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# The Australian seafood industry: Workforce information and stakeholder responses

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# 1 Summary

In 2011, the Fisheries Research and Development Corporation commissioned the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) to undertake a scoping analysis of the employment, education and training data needs of the Australian seafood industry. The analysis is part of an expanded body of work that ABARES is undertaking over the period to 2013-14 under ABARES Fisheries Statistics project. One of the objectives of that project is to improve the current information about employment across the Seafood industry. This study addresses that objective and reports the findings of the scoping analysis and provides general guidance as to the datasets that need to be compiled to adequately inform the industry in its workforce decisions.

Commercial wild-catch fishers, aquaculture producers and post-harvest enterprises are one part of the wider fishing and aquaculture industry and collectively form the Australian seafood industry. The seafood industry captures commercial activities and as such also includes some non-food items such as pearls. Other parts of this broader industry include recreational fishers and associated commercial enterprises and Indigenous customary fishers. However, these are not discussed in this report.

The seafood industry is large and regionally diffuse and makes a significant contribution to Australia's economy. In 2009–10, the gross value of Australian fisheries production and exports was \$2.2 billion and \$1.2 billion, respectively. Australia was also a large importer of fisheries products, with imports in 2009–10 valued at \$1.5 billion. These figures exclude income generated by fishery product processing, and wholesale and retail activities. A number of factors affect employment, education and training in the Australian seafood industry. These include increasing competition for labour resources, significant gaps in the information base and the existence of uncertainty surrounding industry needs in relation to education and training and the number of people in the industry accessing these opportunities. In this labour market environment, the industry faces a number of challenges, including less skilled people applying for positions, a high turn-over of staff and adapting to the ageing Australian workforce.

This report highlights the information and datasets that currently exist for informing the Australian seafood industry on employment, education and training issues. This is done through:

- assessing the main attributes of the current datasets on employment, education and training in the Australian seafood industry
- assessing the workforce development needs by considering whether current employment, education and training datasets are adequate for the planning of industry workforce needs
- identifying workforce datasets that need to be further developed, collected and compiled to satisfy the needs of the seafood industry.

Accentuating labour market issues for the seafood industry is the increased difficulty in attracting suitable workers to the industry, maintaining and retaining skills within the industry and effectively utilising skills. While some of these issues are being addressed through on-the-job training, in-house training resources are likely to be stretched given the current operating environment. Significant restructuring of fisheries in recent years has led to smaller fleet sizes in many fisheries. Moreover, a number of external factors, including a high exchange rate and higher business input costs, particularly fuel, have increased the industry focus on sustaining profitability. These factors are likely to have reduced the availability of funding for training and development of staff resources.

Datasets and information on employment, education and training are available for workforce planning from various sources. The seafood industry and maritime training packages outline nationally endorsed competency standards and qualification for workers in Australia's seafood industry, and guide the delivery of training in the industry. The Australian Bureau of Statistics provides employment and education data through the national census data, the labour force survey and the survey of education and work. The Department of Education, Employment and Workplace Relations provides various websites containing employment, education and training data relevant to the seafood industry. The National Centre for Vocational Education Research conducts a number of surveys and obtains a number of collections regarding education and training programs. The Household, Income and Labour Dynamics in Australia dataset contains extensive annual information on employment, education and training. Each Australian state and territory also conducts analysis across a broad range of issues affecting their respective fisheries sectors. Many of these databases have been constructed using standard industry/occupational classifications. In many cases these classifications are too broad to capture detailed information on the seafood industry.

A number of industry characteristics affect the collection of employment, education and training datasets. Fishing seasonality, the less formal employment arrangements whereby crew are remunerated on the basis of catch, and the way the fishing industry advertises position vacancies make capturing employment-related data difficult. Workers are only intermittently employed in the industry and in periods that may not coincide with statistical data collection exercises. Also, recruitment is not commonly advertised on popular job search websites such as SEEK, MyCareer, CareerOne and Australian JobSearch, making it difficult to track changes in labour demand in the industry.

As part of the study, ABARES conducted a stakeholder survey to better understand the employment and training data needs of the Australian seafood industry. The stakeholders operate in various Australian states and territories, and include major seafood companies, industry associations, seafood wholesale markets, smaller commercial fishing and aquaculture businesses and experts on education and training. Stakeholders within the commercial fishing, aquaculture and seafood processing, sales and distribution sectors all identified common labour market issues, including the attraction and retention of young, skilled and qualified employees. Stakeholders from all three sectors expressed interest in the availability of employment data. Along with other benefits, stakeholders believed that employment data can be beneficial in mapping out skills formation strategies for the industry. Through the stakeholders' responses on the availability of education and training data, it was identified that there is a general lack of education and training data available to adequately inform the industry in making decisions for succession planning and future workforce needs.

Following the review of the current employment, education and training datasets and related information, and a review of the responses to the ABARES stakeholder survey, two major conclusions are drawn. First, it is difficult to access the available and limited datasets and information for informing workforce decisions in relation to people development in the industry. Second, there is a gap in the current information available on employment, education and training for the seafood industry in terms of coverage and reliability. Following on from this study, the analysis suggests that an industry-wide survey is needed to collect further workforce data to assist the industry to better plan for its future work force requirements.

A number of considerations are highlighted as being important in future research involving such data collection:

- The data collected need to accurately identify the labour market trends for the industry.
- Ideally, data collected will enable profiling of the workforce; for example, age and gender clusters, numbers of workers from culturally and linguistically diverse groups, numbers of workers obtained through immigrant visa schemes, and the educational attainment of workers in the industry.
- Data should be collected regularly so trends can be determined. The resulting datasets should reflect the significant seasonality that exists in the industry, and record total numbers working and full-time equivalents.
- Data on education and training need to identify the number of people participating in courses and the geographical spread of that participation. It is important that datasets not only record enrolments in specific seafood industry training courses but also completions.
- Data on the employment destinations of people who complete graduate or vocational training need to be collected. It is important to better understand where students end up working after graduation, their role/position, the duration of employment and the type of employment—full-time, part-time or casual.
- It is desirable that data relating to education and training be aligned with the classifications in the Seafood Industry Training Package to make the datasets more relevant to the industry.

## 2 Introduction

In 2011, the Fisheries Research and Development Corporation (FRDC) commissioned the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) to undertake a scoping analysis of the employment, education and training data needs of the Australian seafood industry. This study reports the findings of that analysis and provides general guidance as to the datasets that need to be compiled to adequately inform the industry in its workforce decisions.

The Australian seafood industry encompasses commercial fisheries and aquaculture producers, and the seafood processing, wholesaling and retailing sectors. As a large and regionally diffuse industry it makes a significant contribution to Australia's economy. In 2009–10, the gross value of Australian fisheries production and exports was \$2.2 billion and \$1.2 billion, respectively. Australia was also a large importer of fisheries products, with imports in 2009–10 valued at \$1.5 billion (ABARES 2011). These figures exclude income generated by domestic fishery product processing and wholesale and retail activities.

Assessing the employment, education and training data needs of the seafood industry is important, particularly in the light of increased competition for labour resources from a rapidly expanding mineral resources sector. In areas where there was alternative employment—for example, in the mineral sector or in other agriculture sectors—it is most difficult to fill industry positions with appropriately trained personnel. The expansion of the minerals sector has had additional effects; for example, pushing up accommodation and living costs in regional centres, and pricing prospective applicants out of the seafood industry.

There are significant gaps in the information base that the seafood industry can access and use to plan its future workforce requirements. For example, there are limited data available to describe the changing demographic profiles of people employed, or even aggregate employment levels across different parts of the industry. There is also significant uncertainty surrounding industry needs in relation to education and training and the number of people in the industry accessing education and training opportunities.

This report reviews existing datasets and information on employment, education and training for the seafood industry. It also provides a summary of views from stakeholders that use such information. As such, the study addresses the following objectives:

- to assess the main attributes of current data sets and information on employment, education and training for the Australian seafood industry
- to assess whether current employment, education and training data and information are adequate for the planning of industry workforce needs
- To identify the key workforce datasets (covering employment, education and training) that need to be further developed, collected and compiled for the industry.

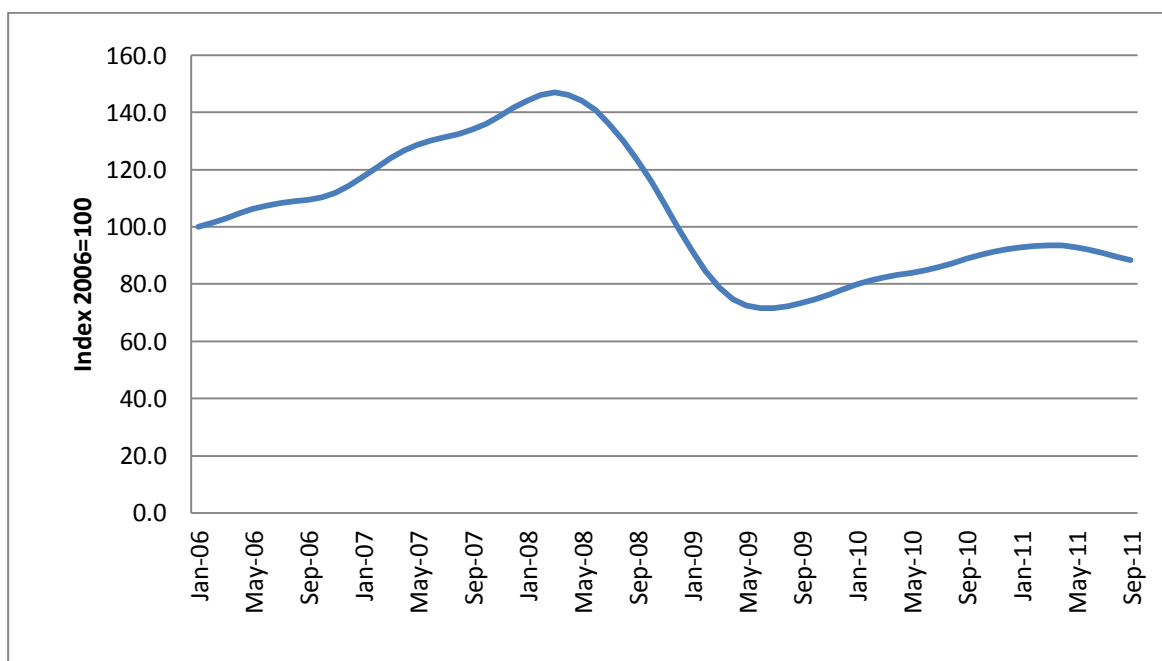
Chapter 3 presents the key features of current datasets and information on employment, education and training for the seafood industry. Chapter 4 assesses workforce development issues and data needs for the industry. Chapter 5 assesses education and training issues and data needs for the industry. Chapter 6 provides general conclusions about future employment, education and training data collection and development activities.

### 3 Information sets for informing workforce issues for the Australian seafood industry

#### Recent labour market trends

Prior to the onset of the global financial crisis in late 2008, Australia was experiencing a tight labour market (Watson 2008). The expanding Australian economy had significantly tightened the labour market, pushing unemployment to its lowest level in 30 years (ABS 2011a). While the labour market is now less tight, continued high levels of infrastructure investment in the mineral resources sector and increased levels of internet vacancies for positions across the economy indicate that access to labour resources is still highly competitive. Figure 1 provides an indication of trend movements in the Department of Education, Employment and Workplace Relations (DEEWR) Internet Vacancy Index, which tracks online advertised vacancies for the Australian labour market and for 350 occupations on a monthly basis (DEEWR 2011a). These data show that since the middle of 2009 internet vacancy rates have increased, indicating a steady tightening of the labour market.

Figure 1 Internet vacancy rate—trend movement in index



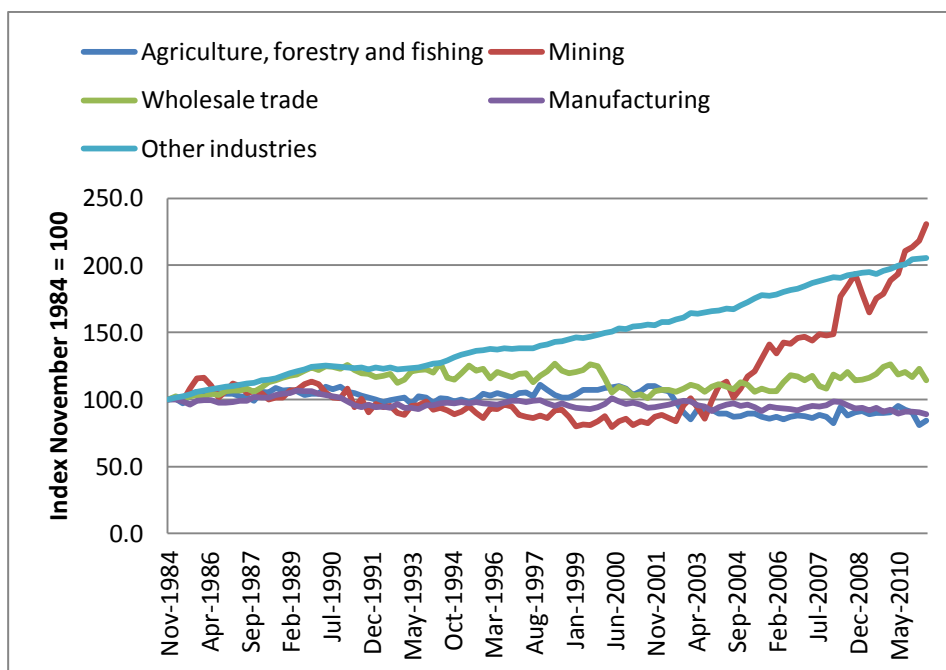
Source: Department of Education, Employment and Workplace Relations

Any tightening of the labour market will tend to accentuate labour market pressures for the seafood industry. These pressures relate to attracting workers, maintaining and retaining skills within the industry and utilising skills effectively. While some of these issues are being addressed through on-the-job training, in-house training resources are likely to be stretched given the current operating environment. Significant restructuring of fisheries in recent years has led to smaller fleet sizes in many fisheries. Moreover, a number of external factors, including a high exchange rate and higher business input costs, particularly fuel, have increased the

industry focus on sustaining profitability. These factors are likely to have reduced the availability of funding for training and development of staff resources.

