

# Predicting wallaby spread and impacts in mainland New Zealand



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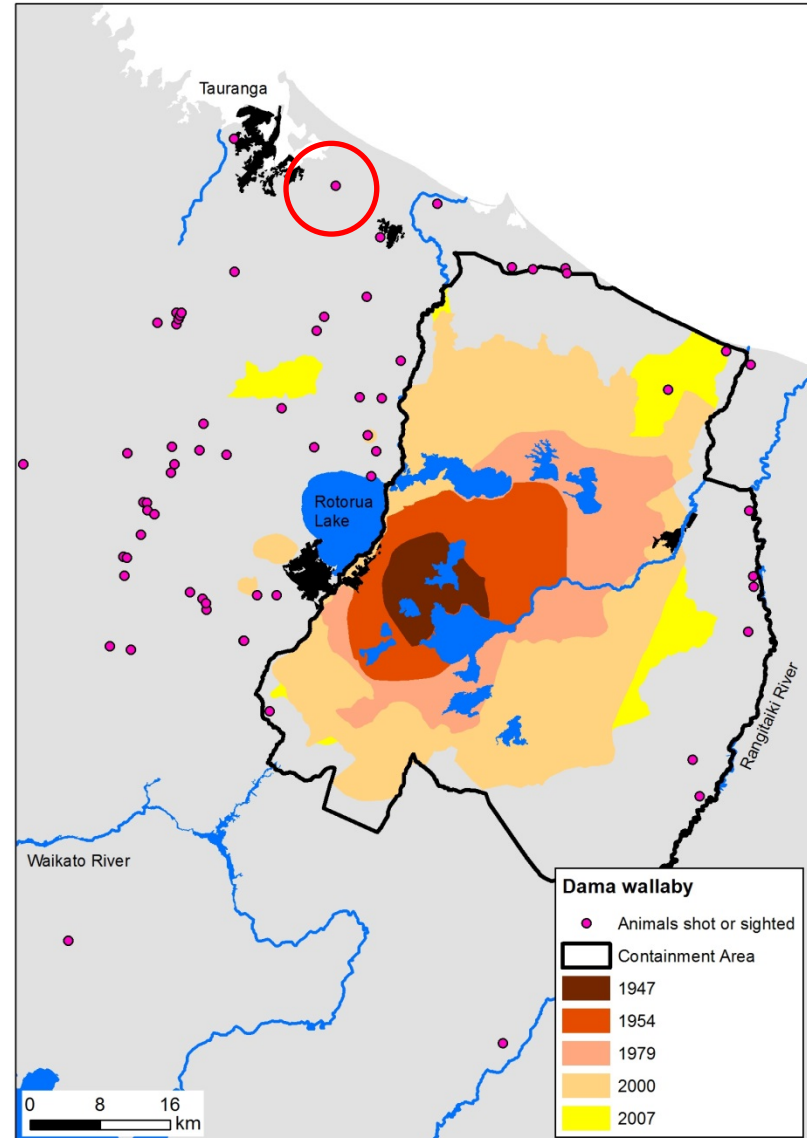
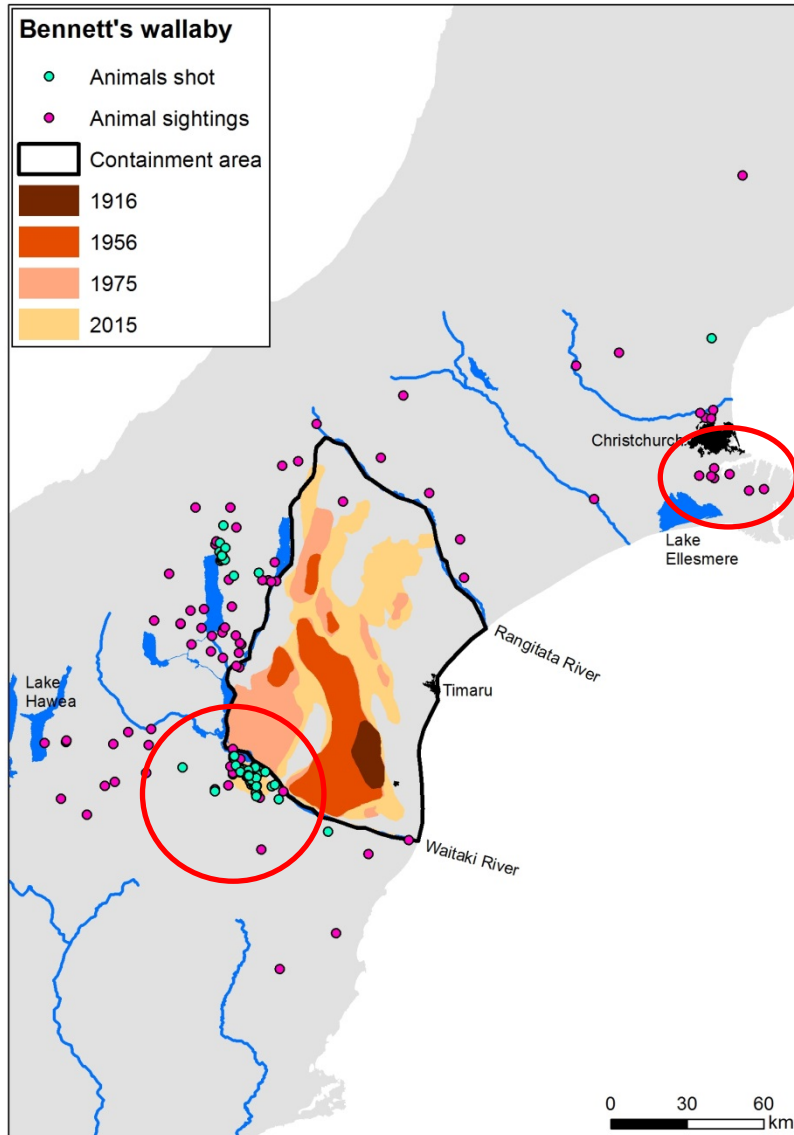
**LANDCARE RESEARCH**  
MANAAKI WHENUA

