Landcare Research
Manaaki Whenua

Rapid reinvasion of pest control areas:

New results from Project Kaka in the Tararua Ranges

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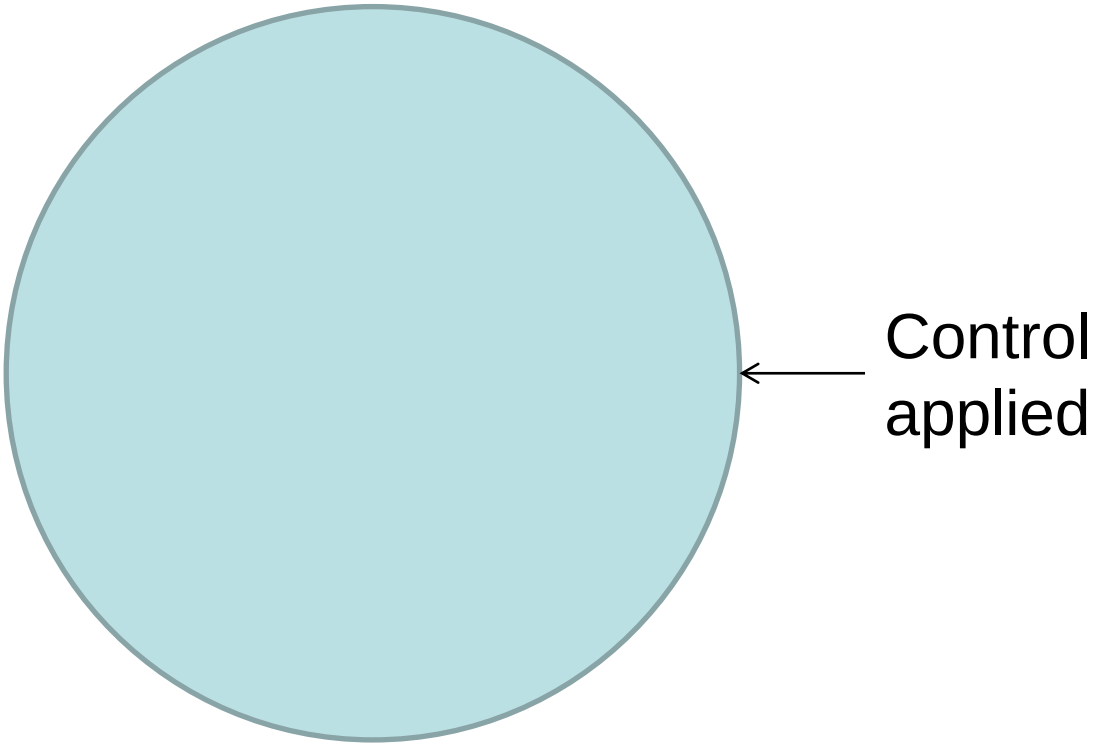
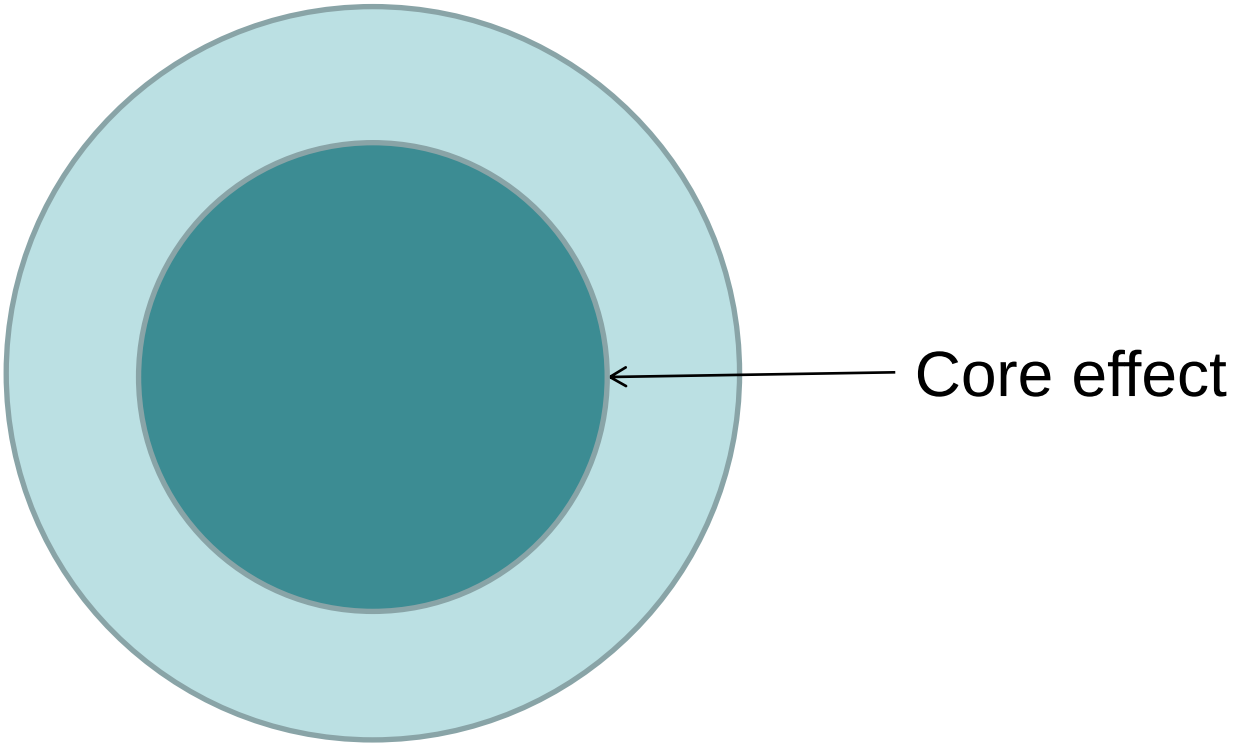
Rationale for pest control

- To mitigate impacts on indigenous biodiversity
- On-going effort required due to pest population recovery (time)
- Spatial extent of pest control and its benefits (space)

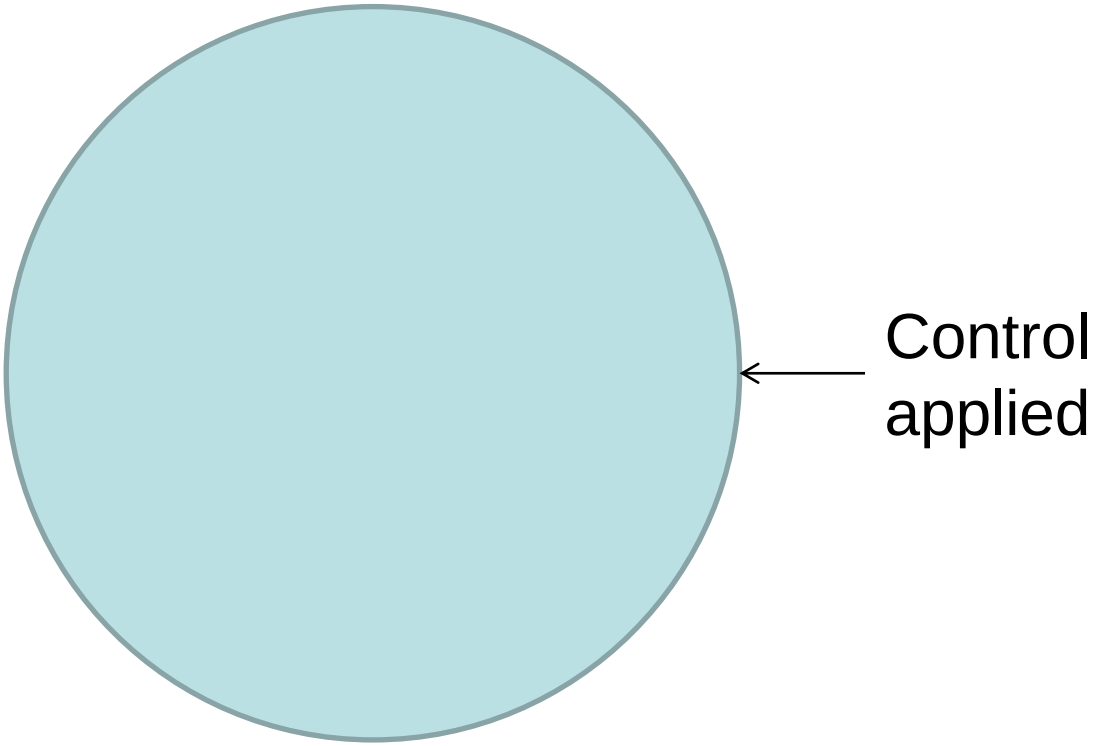
Spatial extent of pest control



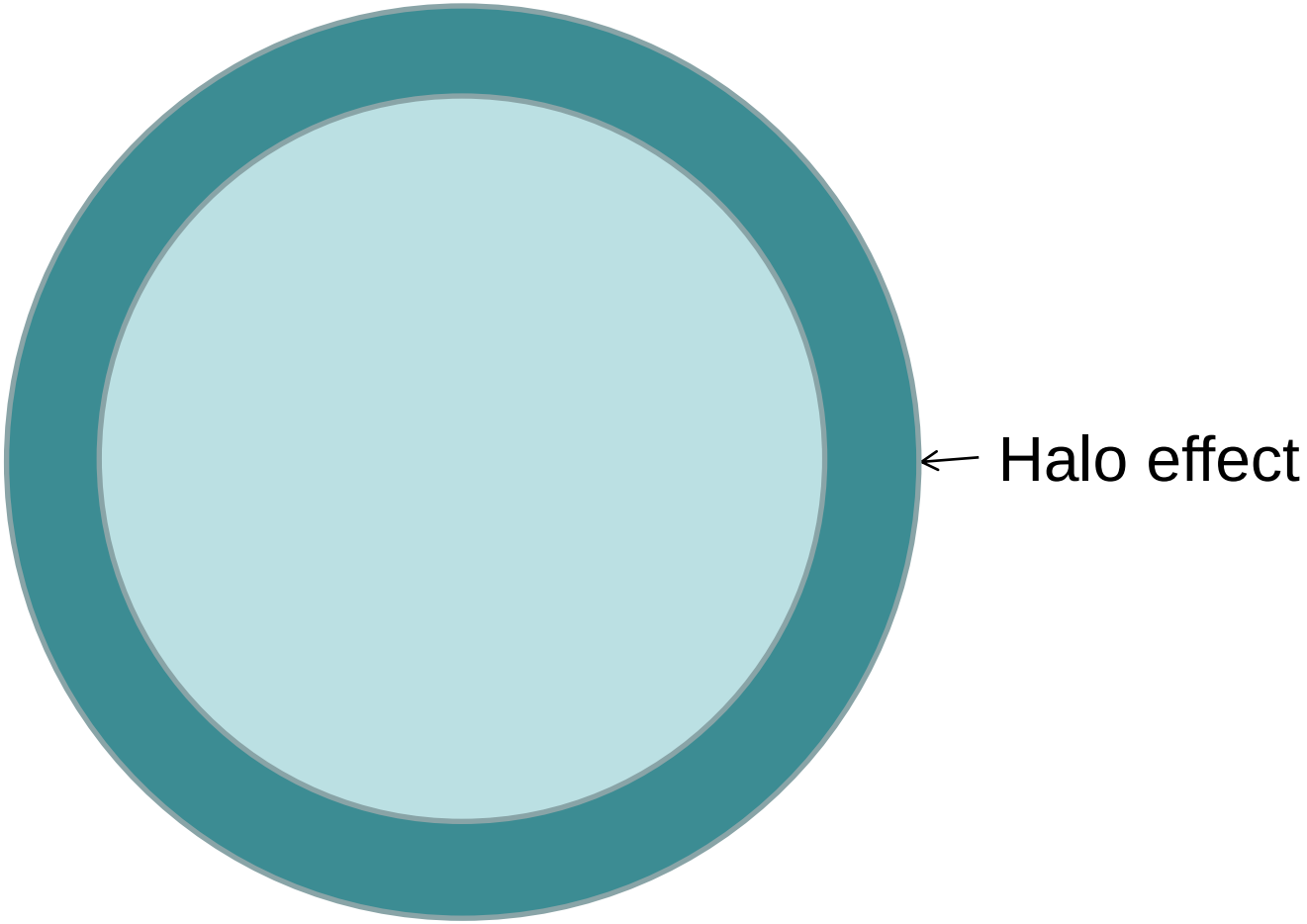
Spatial extent of pest control



Spatial extent of pest control



Spatial extent of pest control



Project Kaka

- DOC initiative
- Large scale control – 22000 ha Tararua Forest Park
- 3-yearly aerial 1080
- First control November 2010

