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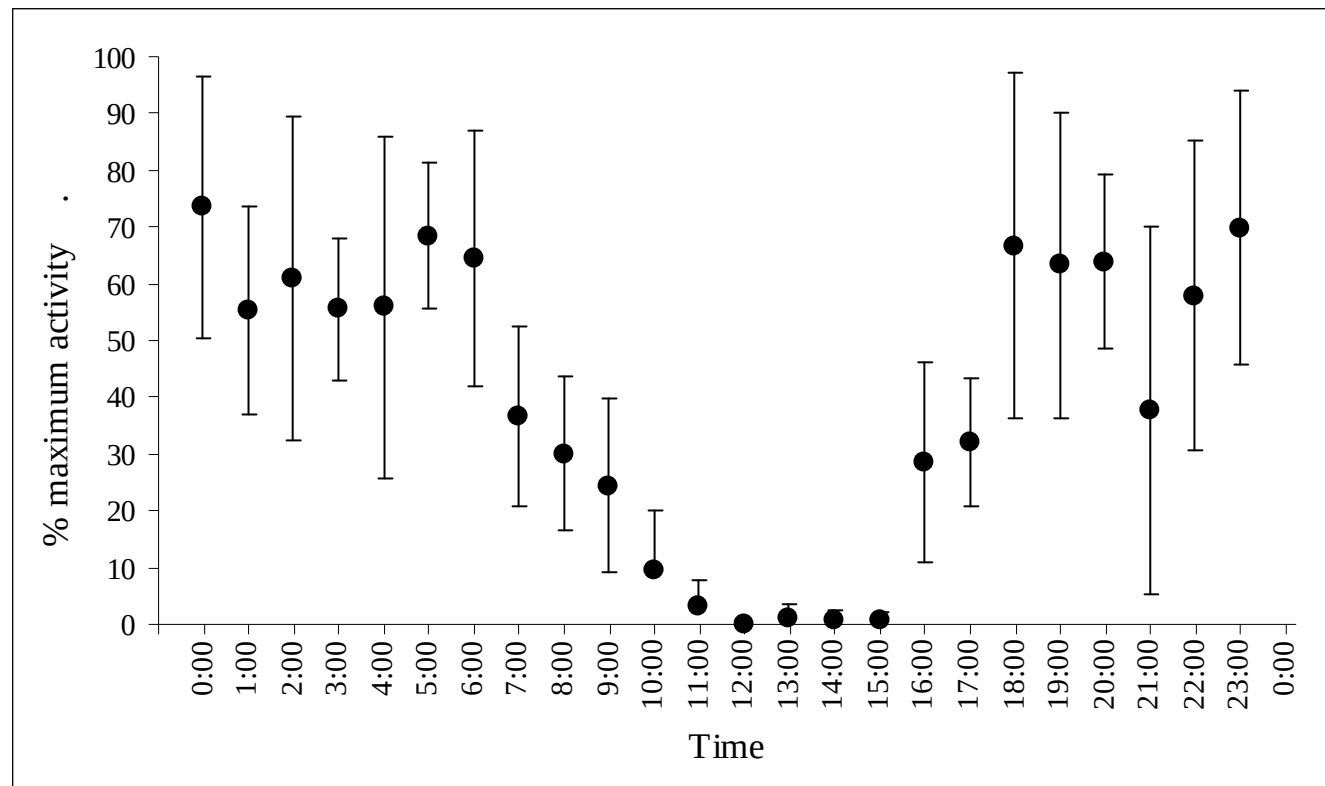
Incorporating ant biology into management

Ben Hoffmann
CSIRO Sustainable Ecosystems, Darwin

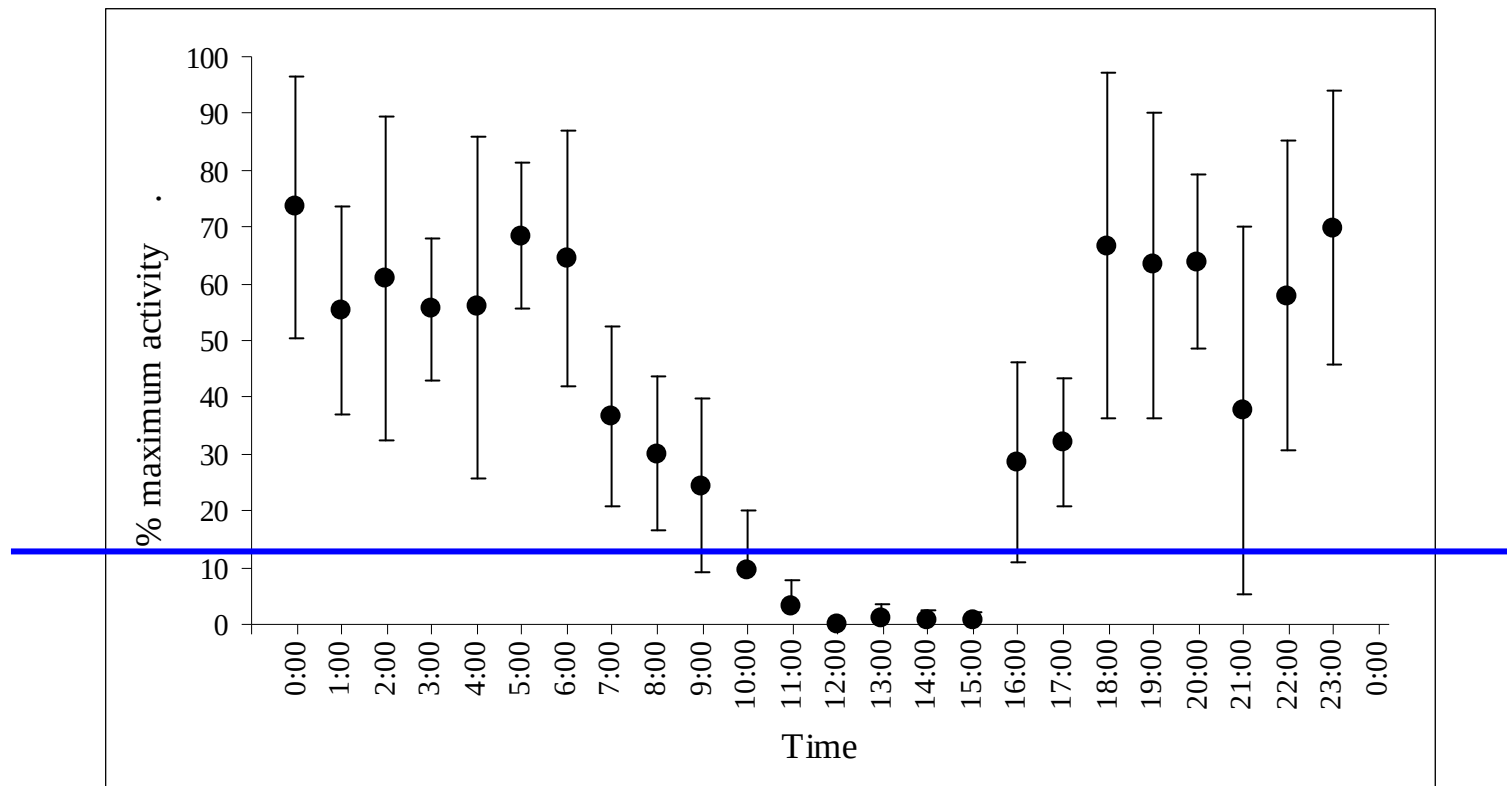
The issues

- **Lack of global protocols**
 - Assessment integrity
 - Effective treatments
- **Very few protocols based on ant biology**