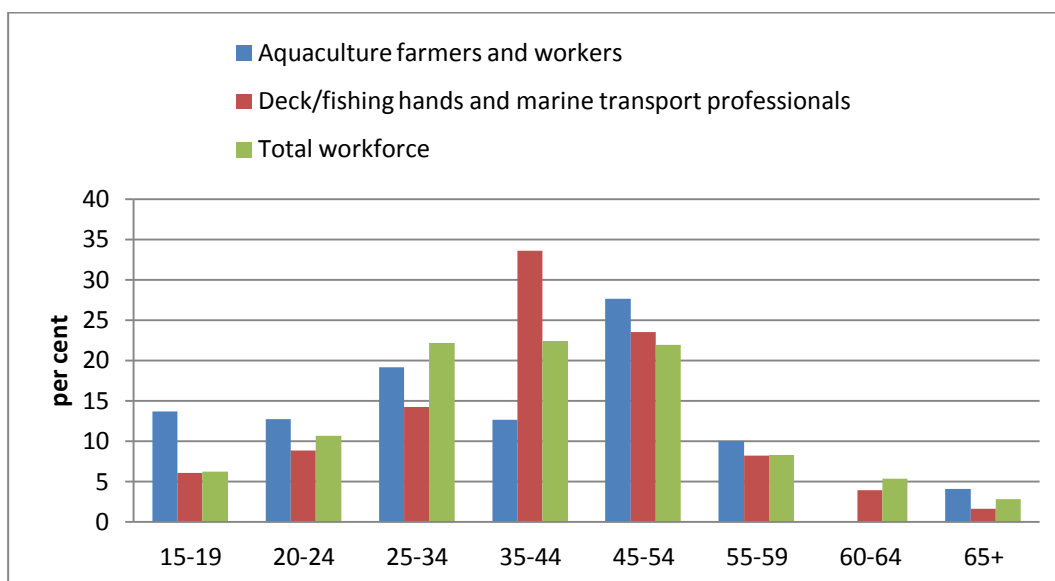
In the past 25 years, employment in the agriculture, fisheries and forestry, wholesale trade, and manufacturing sectors—which have traditionally contributed most to the seafood industry’s labour force—has declined. This decline is largely a result of the steady growth of the economy’s retailing and services sectors and the rapid growth of the mineral resources sector, particularly since 2004 (Figure 2; ABS 2011b). In particular, in recent years growth in the mineral resources sector has affected the seafood industry’s ability to successfully fill positions. Many of the skills involved in seafaring and vessel maintenance and operation are highly relevant to tasks undertaken in the marine minerals sector; for example, oil and gas resource exploration and development. The mineral resources sector is also located in regional areas, where the fishing industry is most active.

**Figure 2 Total employment by sector of the economy, 1984–2011**



Source: Australian Bureau of Statistics

Adding to the challenge of adapting to the changing labour market, the seafood industry, like all industries, is adapting to the ageing labour force demographic. Moreover, the ageing of the workforce may be affecting the seafood industry more than other industries. When compared with the overall labour force, a disproportionate number of workers in the commercial fishing and aquaculture sectors of the industry are aged over 35 years (Figure 3; DEEWR 2011b).

**Figure 3 Age distribution of workers in the seafood industry and the Australian labour force**

Source: Australian Bureau of Statistics Census 2006

The trends in figures 1 to 3 suggest an increasing level of difficulty across the seafood industry in meeting the industry's labour force requirements. The FRDC (2010) investigated the feasibility of a national seafood industry exchange program to help address some of these difficulties. The FRDC's report identifies some of the future learning and skills-related challenges for the seafood industry as being:

- attraction of workers
- adoption of higher level skills across the workforce
- adoption and diffusion of new research, practice and technology across the industry
- workforce retention and effective skills utilisation.

These challenges are in line with the list of challenges for the seafood industry reported in AgriFood Skills Australia (2011a). These challenges are:

- attracting, training and retaining workers at all skill levels
- growing contemporary industry leaders and securing their engagement in skills and workforce development
- linking skill development with industry licensing and compliance requirements
- ensuring occupational health and safety, and food safety form an integrated approach to risk management
- evolving job roles that require higher, often technician-oriented skills
- diffusing new practice and knowledge from research and development work into the workforce via formal training.

In its submission on the 'Review of Skilled Occupation List for General Migration' purposes in 2010, AgriFood Skills Australia lists almost all occupations associated with the seafood industry

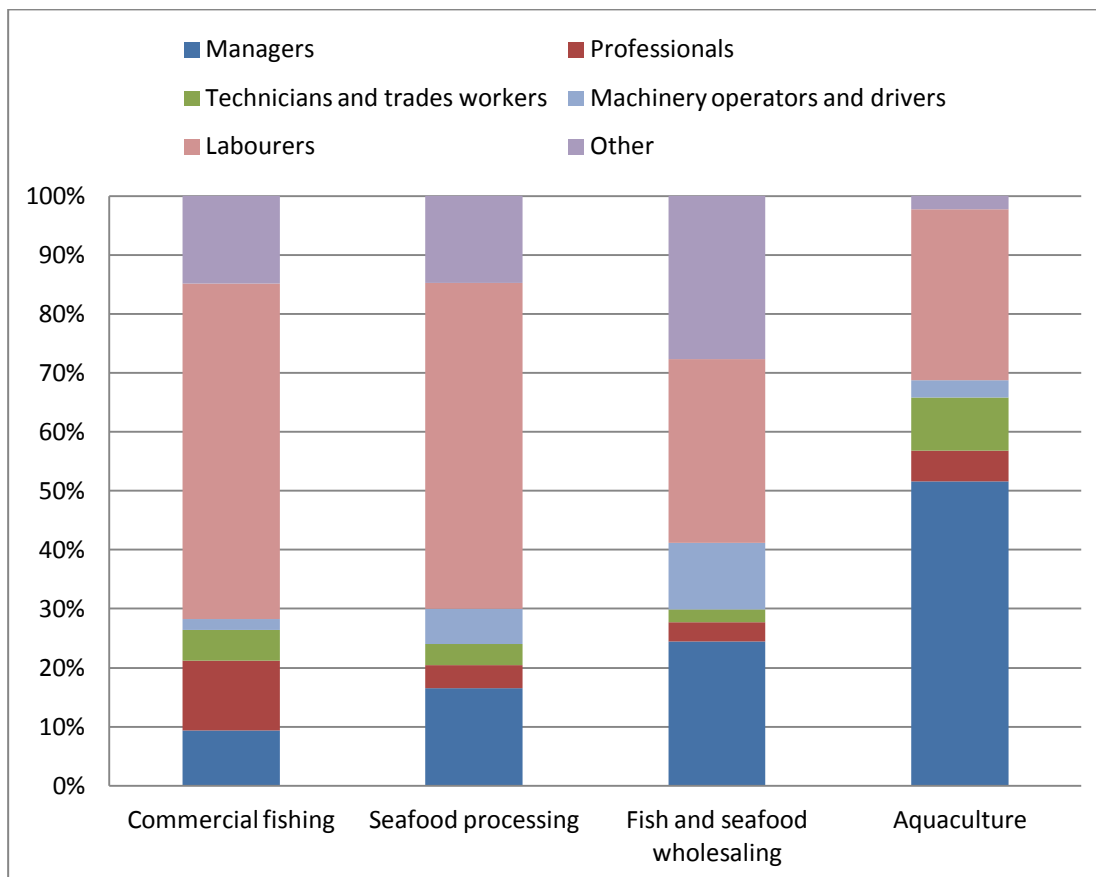
as being in shortage (AgriFood Skills Australia 2011a). Reflecting this view, the Department of Immigration and Citizenship in its list of identified skill shortages for assessing immigration applicants to Australia under the General Skilled Migration Program—Skilled Occupation List 2011—lists master fishers, ships engineers, marine biologists and fisheries inspectors as qualifications sought in Australia (DIAC 2011). In contrast, DEEWR has not listed any fisheries-related occupations as being in short supply in the past 15 years (DEEWR 2011c).

There is also a level of uncertainty surrounding total employment in the sector. The FRDC (2010) estimates that around 100 000 people are directly and indirectly employed in the seafood industry, including all post-harvest activities such as transport and retail. In contrast, the Australian Bureau of Statistics (ABS) national census data for 2006 indicate that around 16 000 people are employed in the total fishing, hunting, trapping and aquaculture industry—including fish wholesaling and seafood processing (ABARES 2011). This substantially smaller figure reflects differences in industry-level definitions and classifications used by the ABS when compiling datasets and information on employment statistics for the industry.

A range of qualifications and attained skills are associated with different occupations in the industry. Employees at a manager and professional level usually have higher qualifications and/or skills attained through years of experience than do other employees. In general, managers may have an Australian Qualifications Framework (AQF) associate degree, advanced diploma or diploma, or at least three years of relevant experience. There are numerous examples of senior management staff holding no formal qualifications but with substantial industry experience. Professionals usually have an AQF associate degree or diploma, which can be substituted for through a minimum of three years relevant experience (ABS 2006a). Technicians and trade workers are generally required to have an AQF associate degree, advanced diploma or diploma, or AQF Certificate III. Depending on the skills level, labourers usually have an AQF Certificate I, II or III, or at least one year of relevant experience and secondary education.

The occupational mix in each of the main sectors of the seafood industry is available from national ABS 2006 Census data and provided in Figure 4 at an Australian and New Zealand Standard Classification of Occupations (ANZSCO) four-digit level of classification using data from DEEWR (2011d). The data reveals differences across the sectors in the skill sets required. For example, the aquaculture sector is more highly reliant on managerial skills than other sectors of the fishing industry, whereas commercial wild-catch fishing and the seafood processing sector are more reliant on relatively less skilled labour.

Figure 4 Seafood industry employment by occupational classification



Source: Australian Bureau of Statistics Census 2006

## Information sources for workforce planning

### Seafood Industry Training Package

The Seafood Industry Training Package recognises nationally endorsed competency standards and qualifications for workers in Australia's seafood industry (AgriFood Skills Australia 2011b). This package was developed by Agrifood Skills Australia, and forms the basis for vocational education and training in Australia's seafood industry. It is a multifaceted package incorporating the training and education requirements for the aquaculture, fishing operation and charter, fisheries compliance, seafood processing, and seafood sales and distribution sectors of the seafood industry (Table 1).

The package guides the delivery of training in Australia's seafood industry. This is done by setting competency standards for the industry and providing the framework under which qualifications under the AQF can be awarded. The package is periodically reviewed to ensure that it remains relevant to the industry needs over time. It covers all levels of work, from unskilled and semi-skilled through to skilled managers and supervisors.

The current seafood training package (SFI11) was endorsed by the National Quality Council in June 2011 after a review process, and replaced the previous training package (SFI04), which had been endorsed in 2004. DEEWR provides some information on its website in the form of an interactive CD-ROM developed by Seafood Training Tasmania to assist the seafood industry gain knowledge of the core units of the Seafood Industry Training Package (DEEWR 2011e). The *Seafood Training CD-ROM* was created with the assistance of funding from the Australian

Government Workplace, English Language and Literacy (WELL) Program to support the implementation of the Seafood Industry Training Package, particularly to employees with limited language and literacy skills. This resource covers the key areas of working in the seafood industry for existing and new employees, including safe food handling, working effectively, health and safety, and communication.

Seafood industry qualification levels are listed in Table 1.

**Table 1 Seafood Industry Training Package Components**

| <b>Code</b>                                 | <b>Title</b>   |
|---|--|
| <b>Qualification level: Certificate I</b>   |  |
| SFI10211                                    | Certificate I in Fishing Operations                                    |
| SFI10511                                    | Certificate I in Seafood Processing                                    |
| SFI10111                                    | Certificate I in Aquaculture   |
| <b>Qualification level: Certificate II</b>  |  |
| SFI20511                                    | Certificate II in Seafood Processing                                   |
| SFI20611                                    | Certificate II in Seafood Industry (Sales and Distribution)            |
| SFI20111                                    | Certificate II in Aquaculture  |
| SFI20411                                    | Certificate II in Fisheries Compliance and Support                     |
| SFI20211                                    | Certificate II in Fishing Operations                                   |
| <b>Qualification level: Certificate III</b> |  |
| SFI30311                                    | Certificate III in Seafood Industry (Environmental Management Support) |
| SFI30411                                    | Certificate III in Fisheries Compliance                                |
| SFI30111                                    | Certificate III in Aquaculture   |
| SFI30211                                    | Certificate III in Fishing Operations                                  |
| SFI30511                                    | Certificate III in Seafood Processing                                  |
| SFI30611                                    | Certificate III in Seafood Industry (Sales and Distribution)           |
| <b>Qualification level: Certificate IV</b>  |  |
| SFI40111                                    | Certificate IV in Aquaculture  |
| SFI40411                                    | Certificate IV in Fisheries Compliance                                 |
| SFI40211                                    | Certificate IV in Fishing Operations                                   |
| SFI40311                                    | Certificate IV in Seafood Industry (Environmental Management)          |
| SFI40511                                    | Certificate IV in Seafood Processing                                   |
| SFI40611                                    | Certificate IV in Seafood Industry Sales and Distribution              |
| <b>Qualification level: Diploma</b>         |  |
| SFI50211                                    | Diploma of Fishing Operations  |
| SFI50511                                    | Diploma of Seafood Processing  |
| SFI50411                                    | Diploma of Fisheries Compliance  |
| SFI50111                                    | Diploma of in Aquaculture  |

Source: Australian Government 2011a

## Maritime Training Package

The Maritime Training Package recognises nationally endorsed competency standards and qualifications required for workers in the marine transport industry (Table 2). This package was developed by the Transport and Logistics Industry Skills Council, and forms the basis for vocational education and training of marine transport professionals for Australia's maritime industry.

