

# Aquaculture and Wild Catch

Australia's reputation for high quality seafood is underpinned by a dedicated and skilled aquaculture and wild catch workforce. From the salmon farms of Tasmania, to crocodiles in northern Australia, to the commercial fishing operations in almost every coastal town, the industry is widespread across Australia.

The Australian aquaculture and wild catch industry is recognised as among the best-managed industries globally, due to sustainable methods and rigorous environmental and biosecurity practices. These practices are constantly evolving and improving through scientific research, so that Australian seafood can continue to be enjoyed for generations to come. Collaboration with Indigenous communities is an important focus, allowing traditional techniques to inform contemporary work practices and Indigenous Communities to access training and business opportunities.

The national skills standards and qualifications for this industry are overseen by the Aquaculture and Wild Catch Industry Reference Committee (IRC).

Employs almost

19,000 people

Over

6,750 businesses

Over

\$9.1 billion in revenue

Contributes

\$1.8 billion

to Gross Domestic Product

(Source: IBISWorld Industry Wizard, 2020)

Between 2020–25

Australian fisheries and aquaculture production value is projected to rise by 2.4% to \$3.41 billion

(Source: Mobsby, D, Steven, AH and Curtotti, R, 2020, Australian fisheries and aquaculture outlook 2020, ABARES, Canberra)



# Skills Forecast

## Annual update and proposed projects for 2020-2021

This year's Annual Update to the IRC Skills Forecast and Proposed Schedule of Work (Skills Forecast) proposed one key project for 2020 – 2021 and identified specific changes to the industry environment.

The Aquaculture and Wild Catch Industry has been significantly impacted by the various weather, bushfire and coronavirus pandemic events of the last 12 months. This year's Annual Update to the Skills Forecast recognised the substantial work undertaken in 2018-19 to update skills standards and qualifications with essential skills for biosecurity, regulation and compliance. The IRC believes this work will provide support over the coming months, both directly through training and by assisting employers to complete analysis of skills which will provide fundamental support.

The updated skills standards and qualifications were published in June 2019, so the IRC expects feedback on the implementation of the updated training package over the next 12 months and will monitor and address issues as they arise. The IRC also expects the current and recent weather, bushfire and pandemic events to give rise to new issues that will need to be addressed.

The IRC also recognises the importance of Indigenous involvement in the development of all aspects of the aquaculture and wild catch industries. They remain committed to finding better ways of assisting Indigenous communities in creating and maintaining commercial operations, and for ensuring there is accessible training for current and future workers.

Chad and Troy unload Southern Bluefin Tuna from Australian Southern Bluefin Tuna Industry Association



## Proposed Project for 2020-21

### Indigenous Consultation for Annual Updates and Future Projects

A research and development project is proposed to improve long-term skills outcomes for Indigenous participants in the Australian workforce and the vocational education and training (VET) system.

In July 2020, the new National Agreement on Closing the Gap was released with the agreement of Aboriginal and Islander Elders and leaders and all Australian governments. In part, the agreement notes:

**“This Agreement also stems from the belief that when Aboriginal and Torres Strait Islander people have a genuine say in the design and delivery of services that affect them, better life outcomes are achieved. It recognises that structural change in the way Governments work with Aboriginal and Torres Strait Islander people is needed to close the gap.**

**“The views and expertise of Aboriginal and Torres Strait Islander people, including Elders, Traditional Owners and Native Title holders, communities and organisations will continue to provide central guidance to the Coalition of Peaks and Australian Governments throughout the life of this Agreement.”**

This project seeks the opportunity to implement these principles in national qualifications and skills standards. The aim of the project is to identify current and future projects that could expand productivity, employment and economic development opportunities, open new and emerging markets, improve training and job outcomes and upgrade industry skills in negotiations and partnerships with Indigenous business and community organisations. It is proposed that this will be a joint project, overseen by both the Aquaculture and Wild Catch IRC and the Amenity Horticulture, Landscaping, and Conservation and Land management IRC. Both IRCs acknowledge the importance of Aboriginal and Torres Strait Islander involvement in the development of all aspects of their industries.

**This project is still under consideration by the Australian Industry and Skills Committee (AISC).**

# Projects

## Project work between 2019-20

---

Outlined over the following pages is a summary of projects Skills Impact managed between July 2019 and June 2020.

The Aquaculture and Wild Catch Industry Reference Committee (IRC) oversaw the project development, as part of their responsibility to support engagement with their industry and to ensure the projects meet stakeholder needs.

