

We have a 3-year PhD scholarship available to study waterborne transmission of *Toxoplasma* oocysts, beginning early 2023.

The project

Infectious *Toxoplasma* oocysts are shed in cat faeces and enter waterways, eventually ending up in the marine environment. Hector's and Māui dolphins appear highly susceptible to toxoplasmosis, with 2 out of the 3 critically endangered Māui dolphins found dead between 2007 and 2011 having died of this disease. With less than 100 Māui dolphins remaining, toxoplasmosis has been identified as a risk factor for further population decline. In order to mitigate this disease, we first need to know when and where oocysts enter our waterways. **We hypothesise that kākahi, endemic mussels that filter and concentrate particles in fresh water, can be used to detect both cat host populations and *Toxoplasma* oocysts in freshwater environments, allowing identification of oocyst entry 'hotspots'.** By using a non-lethal haemolymph sampling method this project will harness one taonga (treasured) species, kākahi, to protect another taonga species, Māui dolphin. PCR and metabarcoding techniques will be applied to haemolymph to detect DNA from cats and oocysts at study sites, generating data on the presence, prevalence and genotype of *Toxoplasma* oocysts and the category of cat host present (feral, stray or pet cats). Overlaying this with other risk-factor data (riparian vegetation, catchment land-cover, and rainfall volume/intensity) will identify entry points and hotspots of oocyst contamination. Knowledge of when and where oocysts enter freshwater systems can inform targeted management strategies that decrease *Toxoplasma* loading and ultimately may prevent oocysts from reaching Māui dolphin habitats.

Candidate profile

We are looking for a PhD candidate who:

- meets the Massey University criteria for admission to the PhD programme
<http://www.massey.ac.nz/massey/research/higher-research-degrees/how-to-apply-for-the-phd/how-to-apply-for-the-phd.cfm>
- has a track record of research experience
- has an interest in studying infectious disease and/or freshwater species
- has experience or an interest in molecular laboratory work and related fields including DNA extraction, PCR, metabarcoding, bioinformatics
- is prepared to undertake field work
- has a Masters, honours or equivalent degree in a relevant scientific discipline
- is enthusiastic about considering and incorporating te ao Māori (Māori world view) into their research practice
- is diligent, methodical and thorough in their research practice and record keeping
- has excellent communication skills and enjoys working in a multi-disciplinary team

The PhD scholarship pays tuition fees and provides a NZ\$31,000 per year stipend for 3 years.

To apply **please send a CV with contact details for at least one referee and a cover letter by 1st December** to w.d.roe@massey.ac.nz

Interviews will be conducted (dates to be advised).

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Deputy Head of School
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Our university - <https://www.massey.ac.nz/>

Our local region - <https://manawatunz.co.nz/>