**Table 2 Maritime Training Package components**

| <b>Code</b>                                  | <b>Title</b>   |
|--|--|
| <b>Qualification level: Certificate I</b>    |  |
| TDM10107                                     | Certificate I in transport distribution (maritime operations)                              |
| TDM 10207                                    | Certificate I in transport & distribution (maritime operations – shorebased linesperson)   |
| <b>Qualification level: Certificate II</b>   |  |
| TDM 20307                                    | Certificate II in transport & distribution (coastal maritime operations – coxswain)        |
| TDM20207                                     | Certificate II in transport & distribution (marine engine driving – grade 3)               |
| TDM20107                                     | Certificate II in transport distribution (maritime operations)                             |
| <b>Qualification level: Certificate III</b>  |  |
| TDM30307                                     | Certificate III in transport & distribution (maritime operations – integrated rating)      |
| TDM30407                                     | Certificate III in transport & distribution (coastal maritime operations – master class 5) |
| TDM30207                                     | Certificate III in transport & distribution (marine engine driving – grade 2)              |
| TDM30107                                     | Certificate III in transport distribution (maritime operations)                            |
| <b>Qualification Level: Certificate IV</b>   |  |
| TDM40207                                     | Certificate IV in transport & distribution (marine engine driving – grade 1)               |
| TDM40107                                     | Certificate IV in transport distribution (maritime operations)                             |
| TDM40307                                     | Certificate IV in transport & distribution (coastal maritime operations – master class 4)  |
| <b>Qualification Level: Diploma</b>          |  |
| TDM50307                                     | Diploma of transport & distribution (maritime operations – deck watchkeeper)               |
| TDM50407                                     | Diploma of transport & distribution (coastal marine engineering – engineer class 3)        |
| TDM50107                                     | Diploma of transport distribution (maritime operations)                                    |
| TDM50207                                     | Diploma of transport & distribution (marine engineering – engineer watchkeeper)            |
| TDM50507                                     | Diploma of transport & distribution (coastal maritime operations – master class 3)         |
| <b>Qualification level: Advanced Diploma</b> |  |
| TDM60407                                     | Advanced diploma of transport & distribution (maritime operations – master unlimited)      |
| TDM60207                                     | Advanced diploma of transport & distribution (marine engineering – class 1)                |
| TDM60307                                     | Advanced diploma of transport & distribution (marine engineering – class 2)                |
| TDM60107                                     | Advanced diploma of transport distribution (maritime operations)                           |

Source: Australian Government 2011b

The typical role and nature of workers in the main sectors of the seafood industry are provided in Box 1.

### Box 1 Fishing industry jobs and profiles

The Job Outlook website—<http://joboutlook.gov.au>—managed by the Department of Education, Employment and Workplace Relations (DEEWR) provides useful information on job profiles across the economy, including those relevant to the seafood industry. The following information on job profiles available in the industry has been sourced from this website (DEEWR 2011b).

**Aquaculture farmers** plan, organise, control, coordinate and perform farming operations to breed and raise fish and other aquatic stock. The majority of aquaculture farmers are 45–54-year-old males located in New South Wales (36.5 per cent), South Australia (22.8 per cent) and Tasmania (18.7 per cent). Of the working population of aquaculture farmers, only 8.2 per cent of all employees are under the age of 25, with the median age being 50 years. More than half (61 per cent) of all full-time aquaculture farmers are male; however, a larger number of part-time workers are female (10.6 per cent, compared with 5.1 per cent male). The number of aquaculture farmers has fluctuated over the past decade, rising by 2200 people between 2009 and 2010. Most aquaculture farmers hold an advanced diploma or diploma-level qualification.

**Aquaculture workers** perform routine tasks in breeding and raising fish and other aquatic stock. The majority of aquaculture workers are generally under the age of 25 (65.2 per cent), with the median age for this occupation being 23 years. Most employees are located in South Australia (52.8 per cent) and Tasmania (38.5 per cent). More than 60 per cent of all aquaculture workers work full-time and are male. Only 5.3 per cent are female, predominantly part-time workers. Most aquaculture workers have no post-school qualifications. The average weekly pre-tax earnings for aquaculture workers are \$600. This figure is below the national average for all occupations, which is \$870.

**Deck and fishing hands** maintain fishing vessel equipment and structures. Most deck and fishing hands work under a subcontract arrangement on a share of catch revenue basis, are male (80.4 per cent) and are located in Queensland (39.3 per cent), New South Wales (25.8 per cent) and Western Australia (14 per cent). The median age for this occupation is 38 years, with only 25.7 per cent of employees under the age of 25 years. More than half (52.7 per cent) of deck and fishing hands have no post-school qualifications, with the remainder holding predominantly Certificate I to IV qualifications. The subcontract nature of their work makes it difficult to access formal supported training places. The average weekly pre-tax earnings of workers in this occupation are \$1200, which is above the national average for all occupations.

**Marine transport professionals** control and manage the operations of ships, vessels and marine equipment. The majority of these workers are employed full-time, are male (87.8 per cent) and are located in Queensland (32.2 per cent), New South Wales (31.1 per cent) and Western Australia (14.3 per cent). The majority of employees in this skill grouping (72.6 per cent) are aged between 35 and 54 years. Only 2.8 per cent of employees are under the age of 25. Most marine transport professionals have obtained Certificate I to IV qualifications (53.1 per cent). The remainder either have no post-school qualifications (12.6 per cent), an advanced diploma/diploma (26.1 per cent) or a bachelor degree (8.1 per cent). The average weekly pre-tax earnings for all marine transport professionals are \$1381, which is above the national average for all occupations.

**Meat, poultry and seafood process workers** slaughter and eviscerate poultry, and process, grade and package meat, poultry, fish and shellfish. This occupational classification includes fisheries and non-fisheries industry employees. The majority of these employees are employed full-time, are male (68.2 per cent) and are working in Queensland (29.4 per cent), New South Wales (20.4 per cent) and Victoria (20.3 per cent). Most of these workers (31.1 per cent) are between 25 and 34 years of age. The majority of these employees (87 per cent) have no post-school qualification, with the remaining 13 per cent holding an advanced diploma/diploma. The average weekly pre-tax earnings for meat, poultry and seafood process workers are \$760, which is below the national average for all occupations.

**Packers** weigh, wrap, seal and label chocolate, fruit, meat, seafood and other products. This occupational classification includes fisheries and non-fisheries industry employees. The majority of these employees are full-time, females (35.1 per cent) and aged between 45 and 54 years (24.8 per cent). Most of these workers are employed in Victoria (31 per cent), New South Wales (26.4 per cent) and Queensland (20.8 per cent). Most packers (78.7 per cent) have no post-school qualifications. The remainder have a mix of Certificate I and II (4.2 per cent), Certificate III and IV (7.4 per cent), advanced diploma/diploma (2.1 per cent) and bachelor degree (5.1 per cent). The average weekly pre-tax income for packers is \$623, which is below the national average.

## Australian Bureau of Statistics

The Australian Bureau of Statistics (ABS) compiles three datasets relevant to determining current employment levels for the Australian seafood industry. These are the national census data, the Labour Force Survey data, and the Survey of Education and Work.

### National census data

The Census of Population and Housing aims to accurately count the number of people in Australia, their key characteristics, including industry of occupation, and the dwellings in which they live. The ABS conducts this survey once every five years. During the census, every household and person in the country is required to answer specific questions on the paper form or through eCensus online. The census collects data that are used by communities, private institutions and all levels of government when planning infrastructure, community services and facilities (ABS 2011b). The ABS classifies national workforce statistics for the Australian seafood industry using the Australian and New Zealand Standard Industrial Classification (ANZSIC) for industry-level data and the Australian and New Zealand Standard Classification of Occupations (ANZSCO) for occupation-level data (Box 2). The national census data are available at a regional level and can be tabulated in detail. The census data reported in this report are for 2006. The ABS is currently compiling data for the results of the latest census conducted in 2011. Table 3 contains a listing of industry and occupation categories relevant to the ANZSIC and ANZSCO.

**Table 3 Occupational and industry classifications relevant to the Australian seafood industry**

| <b>ANZSCO</b>   | <b>ANZSIC</b>                                |
|---|--|
| Code 2006   | Code 2006                                    |
| 121111 Aquaculture Farmer                                   | DIVISION A Agriculture, Forestry and Fishing |
| 231211 Master Fisher  | 02 Aquaculture                               |
| 231212 Ship's Engineer                                      | 020 Aquaculture                              |
| 231213 Ship's Master  | 0201 Offshore Longline and Rack Aquaculture  |
| 231214 Ship's Officer                                       | 0202 Offshore Caged Aquaculture              |
| 231215 Ship's Surveyor                                      | 0203 Onshore Aquaculture                     |
| 231299 Marine Transport Professionals nec                   | 04 Fishing, Hunting, Trapping                |
| 234311 Conservation Officer                                 | 041 Fishing                                  |
| 234399 Environmental Scientists nec                         | 0411 Rock Lobster and Crab Potting           |
| 234516 Marine biologist                                     | 0412 Prawn Fishing                           |
| 311311 Fisheries Officer                                    | 0413 Line Fishing                            |
| 311413 Life Science Technician(Fisheries Technical Officer) | 0414 Fish Trawling, Seining and Netting      |
| 399911 Diver (fisheries Diver)                              | 0419 Other Fishing                           |
| 452212 Fishing Guide  | 042 Hunting and Trapping                     |
| 831313 Seafood Process Worker                               | 0420 Hunting and Trapping                    |
| 832115 Seafood Packer                                       | DIVISION C Manufacturing                     |
| 841111 Aquaculture Workers                                  | 1120 Seafood Processing                      |
| 899211 Deck Hand  | DIVISION F Wholesale Trade                   |
| 899212 Fishing Hand   | 3604 Fish and Seafood Wholesaling            |

Note: nec = not elsewhere classified.

## Box 2 Australian and New Zealand Standard Industrial Classifications and Australian and New Zealand Standard Classification of Occupations

### **Australian and New Zealand Standard Industrial Classifications (ANZSIC)**

The ANZSIC has been developed for use in the compilation and analysis of industry statistics in Australia and New Zealand. The ABS and Statistics New Zealand jointly developed this classification to improve the comparability of industry statistics between the two countries and with the rest of the world (ABS 2006b).

### **Australian and New Zealand Standard Classification of Occupations (ANZSCO)**

The ANZSCO is the product of a development program undertaken jointly by a project team from the ABS, Statistics New Zealand and the Department of Education, Employment and Workplace Relations for use in the collection, publication and analysis of occupation statistics. The ANZSCO provides a basis for the standardised collection, analysis and dissemination of occupation data for Australia and New Zealand (ABS 2006a).

## **Labour Force Survey data**

The Labour Force Survey is based on a multi-stage area sample. It includes a sample of private dwellings (currently approximately 29 000 houses, units and so on) and a list sample of non-private dwellings (hotels, motels and so on), and covers approximately 0.33 per cent of the civilian population of Australia aged 15 years and over. Information is obtained from the occupants of selected dwellings by trained interviewers (ABS 2011c).

Households selected for the Labour Force Survey are interviewed each month for eight months, with one-eighth of the sample being replaced each month. The first interview is conducted face-to-face. Subsequent interviews are conducted by telephone (if acceptable to the respondent). The information obtained relates to the week before the interview—that is, the reference week (ABS 2011c).

The Labour Force Survey includes persons aged 15 years and over. However, it excludes members of the permanent defence forces, certain diplomatic personnel of overseas governments, overseas residents in Australia, and members of non-Australian defence forces (and their dependants) stationed in Australia (ABS 2011c).

The data available from the Labour Force Survey are only available in limited classifications. Specifically, data from the Labour Force Survey are only supplied up to an ANZSIC code of two digits and an ANZSCO code of four digits. As a result, using this dataset will capture employment numbers not relevant to the fishing industry.

## **Survey of Education and Work**

The Survey of Education and Work is conducted annually throughout Australia in May in conjunction with the Labour Force Survey. Therefore, respondents to the Labour Force Survey who are in scope of the supplementary survey are asked further questions (ABS 2010).

The Survey of Education and Work asks participants a range of questions about educational participation and attainment of persons aged 15 to 74 years, along with information on people's transition between education and work. Specifically, the survey provides information on: people presently participating in education; level of highest non-school qualification; level of highest educational attainment; characteristics of people's transition between education and work; and data on apprentices.

Through the Survey of Education and Work the ABS can supply data for ANZSCO codes up to six digits—the most detailed level available—and therefore captures data relevant to the Australian seafood industry.

## Department of Education, Employment and Workplace Relations

### Job Outlook

The Job Outlook website (<http://joboutlook.gov.au/pages/default.aspx>) is a DEEWR initiative (Box 1). Job Outlook provides data on employment characteristics, trends and prospects for occupations. For each occupation, Job Outlook has links to vacancies on Australian JobSearch and education and training courses on the MyFuture website.

The occupations relevant to the seafood industry that are included within this database are aquaculture workers; deck and fishing hands; aquaculture farmers; marine transport professionals; meat, poultry and seafood process workers; and marine transport professionals (DEEWR 2011b).

### Labour Force Region data

DEEWR provides annual labour market information in June of each year. These data are provided on the basis of boundaries used by the Labour Force Survey conducted by the ABS. Data include unemployment rates and employment by industry and occupation as published by the ABS in the Labour Force Survey. These data are available by gender and full-time/part-time status. Population profiles by age group and labour force status are also available. Each Labour Force Region also contains an area profile, which includes the current unemployment, employment and participation rate for the region. Data are available at the national, state and Labour Force Region level (DEEWR 2010b, 2011f).

