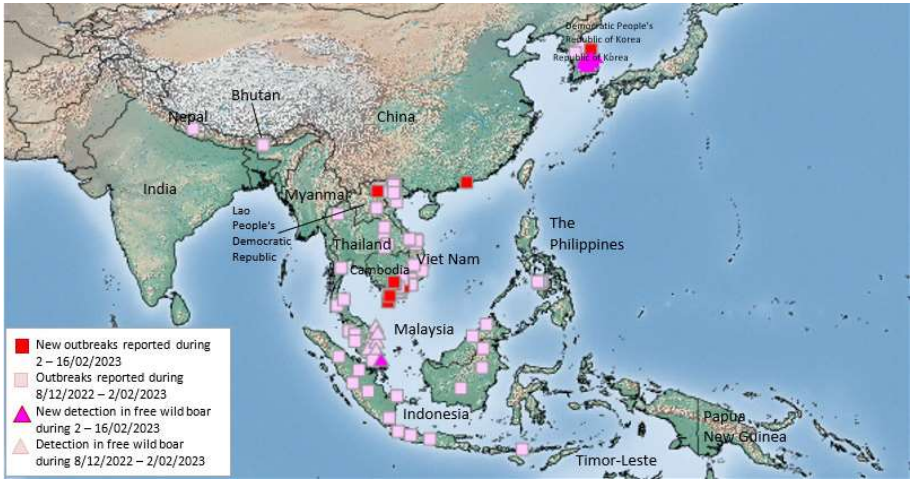
Wildlife Disease Surveillance and Modelling

Andrew Bengsen, Vertebrate Pest Research Unit



21%
African swine fever
Range: 5 – 39%

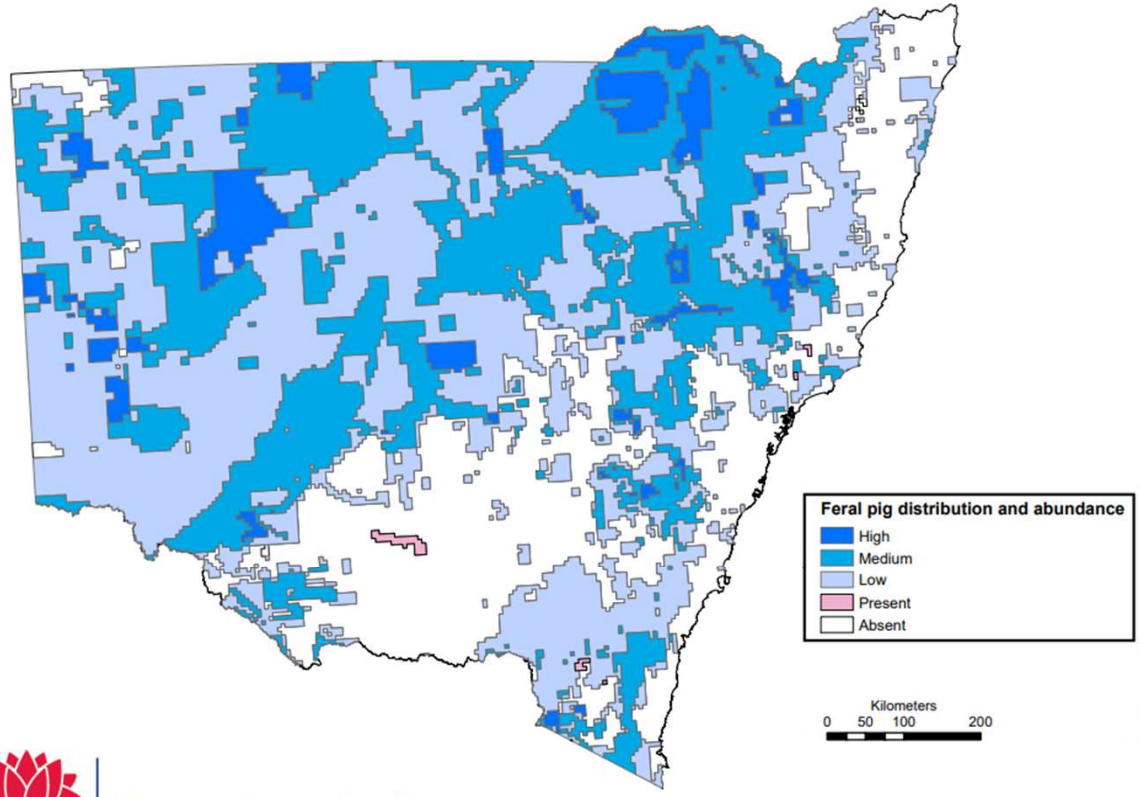
13%
African horse sickness
Range: 1 – 31%