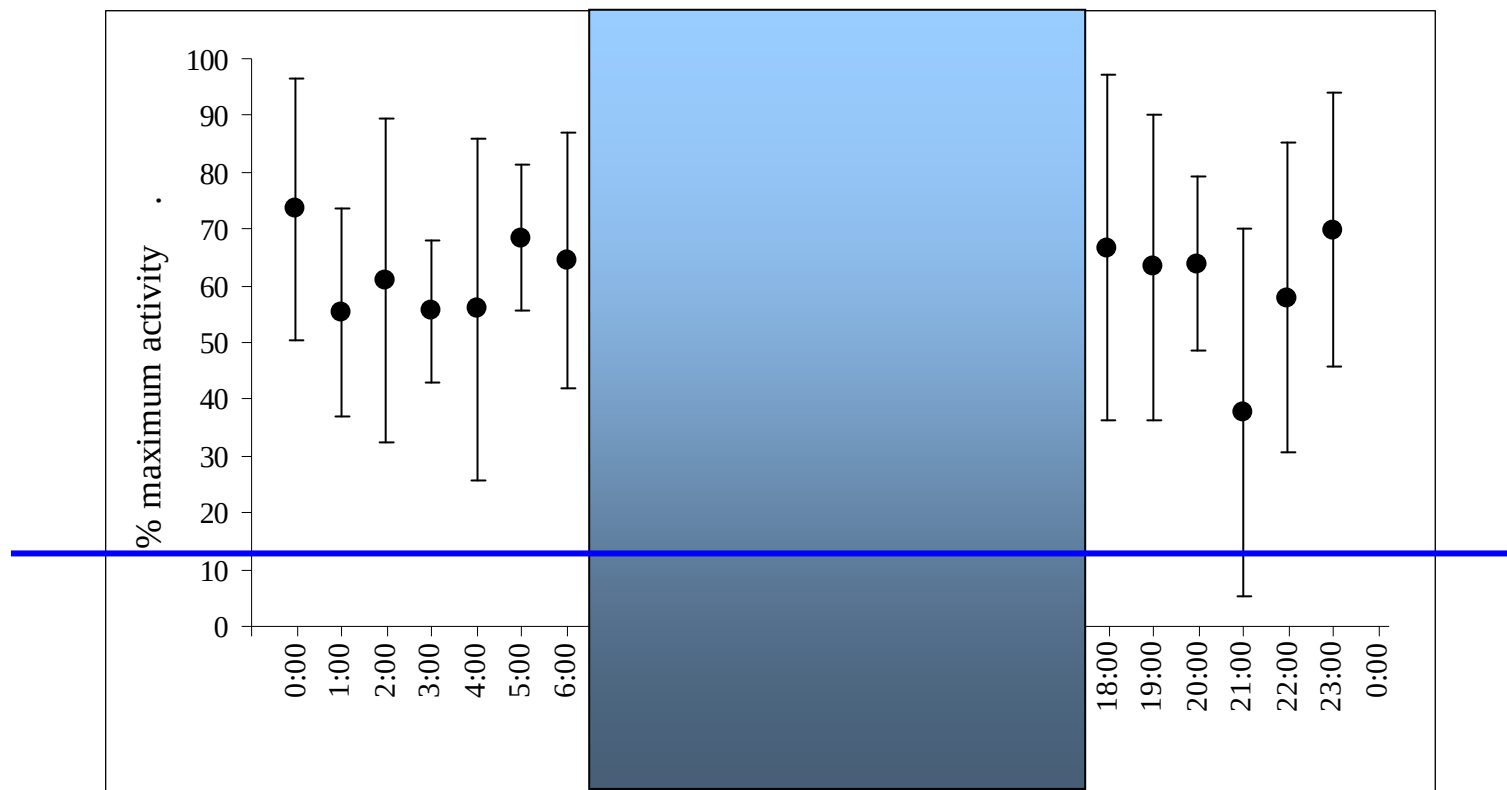
Ensuring assessment integrity



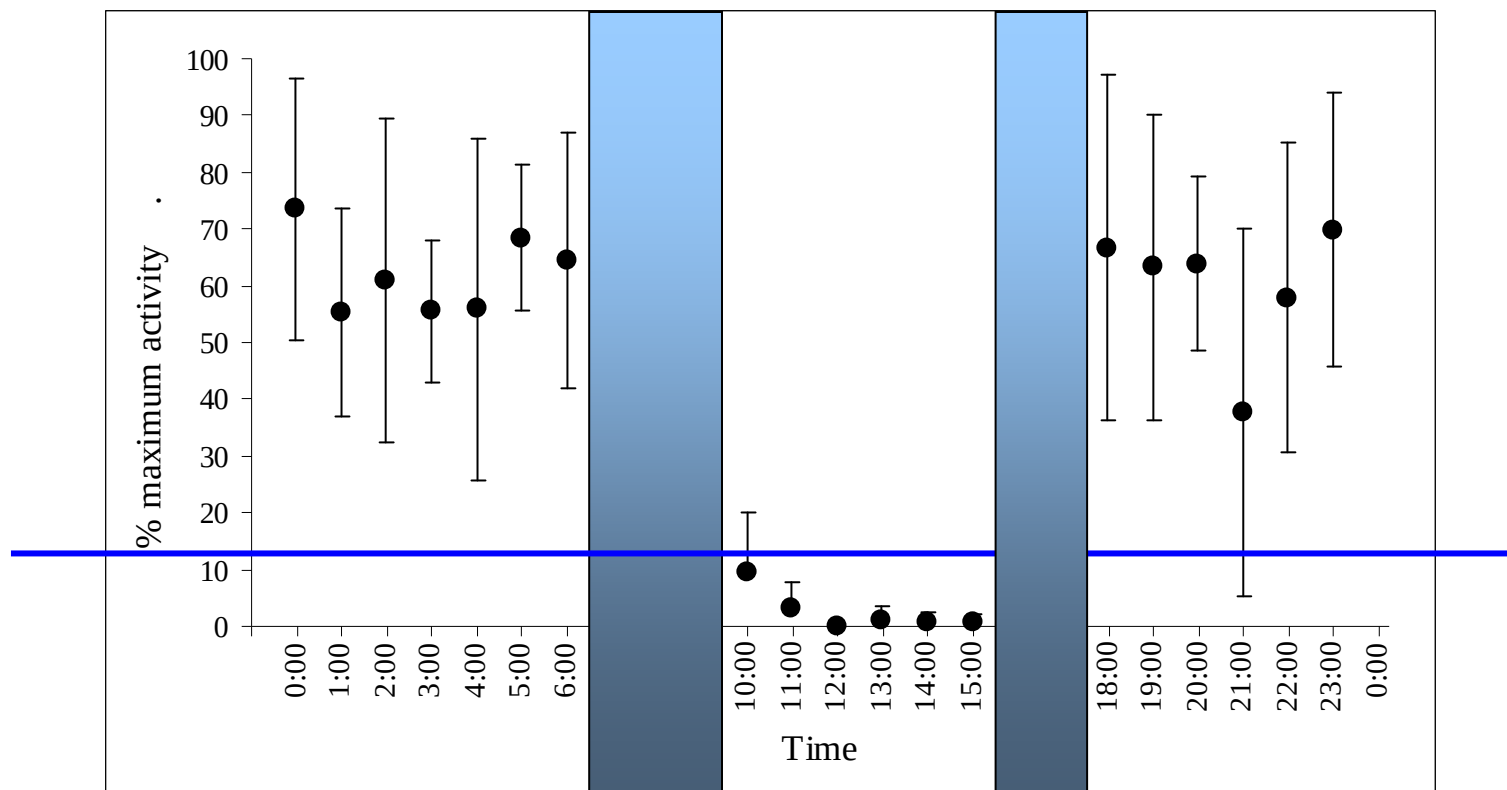
Activity rates



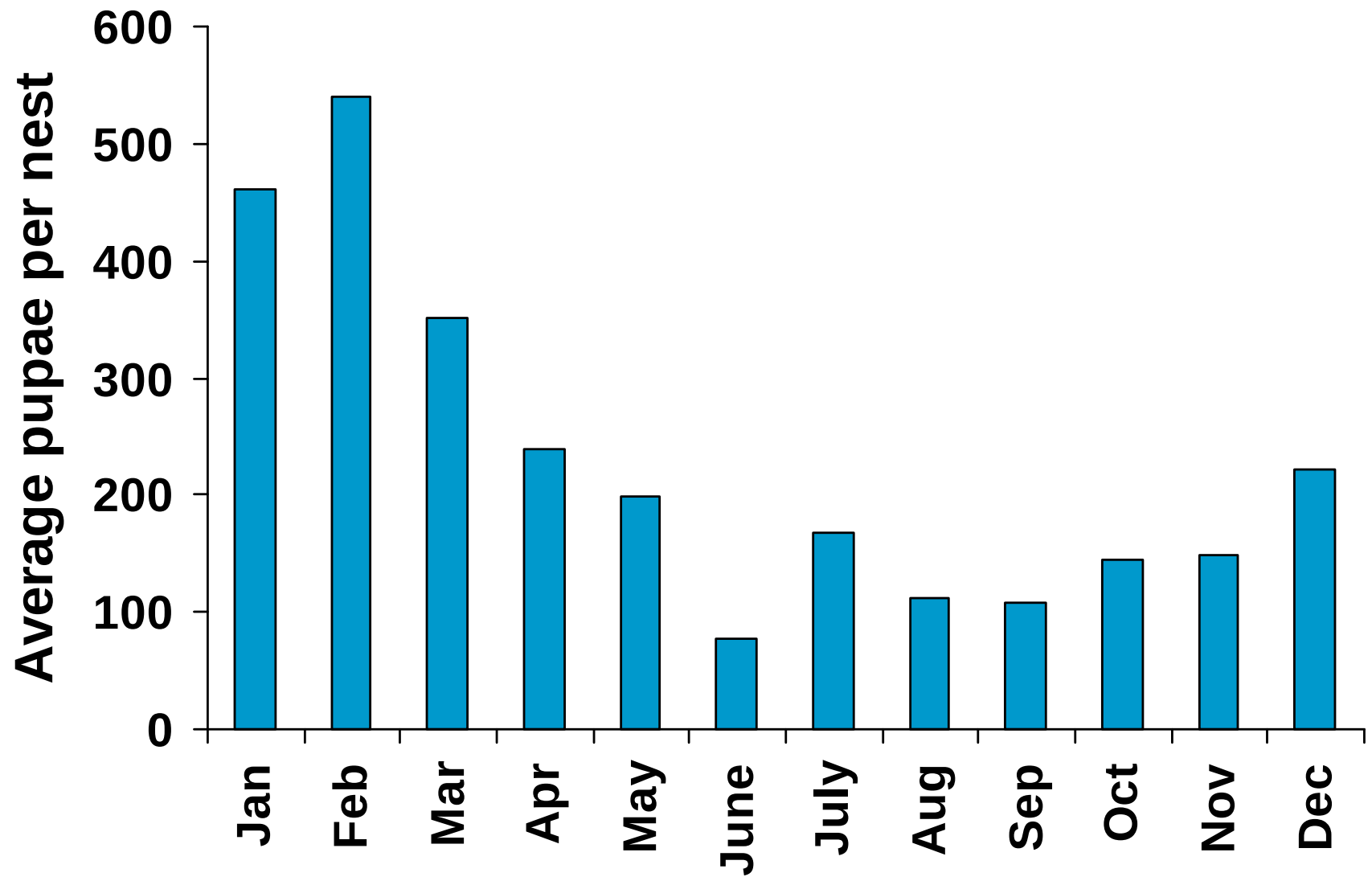