# Wallabies in New Zealand

- 7 species of wallaby introduced >140 yrs ago
- 5 species remain:
  - Dama in North Island, Bennett's in South Island, 4 species in Kawau Island
- Impacts to agriculture, plantation forest and native vegetation



# Historical distribution



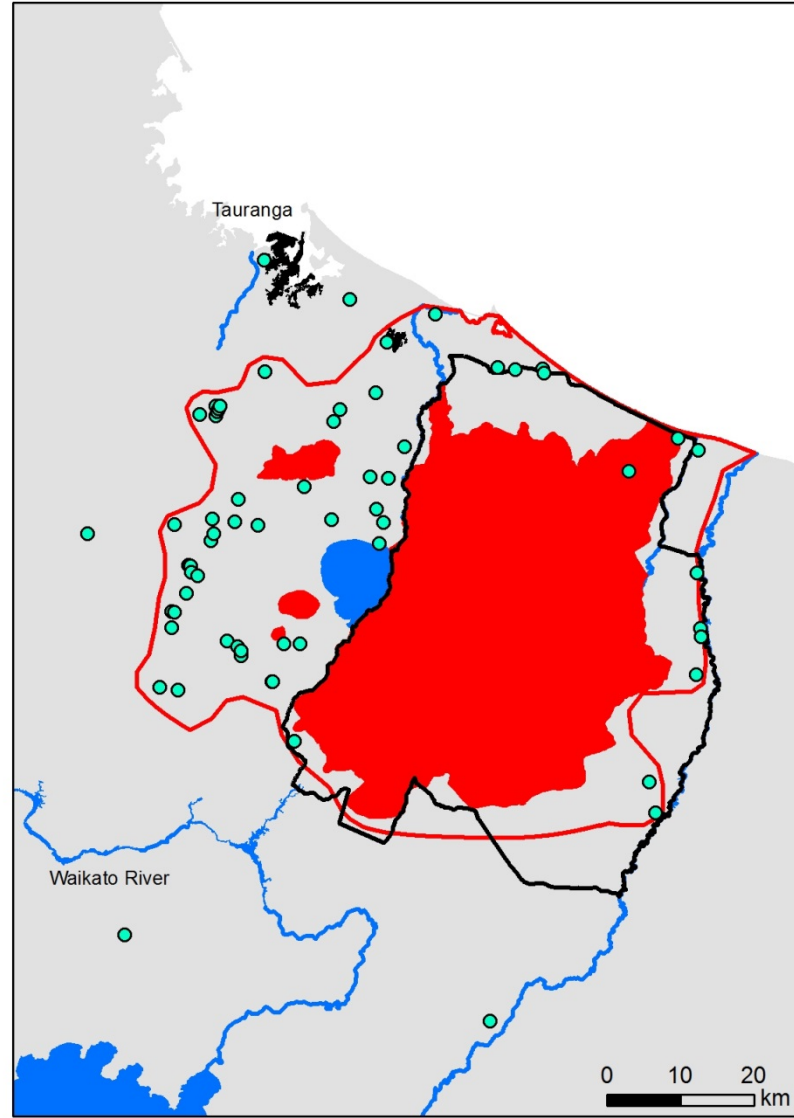
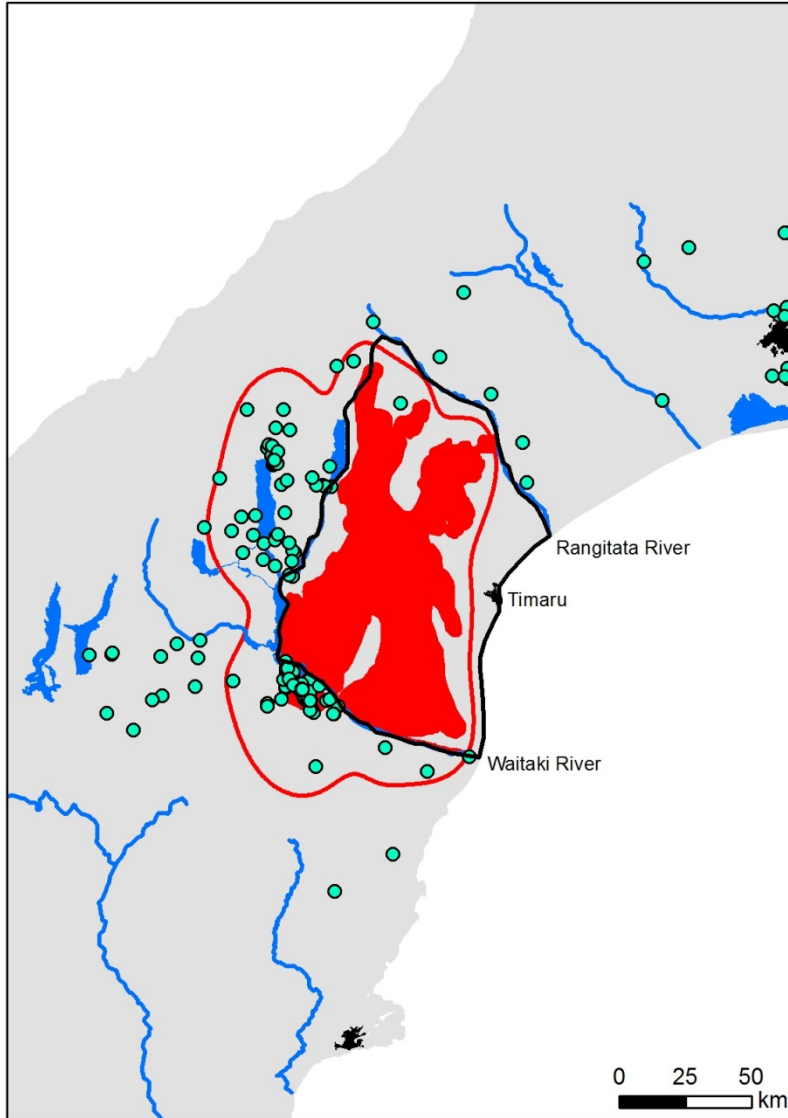