9%
Foot-and-mouth disease
Range: 1 – 19%

8%
Lumpy skin disease
Range: 0 – 22%

CEBRA March 2021

Feral pig distribution and relative abundance 2020



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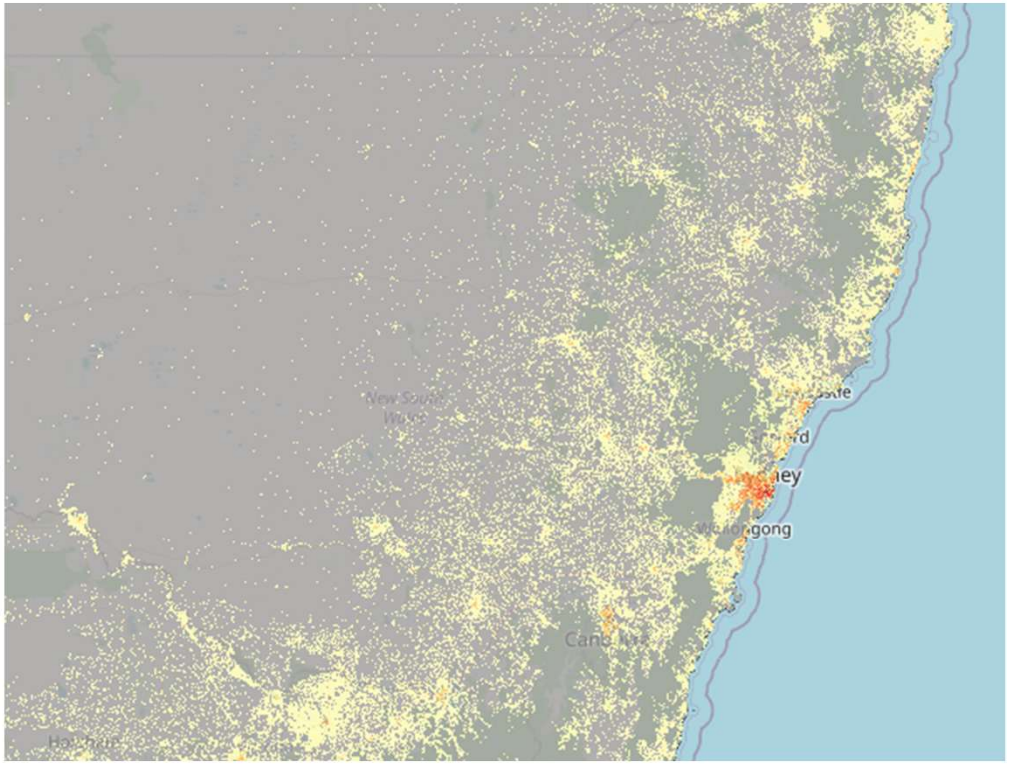
Human distribution 2022



Surveillance

Adaptive sampling strategy for detection of exotic and emerging diseases ***in the wild***

