2006-2016 WORKFORCE

A baseline analysis of ABS Census Data

Tasmanian Seafood Industry Workforce

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This report was prepared by Lisa Denny alongside the Tasmanian Seafood Industry Council to address Objective 1 and 3 of the Tasmanian Seafood Industry Workforce Plan 2019:

1. To prepare the seafood industry for the new work order through a better understanding of workforce demand and training needs

2. To deliver and extend workforce development outcomes and outputs to stakeholders

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Tasmanian Government

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FOREWORD

The Australian Bureau of Statistics (ABS) Census data has long been a contentious issue for the seafood industry. Recent insight from Dr. Lisa Denny suggests that the information on the aquaculture sector may be more valuable than we originally thought. A validation exercise was undertaken with three salmon companies, to see if the analysis of the data presented in this report, aligned with their actual company data over the 2006-16 decade. The consultation revealed an accurate fit for the time period, and we are now confident that the analysis is a true representation of the aquaculture sub-sector.

The fishing sector remains fraught with error when it comes to Census data. This is due to the time of year the Census is conducted (mid-Winter), the nature of small fishing businesses and working arrangements with deckhands. We recognise that the numbers in this report may not accurately reflect actual employment in the wildcatch sector given the likelihood of under-reporting during August. However, the, but the overall profile and trends hold true over the decade. Dr. Denny is also interested to investigate if there is any correlation or multiplier, we could use in future Census periods. The fact remains that the depth of demographic, skillset and income data captured in the ABS Census is invaluable.

This report is retrospective, analysing the change over time for the 2006 to 2016 decade. We see a great importance of understanding where the industry has come from, to better understand the future workforce and where to direct the training resources.

It is a long time between Censuses, so we know that this data can only ever indicate long term trends. Noting that the next Census is this year, 2021, we are well on the way to a robust suite of tools to understand and capture the profile the Tasmanian seafood industry workforce.

Julian Harrington,

Chief Executive

Tasmanian Seafood Industry Council

EXECUTIVE SUMMARY

This report presents an analysis of ABS Census Data from the 2006 and 2016 Census years. The retrospective analysis sets a baseline of data for future Census years and will be useful in revealing Tasmanian seafood industry workforce trends.

KEY FINDINGS

- The Tasmanian seafood workforce, around 2,500 people in 2016, makes up 1.13% of the Tasmania workforce and has grown by 27% since 2006, increasing its share from 0.86% in 2006.
- The Tasmanian seafood workforce makes up 23.7% of the Australian seafood workforce, which represents 0.1% of the total Australian workforce.
- Aquaculture represents around two thirds of the Tasmanian seafood workforce (65.2%) followed by fishing (20.6%) and seafood processing (14.3%)
    - The aquaculture sub-sector recorded a 73.5% increase in workforce size over the decade to 2016
- Over three quarters of the Tasmanian seafood workforce is male (75.7%), increasing from 71.4% in 2006.
- The average age of workers in the seafood industry is 39.9 years, a slight decline in average age since 2006. This is explained by the changed sub-sector composition of the workforce over time and their respective age profiles.
- In 2016, three in five seafood workers were employed full time, increasing by 15.6% over the decade.
- In 2016, the average hours worked in the week preceding the Census was 38.2 hours.
- Most (80.3%) of seafood workers are employees, with the remainder being either owners of unincorporated or incorporated businesses with or without employees, or a contributing family member. However, this differs considerably for the fishing workforce who are predominantly business owners.
- Compared with 2006, and after adjusting for CPI, the seafood workforce in 2016 had higher average levels of income across all sub-sectors.
- Almost half (49.0%) of the seafood workforce's highest level of educational attainment was completing secondary education, an improvement of 9.1 percentage points over the decade.
- Over the decade, as the composition of the seafood workforce grew and changed, it also experienced a change in the type of work available; both jobs and skill level
    - The upskilling of the seafood workforce over the decade to 2016 saw a shift to more highly skilled jobs and less lower skill jobs (with the exception of the fishing sub-sector which increased its deck hands predominantly).
    - The greatest increase in growth was in those occupations which require specialist and technical skills. Jobs such as specialist managers increased by 650% over the decade and the introduction of occupational and environmental health professionals which were not employed in the industry in 2006.
    - The aquaculture sub-sector increased the number of entry level jobs (usually considered skill level 3 occupations) which also provide for career progression from

lower skill level jobs. This is a positive and unique situation across all industry sectors in Tasmania.
    - While the seafood workforce is more highly educated and the jobs are more highly skilled compared with a decade ago, a high level of either over-qualification or under-qualification exists within the workforce. This could compromise the productivity and safety of the sector and the career development of workers.
- It is likely that the seafood workforce will continue to evolve and shift toward more highly skilled requiring higher level of education, training and skill development.

INTRODUCTION

The seafood industry is a complex and diverse industry sector comprising three very different sub-sectors; aquaculture, fishing and seafood processing. It is also serviced by a range of other sectors predominantly in the professional services and transport and logistics industries, however, these are not included in the direct Tasmanian seafood industry workforce.

The Tasmanian seafood workforce made up around a quarter (23.7%) of the total Australian seafood workforce which in turn represents 0.1% of the total Australian workforce.

Since 2006, there has been considerable change in the size, share and composition of the Tasmanian seafood workforce and its sub-sectors as well as its share of the Australian seafood workforce.