### Employment Service Area data

DEEWR compiles Employment Service Area data annually. The database contains information including the number of people in receipt of Centrelink benefits, and the number engaged with Job Services Australia. These data are available at the national, Labour Force Region and Employment Service Area levels. Each level of geography also contains an area profile, which includes the current unemployment rate for the region and jobseeker data, such as average jobseeker age and unemployment duration (DEEWR 2010a). However, the data on the website ([www.deewr.gov.au/lmip/default.aspx?LMIP/EmploymentData](http://www.deewr.gov.au/lmip/default.aspx?LMIP/EmploymentData)) are only available for the current year.

### Small Area Labour Market data

DEEWR conducts the Small Area Labour Market Survey quarterly (DEEWR 2011g). Small Area Labour Market Survey data present the number of unemployed individuals and the unemployment rate in 1400 Statistical Local Areas across Australia. The survey covers the smallest available geographical units, on a state/territory and metropolitan/non-metropolitan basis. For the states, estimates for the capital city and the balance of each state are also provided (SALM 2011).

Small Area Labour Market Survey data cannot be categorised into occupational or industry groups; however, these data may be useful when considering Statistical Local Areas that are known to contain a high population of people employed in the fishing industry. This information may be used in conjunction with other data to provide guidance for education and training investment.

### Higher education enrolments and completions

DEEWR collects, manages and disseminates data related to the provision of higher education in all Australian universities through its Higher Education Statistics Collection. This dataset contains data related to:

- courses conducted by higher education institutions
- numbers and characteristics of students undertaking courses
- student load
- completion of units of study and courses
- students' liabilities under the Higher Education Contribution Scheme
- numbers and characteristics of staff in higher education institutions
- income and expenditure for higher education institutions
- research activity
- educational profiles of higher education institutions.

The data can be tailored to meet user requirements and can be provided for a fee (DEEWR 2011h). Table 4 illustrates the education classification codes that are available for the seafood industry from this dataset.

**Table 4 Fisheries fields of education**

| DEEWR code | Field of education                         |
|------------|--|
| 050700     | Fisheries Studies                          |
| 050701     | Aquaculture                                |
| 050799     | Fisheries Studies not elsewhere classified |

## National Centre for Vocational Education Research data

The National Centre for Vocational Education Research (NCVER) conducts a number of surveys and obtains a number of collections (NCVER 2011a, 2011b). These collections are:

- **Vocational education and training (VET) provider collection**—provides data on training from government-funded and privately operated training providers, both registered and non-registered.
- **Apprenticeships and traineeships collection**—provides data on all persons employed under a training contract.
- **VET in schools collection**—provides data on secondary school students that gain vocational education and training in schools. For example, practical work skills and nationally recognised VET qualifications as well as their senior secondary certificate.
- **Employer views survey**—measures employers' use and views of the VET system and provides detailed information on the way employers interact with the VET system and their satisfaction with these dealings.
- **Apprentice and trainee destinations survey**—collects information on the destinations of apprentices and trainees approximately nine months after leaving their training. Information is collected on employment outcomes, reasons for non-completion, satisfaction with the apprenticeship or traineeship, and further study destinations.
- **Student outcomes survey**—gathers information on students, including their employment situation, their reasons for undertaking their training, the relevance of the training to their employment, their level of satisfaction, any further study aspirations (graduate only) and reasons for not undertaking further training (module completers only).

- **Students’ intentions survey**—provides information on students’ intentions to complete a course/qualification, and the reasons behind those intentions. The survey aims to give a more informed understanding of completion patterns, which will, in turn, enable improvements for students such as greater support.

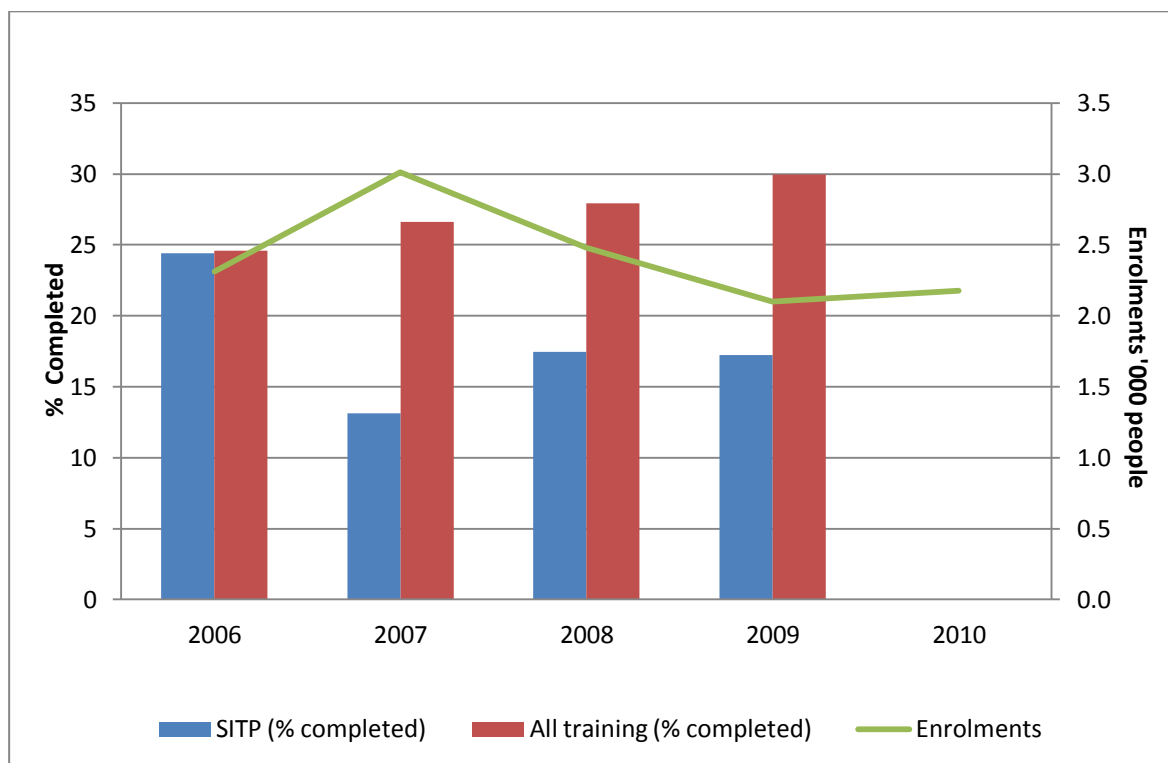
The NCVER data are available at a one-digit ANZSCO level, therefore grouping fisheries employees with ‘agriculture, environmental and related studies’.

### Share of enrolments by training package and seafood industry training package enrolments

The NCVER also produces data on education and training that show actual numbers of enrolled students, and the number of students who completed their course (NCVER 2011c). However, the destination of graduate students is unknown; for example, students may study a course relating to the seafood industry but may not necessarily use it to gain employment in that industry. This issue becomes particularly problematic when considering broad courses such as marine science.

The percentage of training package enrolment completions for all industry training packages has increased over time. In contrast, the percentage of enrolments in seafood training package courses that have been completed has fluctuated since 2006, and has been generally low relative to completions for all training packages (Figure 5). This may reflect an increasing trend toward completion of course components to gain required skill sets rather than whole qualifications. Enrolment for the seafood industry training package has trended down since 2007. This decline in recent years can be attributed largely to decreases in enrolments in Queensland, Western Australia and South Australia.

Figure 5 Enrolments and training package completions—seafood industry training package and all training



Source: National Centre for Vocational Education Research

## Household, Income and Labour Dynamics in Australia data

The Melbourne Institute at the University of Melbourne conducts a Household, Income and Labour Dynamics in Australia (HILDA) survey; a panel database where the same households and individuals are interviewed annually. The survey was first conducted in 2001 and to date nine surveys have been completed. On average, 7000 households and 13000 individuals are interviewed in each survey. The HILDA database includes a wide range of information, including data on the respondents' earnings, education and training, labour market status, occupation, labour market experience and hours of work, as well as extensive information on children. Information on the respondents' family background, fertility and relationship histories, health and attitude on certain aspects of life is also collected (HILDA 2010).

Despite the large database, information on employees in the seafood industry is scarce as a very small proportion of people surveyed are employed in the seafood industry. HILDA uses ANZSCO two-digit occupational classifications and therefore seafood-related employees are bundled within the 'agriculture, forestry and fishing' and 'fishing, hunting and trapping' classifications.

## State jurisdiction fishery status and production reports

Each Australian state and territory has a department conducting fishery analysis in conjunction with their management role of fisheries resources in their jurisdictions. These departments publish various reports, with some limited coverage data on employment. For example, some reports present the number of people directly and indirectly employed in the seafood industry, while others present no employment information. Some of the information available from state jurisdictions is highlighted below.

### New South Wales Department of Trade and Investment

The New South Wales Department of Trade and Investment, through its Primary Industries – Fisheries and Aquaculture Division, provides a range of publications that are relevant to the commercial, recreational and aquaculture fishing sectors in New South Wales. Some of the reports contain useful information on employment across sectors.

The social and economic indicators contained in the wild-catch environmental impact statements (EIS) are the most relevant to this study (New South Wales Government 2011). The statements have been prepared for all commercial wild-catch fisheries in New South Wales. These reports contain estimated employment in each New South Wales fishery, including indirect employment that these fisheries support. While this information is a little dated, the EIS reports provide an excellent overview of the social and economic dimensions of each fishery. The EIS reports can be found at [www.dpi.nsw.gov.au/fisheries/commercial/ea#Environmental-Impact-statements-on-public-display](http://www.dpi.nsw.gov.au/fisheries/commercial/ea#Environmental-Impact-statements-on-public-display).

The New South Wales Department of Trade and Investment also publishes annual production reports for the aquaculture sector. The latest available report, Wiseman (2011), provides a good overview of the aquaculture sector, but has limited information on employment. This is potentially an area of improvement, as employment information for this sector can be gathered using the annual survey of producers. Annual aquaculture reports can be found at [www.dpi.nsw.gov.au/fisheries/aquaculture/publications/aquaculture-production-reports](http://www.dpi.nsw.gov.au/fisheries/aquaculture/publications/aquaculture-production-reports).

The *Status of Fisheries Resources in NSW* report provides an overview of the state of marine and estuarine fish stock populations that are harvested by commercial and recreational fisheries managed by the New South Wales Government (Rowling et al. 2010). While these reports do not include employment statistics, they provide a good overview of New South Wales commercial fisheries.

### **Victorian Department of Primary Industries**

The Victorian Department of Primary Industries produces an annual *Fisheries Status Report* (DPI 2011). This report summarises the performance of Victoria's fisheries and aquaculture industries, but does not provide information on employment. Large amounts of the data in the report are provided by commercial fishers through logbook returns, which are collected by the Victorian Department of Primary Industries as part of the commercial fisheries management framework.

### **Queensland Government Department of Employment, Economic Development and Innovation**

The Queensland Government Department of Employment, Economic Development and Innovation, through its Division of Primary Industries and Fisheries, prepares annual reports for each individual fishery throughout the year. However, the reports do not include data on fisheries employment. Commercial fishers operating in Queensland's state-managed fisheries are required to complete daily catch and effort logbooks. These logbooks detail where, when and how fishing took place and what was caught. They also report the number of crew on board (Queensland Government 2010).

Queensland aquaculture conducts an industry survey and publishes employment numbers and the latest available statistics (Wingfield & Willett 2011). These data are collected at a firm level. The annual reports are available at [www.dpi.qld.gov.au/28\\_14746.htm](http://www.dpi.qld.gov.au/28_14746.htm).

### **Western Australia Department of Fisheries**

The Government of Western Australia Department of Fisheries annual *State of the Fisheries Report* presents data on employment numbers for each bioregion (Government of Western Australia 2011). The report explains that the data are obtained via logbooks that are kept by commercial fishers. These figures are based on a sample of the fishing population (Fletcher & Santoro 2009).

### **Primary Industries and Resources South Australia**

Primary Industries and Resources South Australia publishes the *Economic Indicators for the Commercial Fisheries of South Australia* report annually. This report categorises employment numbers into commercial fisheries. The data are collected by EconSearch ([www.econsearch.com.au/pages/industries/fishing-aquaculture.php](http://www.econsearch.com.au/pages/industries/fishing-aquaculture.php)) through the use of surveys conducted in each of the South Australian commercial fisheries. The economic performance indicator reports for commercial fisheries can be found at [www.pir.sa.gov.au/fisheries/commercial\\_fishing/river\\_fishery/economic\\_performance\\_indicators](http://www.pir.sa.gov.au/fisheries/commercial_fishing/river_fishery/economic_performance_indicators). The economic performance indicator reports for the aquaculture industry are available at [www.pir.sa.gov.au/aquaculture/monitoring\\_and\\_assessment](http://www.pir.sa.gov.au/aquaculture/monitoring_and_assessment).

### **Institute for Marine and Antarctic Studies**

The Institute of Marine and Antarctic Studies, incorporating the previous Institute of Aquaculture and Fisheries Institute, produces assessment reports on each of the main commercial fisheries. Many past reports can be found at the website (TAFI 2011). A very small number of these reports include the number of people directly and indirectly employed by the fishery. Personal contact with the Tasmanian Department of Primary Industries, Parks, Water and Environment indicated that it does not collect employment data at a state level and the only data that it could supply would be licensing numbers.

## **Northern Territory Government Department of Resources**

The Northern Territory *Fisheries Status Report* is a scientific and economic overview of the Northern Territory's wild harvest, recreational, fishing tour operator, aquaculture and Indigenous fisheries (DoR 2010). The employment figures presented in the report are for the Coastal Line Fishery only. Personal contact with Northern Territory Government Department of Resources - Fisheries indicated that they can only supply numbers of licensed operators and no other data on employment are available. The report can be accessed from [www.nt.gov.au/d/Fisheries/index.cfm?newscat1=&newscat2=&header=Fishery%20Status%20Reports](http://www.nt.gov.au/d/Fisheries/index.cfm?newscat1=&newscat2=&header=Fishery%20Status%20Reports).