Activity rates



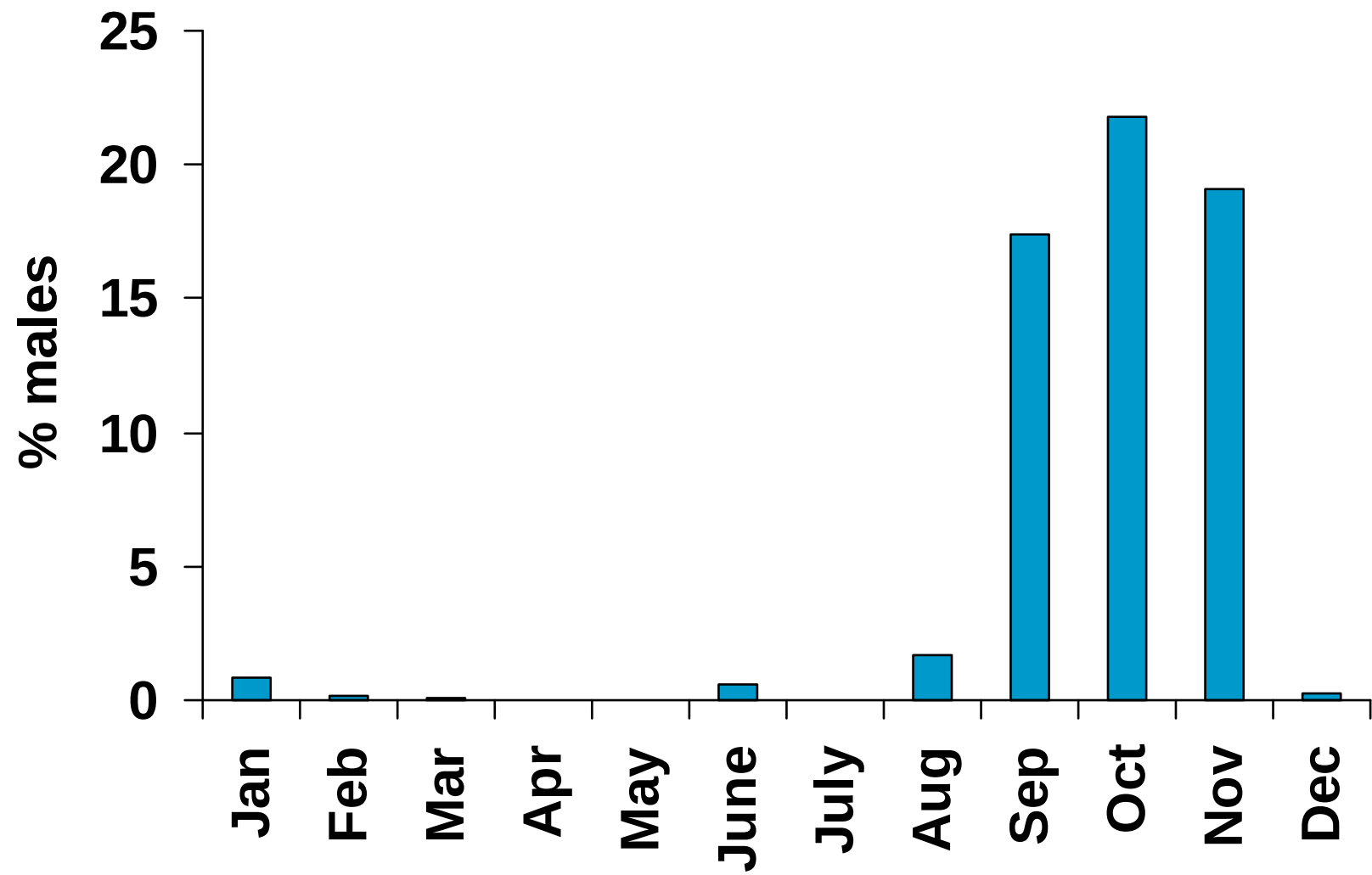
Activity rates



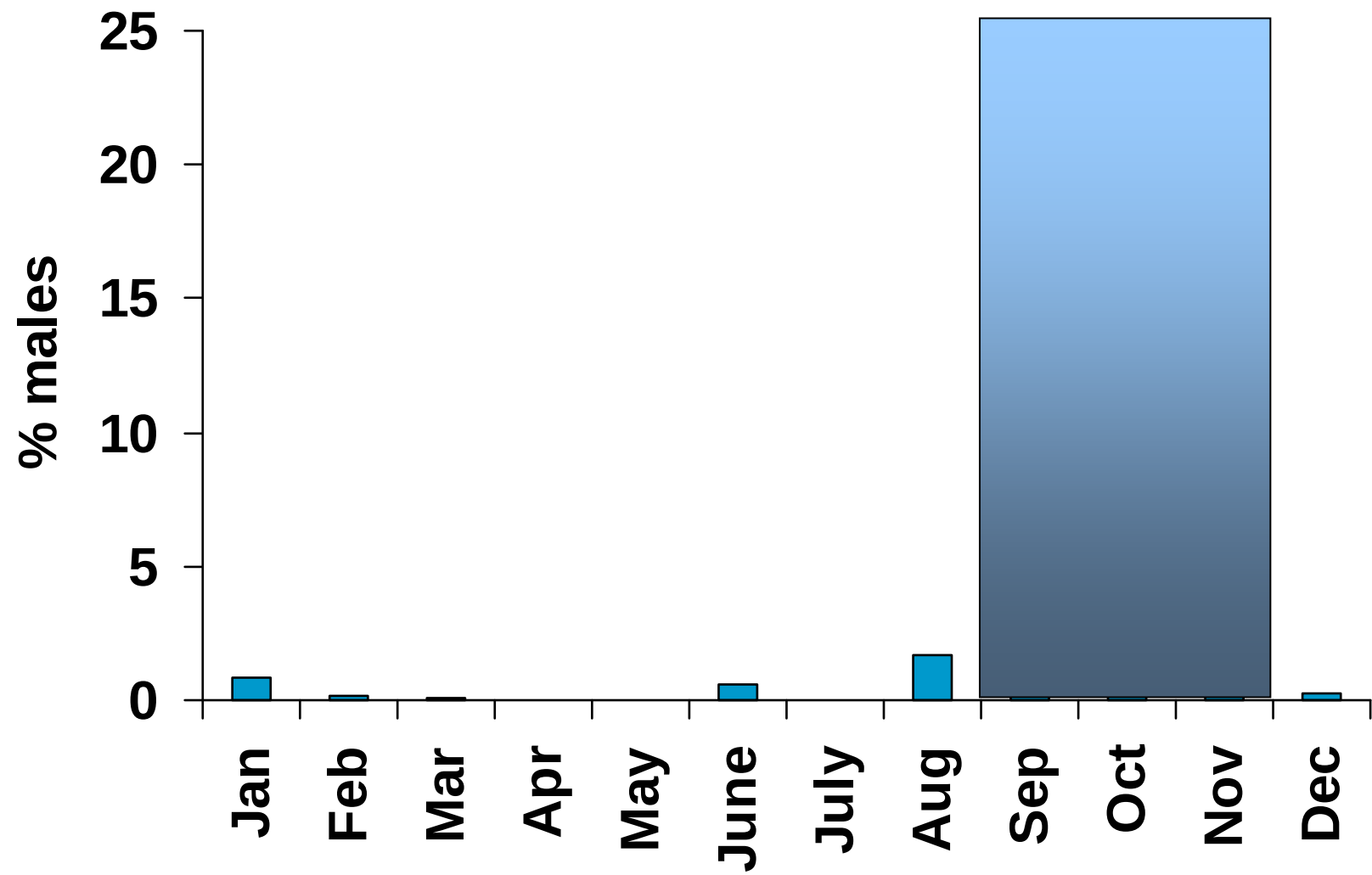
Annual population cycle