This report provides a profile of the seafood workforce in Tasmania using 2016 ABS Census of Population and Housing data and outlines the evolution of the sector's workforce over the previous decade. This detailed understanding of the sector will provide a benchmark for engagement with industry members and further analysis as well as inform the development of scenarios for the future of the seafood workforce over the next 10 years.

THE TASMANIAN SEAFOOD WORKFORCE OVERVIEW

In 2016, the direct seafood industry was made up of around 2,434 workers of which aquaculture represents around two thirds of the seafood workforce (65.2%) followed by fishing (20.6%) and seafood processing (14.3%)[1].

In the decade since 2006, the direct seafood industry workforce in Tasmania grew by 747 people, or 44%, to 2,438 workers. The growth was predominantly in the aquaculture sub-sector (90.0%), equivalent to an additional 672 people. The fishing sector increased by 105 persons while there was a slight contraction in the number of people employed in the seafood processing sub-sector.

SHARE OF THE ECONOMY

The Tasmania seafood workforce made up around 1.13% of the total Tasmanian workforce in 2016, increasing its share by 27%, from 0.86%, over the decade since 2006.

The Australian seafood workforce made up 0.1% of the total Australian workforce in 2016.

[1] ABS (2016) Census of Population and Housing, place of work dataset

The profile of the seafood workforce differs between Tasmania and Australia. Almost half of the Australian seafood workforce comprised fishing (46.4%), followed by aquaculture (38.6%). Almost two thirds of the Tasmanian seafood workforce was in aquaculture (65.2%).

Table 1. Share of the workforce, by sub-sector, Australia and Tasmania, 2016

	Australia (%)	Tasmania (%)
aquaculture	38.6	65.1
fishing	46.4	20.6
seafood processing	14.9	14.3

The Tasmanian seafood workforce made up almost a quarter (23.7%) of the Australian seafood workforce, increasing by 29.5% since 2006 when the share was 18.3%. Almost two in five (39.9%) aquaculture workers in Australia work in the Tasmanian aquaculture sub-sector.

Table 2. Tasmanian share of the Australian seafood workforce, by sub-sector, 2016

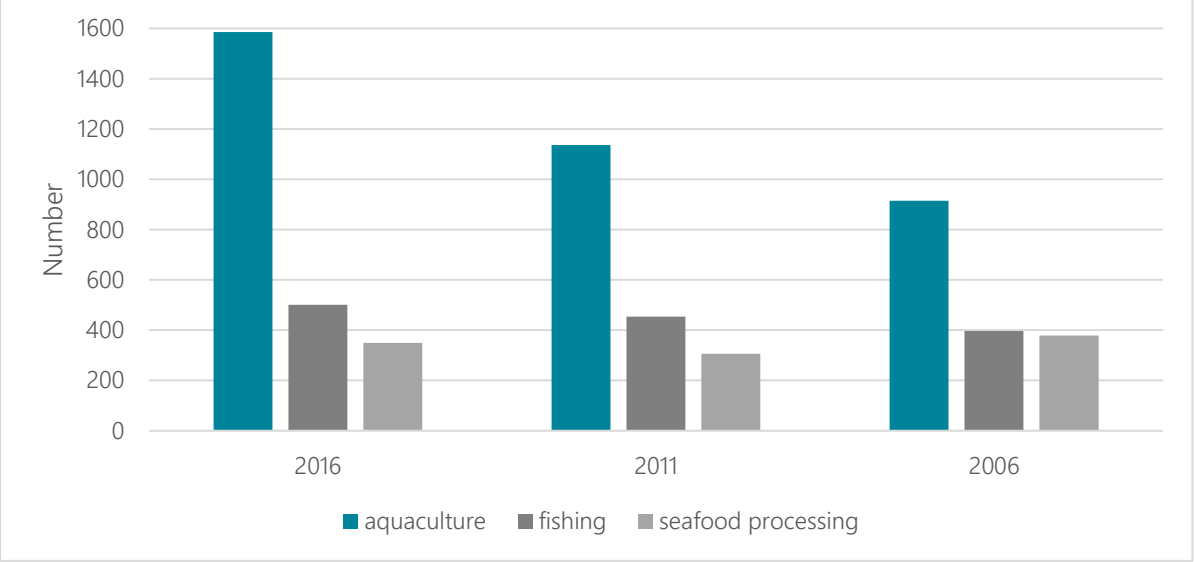
	Share of Australian Seafood Workforce (%)
aquaculture	39.9
fishing	10.5
seafood processing	22.7
total	23.7

WORKFORCE SIZE

In 2016, there were 2,434 workers in the Tasmanian seafood industry, increasing from 1,690 in 2006.