# Objectives

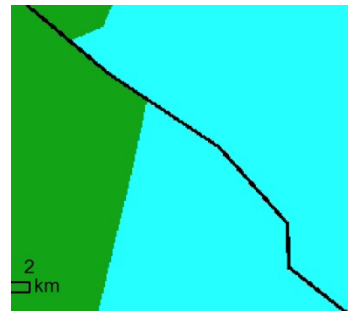
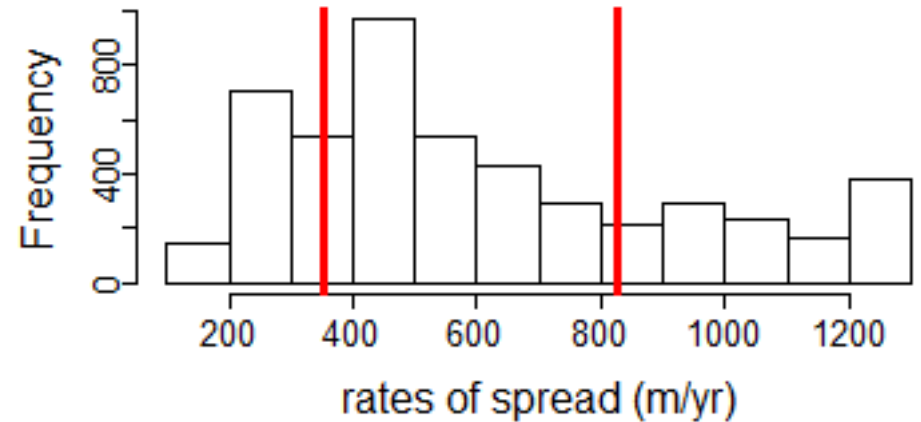
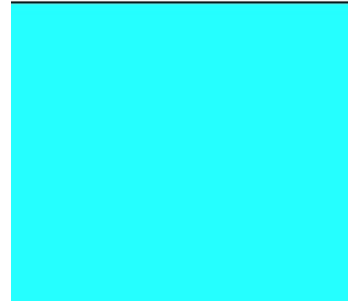
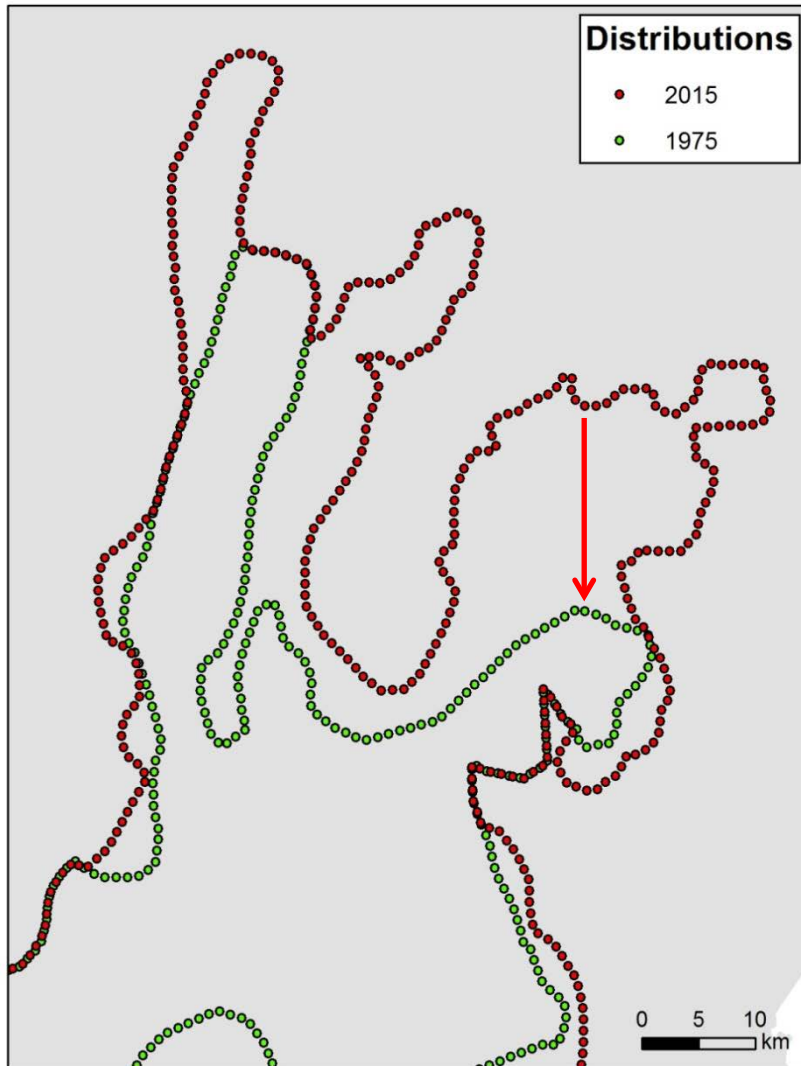
1. Update current distributions in mainland NZ
2. Predict distributions over the next 50 years, based on current rates of spread
3. Describe potential suitable habitat in mainland NZ
4. Cost/benefit analysis: control vs impacts



