Biosecurity and Conservation

Postgraduate Handbook 2018

THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

SCIENCE

Welcome to Biosecurity and Conservation

Do you want to play a vital role in protecting New Zealand's natural treasures? Pursue a postgraduate qualification at a university that is a global leader in biosecurity and conservation education.

You'll undertake advanced training in invasion biology and the science behind current biosecurity and conservation issues alongside leaders in these fields. You'll work on real-life research and management, and network with future employers, gaining the confidence and skills to contribute to the rapidly growing fields of biosecurity and conservation.

The qualifications are jointly offered by the School of Biological Sciences and the School of Environment.

Joint Graduate School (JGS) in Biodiversity and Biosecurity

The University of Auckland and Landcare Research, two of New Zealand's leading research organisations in environmental science and ecology research, joined forces to create the Joint Graduate School in Biodiversity and Biosecurity (JGS) as part of the Centre for Biodiversity and Biosecurity (CBB).

Master of Science in Biosecurity and Conservation students are an important part of the JGS. The JGS supports postgraduate students undertaking research to help maintain New Zealand's terrestrial ecosystems and to enable our natural flora, fauna and fungi to flourish.

Postgraduate students at the JGS come from a wide range of backgrounds, cultures and fields of interest.

For more information visit
www.biodiversity-biosecurity.auckland.ac.nz

Photo: Margaret Stanley

Cover photo: Josie Galbraith

Photo: Margaret Stanley

Postgraduate study options in Biosecurity and Conservation

There are two postgraduate study options within Biosecurity and Conservation. The Postgraduate Diploma in Science (PGDipSci) specialising in Biosecurity and Conservation consists of one year of coursework. If you would prefer to do a masters degree, you can do an additional 'research only' year following the PGDipSci, if you the meet entry requirements.

What are the PGDipSci requirements?

Candidates for entry to the PGDipSci in Biosecurity and Conservation must have a BSc (some undergraduate ecology courses preferred) or equivalent experience (subject to approval).

Eight courses are required per year for the one-year, full-time diploma. You can undertake the diploma on a part-time basis, but you must be enrolled in consecutive semesters and complete within four years. Intake is mid-year and end of year.

- **Prerequisite:** an approved BSc or equivalent experience, subject to approval

Applying for the masters programme

To undertake the MSc in Biosecurity and Conservation (research only), you must have satisfactorily completed the PGDipSci (a GPA of at least 4.0 in the best 90 points of the PGDipSci, including BIOSCI 761) and have filled in the supervision agreement form found on the School of Biological Sciences website under 'Future Postgraduates: Postgraduate study options'. You can approach one of our many staff about possible masters research topics during this time.

- **Prerequisite:** PGDipSci in Biosecurity and Conservation (including BIOSCI 761 if supervised by School of Biological Sciences staff, OR ENVSCI 701 if supervised by School of Environment staff)

Further information

Science Student Centre
Ground floor, room G20 *(beside the entrance to the Large Chem Lecture Theatre)*
Building 301, 23 Symonds Street

pgscience@auckland.ac.nz

For course descriptions and more information, go to www.sbs.auckland.ac.nz and www.env.auckland.ac.nz

Regulations and courses

Programme structure

PGDipSci in Biosecurity and Conservation

- **Requirements:** eight courses (120 points)
- Three prescribed courses (45 points): BIOSCI 747, BIOSCI 748, ENVSCI 733
- Five additional courses, at least three (45 points) from any of the following: BIOSCI 724, BIOSCI 730, BIOSCI 733, BIOSCI 734, BIOSCI 735, BIOSCI 738, BIOSCI 751, ENVMGT 742, ENVMGT 743, ENVMGT 746, ENVSCI 716, ENVSCI 734, ENVSCI 737, either ENVSCI 701 or BIOSCI 761
- **Remaining 30 points:** approved 700-level courses in the Faculty of Science

Photo: Margaret Stanley

MSc in Biosecurity and Conservation

- **Requirements:** 60 points: BIOSEC 796 and 60 points: BIOSEC 796B
- Supervision agreement form required