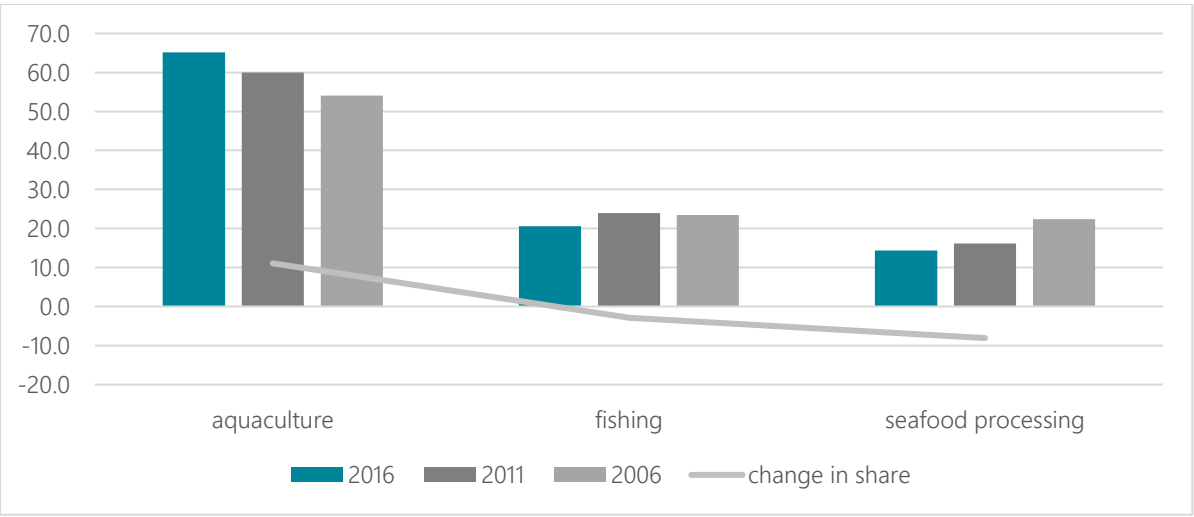
Nearly two thirds of workers (65.2%) were employed in the aquaculture sub-sector (1,586 people), 20.6% in fishing and 14.3% in seafood processing.

Figure 1. Seafood workforce by sub-sector, Tasmania, number, 2006 to 2016



The aquaculture sub-sector recorded a 73.5% increase in workforce size over the decade (672 people), increasing its share of the total seafood workforce by 11.1 percentage points. While the number of people working in the fishing sub-sector increased by 26.5% (105 fishers), its share of the total workforce declined by 2.8 percentage points. The number of seafood processing workers declined by 30 over the decade and the share of the seafood workforce declined by 8.1%.

Figure 2. Share of seafood workforce by sub-sector, Tasmania, 2006 to 2016



OCCUPATION PROFILE

While the seafood industry workforce grew over the decade, it also experienced a change in the type of work available; jobs and skill level (where skill level is equivalent to the required level of educational attainment).

The top 20 occupations in the seafood industry and their sub-sectors are listed in Table 3 by occupation and ABS ANSZCO skill level[2].

Table 3. Top 20 seafood industry occupations by sub-sector and skill level, Tasmania, 2016

Skill level		Aquaculture	Fishing	Seafood Processing	Total
5	Seafood Process Workers	218	23	158	399
1	Aquaculture Farmers	369	8	11	388
4	Deck and Fishing Hands	25	262	0	287
5	Aquaculture Workers	213	4	4	221
3	Other Miscellaneous Technicians and Trades Workers	49	38	0	87
1	Marine Transport Professionals (skippers)	40	45	0	85
5	Packers	39	0	26	65
2	Agricultural Technicians	47	0	0	47
1	Production Managers	18	0	16	34
1	Other Specialist Managers	20	0	10	30
4	General Clerks	12	10	8	30
4	Bookkeepers	6	23	0	29
4	Forklift Drivers	19	0	8	27
5	Commercial Cleaners	24	0	0	24
1	Chief Executives and Managing Directors	12	10	0	22
1	Occupational and Environmental Health Professionals	22	0	0	22
2	Office Managers	10	9	3	22
4	Agricultural, Forestry and Horticultural Plant Operators	18	0	0	18

[2]The Australia New Zealand Standard Classification of Occupations is an international classification system for standardising occupations by their educational requirements and skill specialisation. Skill level 1 occupations require a bachelor degree or higher, skill level 3 jobs required a certificate III or IV and skill level 5 jobs require a certificate I or no formal post school qualification to undertake the tasks of the job.

4	Truck Drivers	5	4	9	18
1	General Managers	9	3	5	17

Source: ABS Census of Population and Housing, 2016

Change since 2006

The occupation and skill profile has change within the seafood industry in the decade since 2016, as shown in Table 4 below which lists the top 20 growth occupations. The greatest increase in growth has been in those occupations which require specialist and technical skills such as specialist managers which increased by 650% in the decade and occupational and environmental health professionals which were not employed in the industry in 2006.