## **Other research on employment and training issues**

In recent years, a number of studies have been undertaken to better ascertain the employment, education and training needs of the Australian seafood industry. This section highlights some of this body of research at both the jurisdictional and national levels.

### **National**

Knight (2011) reports on the use of, and views on, formal training among agrifood industry employers, and the satisfaction and employment outcomes of students who have completed training in a qualification covered by an AgriFood Skills training package. The report found that in the 2005, 2007 and 2009 surveys, agrifood employers have been generally less satisfied than non-agrifood employers that nationally accredited training meets their skill needs. However, it is noted in the report that this finding is based on a small number of respondents. The report also notes that training rates for the part of the labour force in the agrifood sector are generally lower than for non-agrifood industries, with the highest rate within the agrifood industry being for seafood industry related training.

Key points about the seafood industry in Knight (2011) included that 1.1 per cent of students enrolled in the AgriFood VET program in 2008 were from the seafood industry. On graduation, 74.4 per cent of these students became employed in either agrifood or non-agrifood occupations. This figure is relatively low when compared with students trained in other sectors such as the food processing industry, rural production and the meat industry. Furthermore, the analysis shows that only 15.8 per cent of seafood graduates become employed in seafood occupations.

The subject completion rate by the AgriFood training package for the seafood industry was 86 per cent in 2009, implying that a large majority of seafood industry students complete their studies. In 2009, the Northern Territory, Tasmania and Western Australia had the highest proportion of training effort in seafood industry training packages, with, respectively, 15.8, 8.6 and 5.0 per cent of agrifood training effort being seafood industry related. However, the distribution across training areas within the industry remains unclear. For example, at least anecdotally, much of the training effort occurring in the Northern Territory is thought to be skewed toward achieving qualifications through the Northern Territory Sea Ranger Program, with graduates receiving the Certificate in Fisheries Compliance rather than in areas of commercial fishing or aquaculture. The Sea Ranger Program is geared toward achieving better fisheries management compliance outcomes through active participation of the Indigenous community in sea monitoring and reporting activities. Also seafood industry training is available through non-agrifood related sectors. For example, Knight (2011) indicates that seafaring skills needed in offshore oil and gas industries can also be relevant to the seafood industry.

### **Northern Territory**

The shortage of workers for fishing hand and seafood process worker positions was examined recently in Calogeras (2010). This report outlines a project aimed at gathering relevant evidence

to review the status of two fishing and seafood industry based occupations in the NT—deck and fishing hands and seafood process workers. The project was constructed to determine if these occupations need to be added to the Northern Territory Occupational Shortage List for 2011. Twenty participants from a range of fisheries operating in the Northern Territory, including three wholesalers/processors of differing sizes, took part in the survey.

The key findings of the survey showed that there was an occupational and skills shortage in the Northern Territory across the fishing and seafood industry for the two occupations assessed. More than half of the participants had or would have vacancies that needed filling. In many instances existing staff were not adequately skilled for the role. Employment shortages were found to be Northern Territory-wide, with Darwin being the employment hub where most workers were employed. All respondents to the survey indicated that the shortages were ongoing, long-term, and seasonal because of the nature of the fishing industry and the supply of seafood to the market. Potential solutions identified included the need for improved, appropriate and targeted capacity building and the use of overseas workers to fill gaps.

With regard to education, training and licensing, in almost all instances respondents believed that hands-on experience was of greater benefit to their operation than school-based training. In the report it is stated that the seafood industry does not generally have a formal training culture. This is due to hands-on training being undertaken as part of an informal mentoring process, passed down through family connections or provided by the skipper or deck supervisor. Few industry people had a specific training budget or training program and in many instances survey participants did not see increased financial return from the training undertaken.

The key issues surrounding education, training and licensing were:

- existing training not adequately meeting the industry's training needs in respect to the timing of the programs
- costs of training and the relevance and delivery of training.

It was recommended that training and programs should be developed in close association with fishers/processors. It was also felt that registered training organisations were not in sync with industry needs and did not deliver training as and when needed.

The report indicates that in many instances respondents felt that the need for full qualifications was not essential. Rather, training modules targeting specific skills could be used to slowly build key skills across the industry.

The specific training needs identified were:

- employee self service
- first aid training
- use of safety gear
- coxswain, dive tickets, skippers and engineer qualifications
- fish processing skills
- oyster shucking
- basic mechanical, engineering, refrigeration or electrical training.

## Tasmania

Skills Tasmania documented an industry training demand profile for aquaculture ([www.skills.tas.gov.au/providers/industryadvice/training\\_demand\\_profiles](http://www.skills.tas.gov.au/providers/industryadvice/training_demand_profiles)). This document contains data on the number of people needing to be trained in the period 2007 to 2009, by occupation.

The aquaculture profile outlines some of the key labour demand drivers for the sector. For example, warmer seasons usually require increased labour input because of increased need to maintain grow out enclosures under such conditions. Also, the profile indicates that informal training in the salmonid aquaculture sector is persistent, especially in the processing of farmed products, whereas demand for formal training in the shellfish sector remains strong.

New regulatory requirements regarding food safety being considered by the Tasmanian Government were expected to lead to a greater need for training of food handlers in the sector. In general, the accessibility of training is shown to be of great importance given the number of licenses required to operate various pieces of equipment in aquaculture. For example, it was noted that the average farmhand required separate licences to operate a small vessel, diesel motor, marine radio, forklift, and non-slewing crane. Additionally, the farm hand is also required to have a first aid qualification, a stability qualification and an occupational health and safety certificate.

Growth of aquaculture enterprises on Tasmania's west coast presents problems in recruitment of skilled staff, as those working in the east are reluctant to relocate. Attracting workers in this sector is made harder because of the increasing mineral resources sector. In particular, the aquaculture profile notes that there is a diminishing demand for diver qualifications in the sector, given improved farm practices and the use of contractors. Shortages of labour were noted across the full range of qualification areas required for the aquaculture sector.

Employment in the sector is predominately male dominated, with an older demographic profile. A significant portion of employees are in the 40–60 year old age group. It was also noted that the sector invests significantly in unaccredited on-the-job training. This contrasts with the seafood processing sector, which has a general balance in gender across the workforce, and greater use of seasonal and casual staff. While more common for salmonid processors than other processors, formal qualifications in the seafood processing sector have declined in recent years. Greater control over harvest allows processors of aquaculture products to offer more steady employment than the more variable wild-catch sector. The processing sector is seen to be a sector generally reluctant to train staff due to high turnover and seasonality of employees.

The Tasmanian study reported an estimated number of people required for training in the aquaculture and processing sectors. It also provided details of the qualification they required, their region and their sector. The study estimated that training is required by 658 people across all aquaculture and associated processing sectors, all areas of training needs and all regions. Most of this demand is largely in the aquaculture sector in southern Tasmania where the majority of the larger farms are located.

The aquaculture sector in southern Tasmania required the training of approximately 456 people in the period 2007 to 2009. In the aquaculture sector, the greatest training needs are for shipboard safety, coxswain (including restricted) and fish farm attendants. In the seafood processing sector, the greatest training needs are in building seafood processor skills and forklift skills. The provision of training courses was noted as becoming increasingly difficult because of a declining customer base. This is particularly apparent for marine engineer qualifications.

## South Australia

In 2009, the South Australian Seafood Industry Federation Inc. published the report *South Australian Seafood Industry Food Plan 2010–2015* (SASIF 2009). The plan contains five main objectives in focusing the South Australian seafood industry towards growth. One of the strategies for success outlined in the plan involves workforce planning and development. This strategy aims at securing workforce capacity to underpin industry needs by:

- monitoring workforce needs of industry
- identifying and supporting skilling and upskilling of the industry's workforce, including identifying skill sets and career path development
- promoting and providing educative support for value chain development and effective value chain management, business management and market intelligence across the industry.

A potential limitation of the strategy outlined in the South Australian plan is the current labour and skills shortages. The limitation is due to the shifting regional population balance, which has adversely affected the seafood industry as younger workers drift toward the cities. The plan states that technology will help to reduce labour demand. However, current skills and labour shortages will be exacerbated by strong industry growth, especially in the sea farming sectors.

The plan outlines an action for implementation to overcome the potential labour skills and labour shortage issues. This action involves the improvement of targeting of labour to regional areas, combined with better industry profiling of jobs. The plan also states an action to create regional migration elements to establish occupational demand and generate skills shortage schedules to support temporary and skilled migration arrangements (SASIF 2009).

## Western Australia

The Food, Fibre and Timber Industries Training Council (WA) published the *Industry Workforce Development Plan* in October 2010 (FFTITC 2010). The plan notes that the Western Australian seafood industry is characterised by a majority of small two-person fishing vessels that find access to training difficult. Many owner operators have low levels of post-secondary qualifications, although their skill levels and knowledge base are relatively high and of a technical nature. The plan also notes that the increase in economic activity in the north-west of Western Australia has seen investment in training decline as a result of trained workers leaving the industry for better wages in the mineral resources sector. It is stated that any training in this environment ultimately benefits mining and not the seafood industry.

The plan states that the seafood industry is seasonal and therefore has a very transient workforce. The processing sector is market driven and employment vacancies are usually filled by backpackers and people who have retired from the full-time workforce looking for casual work. In the trawling sector, where workers are scarce, many businesses rely on Indonesian immigrants holding 457 visas, who understand the sector but generally have limited English language skills. There is also a regional problem with the cost of housing for workers, which exacerbates labour shortages.

The plan outlines that the sector finds it difficult to attract and retain long-term workers that have the passion and drive to progress to higher levels of training. Also, extensive licensing and compliance requirements in the industry are leading to an abundance of unmet training needs (FFTITC 2010).

## Directories of Australian seafood industry contacts

A number of industry directories exist that can aid in the collection of data related to employment, education and training. The national and state directories help to facilitate communication between existing and prospective fishing industry operators, employers and employees, and provide them with opportunities to network with other industry stakeholders and identify sources of products, services and potential employment that are relevant to their operations. Information on these directories and where they can be accessed is provided below.

### Australian Seafood Industry Directory

The Australian Seafood Industry Directory provides contact details and a description of Australian seafood businesses (SSA 2011). The businesses listed have given their details to Seafood Services Australia, which provides this information through a website and a publication. The directory categorises the Australian seafood businesses into the following sections:

- industry associates
- seafood producers, processors and traders
- seafood retailers (by state)
- seafood services and consultants
- seafood supplies and equipment
- government agencies
- research and development providers
- consumer information
- industry news employment and events.

The directory also lists the details of:

- New Zealand seafood businesses
- overseas seafood businesses
- overseas service providers.

The information provided on these businesses includes:

- company name
- location/address
- email address
- website
- brief description of business operations.

The national directory can be found at [www.seafood.net.au/asid/directory.php](http://www.seafood.net.au/asid/directory.php).

## **NSW Aquaculture Industry Directory**

The *NSW Aquaculture Industry Directory* is a publication produced by the New South Wales Department of Primary Industries. Its purpose is to highlight the diversity of farmed seafood available from New South Wales and show the range of services and equipment available to support the development of aquaculture activities in the state (NSWDPI 2008).

This directory contains two sections. The first section identifies producers of various species farmed in New South Wales (including molluscs, crustaceans and finfish) and provides the following details for each producer:

- company name
- postal address/location
- name of business contact
- phone numbers (business, mobile, fax)
- email address
- website.

The second section details suppliers of supplementary goods and services ranging from hatcheries and product/equipment suppliers to providers of a range of professional services that are applicable to the industry. The above details are also provided for the businesses within this section. Additionally, descriptions of the business operations are also provided for some companies.

This section also highlights the educational and research and development infrastructure that is in position to support the industry's continued growth. The directory also lists aquaculture producers that have facilities to attract tourists (NSWDPI 2008).

The directory can be accessed at [www.dpi.nsw.gov.au/fisheries/aquaculture/contacts/aquaculture-industry-directory](http://www.dpi.nsw.gov.au/fisheries/aquaculture/contacts/aquaculture-industry-directory).

## **Queensland fishing industry contacts**

The Queensland Government Department of Employment, Economic Development and Innovation provides a list of seafood industry contacts at [www.dpi.qld.gov.au/28\\_15591.htm](http://www.dpi.qld.gov.au/28_15591.htm) (Queensland Government 2011a). This list categorises Queensland fishing industry companies into the following groups:

- commercial fishing
- seafood industry
- recreational fishing
- fishing tackle
- game and charter fishing
- conservation.

A separate website ([www.dpi.qld.gov.au/28\\_14833.htm](http://www.dpi.qld.gov.au/28_14833.htm)) provides contact information for aquaculture industry organisations, and incorporates industry contact details for various aquaculture species (Queensland Government 2011b).

### **South Australia aquaculture sector contacts**

Primary Industries and Resources South Australia provides a list of contacts for the aquaculture sector in South Australia. These are:

- Aquaculture association contacts
- state and commonwealth aquaculture contacts
- South Australian aquaculture education and training institutions
- South Australian aquaculture consultancy services
- Australia-wide marketing services
- South Australian research and development institutions.

The contact details and links to the websites of some of the institutions are provided at [www.pir.sa.gov.au/aquaculture/products\\_and\\_services/aquaculture\\_association\\_contacts](http://www.pir.sa.gov.au/aquaculture/products_and_services/aquaculture_association_contacts).

### **Aquaculture Council of Western Australia**

The Aquaculture Council of Western Australia website provides links to lists of contacts for the following categories:

- aquaculture hatcheries
- aquaculture consultants
- aquaculture equipment suppliers and contractors.

Additionally, the following links are provided for jobseekers:

- job board, which lists aquaculture jobs available
- a jobseeking page
- The aquaculture directories can be accessed at [www.aquaculturecouncilwa.com/](http://www.aquaculturecouncilwa.com/).