The skills standards and qualifications updated as part of the following projects were endorsed by the AISC in August 2020. They will be considered for endorsement by the State and Territory Ministers before becoming available on training.gov.au later in 2020.

## Fishtech and Aquabotics Project

New underwater technologies, such as remotely operated vehicles (ROVs), underwater drones and biosensors, are changing the way work is done in Australia's aquaculture industry. From monitoring fish health and environmental conditions, to inspecting and repairing nets, many manual job tasks can now be performed remotely. These are important advancements, improving productivity, catch sustainability, environmental control, stock and habitat welfare, and biosecurity. It is expected that these developments will affect most job roles, as uptake of these new technologies becomes more widespread, requiring updated skills in digital literacy, data, automation and environmental sustainability.

"Innovation and technological advances are changing approaches to how work tasks are being performed. This in turn is driving the industry to introduce new technology, requiring employees to be adept in utilising the tools and computer programs to drive hardware. The industry therefore needs to prepare for the future and a focus now needs to be on the development of a workforce who is strong in digital literacy." Natalie Cheeque, Group Manager People and Culture, Huon Aquaculture.

Thanks to the input of industry throughout Australia, the skills required for working with new remote technologies in the aquaculture and wild catch industries have been outlined in new and updated skills standards.

To capture these skills standards the project team went on a national journey, to speak with industry experts and organisations across the various sectors. At various worksites they were shown the skills used to perform different work tasks. They were shown how probes and sensors are used to collect environmental data, how sophisticated and remote feeding systems are used across different fish species, how ROVs are being utilised for aquatic biosecurity and video imaging, and how sensors are replacing traditional methods for monitoring environmental factors and net conditions. This project focused on current skills needed now and for the future of work in aquaculture and wild catch.

**"Technology in the seafood industry is evolving and at a quick pace, so it was important that as soon as industry identified this skills gap, the IRC responded promptly to ensure it could be addressed. We are thankful for the input of industry from around the country in describing the ways job roles have changed as a result of these new technologies,"**

Johnathon Davey, Chair of the Aquaculture and Wild Catch Industry Reference Committee.

### Key Outcomes

- Three skill sets have been developed for aquatic technology induction, aquabotics, and aquatic environmental audit.
- Nine units of competency have been developed, with a focus on the use and future use of technology in the seafood industry. These units will be incorporated as electives into existing aquaculture qualifications, in addition to being available for import to other qualifications. Some units have been developed to meet immediate needs and others are intentionally generic to future proof them and allow for new and emerging technologies to be incorporated into training. These units will be placed as electives in:
  - SFI20119 Certificate II in Aquaculture
  - SFI30119 Certificate III in Aquaculture
  - SFI40119 Certificate IV in Aquaculture
  - SFI50119 Diploma of Aquaculture
  - SFI50219 Diploma of Fisheries Compliance
- Twenty-three units of competency have been revised so that they are applicable for use in the context of remote technologies

# Underwater robotic technology is making a splash in Australia's aquaculture industry

Large companies like Tassal and Huon Aquaculture are using Remotely Operated Vehicles (ROVs), drones and biosensors to perform tasks that were previously done manually. Fish are being fed by the push of a button from a control centre in Tasmania. Workers are monitoring the health and behaviour of fish and their environments in real time via ultra-HD screens and biosensors. ROVs are being used to inspect, repair and clean nets and to carry out environmental compliance monitoring.

These are important advancements, making for more efficient monitoring, improved welfare practices and more thorough biosecurity measures. When paired with decreasing costs of equipment, the uptake of these new technologies across industry is becoming more likely. This means workers will need further expertise in operating new equipment, understanding scientific information and managing compliance.

**“The training documents developed as a part of this project will assist our workers to improve their skill level and work with greater awareness and knowledge.”**