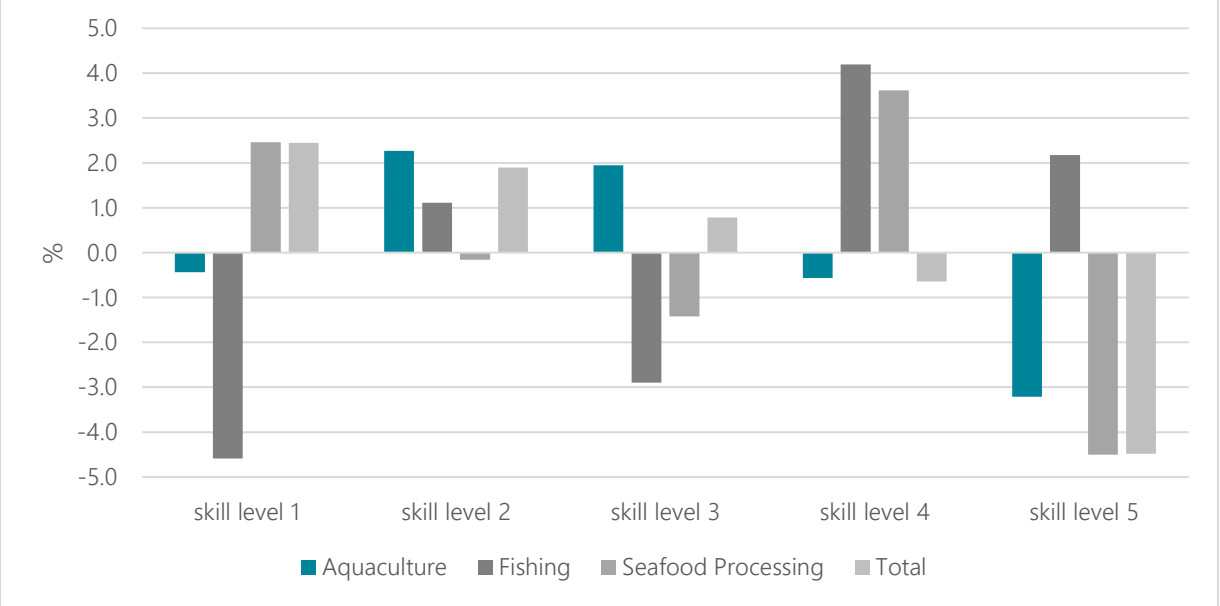
These occupations and the shift within the sector may appeal to those young Tasmanians and potential workforce entrants given that technical skills are more likely to provide job and financial security and the passion and interest in the environment.

Table 4. Top 20 occupations by growth, number and rate, seafood industry, Tasmania, 2006 to 2016

Skill level	Occupation	Number	% change
1	Aquaculture Farmers	118	43.7
4	Deck and Fishing Hands	69	31.7
5	Aquaculture Workers	53	31.5
1	Marine Transport Professionals	42	97.7
5	Seafood Process Workers	40	11.1
3	Other Miscellaneous Technicians and Trades Workers	30	52.6
5	Packers	30	85.7
1	Other Specialist Managers	26	650.0
2	Agricultural Technicians	24	104.3
1	Occupational and Environmental Health Professionals	22	N/A
4	Forklift Drivers	17	170.0
5	Commercial Cleaners	15	166.7
3	Electricians	15	N/A
2	Office Managers	13	144.4
1	Production Managers	12	54.5
4	Agricultural, Forestry and Horticultural Plant Operators	11	157.1
3	Metal Fitters and Machinists	11	183.3
4	Storepersons	9	300.0
1	Chief Executives and Managing Directors	8	57.1
1	Human Resource Managers	8	266.7

There has also been an upskilling of the overall seafood industry workforce over the decade; a shift to more highly skilled jobs and less lower skill jobs (with the exception of the fishing sub-sector which increased its deck hands predominantly). The aquaculture sub-sector in particular increased the offering of entry level jobs (usually considered skill level 3 occupations) which also provide for career progression from lower skill level jobs. See Figure 3.

Figure 3. Change in the share of seafood industry occupations by skill level and sub sector, Tasmania, 2006 to 2016



AGE AND SEX

Over three quarters of the Tasmanian seafood workforce is male (75.7%), increasing from 71.4% in 2006. This can be explained by an increase in the proportion of men working in aquaculture and seafood processing since 2006, offset by a slight decline in the proportion of men working in fishing.

Table 5. Seafood industry sub-sectors, male and females, Tasmania, 2006 and 2016, proportion

	Male		Female	
	2016	2006	2016	2006
Aquaculture	78.2	75.5	21.7	24.5
Fishing	80.9	81.5	19.1	18.5
Seafood processing	57.7	53.5	42.3	46.5
total	75.7	71.4	24.3	28.7

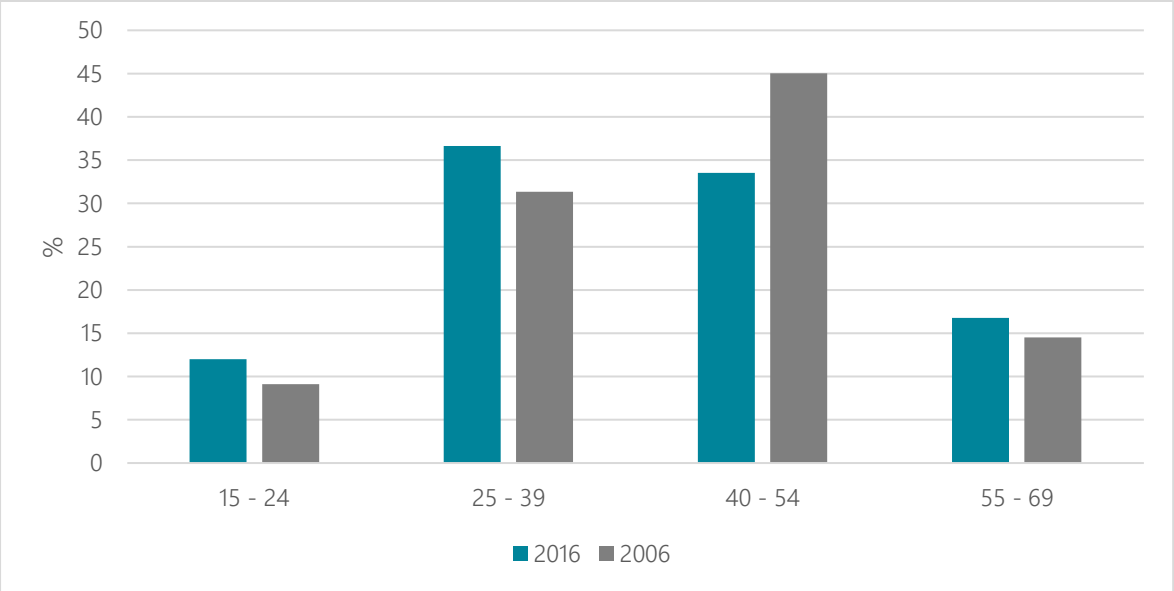
The average age of workers in the seafood industry is 39.9 years, a slight decline in average age since 2006 despite an increase in average age for the sub-sectors apart from seafood processing. Fishers are the oldest in the seafood workforce (averaging 43.8 years), followed by those working in aquaculture (38.1 years).