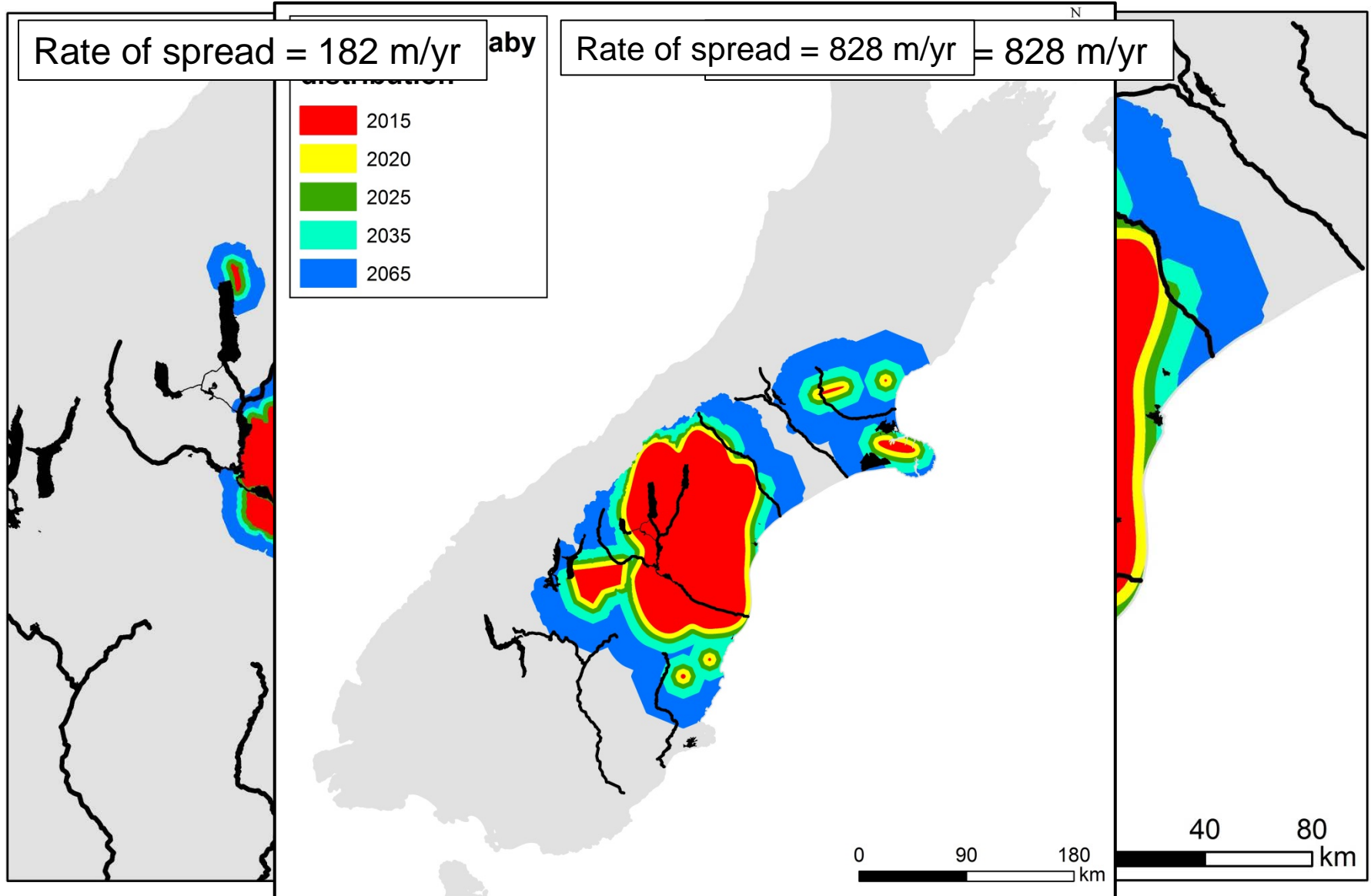
# 1. Current distribution: known vs. probable



