



# Marine Science

## An Ocean of Opportunities

"Doing the BSc Minor in Marine Science prepared me with solid practical and theoretical foundations essential for good science. It also opened up exciting new possibilities in further studies, potential jobs in conservation, and piqued my own interest in an environment we really know very little about."

David Johnston  
MSc student, Department of Marine Science

Stretching over 30° of latitude, New Zealand's coastline is more than 15,000 km long, and its EEZ is one of the largest in the world. And yet our understanding of our own big blue backyard is extremely limited. Whether it's finding new species, protecting sensitive habitats, or solving our energy problems, there are countless opportunities for ocean explorers. Study Marine Science and you could be part of the discoveries to come.

Found only around New Zealand's South Island, Hector's dolphins are a symbol of just how unique our marine environment is. Facing many challenges in a fragile habitat, these dolphins are teetering on the brink of existence. The watery world surrounding us is a special place that needs YOU to help understand its complexity, and to find answers for important questions about its future.

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Photo: Steve Dawson

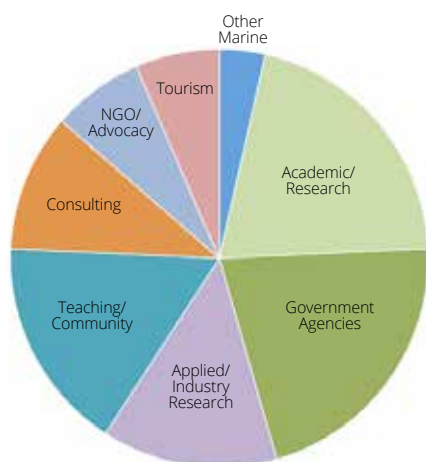
## Why study Marine Science?

The world is waking up to just how important the marine environment is to the survival of our planet. And when your office extends to the seashore and beyond, every day is a new challenge! A qualification in Marine Science from the University of Otago is internationally recognised, and its multi-disciplinary nature opens up an ocean of opportunities.

## Career possibilities

Marine scientists are valued, not only in learning institutions, but also by governments and large corporations. Many organisations need people with analytical minds on their team. Over 90% of Marine Science postgraduates from Otago University go on to find marine related jobs.

*Graduates with a Marine Science qualification find employment in a wide variety of areas. Career destinations of 78 Marine Science alumni who graduated from 1974 to 2014 are shown below.*



Marine research can take you from the poles to the tropics, Antarctica to Fiji and from regional councils to government agencies, such as the Department of Conservation, NIWA and the Ministry for Primary Industries. Careers have

also been launched in private consultancy firms, within the IT industry, the media (for example, Dunedin's Natural History New Zealand Ltd) and government science policy groups. Other graduates continue their marine science careers in museums and aquariums, within the educational system, through science teaching and community engagement, or university research and teaching positions.

## Background required

Students from a wide range of backgrounds are welcome to study Marine Science. You will need an interest in the marine environment and a solid foundation in science to Year 13 level. We particularly recommend Biology, Chemistry, Physics and Statistics or Calculus.

## What will I learn?

Some students have a physical or mathematical outlook, suitable for modelling ocean environments and working in marine chemistry, geology or ocean physics. For these students we recommend the BSc in Oceanography (OCEN). For a more applied approach, looking at food resources in the sea and the effects of fishing and aquaculture, students should enrol in the BAppSc in Aquaculture and Fisheries (AQFI). Some people want to work with marine plants and animals, trying to understand underwater life and its relationships. We recommend that these students enrol in a Major in Ecology, Botany, or Zoology, and add the Minor in Marine Science (MARI).

To get started, enrol in:

- EAOS 111 (Earth and Ocean Science)
- MARI 112 (Global Marine Systems).

Health Science students may enrol in MARI 112 as their optional eighth paper, allowing them to continue in Marine Science if they wish to do so.

## How will I study?

Marine science is very much a hands-on discipline. Apart from attending lectures and tutorials, you will also have practical laboratories and field trips at sea. The Department of Marine

Science has research and teaching facilities on the main campus in Dunedin, a major research laboratory at Portobello on the Otago Peninsula and field stations on Stewart Island and in Doubtful Sound. A fleet of research vessels, including the expedition vessel *RV Polaris II*, provides access to all the local marine habitats.



## Can I combine my Marine Science study with other subjects?

Marine Science is available as a minor in any undergraduate degree from Commerce, Humanities or Sciences. It is most easily combined with other sciences (e.g. Ecology, Botany, Zoology, Chemistry and Geology) but adding it to other disciplines, such as Education, Law, Geography or Tourism, would lead to interesting job opportunities.

## What about further study?

BSc graduates from a wide range of disciplines can apply to one of our postgraduate programmes: Postgraduate Diploma of Science (1 year), Master of Science (2 years), or PhD (3+ years). There are many opportunities for research in the Marine Science Department, including:

- Marine mammal biology and conservation
- Antarctic science
- Deep sea biology
- Ocean physics
- Climate change

## PROFILE

### Josie Crawshaw

MSc student, Department of Marine Science

Josie Crawshaw studied for her BSc with a minor in Marine Science and major in Ecology. Her interest stems from a childhood spent by the beach, and in particular wanting to know how animals interact with their environment.

Her favourite paper was MARI 301, Marine Ecology. "I particularly enjoyed the field trips and the hands-on aspects of the paper. The skills we were taught proved useful in gaining my first job."

As a summer student she carried out estuary monitoring for the Bay of Plenty Regional Council. It was a job she loved as every day was different: monitoring the water quality of rivers and taking samples of animals and sediments for analysis. Josie thinks she got the position largely because of the estuary sampling and invertebrate identification skills learned in the Marine Ecology paper. Following this position, she gained a short contract as an Estuary Technician, doing state of the environment monitoring for EOS Ecology – a small consulting business in Christchurch. Josie thoroughly enjoyed this work, and would love to return to be the person running the projects!

Josie has decided to study for her MSc in Marine Science as she feels that this qualification will help lead her into a permanent research position, rather than staying at technician level. She is studying the influence of high nitrate pulses on coastal lagoons and looking at how polluted sediments are naturally renewed by the process of denitrification (where microbes in the sediment convert nitrate to nitrogen gas).

Josie is also a keen scuba diver, allowing her to get face-to-face with the marine creatures she studies.

Josie's advice to students is "keep the scope wide at undergraduate level, and then narrow down to the topics that really grab your interest. That way you know you will love your job at the end of the day."



Photo: Sorrel O'Connell-Milne

For questions about  
Marine Science  
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