



Aquaculture and Fisheries

Supporting the blue economy

"I've always had a keen interest in the marine environment and wanted to study something that took me out into the field. The AQFI course provided me with the right mix of practical experience and academics to advance into postgraduate research, and I had heaps of fun in the process!"

Isla Twigg
PhD candidate

To fulfil the needs of a growing human population the production of food and other products from marine and freshwater environments must increase sustainably. Declines in wild fisheries and the growth in the aquaculture sector mean that now more than half of all seafood consumed throughout the world comes from aquaculture. The sustainable growth of aquaculture and the restoration of wild fisheries are two of the greatest challenges facing the planet – many of the solutions will be provided by scientists.

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Why study Aquaculture and Fisheries?

Fisheries and aquaculture are very important to New Zealanders because of the importance of the freshwater and marine environments for our culture, food and trade. Management of wild fisheries and aquaculture is connected – both require science to innovate and ensure sustainable practice. Understanding environmental impacts, reducing waste, enhancing production and ensuring the highest value for the products we produce are all challenges that will be met through the application of science across a range of disciplines.

Career opportunities

With a BAppSc in Aquaculture and Fisheries you'll be well placed to work in a variety of positions within New Zealand and internationally. The companies who produce, catch and process the fish we eat or export provide opportunities for researchers to be involved from production and harvest through to processing and marketing. The aquaculture industry is expanding and the challenge of feeding the planet in a changing world will be met through innovation and the work of the next generation of scientists.

You could work for government departments or join the science teams of local councils, iwi organisations or business – managing fish stocks and aquaculture operations and protecting the ecosystems and environment that support them. If you wish to stay in the university system and learn more about

new models of aquaculture and fisheries science, environment management, product development and food science, you could complete an MSc or PhD opening up wider job opportunities in scientist or management positions in a range of organisations.

Background required

High school students are recommended to take Biology, Chemistry, and Maths in Year 12 and preferably in Year 13.

What will I learn?

Fisheries and aquaculture scientists and managers need to have a good understanding of biology, ecology, oceanography, chemistry, statistics, and management. You will learn the fundamental aspects of these subjects during the first two years of the degree. As you progress through the degree, more specialist subjects such as fisheries, aquaculture, environmental and ecosystem management, and food science will be introduced.

What is the Bachelor of Applied Science?

The strength of the Applied Science programme is its outward focus – developing graduates with wide-ranging skills and practical experience in the workplace. The Applied Science programme is a three-year undergraduate degree with open entry at 100-level. An Honours year is offered to those students who achieve an appropriate academic standard. This will be offered at the end of the undergraduate degree. Every Applied Science

degree has a compulsory minor or second major, in a subject area that's directly relevant and will deliver complementary skills. The programme encourages real-world business awareness, enabling you to apply what you have learnt to any organisation you work for.

What will I study?

First year: You will study fundamental sciences including biology, chemistry, earth and ocean science and statistics as well as pursuing a relevant second discipline such as management, genetics, food science or Te Reo Māori.

Second year: In this year you will start to apply your science knowledge to the marine environment with courses in Aquaculture, Marine Science and Ecology as well as Food Science.

Third year: You will study fishery sciences as well as further exploring the marine environment and chemistry. You will apply your skills on real-world issues in field-based courses. Your compulsory minor or second major will tailor your course to your own particular interests.

How will I study?

You will learn the theoretical aspects of the above topics in lectures. In addition, for all of the science courses, practical and hands-on experience will be gained in the University's well-equipped laboratories (including the Portobello Marine Laboratory), field stations and boats.

PROFILE

Josh Wyber BAppSc (Otago)

Farm and Asset Manager, High Country Salmon Ltd

The University of Otago's location was a perfect fit for Josh Wyber. What he would study once he got there was a different matter.

"I called – well my mum, actually – called Chris Hepburn (Department of Marine Science) in my last year of school as I'd heard about the course I was interested in but still didn't really know what I wanted to do with my life," says Josh.

Dr Hepburn's advice?

"He said, 'just turn up, we'll sort you out, you'll love it'. Funnily enough, I turned up, he sorted me out, and I loved it!"

The pair still catch up from time to time, except these days Dr Hepburn brings students to visit Josh at High Country Salmon, where he now works as a Farm and Asset Manager.

During his own time as a student, Josh says such fieldtrips were among his favourite learning opportunities. They would also directly help him land his first aquaculture job.

"I'm a hands-on learner so to go out to the salmon, oyster and mussel farms and see them operational in Stewart Island and in Twizel was a real learning experience for me. The Karitane fieldtrip was memorable as you got to interact with the community to see what research they thought would be useful to the area. I still remember our research topic 'How tidal gates impact the biodiversity of the Karitane estuary'. Probably the best report I have ever written as I found it so interesting."

After meeting the manager of the Sanford salmon hatchery while on a fieldtrip to Stewart Island, Josh landed his first aquaculture job and has been involved in aquaculture ever since.

"I started working at Sanford's salmon hatchery in Kaitangata in my holidays and some weekends which I really enjoyed. It involved trips to their other hatchery on the Waitaki River and work on the farm down in Stewart Island. It was on one of these trips that I met a local oyster farmer. He showed me around his farm and hatchery which I thought was pretty cool! He then asked me what I was doing once I finished university and I replied 'working for you!'"

Five months later that's exactly what he was doing, eventually progressing to the role of stock manager where he was responsible for supervising new staff and creating a basic farm program to better track which oyster cages needed to be graded, cleaned or harvested. From there, Josh took up an offer to move into an assistant farm manager role and then his current Farm and Asset Manager role at High Country Salmon.

"My degree in AQFI has helped in my career by providing me with the basic knowledge but also more critical aspects of aquaculture. It helps you understand and think about things in a more critical way. It also helps with contacts and getting your foot in the door. Employers look kindly at future employees if they have a tertiary qualification."

The future is bright for aquaculture in New Zealand and around the world, says Josh.

"Most current farmers are either currently expanding or trying to expand. There are lots of exciting new species on the horizon also. There is definitely a shortage of good fish farmers out there! I now have contacts all around New Zealand and in some countries around the world so I could go anywhere when or where the opportunity arises."



For questions about
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otago.ac.nz/aqfi

