

Aims

1) Use three methods to evaluate the impact of crossing structures on animal movement

2) Evaluate the utility of these methods to make inferences about population level effects

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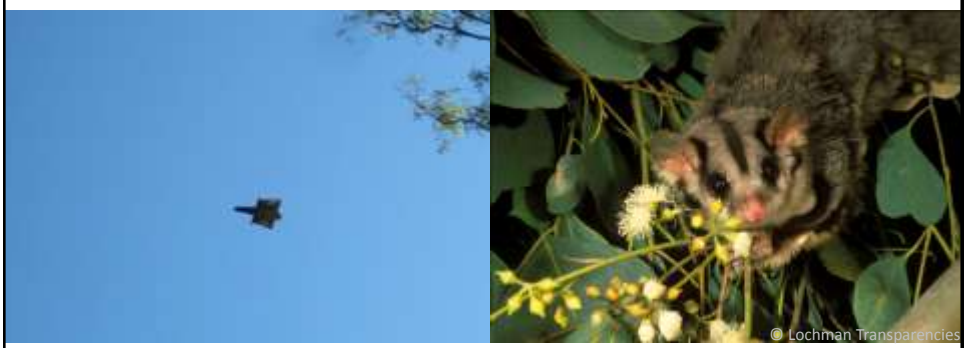
Squirrel Glider



- Gliding marsupial
  - Average glide 30-40m, max approx. 70m
- Threatened species

Hume Freeway Victoria

- 4 lane divided highway
- 10,000 vehicles per day

Impacts on the Squirrel Glider

Barrier to movement

- where gap > 50m

(van der Ree *et al.* 2010)

Reduced survival rates

- 60% lower survival at freeway

(McCall *et al.* 2010)

Wildlife crossing structures

Canopy bridge - 2007

Glider pole - 2007

Vegetated medians- 1980

Impacts on glider movement?

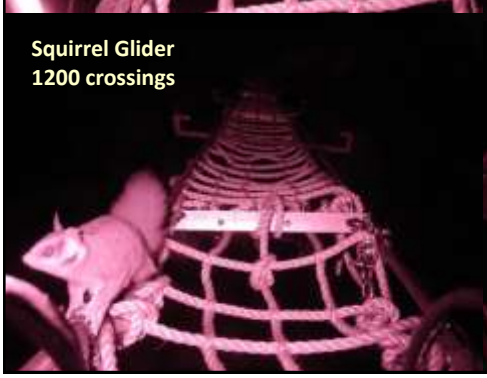
Measuring structure use

Cameras

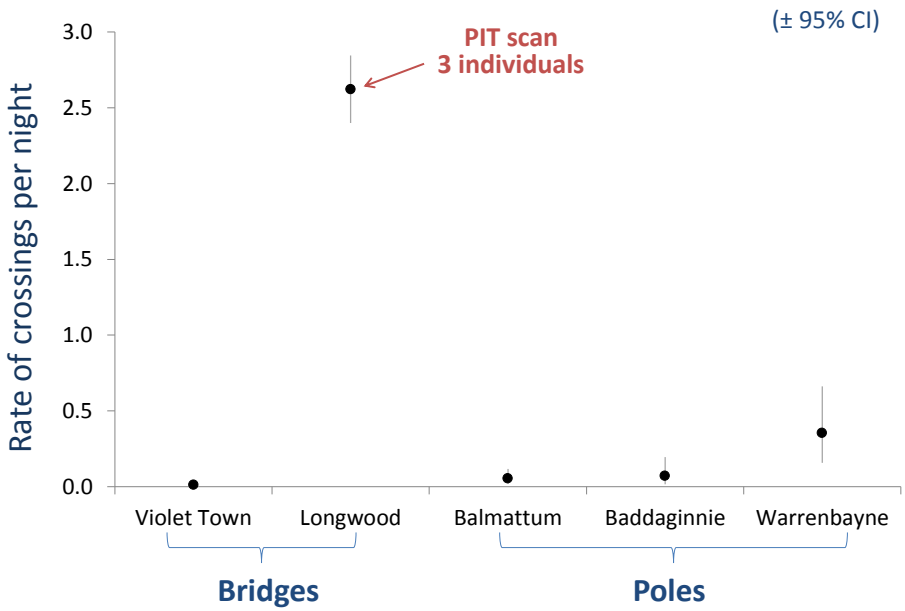
- 2 canopy bridges
- 3 glider poles
- Up to 4 years

PIT-tag scanners

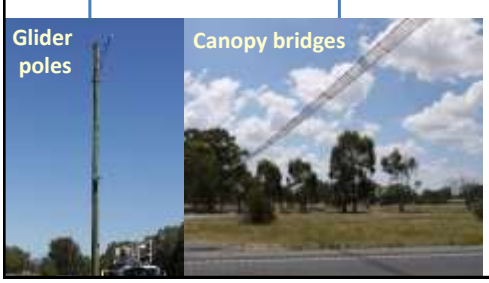
- Individual ID
- Canopy bridges only



More crossings = more effective?



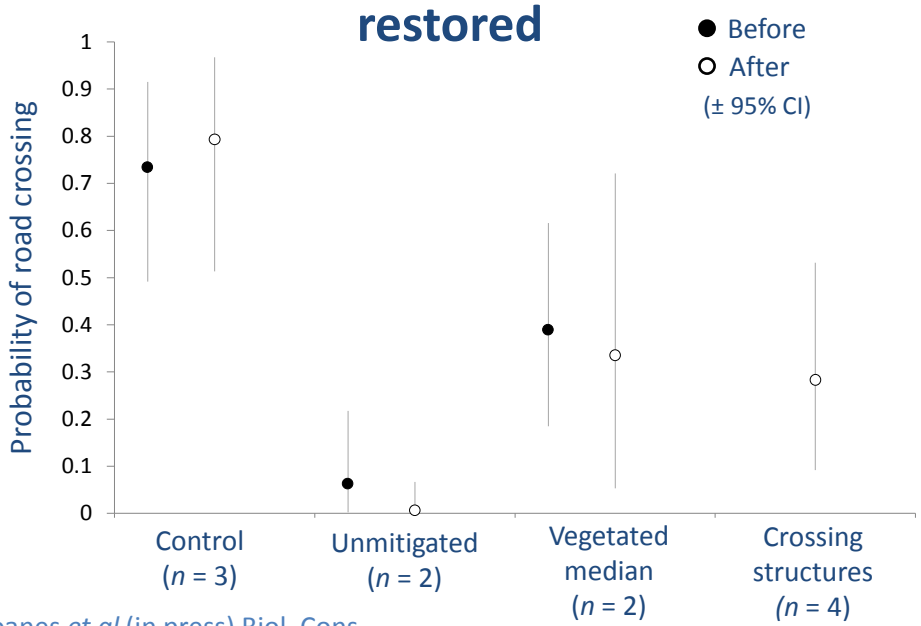
Crossings installed



Measuring movement

- Radio-tracking
- Before mitigation (2005/2006)
- After mitigation (2010/2011)

Movement re-established but not restored



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Inferring effectiveness from movement

What we can say...

- Cameras
  - Animals use structures

- PIT scanners
  - For habitat access
- BACI tracking
  - Crossing increased but only partially mitigated

Likely positive effect on population persistence

Inferring effectiveness from movement

What we can't say...

- Impacts on survival, gene flow?
- Which mitigation is most effective?
- How much movement is enough?

Thanks

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