



# Magpie Geese on mango orchards:

Understanding behaviour  
to improve management

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Research Institute  
for the Environment  
and Livelihoods





# Research Context





# Challenging conflict

## Australian mangoes



Photos: A. Corriveau



Photo: Fresh Plaza



Photo: Hort Link

## Magpie Geese



Painting: Jimmy Djelminy



Photo: Richard Field



Photo: Gettyimages



Photo: Wildlife & Wilderness

# Managing birds & damage



Photo: Spinifex pest control



Photo: Hawk A.I.



Photo: Vitiworks



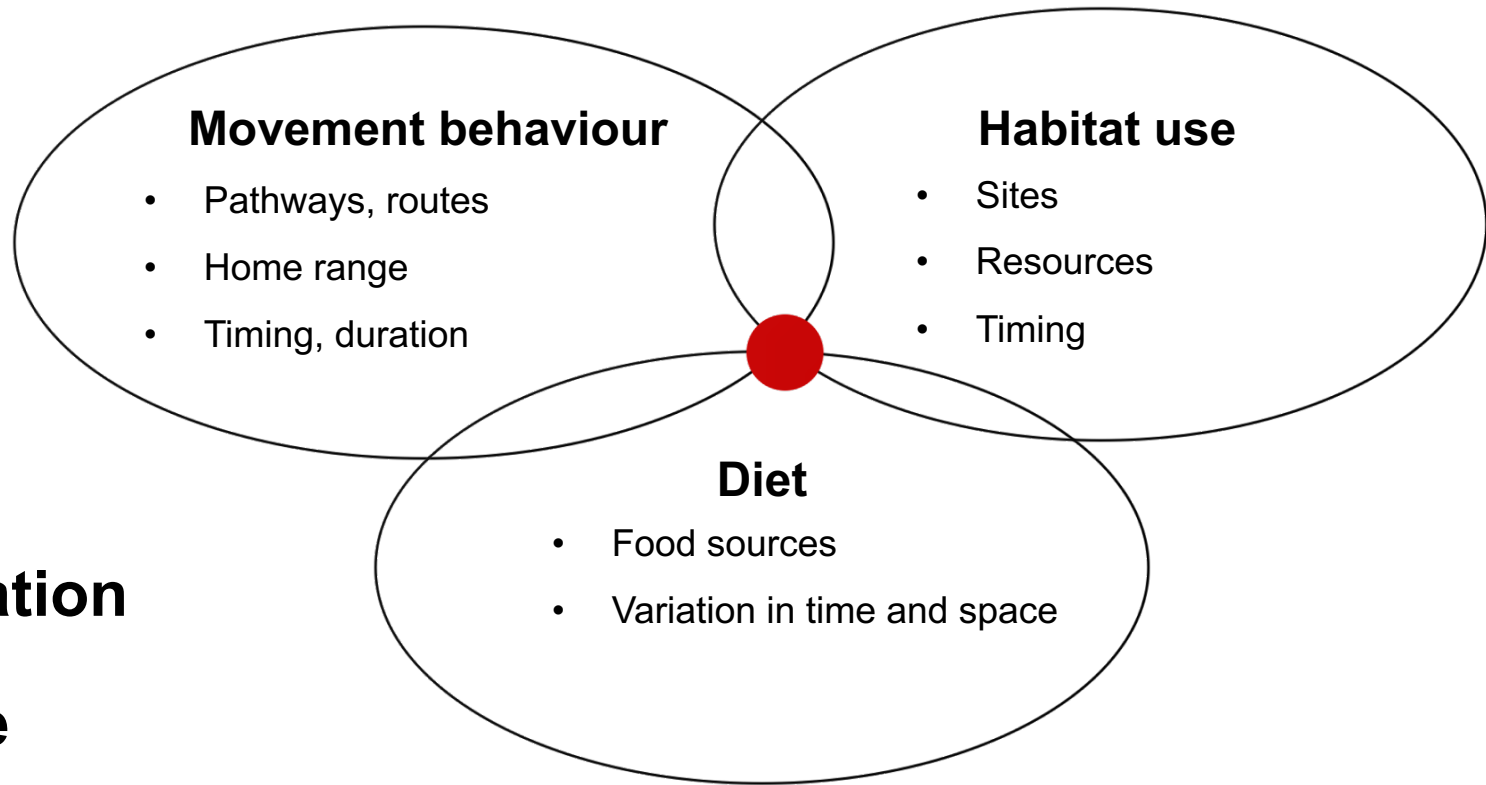
Photo: NFU

## Finding last solutions is challenging:

- Diversity in bird species
- Diversity in crop types
- Social, environmental & legal implications

- Habituation / no 'silver bullet'
- High costs:
  - Time
  - Labour
  - Equipment
- Design – Implement – Monitor