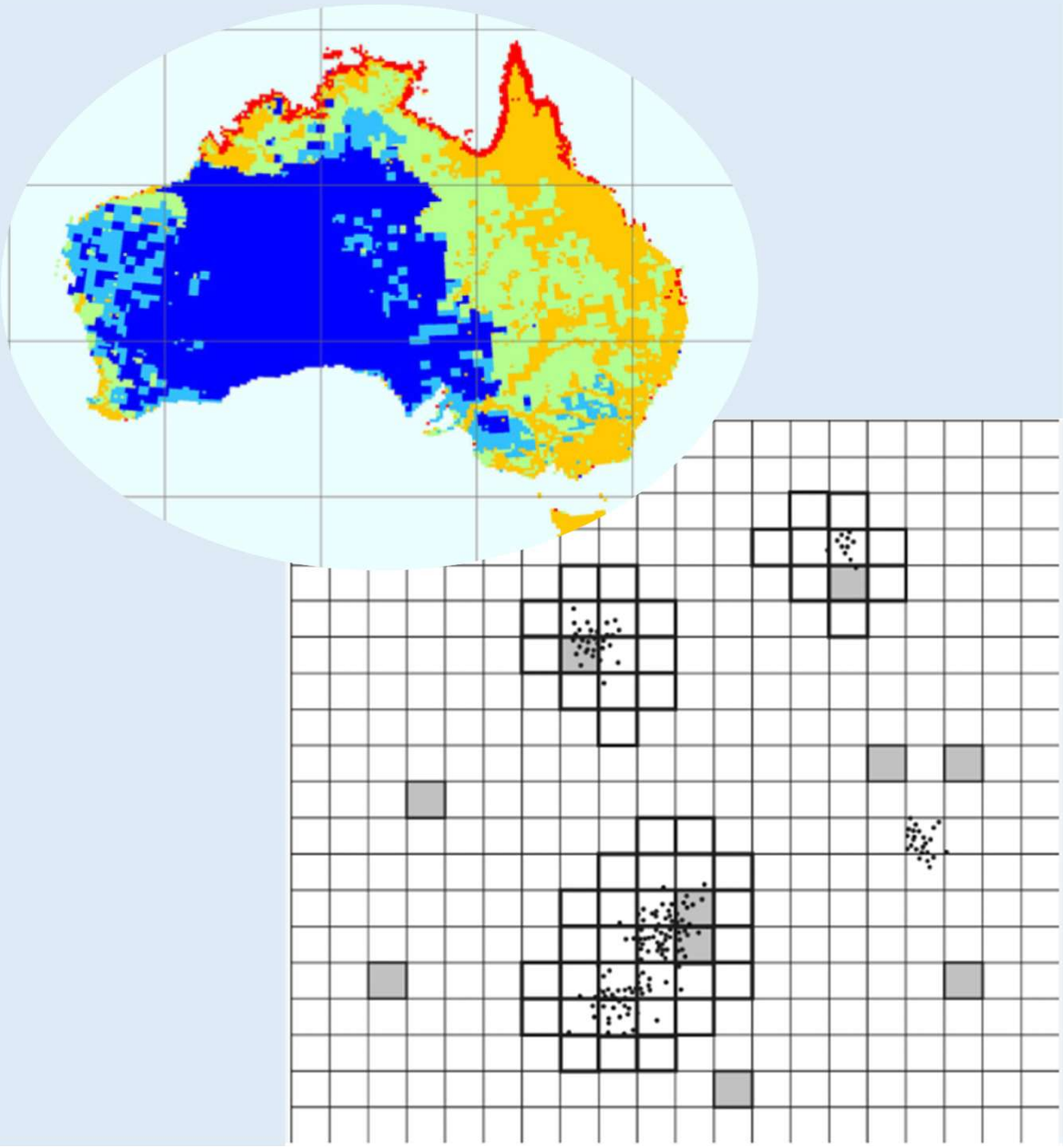
Response

Develop ***management*** strategies based on models of disease transmission ***in the wild***

Surveillance

Key components:

- Risk-based
- Adaptive sampling
- Emerging & sporadic disease



Surveillance

Key components:

- Risk-based
- Adaptive sampling
- Emerging & sporadic disease
- Tie in with Biosecurity ops