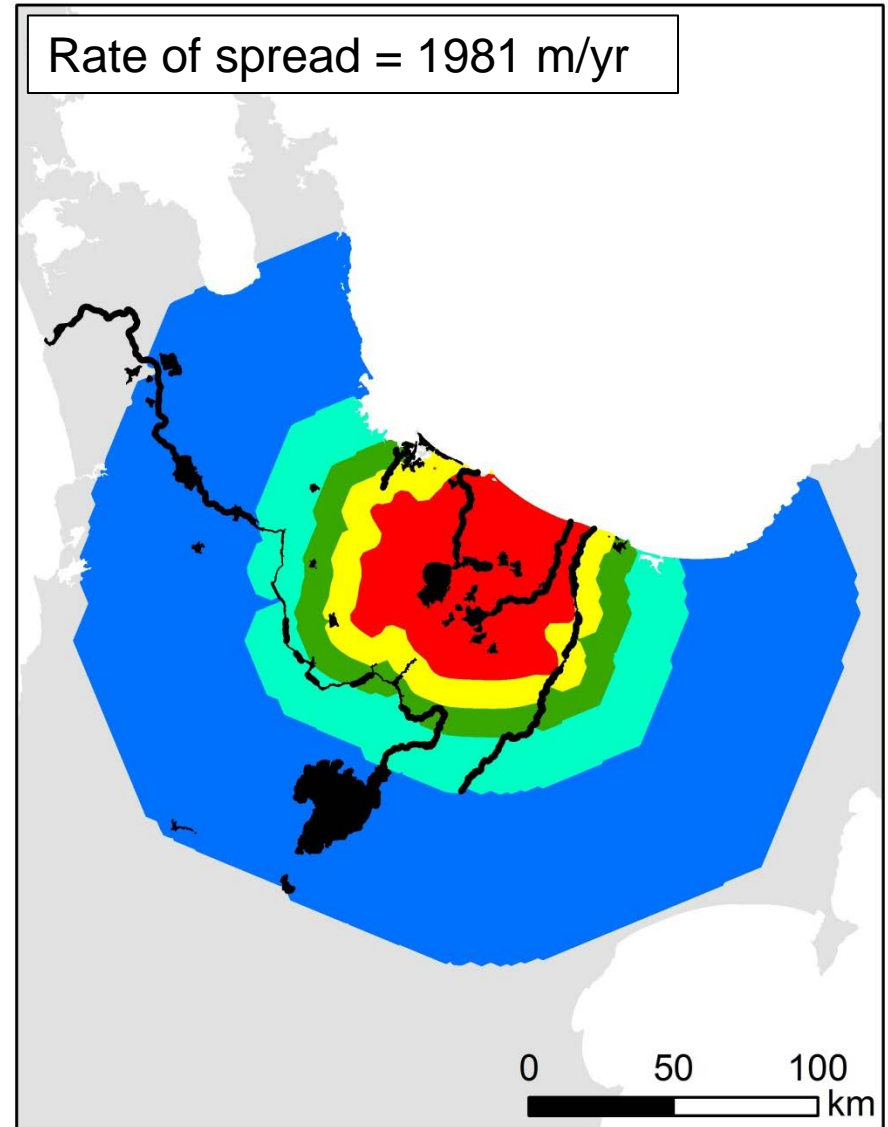
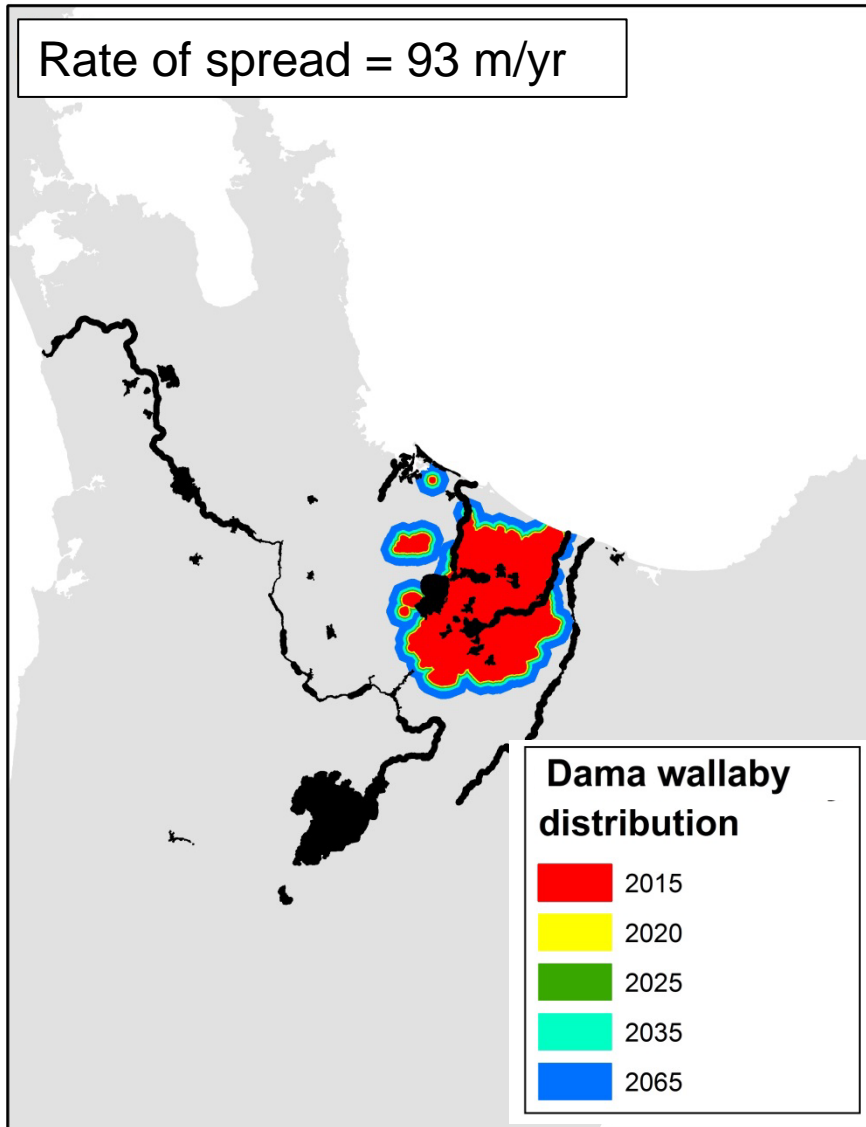
## 2. Rates of spread to predict distributions