Postgraduate Biosecurity and Conservation courses

Course Code	Title	Semester
BIOSCI 747	Biosecurity and Invasion Biology	S1, CORE
BIOSCI 748	Weed and Pest Management	S2, CORE
ENVSCI 733	Biodiversity Management and Conservation	S1, CORE
BIOSCI 761	MSc Thesis Proposal	S1, S2
ENVSCI 701	Research Practice in Environmental Science	S1
BIOSCI 724	Marine Ecology	S1
BIOSCI 730	Entomology and Biosecurity	S2
BIOSCI 733	Molecular Ecology and Evolution	S2
BIOSCI 734	Terrestrial Plant Ecology	S2
BIOSCI 735	Advanced Behavioural Ecology	S2
BIOSCI 738	Advanced Biological Data Analysis	S1
BIOSCI 751	Plant Microbial Interactions	S2
ENVMGT 742	Social Dimensions of Global Environmental Change	S2
ENVMGT 743	Environmental Policy	S1
ENVMGT 746	Collaborative Environmental Management	S1
ENVSCI 716	Aquatic Ecological Assessment	S2
ENVSCI 734	Landscape and Restoration Ecology	S2
ENVSCI 737	Applied Terrestrial Ecology	S2

Past masters research topics

Master of Science (MSc) in Biosecurity and Conservation

To achieve the Master of Science in Biosecurity and Conservation, you must first successfully complete the PGDipSci, then complete a one-year research project.

Our students carry out work on a wide range of biosecurity, biodiversity and conservation topics.

For example:

- Foraging ecology and translocation physiology of the mottled petrel *(Pterodroma inexpectata)*
- The space used by the short-tailed bat *(Mystacina tuberculata)* in relation to its nectivorous diet and interactions with *Dactylanthus taylorii*
- The ecological relationship between Cook's scurvy grass *(Lepidium oleraceum s.s.)* and seabirds
- The spatial extent of biodiversity outcomes from mammalian predator pest management
- Impacts of introduced herbivores on sand dune restoration
- Estimating a damage function for feral pig impacts

Photo: Josie Galbraith

Photo: Margaret Stanley

- The importance of invertebrates in decomposing coarse woody debris
- Are native plant species within the host range of the introduced hadda beetle?
- Impacts of *Anoplolepis gracilipes* (yellow crazy ant) on invertebrate communities in Samoa
- Response of fruit fly populations to new management tools in mango orchards in Vietnam
- Population dynamics and behaviour of a founder population of house mice
- The potential invasiveness of Moreton Bay fig *(Ficus macrophylla Moraceae)* in New Zealand
- Assessing the efficacy of disturbance-based management of black swans at the Auckland Airport
- Trophic interactions between geckos and honeydew-producing scale insects
- Pollination ecology of native New Zealand orchids and the role of introduced species

You can approach one of our many staff in the School of Biological Sciences or School of Environment about possible masters research topics.

Meet our graduates

"I rate this programme and the management behind the curriculum as the best in New Zealand. The programme directors understand the biosecurity industry and provide a flexible structure so that the diploma can be spread over time. This was important for me as I could only attempt the study part-time.

The courses have direct relevance to biosecurity and biodiversity work and have given me a much better understanding of the science behind these two themes. The lecturers are involved in new biosecurity science and the Tamaki campus hosts Landcare Research, which provides a great opportunity to connect with other science students and researchers who are at the leading edge of biosecurity issues."

***Don McKenzie** is Biosecurity Senior Programme Manager for Northland Regional Council in Whāngārei.*

"Completing my PGDipSci and MSc in Biosecurity and Conservation was instrumental in developing the skills and knowledge I required for a career in the ecology and conservation field. The applied science focus and ability to tailor the coursework to my particular interests meant I could get exactly what I wanted out of the programme. The strong tie-in with relevant industry partners exposed me to career possibilities, some of which I hadn't previously known about or considered, and allowed me to make connections with many established practitioners in the industry. I now work at Auckland Council as an ecologist, and the skills and knowledge I gained from my time in the Biosecurity and Conservation programme are proving to be very relevant and useful for this role."

***Eru Nathan** is an ecologist in the Biodiversity Team at Auckland Council.*

"During my MSc in Biosecurity and Conservation I studied the role of apple orchards as donors of invertebrate diversity to adjacent areas of riparian restoration. The project was funded by Plant and Food Research and I was able to work part time there while carrying out my research. After graduating, I worked in a number of different roles for the Ministry for Primary Industries (MPI), where I have been able to contribute to biosecurity responses and disease surveillance. As a technical supervisor, I audit containment laboratories who carry out work on new or unwanted organisms. My MSc in Biosecurity and Conservation gave me a great base knowledge of biosecurity principles and relevant industry exposure, which has led me down a very interesting and rewarding career path."