Table 6. Average age of seafood workforce by sub-sector, Tasmania, 2006 and 2016

	2016	2006
Aquaculture	38.1	37.8
Fishing	43.8	43.6
Seafood processing	39.3	39.8
Total	39.9	40.2

Around half of the seafood workforce is aged over 40 (50.3%), considerably less than in 2006 (59.5%). The distribution of the workforce by age group changed substantially over the decade. A greater proportion of the total workforce was aged between 25 and 39 years (36.6%) compared with 31.3% in 2006, and considerably less were aged between 40 and 54 years (33.5%), compared with 45.0% in 2006, contributing to slowing the ageing of the seafood workforce in Tasmania.

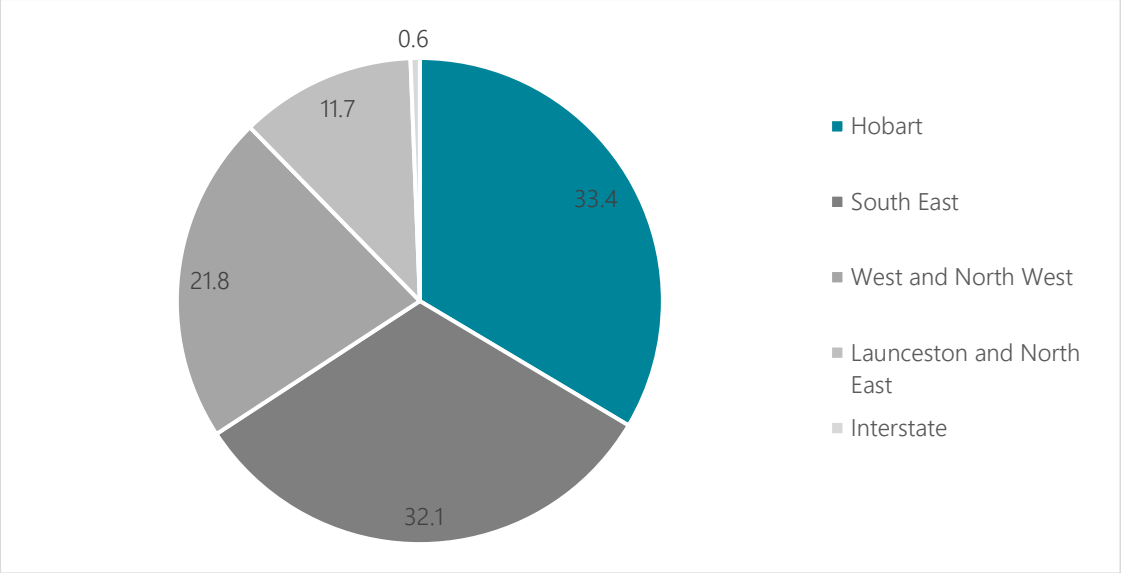
Figure 4. Age structure of the seafood workforce, Tasmania, 2006 and 2016



PLACE OF USUAL RESIDENCE

Two thirds of the seafood workforce live in Hobart (33.4%) or the south east of Tasmania (32.1%) while one in five (21.8%) live in the west and north west of the state. A very small proportion live interstate or have no fixed address (0.6%).