Surveillance

Key components:

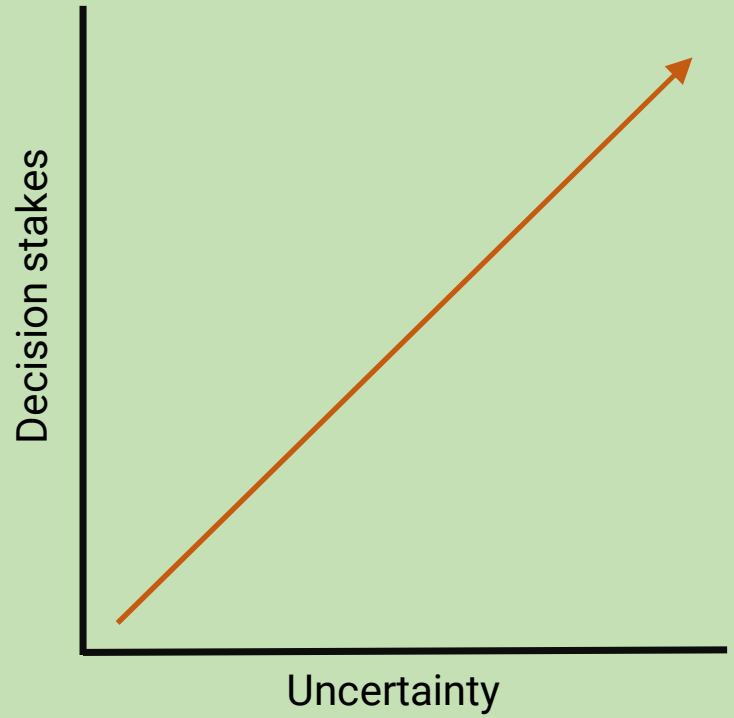
- Risk-based
- Adaptive sampling
- Emerging & sporadic disease
- Tie in with Biosecurity ops
- Alternative sampling tech

Response

Key components:

- High stakes, high uncertainty

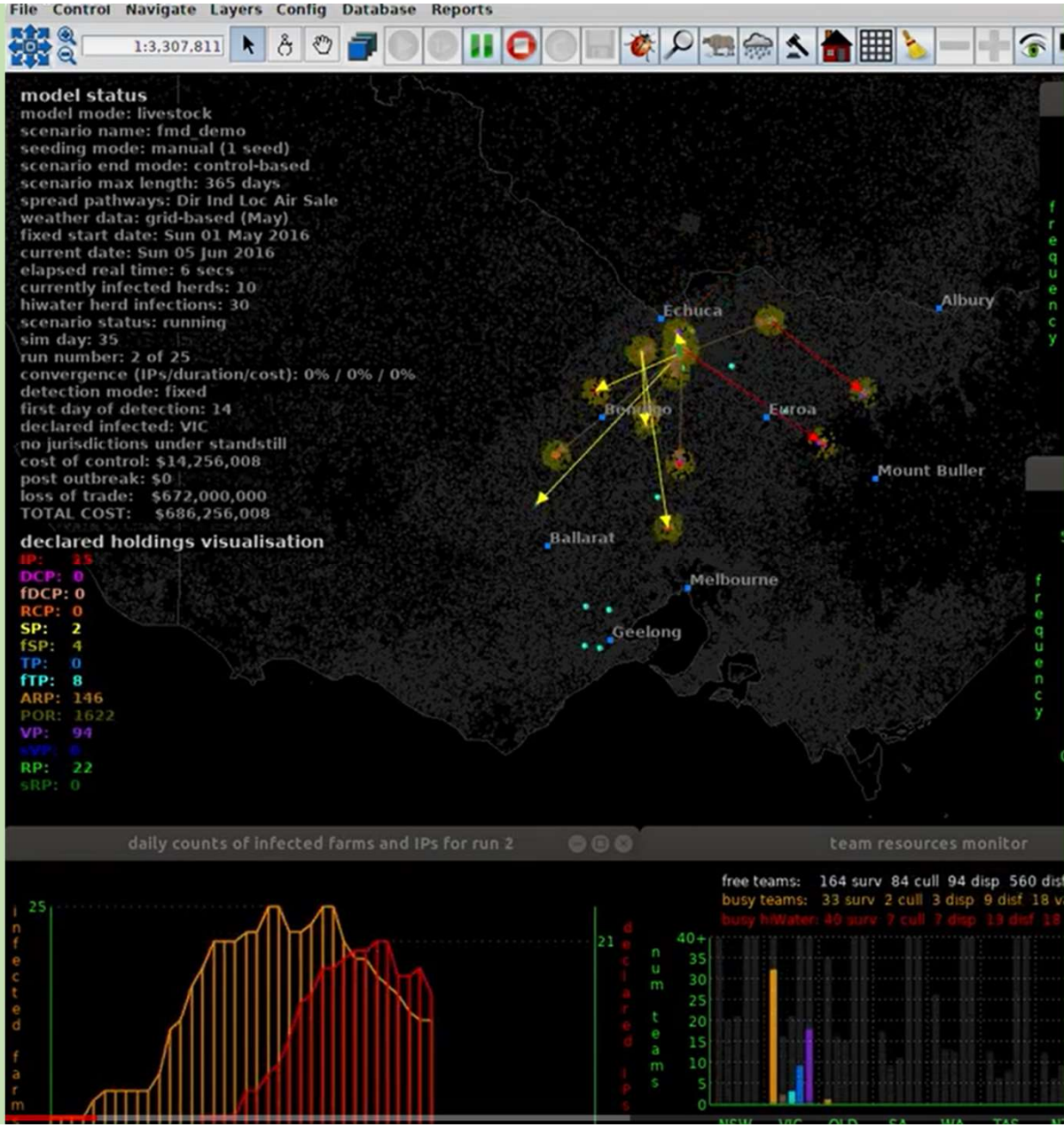
Stakes are high
Facts are uncertain
Decisions are urgent!