***Marisa Sorce** is a Technical Supervisor with the Regulation and Assurance branch of the Ministry for Primary Industries.*

"Growing up, I loved the outdoors and wanted to work in conservation. I completed my MSc in Biosecurity and Conservation, looking at the effects of vertebrate pest management on plant reproduction, trying to establish whether pest management alone is able to restore these processes for the endemic nikau palm.

Since leaving university, I have worked for the Department of Conservation firstly as a ranger at the Rotoiti Nature Recovery Project and currently as a seasonal ranger on the Kākāpō Recovery Project. My postgraduate studies gave me good theoretical conservation knowledge as well as skills like critical thinking and problem-solving that I have found very useful."

***Jennifer Waite** is a ranger on the Kākāpō Recovery Project. Jennifer has an MSc in Biosecurity and Conservation.*

Careers in Biosecurity and Conservation

Both qualifications prepare students for employment in the biosecurity and conservation sector in organisations such as the Ministry for Primary Industries, local government, environmental consultancies, private pest-control companies, non-governmental conservation organisations, the Department of Conservation, Crown Research Institutes and the tertiary education sector. The masters programme also prepares students for pursuing doctoral study in New Zealand and overseas. Our graduates are:

In New Zealand

Pursuing doctorates
Department of Conservation
Auckland Council and other local authorities
Ministry for Primary Industries (MPI)
AsureQuality
NIWA
Plant & Food Research
Landcare Research
University research technicians
Environmental consultancies

Overseas

Pursuing doctorates
Fire Island National Seashore, New York, US
Scottish Natural Heritage, UK
British Museum, UK
Discovery Channel, UK
Department of Agriculture, Vietnam
Department of Energy and Environmental Protection, Connecticut, US

"I chose the University of Auckland because I wanted to acquire more experience in the field of biodiversity/ conservation, and learn how I can utilise it to the advantage of people in my community.

"Right now I'm exploring in-depth knowledge on the biosecurity of New Zealand, learning more about the work that is done in the Landcare and MPI facilities. My elective courses allow me to explore other fields that complement my interest in biodiversity.

"I enjoy the interactive learning involved in all my courses. We take the initiative to get involved – learning is centred on our contribution towards the topic discussed. The lecturers are hands-on with communication, which is great in terms of getting ahead in the programme.

"I hope to study for my masters and PhD in the future. I'm looking at research with water biology, focusing my study around my people in Samoa. I want to empower, and incorporate how our community sees science."

***Velonika Nikki Lioa Falaniko** is studying for a Postgraduate Diploma in Science specialising in Biosecurity and Conservation.*

Helpful information

Academic dates
www.auckland.ac.nz/dates

Accommodation
www.accommodation.auckland.ac.nz

Apply for postgraduate study
www.auckland.ac.nz/applynow

Career Development and Employment Services
www.cdes.auckland.ac.nz

Childcare
www.auckland.ac.nz/childcare

Course advice and degree planning in Science
www.science.auckland.ac.nz/student-centre

Disability Services
www.disability.auckland.ac.nz

How to enrol
www.auckland.ac.nz/enrolment

Information for postgraduate students
www.postgraduate.ac.nz

International students
www.international.auckland.ac.nz

Libraries and Learning Services
www.library.auckland.ac.nz

Māori and Pacific students
www.science.auckland.ac.nz/tuakana

Need help?
www.askauckland.ac.nz

Postgraduate Students' Association
www.pgsa.org.nz

Rainbow Science Network for LGBTI students
www.science.auckland.ac.nz/rainbowscience

Scholarships and awards
www.scholarships.auckland.ac.nz
www.auckland.ac.nz/fees

Support for students
www.science.auckland.ac.nz/support

Questions about Biosecurity and Conservation?
Contact Dr Margaret Stanley
mc.stanley@auckland.ac.nz

Disclaimer

Although every reasonable effort is made to ensure accuracy, the information in this document is provided as a general guide only for students and is subject to alteration. All students enrolling at the University of Auckland must consult its official document, the University of Auckland Calendar, to ensure that they are aware of and comply with all regulations, requirements and policies.

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Connect with us

Faculty of Science, The University of Auckland
Private Bag 92019, Auckland 1142, New Zealand

Phone: 0800 61 62 63 | Email: scifac@auckland.ac.nz
Web:www.science.auckland.ac.nz/biosecurity

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