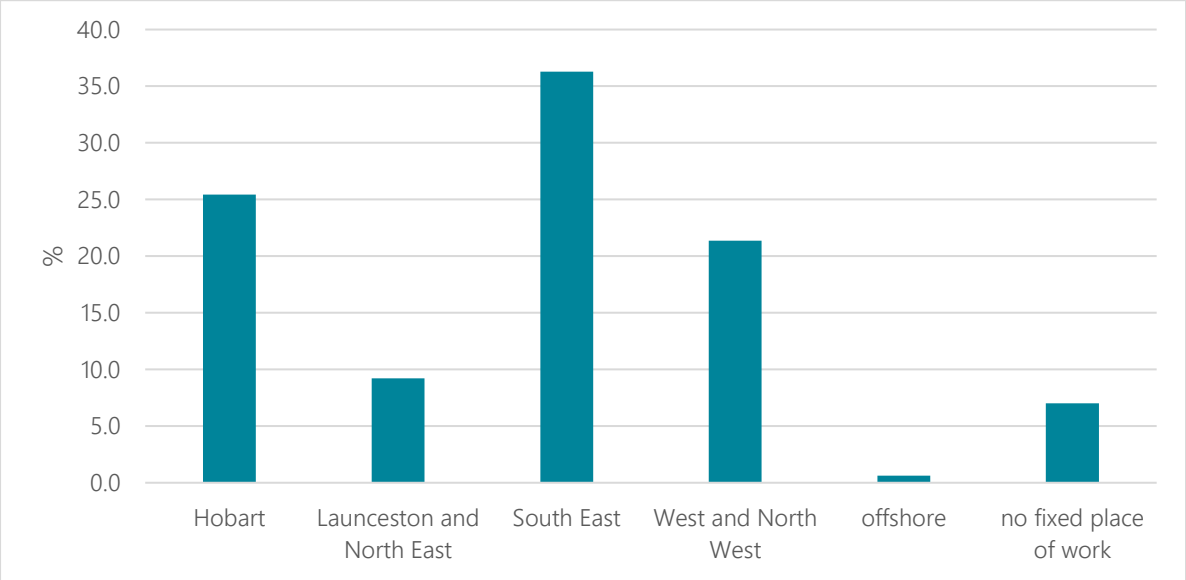
Figure 6. Place of usual residence, seafood workforce by SA4 and interstate, Tasmania, 2016, %



PLACE OF WORK

Most of the seafood workforce work in the south east of Tasmania (36.3%) or Hobart (25.4%), while around 7.6% have no fixed place of work.

Figure 7. Place of work, seafood workforce by SA4 and elsewhere, Tasmania, 2016, %



INDIGENOUS STATUS

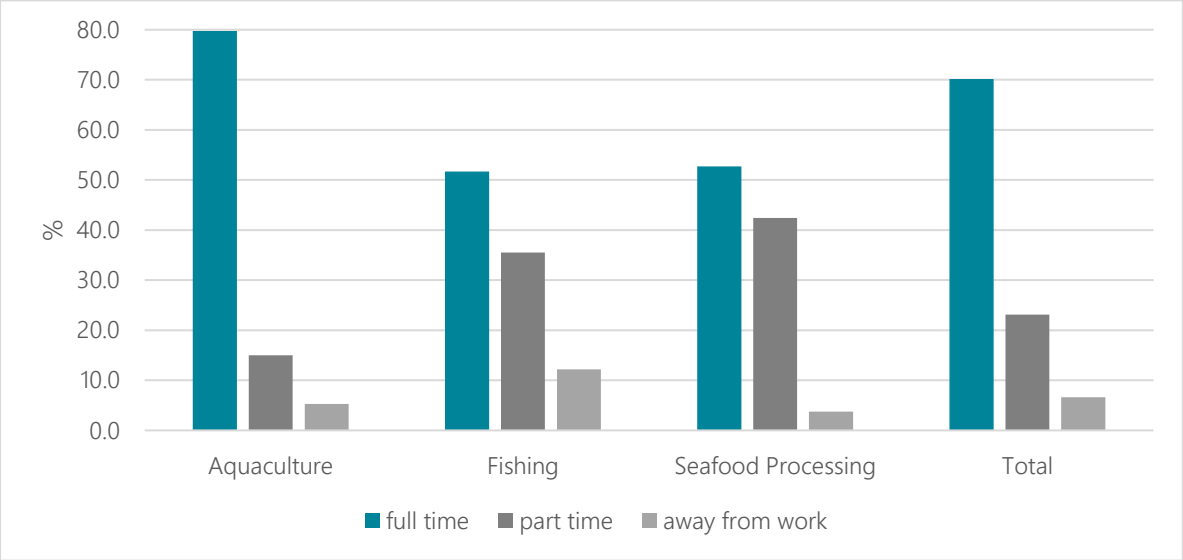
In 2016, 3.8% of the seafood workforce identified as indigenous.

LABOUR FORCE STATUS

In 2016, three in five seafood workers were employed full time. The proportion employed full time, part time or away from work at the time of the Census in August 2016 differed for each sub-sector of the seafood industry.

Nearly four in five (79.8%) of those employed in the aquaculture sub-sector were employed full time, while around half in the fishing and seafood processing sectors worked full time (51.7% and 52.7% respectively). Around two in five (42.4%) seafood processing workers were employed part time, while 12.2% of fishers were 'employed, but away from work' at the time of the Census[3].

Figure 8. Labour force status, seafood workforce by sub-sector, Tasmania, 2016



CHANGE SINCE 2006

Since 2006, a greater proportion of the seafood workforce was employed full-time in 2016, increasing by 15.1%. The proportion employed full-time in the seafood processing sub-sector increased by 23.3%.