# PhD research



➤ **Location**

➤ **Time**

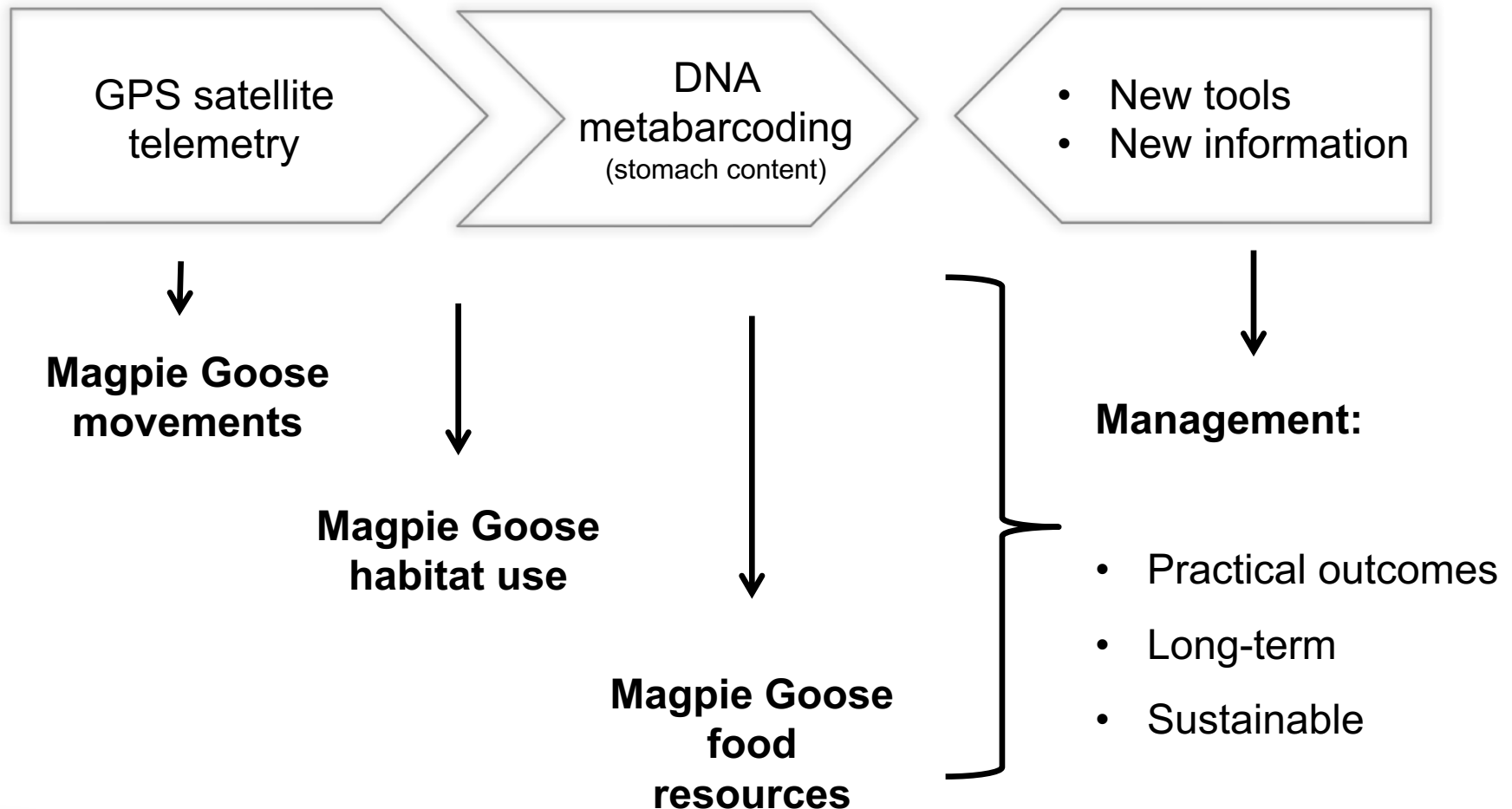
➤ **Scale**

➤ **Targeted actions** (e.g., habitat manipulation)

