



# Development of Monitoring Methods for *Brachaspis robustus*

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# The Project

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- Improvement of conservation translocation techniques
    - Role of introduced mammalian predators
    - Optimize founder populations
    - **Development of monitoring methods**
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# The Project

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- Development of monitoring methods
    - When should monitoring be carried out?
    - How should monitoring be done?
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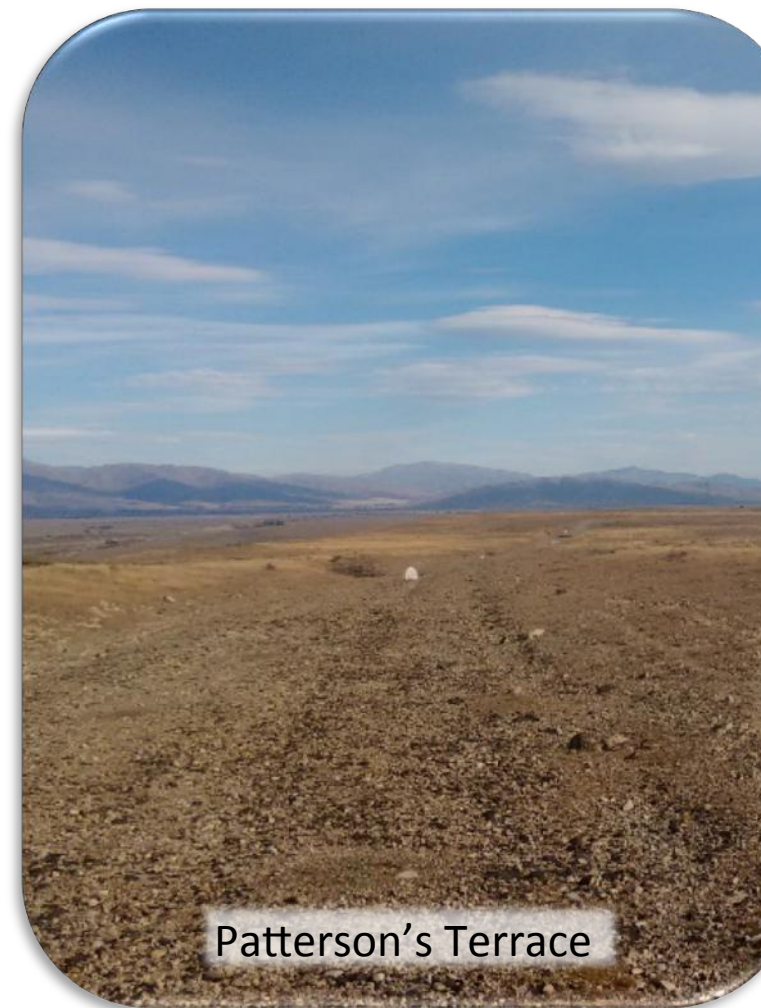
# e field site



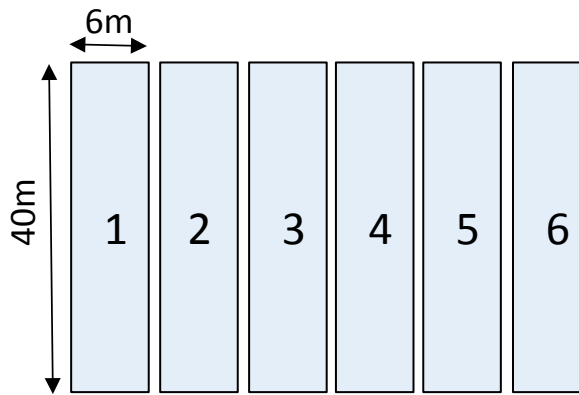
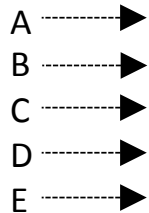
Image: [https://en.wikipedia.org/wiki/Template:Location\\_map\\_New\\_Zealand](https://en.wikipedia.org/wiki/Template:Location_map_New_Zealand)