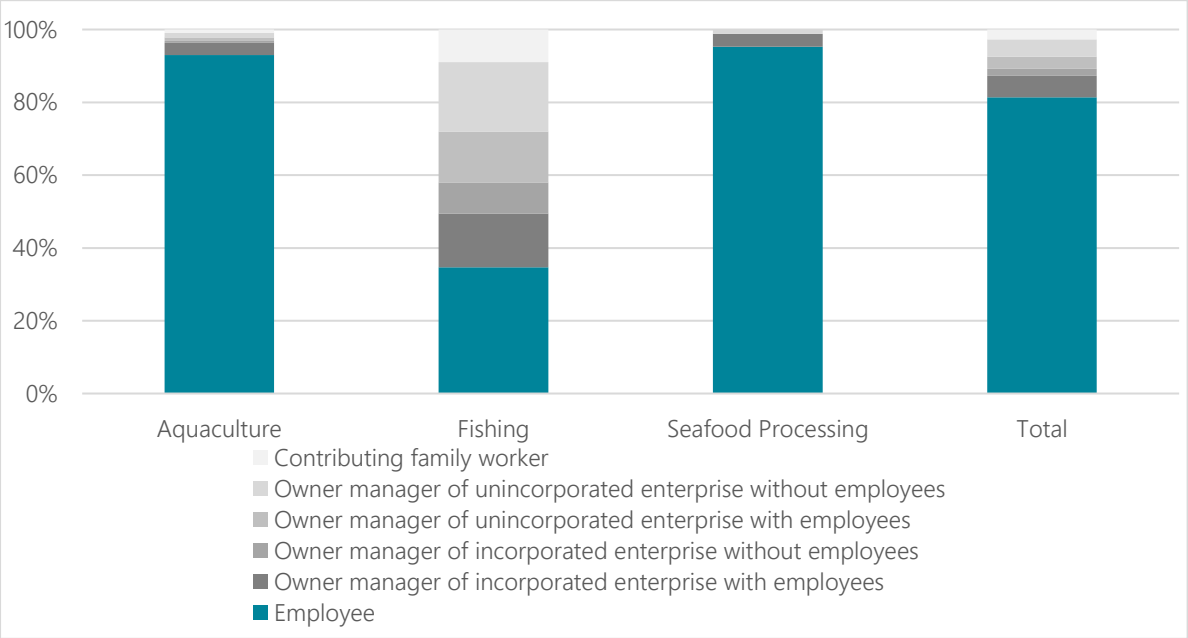
[3] The Census is undertaken in August which is a time in the year not conducive to wild-catch fishing.

STATUS IN EMPLOYMENT

Most (80.3%) of the seafood industry workers are employees, with the remainder being either owners of unincorporated or incorporated businesses with or without employees, or a contributing family member.

For the fishing sub-sector the profile of employment status differs considerably to the overall seafood industry workforce. A third of fishers are employees, nearly one in five (18.4%) are owners of an unincorporated business with no employees, 14.2% own an incorporated business with employees and 13.4% own an unincorporated enterprise with employees. 8.6% are contributing family members.

Figure 9. Status in employment, seafood workforce by sub-sector, Tasmania, 2016, %

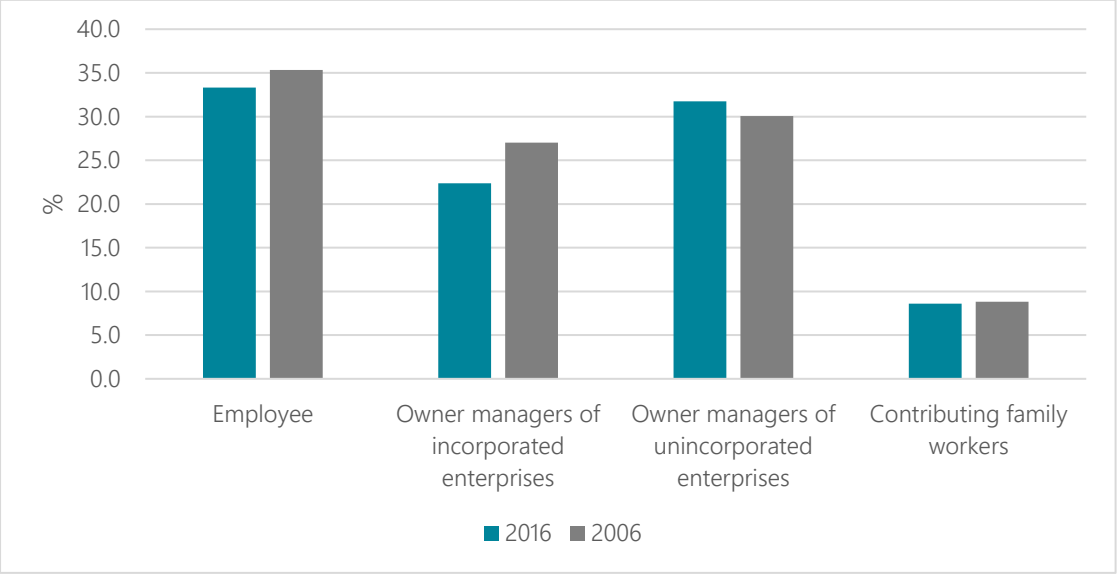


CHANGE SINCE 2006

A greater proportion the seafood workforce was employed in 2016 than in 2006, an increase of 5.4 percentage points from 74.9%, led by a large increase in the aquaculture sub-sector (7.0 percentage points), but offset by a decline for fishers (2.0 percentage points) and seafood processing workers (0.3 percentage points).

For the fishing sub-sector, in 2016, the proportion of the workforce who were owners of incorporated enterprises declined compared with 2006, while the proportion who were owners of unincorporated enterprises increased.

