

AQUACULTURE AND FISHERIES



Australian Government
Australian Trade Commission





DISCLAIMER

Austrade does not endorse or guarantee the performance or suitability of any introduced party or accept liability for the accuracy or usefulness of any information contained in this Report. Please use commercial discretion to assess the suitability of any business introduction or goods and services offered when assessing your business needs. Austrade does not accept liability for any loss associated with the use of any information and any reliance is entirely at the user's discretion.

©Commonwealth of Australia 2015

This work is copyright. Apart from any use as permitted under the Copyright Act 1968, no part may be reproduced by any process without prior written permission from the Commonwealth, available through the Australian Trade Commission. Requests and inquiries concerning reproduction and rights should be addressed to the Marketing Manager, Austrade, GPO Box 5301, Sydney NSW 2001 or by email to Marketing-Comms-Helpline@austrade.gov.au

Publication date: January 2015



**SAFE
HIGH QUALITY
SUSTAINABLE**

INTRODUCTION

INDUSTRY OVERVIEW

INDUSTRY STRENGTHS

FURTHER
INFORMATION

Australia has earned a worldwide reputation as a supplier of safe, high quality seafood, produced using environmentally sustainable practices in wild-catch fishing and aquaculture.

Over recent years, world seafood consumption has risen and overall production has increased. However, wild-caught production has remained stable, suggesting that wild-catch fisheries have reached their potential. Aquaculture has therefore become increasingly important in meeting local and global demand for seafood.

In addition to high quality wild-caught and farmed production, Australia offers the latest technology and processes, sophisticated management and modern catching regimes, world-class harvest and post-harvest technologies and innovations.

Australian aquaculture and fisheries products and expertise are in international demand.

This industry capability statement provides an overview of Australian capability in aquaculture and fisheries management, including areas of specialist expertise.

Talk to your local Austrade representative for more tailored advice and information about connecting and partnering with the Australian aquaculture and fisheries sector.



INTRODUCTION

› INDUSTRY OVERVIEW

INDUSTRY STRENGTHS

FURTHER INFORMATION

Australia has the world's third largest fishing zone, with a coastline spanning approximately 60 000km, spread over a jurisdiction of 14 million square km.

Australia's marine environment includes all the world's five ocean climate zones: equatorial, tropical, sub-tropical, temperate, sub-polar and polar.^{1,2}

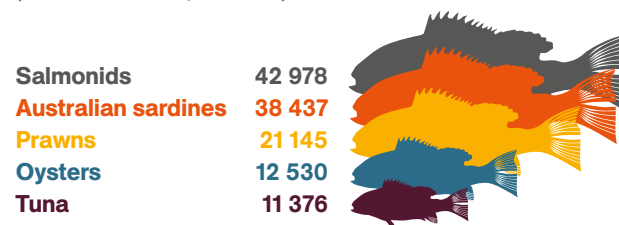
Australian waters contain over 3 000 known species of fish and at least an equal number of crustaceans and molluscs. Only about 10 per cent of these are commercially fished.³

The commercial fishing and aquaculture industry is an important primary industry in Australia, generating A\$2.4 billion annually and employing around 10 600 people (7 000 directly and 3 600 indirectly).⁴

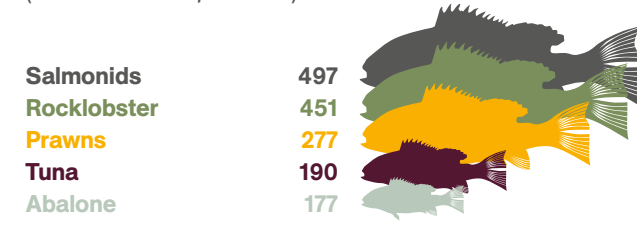
In 2012-2013, aquaculture comprised 43 per cent of gross value and 35 per cent of the volume of Australian fisheries production. Farmed salmonids were the largest aquaculture species group produced, and also the most valuable fisheries product in Australia.⁴

Australian fisheries production 2012-2013 by volume and value⁴

Top five, by volume - tonnes (wild-catch and aquaculture)



Top five, by value - A\$ million (wild-catch and aquaculture)



* Does not include the value of Victorian aquaculture abalone production.