Image: <https://www.google.co.nz/maps/>



# When to monitor?



Nov	Dec	Jan	Feb	Mar
Nov	Dec	Jan	Feb	Mar
Nov	Dec	Jan	Feb	Mar

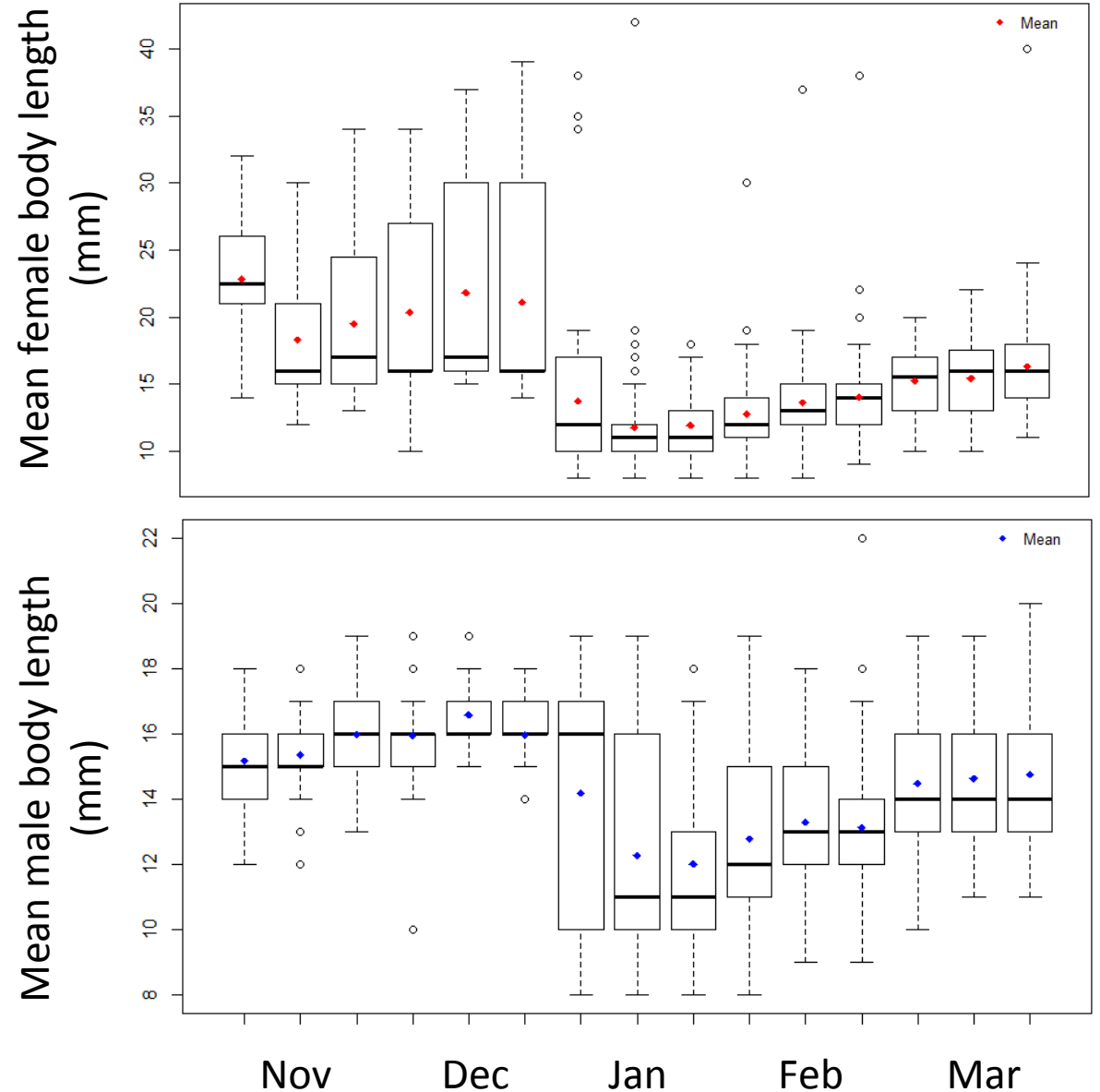
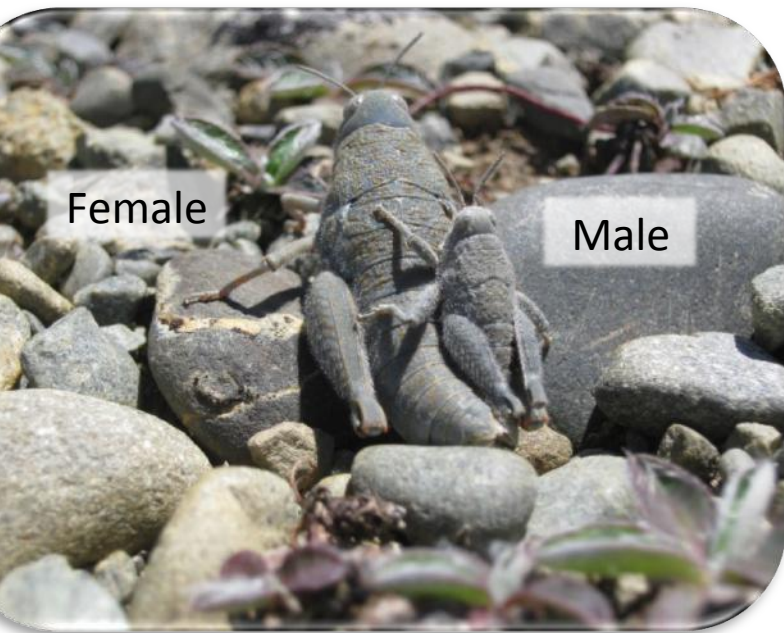
Pass