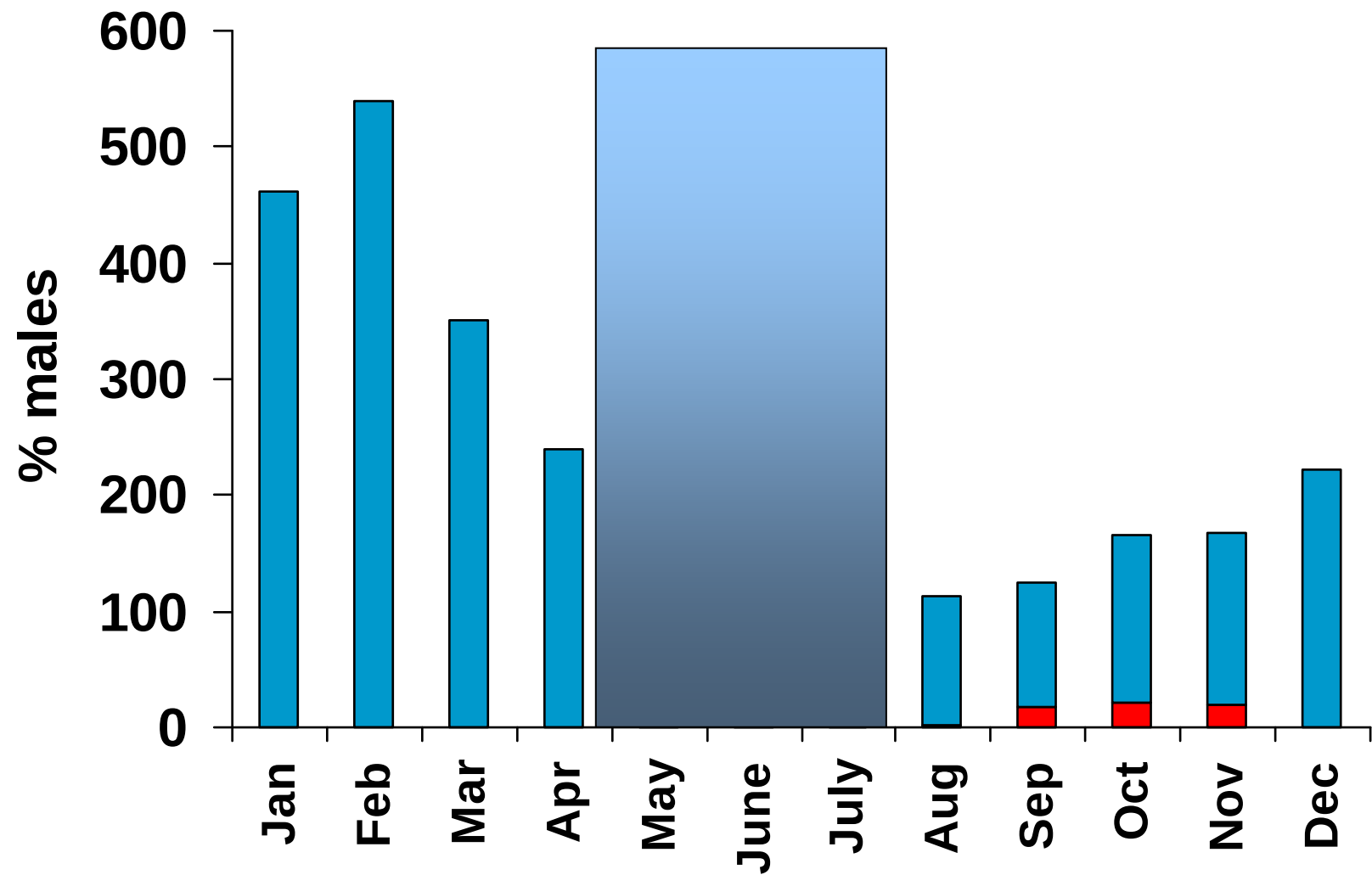
Emergence of new sexuals



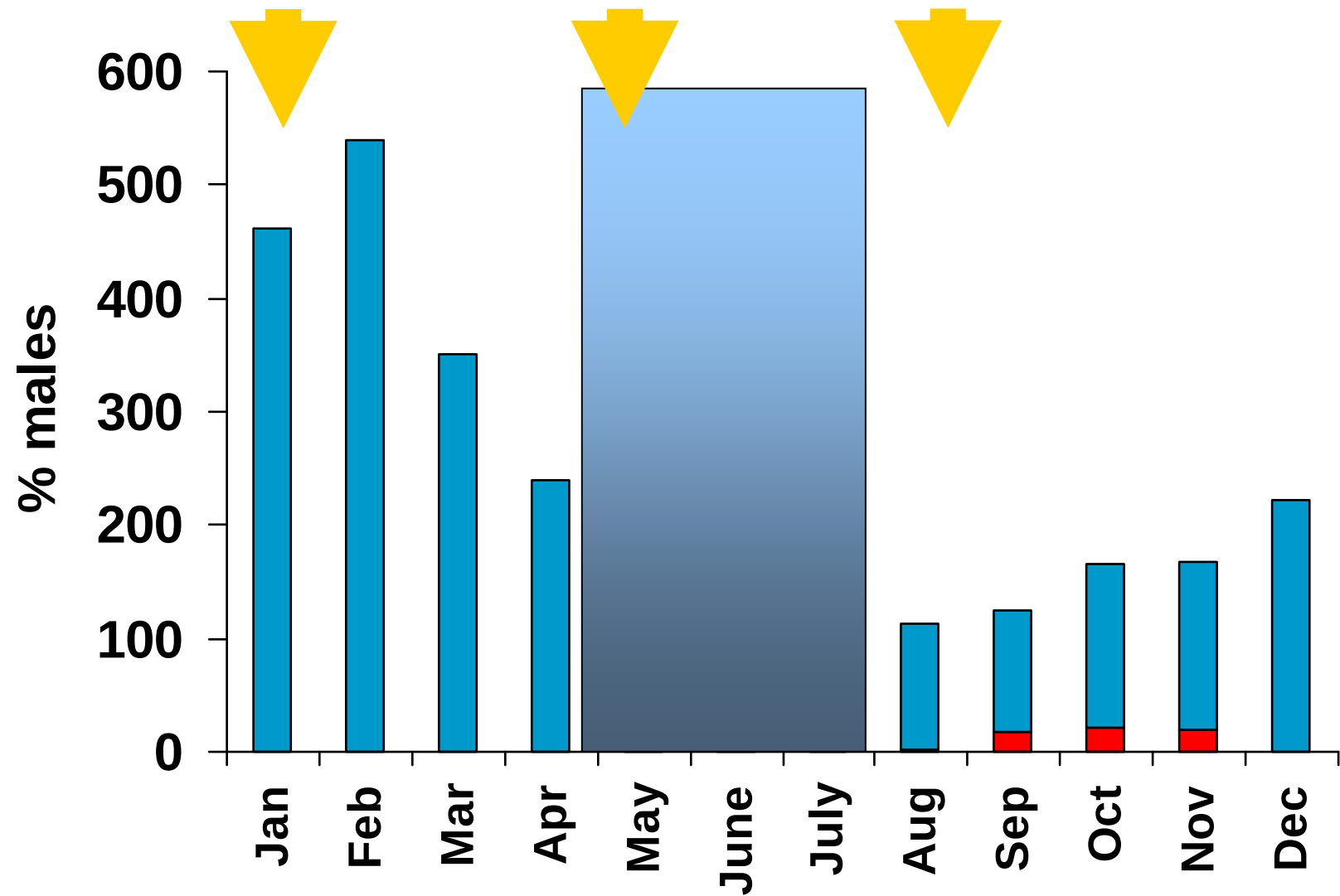
When not to treat



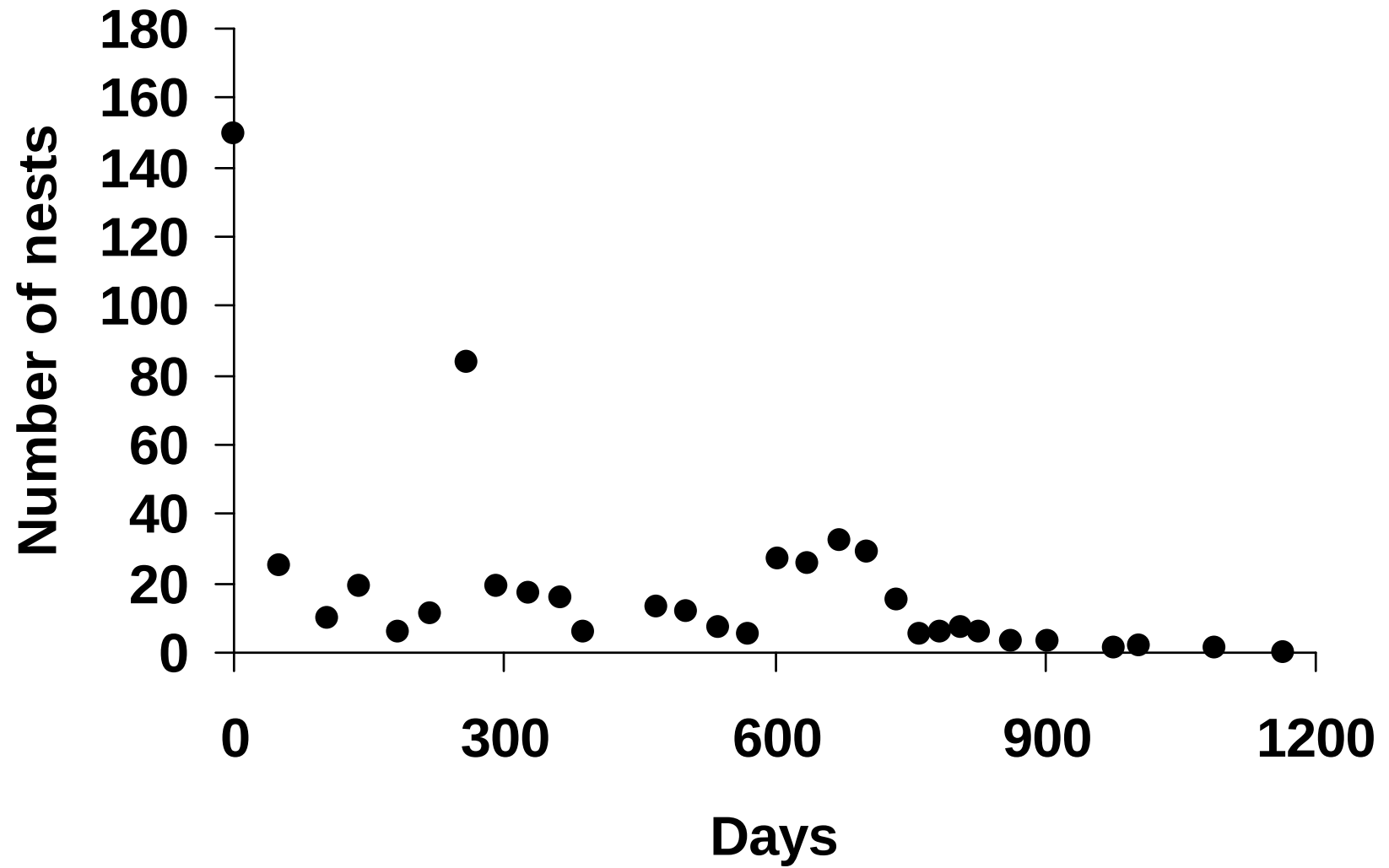