INTRODUCTION

› **INDUSTRY OVERVIEW**

INDUSTRY STRENGTHS

FURTHER
INFORMATION

Through a combination of careful fisheries management and modern aquaculture techniques, the Australian fishing industry, government organisations, scientists and other user groups are responding to the challenge of growing a profitable and competitive fishing industry while protecting the long-term future of Australia's marine ecosystem.

SEAFOOD PRODUCTION AND EXPORTS

Australian commercial fisheries are very diverse, operating from estuaries and bays, across the continental shelf to oceanic waters and, in some cases, on to the high seas. A wide range of species are caught, including scallops, prawns, sea urchins and squid, coastal fish such as whiting and flathead, reef fish such as coral trout, and oceanic Patagonian toothfish, tuna and billfish.

Fisheries production focuses on high-value export species such as rocklobsters, prawns, tuna, salmon and abalone. Australian fisheries also supply fresh product for local and domestic markets.⁵

Australia is one of the world's leading producers of wild-caught abalone and rocklobster. Hong Kong, Vietnam, Japan, China and the United States are Australia's major seafood export markets.⁶

Baramundi



INTRODUCTION

INDUSTRY OVERVIEW

› **INDUSTRY STRENGTHS**

FURTHER
INFORMATION

SUSTAINABLE FISHERIES MANAGEMENT

Australia is committed to supporting sustainable fisheries and protecting its marine environment. Ensuring that stocks are fished at a sustainable level, and monitoring the status of key species, is an industry priority. A 2014 government report found that 88 per cent of the Australian catch came from sustainable stocks, 2.1 per cent from transitional/depleting stocks, 4.9 per cent from overfished stocks, and 4.6 per cent from undefined stocks.⁵

TRAINING AND STANDARDS

Australia's Seafood Industry Training Package (SITP) is the basis of vocational education and training for the seafood industry in Australia. It covers the industry sectors of Aquaculture, Fishing Operations, Seafood Processing, Fisheries Compliance and Seafood Sales and Distribution.

SITP incorporates all commercial activities conducted in or from Australia concerned with harvesting, farming, culturing, processing, storing, transporting, marketing or selling fish and seafood, as well as fish and seafood products. The skills and knowledge required to undertake work in the industry are represented in competency standards for the four sectors of the seafood industry.⁷

The Australian fishing industry is one of only five in Australia which has an approved Standard Development Organisation recognised by Standards Australia. So far one standard has been developed: AS SSA 5300 - Australian Fish Names Standard.

fishnames.com.au

This is a world-first initiative that aims to eliminate confusion on fish names at every stage from the time of catch through to consumers. An additional Retail Fish Names Accreditation has been developed, aligned to the fish names system, and work has started on a Responsible Fishing Standard.

WILD, PREMIUM AND PRISTINE FISHERIES PRODUCTS

Rocklobsters

Australia exports two key rocklobster varieties: the western rocklobster and southern rocklobster. The former is harvested in Western Australia and the latter mainly in South Australia and Tasmania. Western rocklobsters have historically accounted for about 60 per cent of the total value of Australian rocklobster production, but this is giving way to an increase in southern rocklobster varieties.

INTRODUCTION
INDUSTRY OVERVIEW
› **INDUSTRY STRENGTHS**
FURTHER INFORMATION

Abalone

Australia exports over 60 per cent of its abalone, mainly to Hong Kong, China and Japan. The abalone exported are primarily greenlip and blacklip varieties which are both farmed and wild-caught. In volume terms, Tasmania accounted for 55 per cent of Australia's total abalone production and is one of the largest abalone fisheries in the world. Besides Tasmania, abalone is primarily harvested in Victoria and South Australia.

Tuna

Approximately three-quarters of Australia's tuna production is exported, mostly to the Japanese sashimi market and the United States, but increasingly to Thailand and the South Pacific. The majority of wild-caught tuna comes from the Eastern Tuna and Billfish Fishery (ETBF), which extends from Cape York at the northern tip of Queensland along the east coast to the Victoria-South Australia border, including waters around Tasmania. Yellowfin and bigeye tuna production from the ETBF was valued at about A\$20 million in 2012-2013.⁸

AQUACULTURE AND FARMED PRODUCTS

Aquaculture is a steadily growing sector of the Australian fishing industry. The increasing demand for Australian native species and the proximity to Asia, together with internationally recognised seafood quality and standards, means Australian aquaculture is competitively positioned to deliver high value aquaculture products.