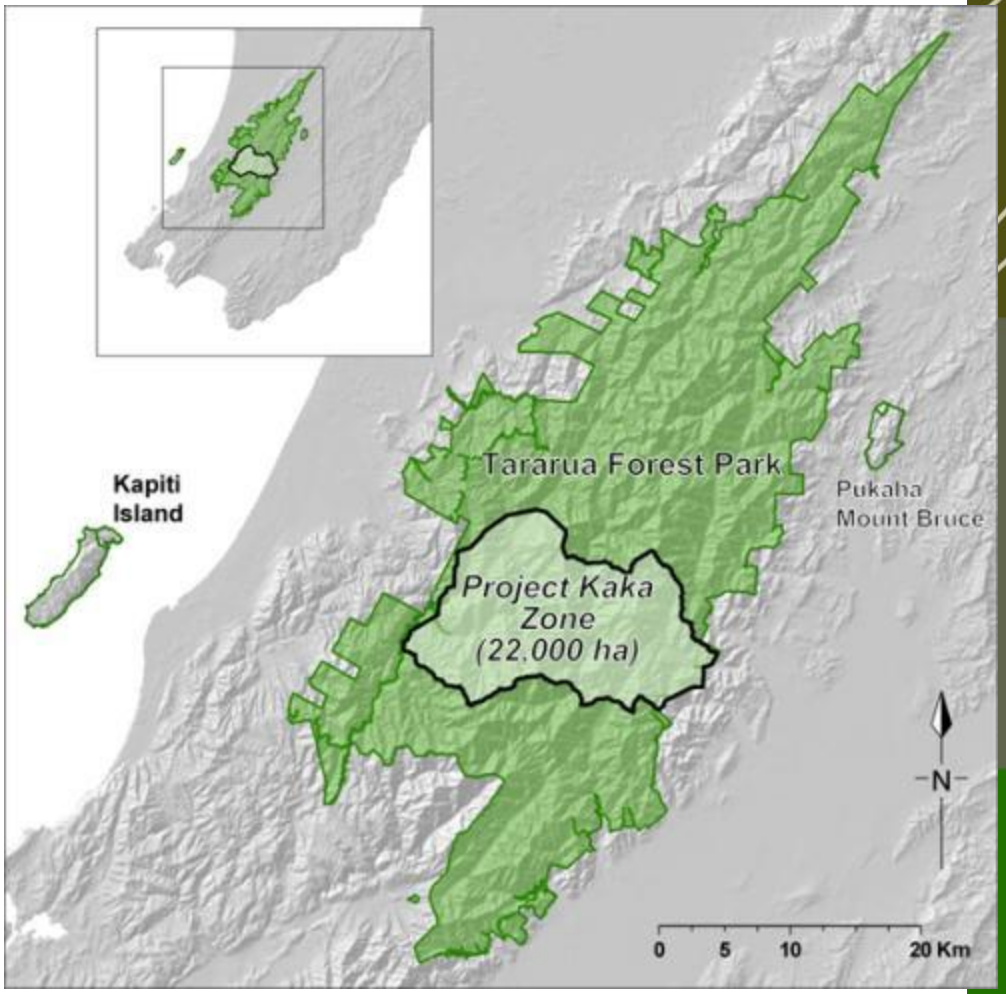
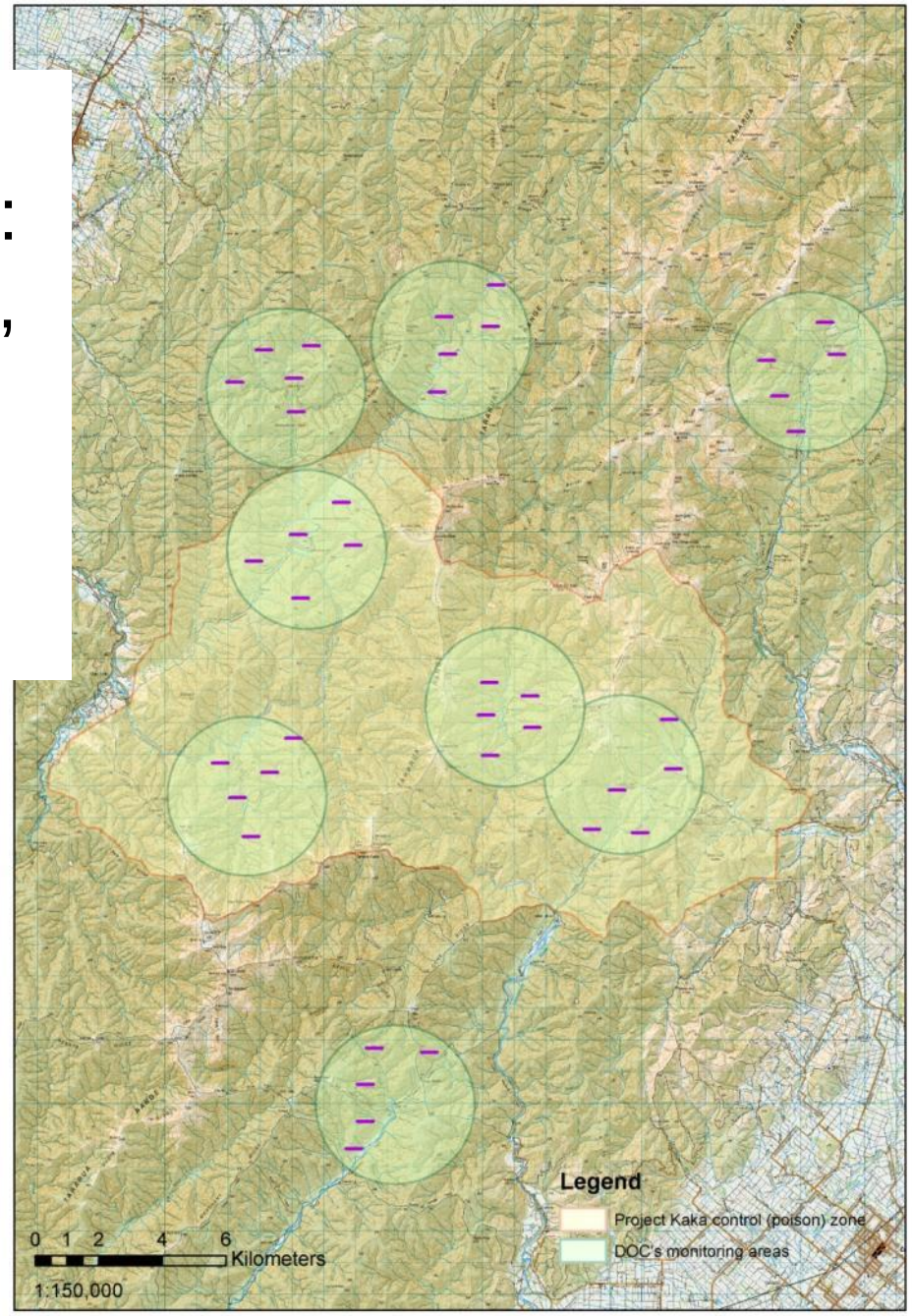


Image: www.doc.govt.nz

Department of Conservation monitoring:

- Possums, rats, stoats, birds & vegetation
- Tmt/non-tmt
- *In situ* pest response

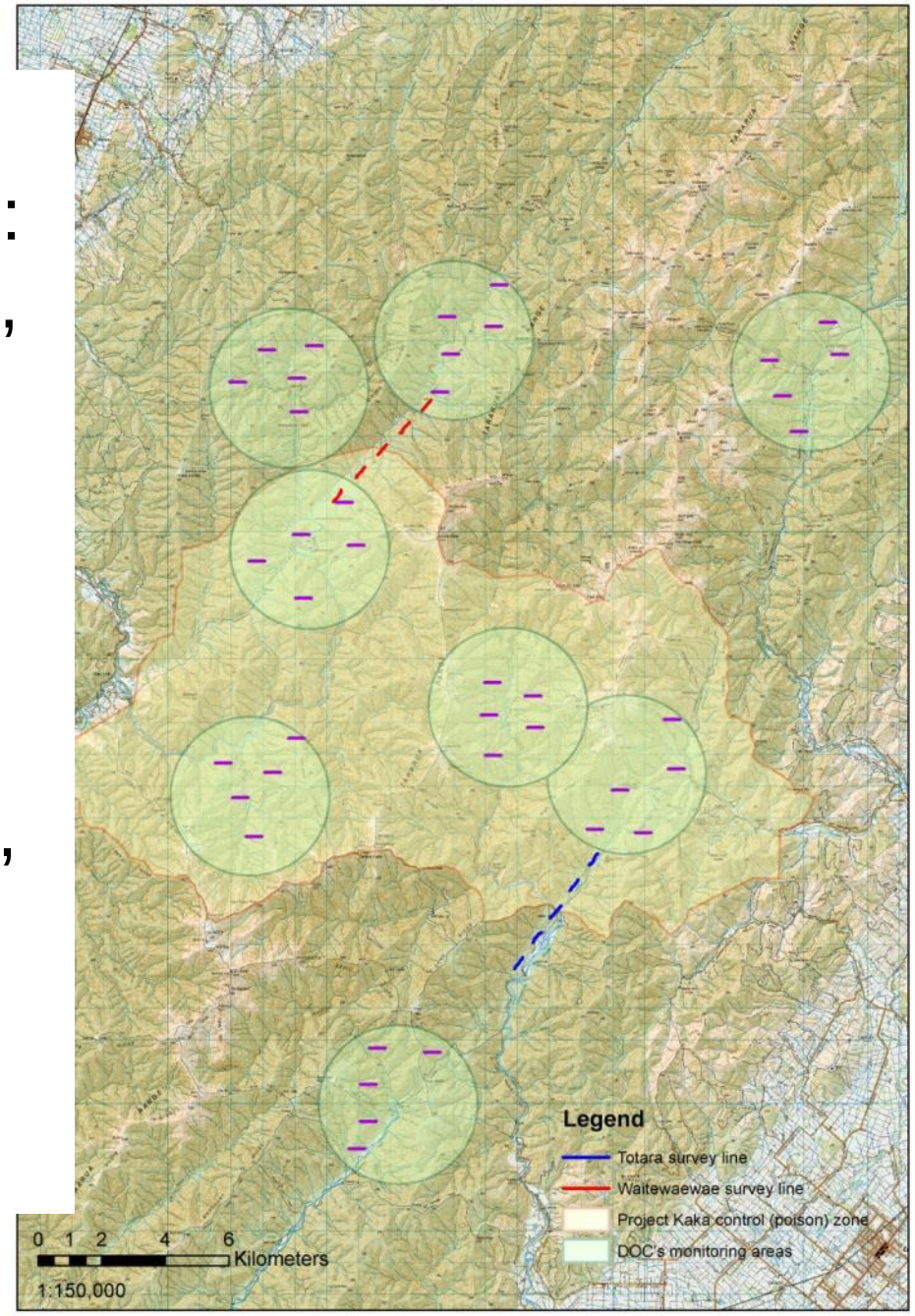


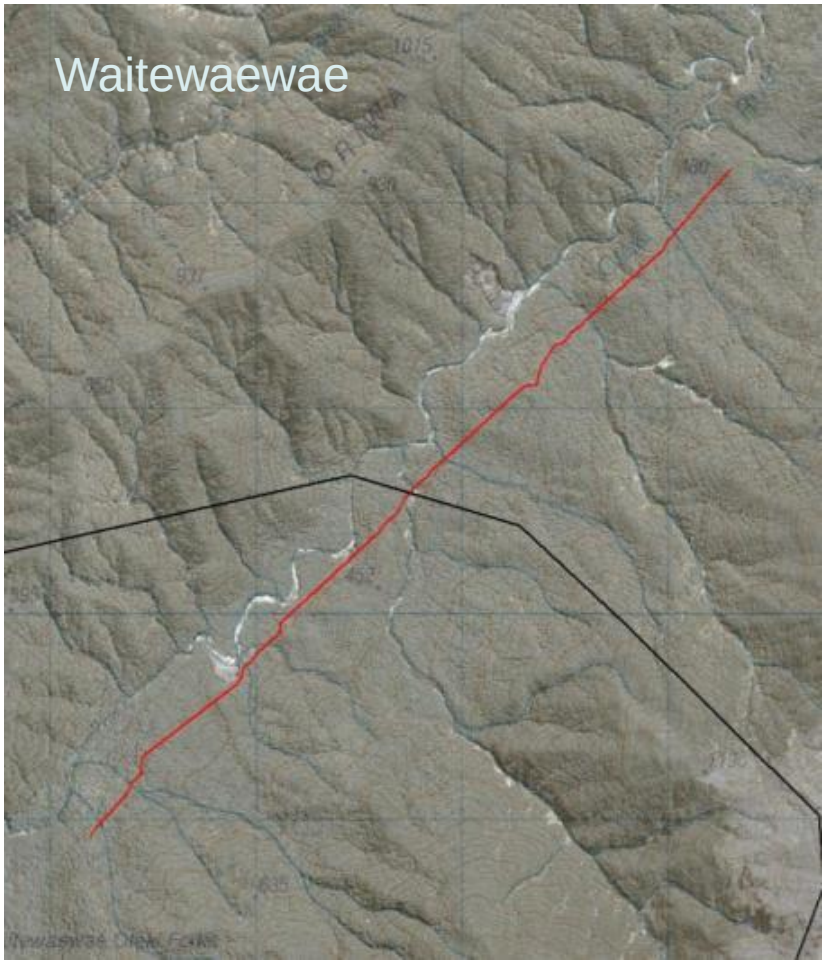
Department of Conservation monitoring:

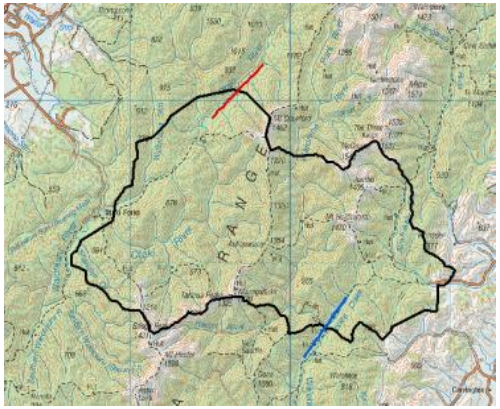
- Possums, rats, stoats, birds & vegetation
- Tmt/non-tmt
- *In situ* pest response

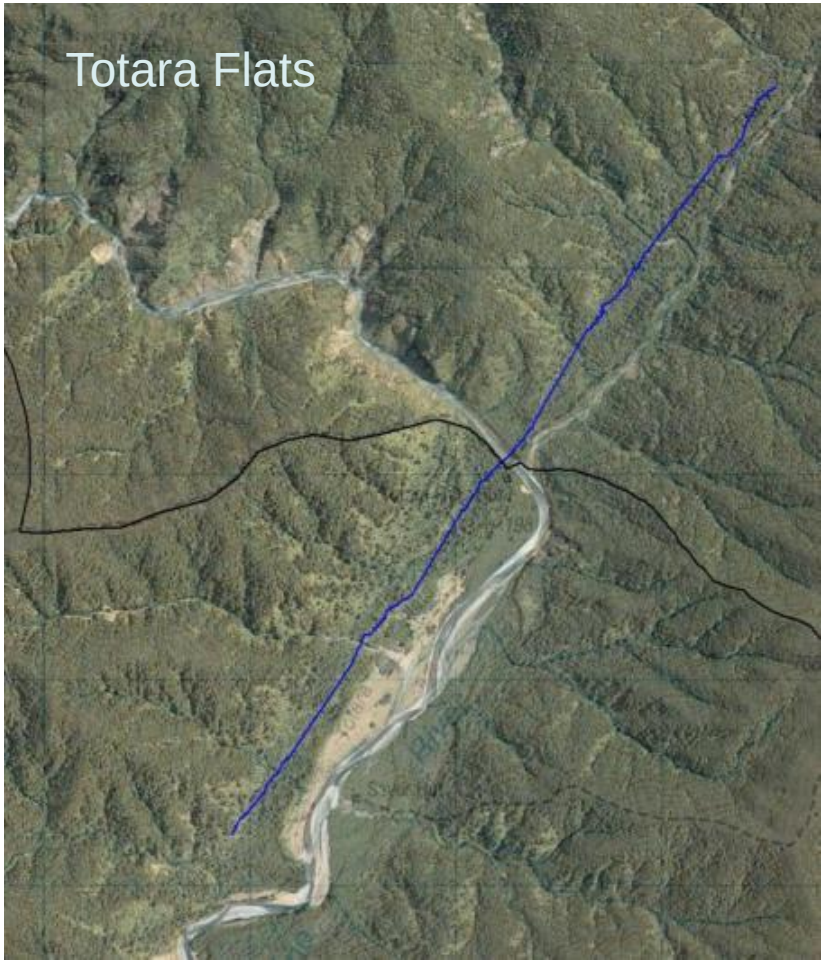
LCR monitoring:

- Same as DOC, -birds, +inverts.
- Across boundary
- Immigration



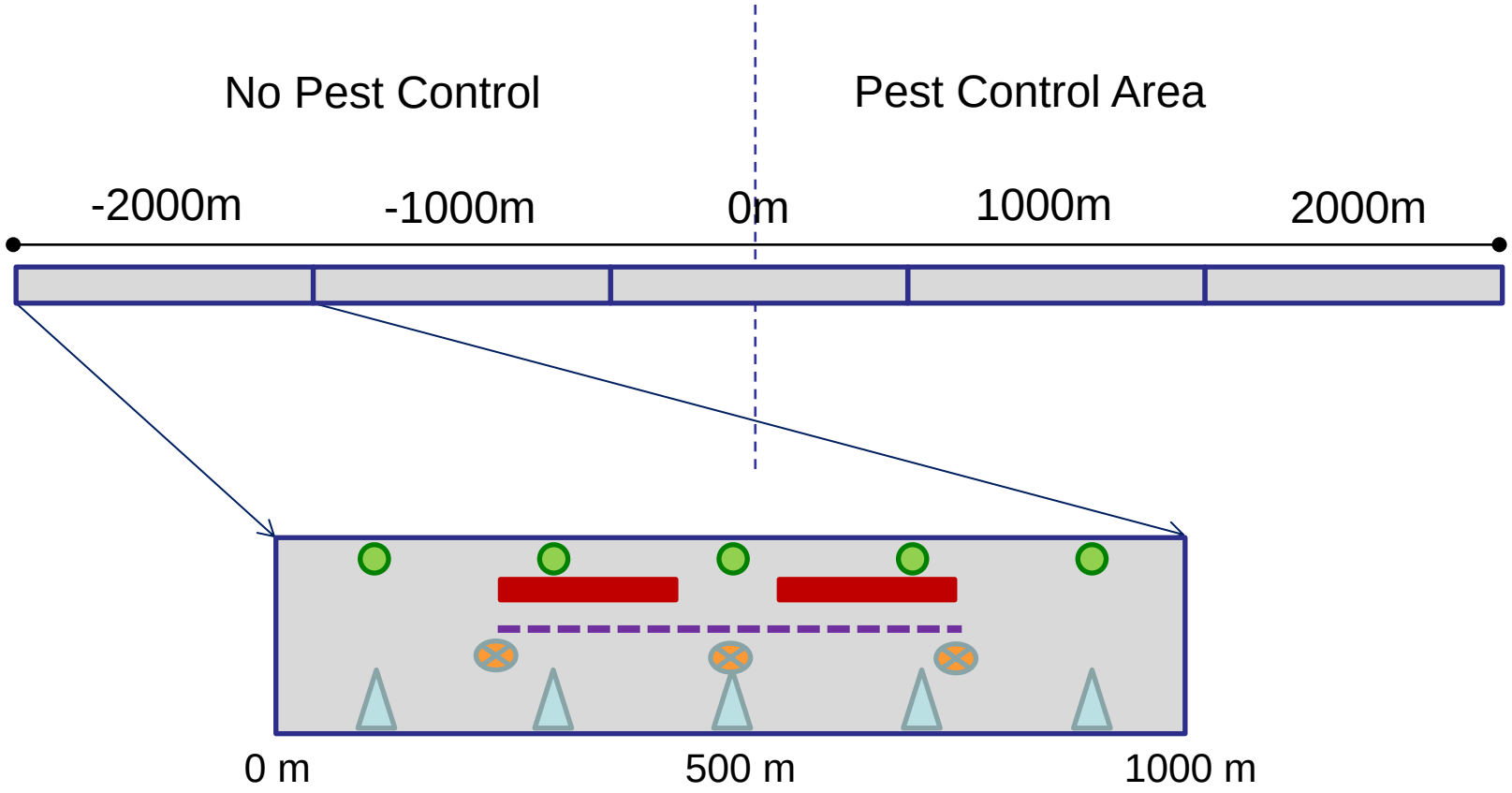






2 x 5 km transects across the pest control boundary

Monitor lines



Wax tag line (200 m)

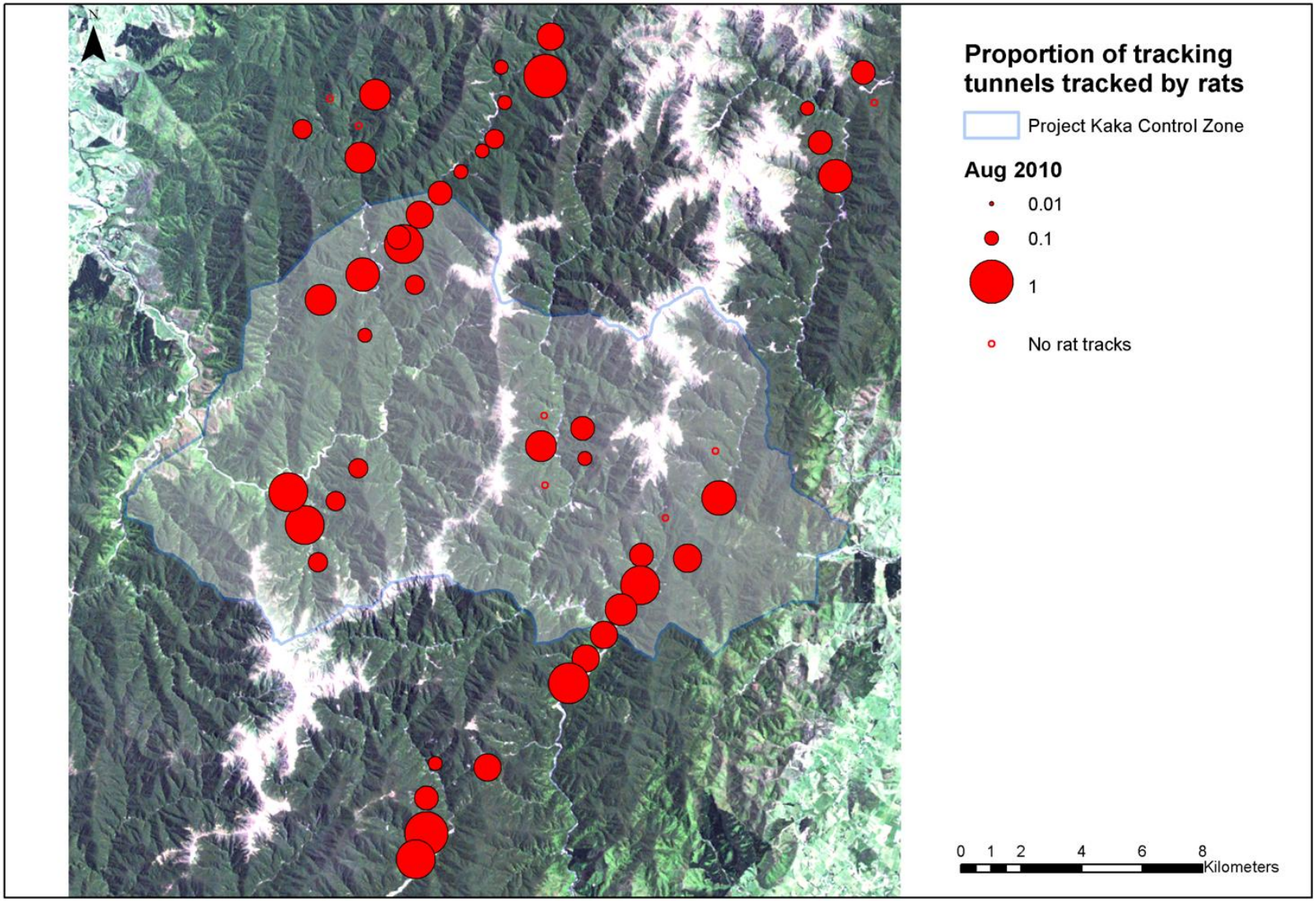
Tracking tunnel line (500 m)