# Research approach



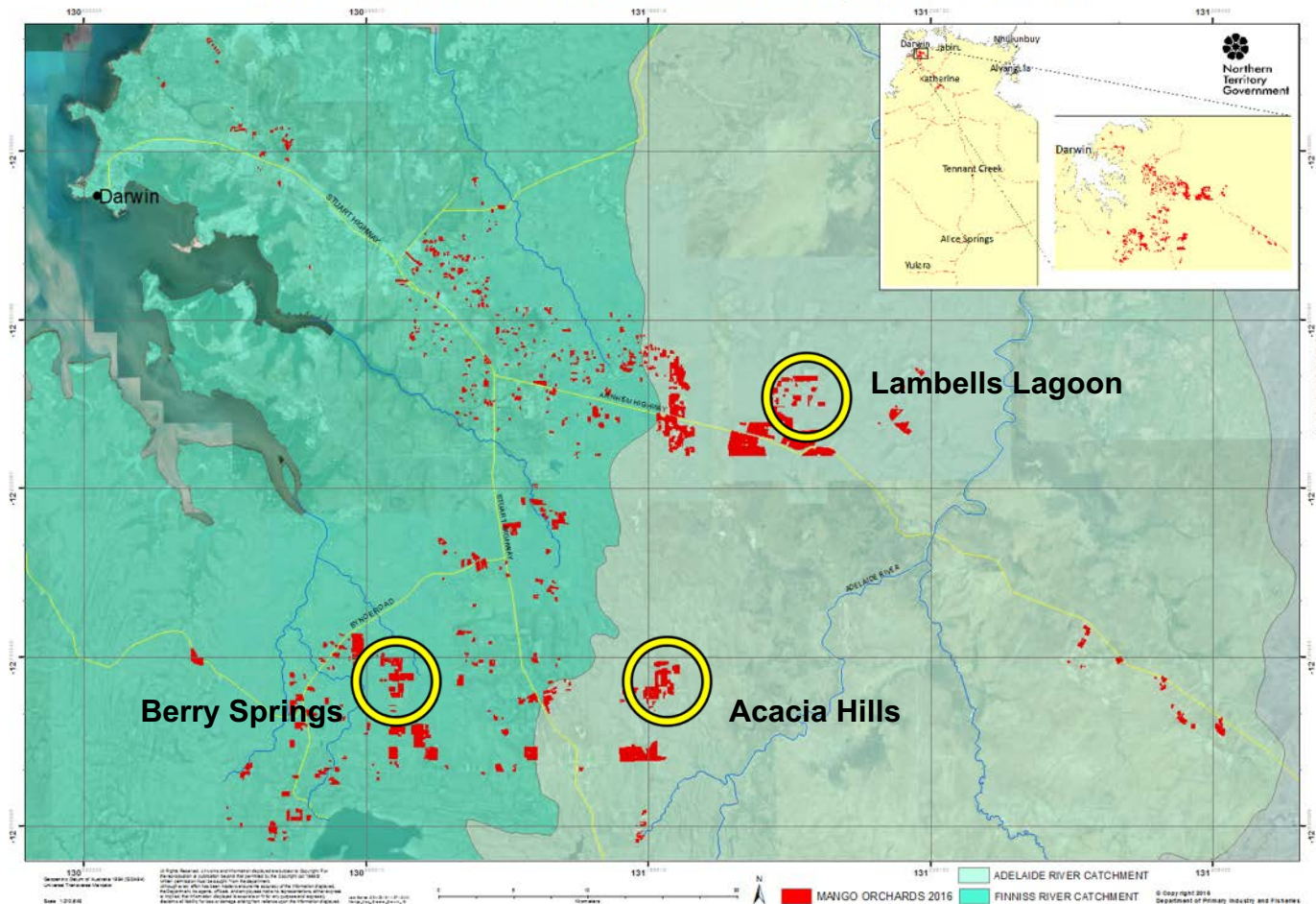
Image: Dawson et al. 2000





# Field season 2016

MANGO ORCHARDS GREATER DARWIN REGION by RIVER CATCHMENT



- **GPS tracking**  
28 individuals
- **Tissue sampling**  
55 individuals
- **Management techniques trials**  
10 weeks