### **Summary**

Table 5 provides a summary of the characteristics of employment, education and training information sources listed in this report.

**Table 5 Summary characteristics of employment, education and training information sources**

| <b>Information source</b>                                | <b>Employment information</b> | <b>Education and training information</b> | <b>Employment data</b> | <b>Education data</b> | <b>Nature of dataset</b> | <b>Comments</b>   |
|--|-------------------------------|---|------------------------|-----------------------|--------------------------|---|
| Seafood Industry Training Package                        | No                            | Yes                                       | No                     | No                    | n/a                      | Good source of information on competency requirements.                                      |
| Maritime Training Package                                | No                            | Yes                                       | No                     | No                    | n/a                      | Good source of information on competency requirements.                                      |
| ABS National Census                                      | No                            | No  | Yes                    | Yes                   | Every five years         | Accurate data at a high level of disaggregation. Timely data an issue.                      |
| ABS Labour Force Survey                                  | No                            | No  | Yes                    | No                    | Quarterly                | Too aggregated to be useful for on fisheries sector workforce issues.                       |
| ABS Survey of Education and Work                         | No                            | No  | No                     | Yes                   | Annual                   | Accurate data at a high level of disaggregation.  |
| DEEWR Job Outlook website                                | Yes                           | Yes                                       | Yes                    | Yes                   | n/a                      | Informative. Based on ABS census data; timeliness of the data can be an issue.              |
| DEEWR Labour Force Region data                           | No                            | No  | Yes                    | No                    | Annual                   | Informative. Based on ABS Labour Force Survey data.   |
| DEEWR Employment Service Area data                       | No                            | No  | Yes                    | No                    | Annual                   | Job Services Australia data.  |
| DEEWR Small Area Labour Market data                      | No                            | No  | Yes                    | No                    | Quarterly                | Useful data collected by DEEWR.   |
| DEEWR Higher Education Statistics collection             | No                            | No  | No                     | Yes                   | Annual                   | Useful data collected by DEEWR.   |
| NCVER datasets   | No                            | Yes                                       | No                     | Yes                   | Various                  | Too aggregated to be useful for fisheries sector workforce issues.                          |
| HILDA data   | No                            | No  | Yes                    | Yes                   | Annual                   | Too aggregated to be useful for fisheries sector workforce issues.                          |
| State jurisdiction fishery status and production reports | Yes                           | No  | Yes                    | No                    | Annual                   | Only limited and ad hoc data provided for most jurisdictions. South Australia an exception. |
| Directories of Australian Seafood Industry contacts      | Yes                           | Yes                                       | No                     | No                    | n/a                      | Useful points of contact for engagement with industry on workforce issues.                  |

*Notes:* n/a = not applicable; ABS = Australian Bureau of Statistics; DEEWR = Department of Education, Employment and Workplace Relations; HILDA = Household, Income and Labour Dynamics in Australia; NCVER = National Centre for Vocational Education Research.

## 4 Workforce development and employment data needs

ABARES conducted a pilot stakeholder survey to better understand the employment and training data needs of the Australian seafood industry. Survey participants were selected from a range of industry leaders. Respondents to the survey included office bearers of major seafood companies, industry associations—from both the aquaculture and commercial fishing sectors—seafood wholesale markets, smaller commercial fishing and aquaculture businesses, and experts on education and training trends in the industry. Responses were received from 32 of the 49 participants (65 per cent response rate).

Respondents provided their views on workforce employment, education and training from various locations around Australia. There was limited coverage of the seafood retail sector—for example, seafood sold directly to consumers from restaurants and supermarkets—owing to the large number of businesses involved. Moreover, the labour market issues faced in the seafood retail sector are likely to differ from those faced by the broader seafood industry given the location of a large proportion of seafood retail activity in metropolitan areas.

The survey was conducted by email. The key views of respondents to the survey questions have been incorporated into the discussion provided below. The survey questions are presented in Appendix A.

### Aquaculture

Aquaculture operations in Australia are located predominantly in marine environments adjacent to the coast. Different species are grown in different regions, depending on climate and other conditions. For example, climatic conditions in northern Australia are generally suited to prawn and barramundi farming. Cooler climate finfish species are readily grown out in southern Australia, with southern bluefin tuna grown out in farms in South Australia, and Atlantic salmon in Tasmania. Edible oysters and mussels are significant aquaculture activities in New South Wales, South Australia and Tasmania. Pearl oysters are farmed in northern Western Australia and the Northern Territory.

The aquaculture sector employs a range of skilled and semi-skilled workers in both a full-time and part-time/casual capacity, with some variation in employment arrangements between sectors. For example, whereas the majority of farm hands in finfish farms are full-time employees with a steady stream of work throughout the year, shellfish operations, such as oyster farming, tend to require varying labour input across the production cycle, resulting in a greater need for part-time/casual arrangements.

Employment opportunities in the sector range from working in areas involved in developing feedstock for farms, to farm husbandry duties, and post-harvest and marketing. As a result of the diverse tasks performed within the industry, a range of skill sets are required.

Most employees in the aquaculture sector are general hands, with their duties being many and varied. The main duties of general hands on land-based operations involve cleaning tanks and ponds, feeding, pipe and pump maintenance, farm machine operation, general construction and maintenance, and harvesting and packing of stock. Many aquaculture farms also involve the servicing and operation of small vessels involved with feeding stock, maintenance of sea cages, dive operations, and harvesting and processing operations.

The nature of work for more skilled workers in the aquaculture sector also involves a range of skill sets. For example, work can require detailed and species-specific knowledge and handling skills. As such, many aquaculture operations employ specialists to, for example, check on the quality of the water and the growth and health of the seafood stocks. Much of this work involves taking samples for laboratory analysis and assessing the health and quality of the whole aquaculture operation.

Most aquaculture operations will have a manager or manager/owner who is responsible for managing the operations and developing markets for the seafood product. Therefore, business management skills are also important to the overall success of the enterprise. The particular work done in these jobs will vary considerably, often depending on the size of the operation.

Vocational study in aquaculture is available from Certificate I to diploma-level qualifications in most state/territory jurisdictions. Tertiary qualifications are also available in aquaculture studies at a range of Australian and international institutions. The wide range of electives within each qualification implies that each qualification can be tailored to meet the particular needs and interests of employers and trainees.

### **Current labour market issues**

Thirteen surveys were sent to stakeholders in the aquaculture industry. The respondents covered all the major species produced in the sector, including post-harvest activities, across a range of geographical production areas.

Responses to the ABARES survey indicated that the skill level in the aquaculture sector is steadily increasing, with applicants for skilled positions now generally holding more qualifications compared with a few years ago. While people that engage in degree and/or diploma-level studies in aquaculture are keen to work in the sector, there is sometimes a mismatch between the applicants' expectations of a position and the actual day-to-day work. Training opportunities for work in the aquaculture sector also appear to concentrate on particular areas of study. General farm hands were seen to need training courses tailored to improving their farm management skills.

Unskilled labour demand in the sector is seasonal in nature, with higher demand for labour occurring in harvest periods, owing to perishability issues. As a result there is a large turnover of unskilled staff in the sector. In high demand periods, 'backpackers', 'retirees' and other agricultural sector workers that seek employment in the sector usually make up a significant portion of the workforce. As a result, these workers have little commitment to further training in the sector, and there is little incentive for employers to provide training.

The following were raised as issues faced in attracting and retaining qualified staff:

- Relatively low wages paid in the sector when compared with other sectors of the economy, which was seen as an issue that exacerbated the high turnover rate.
- Lack of career pathways, or knowledge about possible pathways.
- Lack of employment tenure (part-time, casual employment), industry profile, wages and competition from other sectors—particularly the mineral resources sector—combined with poor job security and poor conditions.
- Lack of a corporate culture and workplace pride in being part of a successful organisation.

Remoteness from large metropolitan areas is a key feature of the geographical location of aquaculture operations. As a result, labour is often in short supply—with the possible exception of South Australian aquaculture producers—and positions are difficult to fill with appropriately trained and qualified staff, particularly in the peak post-harvest period of operations. Labour supply of farm managers, hatchery technicians and divers was highlighted to be low in a number of aquaculture producing areas. Labour shortages in the sector are for both skilled and unskilled workers, for farm hand and post-harvest packaging and marketing operations. Some respondents also saw location of work relative to training facilities as an issue. For example, some respondents commented that specific training for prospective employees in hatchery production is not always relevant to the species being farmed in a particular location. Attaining skilled graduate labour appears to be less problematic, as graduate labour can be sought from the international labour market.

Geographically, skill shortages manifest most in areas where competition with other sectors is greatest. In areas where there was alternative employment, for example in the mineral resources sector, or other agriculture sectors, it is most difficult to fill positions with appropriately trained personnel. The expansion of the minerals sector had multiple additional effects; for example, pushing up accommodation living costs in regional centres, and pricing prospective applicants out of the market. Hence, applications for positions are increasingly coming from the limited number of people already living in areas close to where the work is available.

Except for some pockets of expansion, such as barramundi aquaculture, most respondents did not see additional labour requirements in 2011–12. The main reason given was that it was extremely difficult to approve new projects or expand existing ones given current state/territory government regulations governing the sector. Prawn farms are a good example of where there has been little new development over the past decade and so there is limited demand for additional workers. This has led to limited new training and education opportunities to support the industry.

### **Prawn aquaculture**

Prawn farms are predominantly located in regional areas in coastal northern Queensland and New South Wales. Farms need a steady labour supply to work on-farm throughout the year and process catch at harvest time. Due to the seasonality of work, farms rely on itinerant workers, and often attract workers from other agricultural sectors whose off season coincides with the prawn farming busy season. Itinerant workers are generally associated with having a lower skill base and make up a large percentage of the casual workforce requirement of a prawn aquaculture farm. This dependence has developed largely because the farms can get the required work done, at a lower cost, without increasing their full-time staffing levels.

Aquaculture is in direct competition with other more established primary industries with respect to the employment of itinerant workers. For example, prawn farms are located in close proximity to other agricultural and mining industries, particularly in north Queensland. Other industries are able to offer higher remuneration and more steady work. In particular, the mineral resources industries have had a major impact on reducing the size and quality of the employment pool normally used by primary industries, including aquaculture. Higher wages offered to potential employees by these industries have rendered the aquaculture sector unable to compete effectively for labour resources.

Given the difficulties in attracting new entrants, and the few new farms that have been developed in the prawn aquaculture sector over the past 10 years, the industry is focused on

upskilling existing permanent workers rather than developing pathways into the industry. Permanent positions on farms attract a higher calibre of applicants. Many possess degrees or vocational qualifications, and while these qualifications are not always well aligned with day-to-day duties, they provide a good basis for further development. Skilled graduate labour is less of an issue for prawn farming as there is a global supply of specialists and the level of interest from overseas applicants for positions is steadily increasing.

Another concern is the limited number of young people applying for jobs within the industry. This possibly indicates that employment of younger people and the development of career pathways within the industry are poor, or poorly understood by those aspiring to enter the industry. The highly mechanised nature of most operations, the need to hold a driving licence, and the limited skills of many young people have also been indicated as reasons for this low level of participation.

Difficulties in filling positions are due to the regional location of prawn farms, the seasonality of the work, the large number of small-size producers, and the length of gainful employment opportunities on offer. To resolve some of these labour market issues, some respondents suggested that the industry needs to better promote itself to people who would be interested in working in the industry. For example, the alignment of itinerant worker expectations to industry needs and remuneration capacity warrants closer investigation.

### **Atlantic salmon aquaculture**

Respondents from Tasmania's Atlantic salmon aquaculture farms indicated that skilled labour for supervisory positions in production and diving operations were particularly difficult to fill. Like other sectors, the limited number of qualified persons living in regional areas, and strong competition for skilled labour (with mining and heavy industry in the local area) were reasons for these difficulties.

While in past years this sector has focused on upskilling existing staff, more recently labour market shortages have led to increased focus on employing less skilled labour. This is due to the recent decrease in the availability of commercial divers and bachelor-level aquaculture graduates applying for positions. As older workers in the industry are now retiring and the industry is losing its skill base, there are less skilled people filling positions. Applications for employment coming from overseas, in particular from India, South-East Asia and South America, have increased noticeably.

### **Southern bluefin tuna aquaculture**

Located predominantly in the metropolitan Port Lincoln area, the southern bluefin tuna aquaculture industry has less difficulty filling positions relative to other aquaculture growing regions. However, similar to other aquaculture sectors, this sector experiences a large staff turnover, a tight labour market and high labour demand. For example, respondents from the sector have indicated a lack of people to fill many roles, from deckhands and process workers through to skippers and divers. The lack of labour supply can be attributed to a competitive labour market (particularly with mining), the lack of appropriate education and training programs, an ageing demographic and significant structural adjustment.

### **Barramundi farming**

Northern Western Australia, Queensland and the Northern Territory are also experiencing problems in attracting and retaining staff needed for operations in barramundi aquaculture. For example, operators in the Derby area in Western Australia indicated that it is a challenge to attract and retain labour, given the many alternatives available to prospective workers,

including in the mineral resources sector and the Curtin Detention Centre, which is now a major employer. The difficulty of attracting workers to areas like Derby is heightened by the increase in housing prices in north Western Australia. In particular, challenges in attracting employees for fish processing and packing are acute.

### **Oyster farming**

Skilled labour shortages are being experienced in a range of areas for oyster aquaculture enterprises, from hatchery technicians to farm managers. However, unskilled labour is more readily available. The difficulty in attracting skilled staff to the industry can be attributed to the industry's remote locations relative to large metropolitan areas. The acquisition of graduates in aquaculture studies with specific training in oyster farming is particularly difficult.