Peter Cheesman, WHS Induction and Training Coordinator Farming

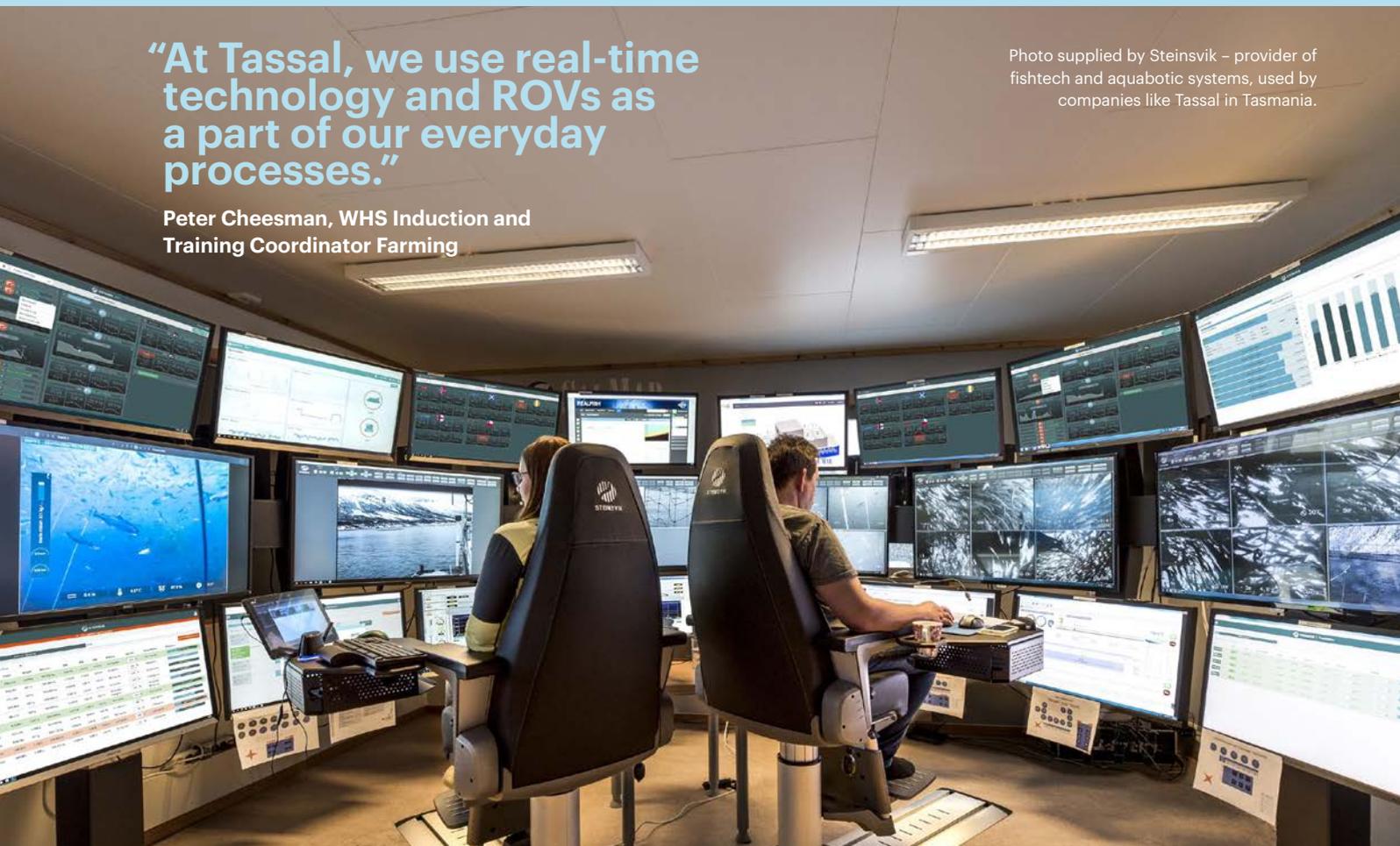
While training until now has occurred on the job, industry would like nationally recognised training that can support and recognise these skills across the board.

“The ability to work with leading edge training organisations and access these programs will greatly enhance our ability to receive industry leading training. Training in emerging technologies such as real-time systems for ponds, and better management of feeding and water quality in ponds will enable Pacific Reef Fisheries to be a leader in global prawn production.” Bastien Finet, Technical Manager, Pacific Reef Fisheries Technologies

**“At Tassal, we use real-time technology and ROVs as a part of our everyday processes.”**

Peter Cheesman, WHS Induction and Training Coordinator Farming

Photo supplied by Steinsvik – provider of fishtech and aquabotic systems, used by companies like Tassal in Tasmania.



## Work with Crocodiles Project

Crocodile farm workers, park rangers, zoo employees and licenced individuals all need the same foundational skills to work with crocodiles and their eggs in ways that are safe and sustainable. This requires knowledge of diseases, biosecurity management, and the humane treatment of crocodiles, as well as the ability to perform risk assessment and an understanding of cultural sensitivities relating to Indigenous communities. Additional expertise is also needed depending on whether animals are in the wild or in a controlled environment.

