



Kumutoto Forest Restoration Group





Questions concerning undergraduate ecology students

- How to get outdoors and apply knowledge from the classroom as soon as possible?
- What do our futures look like, as ecologists? Are there jobs for us? If so, are those jobs in the field or behind a desk?
- How do I get the experience that employers demand?



Inspired by those who have come before us
and those who stand in front of us now.



Robert MaCarthur



Rachel Carson



Kevin Gould



Nicky Nelson



Kevin C. Burns



Kumutoto Forest



Our place to put into practice what we learn in lectures.



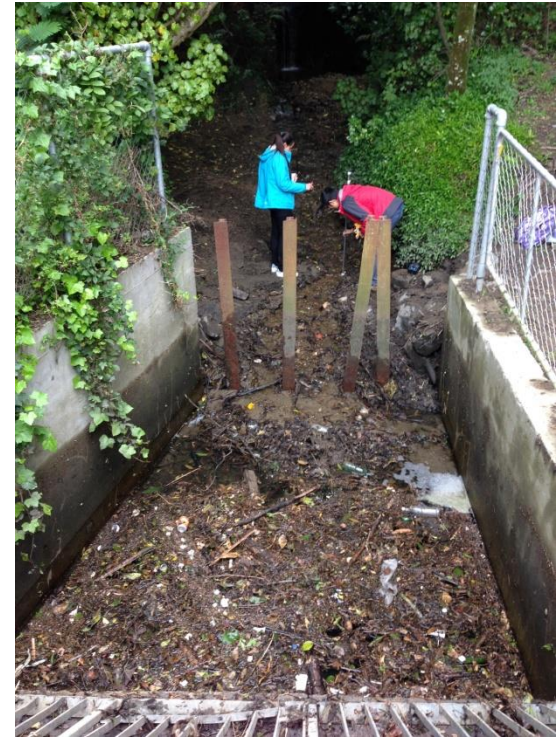
Kumutoto when we found it



Rubbish everywhere!



Invasive flora & fauna



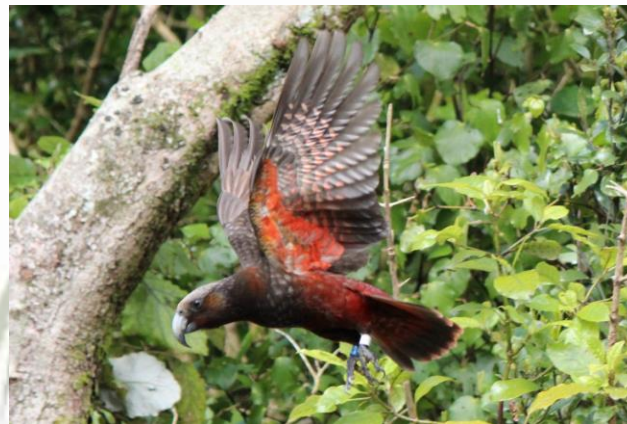
Storm water drain



Committee meetings



- Meetings often held in the bush
- Whanaungatanga-relationship building
- Observation time
- Squeeze in a bird count





Weekly bird counts morning & afternoon



5 MINUTE BIRD COUNT

DATE:
OBSERVER:

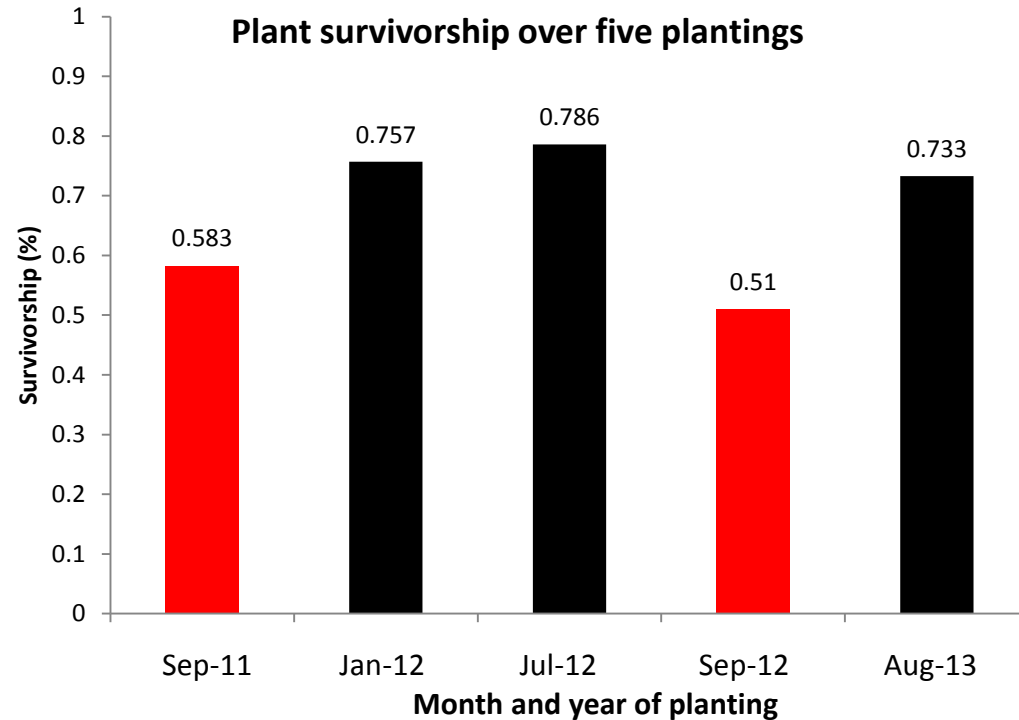
COUNTS:	1	2	3	4
Temperature				
Time				
Sun				
Precipitation				
Showers				
Wind				
Other Noises				

