School of Environment
2019 Research Experience Awards Projects

Project Number	Supervisor	Title	Information
REA 1	Jennifer Montaño (PhD Student)	The use of video imagery to study shoreline dynamics at Tairua Beach, New Zealand	I plan to involve the student in the analysis of 19 years of daily video images of Tairua Beach. The dataset involves time-average images collected by NIWA and already made available as part of my PhD. I have already written codes to extract the shoreline from video images but have been able to collect the shoreline position only at high tide. Extending the dataset to the low-tide shoreline will allow to calculate beach slope (a key parameter to predict wave transformation and shoreline evolution) and so improve our understanding of beach morphodynamics. The student will be involved in both aspects of the study from extracting the shoreline from video images to the development of a statistical relation that links wave characteristics and beach slope to shoreline movement. Knowledge of Python is preferred.
REA 2	Hannah Marley (PhD Student)	Image analysis of Auckland air pollution events	Air pollution in Auckland is a serious issue with Auckland Council estimating the social cost to be approximately $1.1 billion each year and that around 260 premature deaths occur annually as a result of air pollution. During the winter months, Auckland occasionally experiences air pollution events in the form of a distinct brown haze that hangs over the city. These brown haze events are not well understood and are difficult to predict. This project involves working alongside a PhD student whose thesis aims to better understand and predict these events. The main task will involve looking through a database of photos of the Auckland CBD and identifying days where brown haze is present and how severe the haze is (based on a set of criteria).
REA 3	João Albuquerque (PhD Student)	The past and future of extreme wave events in New Zealand: hindcasts and projections	In this research experience the student will analyse the trends on extreme wave height events around New Zealand in areas that are threatened by beach erosion. This investigation will be based on historical data from a wave hindcast and three Global Climate Models past and future simulations. After the analysis, the student will clarify whether the risk of the threatened areas will increase or decrease along the following decades.
REA 4	Brendon Blue (Research Fellow)	From crusades to kaitiakitanga: discourses of predator	As New Zealanders attempt to eliminate a subset of mammalian predators from the entire mainland by 2050, the way conservation advocates describe and justify pest control efforts seems to be changing.

		eradication in Aotearoa New Zealand	This project will involve working with Brendon Blue and Karen Fisher to examine the discourses of predator control in Aotearoa New Zealand. The student will gather official reports, news articles and academic literature relating to Predator Free 2050, using these documents to create an annotated bibliography as the basis for ongoing research. This project supplements *Negotiating a predator free nation: the changing scope and scale of pest control in Aotearoa New Zealand*, a postdoctoral research project funded by the George Mason Centre for the Natural Environment. The ideal candidate will already be familiar with nVivo qualitative data analysis software, but an ability and willingness to learn quickly will suffice!
REA 5	Emma Sharp (Professional Teaching Fellow)	Navigating transitions to different diets: an investigation into the motivations of, and challenges to, shifts away from dairy (and/or back again)	Dairy production has become controversial in recent years due to its importance to Aotearoa New Zealand's economy, cultural associations and identity, as well as the awareness of ecological and animal welfare exploitations in its production. This project's research will investigate the consumption of dairy in New Zealand, and the various implications of these practices. This project work involves a small amount of collecting research literature, media articles, website material and reports, but mostly will be based on applying thematic analysis to texts and transcripts that contain information on transitions to different (dairy or non-dairy) diets. This work will help to examine consumption preferences and practices. The research experience student will be interested in issues of food politics, and further developing their qualitative research capabilities.
REA 6	Julia Jakobsson (PhD Student)	Analysing organic matter in the landscape	The student will get experience in the procedures relating to a project looking into organic matter quality. Water samples that have been collected from a field site will be prepared for a set of experiments and periodically analysed. Sample preparations and analysis instruments used in this project are essential tools in a variety of fields such as, marine, limnological or environmental sciences to name a few. Insights from the project will help the student more critically analyse methodologies and try out the work of a grad student.
REA 7	Katarzyna Sila-Nowicka (Lecturer)	The belowground impacts of restoration plantings	As more reforestation occurs in New Zealand this will likely have positive effects on our soil quality as well as our carbon offsets, the extent of which has not yet been established in a New Zealand context. This research will examine the relationship between belowground carbon and soil characteristics, and what effect the age of restored stands has on these carbon stocks. The spatial distribution of belowground carbon will also be mapped.

			Involves: Field work in a recently restored native forest with standard equipment and techniques, analysis of sediment samples, mapping and interpolation of carbon values and data analysis. Student should be willing and able to do physical work outdoors, be prepared to travel within the Auckland region and have some previous experience with GIS.
REA 8	Kathy Campbell (Professor)	In hot water: resource building for engagement with the nature of geothermal systems	The aim of this research experience award is to develop outreach material based on past and current scientific research occurring at Hells Gate/Tikitere Geothermal Park, Rotorua. In particular, the student will develop a way to visualise temperature probe readings (taken by the general public / school students at different hot pools) on an interactive graph/map, allowing the public/students to see variations spatially and temporally. Based on the time it takes to create this resource, other outreach resource development may also be an option. Students applying for this award should have a keen interest in science engagement and proficient computing skills.
REA 9	Michaela Dobson (PhD Student)	Lab analysis of hot spring deposits	A student will undertake several lab analysis procedures on siliceous hot spring (sinter) deposits from Northern Waiotapu. Procedures include but are not limited to taking professional hand specimen photographs, drying and crushing rocks, and preparing samples for geochemical analysis. This is a great opportunity to gain vital lab experience. No prior knowledge is needed as all skills will be taught.
REA 10	Mark Costello (Professor)	Archiving research invertebrate specimens and biodiversity data for the Auckland Museum	Want to learn how invertebrate specimens are physically archived for research in museums, and best practice in biodiversity data management? This project is a collaboration between Professor Mark Costello (School of Environment) and Dr Wilma Blom and Dr Tom Trnski (Auckland Memorial Museum). An existing collection of identified and labelled amphipod crustaceans from the PhD work of Professor Costello is being donated to the Auckland Museum. The specimens are in small glass tubes stored in jars of alcohol. Because the specimens are identified to species level this means other researchers can use them to compare their own specimen's identification, and/or do comparative research. The work involves laboratory work picking out the specimen labels and entering them into a data sheet for the museum electronic database. The names are then matched to their current usage using semi-automated tools in the online database World Register of Marine Species. The resulting data will then be published online with other museum data through the Global Biodiversity Information Facility (GBIF) and Ocean Biogeographic Information System (OBIS). Thus, you will learn about current best practice in management of biodiversity specimens and data publication.