Working with crocodiles is a complex field, overlapping a number of sectors including conservation and land management, animal care and management, and aquaculture. It is also closely tied to Indigenous communities, who have respected crocodiles as entities and a source of food for thousands of years. Crocodile farming and conservation utilises Indigenous knowledge and provide economic benefits for Traditional Owners through employment and royalty payments for egg collection on their land.

Until now, only two units of competency have been available to describe the skills needed for this work. Consultation with industry throughout this project has indicated that a broader range of skills standards are required, resulting in the creation of a qualification, eight skills sets, and 11 units of competency. These new and revised skills standards aim to help support this developing industry, to promote its excellent international reputation and to support the remote economies and Indigenous communities working with crocodiles across Northern Australia.

“There’s a strong desire for training by community rangers who want additional skills to deal with crocodile management and safety issues. We’ll be putting the new Certificate III in Working with Crocodiles to use as soon as our RTO gets it on scope.” Dr. Adam Britton, Big Gecko Crocodilian Research, Charles Darwin University, NT

## Key Outcomes

- Certificate III in Working with Crocodiles developed.
- Eight skill sets developed, including: Introduction to Working with Crocodiles, Care for Crocodiles in a Controlled Environment, Hatchling and Juvenile Crocodile Care, Crocodile Egg Harvesting, Crocodile Relocation, Crocodile Incident, Crocodile Survey, and Crocodile Public Relations.
- Eleven units of competency were developed with a focus on working with crocodiles and working in crocodile habitats. All of these are featured as core and elective units in the Certificate III in Working with Crocodiles. Some will also be included in elective lists for qualifications in the Conservation and Land Management and Animal Care and Management industries:
  - Certificate III in Conservation Land Management
    - SFICRO305 Prepare to work with crocodiles
    - SFICRO306 Work safely in crocodile habitats
    - SFICRO302 Conduct crocodile surveys
  - Certificate IV in Conservation Land Management
    - SFICRO401 Manage minor crocodile incidents in the wild
    - SFICRO403 Capture, transport and release crocodiles
  - Certificate III in Wildlife and Exhibited Animal Care
    - SFICRO303 Care for Crocodiles over 1.2 metres in a controlled environment
- Two existing units of competency are proposed for deletion – SFIAQU216 Work with crocodiles and SFIPRO303 Slaughter and process crocodiles – as they do not adequately address industry needs.





**Left to right:** Susie Falk, Industry Skills Standards Specialist at Skills Impact; Craig Moore, Manager of Lagoon Crocodile Farm; Anna Henderson, Industry Skills Standards Contractor for Skills Impact; Debbie Knight, Industry Support Officer at Industry Skills Advisory Council NT; Michelle Ingley-Smith, Industry Engagement Manager at Skills Impact; Dr Charlie Manolis, Chief Scientist at Wildlife Management International; and Dr Sally Isberg, Managing Director at Centre for Crocodile Research.

## Visits With Crocodile Industry Experts

**The unique nature of this crocodile project required Skills Impact to focus consultation in the northern parts of Australia (WA, NT and QLD). The project team met with many passionate industry and Indigenous people working with crocodiles. During these visits, Skills Impact observed firsthand the tasks being performed, enabling the project team to understand the unique skills and knowledge used when undertaking this work.**

The project team were invited into their operations and onto Country to observe the tasks being performed, so the unique skills and knowledge could be recorded as part of national skills standards. Along the Adelaide River they were shown some of the techniques to safely and humanely handle a crocodile. At another site visit on a crocodile farm, industry experts demonstrated the skilful methods of handling crocodile eggs in ways that do not disrupt the crocodile young. The demonstrations and conversations that took place throughout this project have been a valuable contribution towards embedding real job tasks and processes into the national skills standards and qualifications, so that the skills used to work with crocodiles can be recognised and passed on.

**“Farming any species is a responsibility,”**

says Dr Sally Isberg. “Training staff to understand that crocodile welfare is the pinnacle from where crocodile farming begins is imperative. Maximising welfare and farm production output are 100% aligned so having staff that are trained in this philosophy will ensure that animals are humanely farmed with appropriate access to food and housing requirements as well as being able to prevent and recognise disease early to reduce reliance on antibiotics. These, in turn, will increase the production output of farms and allow further expansion of this sustainable use industry with broad-reaching community benefits.”

