

# AQUACULTURE SCIENCE AND TECHNOLOGY CAREER SNAPSHOT



## Aquaculture at JCU

Australia's marine environment is the world's third largest marine jurisdiction at 13.86 million square kilometres<sup>1</sup> (including 8M km<sup>2</sup> Australian Fishing Zone), however due to relatively low biological productivity, Australia is a minor producer of fisheries products<sup>5</sup>.

In 2016 world aquaculture production recorded an all-time high of 110 million tonnes of live weight valued at US\$243Bn<sup>2</sup> while in Australia the value of aquaculture production is around AU\$1.3Bn, (AU\$756M of this Salmonids) and fisheries production is estimated nearly twice as high<sup>3</sup>. The size of employment in aquaculture across Australia is estimated 8,353 individuals<sup>3</sup> with largest employment in Tasmania and NSW. You will find more comprehensive information in the [Australian fisheries and aquaculture statistics 2017 \(December 2018\)](#) compiled by the Department of Agriculture and Water Resources ABARES (accessed October 2019) and on IBISWorld ([Industry Report Aquaculture in Australia](#)) available for free access through the JCU Library website. According to the business analysts at Stockhead, the aquaculture industry is poised for a healthy growth<sup>4</sup>.

JCU is one of the leading aquaculture research and innovation institutions in the world with institutes such as [Marine and Aquaculture Research Facility](#), [Sustainable Tropical](#)

[Fisheries and Aquaculture](#) and a number of partnerships such as [International Center for Biosaline Agriculture](#) in the UAE, [Tropical Futures Institute](#) or [Aquaculture Innovation Centre](#) in Singapore offers ample opportunities to build your cutting edge knowledge and develop current practical skills. The course focuses on tropical species including shrimp/prawns, pearl oysters, groupers, crabs and barramundi production. You will learn about aquaculture principles and practices, species farmed, aquatic animal ecophysiology, design of aquaculture systems, feeding and nutrition, pathobiology, propagation techniques, stock improvement, and sustainable aquaculture practices.

All sources below were accessed in 10/19.

<sup>1</sup> [Australia State of Environment: Marine Environment](#)

<sup>2</sup> [Seafish.org: Aquaculture](#)

<sup>3</sup> [ABARES, Employment – Fast Facts](#)

<sup>4</sup> [Stockhead: These aquaculture stocks are underwater but could be a good catch.](#)

<sup>5</sup> [ABARES: Snapshot of Australia's commercial fisheries and aquaculture](#)

## Understanding Options & Preparing Your Career

Aquaculture Science and Technology can lead to work in hatcheries, grow-out production, aquaculture supply companies, developing stock nutrition programs, designing water supply systems, research and development programs - or in the many aligned industries and government bodies servicing aquaculture including planning, strategy and policy development, teaching and trade.

You could be employed as a supervisor, technical manager or chief operations manager in pearl cultivation, or producing luxury foods such as oysters, prawns and finfish, or pursue research with organisations such as CSIRO developing resilient species with more immunity to disease and climate heating, or take up freelance consulting work for smaller organisations that do not keep a full time specialist.

Check [Rural Skills Australia](#) and [Business Queensland \(aquaculture\)](#) for further information on pathways in aquaculture.

Graduates may choose to undertake postgraduate study in order to specialise in a particular area of interest within their discipline (e.g. genetics) or pursue further studies in an area outside of science.

Over 800 [JCU Alumni](#) listed on LinkedIn have "aquaculture" included in their profiles. The top 20 employers include a number of universities, Australian Institute of Marine Science, Australian Government Department of Agriculture and Water Resources, NOAA (National Oceanic & Atmospheric Administration), Tassal Operations, Department of Fisheries Western Australia, CSIRO, Department of Agriculture and Fisheries (Queensland), Pacific Bio/MBD Energy (bioremediation, wastewater treatment with algae, astaxanthin production and nutraceuticals), Institute of Marine Research (IMR) Norway, NSW Department of Planning, Industry and Environment, Cawthron Institute. (Retrieved 11 October 2019)

Take time to review career paths of JCU alumni, note the organisations and positions that led them where they are now, the professional groups they have joined on LinkedIn and consider inviting them to connect and ask them some questions about their career progression and what made them successful.

To understand current demand areas and the scope of roles available, tasks involved, knowledge and skills sought by employers, search weekly current vacancies in the following positions for future reference. You may be able to apply for or negotiate with some of these employers, skill development opportunities before graduation, such as farm work, vacation work and internships.

- [Aquaculture Talent](#)
- [Work in Aquaculture](#)
- [Marine Education Society of Australasia Job Board](#)
- [World Aquaculture Society](#)
- [World Fishing and Aquaculture](#)
- [Jobs in the Tuna Industry](#)
- [Seafood Jobs \(Tasmania\)](#)
- [Seafood Jobs \(SA\)](#)

- [Australian Government Department of Agriculture](#)
- [Australian Government Australian Fisheries Management Authority](#)
- [Queensland Government Department of Agriculture and Fisheries](#)
- [LinkedIn Jobs](#)
- [Seek.com.au](#)
- [Seafood Australia: Directory](#)

## Stand out: Gain Skills & Experience While at Uni

Develop your [Career Action Plan](#).