### **Commercial fishing**

The labour needs in the commercial fishing sector encompass a range of skill areas. People working in the wild-catch sector of the seafood industry operate on fishing vessels that vary from small one-person vessels to larger ocean-going vessels with numerous crew. The vessels work in a range of operating environments and climatic conditions. Fishers working on these vessels require skills and understanding of food quality, safety, and environmental standards. Many of these skills are attained through formal qualifications contained in the Maritime Industry Training Package (Table 2) and on-the-job training, but also to a lesser extent from the Seafood Industry Training Package (Table 1).

Workers on vessels perform a variety of tasks, depending on the fishing techniques used and the species caught. Teamwork is required to bring the fisheries products caught at sea to shore in variable operating environments. Fishing trips can vary in length, with many being undertaken for several weeks at a time.

The main qualifications required in the wild-catch sector are deck hands, senior deck hands with a coxswain ticket or licence, the vessel skipper, fishing operations manager, and marine engineer. A range of vocational qualifications exist to support training of workers for fishing operations, from Certificate I to diploma-level qualifications. The electives within qualifications can be used to tailor training to employer or trainee needs. The engagement arrangements for many of the workers on fishing vessels implies that remuneration is based on share of catch revenue and, as a result, formal sponsored training opportunities are limited.

Vessel skippers and charter operators are responsible for the safe operation and navigation of the vessel, with maritime and fishing skills being the key skills required to undertake the work. The vessel skipper is also responsible for the safety of the crew. Larger fishing operations may employ a fishing operations manager, who has overall responsibility for the success of the fishing trip, including the safety of crew. The marine engineer is responsible for the maintenance and operation of the mechanical equipment on fishing vessels.

Deck hands need to be relatively fit, and are required to undertake a range of tasks, including setting lines, nets or pots, assisting in hauling catch, and sorting and managing catch on the vessel. This could also involve some processing of catch, such as filleting, skinning and packing catch. Senior deck hands can provide support to the skipper or manage smaller vessels given that they have a coxswain ticket or licence.

## Current labour market issues

Many respondents saw labour needs for the commercial fishing sector as being greatest in vessel-related skill areas—for example, skippers, deck hands, divers and process workers. The fishing industry is regulated by Australian maritime regulations that specify the number of crew members and the minimum certification requirements of the crew for each vessel. These specifications depend on the size of the vessel and the waters being fished. The crew mix is also determined by safety and insurance compliance.

However, the commercial fishing sector faces a number of challenges in recruiting and retaining qualified workers to work across these skill categories. These challenges are widespread across all fisheries and jurisdictions to varying degrees. Many of the sector's issues stem from the competitive nature of the labour market, and the need to compete with other industries that are recruiting fishers with the desired skill sets. The lack of skilled employees to work in the sector is so acute that many respondents indicated a desire to recruit from overseas through work visa arrangements.

As many people in Queensland and Western Australia are leaving the seafood industry for work in the mineral resources sector, a limited number of people are available to fill positions ranging from deck hands and process workers through to skippers and divers. The resources sector pays much better, with less risk of loss of income owing to poor catch rates—remuneration to crew is generally tied to catch and is not a set wage—than what is possible for crew in the fishery sector. There is also a general lack of training opportunities and qualifications for those entering the seafood industry.

An overall trend for the commercial fishing sector in most regions is the struggle to attract young and skilled people to the industry. As seasoned operators leave the industry, the average experience level of fishers in the fleet is diminishing. A continued need for young people to enter the industry is heightened as the commercial fleet is generally shrinking, and people are leaving the industry because of retirement or moving into the resource sector. The aging demographic, remoteness of the locations, competition for employees due to other industries paying higher wages and the seasonal nature of the industry are making it difficult for the commercial fishing industry to acquire and retain young and skilled employees.

Reasons typically given for younger people's lack of interest in working in the industry were:

- uncertain career paths
- the industry being viewed as relatively informal
- little career advertising being undertaken
- few registered training organisations offering training opportunities
- the general seasonality of the work.

Unskilled young people readily apply for positions; however, difficulty is experienced when trying to source young people with the necessary skill set. Younger people are generally not as qualified for seamanship as older and more experienced workers. Many older workers in the industry are not interested in expanding their businesses and look toward retirement.

Lack of interest in commercial fishing positions also stems from the nature of the work, which generally involves extended periods away from home in difficult operating environments. This is particularly applicable for younger people who value access to modern communication such as

the internet and other recreational opportunities, which are limited in regional areas or on vessels.

Some respondents indicated that the shrinking commercial fleet is likely to exacerbate skilled labour shortages. A smaller fleet size will increase competition for the less skilled to enter the industry. For example, given the existence of a pool of seasoned and trained deck hands, deck hands wishing to enter the industry will be unwilling to undertake the required training if there is limited opportunity to get on a boat. Another potential problem for the industry in training 'new' people to begin a career in fishing is that there are seasoned and reliable deck hands vying for a place on board in areas where fleets have been reduced.

Respondents highlighted the following main recurrent issues:

- A general shortage of workers to crew vessels across all the major skill sets, especially engineers.
- The mineral resources sector being the main area of competition and loss of skilled employees.
- An Australia-wide shortage of workers across all major fisheries.

It was also noted that the Western Australian Rock Lobster Fishery has fewer issues in training and recruiting staff, given the recent downsizing of the industry.

A greater shortage of workers is identified in northern Australia, particularly in the prawn fisheries. This is due to the remoteness of the area, the higher intensity of oil and natural gas production relative to southern Australia, and workers' reluctance to relocate to remote areas.

Most respondents indicated that employment expectations for 2011–12 would be about the same as 2010–11. However, some areas of growth were indicated in specific fisheries. It was also noted by many respondents that recruitment is expected to be increasingly competitive and the difficulty of hiring adequately skilled crew is expected to continue. Some respondents noted that quota cuts in some subsectors have meant that there are fewer requirements for labour in 2011–12 in those sectors.

### **State/territory fisheries**

Stakeholders associated with state/territory fisheries indicate that it is difficult to fill positions across a range of occupational categories—from deck hands to skippers and seafood process workers—in wild-catch fisheries. Across jurisdictions, there is widespread competition for labour resources with the mineral resources sector and other agricultural industries.

Stakeholders highlighted that there was a lack of skilled people available to the sector, a lack of knowledge of career opportunities and a lack of succession planning within the industry. Here, there is a greater role for peak industry bodies to provide increased assistance to regulators to develop policy and direction toward meeting the industry's future labour and training needs. In addition, there is a lack of formal training opportunities and qualifications for those entering the seafood industry. Engineers are the most difficult to find as their skills are in highest demand elsewhere. In general, the industry has few young skippers (under 30 years of age).

In the Northern Territory, responses to job advertisements are largely from unskilled/inexperienced individuals. Industry has generally given up on using recruitment/classifieds and depends more on word of mouth or on 'poaching' workers from existing fishing businesses.

Fishery jurisdictions in southern Australia have fewer labour availability issues. This is in part due to less mineral and resource extraction industries being located in southern Australia. The West Coast Prawn Fishery in South Australia experiences greater difficulty filling positions for experienced and trained deck hands because of the remote location relative to the Spencer Gulf prawn fisheries. The Spencer Gulf fleet has recently experienced an increased rate of staff turnover, which has not been experienced before. Employees are mostly required for deck hand and marine engineer positions as a result of more competitive wages offered by other industries.

In Western Australia, the Western Rock Lobster Fishery is experiencing fewer issues in filling vacancies as the industry has undergone a period of restructure. In recent years, the fishing fleet has been halved and many experienced crew are not employed in the industry. As a consequence, they are moving into other areas of employment, which may result in future problems for the industry in obtaining experienced crew.

As with other fishing industries, the Tasmanian wild-catch sector is having difficulty attracting young people, is experiencing competition from the mineral resources sector and has an ageing demographic.

### **Commonwealth fisheries**

Respondents indicated that there is a general shortage in labour supply for skilled and experienced skippers, mates, engineers, fishing and deck hands. Acquiring employees in these positions has been a struggle for several years. One reason for the shortage is increased competition from the mineral resources sector for labour resources, particularly for skippers, engineers and divers for mineral exploration work. The conditions and salary offered in the mineral resources sector are more attractive than what is available in the fisheries sector.

Key Commonwealth fisheries sectors that are most affected by changes in the labour market are the deep sea operations in southern Commonwealth fisheries, some sectors of the Southern and Eastern Scalefish and Shark Fishery and the Northern Prawn Fishery. The Northern Prawn Fishery in particular has difficulties finding crew with suitable engineering qualifications, as a result of the fishery's proximity to areas where the mineral resources sector operates. This sector entices skilled workers through higher remuneration and better working conditions.

Respondents attributed the labour shortage in the commercial fishing industry to:

- competition for workers from multiple industries
- a lack of industry-specific training for commercial fishing in Australia
- the nature of the roles and the impact they have on lifestyle, as many weeks at sea can deter people from this type of work
- the ageing workforce
- immigration restrictions for sourcing from the international labour market.

The well-documented skill shortages in the maritime sector are likely to be compounded by the projected revitalisation of Australia's coastal and international shipping industries, the new investments in oil and gas projects and the commercial fishing industry.

A lack of availability of registered training programs in Australia is also affecting the skills shortage in the labour market. Training has been identified as being on-the-job, and therefore fishers must be skilled as trainers. It has been suggested that Certificate II in Fishing Operations

be offered as a school-based traineeship and that skill sets from Certificate III in Fishing Operations also be available.

In general, primary industries and fisheries are not seen as offering clear career pathways. Consequently, young people do not view the industry as an area that offers opportunities; rather it is seen as one where high-level skills are not required. In reality, jobs in the sector are becoming increasingly skilled and complex. Instead of fishing, school students are steered toward rural jobs. The seasonal nature of the commercial fishing industry is also incompatible with the current structure of traineeships, as the 'hands-on' learning is restricted to only the fishing season.

The nature of some jobs in the industry is also incompatible with some people's desired lifestyle. Some jobs entail many nights at sea, and living on a vessel. In general this affects the attractiveness of the industry to potential employees. Some specific examples of lifestyle factors include the 'fly-in fly-out' nature of the role, and the industry standard pay structure, which is based on share fishing agreements.

The commercial fishing industry is facing a worrying and unsustainable demographic situation. A particularly high proportion of workers are aged over 55 years. Current immigration laws create restrictions and frustration for companies within the industry attempting to source international skilled employees. In particular, fishing and deck hands are considered unskilled labour and therefore cannot be employed under current work visa regulations.

Operators who have larger operations are able to develop crew through on-the-job training but smaller operators with only two to three crew often experience difficulties. The industry—both the work and the pay scale—does not seem to attract skilled individuals.

## Seafood processing, sales and distribution

Seafood processing can involve a range of skills. These include cleaning, filleting and cutting fish, preparing smoked or marinated seafood, preparing sashimi-grade fish, freezing fish, preparing shaped and crumbed products, opening oysters and other shell fish (shucking), grading and boiling prawns/crustaceans and packaging seafood. Vocational qualifications exist to help people develop skills in their area of work, ranging from Certificate I to a diploma. These qualifications lead to a range of qualifications and help fill roles from seafood processing assistant to seafood processing worker and seafood processing leading hand. The work involved at each level varies from cleaning and filleting fish to cold storage. The more specialised areas of the work involve more complex processing tasks such as oyster shucking, prawn grading and handling and packaging sashimi-grade fish.

The sale and distribution of fish is the final stage of the supply chain of seafood to consumers. Workers at this level need a clear understanding of the products being sold. For example, the correct marketing names and seasonality of seafood, safe handling of fish to avoid food safety hazards, handling and packaging of seafood products, and the ideal cooking methods. At this level of the supply chain, workers may be employed by small specialist seafood suppliers, by restaurants or in seafood sections of large supermarkets. Vocational qualifications in seafood sales and distribution are available from Certificate II to Certificate IV.

## Current labour market issues

The current labour market issues in the post-harvest sector of the seafood industry are a lack of skilled and unskilled workers, a lack of young workers and the perceptions of the industry's future. Attracting skilled and unskilled workers appears to be more of an issue for small-

medium enterprises than for larger enterprises. The ageing population and the unpredictable future of the wild-catch sector are reported as having flow-on effects on the post-harvest sector. Respondents reported that attracting and retaining skilled oyster shucking, fish filleting, prawn grading and processing and trained retail workers is a challenge for the post-harvest sector.

Respondents from the post-harvest sector indicated that they do not expect to hire more people in 2011–12. Some respondents felt that a strategic plan promoting the industry and encouraging younger people into various jobs would be beneficial.

## Employment data needs

There is limited data available on the Australian seafood industry that can be used to determine aggregate employment levels and trends. Apart from the ABS employment data in the ABARES annual *Australian fisheries statistics* publication, no other data are collected on trends in employment in the industry at the national level. Large companies tend to have their own databases of employees, but these data are not generally available in the public domain.

Respondents had mixed views on whether they needed more comprehensive employment data to support their day-to-day operations and for the development of the broader industry. The wild-catch sector and industry peak body representatives reported a greater need for employment data compared with the aquaculture sector. Some respondents suggested that having more comprehensive employment data would be beneficial in mapping out skills formation strategies for the industry and accessing the international labour market. For example, respondents indicated that data can be used to support immigration applications by demonstrating skilled labour shortages in parts of the industry. Respondents also stated that the data can assist in better understanding the socioeconomic environment and can become useful in a number of discussions about fisheries employment management. It was also suggested that the data can assist in strengthening the industry's position in advocating proposals that may affect the industry.

Employment data are not routinely used at a national level because data are not uniformly collected across all jurisdictions (South Australia being an exception). Respondents stated that larger companies were likely to have a greater need for national employment data than were smaller enterprises. It was also stated that information explaining the available data and how the data can be turned into useful information for companies would be helpful.

Much of the research and data collected is incorporated in the agrifoods/agriculture broad sector groupings, and so is less useful for the seafood industry. Respondents suggested that research targeting the commercial fishing industry is often neglected. Respondents noted that there is a great need for employment data, but of equal importance is an increased industry capacity to understand and act on these data. Raised awareness and understanding of the use of the data collected would greatly assist the industry to:

- identify workforce needs and pathways
- develop career pathways
- identify key skills and articulate job descriptions
- identify qualifications and training resources required.

