

UNIVERSITY
of
OTAGO



Te Whare Wānanga o Ōtāgo
NEW ZEALAND

Postgraduate Research Opportunities

Marine Science
Aquaculture and Fisheries
Oceanography



Photo: Ursula Ellenberg

2024

A postgraduate degree in Marine Science lets you investigate the ocean on your own terms. At Otago, we offer opportunities for people who want to pursue research in the sea or who are interested in marine education or management. From life scientists to modellers to environmental managers, there's a marine postgraduate option for you. Marine Science Research stretches from the tropics to the poles: in labs, on boats, on land, on computers, in our heads and underwater.

Postgraduate Degrees in Marine Science at Otago

Degree	Description	Timing	Background needed
Bachelor of Applied Science with Honours Aquaculture and Fisheries (120 points)	The BAppSc (Hons) in AQFI allows you to carry out a small field or lab-based research project while studying in the areas of aquaculture, human impacts, and fisheries. (A BSc(Hons)AQFI will be available in the near future)	Jan-Oct	BSc in related discipline
Bachelor of Science with Honours Marine Science (120 points)	The BSc (Hons) in MARI allows you to carry out a small field or lab-based research project while studying marine science papers.	Feb-Oct	BSc in related discipline
Postgraduate Diploma in Science Marine Science (120 pts)	The PGDipSci is a one-year degree that allows you the choice between desktop and field research. Students can do a small desktop research project (20 points) and take five 400-level papers, or they can do a larger field-based research project (40 points) and take four 400-level papers.	Feb-Oct	BSc in related discipline
Masters Degree Marine Science (240 pts)	The MSc in Marine Science is a two-year research degree. In the first year, students take papers and prepare a research proposal based on a field pilot study. In the second year, students carry out full-time independent research, leading to production of a thesis.	2 years beginning in Feb	BSc in related discipline
Masters Degree (thesis only) Marine Science	Students who have already carried out postgraduate study may be admitted to the second year of the MSc , to carry out independent research leading to production of a research thesis.	12 months from start date	BSc(Hons) or PGDipSci in related discipline or equivalent
Doctor of Philosophy	The PhD is the University's highest-level research degree. We accept only the very best students into this programme.	36 months from start date	BSc(Hons) or MSc in related discipline

Can I get in? We expect postgraduate students to have completed a BSc in a relevant science discipline with either an average of B (>70) overall, or an average of B+ (>75) over their final year of study (300-level papers). Applicants for a research-only degree (MSc thesis only or PhD) must present evidence of having carried out a large independent research project at B+ (75) or better.

Postgraduate Research Students must have a project and a supervisor before they can be admitted. This booklet is designed to help you find the perfect match.

What if I have changed direction? If you have a Bachelor's degree but didn't study a discipline related to Marine Science, you can still change your mind. The Diploma for Graduates (**DipGrad**) allows you to take a year's worth of undergraduate papers in Marine Science in order to gain the skills you'll need for postgraduate study. Contact marine.course.advice@otago.ac.nz for details.

Marine Science Academic Staff and Research Projects



Dr Bridie Allan

Research Interests: Bridie is interested in understanding how the behavioural ecology and physiology of marine animals changes under global and local stressors. To this end, Bridie offers a range of potential research projects broadly investigating the influence of habitat complexity on antipredator behaviour in marine animals; the effects

ocean warming and ocean acidification on the fitness of marine taxa, and the effects of pollutants (crude oil, microplastics and herbicides) on the physiology and behaviour of marine taxa. Bridie is also very open to students coming with their own research ideas.

If you're interested in this type of research, please contact Dr. Allan at bridie.allan@otago.ac.nz



Dr. Matt Desmond

Postdoctoral Fellow

Research interests: Kelp-forest ecology and physiology, algal aquaculture, habitat restoration, seafloor and habitat mapping.

For more info, please contact Dr. Desmond at matthew.desmond@otago.ac.nz



Dr. Ursula Ellenberg

Research interests: Ursula is motivated by conservation issues; she enjoys employing novel technologies to understand how seabirds use their environment or respond to stressors. Her research emphasis is on conservation physiology, behavioural ecology, and human-wildlife interaction. Are you curious, hands-on, practical, independent, and

self-motivated? Fantastic! **Contact Ursula at ursula.ellenberg@otago.ac.nz**



Associate Professor Crid Fraser

Rutherford Discovery Fellow

Research interests: 'Big picture' questions such as how do species get around, how do physical processes such as earthquakes influence biodiversity, and how does climate affect species' distributions.

Potential research projects: Do animals use volcanoes to get rid of their parasites? Is there population structure in Antarctic marine species? Will floating kelp and its animal passengers be able to colonise Antarctica in a warmer future world? Do heatwaves 'bleach' kelp, and up to what point can affected kelp recover? Most (but not all) projects include some genetic analyses as well as environmental or ecological data.