Source: NT Government – Department of Primary Industry and Resources

# Magpie Goose processing





# Magpie Goose tracking



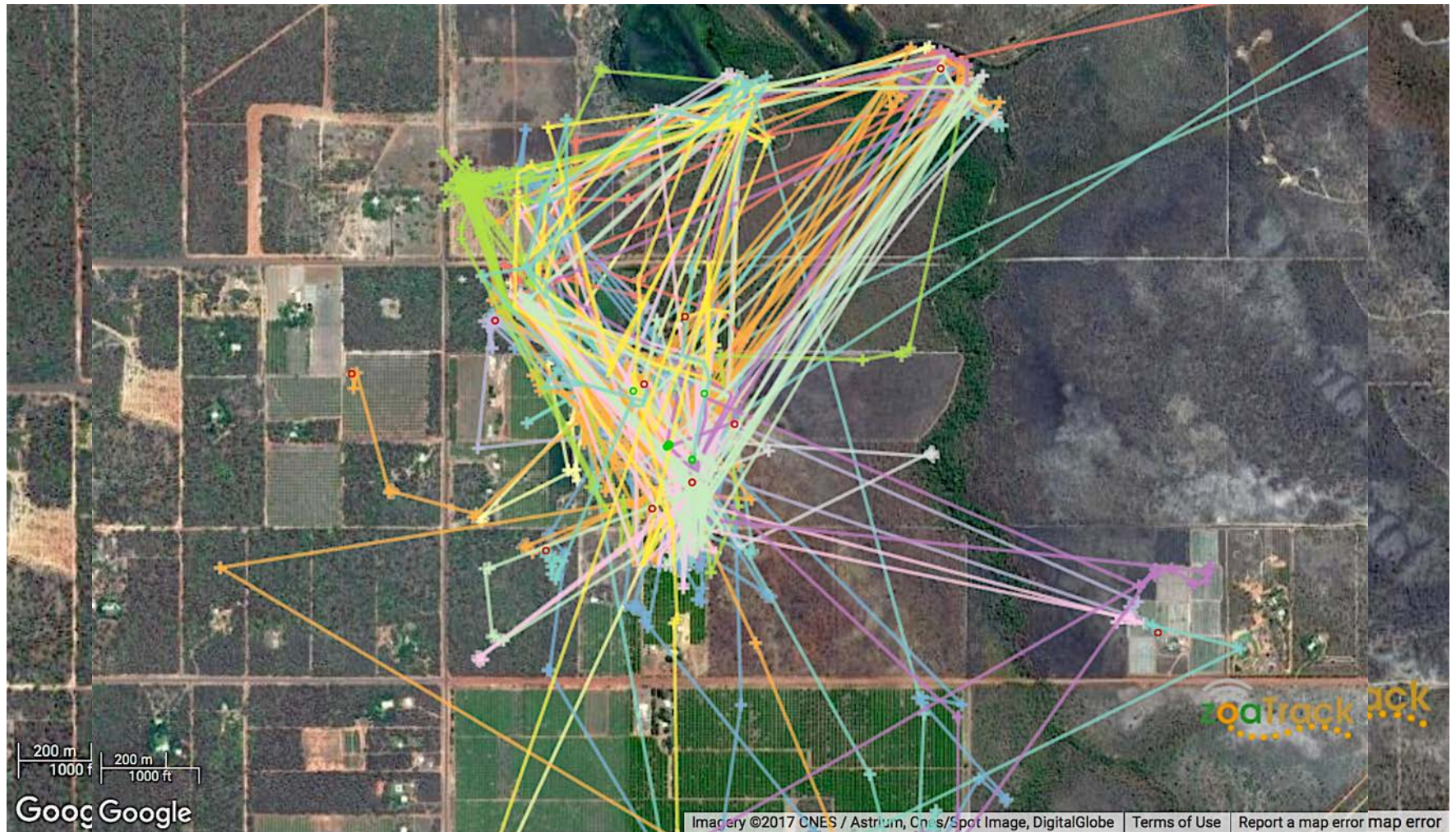