Sites

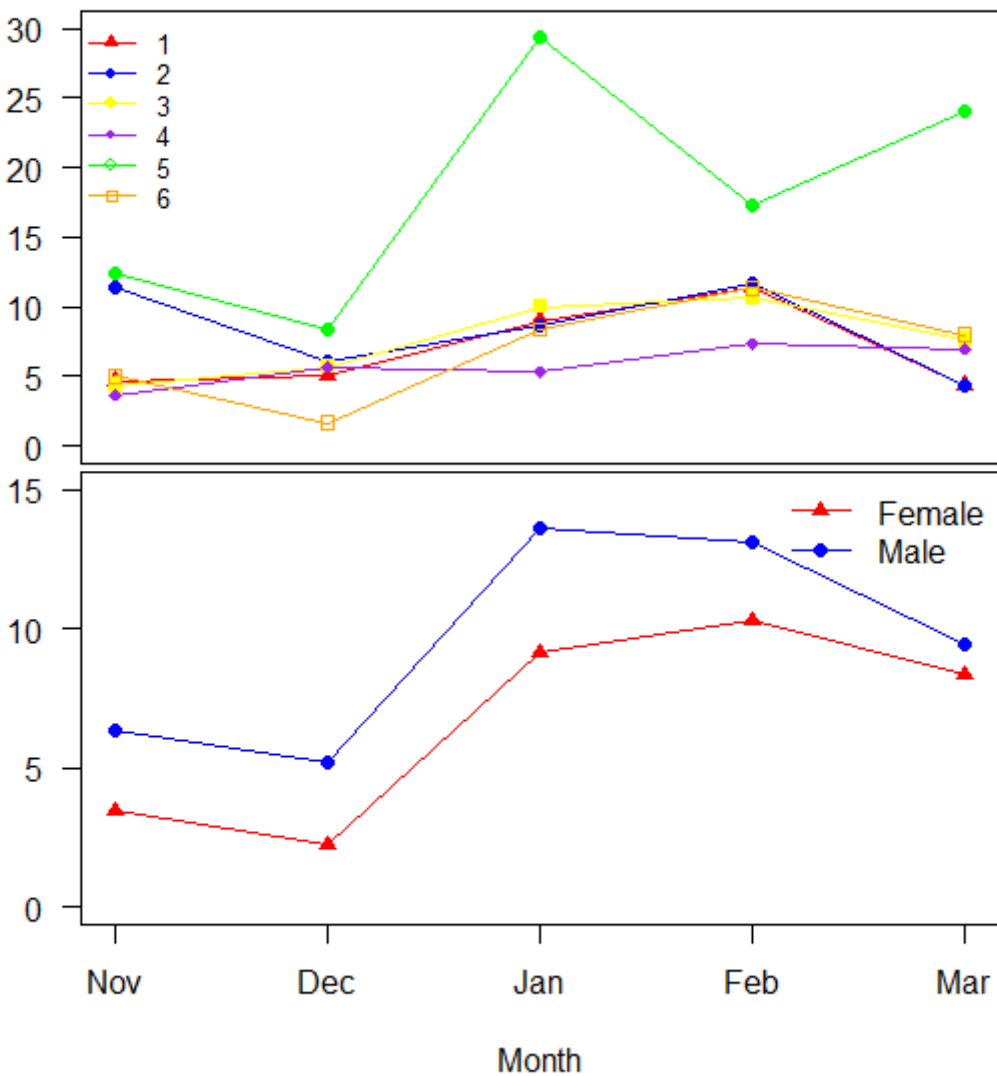
Sampling Events

# nds in body length

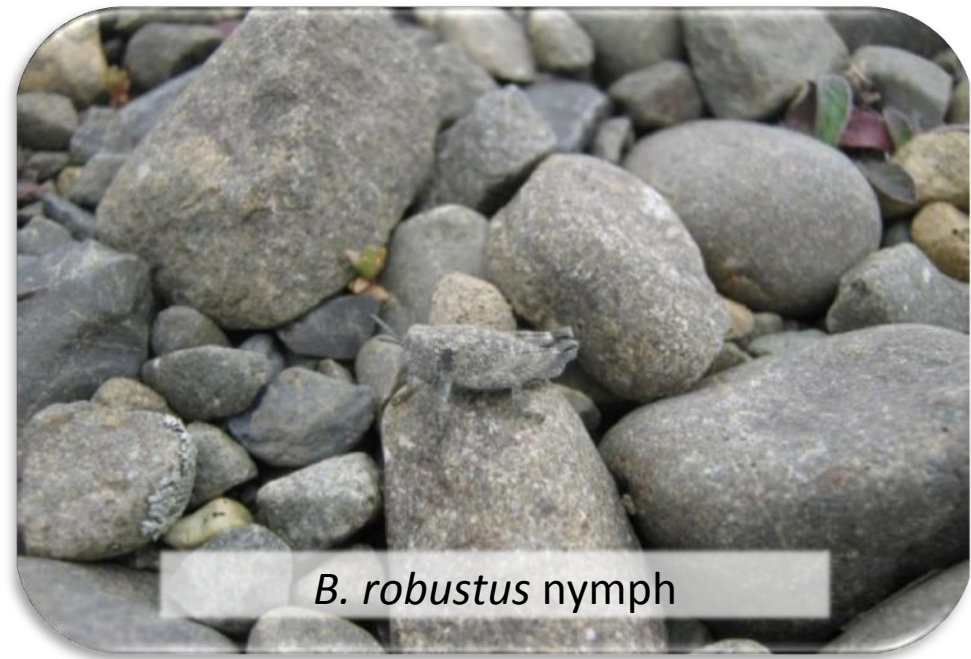
Mean body length is greatest in December  
Highest proportion of breeding adults in December  
Nymphs emerge in Dec/Jan