For more info, please contact Dr. Fraser at ceridwen.fraser@otago.ac.nz



Dr Gaya Gnanalingam

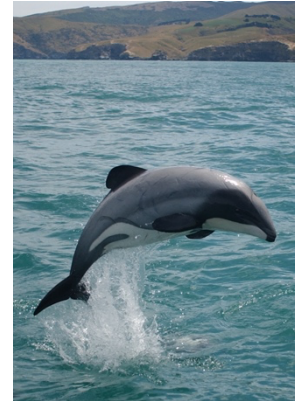
Research interests: aquaculture, fisheries, marine ecology, marine policy and law, habitat and fisheries restoration, customary fisheries management, population modelling, marine invertebrate ecology

For more info, please contact Dr. Gnanalingam at
gaya.gnanalingam@otago.ac.nz



Dr. Marta Guerra

Research Interests: Ecology and conservation biology of marine mammals; species-habitat relationships; behavioural and acoustic response to impacts; foraging ecology and food webs. **Dr Guerra is not taking any new postgraduate students at present.**



Professor Chris Hepburn

Research Interests: Ecology & physiology of macroalgae; impacts of elevated CO₂ on coastal ecosystems; invasion by exotic marine organisms; algal/invertebrate interactions.

For more info, please contact Prof Hepburn at
chris.hepburn@otago.ac.nz



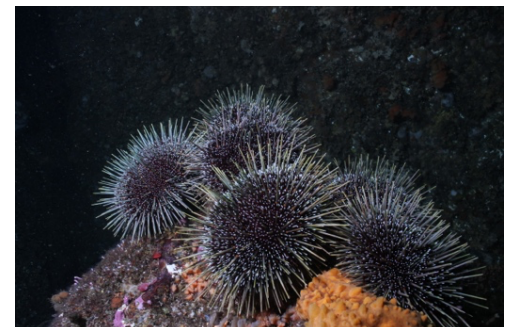
Professor Miles Lamare

Head of Department, Marine Science

Research Interests: Marine invertebrate ecology; Antarctic biology; echinoderms; Tropical echinoderms; ecology and physiology of marine invertebrate larval stages; Response of invertebrates to future oceans

Potential Research Projects: Climate induced changes in sea urchin population distributions, and the role of larval stages in expansion; tropical starfish ecology; environmental DNA to understand biodiversity and change; the response and adaptation of marine invertebrates to warming (heatwaves) and ocean acidification; Polar marine ecosystems. Boundary layers and newly settled marine species; Antarctic species responses to warming and acidification.

For more info, please contact Prof Lamare at
miles.lamare@otago.ac.nz





Professor Cliff Law

Principal Scientist, Marine Biogeochemistry, NIWA, Wellington

Research interests: Cliff has broad interests in marine biogeochemistry including what controls phytoplankton, nutrients and trace gases (such as methane, nitrous oxide and DMS) in the ocean. He is particularly interested in the impact of climate change and ocean acidification on marine biogeochemistry and plankton in coastal and open ocean waters, and also mitigation and adaption to climate change in the marine realm. Projects are Dunedin-based, but there would also be opportunities in the Ocean-Atmosphere research lab at NIWA Wellington. **For more info, please contact Prof Law at clifford.law@otago.ac.nz.**



Dr Jean McKinnon

Research Interests: Age, growth and diet of marine invertebrates, particularly cephalopod molluscs; behaviour of cephalopod molluscs; the effect of land use on mudflat biodiversity; citizen science for collecting baseline data. **For more info, please contact Dr McKinnon at jean.mckinnon@otago.ac.nz**



Associate Professor Will Rayment

Research Interests: Ecology and conservation biology of cetaceans; capture-recapture methods and analyses; species-habitat relationships; efficacy of Marine Protected Areas and MPA networks; cetaceans and seabirds of the Otago coast - abundance, distribution and impacts. **For more info, please contact Dr Rayment at will.rayment@otago.ac.nz**



Dr Christina Riesselman

Joint appointment in Marine Science and Geology

Research Interests: Cenozoic paleoceanography and paleoclimate; Antarctic climate evolution; micropaleontology and applications of diatoms; stable isotopes and other geochemical proxies of paleoenvironmental change.

Dr Riesselman is not taking any new research students in 2024.



Dr. Pete Russell

Research interests: My research interests are in physical processes that support marine ecosystems. I integrate a number of research areas, including: Coastal and estuarine processes, Tropical cyclone generated primary production, Research in Customary fisheries Protected Areas (CPA's). **For more info, please contact Dr Russell at peter.russell@otago.ac.nz**



Associate Professor Candida Savage

Research Interests: Marine ecology and ecosystems with a focus on human impacts in coastal ecosystems; tipping points and recovery dynamics following multiple stressors in marine ecosystems; nutrient cycles that underpin healthy ecosystems from the fjords to coral reefs and intertidal estuaries.



Potential Research Projects: Candida is interested in working with students who have a passion for research questions around ecosystem structure (including food webs) and functioning (nutrient cycling) of soft sediment ecosystems, restoration ecology in estuaries or coral reefs, or carbon burial processes in fjords. We conduct field and laboratory experiments on the role of key species on processes that maintain healthy coastal ecosystems. Other research topics of interest include food web structure and connectivity, carbon sinks in sediments, coral reef ecology and the effects of cumulative stressors on recovery and resilience of marine ecosystems.