Response

Key components:

- High stakes, high uncertainty
- Current recs for wild populations based on
  - Very limited data
  - Very limited scope
  - Models with very restrictive assumptions



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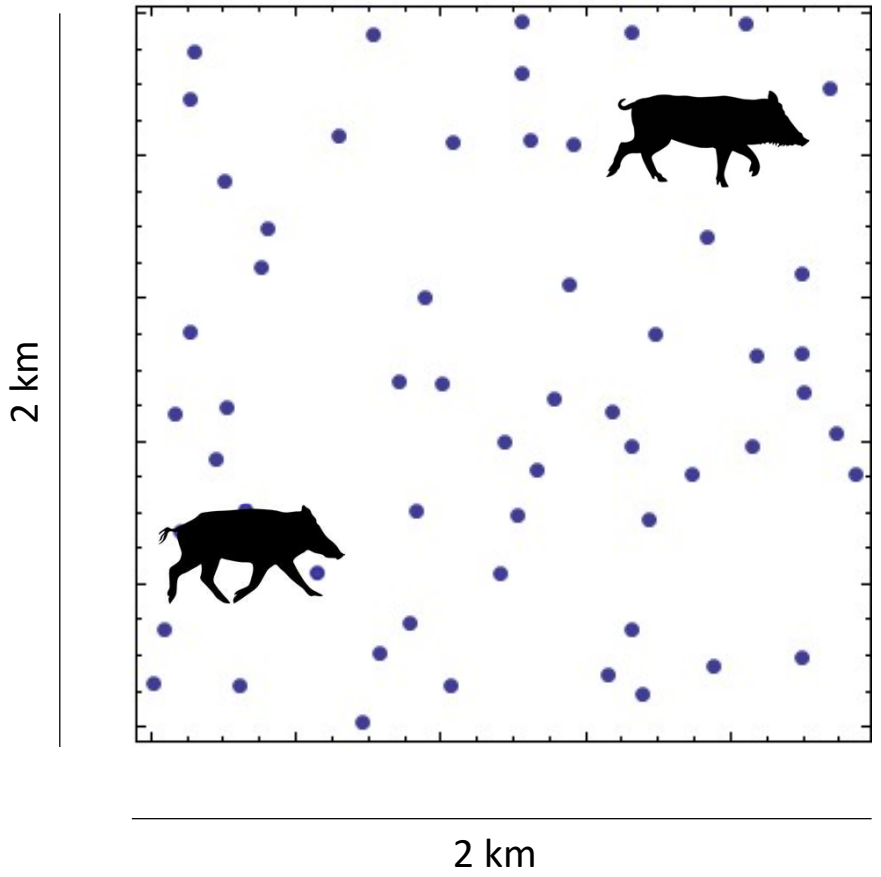
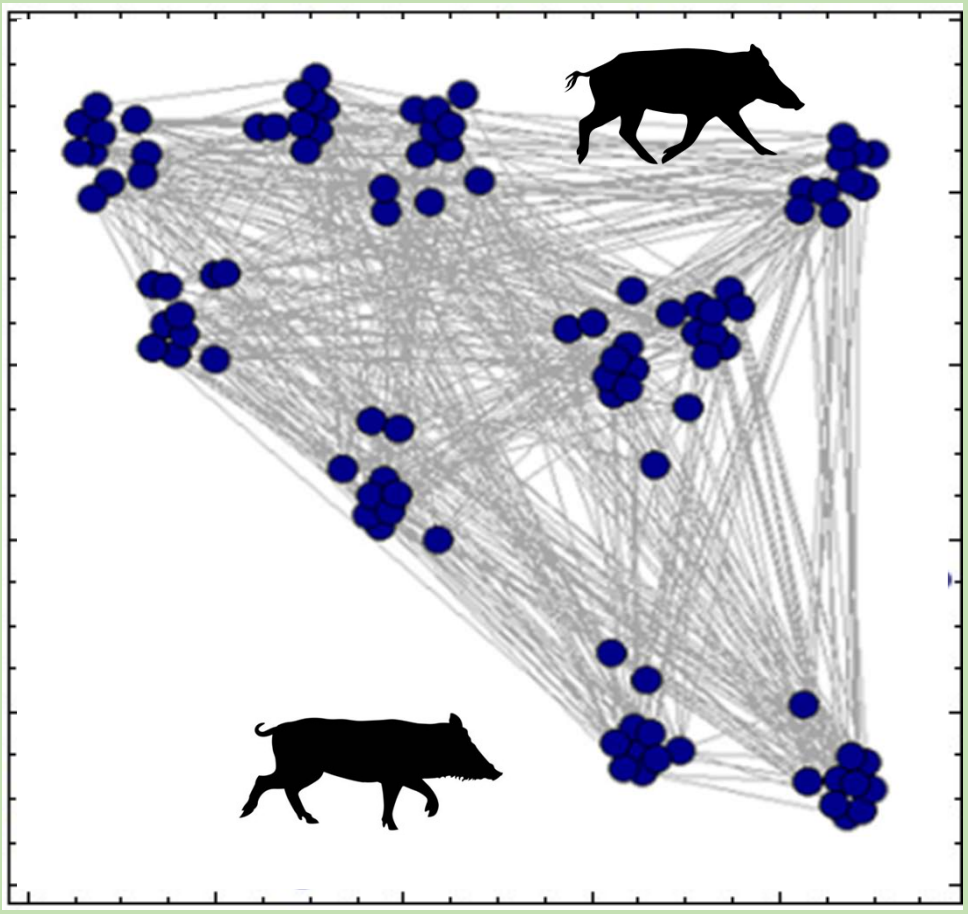
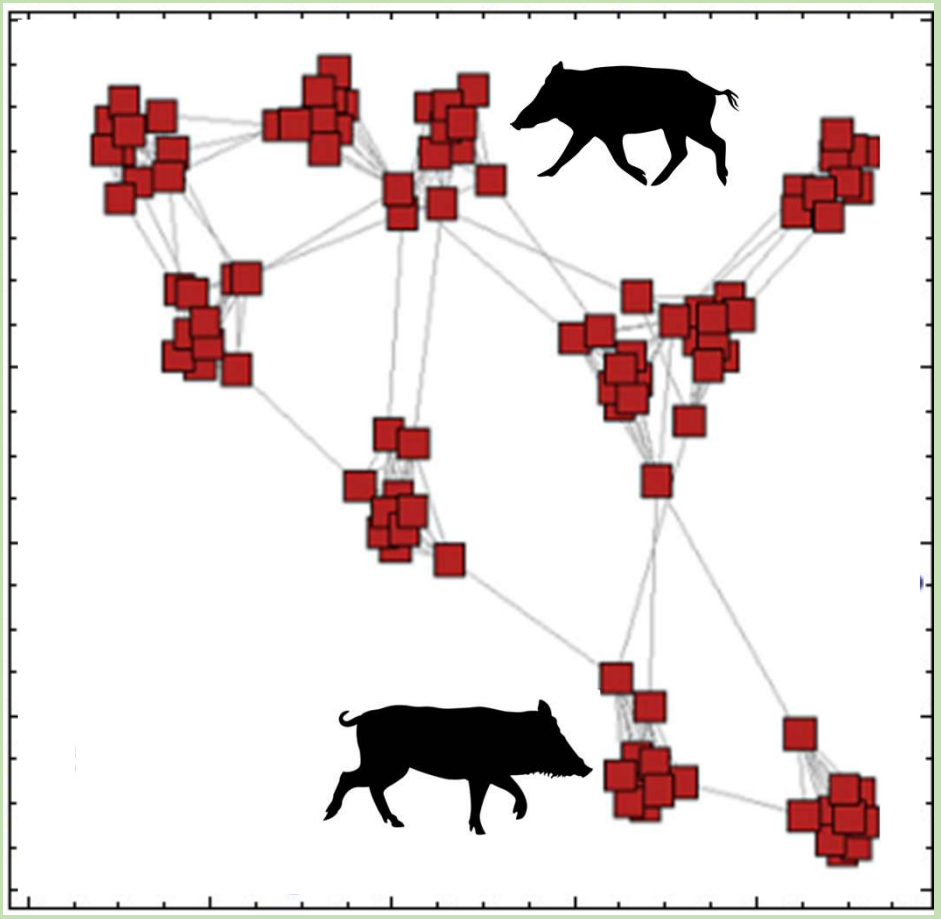