5 Pitfall traps

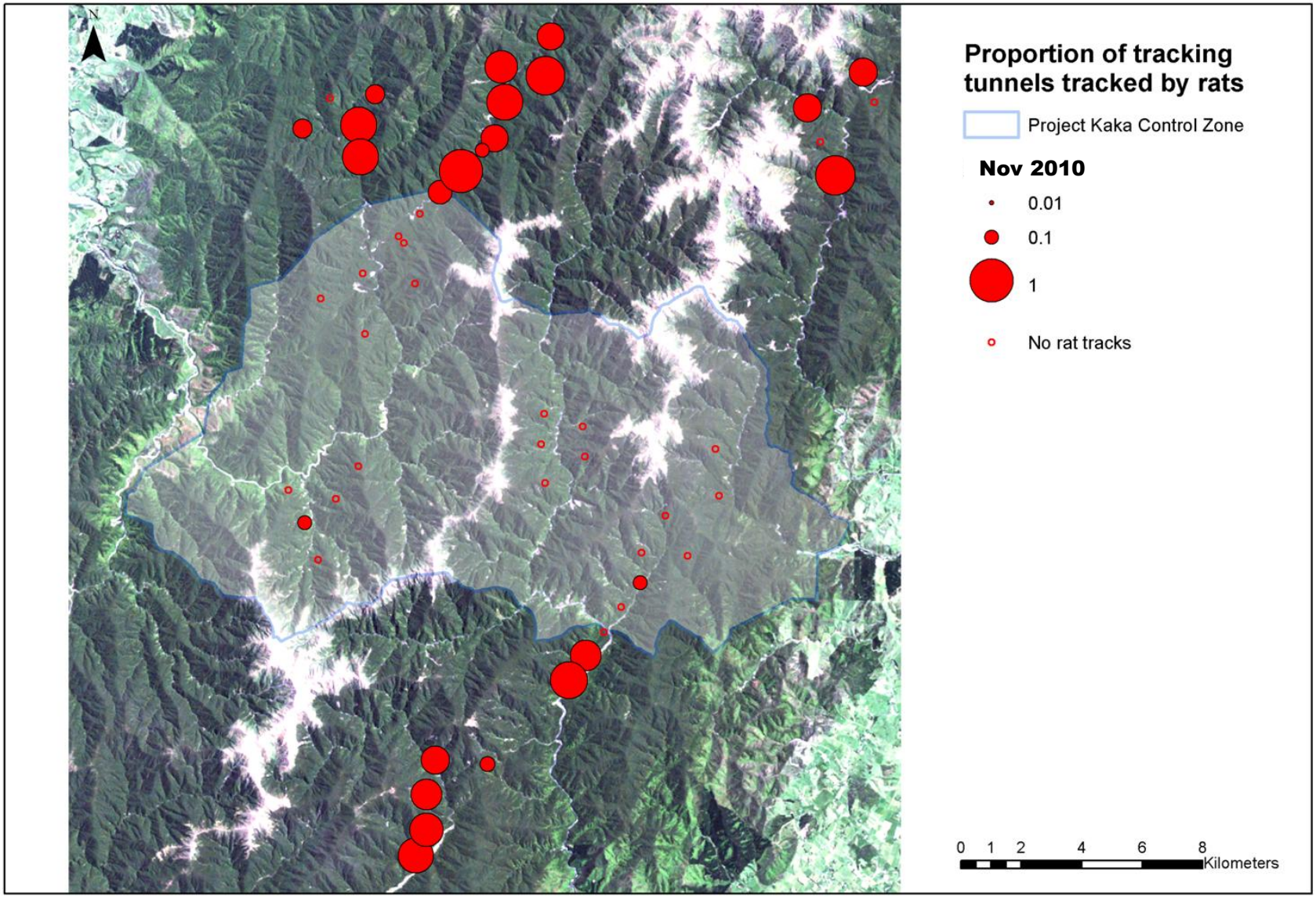
Weta hotel

Kamahi, toro and rimu trees

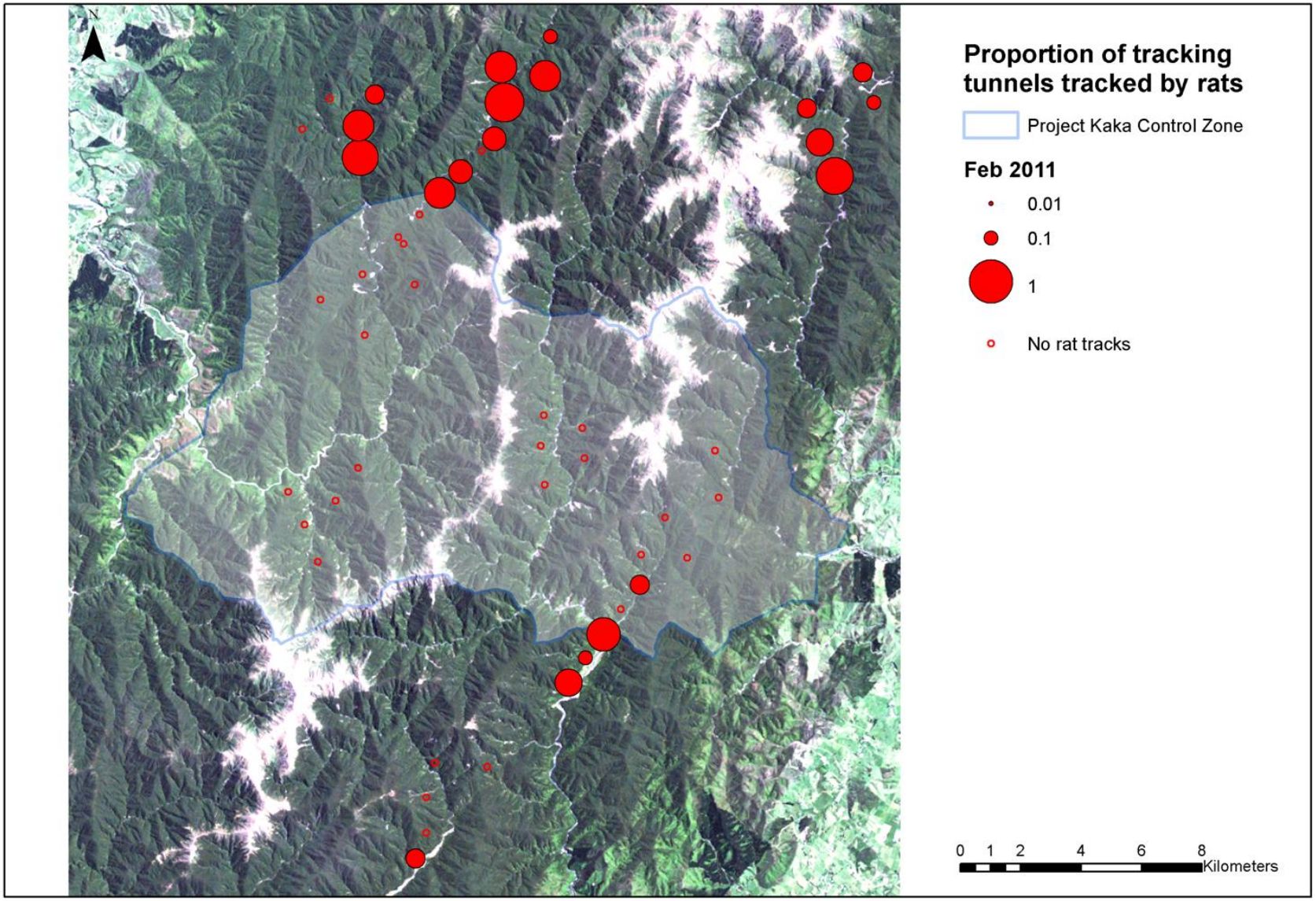
Rats: pre-control



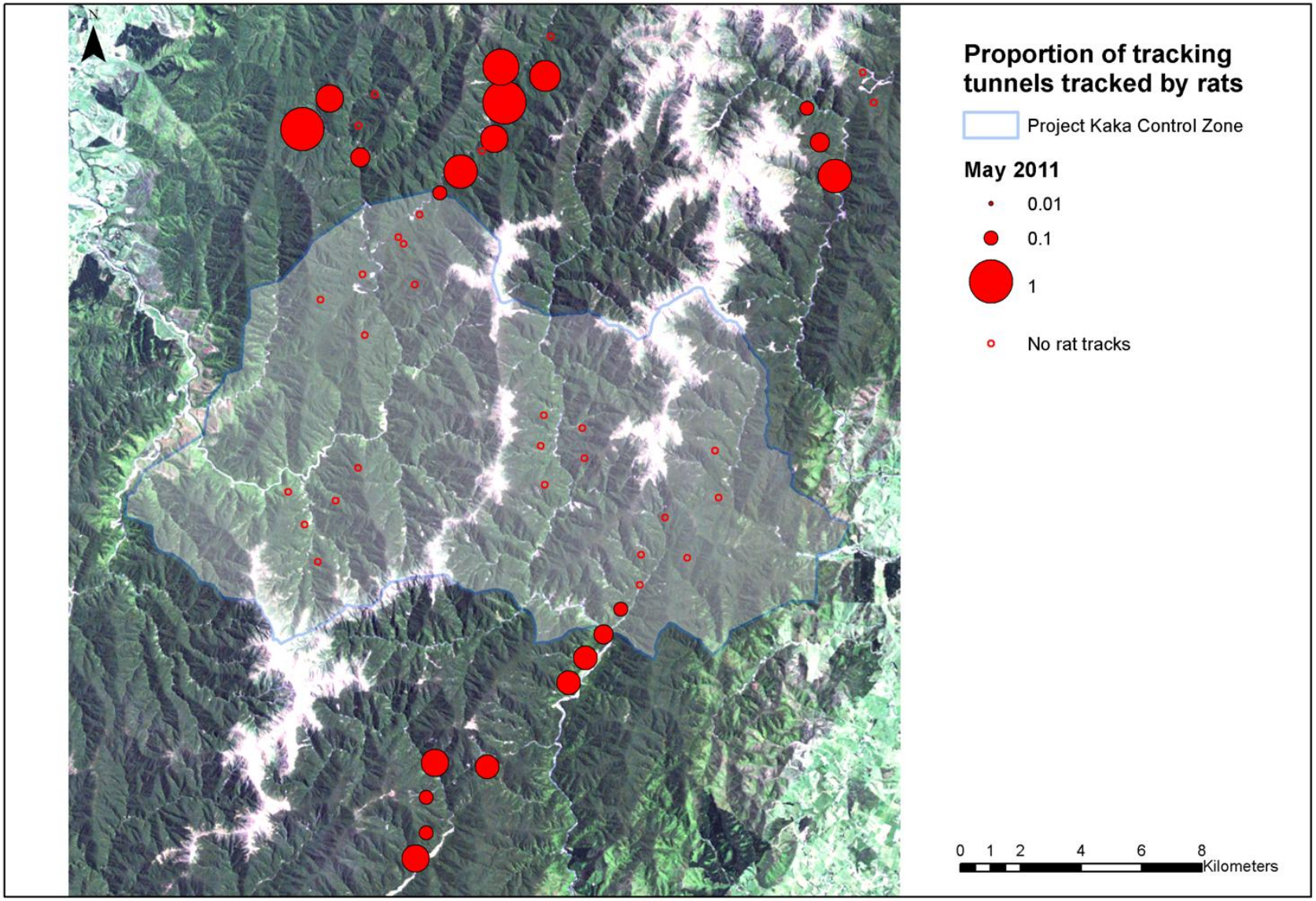
Rats: 3 mths post-control



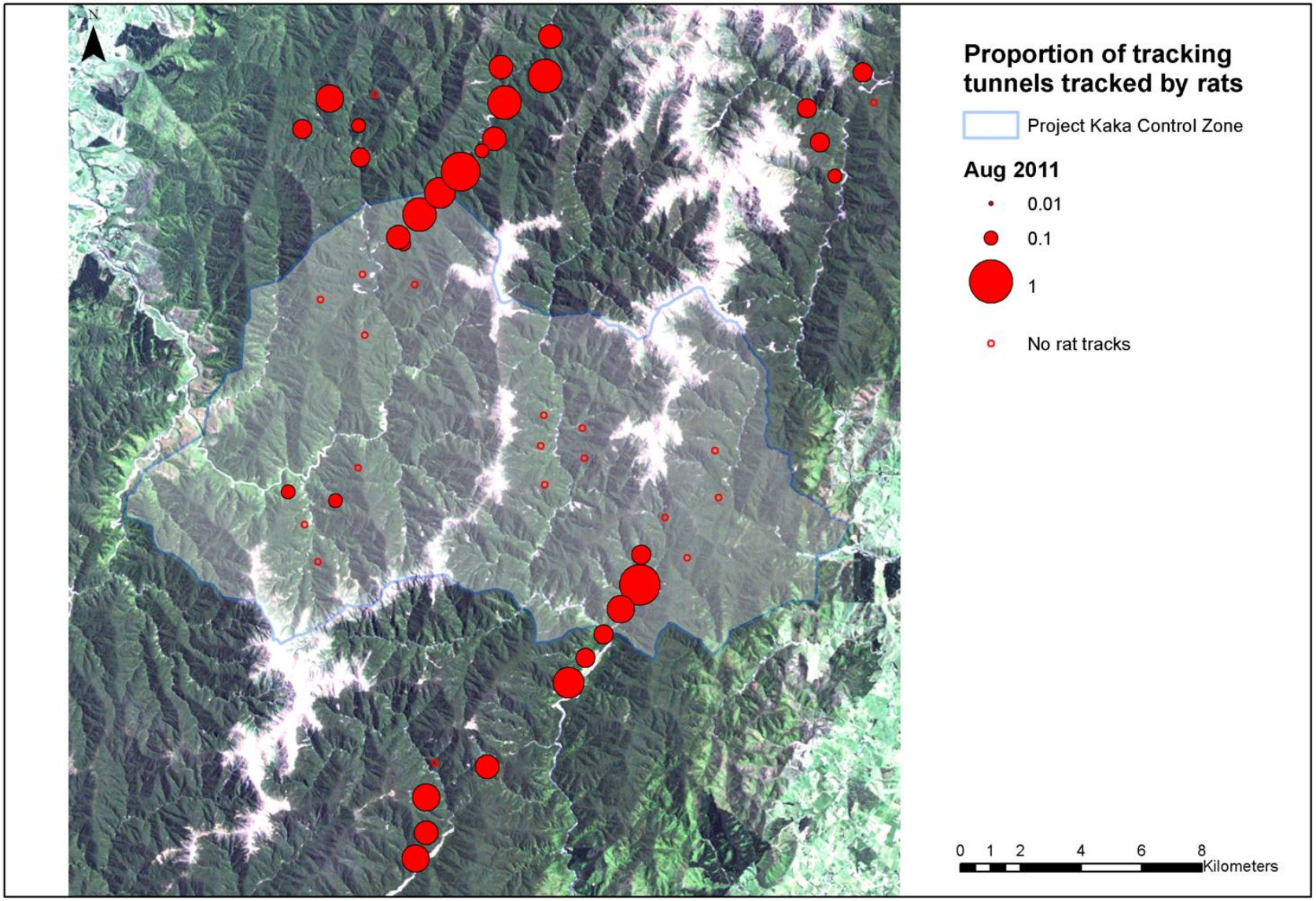
Rats: 6 mths post-control



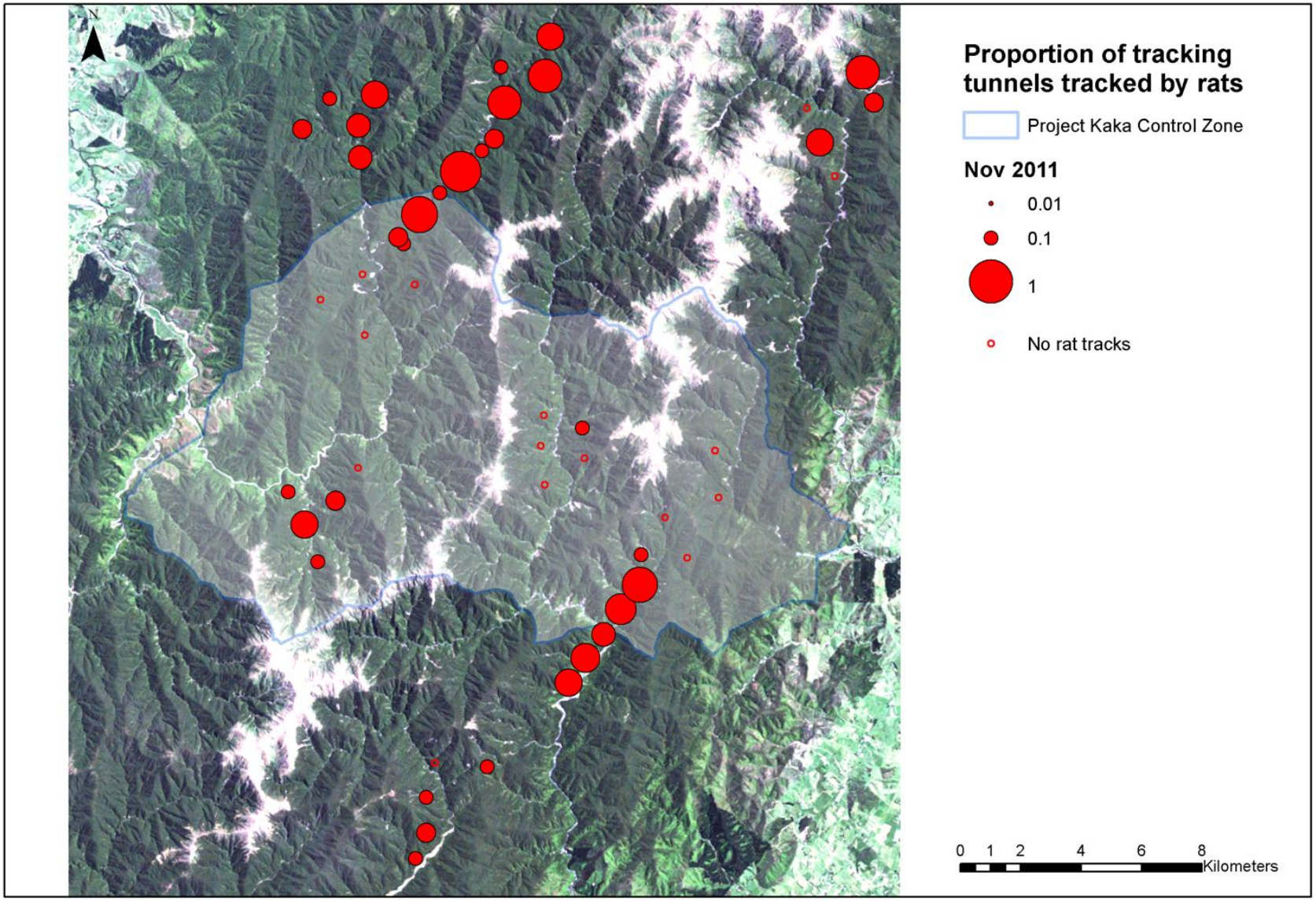