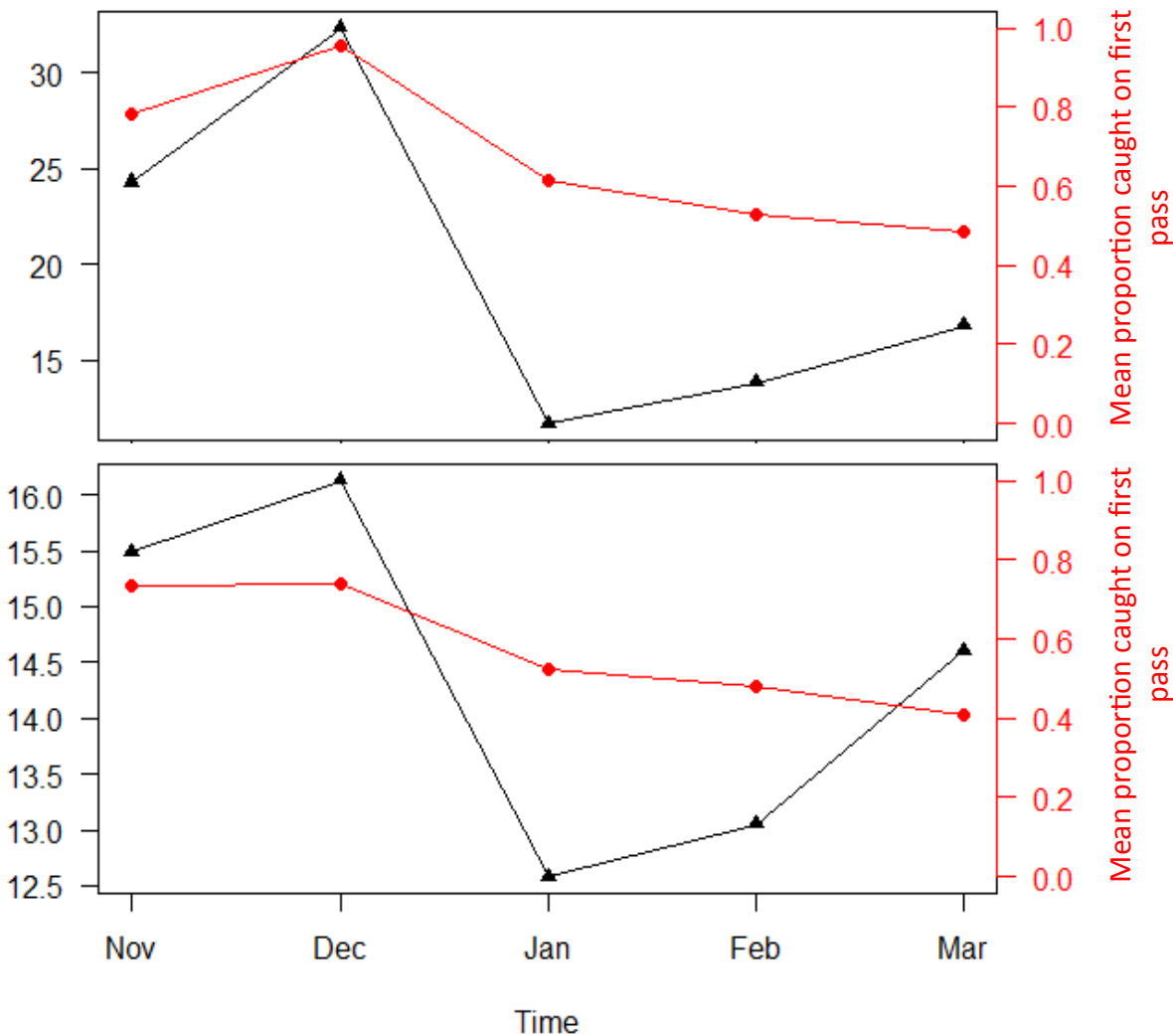
# Changes in population size



- Nymph emergence results in population increase in January



# caught on the first pass

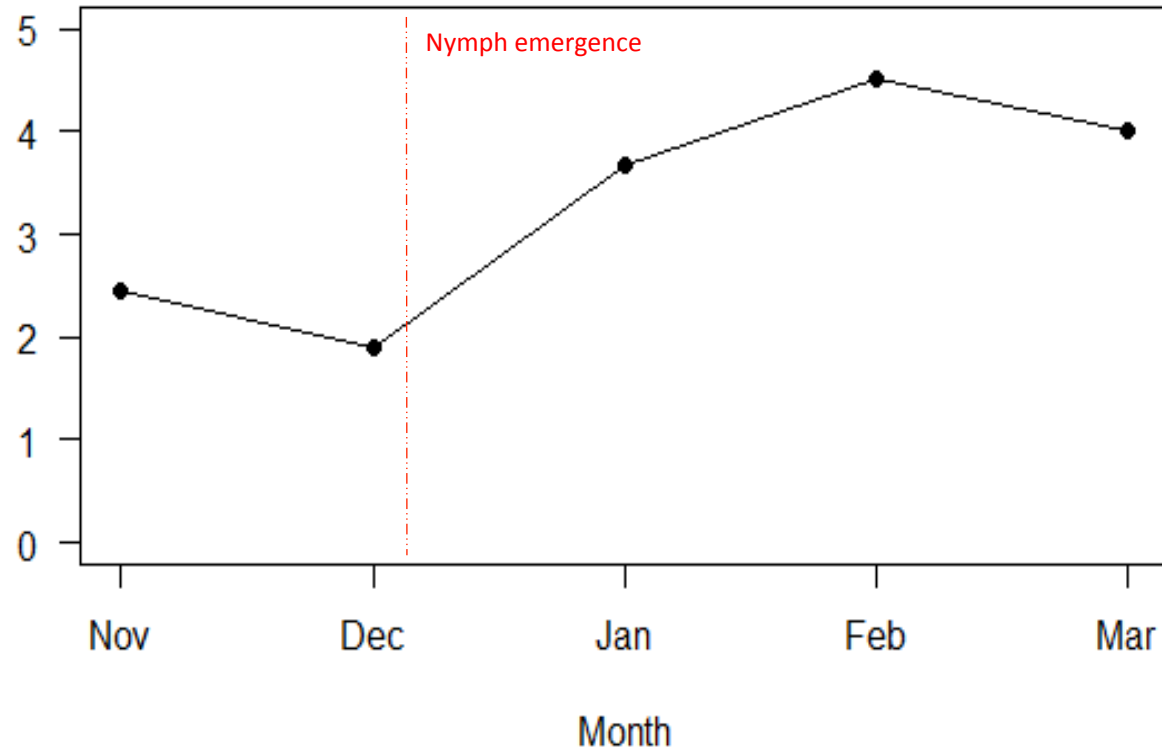


**Females:** Detectability around 95% when mean body length peaks.

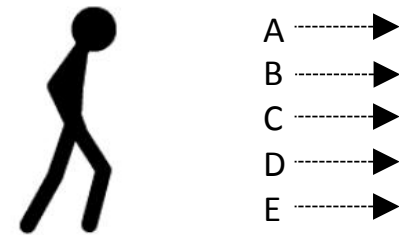
**Males:** Detectability around 75% when mean body length peaks.