# Magpie Goose tracking



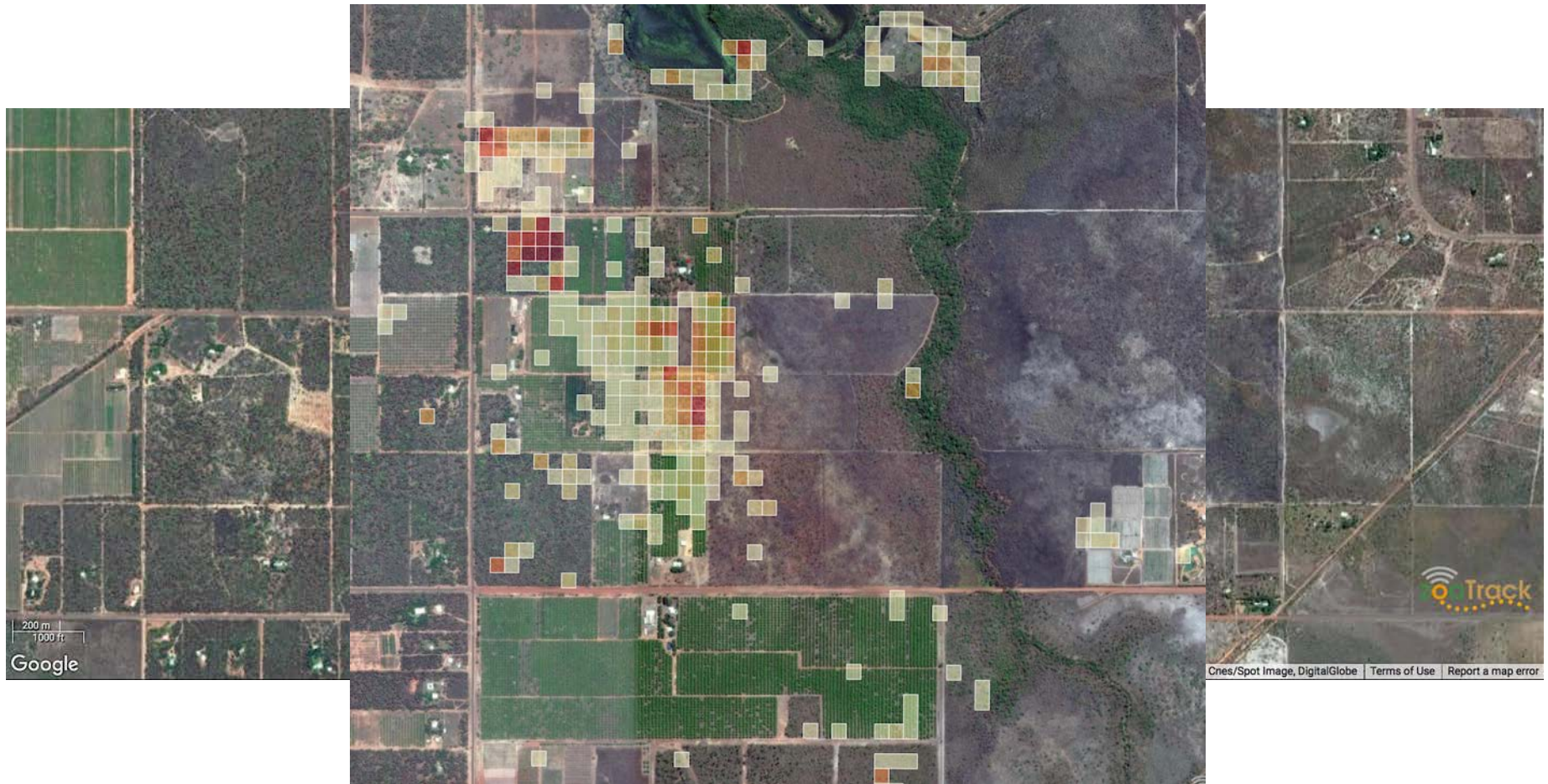


# Tracking data

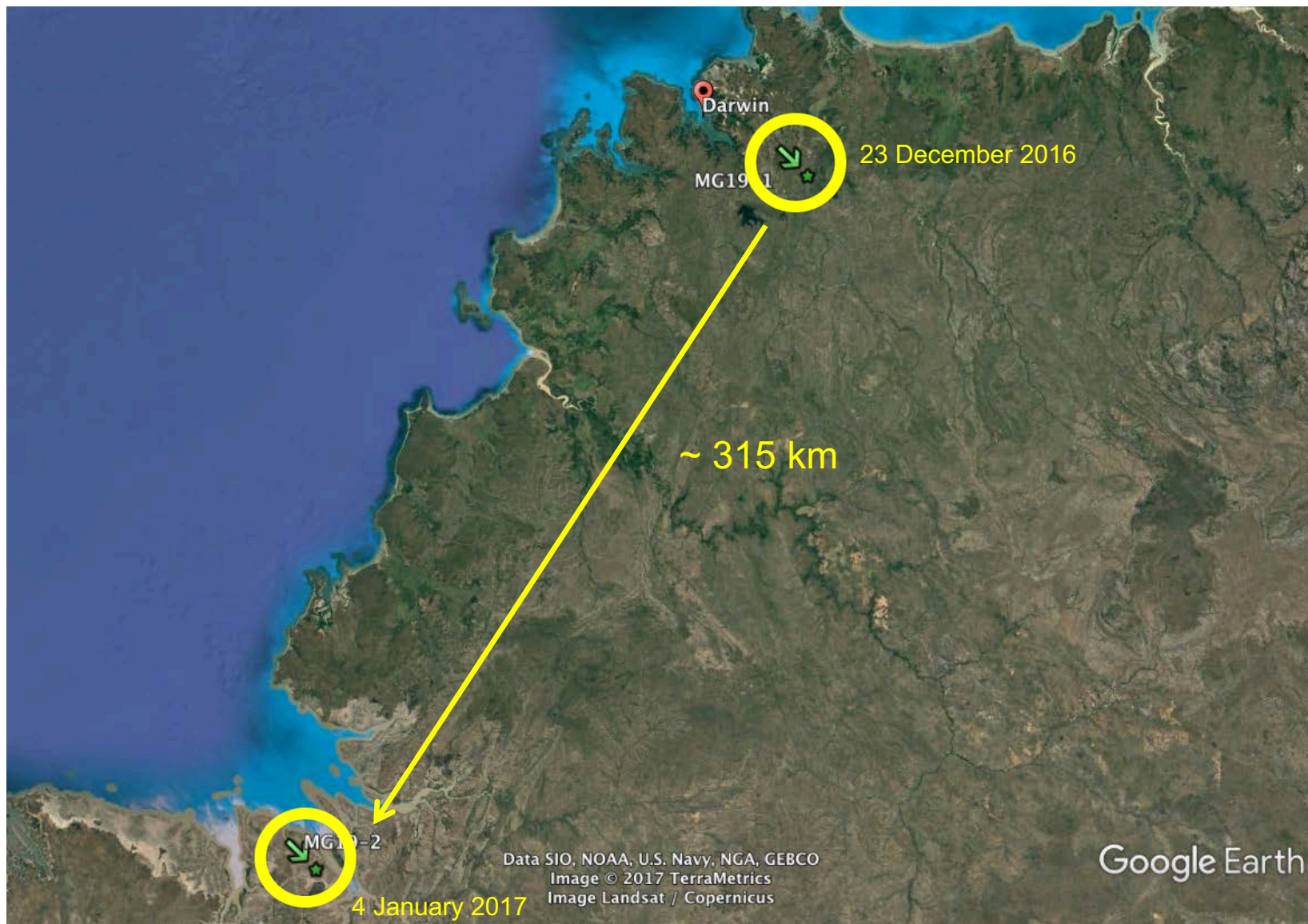




# Hot spot analysis







# Tracking data – MG19





# Tissue sampling & diet



Photos: A. Corriveau



Photo: Bart Irwin



Photo: Damien Stanioch

- Waterfowl hunting season
- Pest mitigation permits to farmers
- NT Field & Game Association