Rats: 9 mths post-control



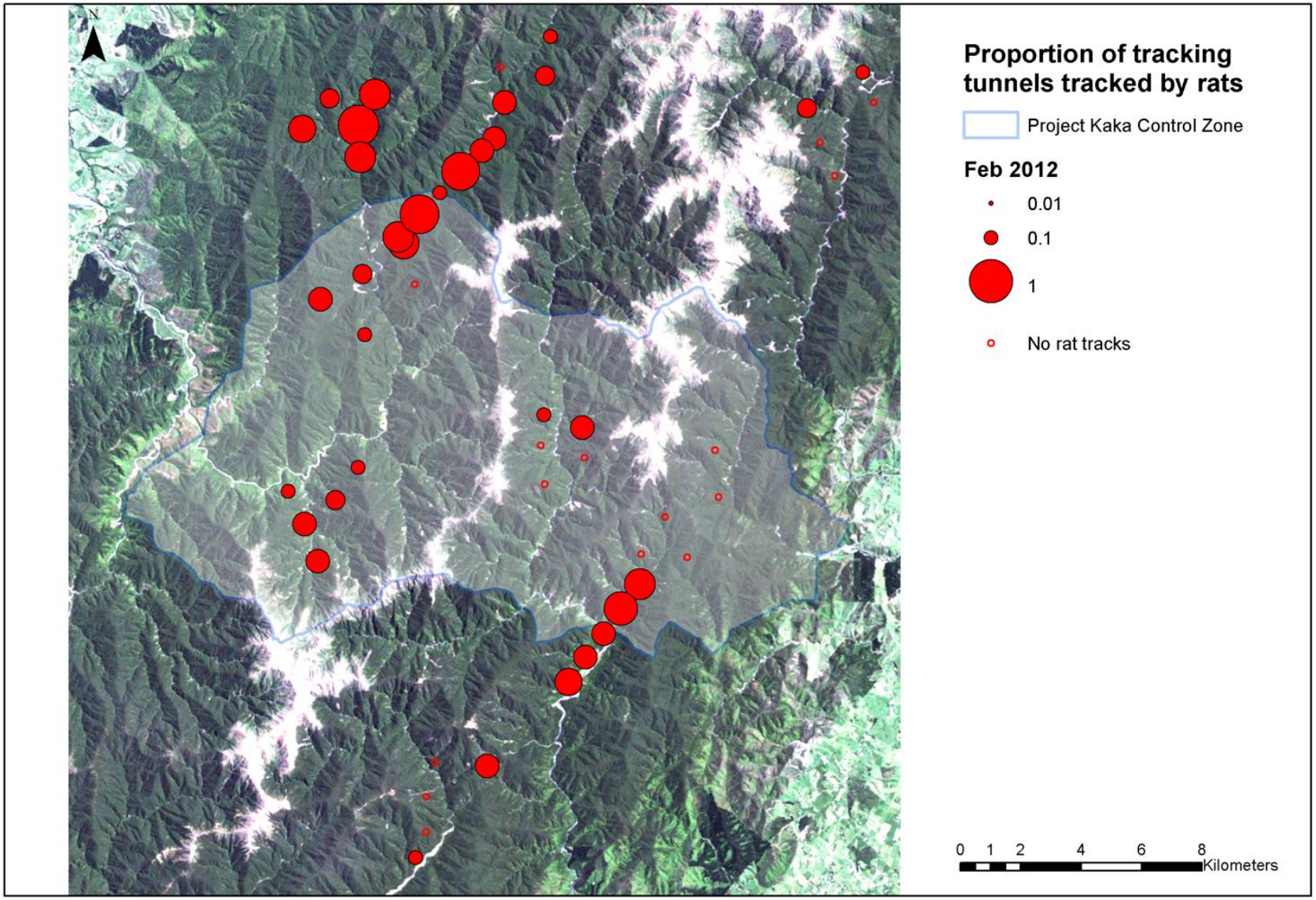
Rats: 12 mths post-control



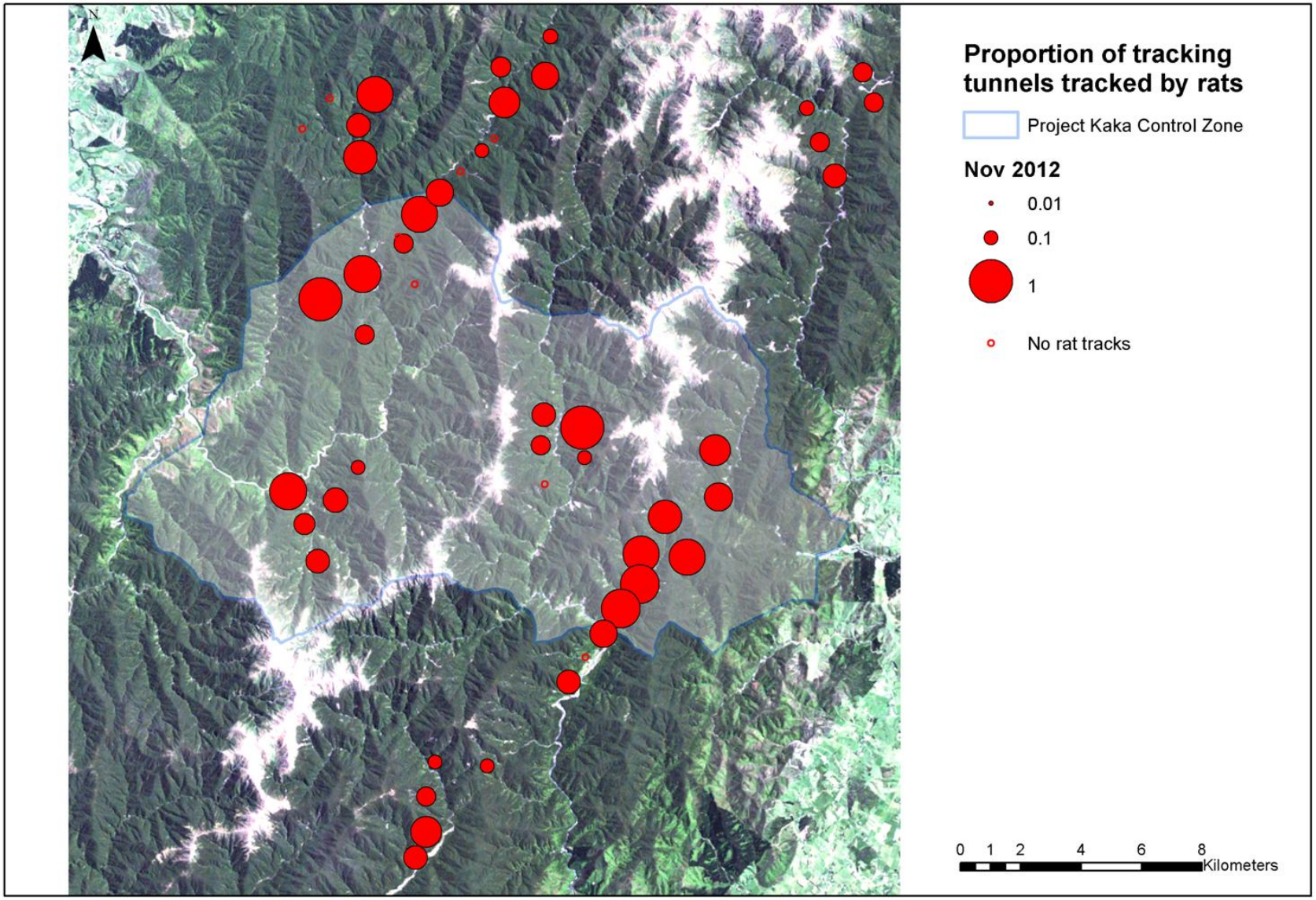
Rats: 15 mths post-control



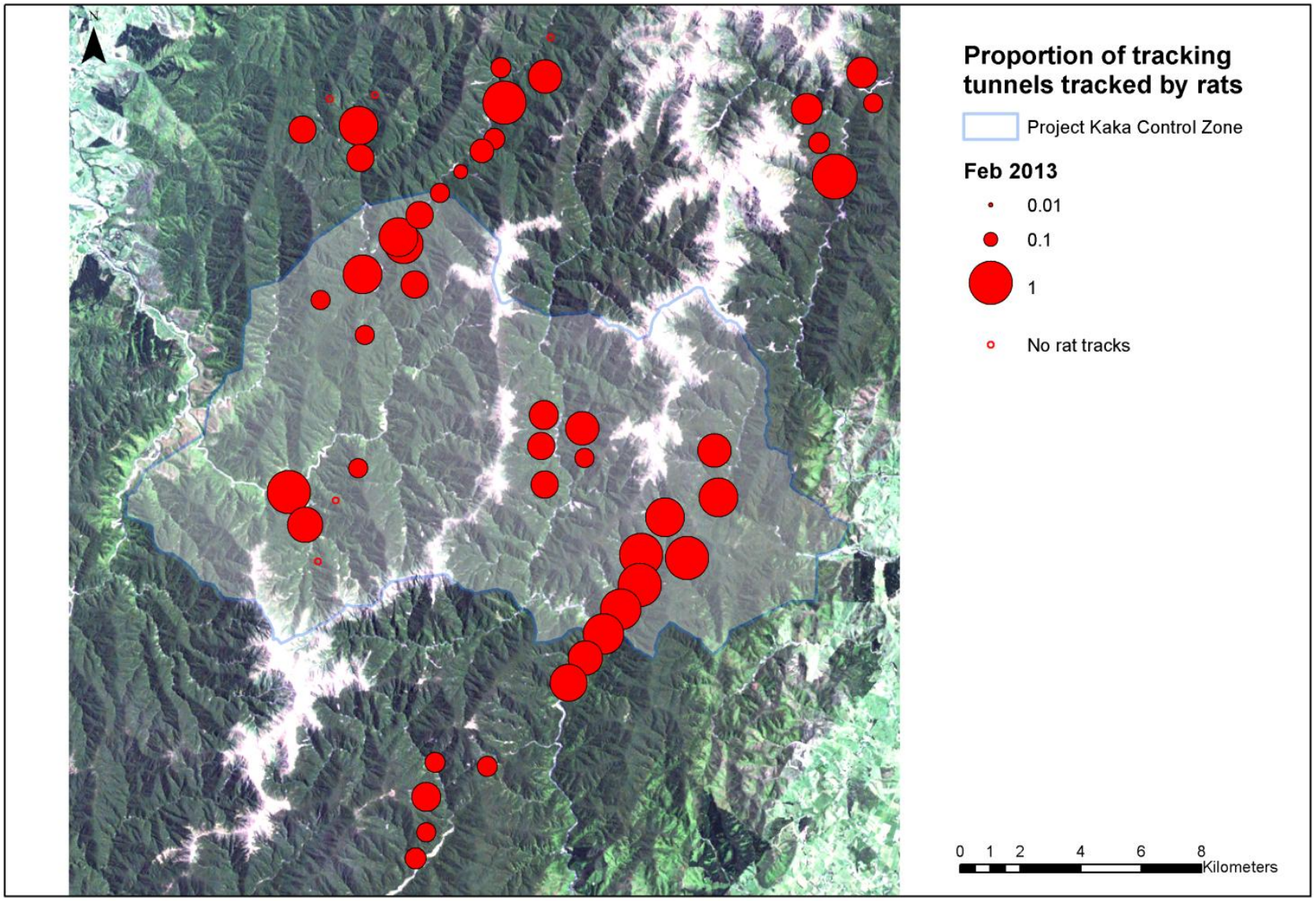
Rats: 18 mths post-control



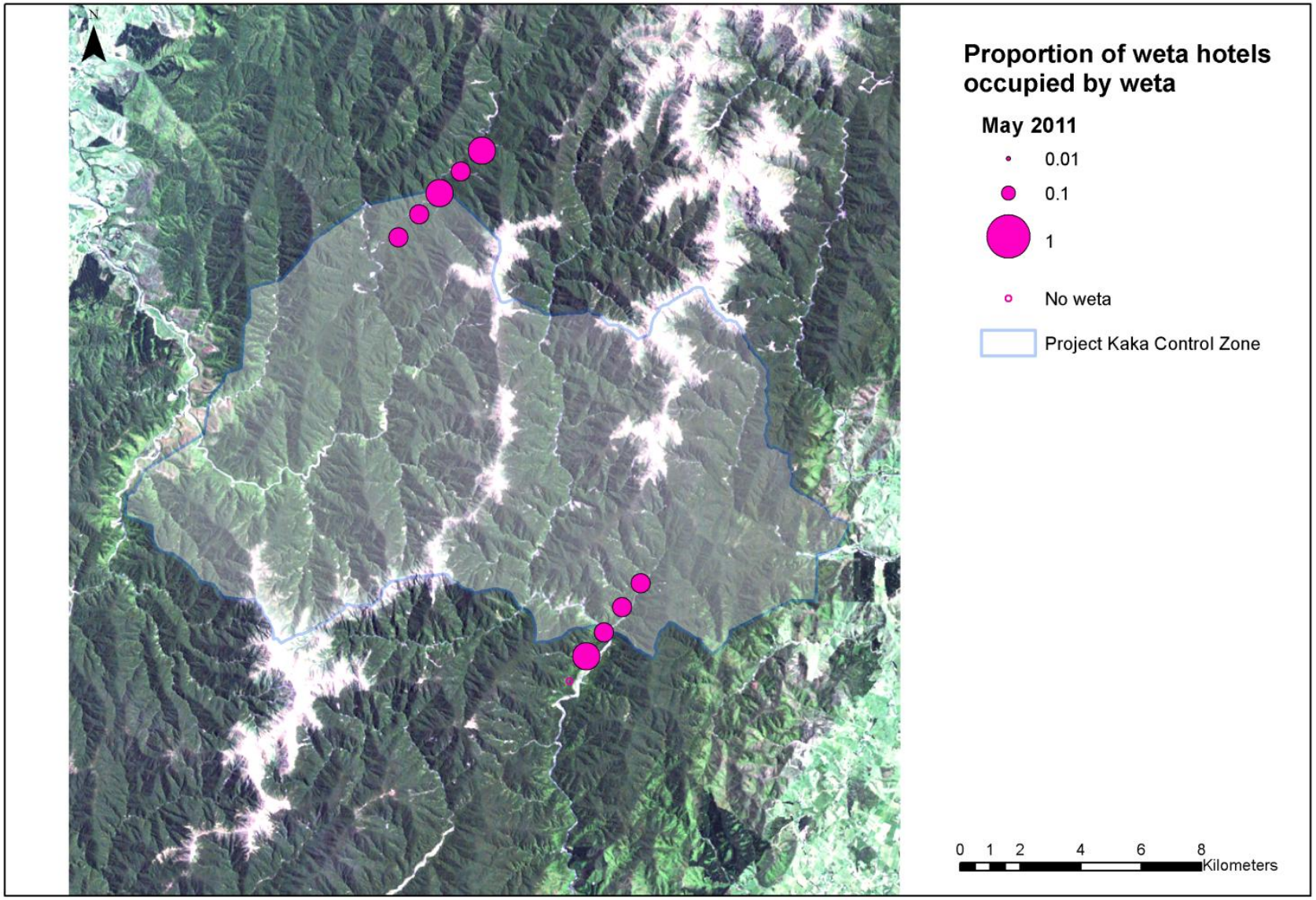
Rats: 27 mths post control