## 2. Predicted distributions in 50 yrs

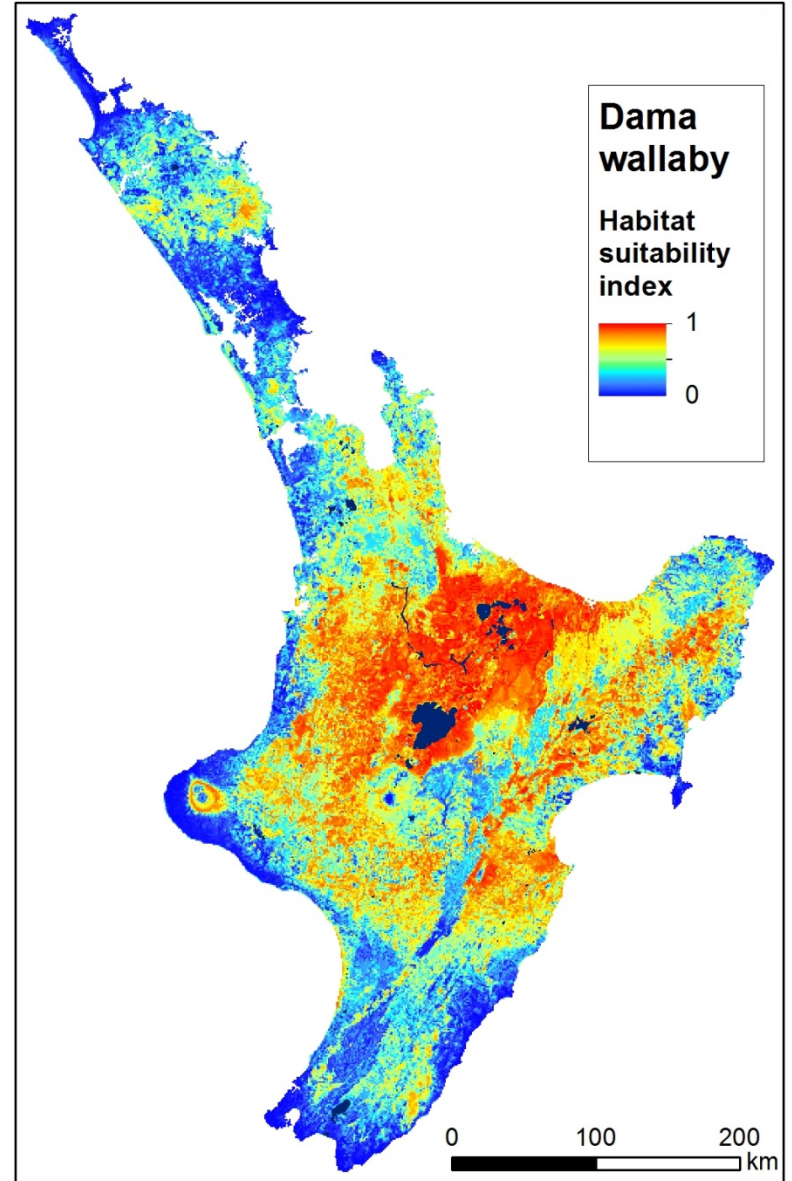