SPECIES:	Seen/Heard	Seen/Heard	Seen/Heard	Seen/Heard	NOTES:
Blackbird					
Tūi					
Fantail					
Kākā					
Warbler					
Kereru					
Chaffinch					
Goldfinch					
Eastern Rosella					
Kākāriki					





Restoration planting survivorship results



- Winter plantings turned out to be more effective with survivorships around 75%.
- It made sense to abandon spring plantings.
- Low survivorship in spring probably due to low soil moisture content.



Pest management programme



Sarah and volunteers implementing our pest management programme





Rats prefer facing up ($p=0.045$)

The catch difference for rats has a left skew, indicating a significant preference for the downhill facing traps (Figure 6).

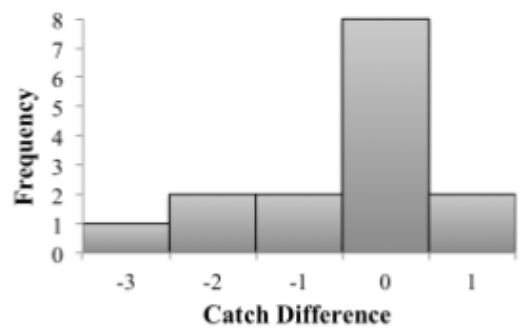


Figure 6: Histogram of total catch difference (uphill – downhill) for ship rats.

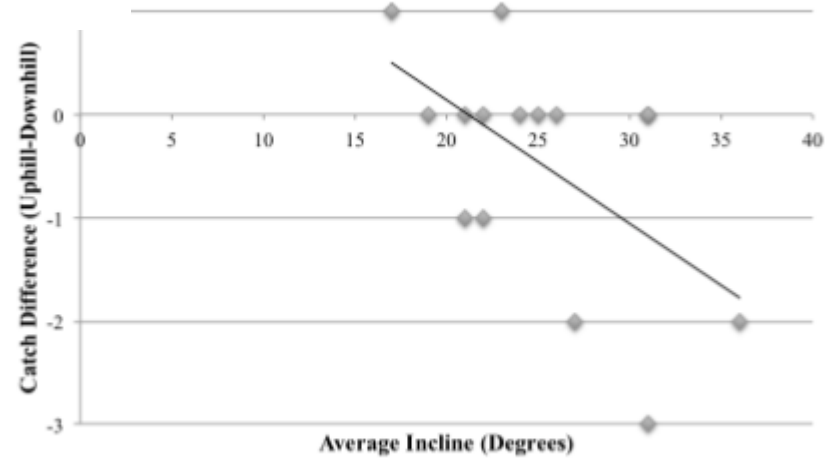
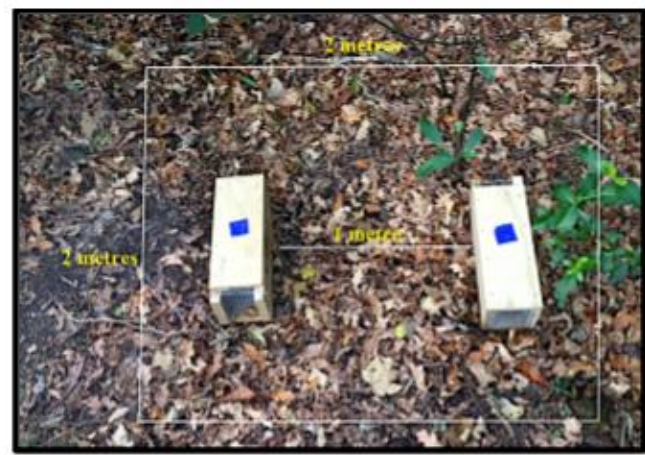


Figure 4: Catch difference versus average incline (degrees) for ship rats.



Master's students

Kumutoto Forest Restoration: Does box orientation affect rat trapping efficiency?