Rats: 30 mths post-control



Weta: 9 mths post-control



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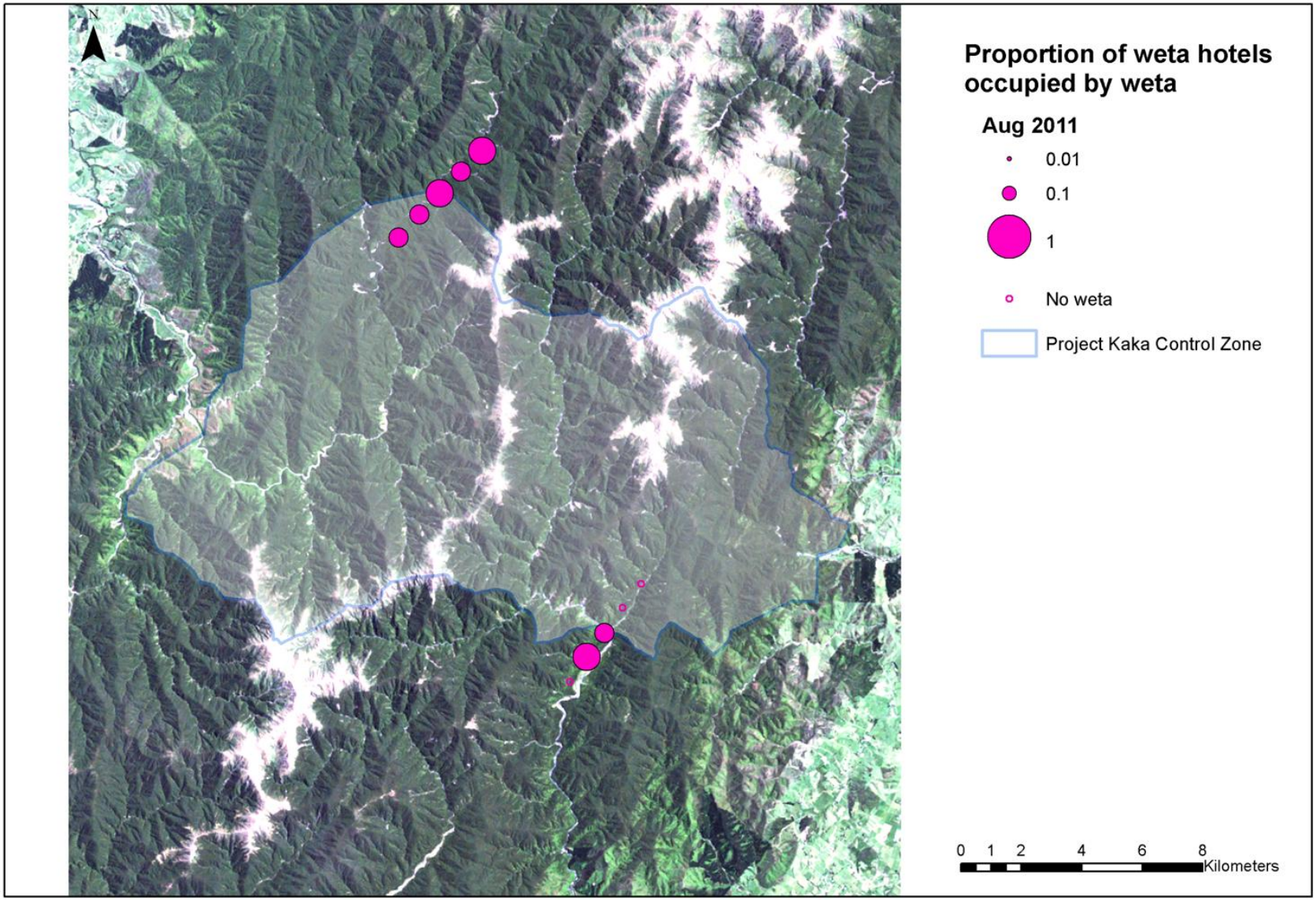

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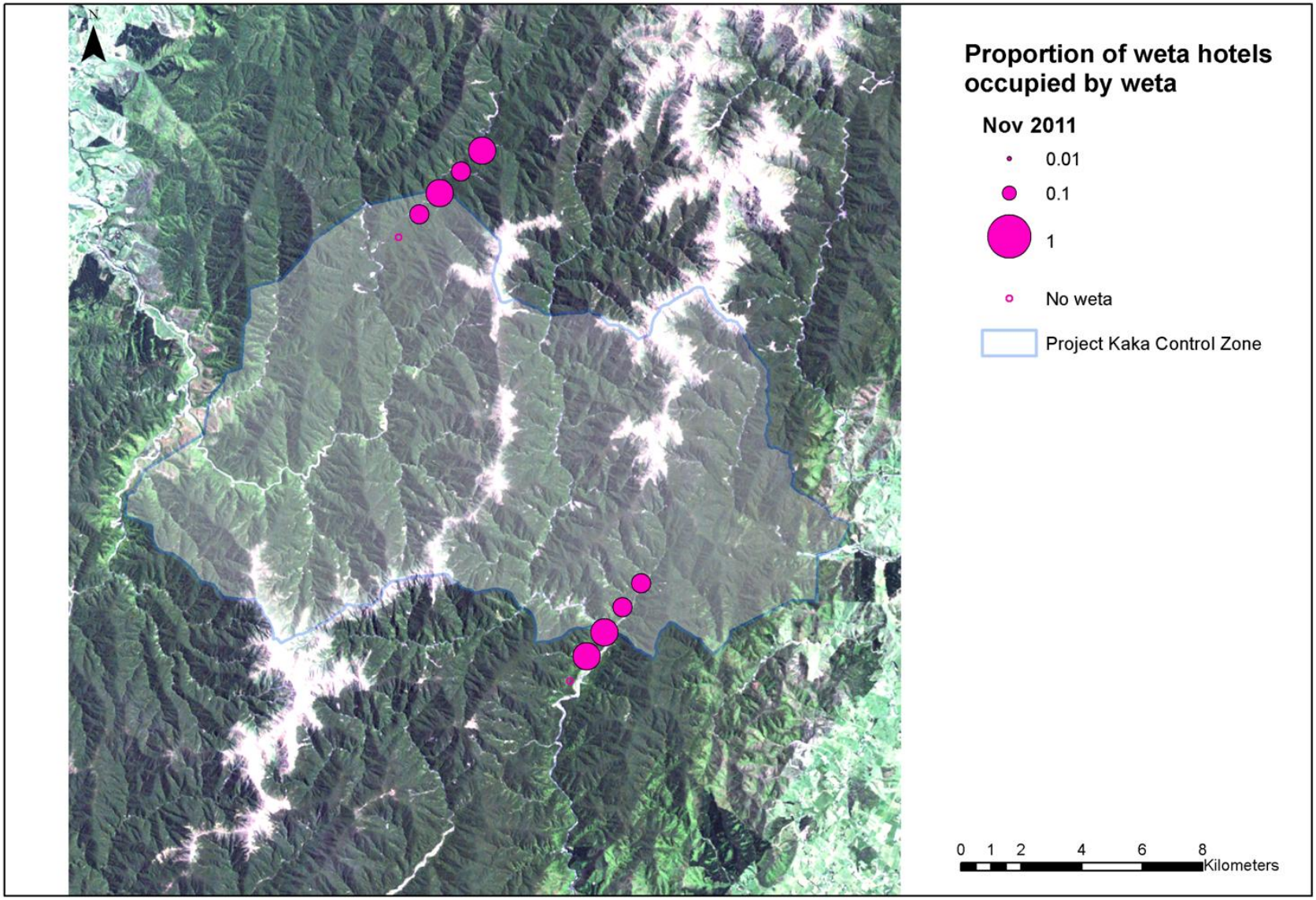

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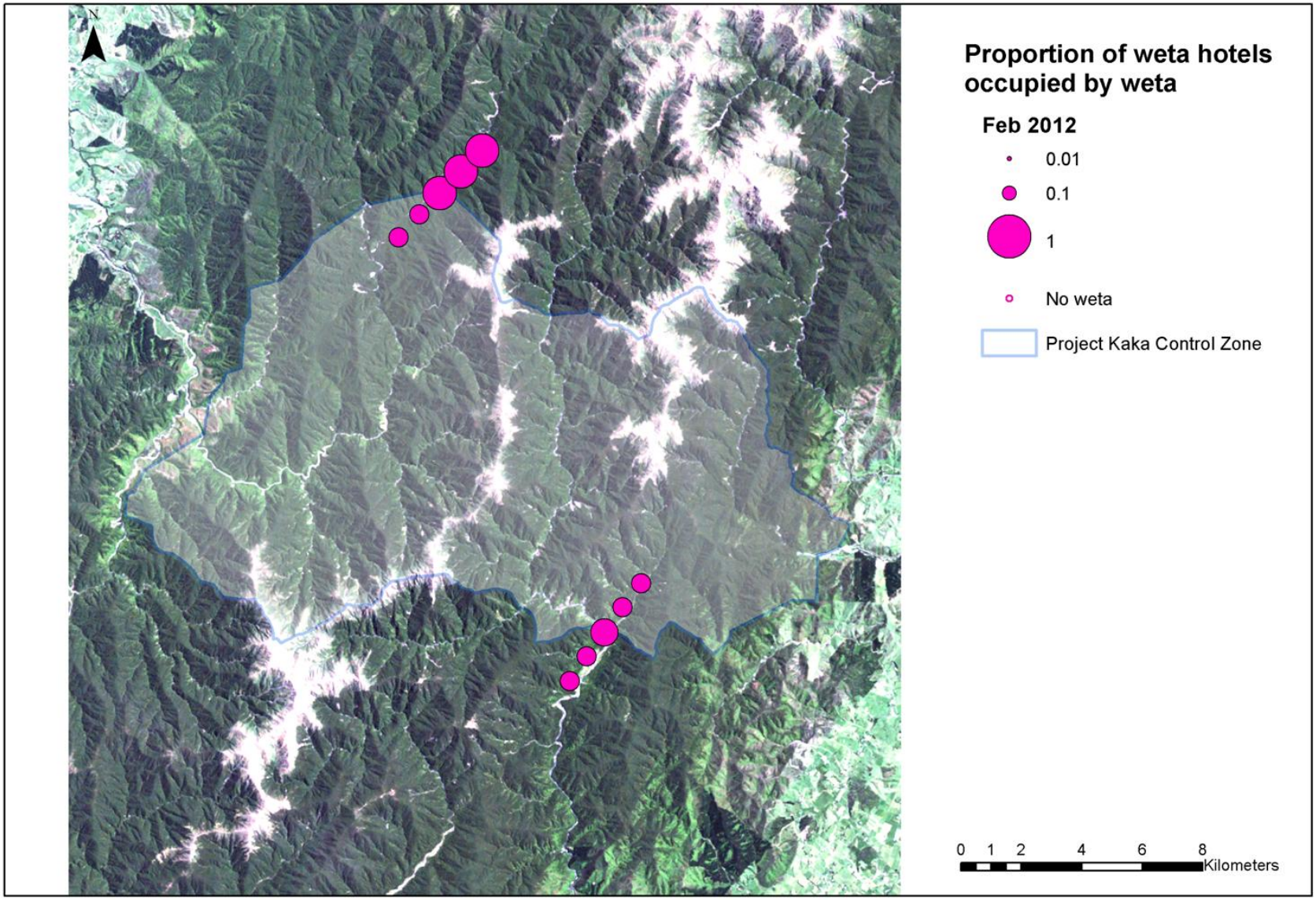