Most of the value of Australian aquaculture production comes from high-value species such as pearls, salmonids and tuna, but over forty species are commercially produced in Australia. The top five aquaculture species groups, in terms of production value, are salmonids, tuna, pearl oysters, prawns and edible oysters.⁹

In 2012-2013, the gross value of aquaculture production (including Southern Bluefin tuna wild catch input to the South Australian tuna farming sector) stood at A\$1 billion and accounted for 43 per cent of the gross value of Australian fisheries production. The volume of aquaculture production was 80 066 tonnes, making up 42 per cent of total Australian fisheries production.⁴

Farmed salmon

Farmed salmonids continue to be the largest aquaculture species group produced, and also the most valuable fisheries product in Australia. In 2012-13, the value of farmed salmonids was A\$497 million. Salmonids accounted for 48 per cent of the total value of Australian aquaculture production and 21 per cent of the total value of fisheries production.⁴

Other key farmed and edible aquaculture exports

In addition to salmonid aquaculture, Australia is a major producer of a variety of both freshwater and saltwater products, cultivated and harvested in environments that range from river systems and estuaries in sub-tropical climates through to more temperate waters off the Australian coast.

Major exports of farmed fisheries products include Southern Bluefin Tuna (which are caught and fed, rather than being raised from hatcheries), oysters, prawns and barramundi.

INTRODUCTION

INDUSTRY OVERVIEW

› **INDUSTRY STRENGTHS**

FURTHER
INFORMATION

AQUACULTURE AND AQUARIUM SUPPLY

In addition to aquaculture production, Australia has substantial capabilities and expertise in aquaculture (including aquaponics) consulting, equipment and technology, marketing, research and development.

Australian companies have experience in designing and producing systems for marine environments (e.g. sea ranching, surface lines, subsurface lines, racks, sea cage culture, land-based marine ponds and tanks and hatcheries), and freshwater environments such as pond and tank systems.

Australia has extensive capabilities in recirculating aquaculture systems and their use in production of fin fish such as barramundi, Murray Cod and sea bass as well as in research facilities.¹⁰

Worldwide, the keeping of ornamental and pet fish in aquaria is a popular hobby. The ornamental fish industry in Australia is estimated to be worth A\$350 million annually. Australia's unique river systems, estuaries and marine environments allow for a niche export sector supplying ornamental fish and plant species to aquaria around the world.

Australian firms can deliver across the value chain from the concept and design of systems, project management, support equipment and facilities, through to the supply of fingerlings and ornamental plant and fish species for aquarium environments.

Talk to your local Austrade representative for more information about connecting and partnering with Australian companies in the aquaculture industry.



AQ1 lowers production costs through precision feeding

Tasmanian-based aquaculture engineering company AQ1 Systems has developed an intelligent process for feeding shrimp and fish through sound detection.

At the heart of the system is a hydrophone, or underwater microphone, that monitors the sound of feeding. The passive acoustic sensing technology has embedded algorithms that measure hunger levels of the shrimp or fish and dispense a precise amount of food to match their appetite.

These algorithms feed shrimp and fish by measuring the sound of feeding intensity, then using the information to match feed delivery with appetite.

The research that went into developing this system, the SF200, was originally conducted in Australia and was further developed in Asia and Latin America.

AQ1 recently released the latest SF200 model to the global shrimp-farming sector and is experiencing solid uptake of the technology, with the system in use in 13 countries by a majority of the world's largest shrimp farmers.

'The system provides the farmer with an efficiency improvement of about 20 to 60 per cent,' AQ1 Director Peter Blyth said.

Because prawns eat frequently throughout the day and night, any system that aligns food delivery with their appetite saves money. In addition, eliminating the amount of uneaten feed in a pond keeps water quality as high as possible, optimising the prawns' average daily growth rate.

The SF200 can also monitor dissolved oxygen levels, water temperature and rainfall, all important factors in determining feed intake and growth rates.

AQ1 has offices in Latin America, Thailand and Japan, as well as agents elsewhere to support its technologies.

'We've worked with Austrade in Thailand and Indonesia to get a presence in those markets, and we've entered Viet Nam recently,' AQ1 Director Peter Blyth said.

