Detectability Issues and Biodiversity Planning

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Biodiversity Planning in Urban Fringe Landscapes
Outline

• Why worry about detectability?
• What can we do about it?
• Field work and examples
Why worry?

• Plants can be difficult to find!
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• Plants can be difficult to find!
Why worry?

- Plants can be difficult to find!
- No minimum survey requirements
What can be done?

• Assess probability of detection

• How does it relate to:
  – Observer?
  – Plant?
  – Environment?
Fieldwork

- Over 100 surveys across 16 sites
  - Range of observer experience
  - Weather conditions
  - Time of day
  - Search method

- Recorded time to detection

- Spring 2006 & 2007
• Time to detection related to:
  – Observer
  – Plant
  – Site
  – Weather
  – Search
Examples

- *Calocephalus citreus*

- *Pimelea spinescens*

Source: DSE, 2007
Caloccephalus citreus

Time to detection related to:
- Observer experience
- Weather conditions
- Time of day
- Interaction between vegetation cover and time of day
Calocephalus citreus

Average Time to Detection

Average Conditions
• Middle of the day, sunny

Intermediate observer:  60 minutes
Experienced observer:  81 minutes
Novice observer:  156 minutes
Calocephalus citreus

![Graph showing the probability of detection (D) over survey duration (minutes). The graph includes three sections: a), b), and c).](image)
Caloccephalus citreus

\[ D = 1 - \exp^{-\lambda t} \]

\( \lambda = 1/\text{mean detection time} \)
Calocephalus citreus
Caloccephalus citreus

Survey Duration (minutes)

Probability of Detection (\( P \))

0.63
Observer Experience

Observation of detection probability ($D$) over survey duration (mins) for Experienced, Intermediate, and Novice observers.
Time of Day

![Graph showing the probability of detection over survey duration at different times of day.](image)
The future...

- **Single species models**
  - Pimelea spinescens, Dianella amoena
  - Invasive weeds

- **Generalised model**
  - Plant traits
  - Prior information where no species model

- **Incorporating into policy**
  - Decision theory analysis