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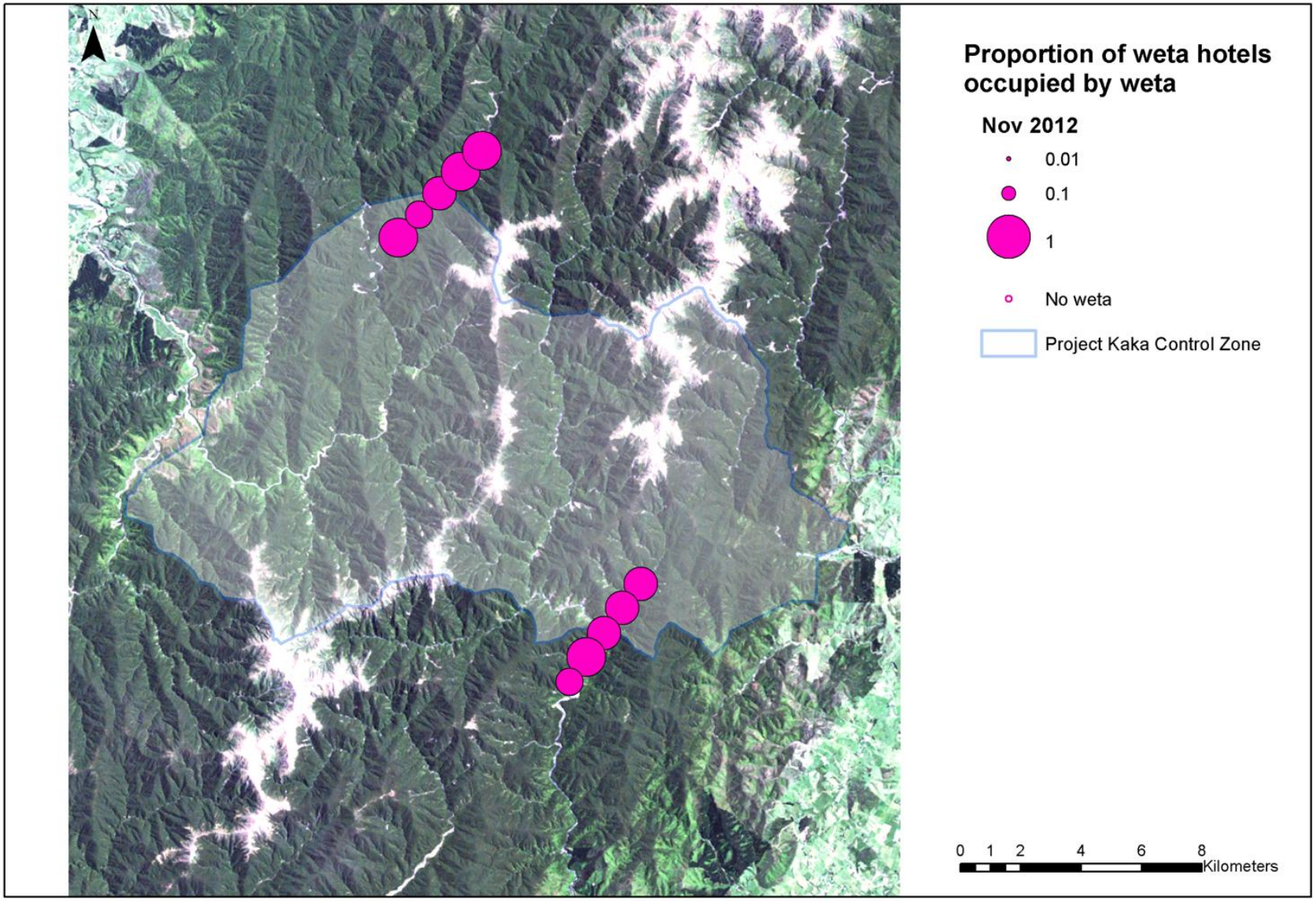
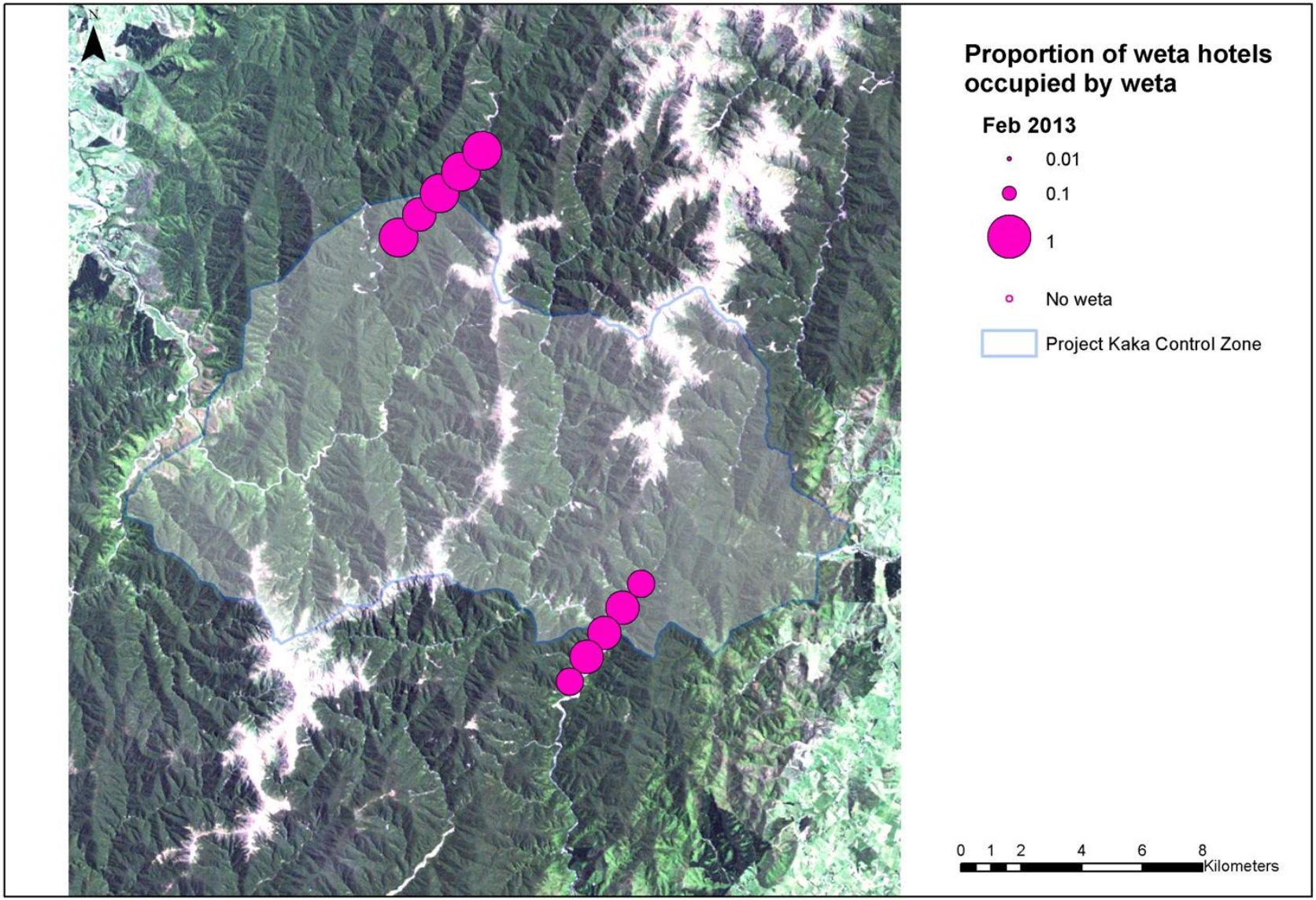
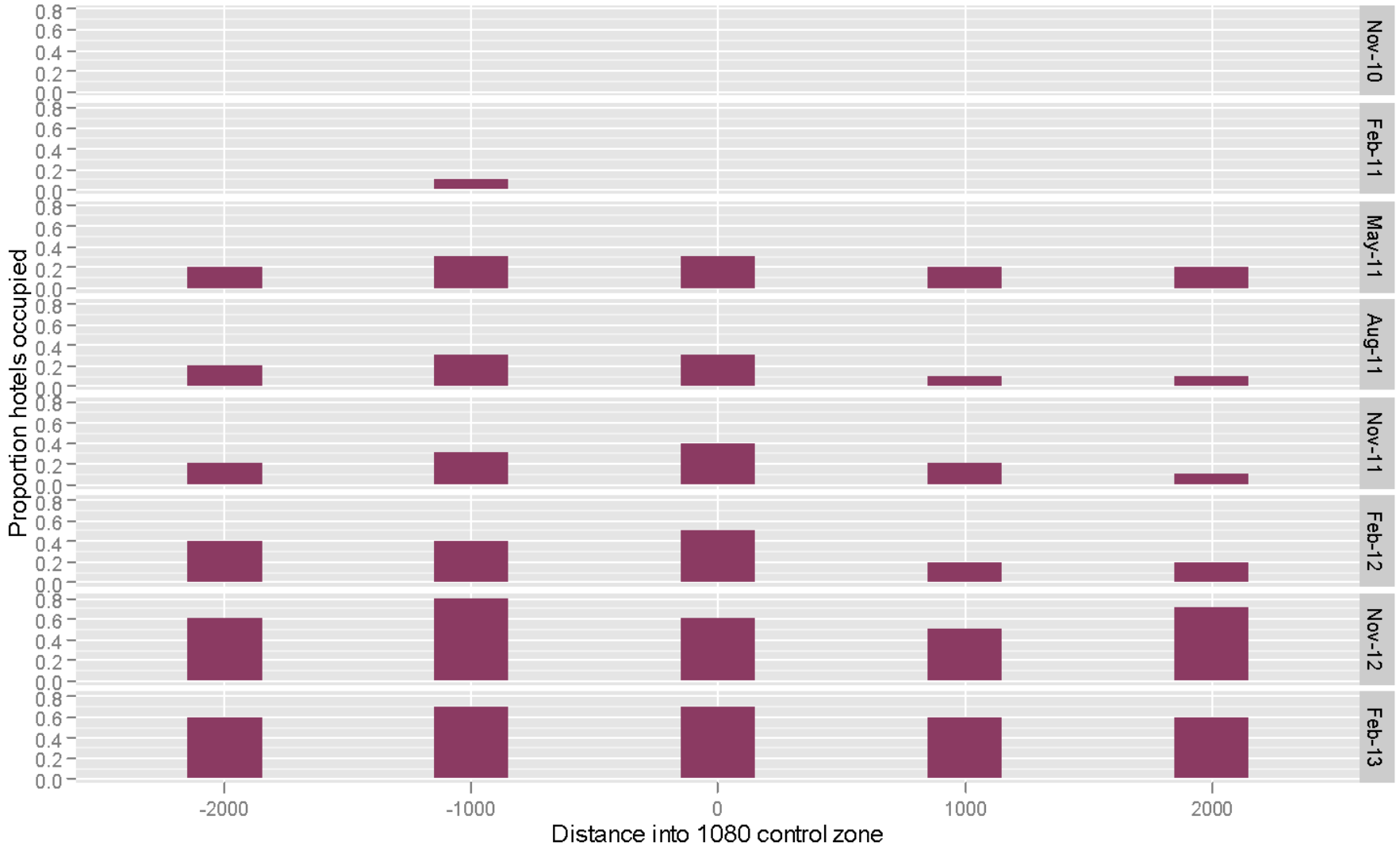