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Abstract:

New Zealand's historically mammal free environment endured devastating changes upon the arrival of Europeans and their introduction of pests. The Kumutoto restoration committee has aimed to return Wellington's Kumutoto forest to its former pest free state. This study focused on implementing pest control, allowing for bird populations to flourish and increasing plant survival. Previous monitoring in Kumutoto forest indicated that there was a rat infestation. The orientation of trapping boxes on an incline was examined in an attempt to determine whether rats have a preference for entering traps going downhill or uphill. 30 traps were distributed randomly throughout the forest in pairs. These were checked twice a week, recording the animal caught, the body and tail length and the direction of the box entrance. Additionally, the incline of the boxes and percent field vegetation were noted for each of the 15 sites. The traps were checked seven times with 42 animals caught, including 19 house mice and 23 ship rats. A paired t-test revealed that ship rats have a significant preference for entering traps downhill ($p=0.045$) while the mice were not significant ($p=0.424$). An ANOVA indicated that there is a significant interaction between catch difference (uphill-downhill) and the average slope of the sites for ship rats ($p=0.011$). Steeper slopes showed more of a downhill preference. All interactions for mice and percent vegetation for rats were not significant. The non-significant values found for mice may be due to the dominance of rats, altering their population structure and behaviours. The preference for rats entering boxes travelling downhill on steeper slopes should be considered in future trap placement in Kumutoto forest. Additional research into the relationship between rats and mice should be prioritized and integrated into restoration plans to prevent unforeseen issues arising with the eradication of rats. Results of this study may be limited due to the inconsistency of volunteer knowledge and training which should be addressed by the Kumutoto restoration committee to allow for more clear and less biased results in future pest management.

Keywords: pest control; Kumutoto forest; Kelburn Park; restoration; *Rattus rattus*; *Mus musculus*

Introduction

Restoration

Ecological restoration aims to restore communities, both flora and fauna, to a prior

state through management (Atkinson 1994). Formerly, restoration work aimed to restore a system back to its original condition, and neglected the dynamic nature of ecosystems (Atkinson 1994). Current restoration

•Sarah's paper came out of the pest management program

•Claudia revisited our original (2009) management plan and gathered data from surveys of the public and volunteers

•Alice tested water quality of the stream and researched the viability of native eels populations returning to Kumutoto.

•Smrutica wrote a paper on the restoration effort at Kumutoto thus far and compiled a species brochure of flora planted by us at Kumutoto.





Master's students

- Great opportunity for us to work alongside postgraduate students and assist them with their work.
- Empowering because we could actually help them more than we would have expected.
- Providing meaning when work can be hypothetical for 5 years! Sarah “what I'm going to do is actually going to mean something to you guys, eh? This is great!”
- Tuakana / teina



Toni

- Chose Wellington to study in hope of connecting with whanau from Te Ātiawa.
- Joined Kumutoto Forest Committee.
- One meeting later had met all her whanau.
- and was invited to join the iwi science team.





Whakawhanaungatanga Relationships

- Treaty of Waitangi – partnership between Māori and Pākehā. Very important for future of conservation in NZ. Not to mention well-being of our society.
- Māori history at Kumutoto goes back a long way.
- Māori experience of the country is rich and profound.
- Make the most of different world views - different ways of thinking can help to solve problems in science.
- Human culture is a valuable and an important factor in conservation.
- Forming working relationships with city council staff is invaluable.
- Friendships rooted in the work we do at Kumutoto forms a strong committee and lifelong friendships – i'm sure we'll get to wok together again one day.

Future projects



- Restoring epiphytes to Kumutoto.
- Lizard survey – providing habitat for lizards.
- Replanting the stream with Sustainable Coastlines – and possible day-lighting of the mouth.





Conclusion

- Engaging with lecturers
 - seeking advice
 - borrowing equipment
 - speaking at symposia on request of university
- Whanaungatanga
 - Mixing with other students, postgrads, lecturers, community conservationists, ecologists, park rangers, horticulturalists, joggers/ walkers, people visiting their old backyard.

KUMUTOTO FOREST

Conclusion

- Complementary learning.
 - activities reinforce classroom learning.
 - makes class material relevant to us.
 - increases interest in lectures.
- Tuakana/ teina
 - gets us working alongside our big siblings i.e. postgrad students.
- Real science by students and another successful conservation project for Wellington!

A vertical wooden signpost with white Māori text. The text is arranged vertically and includes the words 'KUMUTOTO' and 'FOREST' in a stylized font, with a small tree icon at the top.



Job prospects

Job I found on NZ Conservation Jobs website yesterday:

Kereru Discovery Project Co-ordinator – WWF New Zealand.

To be successful in this role you will need to :

- have experience of community-based ecological restoration, and have existing relationships with conservation groups and the wider Wellington community
- be self-motivated and be comfortable working independently
- be a great communicator, across all channels including social media, written and face to face
- have solid project management skills and a track record of successful delivery



Acknowledgements

- Kumutoto committee and volunteers for a tremendous amount of passion.
- SCB for continuous support at Kumutoto.
- Te Ātiawa
- Wellington City Council
- Victoria University especially Stephen Hartley.
- Kumutoto Forest

Nō reira, tēnā koutou, tēnā koutou, tēnā koutou katoa.