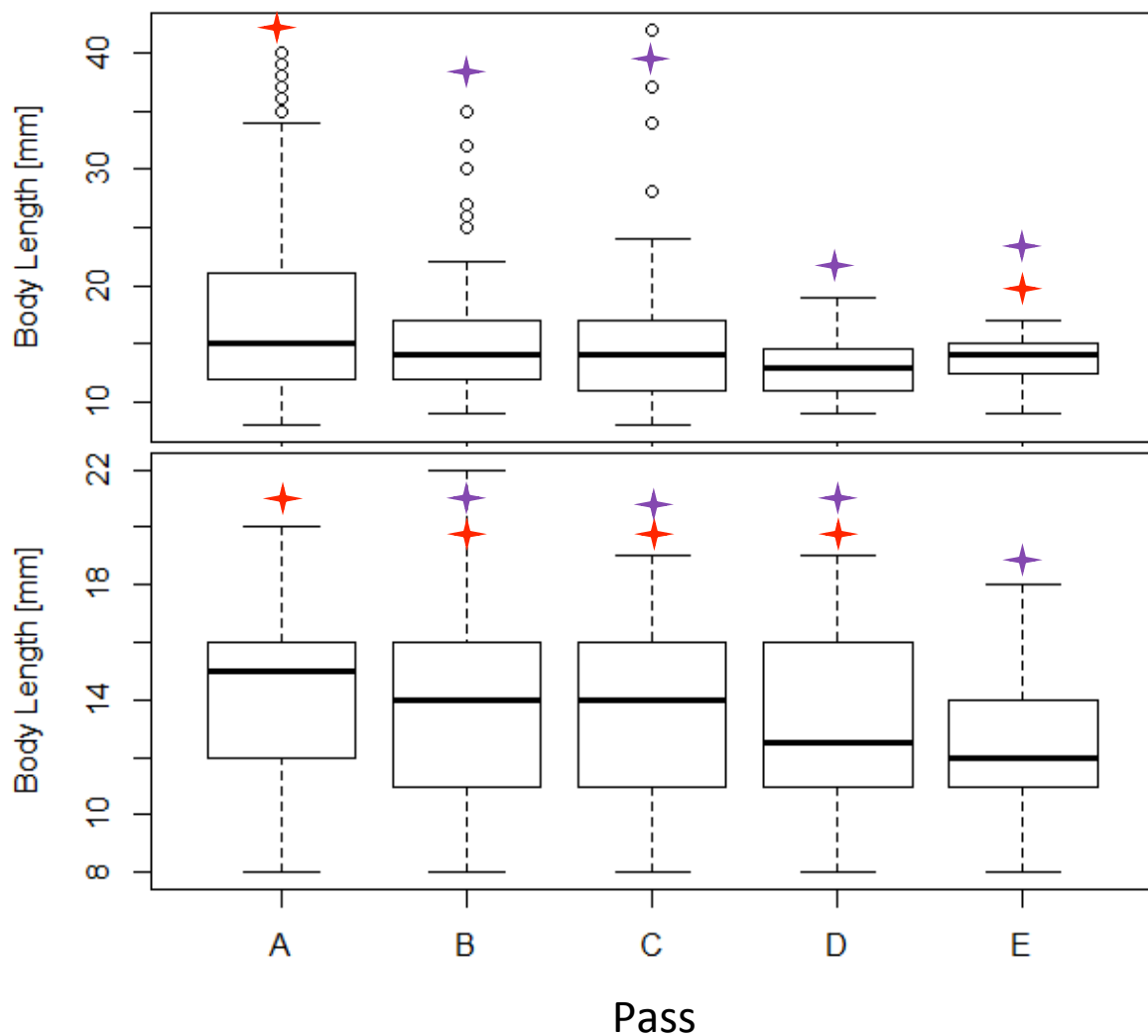
# Number of passes



- Least number of passes before nymph emergence



# Body length of grasshoppers caught on each pass



**Female**

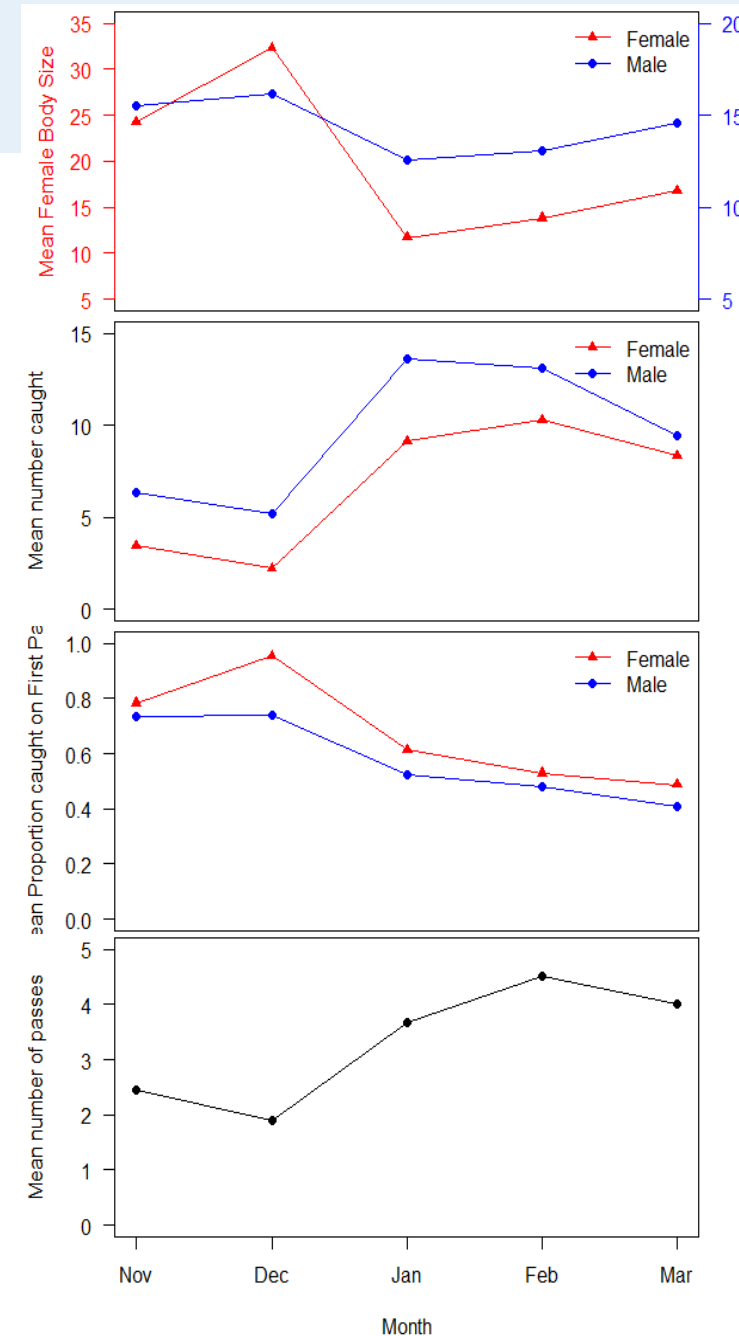
Longest ones are caught first

**Male**

Shortest ones are caught last

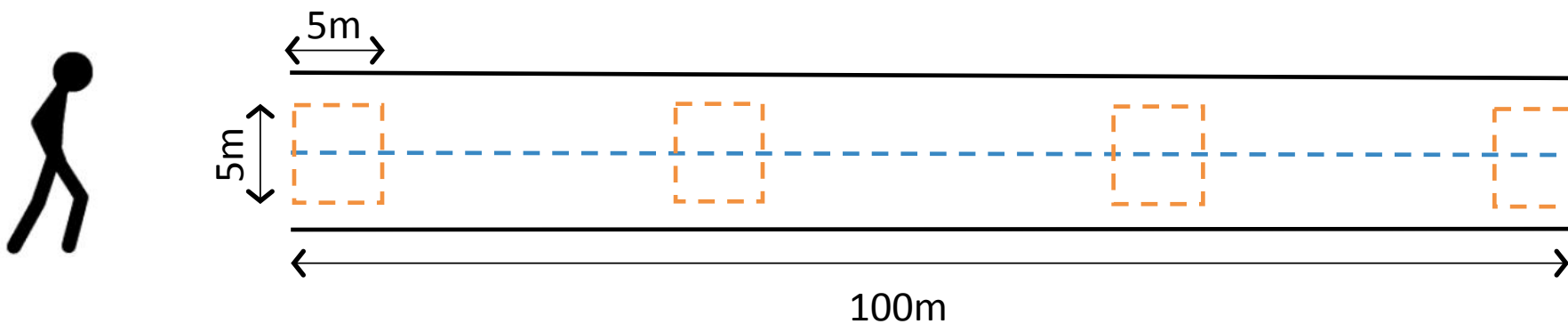