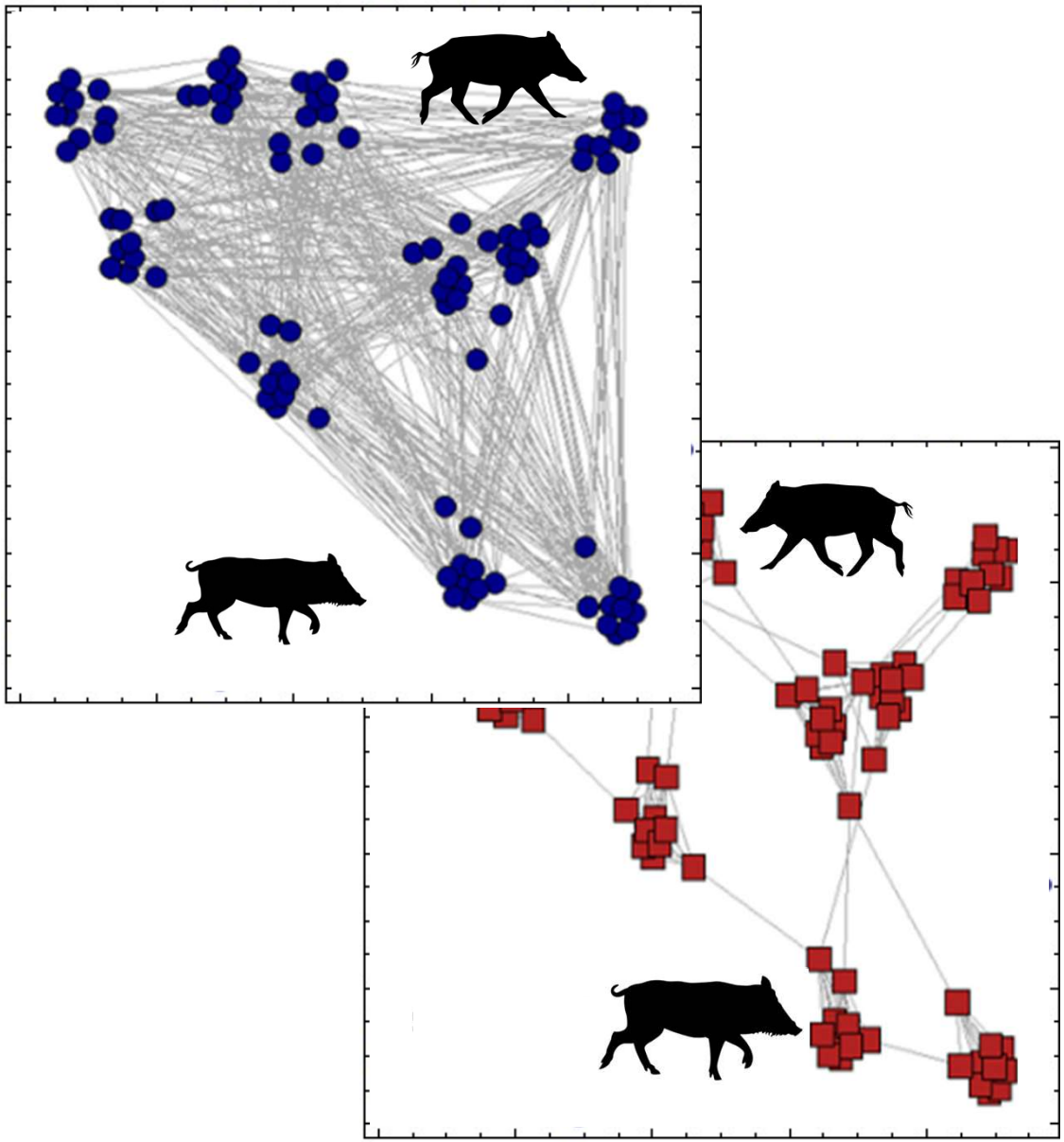




Response

Key components:

- High stakes, high uncertainty
- Current recs for wild populations based on
  - Very limited data
  - Very limited scope
  - Models with very restrictive assumptions
- Need reliable predictive models for wild populations