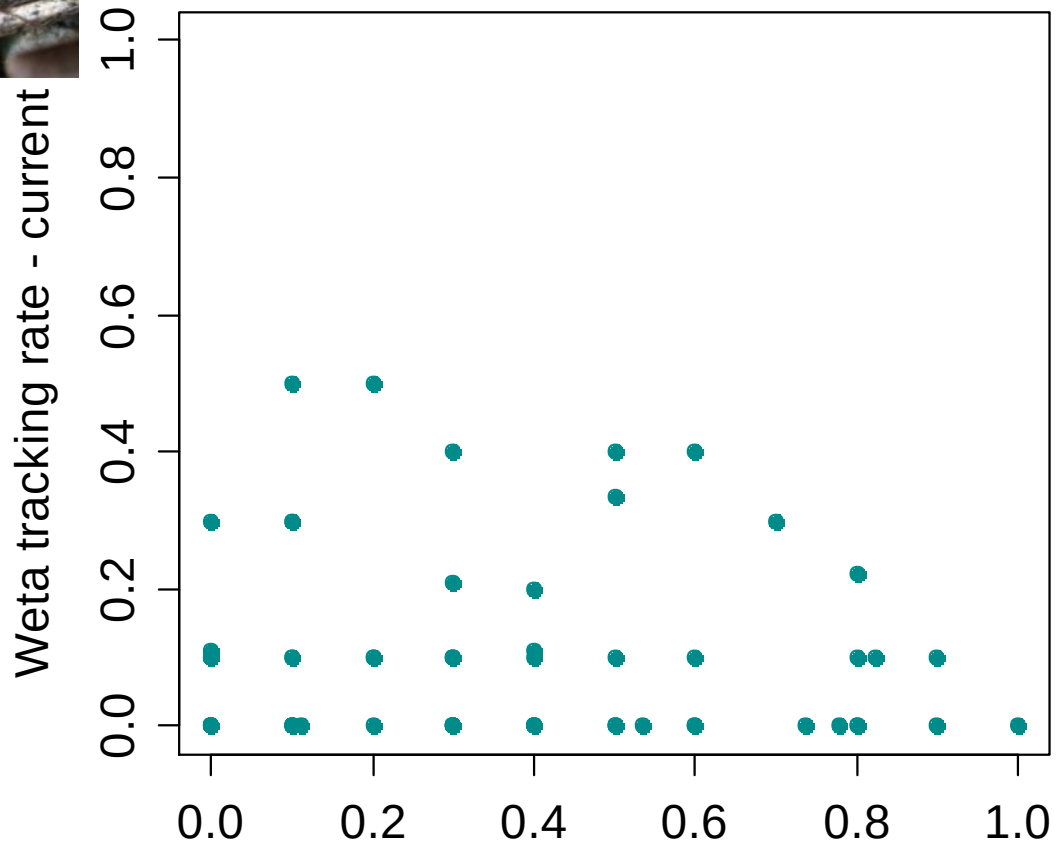
Weta: 30 mths post-control



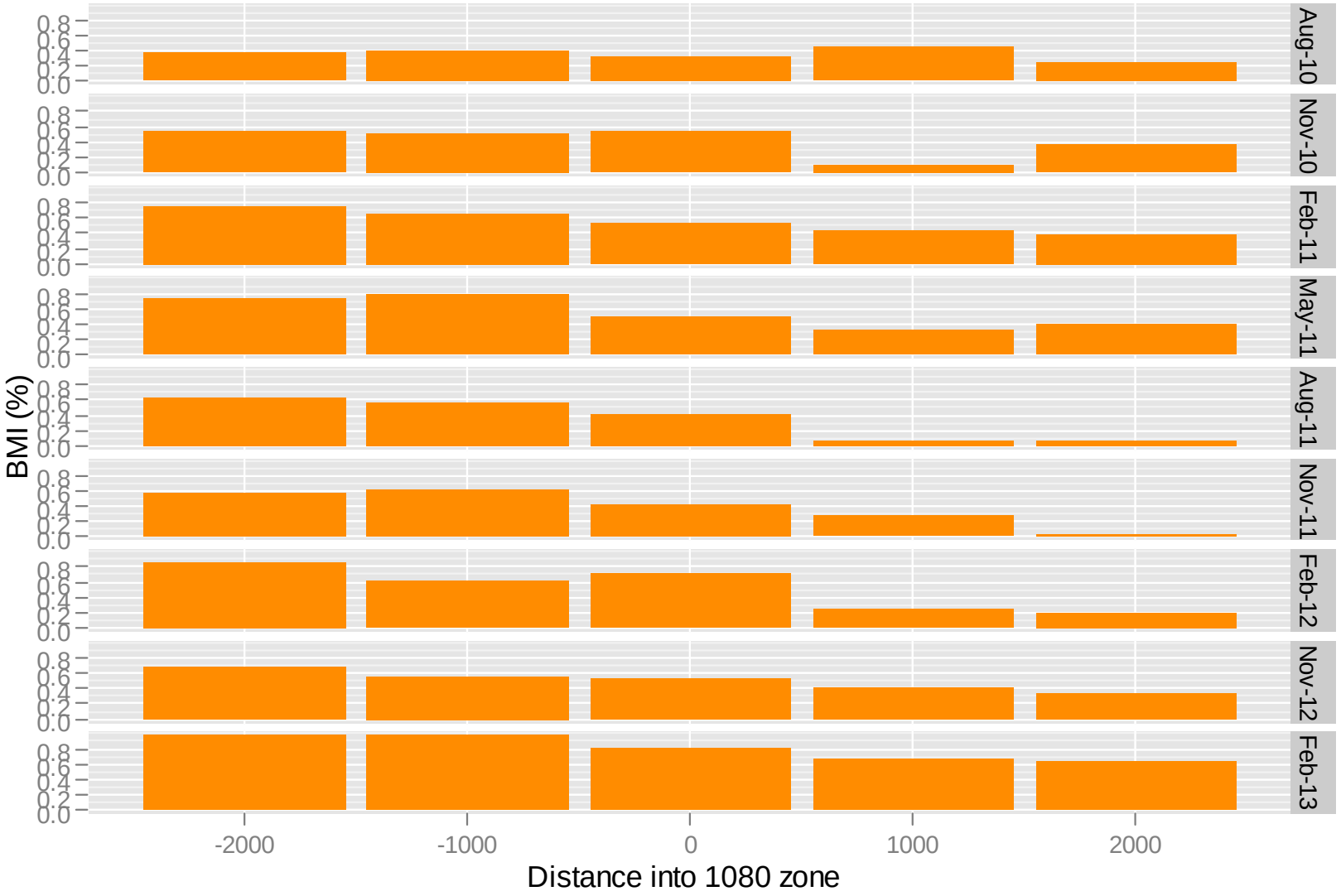
Weta hotel occupancy



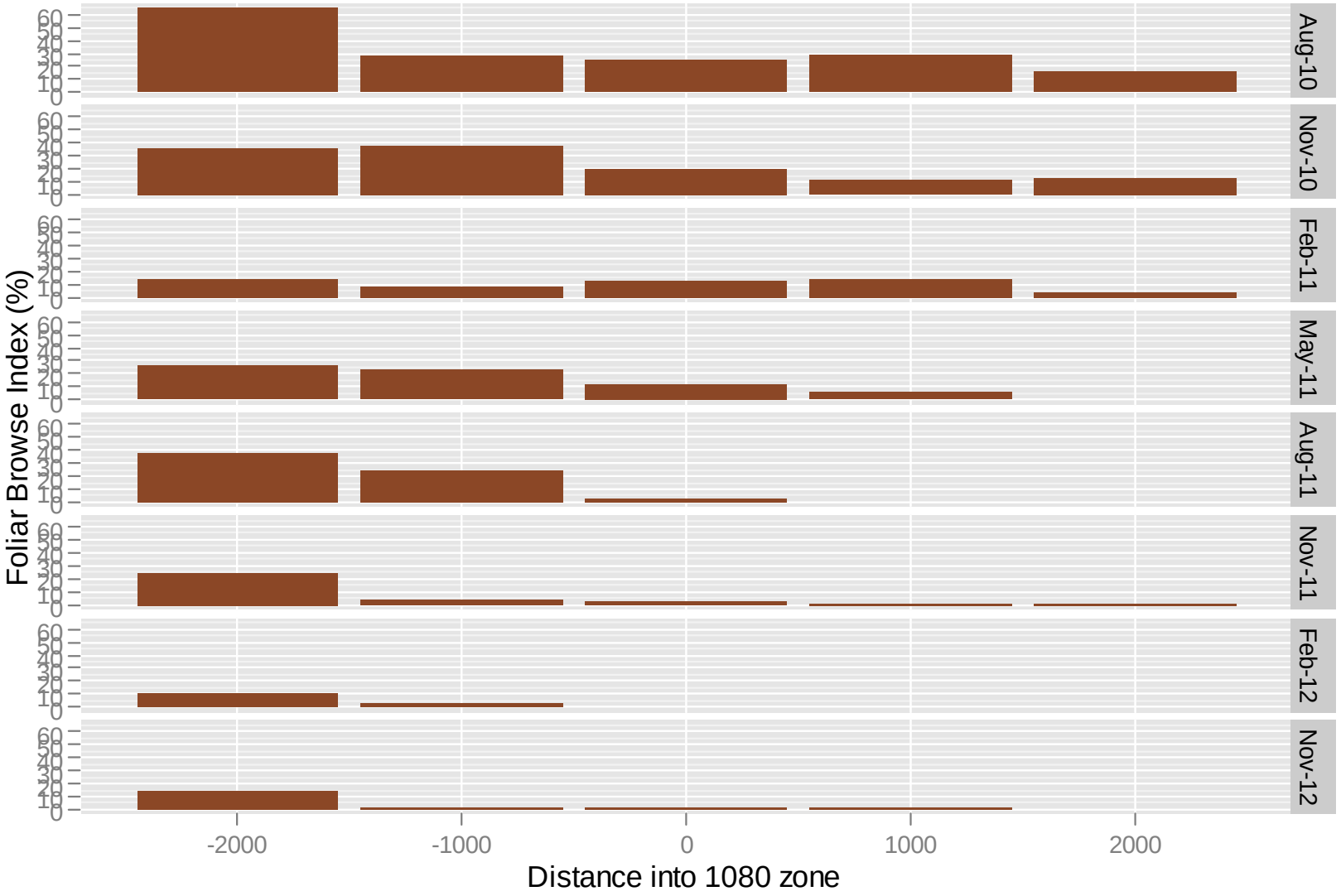
Weta vs. rats


Weta tracking rate - current
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0
Rat tracking rate - 6 months prior

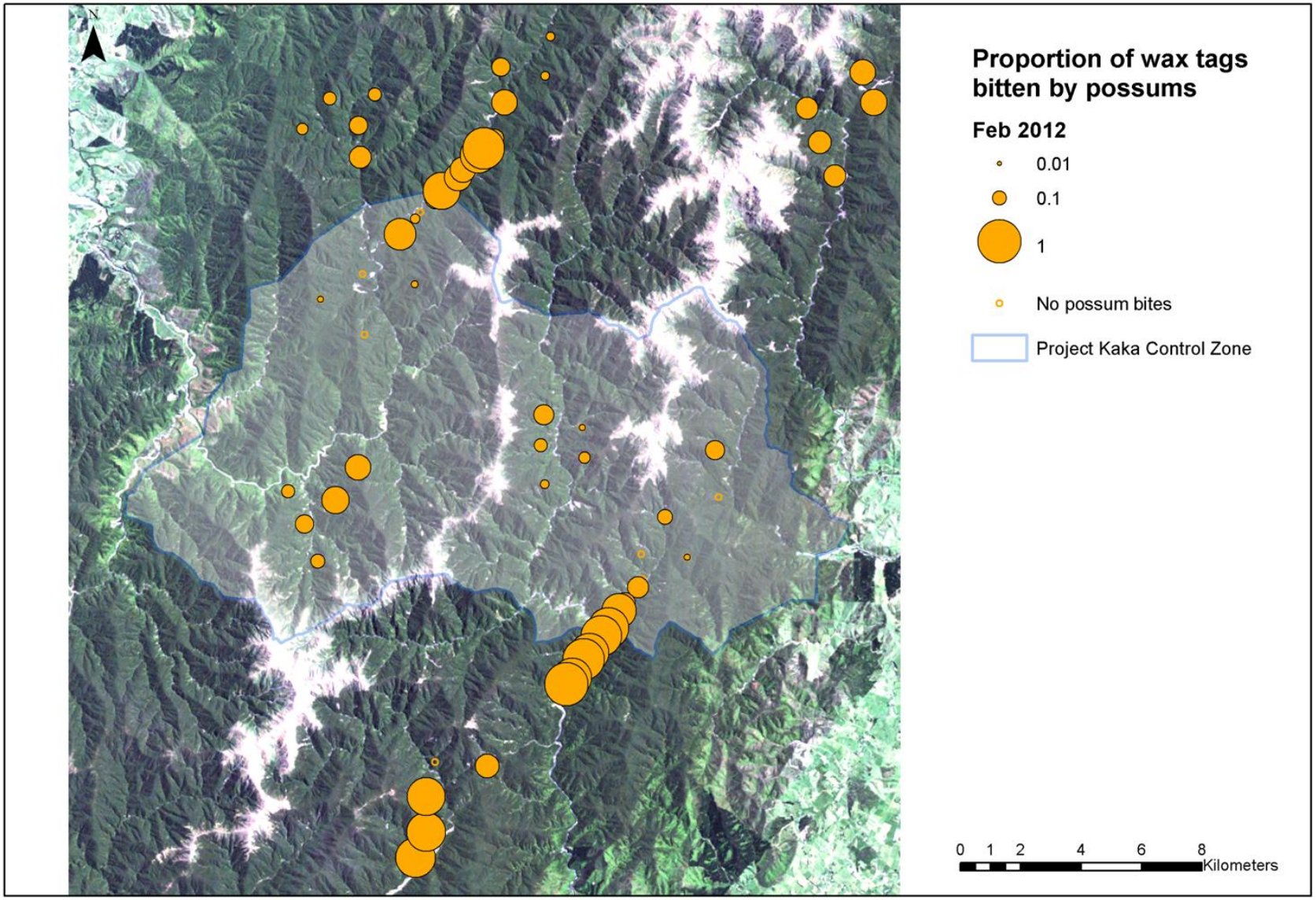
Possum abundance (wax tags)



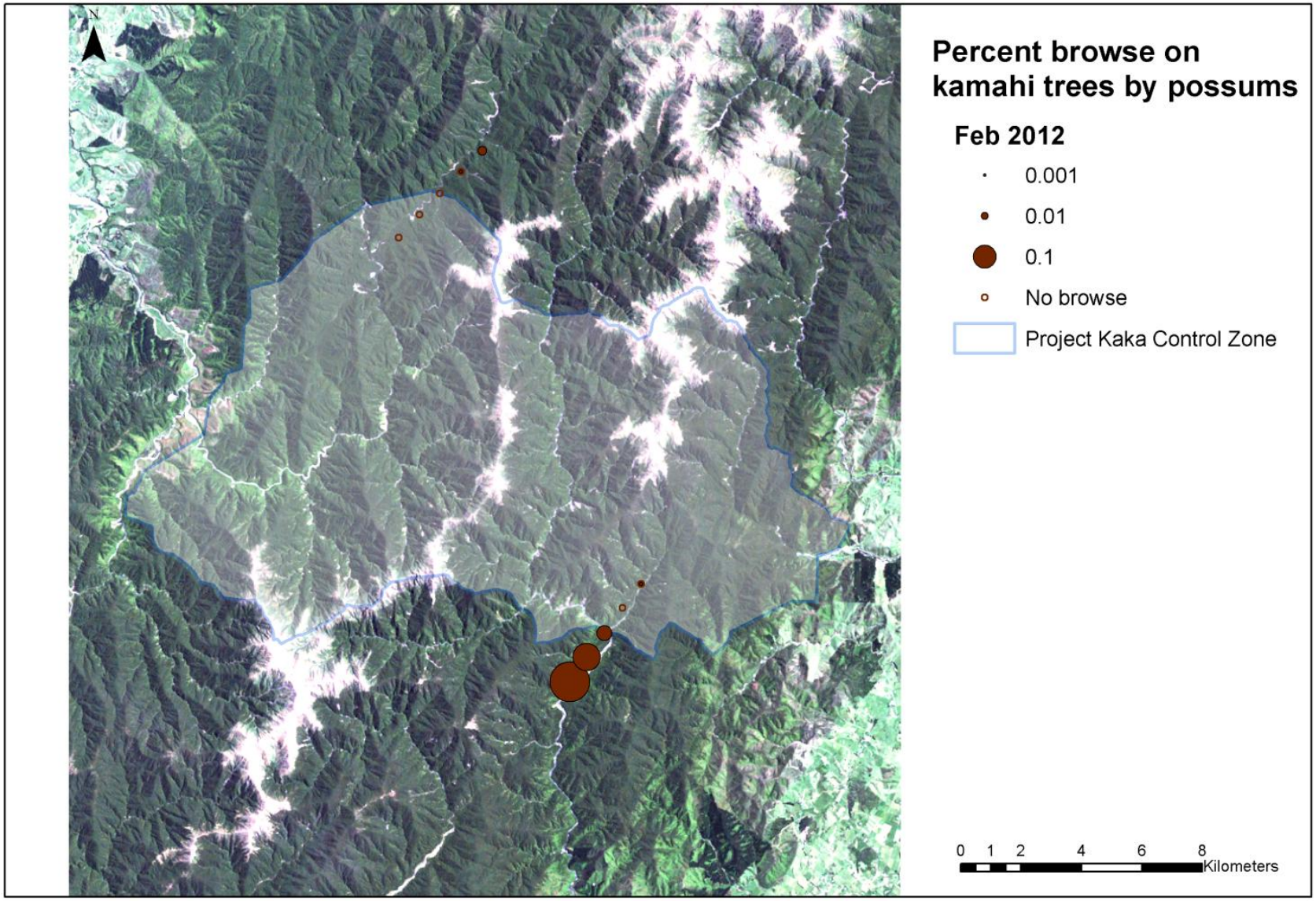
Possum browse on kamahi



Possums: 1.5 yrs post-control



FBI kamahi: 1.5 yrs post-control



Spatial & temporal extent of control on pests

- Core effect of 1080 treatment on rat abundance but resulting in more rats inside than out (competitive release?)
- Location and timing of recovery suggests immigration rather than in-situ breeding responsible for rapid increase in rats at edges
- Difference in possum abundance at edges driven more by habitat /resources than by treatment effects?

Spatial & temporal extent of control on biodiversity

- Complicated!
- Both weta and kamahi showed initial response to consumer abundance but over time improved across transect despite high consumer abundance
- Multiple cycles operating:
  - Seasonal
  - Masting
  - Control operations

Acknowledgements

- Funding: Ministry of Business, Innovations and Employment, Contract no: C09X0909
- Dave Carlton, Ben Reddiex (DOC)