Possibly when best to treat



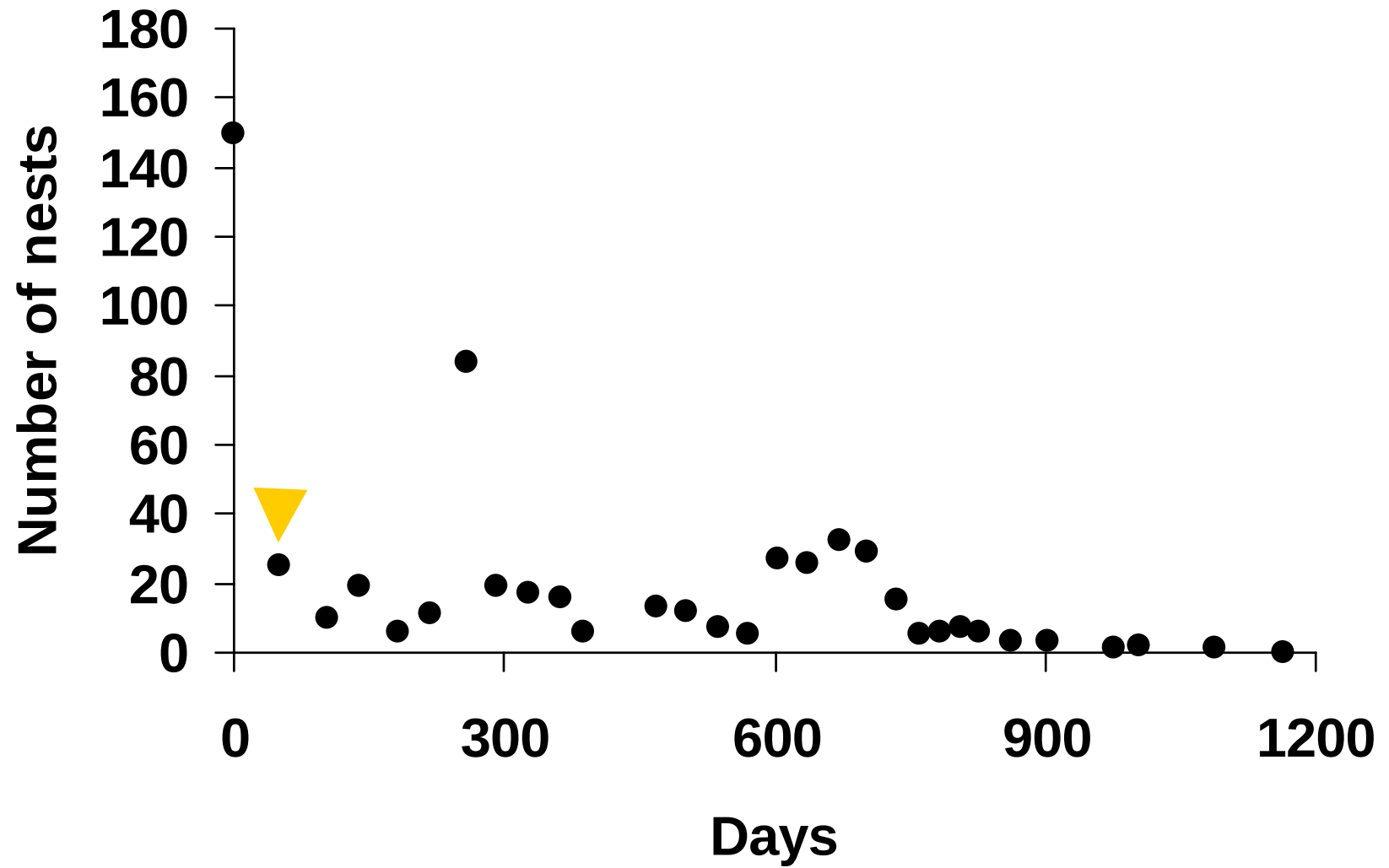
Possibly when best to treat



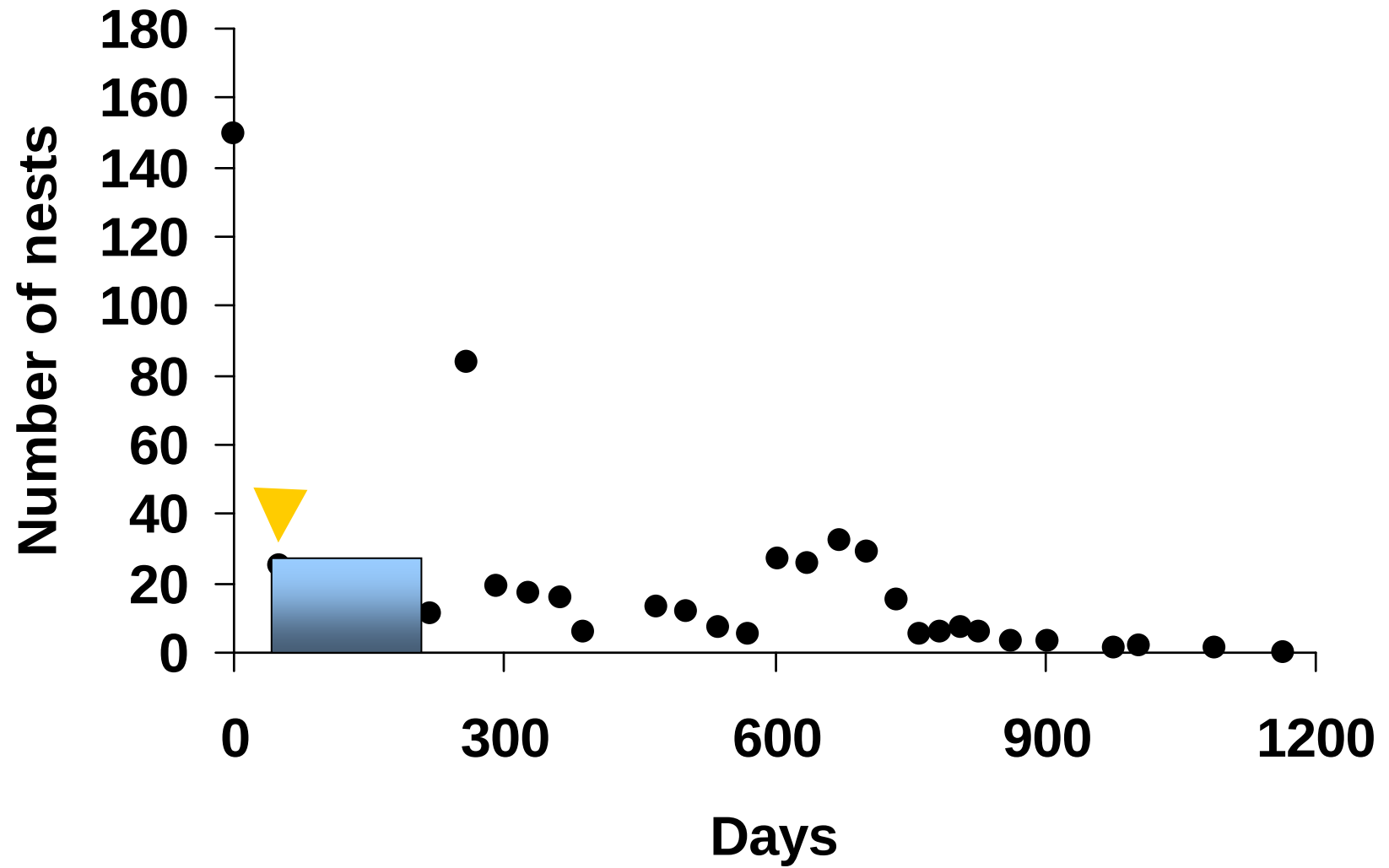
New views of old data