For more info, please contact Assoc Prof Savage at candida.savage@otago.ac.nz



Professor Abby Smith

Research Interests: Abby studies growth, calcification and skeletal mineralogy of marine invertebrates, including the effects of sea water chemistry on marine carbonates in temperate coastal and shelf environments, with a strong focus on New Zealand

bryozoans. **Honours projects available in 2024:** 1) growth and calcification of Otago shelf bryozoans using a new deep water mark-and-recapture method; 2) mineral composition of complex decorated snail shells. Both fully funded, involving field and lab work and some travel.

For more info, contact Prof Smith at abby.smith@otago.ac.nz



Dr Robert Smith

<https://twitter.com/robowainsmith>

Research Interests: Rob is a physical oceanographer. His research group focuses on ocean dynamics in shelf and coastal waters across Aotearoa New Zealand.

Potential Research Projects: Rob is keen to work with students interested in using ocean data and models to study the impact of physical processes (air-sea heat fluxes, wind, currents) on our coastal seas. Possible projects include: (1) studying the drivers and predictability of marine heatwaves across New Zealand, (2) investigating the transport and dispersal of material (e.g. marine plastic, larvae, phytoplankton) in coastal seas and (3) studying processes that buffer coastal ecosystems from extreme warming. **For more info, please contact Dr. Smith at robert.smith@otago.ac.nz**



Honorary Professor Gary Wilson

Chief Scientist, GNS Science, Lower Hutt

Research Interests: Antarctica's role in the evolving global ocean and climate system; New Zealand ocean and climate response to changing climate; the marine and coastal carbon cycle; records of environmental change and sea level rise in seismic records and

marine sediment cores; and the application of paleomagnetic and physical properties methods to dating and correlation and as proxies for environmental change.

For more info, please contact Prof Wilson at gary.wilson@otago.ac.nz



Professor Steve Wing

Research Interests: My research group focusses broadly on marine ecology with specific projects on food web and population structure of key coastal species such as rock lobsters, blue cod, sea lions, penguins and bivalves. Currently we are working on a large project on

integrated multispecies aquaculture, another on biodiversity and connectivity in the Antarctic ecosystem and a third on cumulative stressors in kelp forest ecosystems as part of the National Science Challenge, Sustainable Seas. There are multiple opportunities for postgraduate study in all three.

For more info, please contact Prof Wing at steve.wing@otago.ac.nz



What next?

How to apply? Use the “Apply Now” button at www.otago.ac.nz.

When to apply? International applications are due by 31 October. Returning Otago students should apply by the end of November. Nevertheless, **candidates should talk to potential supervisors about projects and apply as soon as possible to ensure a place in their preferred area of interest.** Applications to PhD & MSc Thesis-Only can be submitted at any time.

Put Together Your Team

It is very common for Marine Science students to be co-supervised outside the Department. Feel free to work with your primary supervisor to assemble the best possible supervisory committee for your research.



Photo: Will Rayment

Marine Science Postgrad Papers 2024

Fourth-year students enrol in: MARI 401, one of the 480/490/495 research papers, and additional papers to reach a total of 120 points.

Do not upload a research proposal or enrol in MARI5F – that is for your fifth year. Do not tick the box that says you are a research student or in your thesis year.

MARI 401 20 pts	Advanced Methods in Marine Science	Feb-May	Workshops on research skills and statistics, study design, a week-long field trip
MARI 403 20 pts	Critical Thinking for Environmental Scientists	Feb-Jun	Students lead seminar discussions about major papers focussing on marine issues
MARI 429 20 pts	Coastal Marine Environment	Feb-Oct	Field-based course: design and carry out coastal marine sampling transects
MARI 431 20 pts	Antarctic and Southern Ocean Science	Jul-Oct	Physical science of the Southern Ocean and poles through labs and seminars
AQFI 421 20 pts	Advanced Aquaculture and Fisheries	Mainly in March	Field-based course on coastal impacts and management
MARI 480 40 pts	Independent Project (for PGDipSci candidates)	Feb-Oct	Desktop research project
AQFI 490 60 pts	Dissertation (for BAppSc (hons) candidates)	Feb-Oct	Field or lab or data-based research project carried out within the year
MARI 490 60 pts	Dissertation (for BSc (hons) candidates)	Feb-Oct	Field or lab or data-based research project carried out within the year
MARI 495 40 pts	Masters Thesis Preparation (for MSc candidates)	Feb-Dec	Pilot study and proposal for research to be carried out in the second year
Postgraduate students may incorporate one paper in a different discipline into their degrees, with permission of the HOD or Fourth-Year Coordinator.			

Need more Info?

How much will it cost?

Fees information is here: <http://www.otago.ac.nz/study/fees/> - feebands

Need money?

Scholarships information is here: <http://www.otago.ac.nz/study/scholarships/>

Have a more specific question?

Contact us at:

marine.courseadvice@otago.ac.nz