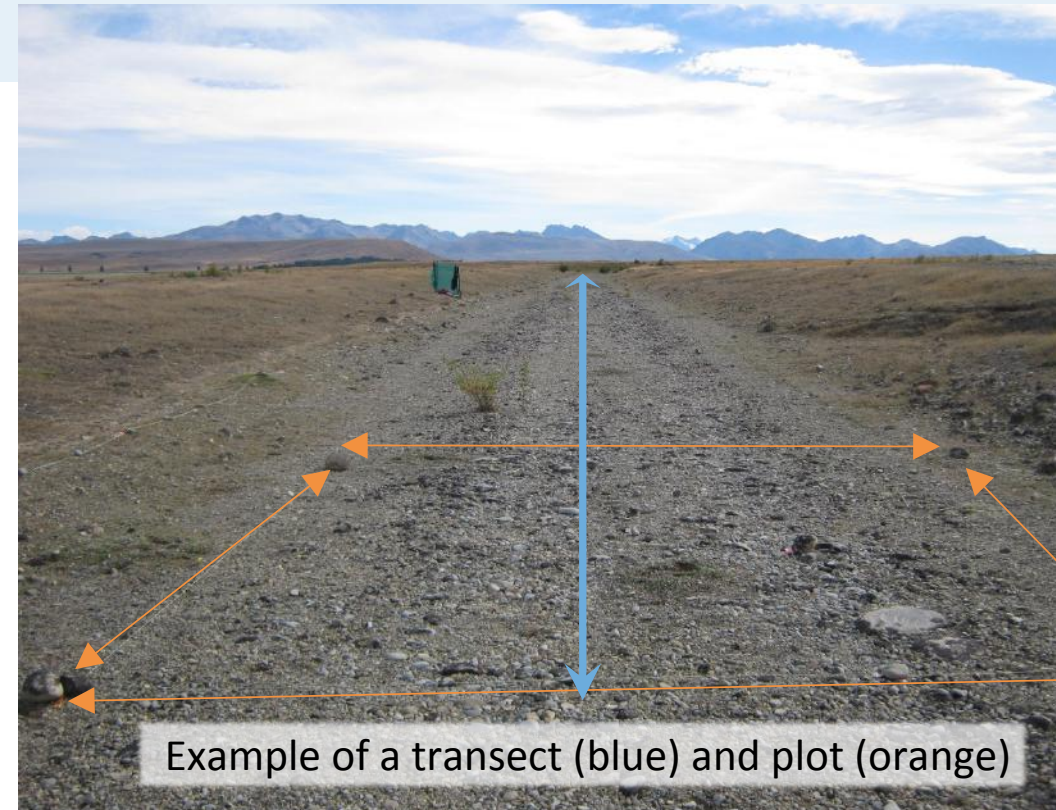
# When to monitor?

- In December:
  - Mean body length peaks
  - Population size is the smallest
  - Detectability peaks
  - The least number of passes required
- Likely that monitoring in December will:
  - detect the majority of adult grasshoppers present
  - give most accurate estimates of breeding adults