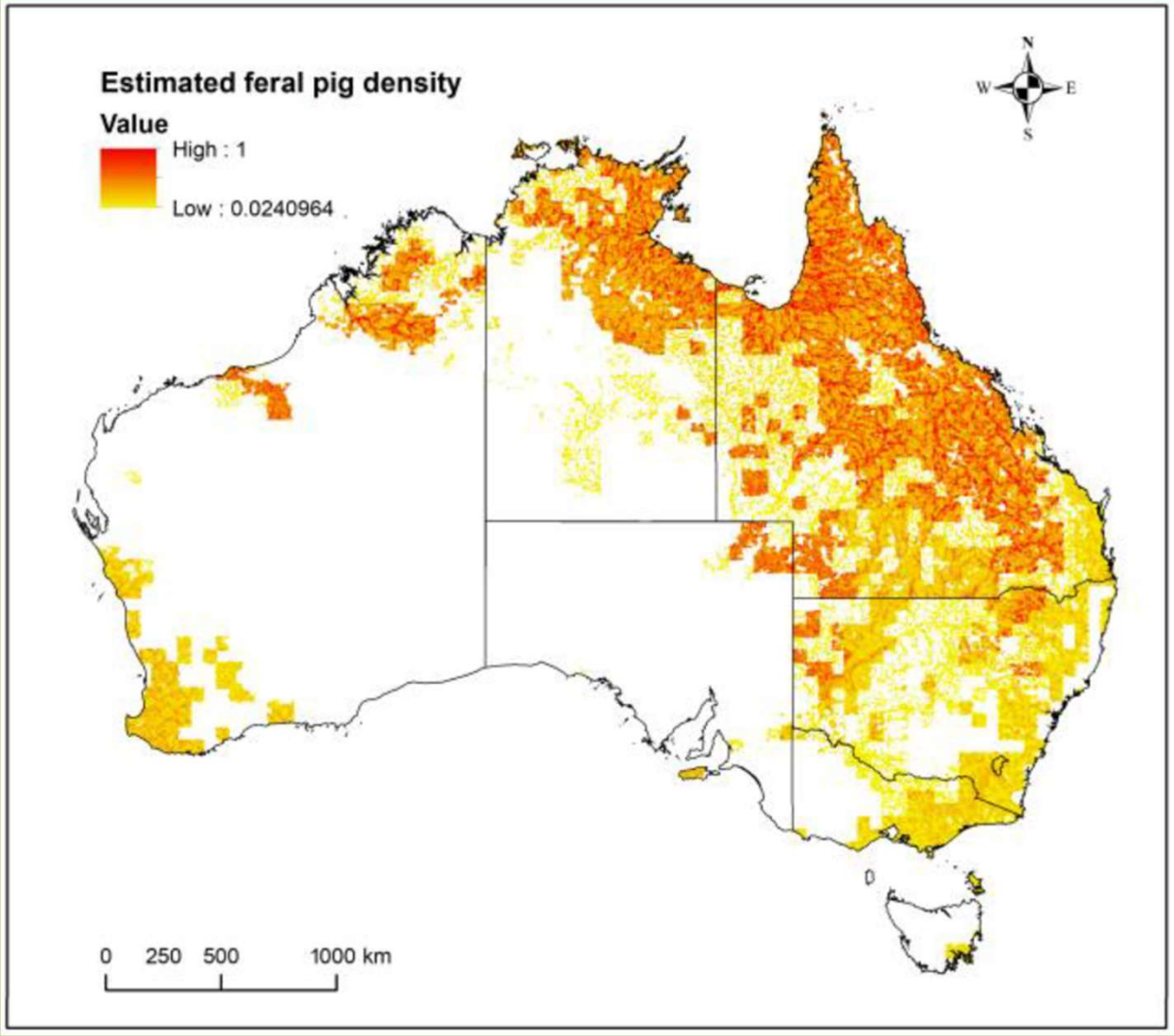


Response

- Better models need better data
  - Host movement and connectivity
  - Behavioural response to management