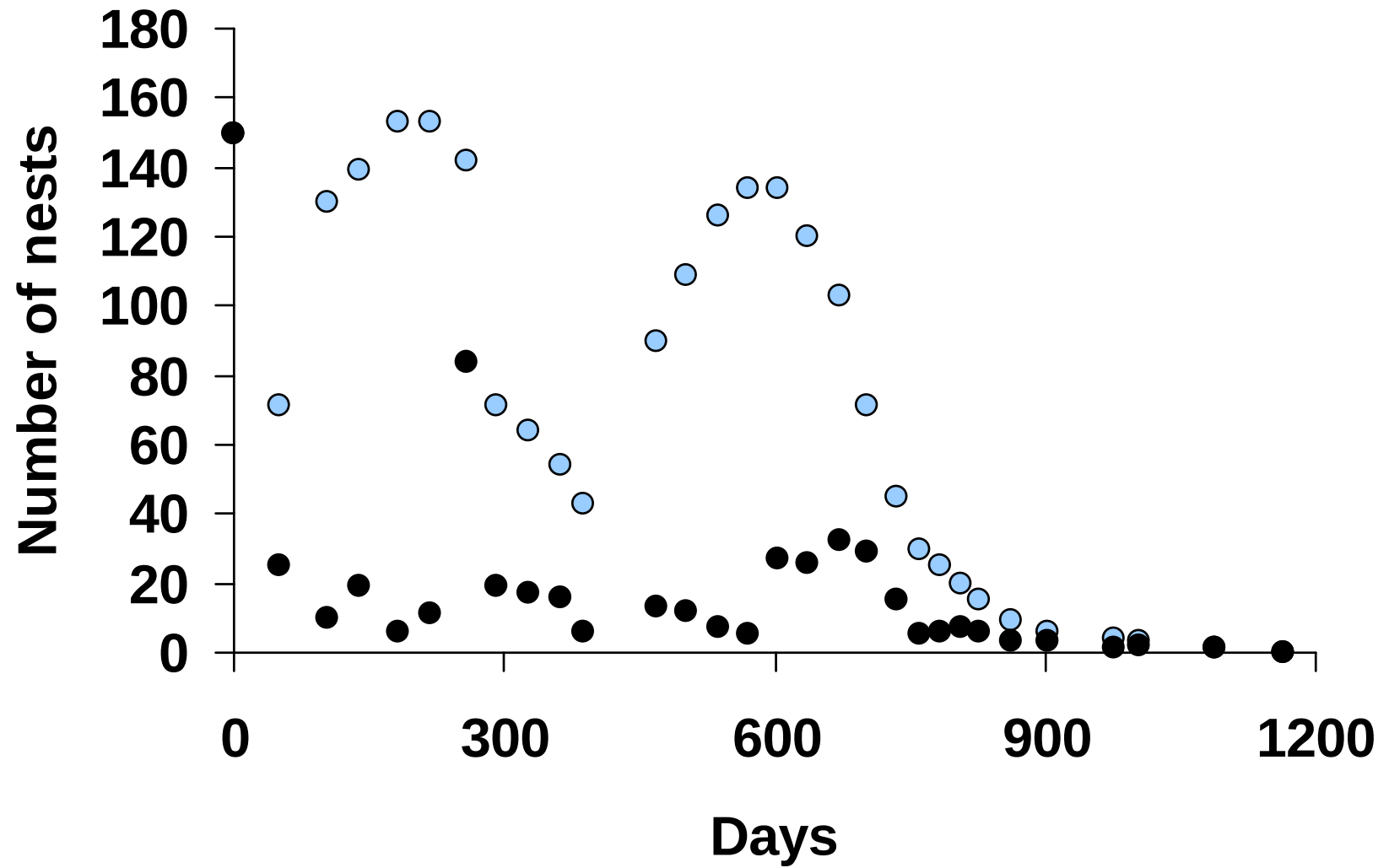
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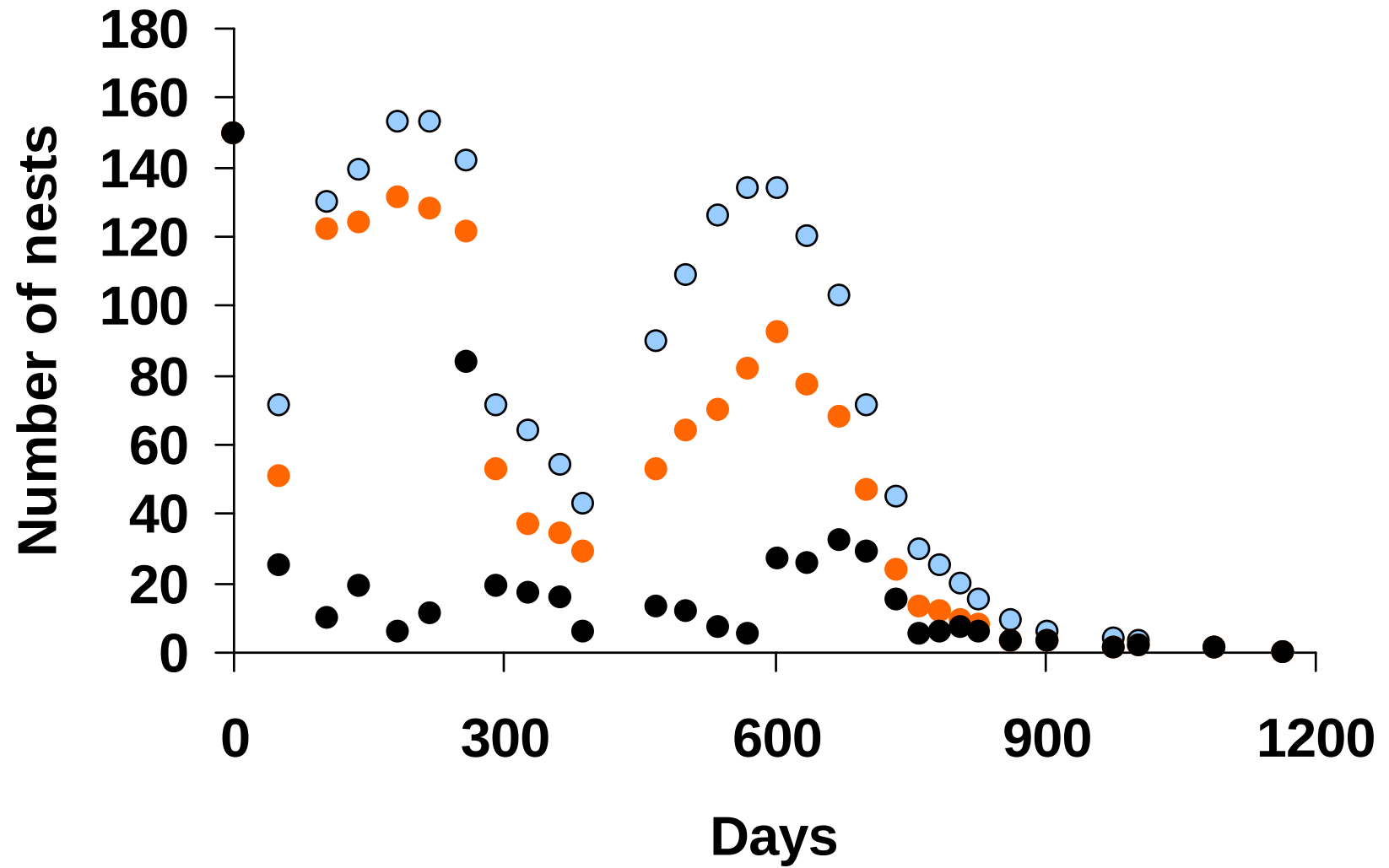
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