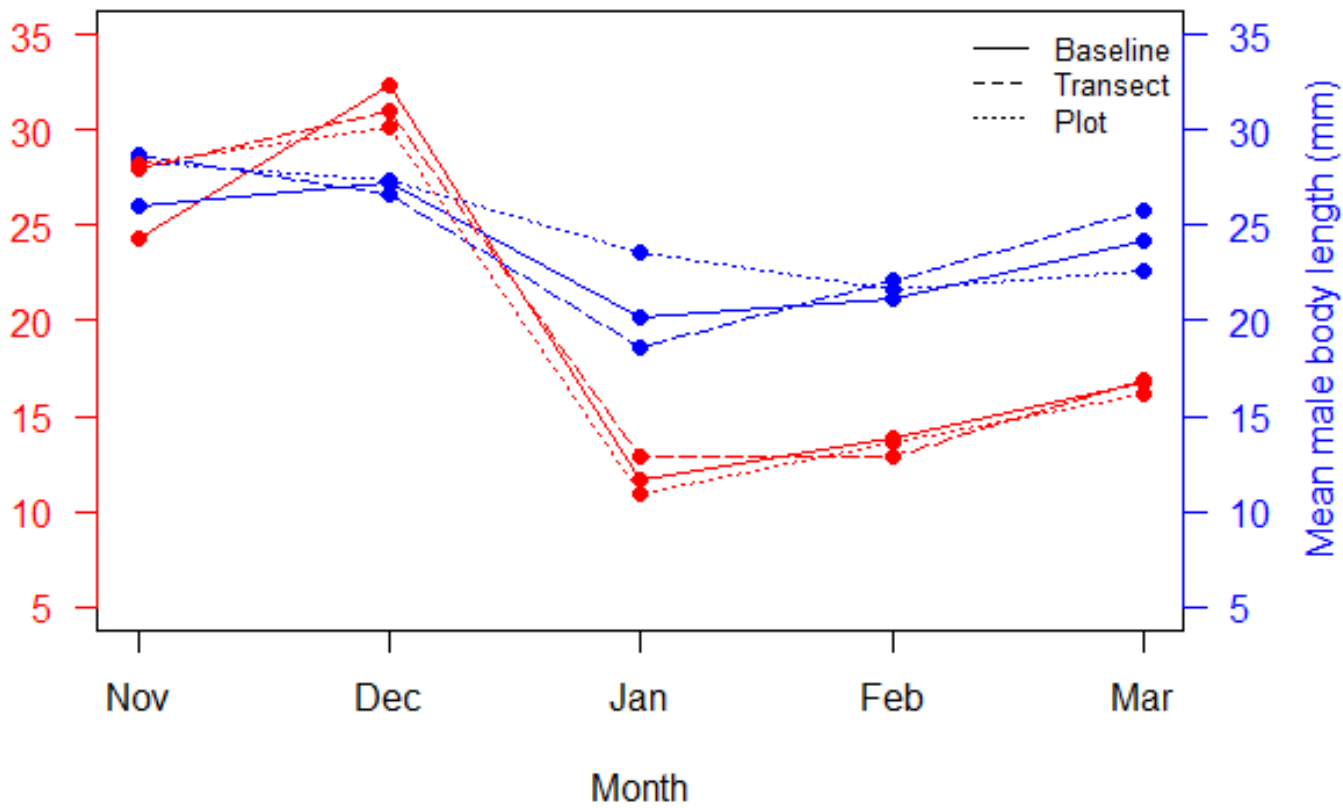


# How to monitor?

- Transect sampling vs. plot searches
- Three sites
- Repeated 33 times (Nov-Mar)
- Compared to “baseline” population information gained in the previous trial

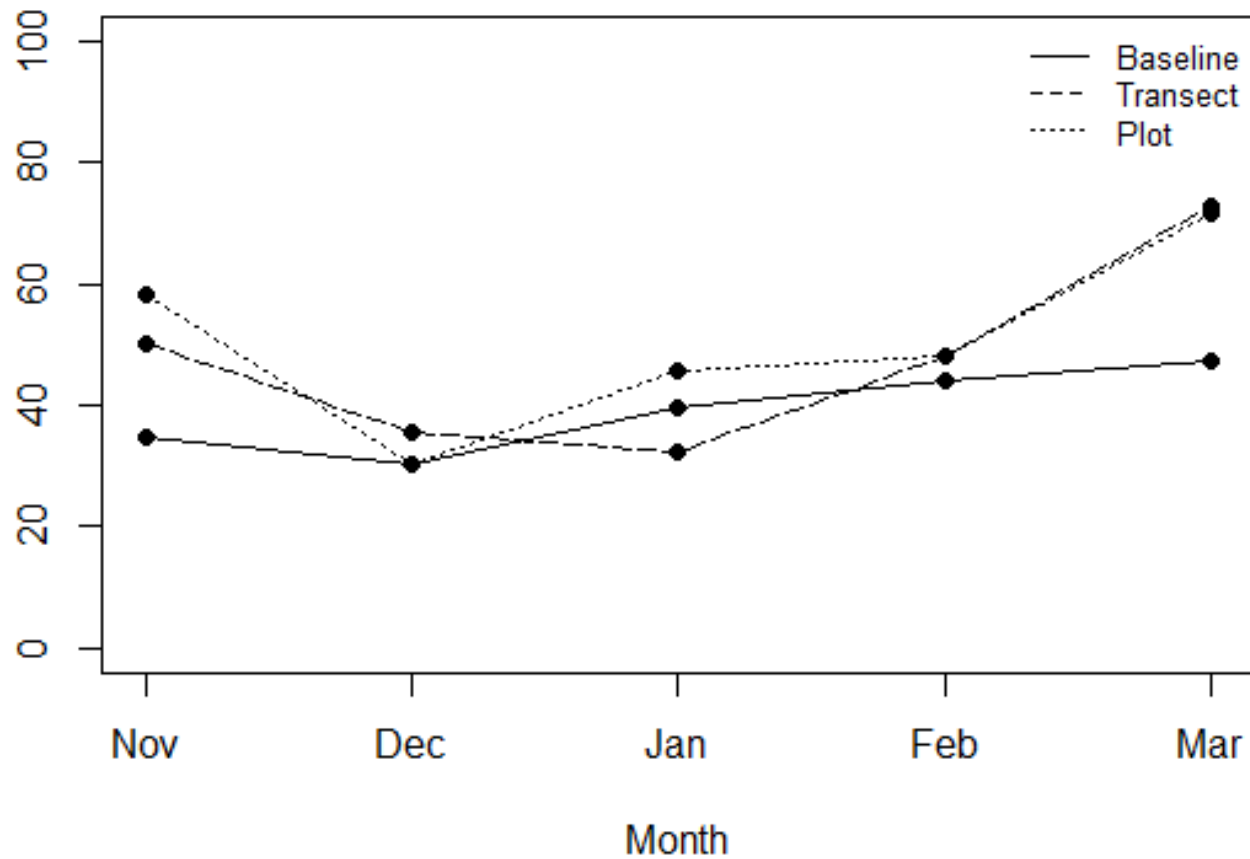


# Body length



Transects and plots show similar trend to baseline data

# Female:Male ratio



Transects and plots show similar trend to baseline data in Dec, Jan and Feb

# What's Next?

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- How frequently should monitoring be carried out?
  - Which gender and /or life stage should be monitored?
- 



# acknowledgements

*y thanks to:*

*ara Murray (UC Forestry)*

*ammy Steeves (UC SBS)*

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*t and Bird, JS Watson Trust*

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*Canterbury Branch, Travel grant*

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