While your course will provide you with the professional knowledge and skills, be proactive, make a plan and work towards filling any skill, knowledge or experience gaps you identify based on your research of job adverts (as explained above), so that you are competitive when entering the graduate labour market.

Your time at the university could be turned into a streak of deliberate skill development exercises. Some activities do not require any previous experience, e.g. joining a [student club](#) and teams within (projects, events, campaigns, managing the club and its finances, recruiting new members, managing the Facebook page, etc.). Student clubs are a great way to start building experience and confidence. You could also participate in the [Mentor Program](#) to develop your consulting and leadership skills first as a mentee and later as a mentor. Another great opportunity to develop teamwork and cross-disciplinary collaboration, leadership, project management and communication skills including presenting and selling your solutions to the client (pitching) are [student competitions](#) (e.g. *Thought for Food Challenge*, *Ideas for Action*, *Go Green in the City*, *ClimateLaunchpad*, *Famelab*, *Top100 Future Leaders Competition* etc.). Participation in those competitions is proof to employers that you have enterprising skills (identifying problems and taking initiative to use your skills and networks to address them). If you develop a taste for entrepreneurship and want to find out more you might like to contact:

- [iNQ](#)
- [JCU Connect](#)
- [Hatch](#)

Undertaking a [Study Abroad](#) semester included in your study, for example in the Asian Aquaculture hub Singapore, where JCU has an established campus, could be a great way to develop international industry networks, your global acumen, cultural sensitivity, resilience and adaptability.

Volunteering in a [general](#) or an environmental role provides an opportunity to give back to the community, develop work skills and networks. Opportunities can be sourced from:

- [Australian Marine Parks](#)
- [Redmap](#)
- [Reef HQ Aquarium](#)
- [Wet Tropics Management Authority](#)
- [Conservation Volunteers](#)
- [Australian Wildlife Conservancy](#)
- [Seek Volunteer](#)
- [Volunteering North Queensland](#)
- [Townsville City Council Community Directory](#)
- [Cairns City Council Community Directory](#)
- [Orpheus Island Research Station](#)
- [JCU TropWATER](#)

Engaging in a [part time job](#) and [mapping out the transferable skills](#) you develop would also be highly regarded by future employers.

You may be able to engage in a [placement subject](#) as part of your study that could give you an opportunity to get a taste of working in your industry.

## Build Your Professional Networks

Building your networks will increase your knowledge of your profession, grow your reputation with potential future employers and help you identify opportunities. Employers prefer to recruit someone they know or have met so take advantage of every opportunity to meet professionals.

**Attend Key Events** such as the

- [Annual JCU Careers Fair](#)
- [JCU TESS Seminars](#)
- [JCU Market Day](#)
- Industry Panels
- Information Sessions advertised through the [Career Hub](#).

For further ideas check the [Connecting with Professionals](#) page on our website.

You are encouraged to investigate relevant Professional Associations and Peak Bodies to gain greater awareness of developments and opportunities within your future industry area. A number of Professional Associations offer discounted membership fees to students.

The benefits include access to industry news and trends, career opportunities, networking events, mentoring programs, online learning, conferences and other professional development opportunities. Membership sends a clear signal to employers about commitment to your future profession and ongoing professional development.

- [World Aquaculture Society](#)
- [Australian Marine Sciences Association](#)
- [Australian Society for Fish Biology](#)
- [Aquaculture associations in Australia: directory](#)

## Network via Social Media

Social media is a key way to connect with your profession and hear of future opportunities. Careful use of LinkedIn, Facebook, and Twitter will expand your networks and may lead to job opportunities. Social media is widely used by employers to promote job opportunities, recruit staff and background-check job applicants.

You need to ensure you [maintain a professional online presence](#).

## Useful links

Browse a variety of aquaculture and fisheries related websites.

- [ALife: video interviews](#)
- [Business Queensland: Aquaculture](#)
- [CSIRO Aquaculture](#)
- [Fish.gov.au](#)
- [Fishes of Australia](#)
- [Fisheries Research and Development Corporation](#)
- [Linking careers research and training – a pilot for the seafood industry \(Report\)](#)
- [Marine Education Society of AU](#)
- [Moana New Zealand](#)
- [National Aquaculture Statement](#)
- [NT Industries: Fishing and Aquaculture report](#)
- [Ocean Watch Australia](#)
- [Queensland Seafood Industry](#)
- [Rural Skills Australia](#)
- [Seafood New Zealand](#)
- [Seafood Industry Directory](#)
- [Women in Seafood Australasia](#)