Image: metabarcoding.org



Curtin University

## DNA metabarcoding of stomach content

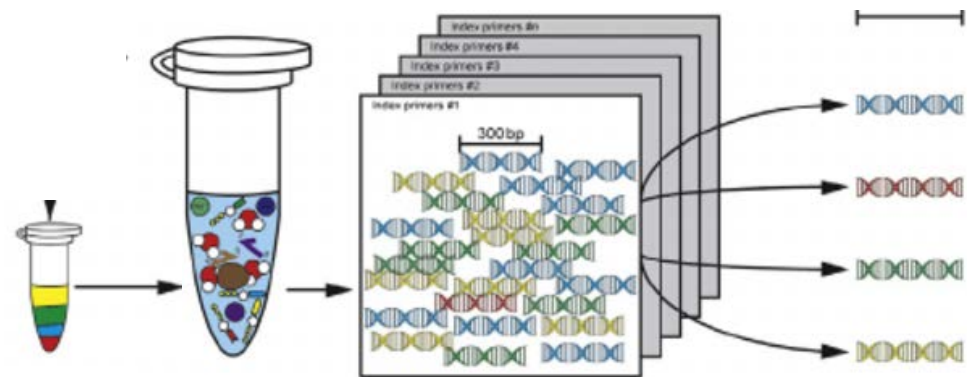
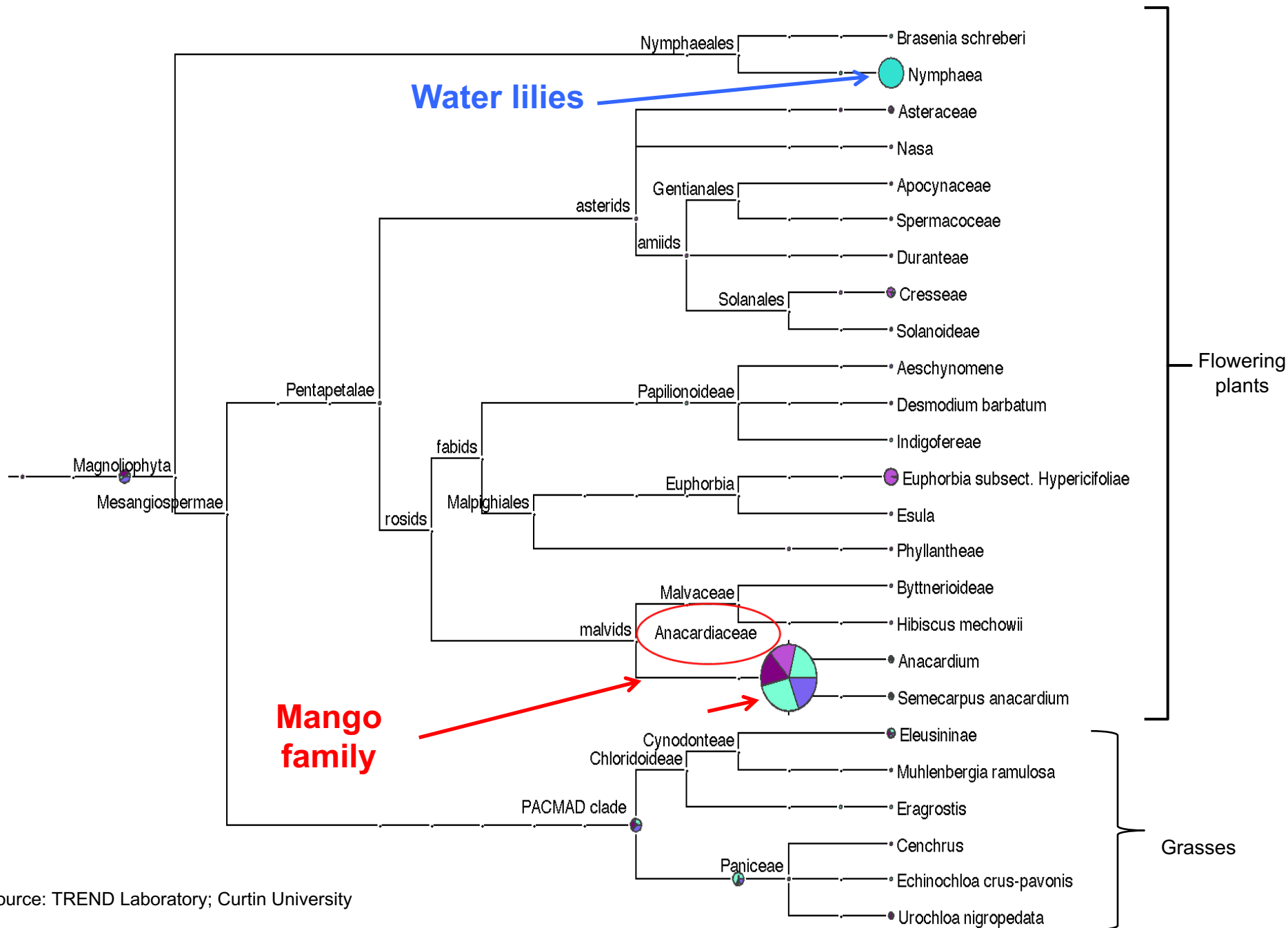


Image: Gill et al. 2016





# Key points – Season 2016

## Observations:

- Return to trapping location
- Repeated behavioural patterns  
(i.e., location on orchard, travel routes)
- Geese use various resources & locations
- Geese have large travel potential  
(e.g., Adelaide river, Victoria river)
- Evidence of social structure

## Ramifications for management:

- ➡ Scaring likely to low effectiveness
- ➡ Disrupt behaviour in innovative ways
- ➡ Extend management to broad areas  
(e.g., water bodies, native bushlands)
- ➡ Localised actions may not be enough  
(i.e., geese used to track resources)
- ➡ Actions on groups may be more successful

# Acknowledgements



Research Institute  
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and Livelihoods

**RIEL**



Horticulture  
**Innovation**  
Australia

**AUSTRALIAN  
MANGOES**



- Private landowners
- Participating mango growers
- Field volunteers
- ABS Scrofa

Fonds de recherche  
sur la nature  
et les technologies

Québec



Curtin University



Photo: Stuart Robertson Reynolds