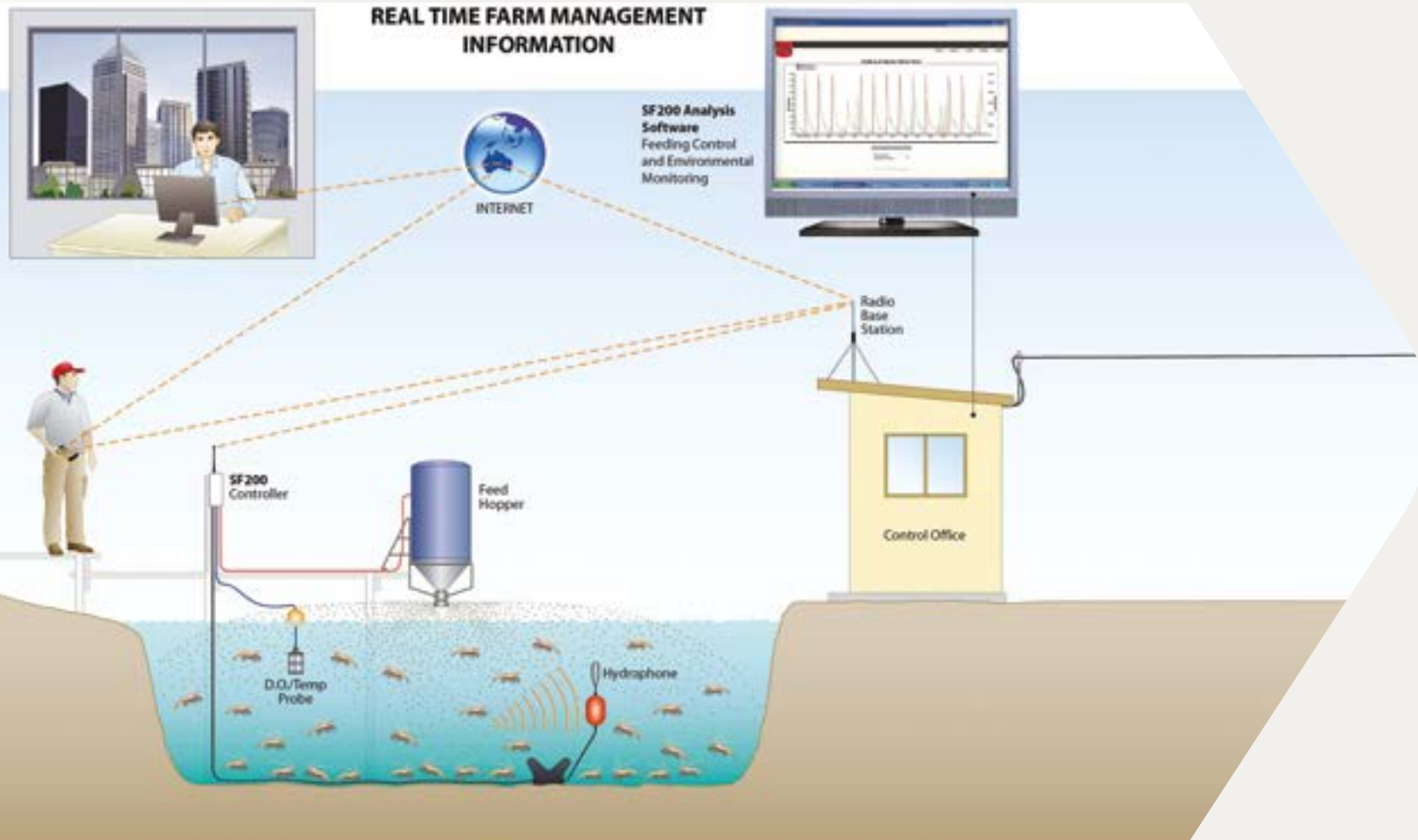
Mr Blyth added that AQ1 is also active in Saudi Arabia, Latin America and elsewhere.

'We're now starting to get a lot of enquiries out of India,' he said.

Established in 1993, AQ1 specialises in research, development, manufacturing and marketing of sensor-based feeding control systems as well as underwater sizing systems for the aquaculture industry.