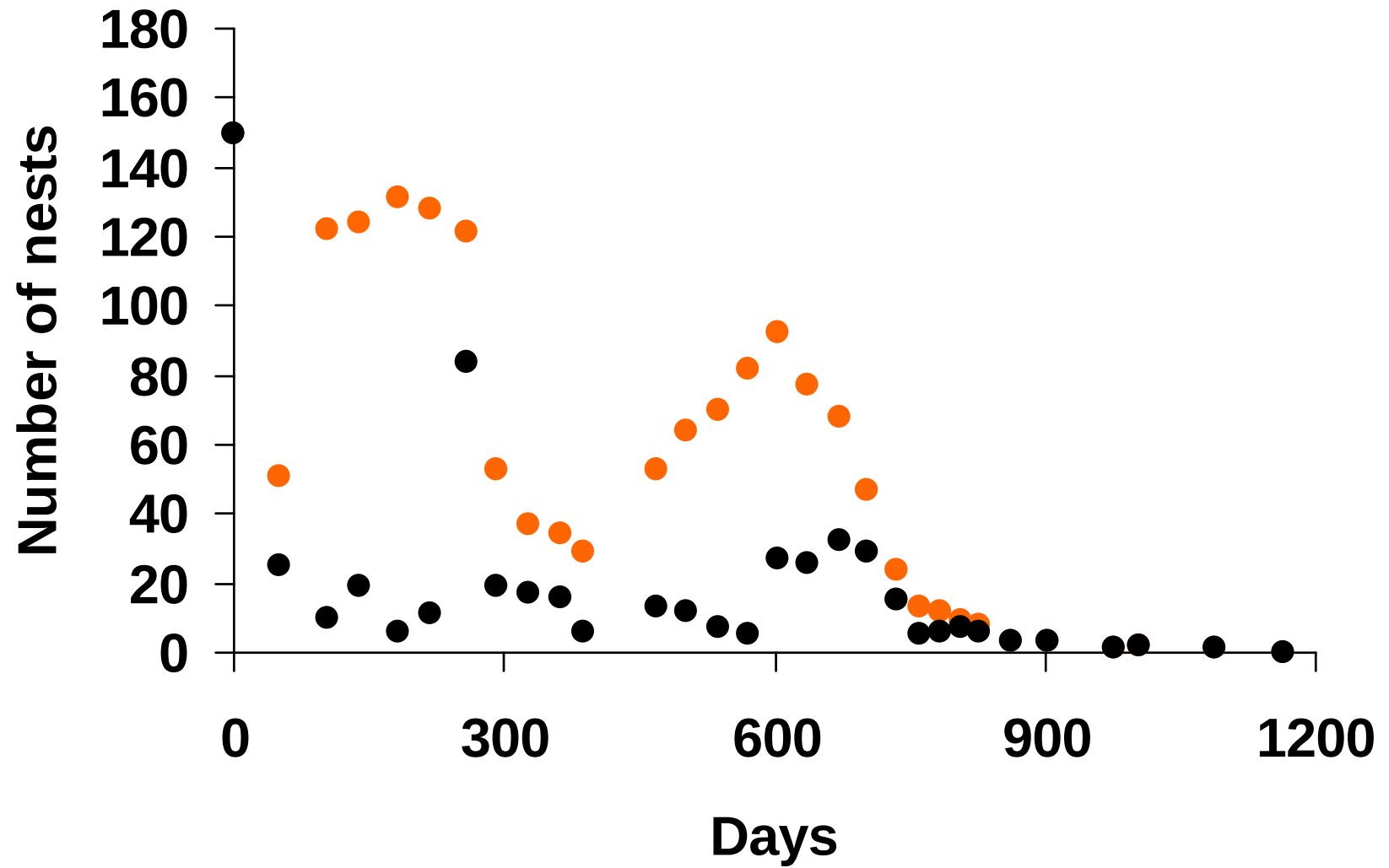
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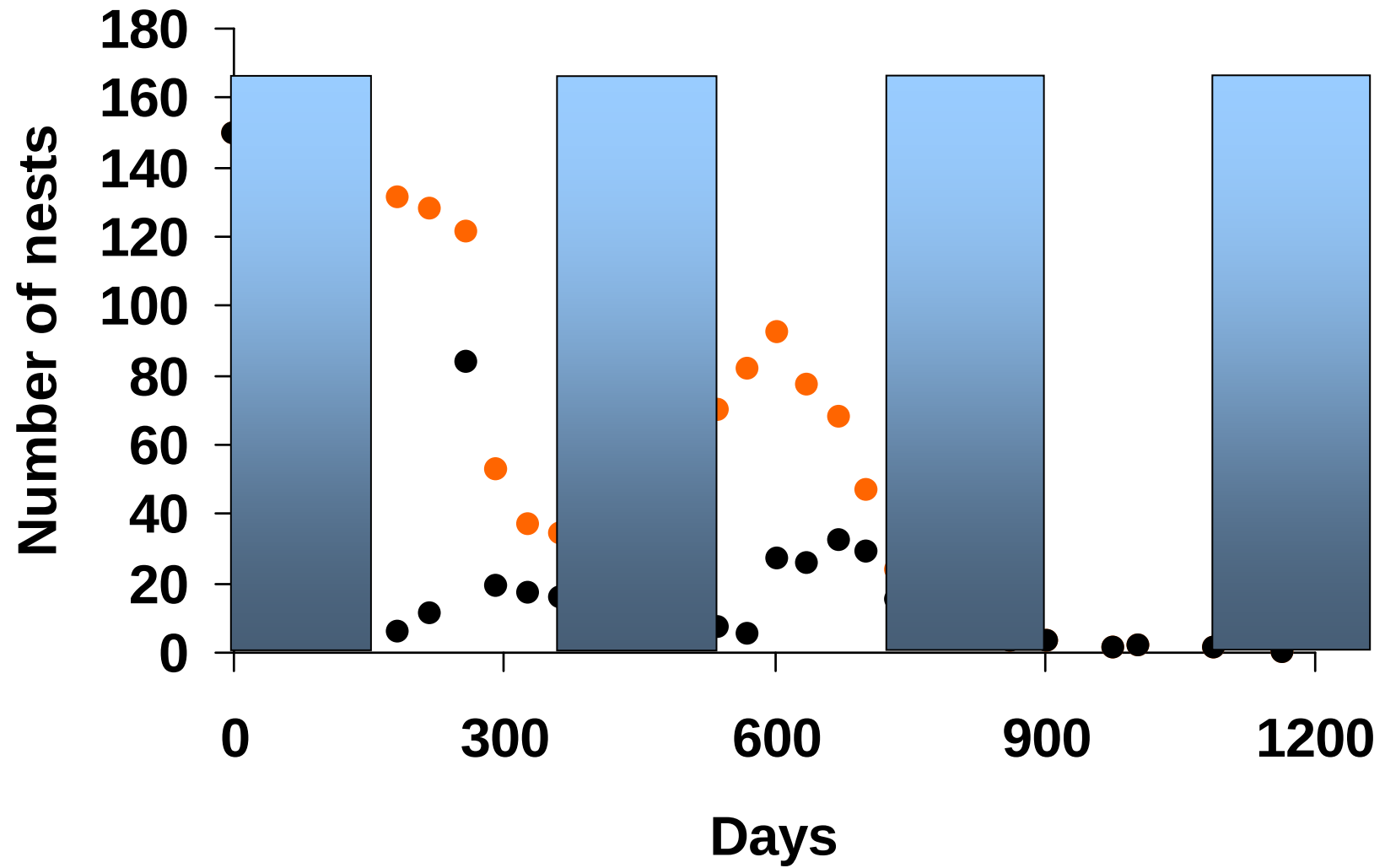
New views of old data