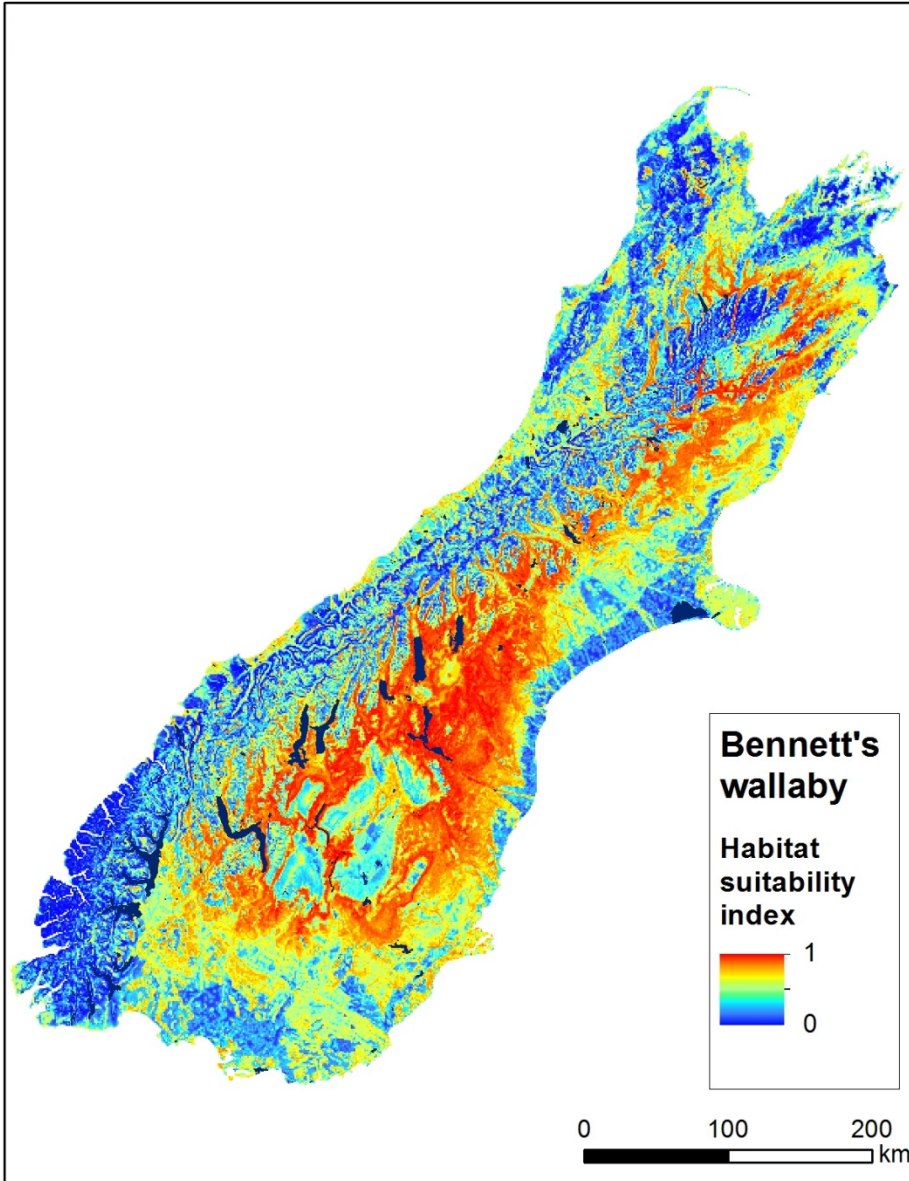