'The system provides the farmer with an efficiency improvement of about 20 to 60 per cent'

- Peter Blyth, AQ1 Systems Director



AQ1's latest technology precisely matches feed dispensed with hunger levels of the shrimp or fish, saving money and optimising growth rates.
Image courtesy of AQ1 Systems

MBD Energy develops win-win wastewater treatment method

Bioremediation company MBD Energy is developing low-cost processes that clean waste from a range of industries, including aquaculture, with the option of significantly offsetting the cost through the commercial production of algae.

‘Our business model is simple – partner with leading industry companies, clean their waste cheaper than other alternatives and where commercial, develop products that we can sell for additional revenue,’ said Andrew Lawson, MBD Energy Managing Director.

The Melbourne-based company has invested heavily in the research and development (R&D) of water bioremediation solutions for aquaculture and other industries, investigating a wide range of environmentally harmful contaminants, including nutrients and heavy metals.

Through a six-year investment program, MBD has built a pilot plant test facility at Australia’s James Cook University, a

recognised world leader in both micro and macro algae R&D.

At Pacific Reef Fisheries, a major producer of black tiger prawns in the Australian state of Queensland, MBD has been focusing on R&D activities that restore nitrogen and phosphorous levels of intake water to levels found in the ocean before returning the water to its source.

‘We begin by identifying the most appropriate bioremediation solution for any given pollution challenge. Typical projects may utilise select macro algae, micro algae or bacteria – or combinations of these,’ Mr Lawson said.

‘Depending on the contamination type, location and commercial considerations, by-product algal biomass may be suited to the upstream production of fuels, fertilisers, food and animal feed,’ he said.

Following a successful demonstration project in August 2014, a joint venture between MBD Energy and China’s MO National Energy Environment

Engineering Company has identified a pipeline of large-scale environmental clean-up projects in China.

The joint venture was set up to clean the water in Shandong Province’s ceremonial Daming Lake with the objective of demonstrating MBD’s technology to China’s Central and Provincial Governments.

The two companies will deploy MBD’s low-cost bioremediation system throughout Shandong Province, which controls 80 per cent of China’s existing coastal aquaculture farms.

‘With 80 per cent of the world’s farmed fish production from China, the seafood industry represents a significant and growing opportunity for aquatic feeds and nutrition,’ Mr Lawson said.

Coastal provinces like Shandong and Guangdong are the major exporters of aquatic products which are largely exported to the US, Japan and South Korea.

Demand is forecast to grow 10 to 30 per cent a year as rising living standards in China and elsewhere in Asia boost the consumption of high-protein aquatic products.

‘Our business model is simple – partner with leading industry companies, clean their waste cheaper than other alternatives and where commercial, develop products that we can sell for additional revenue’

- Andrew Lawson, MBD Energy Managing Director





A scallop farm in China's Shandong province

Sri Lanka's Ocean Pick selects certified barramundi fingerlings from Robarra

When Ocean Pick Lanka Pvt Ltd, based on the eastern coast of Sri Lanka, needed barramundi fingerlings, it turned to Australia's Robarra Broodstock Sanctuary and Hatchery.

Robarra, founded 20 years ago as WBA Hatcheries Pty Ltd in South Australia, provides barramundi fingerlings reared from certified disease-free broodstock.

'Our long-term, eighth-generation breeding programme, coupled with selective culling, now provide us with world-class certified Barramundi broodstock,' Robarra Chief Executive Arthur Poligerinos said.

Robarra's aquaculture farm is located near the rural village of Robe in South Australia.

'Each Robarra barramundi is raised in the warm, pristine spring water flowing from an aquifer hundreds of metres beneath the earth's surface,' Mr Poligerinos said.

Robarra's farming standards surpass the rigorous requirements set by the Australian Government Department of Primary Industry and the Australian Barramundi Farmers Certification Program, he added.

Ocean Pick, a Sri Lankan and Scottish joint venture, recently imported 65,000 Australian-origin barramundi fingerlings from Robarra.

Ocean Pick Lanka began operations about 18 months ago by growing fin-fish at their aquaculture farm. Shameel Javadh, the Australian Trade Commission's Country Manager for Sri Lanka, visited last year in Ocean Pick's early days to explore potential collaboration with Australia in the areas of equipment and technology transfer.

Initial discussions led to a site visit by TradeStart partner the Department for Manufacturing, Innovation, Trade, Resources and Energy. The purpose of

the visit was to inspect Ocean Pick's facilities in Sri Lanka and introduce them to the South Australian barramundi supplier and technical services company, Robarra.

