# CONSERVATION AND ECOLOGY CAREERS

Lincoln University
Te Whare Wānaka o Aoraki
AOTEAROA • NEW ZEALAND

New Zealand's specialist land-based university

Library, Teaching and Learning

## WHAT ARE CONSERVATION AND ECOLOGY?

Specialists in conservation and ecology graduate ready to address the environmental issues that the world faces today. How can we feed the world while maintaining environmental standards? How can we protect our environment from biological threats? How can we maintain environmental quality to sustain us for generations to come? Conservation and ecology specialisation equips students with the scientific skills and knowledge to help answer these questions.

Ecology is an area of study concerned with the interconnections between living things and their environment- from small living things such as bacteria, to entire ecosystems and even global systems. Conservation is often linked with ecology because of their shared concern with the relationships between people, animals, plants and the land or waterways. The conservation and ecology specialisation builds on a solid scientific grounding to focus on issues ranging from biological diversity, sustainability, and biometrics, to field ecology research and methodology, and data analysis.

Conservation and ecological scientists must grapple with big issues such as climate change, biodiversity, and sustainability. With the growth and movement of populations there is increased pressure on global resources. Qualified professionals who can manage and innovate, and who have a sound knowledge of scientific and social principles, are needed in this sector.

## CONSERVATION AND ECOLOGY IN NEW ZEALAND AND THE WORLD

Ecological and conservation matters are a high priority for citizens and governments of New Zealand and the world. Alongside economic growth comes increased demand for resources, and an increase in infrastructure and building projects, the ecological impacts of which are often required by law to be monitored and assessed. This makes conservation and ecology professionals sought after in both developed and developing economies, and across many sectors.

Conservation is a topic very much in the public domain; with increased attention comes more demand for specialists in the field who can advise, arbitrate and quantify the issues. These roles require qualified professional staff. Scientists who wish to become specialised may consider post-graduate study to a doctorate level or beyond, which would make them eligible to apply for research, strategic or academic positions. Bachelor degree graduates will find opportunities in areas such as land restoration, laboratory or field-based research, biodiversity monitoring, or in advisory roles in areas such as regulation, management and communications. Immigration New Zealand currently lists Environmental Research Scientist on its long-term skills shortage list, showing that demand for professionals in this field is projected to remain high.


## SKILLS AND KNOWLEDGE DEVELOPED BY STUDYING CONSERVATION AND ECOLOGY

The types of skills gained from studying conservation and ecology at Lincoln University are highly valued by employers. Coursework provides students with a solid base knowledge of the biological sciences. Students are afforded the opportunity to extend themselves with project work and get hands-on experience with practical work in the field. Transition from a learning to a real world setting is made smoother by experience gained during study. Lincoln University has a well-regarded team of researchers and academics who excel in and have a passion for what they do. A large part of this is to pass on their skills and knowledge so that the next generation of graduates are well-equipped as they head into professional roles.

Employers seek well-rounded, engaged graduates with a strong work ethic. As in any sector, employers value those with a professional attitude. This includes good communication (including the ability to communicate to groups, as well as effective interpersonal and written communication), honesty, self-motivation, initiative, time management, and flexibility. The importance of these basic skills cannot be underestimated, even in voluntary or internship roles, as future job opportunities often arise from a good reputation and a varied network of contacts.

The following skills and knowledge are valued in conservation and ecology roles:

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| Strong knowledge of environmental, ecological, and social systems |
| Knowledge of sustainability and biological diversity |
| Ability to follow appropriate organisational and scientific procedures |
| Communication skills including the ability to deliver written reports and oral presentations |
| Ability to collect, synthesise, review, and report on data |
| Knowledge of current scientific and public debates in the field |
| Awareness of tikanga Māori |
| Solution-focussed attitude |
| Knowledge of and adherence to health and safety rules |
| Knowledge of fieldwork procedures |
| Ability to work across disciplines and with a range of people |
| Research methods, data collection, and analysis skills |
| Innovative thinking |
| Cultural knowledge and sensitivity |
| Numerical and quantitative skills |
| Willingness to learn and to teach |
| Knowledge of laboratory practices |
| Attention to detail |

## WHERE CAN CONSERVATION AND ECOLOGY GRADUATES FIND WORK?

Places of employment for graduates include:

- Local/ regional government (e.g., Gisbourne District Council, Greater Wellington Regional Council, Nelson City Council)
- Government bodies/ departments (e.g., Department of Conservation (DoC), Land Information NZ (LINZ), Ministry for Primary Industries (MPI), Ministry of Transport (MoT))
- Crown Research Institutes (e.g., NIWA, SCION, Landcare Research, AgResearch, GNS Science, Plant and Food Research)
- Universities (e.g., Lincoln University, Massey University)
- Group, iwi, trust or other non-government organisation (NGO) – regional, national or multinational (e.g., Ngāi Tahu, International Union for Conservation of Nature, Greenpeace, Royal Society Te Apārangi, Stewart Island/ Rakiura Community and Environment Trust)
- Private consultancy or professional services firm (e.g., Wildlands Consultants Ltd., Tonkin + Taylor, Environmental Resources Management (ERM), Landpro Ltd., Parker Conservation)
- Mineral resources industries, such as oil, gas or mining (e.g., Spencer Ogden, EnergyStream, OceanaGold, Solid Energy)

## CONSERVATION AND ECOLOGY JOB TITLES

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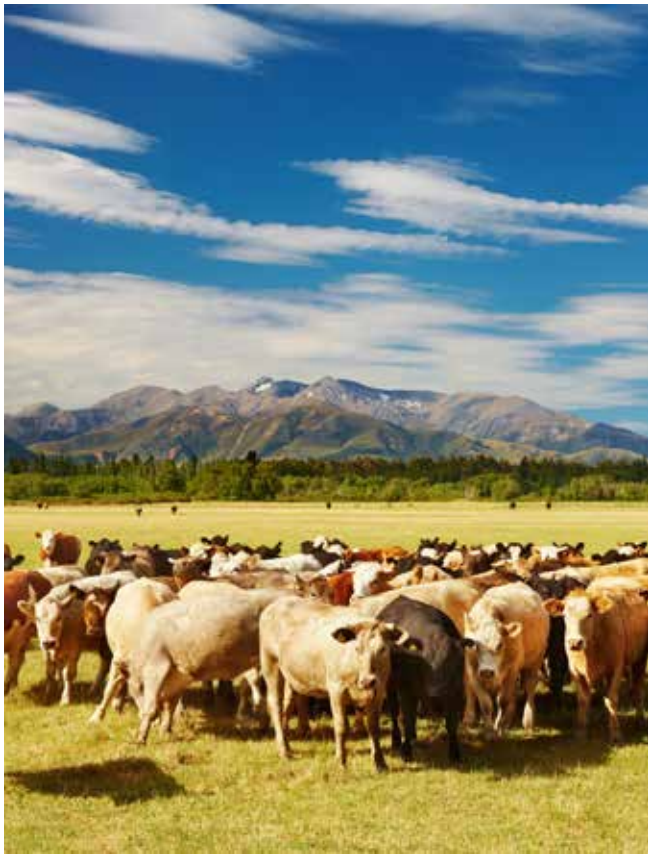
| Advisor/ Senior Advisor |
| Aquatic Ecology Technician |
| Assistant Ecological Surveyor |
| Biodiversity Ranger/Supervisor/Officer |
| Community Advocate |
| Conservation Officer/ Advisor |
| Consulting Officer |
| Contaminated Sites Manager |
| Ecological Consultant/ Consultant Ecologist |
| Ecological Field Surveyors |
| Ecological Restoration Advisor |
| Ecologist/Terrestrial Ecologist |
| Ecosystem Restoration Technician |
| Education Officer/ Teacher/ Lecturer |
| Environmental Auditor/Consultant/Scientist |
| Environmental Manager/ Officer/ Coordinator |
| Field Coordinator |
| Fisheries Officer/ Technician |
| Freshwater Ecologist |
| Improvement Manager |
| Industrial Ecologist |
| Laboratory Technician |
| Land Management Officer |
| Marine Biologist |
| Marine Biologist/Ecologist |
| Monitoring/ Compliance Officer |
| Natural Resources Manager |
| Parks and Spaces Specialist |
| Pest Manager |
| Policy Advisor/Analyst |
| Project Manager |
| Quarantine Officer |
| Ranger/ Park Ranger |
| Regional Advisor Ecology |
| Research Scientist/ Assistant |
| Resource Management Monitoring Specialist |
| Science Support Administrator |
| Scientist/Land Scientist |
| Site Auditor |
| Sustainability Educator |
| Sustainable Development Planner |
| Technical Support Officer – Animal, Pests, Biosecurity |
| Technician- Applied Entomology |
| Water and Coastal Resources Officer |



## PAY RATE INDICATIONS: FULL TIME EQUIVALENT (FTE) $NZ PER ANNUM

Most starting salaries for graduates of bachelor degrees fall between 40,000 - 55,000. Entry level jobs are stepping stones to roles with increased responsibilities and remuneration. Your employability is enhanced by all of your life experiences, be they employment related, or the transferrable skills and competencies gained from community involvement, volunteer work, or previous work or study- all of which can grow competency, expand networks, and demonstrate enthusiasm to future employers.