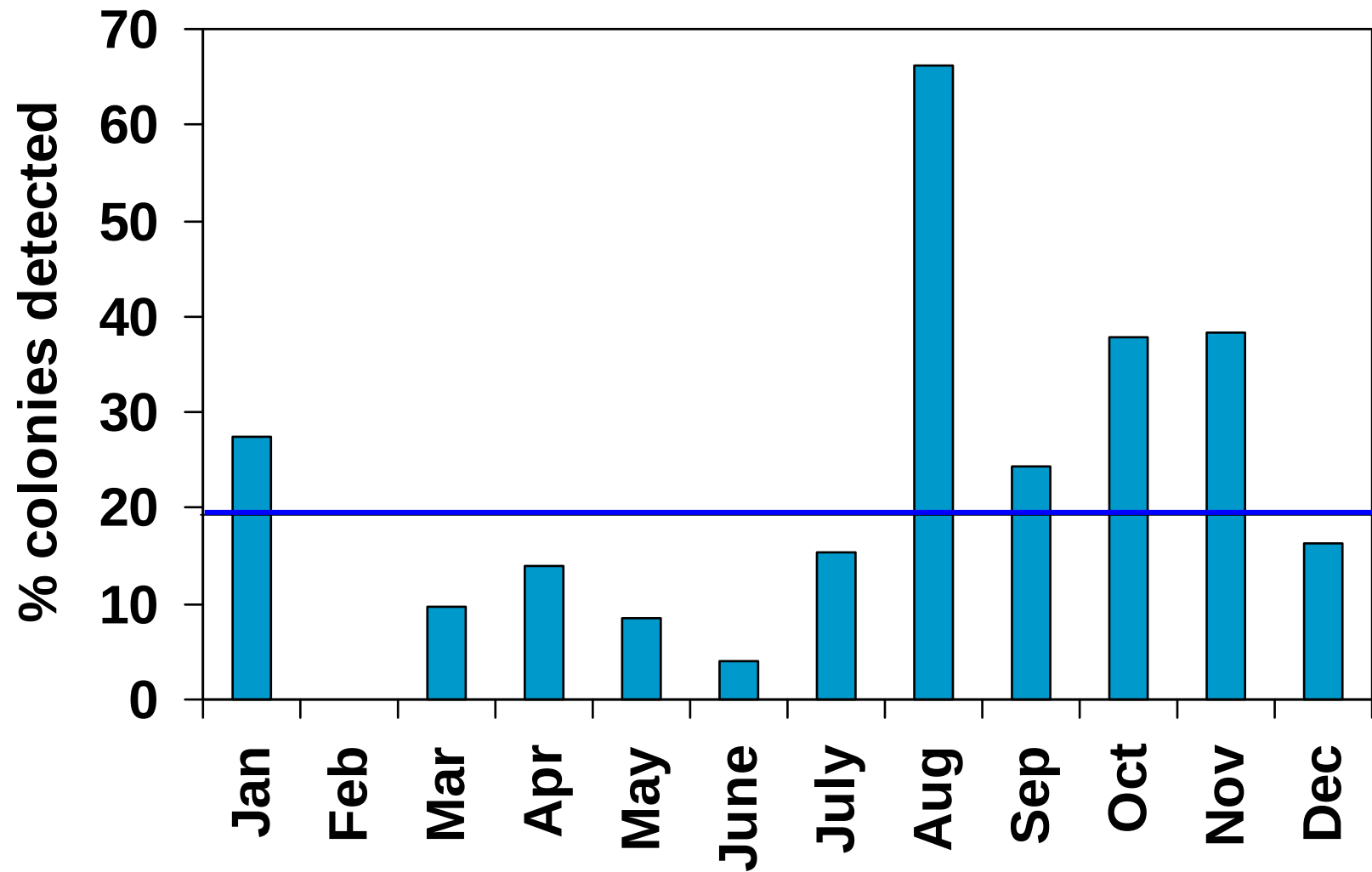
New views of old data



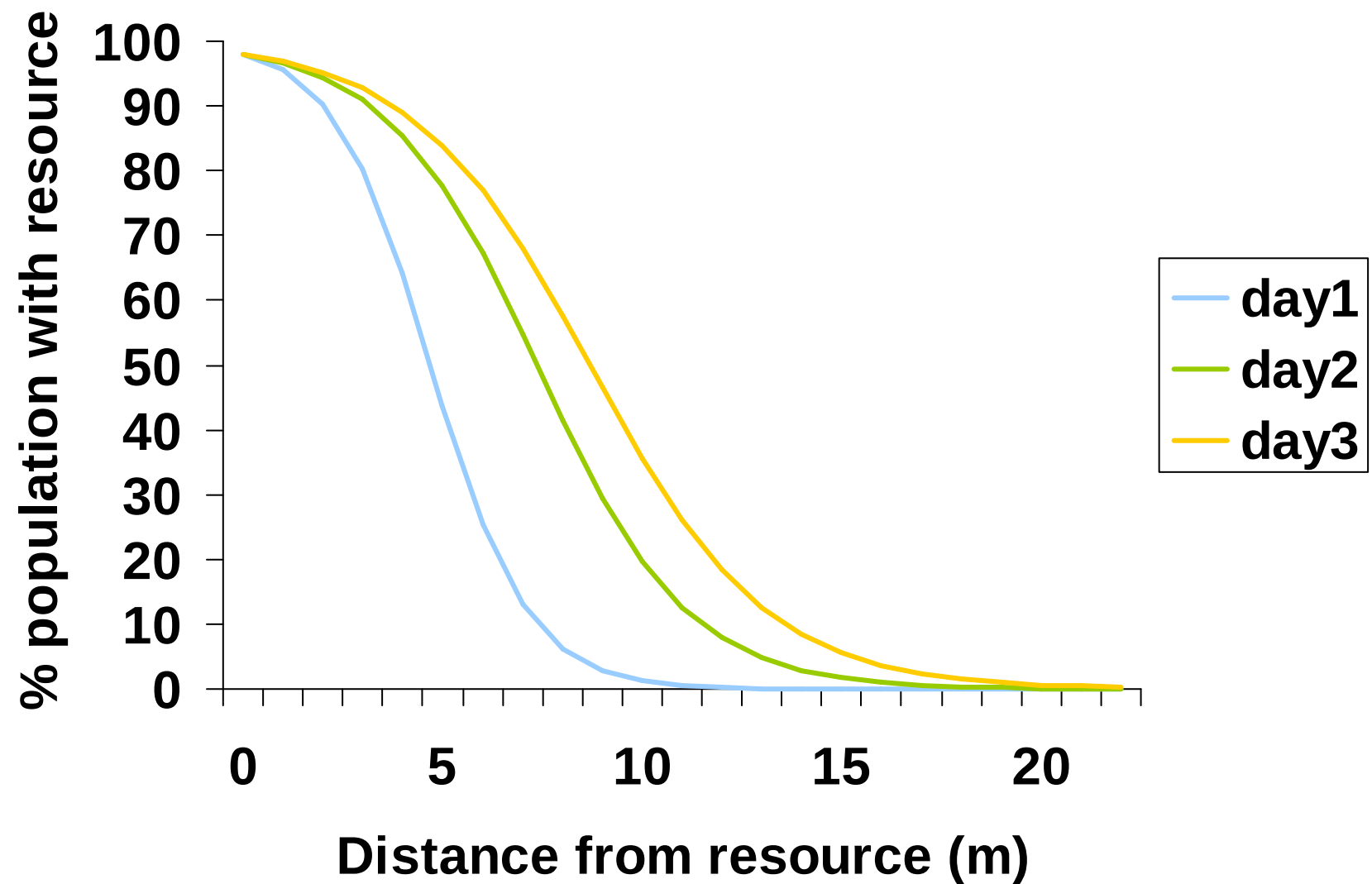
Sexual reproduction stopped



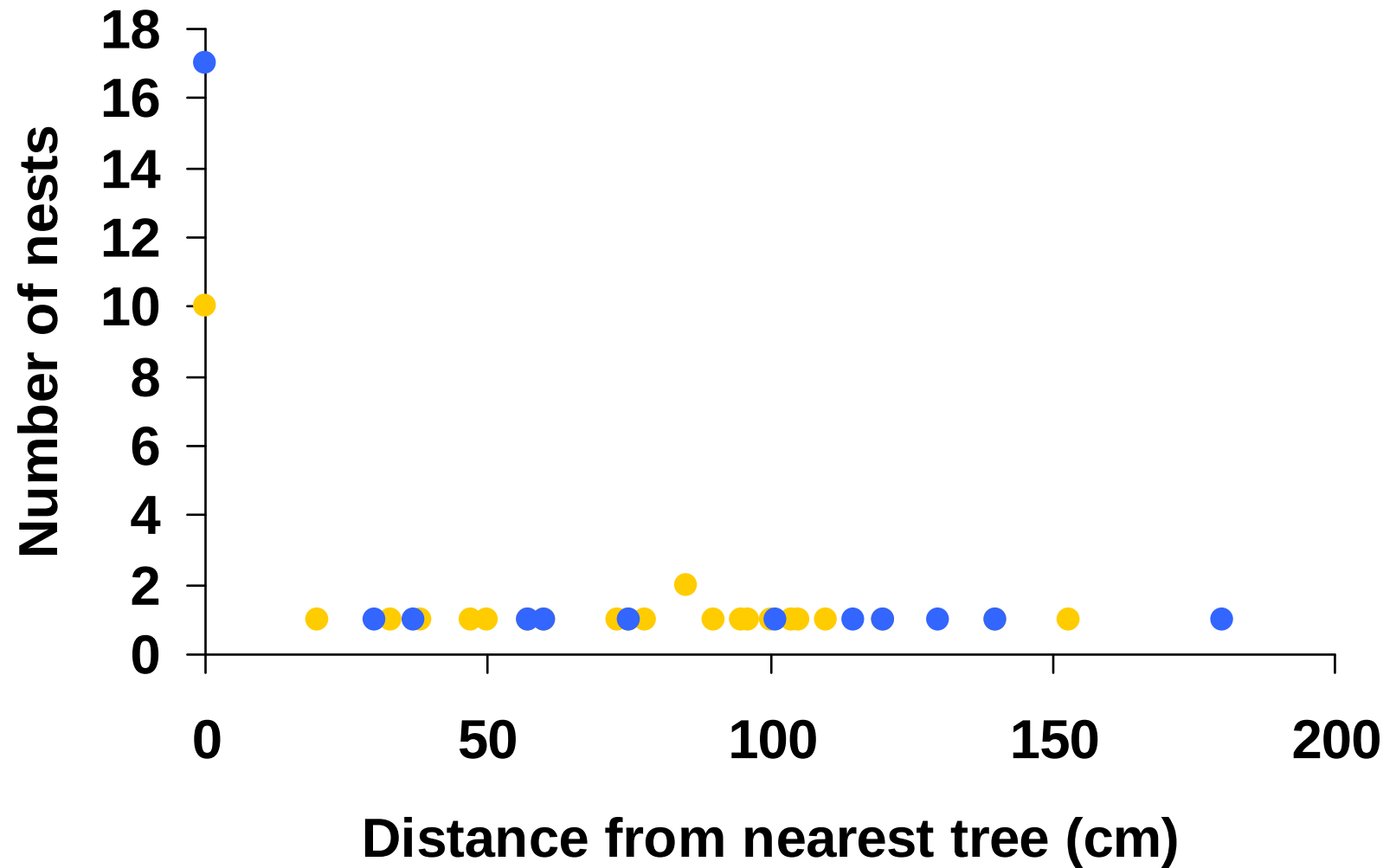
Detectability - opportunities and traps



Treatment coverage



Nest location



Nest density

- *Pheidole megacephala*: 1 per 8 m²
- *Anoplolepis gracilipes*: 1 per 7 m²
- *Solenopsis geminata*: 1 per 455 m²

Summary

- **No doubt that procedures based on knowledge are best**
- **Integrity of outcomes based on knowledge-based procedures are easiest to justify**
- **Basic research, prior to conducting management, can be very time and cost effective**