Following from the site visit, Mr Javadh led a focused Sri Lankan business and government delegation, including the Head of Colombo's National Aquatic Resources Research and Development Agency, to the World Aquaculture Conference in Adelaide in June to meet Australian aquaculture companies, including Robarra.

Ocean Pick Lanka plans to visit Robarra for further collaboration and commercial shipments to develop Sri Lanka's east coast as a sustainable aquaculture hub for farming Australian barramundi and using skills and services in aquaculture farming.

This commercial outcome in Sri Lanka paves the way for more opportunities for sustainable fisheries management in this South Asian nation, which is keen to address food security and market demand for more protein through Australia's clean, safe aquaculture products.

'Our long-term, eighth-generation breeding programme, coupled with selective culling, now provide us with world-class certified Barramundi broodstock'

- Arthur Poligerinos, Robarra Chief Executive





Robarra provides barramundi fingerlings reared from certified disease-free broodstock.
Image courtesy of Robarra

INTRODUCTION

INDUSTRY OVERVIEW

INDUSTRY STRENGTHS

› FURTHER INFORMATION

The following are some of the government and industry bodies involved in the Australian fisheries and aquaculture sector.

Contact your local Austrade representative about connecting and partnering with the Australian fisheries and aquaculture industry.

austrade.gov.au

Australian Fisheries Management Authority (AFMA) is responsible for the management of Commonwealth fisheries. **afma.gov.au**

Commonwealth Fisheries Association (CFA) represents the commercial fishing industry in Commonwealth regulated fisheries. **comfish.com.au**

Department of Agriculture is the Australian Government department responsible for developing and implementing policies and programs that ensure Australia's fisheries and aquaculture industry remains competitive, profitable and sustainable. **agriculture.gov.au/fisheries**

Fisheries Research and Development Corporation (FRDC) is a co-funded partnership between the Australian

Government and the fishing industry. Its role is to plan and invest in fisheries research, development and extension activities in Australia. **frdc.com.au**

National Aquaculture Council is the main body representing the Australian aquaculture industry at the national level. **aquaculture.org.au/introduction**

Seafood Experience Australia (SEA) represents the seafood industry in marketing, promotion and knowledge broking. **australianseafood.com.au**

REFERENCES

1. Geoscience Australia **ga.gov.au/education/geoscience-basics/dimensions/coastline-lengths**
2. Geoscience Australia **ga.gov.au/ausgeonews/ausgeonews201006/biodiversity**
3. Department of Agriculture **agriculture.gov.au/fisheries/domestic**
4. Australian Bureau of Agricultural and Resources Economics and Sciences, 'Australian fisheries and aquaculture statistics 2013', November 2014 **agriculture.gov.au/abares/publications**
5. Fisheries Research and Development Corporation, 'Status of Key Australian Fish Stocks Reports 2014' **agriculture.gov.au/abares/publications**
6. Australian Bureau of Agricultural and Resources Economics and Sciences, 'Australian fisheries and aquaculture statistics 2013', November 2014 **agriculture.gov.au/abares/publications**
7. Agrifood Skills Australia **agrifoodskills.net.au**
8. Australian Bureau of Agricultural and Resource Economics and Sciences, 'Fishery status reports 2013-14', October 2014. **agriculture.gov.au/abares/publications**
9. Department of Agriculture **agriculture.gov.au/fisheries/aquaculture**
10. Queensland Government Business and Industry Portal **business.qld.gov.au/industry/fisheries/aquaculture/site-selection-and-production/aquaculture-production-systems/recirculating-aquaculture-system-characteristics**



The Australian Trade Commission – Austrade – is the Australian Government’s trade, investment and education promotion agency.

Through a global network of offices, Austrade assists Australian companies to grow their international business, attracts productive foreign direct investment into Australia and promotes Australia’s education sector internationally.

Austrade helps companies around the world to source Australian goods and services. We can help you reduce the time, risk and cost involved in sourcing suppliers by:

- helping you identify and contact Australian suppliers
- providing insight on Australian capabilities
- alerting you to the latest products and services out of Australia to help you grow your business.

Austrade partners the strengths of Australian businesses with the needs of international markets. We can open the door to a world of opportunities for your business.

W www.austrade.gov.au
E info@austrade.gov.au



austrade.gov.au



Australian Government
Australian Trade Commission