| Job Title | Indicative Pay |
|---|---|
| Environmental Scientist | 58,000 - 120,000 |
| Biosecurity (Customs) Officer (early career) | 40,000 - 45,000 |
| Biosecurity Officer (late career) | 55,000 - 75,000 |
| Contaminated Land (Graduate Consultant) | From 50,000 |
| Plant Imports Advisor | 65,000 - 80,000 |
| Technician- Applied Entomology | 40,000 - 50,000 |
| Quarantine Officer (early career) | 49,000 - 51,000 |
| Quarantine Officer (late career) | 52,000 - 61,000 |
| Pest Control Researcher | 60,000+ |
| Environmental Technician | 48,000 - 76,000 |
| Academic Lecturer/ Professor | 74,000 - 120,000+ |
| Field/ Environment Technician | 38,000 - 55,000 |
| Environmental Consultant | 45,000 - 90,000+ |
| Fisheries Officer | 48,000 - 81,000 |
| Analyst (early career) | 50,000 - 80,000 |
| Analyst (late career) | 80,000 - 93,500+ |
| Laboratory Technician | 40,000 - 65,000 |

## CONSERVATION AND ECOLOGY TASKS

Because of the varied career pathways open to graduates with specialisation in conservation and ecology there is no one typical job destination. The following section outlines two career paths, and the associated tasks one could expect in those roles.

**a) Field/ Environmental Technician:**

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| Conduct site observations, inspections and investigations |
| Trace and record pathways of environmental pollutants |
| Measure and record characteristics of biological systems |
| Collect samples in the field |
| Test samples in the laboratory |
| Prepare, analyse and report samples |
| Reporting to staff, managers, clients or other groups in meetings, group presentations, video-conferencing, or skype |
| Prepare written reports of findings |
| Learn and use applicable regulations and compliance requirements |
| Incorporate social and other issues to the management of environmental systems |
| Maintain and repair equipment |
| Review or contribute to resource consent application processing |

**b) Quarantine Officer:**

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| Undertake biosecurity risk assessments at various locations (at airports, aboard vessels, at mail centres) |
| Locate, identify and inspect risk goods |
| Review clearance documentation |
| Interpret x-ray images of baggage/ mail/ cargo/ goods |
| Inspect baggage/ mail/ cargo/ goods |
| Determine penalties for non-compliance with biosecurity rules or laws |
| Liaise with colleagues, management and stakeholders |
| Prepare written reports of findings |
| Monitor and audit standards and systems |
| Utilise intelligence information |
| Sample cargo/ stored products |
| Report and analyse data for internal and/or external reporting |
| Data entry and secure record keeping |

Job tasks are role-specific, so the above is an indication only. For more information on roles, registered Lincoln University students can search Lincoln CareerHub (including expired jobs) for job titles similar to those they are interested in. Job descriptions, including tasks and skills required, are often available.

## GRADUATE PROFILES

### GEORGE LEDGARD

***Bachelor of Science (Honours) (Conservation and Ecology)***
***Senior Ranger Biodiversity - Kaitiaki Matua (Kanorau Koiora), Department of Conservation (DoC)***

### ROBIN PIEPER

***Bachelor of Science (Conservation and Ecology)***
***Land Management Officer, Bay of Plenty Regional Council***

### OSCAR POLLARD

***Bachelor of Science (Conservation and Ecology)***
***Field Ranger and Animal Behaviour Technician, Zero Invasive Predators (ZIP)***

## INDUSTRY BODIES

Membership of an industry specific body enhances the professional status of students and employees. By joining a professional body, members can research career options, access training and events, and network and collaborate with industry colleagues at all levels.

Examples of conservation and ecology industry bodies include:

New Zealand Ecological Society
**www.newzealandecology.org**

New Zealand Freshwater Sciences Society
**www.freshwater.science.org.nz**

New Zealand Marine Sciences Society
**www.nzmss.org**

Environment Institute of Australia and New Zealand
**www.eianz.org**

Soil Ecology Society
**www.soilecologysociety.com**

Science New Zealand
**www.sciencenewzealand.org**

Royal Society of New Zealand
**www.royalsociety.org.nz**

Conservation Volunteers New Zealand
**www.conservationvolunteers.co.nz**

New Zealand Conservation Trust
**www.nzconservationtrust.org.nz**

Environment and Conservation Organisation of Aotearoa New Zealand (ECO)
**www.eco.org.nz**

Royal Forest and Bird Protection Society
**www.forestandbird.org.nz**

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