## 2. Predicted distributions in 50 yrs





# 3. Potential habitat



## 4. Cost/benefit analysis

- 3 scenarios:
  - Do nothing (or status quo)
  - Widespread remedial control (control after spread)
  - Defensive control for containment
- Impacts to (1) agriculture and (2) ecosystem services
- Estimated for spread in 10 yrs
- Accounted for impacts of sympatric herbivores on ecosystem services

## 4. Cost/Benefit analysis

Scenario	Bennett's wallaby	Dama wallaby
1. Do nothing	43.4	12.3
2. Remedial control	18.0	8.6
BENEFIT of 2.	25.4	3.7
3. Containment	6.2	3.4
BENEFIT of 3.	37.2	8.9

# Conclusions - distributions

- Bennett's could occupy 3x current delineated distribution, dama >2x
- Under current management: increases of 6x current known distribution for Bennett's, 20x for dama
- Including illegal liberations, Bennett's predicted to increase by 8x
- Worst case scenario: 1/3 of each island
- There is ample good quality habitat for wallabies to invade
- BUT, predicted distribution overestimate actual area occupied by wallabies.





# Conclusions - management



- Significant net benefit of remedial control of Bennett's & dama
- Paucity of data means ES estimates are not robust, only indicative
- BUT most cost/effective strategy is containment
- For this to succeed, fit-for-purpose surveillance, detection, and control methods are needed

# Acknowledgements



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