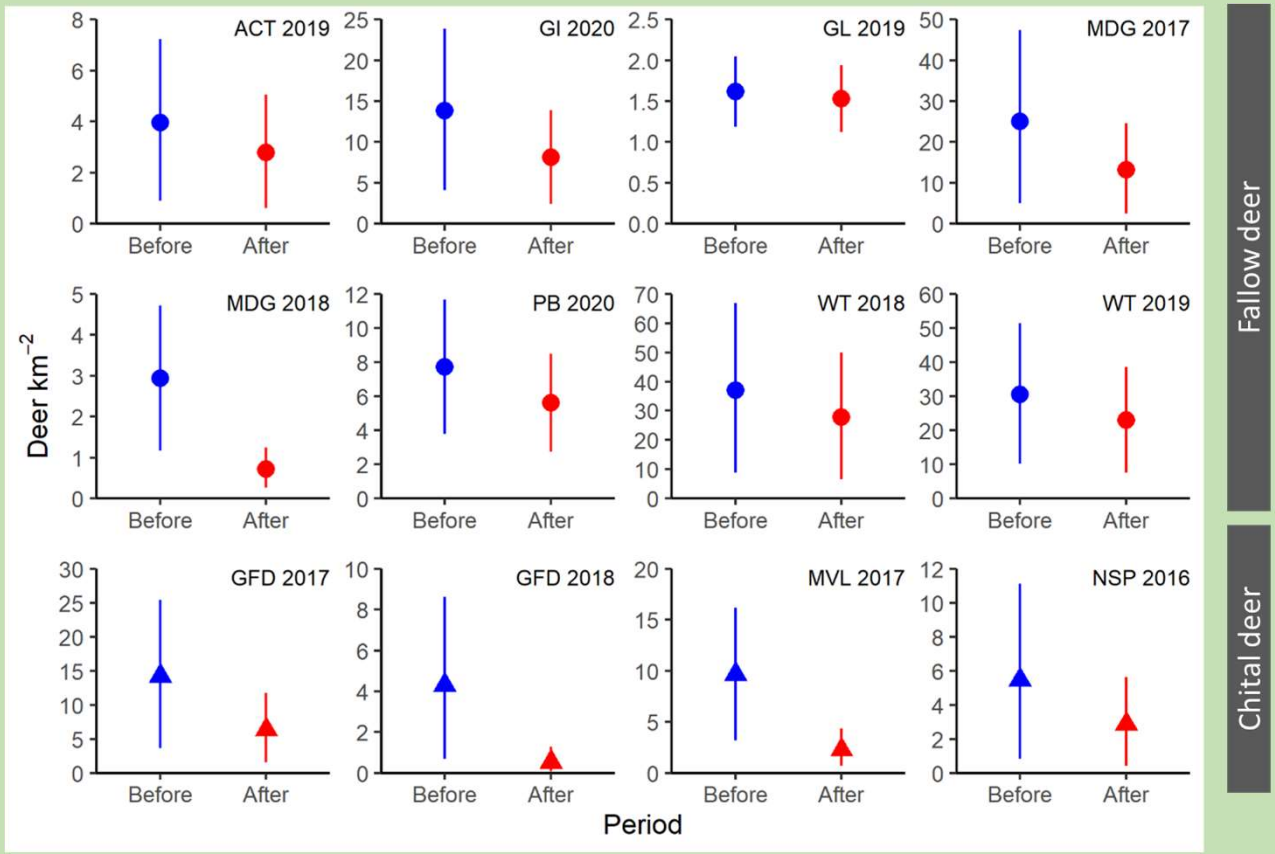
Response

- Better models need better data
  - Wild host density



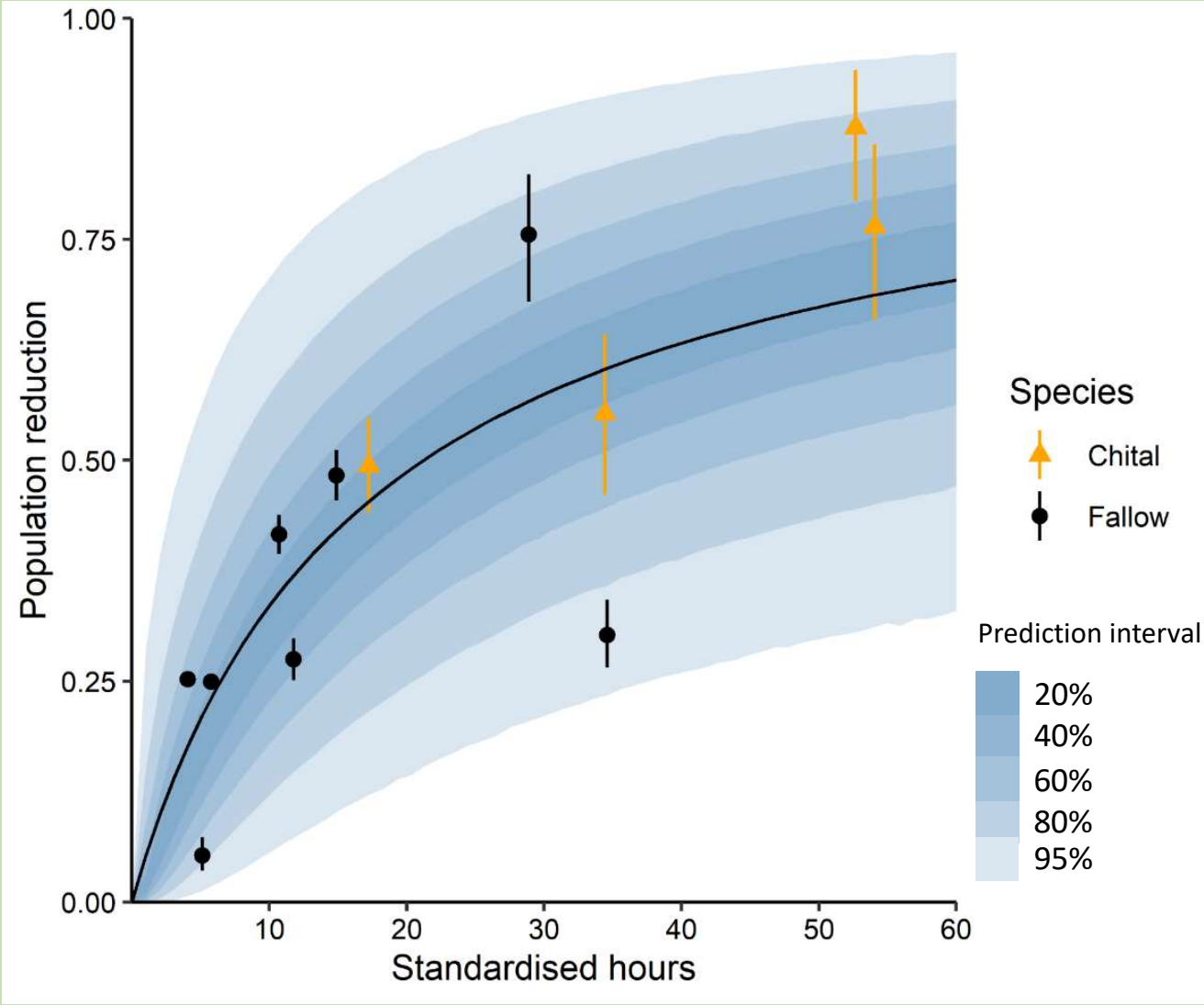
Response

- Better models need better data
  - Control efficacy



Response

- Better models need better data
  - Effort:Outcomes



Conclusion

- Risk of wild incursion has been neglected (recently)

- We aim to reduce:
  - risk of long establishment
  - uncertainty of response

Intensity, severity and impacts of EAD incursion in wild populations

Facts are uncertain
Stakes are high
Decisions are urgent!