In the aquaculture sector, employment data were seen as less of a need, as these data needs were substantially met by state government initiatives to collect data through employment surveys of aquaculture farms. For example, employment data for the aquaculture sector can be accessed on an annual basis. These data are provided by the Department of Employment, Economic Development and Innovation in Queensland through an annual report to farmers and by the Department of Primary Industries and Resources in South Australia through fisher surveys for aquaculture operations. The South Australian database was reported by fishers to be a substantial source of employment data for that jurisdiction.

Despite these responses, it was generally agreed that accurate employment, education and training datasets at a national level would be useful and needed. This is especially true in an environment where education budgets are tight and need to be successfully targeted to industry development needs. However, it was suggested that if employment data are collected this should be at the same time as other data so that paperwork for operators is not increased. Some respondents who suggested that employment data are not needed indicated that the sector is too small-scale and did not require employment data, while others suggested that they make great use of employment companies to fill their positions and hence did not have a need for industry employment information.

## 5 Education and training in the Australian seafood industry

### Education and training requirements

The training and education requirements for workers in the seafood industry are described and addressed in the Seafood Industry Training Package and the Maritime Training Package. These packages have a detailed description of job roles across each sector of the industry and the training and skills required to successfully undertake these roles. The packages also assist in developing the range of skills required for the workforce of the seafood industry, including elements of:

- shipboard safety
- first aid training
- basic navigation skills and master/skipper/mate qualifications
- marine vessel repair and maintenance
- training of deck hands
- diving
- researching
- at-sea experience
- aquaculture farm management
- aquaculture farm work
- seafood processing
- seafood wholesale and retail.

Training for people involved in the industry against the competency requirements of the training packages are generally available from a range of Registered Training Organisations (RTOs). RTOs exist across Australia, although some geographic areas are disproportionately represented in training opportunities available through these providers compared with other locations. Key training and education enterprises include private providers such as the Australian Fisheries Academy in South Australia, and Seafood Training Tasmania. These institutions predominantly provide training that leads to qualifications up to Certificate III-level studies. Public providers such as TAFE and universities can provide higher qualifications. A full list of available RTOs by qualification is available at <http://training.gov.au/>. This list includes information on training providers (both public and private) registered to deliver the Seafood Industry Training Package qualifications.

The aquaculture sector requires key areas of competency to be addressed. These include a basic understanding of water quality, animal husbandry and farm management, as well as general farm skills—working with machinery (for example, pumps and aerators), maintenance tasks and food handling. Some workers in the aquaculture sector also require similar skill sets to those working in the commercial fisheries sector, such as diving, and basic vessel navigation skills. For

the commercial fisheries sector, key areas of competency include shipboard safety, skipper skills, and food handling. For the processing sector, basic skills in fish filleting, shucking, packaging and food management and safety are required. Across all sectors, a continued and increasing focus on management skills, including human resource management, is required, and has been identified as a need in key jurisdictions. Across the sectors, much of the training is on-the-job for unskilled people entering the industry, but a range of regulatory qualifications (certificate of competency) and tickets are required for key personnel in the industry, and these can be attained through RTOs.

Long-serving full-time employees in the industry already possess the required skill sets, qualifications and tickets. These employees require little further training apart from continued 'training on the job'. However, given the high turnover rate of employees in the industry (even among full-time employees), the regulatory requirement to possess licences and tickets to perform tasks and the need for training of new employees is a continual challenge for the industry. A major difficulty faced when training new employees is that, once they have attained regulatory qualifications, people relocate to other jobs after a relatively short period. Hence, a key challenge for the industry in meeting its training needs is to achieve a stable workforce, where skills can be retained. The industry is already taking measures to deal with some of these issues. For example, the aquaculture sector is increasingly automating processes through the use of electronic equipment. However, as this continues it will necessitate a number of new skilled positions to be created.

Seasonal workers require some basic understanding of farm management practices in the case of aquaculture, and some basic tickets in relation to onboard safety and food handling skills in the case of deck hands in the commercial sector. This includes occupational health and safety requirements, the ability to follow instructions, and animal husbandry and/or food processing/safety skills. As the seafood industry frequently uses seasonal workers, these workers do not always need to be trained on the job. For example, full-time employees in the industry usually have qualifications ranging from degree qualified, particularly in aquaculture hatcheries, to skipper, to engineer vessel qualifications, which help fill the skill gaps at the enterprise level. Moreover, while deck hands and shed workers are normally unskilled, employers frequently implement on-the-job training programs to improve employee skills.

In general employers seek skilled labour, but the reality is that most new entrants into the industry do not have formal training, especially in fishing activities. Moreover, the majority of lower level positions have poor education standards, which inhibit employees' willingness to try to advance. To overcome the first hurdle to achieve further education and qualifications in these areas, employees are required to have the basic courses of Year-10 English and mathematics studies. However, because of the increasing difficulty in obtaining skilled labour, employers are sourcing unskilled labour, with many employers reportedly taking on people with little or no education/training. As a result, the industry focus is on providing on-the-job training that can help people meet the regulatory ticket qualifications for employment in the industry. As they gain experience, the employees that stay in the industry progress to higher ticket qualifications.

## Suitability of available education and training courses

It is unclear from the survey responses whether training courses currently on offer are sufficient to meet the training needs of the seafood industry. While businesses in some regions are well served by RTOs, other areas lack training support. For example, in Queensland there are limited TAFE and university courses on offer that are relevant to the seafood sector and few RTOs offering Certificate III qualifications in fishing operations and seafood processing. In other

jurisdictions, such as South Australia, the industry has more support from the Australian Fisheries Academy (a private sector RTO) and they are able to provide ready and qualified training. Opportunities for government or school-based training for the commercial fishing sector is also seen as limited by industry stakeholders. Regulatory burden across the seafood industry compared with other comparable agricultural sectors was said to be heavy and a challenge for the industry in meeting its training requirements. Moreover, the approach to workforce planning, workforce development and the prioritisation of skills for development across the seafood industry needs to be based on an agreed strategy and implementation, and needs to be consistent across jurisdictions.

The most common qualification required by most workers in the industry is Certificate III, with many RTOs providing training to reach this level of qualification. Of more concern are higher qualifications. For example, the aquaculture sector is experiencing a declining trend in the number of graduates entering the industry with the requisite skill sets. Respondents have attributed this to the notion that aquaculture graduates are focused on research outcomes and professions rather than industry involvement and participation. Some respondents recommended that the industry needs to develop relationships with institutes that deliver higher education qualifications to ensure relevancy of content and alignment to the current industry practice. Respondents also recommended that studies be integrated with hands-on work experience.

Many respondents felt that the training courses on offer for the seafood industry are readily available and there have been initiatives to increase training over the past decade. The main issue for the industry to address is the lack of participants in these courses. If the fishery sector were to expand significantly in the future, training needs could increase, and might even change.

Attracting school leavers to the industry, and retaining them once they are in the industry, was seen as an impediment to training. It was felt that it would be beneficial to understand which courses are on offer, and where, and the number of students involved, so that industry can better target its recruitment efforts.

## Education and training data needs

Respondents felt that there is a general lack of education and training data available to adequately inform the industry. The availability of education and training data can improve understanding of the industry's size and workforce component. In particular, the identification of differing skill requirements may progress the identification of career pathways within the industry and the articulation of industry job descriptions. The data could also allow for greater alignment of training and education resources by identifying industry requirements, and could serve as a 'barometer' of the suitability of training being delivered across the industry.

Appropriate data may allow business enterprises involved in the fishing industry to relate training outcomes to increased productivity and therefore be able to determine a return on investment from undertaking education and training programs. Appropriate data will also allow the industry to effectively communicate its needs to education and training stakeholders. This would also apply to those stakeholders that provide a research and development capacity to industry. A greater understanding of industry needs in relation to education and training data will ensure the relevancy of training and research projects undertaken by third parties that view industry members as the end user of their findings.

The collection of workforce training data for the seafood industry should be supported by a program designed to increase capacity for the eventual use of the data by industry. This should

be designed to provide industry with an understanding of the datasets being collected and how the information collected can be incorporated into management structures and workforce development strategies. The effective dissemination of these data will also be critical in maximising outcomes arising from any education and training data collection processes. Skills training respondents suggested that the development of a central information hub in the form of a website would be the most efficient way to communicate education and training data to industry, training providers, stakeholders and potential industry entrants.

Respondents indicated that a comprehensive breakdown of the skills is required in each sector. For example, respondents believe it is beneficial to understand the number of people at each level of qualification. It was suggested that social profiling data of people who already have these qualifications and are working in the industry will benefit the industry. Specifically, respondents suggested that it will be beneficial to the industry to understand who is attracted to the seafood industry, in which regions and why, as well as their average age, responsibilities, and the number of years taken to reach their current employment position. Respondents also stated that a full list of the training programs available and the sources of competent trainers and possible sources of funding would be of assistance.

## 6 Conclusions

This report highlights recent trends that have affected the labour market for the Australian seafood industry, and provides a description of the employment, education and training datasets that currently exist. This report also provides an overview of a range of other existing information on the industry workforce. Finally, it presents some perspectives of industry stakeholders regarding recent labour market trends, and their current needs for employment, education and training related datasets.

Two major conclusions are drawn from the study. First, the limited datasets and information available for informing workforce decisions in the industry are difficult to access. This is mainly due to the dispersed publication of this information through various government websites, and the jurisdictional nature of the industry. While this report goes some way to increasing knowledge about this information, more can be done to increase awareness of existing datasets and how they can be used to inform industry. Second, there is a wide gap in the current information available on employment, education and training for the seafood industry in terms of coverage and reliability. For example, available data fail to reliably answer questions such as:

- How many jobs, and in which location, are generated (directly and indirectly) by the seafood industry across Australia?
- What is the demographic profile of those working in the industry and how is this changing?
- How many students are undertaking seafood industry related studies and where are they located?
- What is the basis for allocation of vocational education and training support funding to the seafood industry across jurisdictions and what additional data are required by these jurisdictions to better target their funding?
- How many students completing whole qualifications or seafood industry skill sets are later employed in the seafood industry?
- What qualifications/competencies are most sought by the industry?

The answers to these questions are important for providing the seafood industry with a strong basis for planning its workforce requirements. The above questions (and others) can be answered through a comprehensive industry-wide survey. In collecting data, the following requirements need to be taken into consideration:

- The data collected need to accurately identify the labour market trends for the industry.
- Ideally, data collected will enable profiling of the workforce; for example, age and gender clusters, numbers of workers from culturally and linguistically diverse groups, numbers of workers obtained through immigrant visa schemes, and the educational attainment of workers in the industry.
- Data should be collected regularly so trends can be determined. The resulting datasets should reflect the significant seasonality that exists in the industry, and record total numbers working and full-time equivalents.
- Data on education and training need to identify the number of people participating in courses and the geographical spread of that participation. It is important that datasets not only record enrolments in specific seafood industry training courses but also completions.

- Data on the employment destinations of people who complete graduate or vocational training need to be collected. It is important to better understand where students end up working after graduation, their role/position, the duration of employment and the type of employment—full-time, part-time or casual.
- It is desirable that data relating to education and training be aligned with the classifications in the Seafood Industry Training Package to make the datasets more relevant to the industry.

# Appendix A

## Survey questions to respondents to the stakeholder survey

- 1) What is your role?
- 2) Can you briefly describe your association?
- 3) Is your industry currently experiencing any problems filling labour demands?
- 4) What are the employment expectations for your industry in 2011–2012? Do you think you will be hiring more labour, less or about the same?
- 5) Are you aware of any, or have you noticed any employment trends?
- 6) In the course of normal business, does the industry typically use employment data?
- 7) Do you have a need for more comprehensive employment data?
- 8) In general, does your industry have a greater demand for skilled or unskilled labour?
- 9) What are the typical education and training requirements for new employees?
- 10) Do you believe the available education and training courses are sufficient?
- 11) Would data on education and training benefit your industry?

## Organisations that contributed comments to survey

A Raptis & Sons

Abalone Industry Association of South Australia Inc.

Austral Fisheries Pty Ltd

Australian Barramundi Farmers Association

Australian Council of Prawn Fisheries

Australian Maritime College

Australian Prawn Farmers Association

Australian Southern Bluefin Tuna Industry Association

Cleanseas Tuna and Australian Tuna Fisheries

Commonwealth Fisheries Association

Marine Produce Australia Limited

National Aquaculture Council

Natfish

Northern Territory Seafood Council

Primary Industries and Resources South Australia, Fisheries and aquaculture division

Primary Industries Skills Council SA

Primary Industries Training Advisory Council NT

Queensland Aquaculture Industries Federation

Queensland Aquaculture Skills Formation Strategy

Queensland Seafood Industry Association

Rural Training Initiatives

Seafood CRC Oyster Consortium

Seafood Experience Australia Ltd

Seafood Processors and Exporters Council

South East Trawl Fishing Industry Association

Sydney Fish Market

Tasmanian Seafood Industry Council

Tassal

Tasmanian Seafood Industry Council and Seafood Training Tasmania—board member

Western Australian Fishing Industry Council

Western Rock Lobster Council

Van Diemen Aquaculture Pty Ltd

# Glossary

|        |   |
|--------|---|
| ABARES | Australian Bureau of Agricultural and Resource Economics and Sciences |
| ABS    | Australian Bureau of Statistics                                       |
| ANZSCO | Australian and New Zealand Standard Classification of Occupations     |
| ANZSIC | Australian and New Zealand Standard Industrial Classification         |
| AQF    | Australian Qualifications Framework                                   |
| DEEWR  | Department of Education, Employment and Work Relations                |
| FRDC   | Fisheries Research Development Corporation                            |
| NCVER  | National Centre for Vocational Education Research                     |
| VET    | Vocational education and training                                     |

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