Figure 10. Status in employment, fishing workforce, Tasmania, 2016 and 2006, %



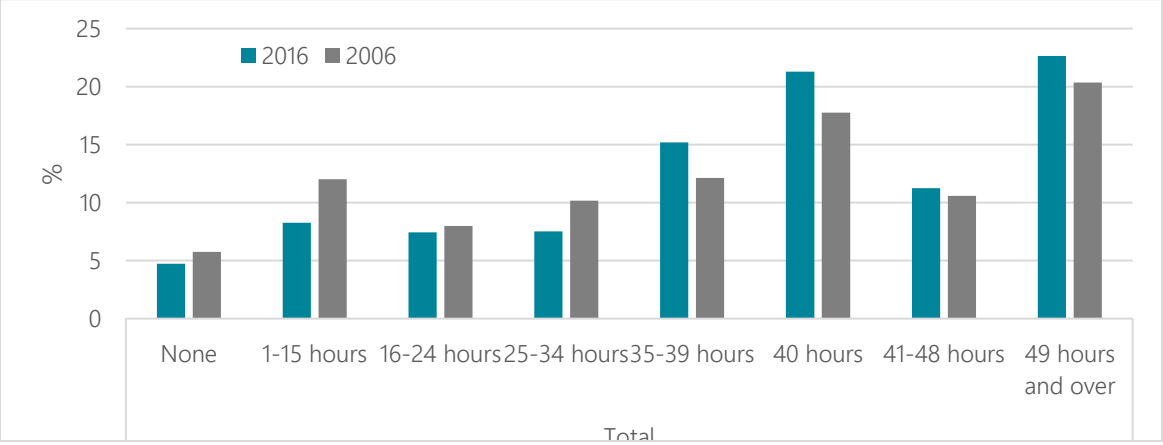
HOURS WORKED

In 2016, the average hours worked in the week preceding the Census was 38.2 hours for the seafood workforce. This differed considerably for the sub-sectors. For the aquaculture workers, the average hours worked was 40.3, while it was 34.4 for fishers and 29.3 for those in the seafood processing workforce.

Average hours worked data is not available from the 2006 Census.

In 2016, over half of the seafood workforce worked 40 or more hours (55.2%) compared with 48.7% in 2006. A greater proportion of the seafood workforce worked more than 35 hours than in 2006, and less of the workforce worked between 1 and 34 hours in 2006 compared with 2016.

Figure 11. Hours worked, seafood workforce, Tasmania, 2016,

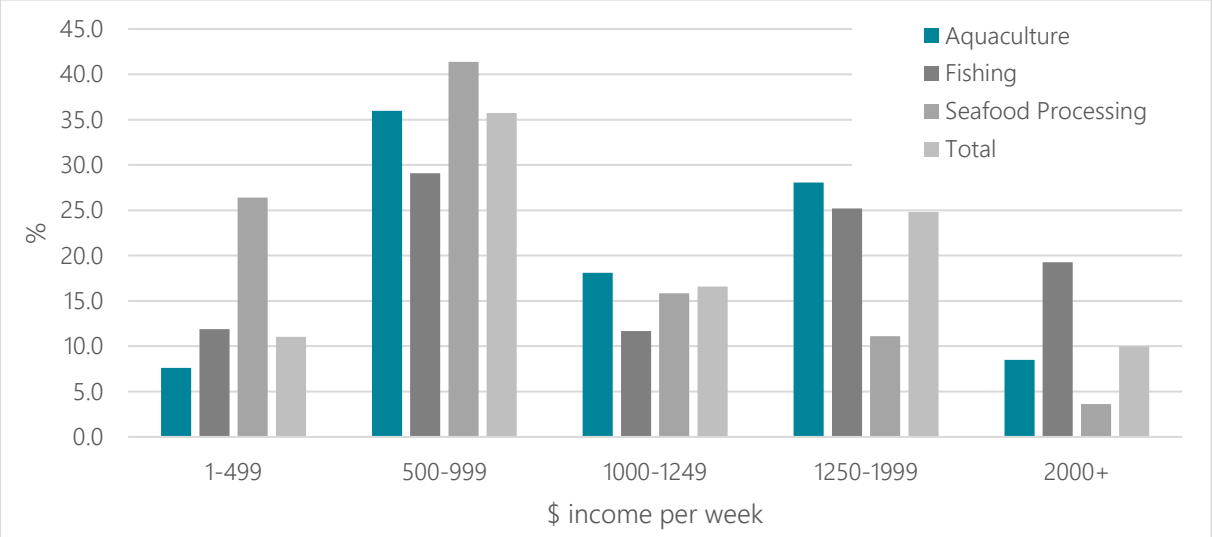


INCOME[4]

Around half of the seafood workforce in 2016 earned between $1 and $999 per week, equivalent to up to $51,999 per annum. A further 41.4% earned between$ 52,000 and $103,999 with the remainder (10.0%) earning above $2,000 per week (more than $104,000 per annum). Considerable differences in income exist in between the sub-sectors. A quarter (26.4%) of seafood processing workers earn between $1 and $499 per week and a further 41.4% earn between $500 and $999 per week, so that over two thirds of the seafood processing sector have annual income up to $51,999.

Almost half (46.2%) the aquaculture workers had annual income between $52,000 and $103,999 while one in five (19.3%) fishers had annual income over $104,000.

Figure 12. Income, seafood workforce by sub-sector, Tasmania, 2016



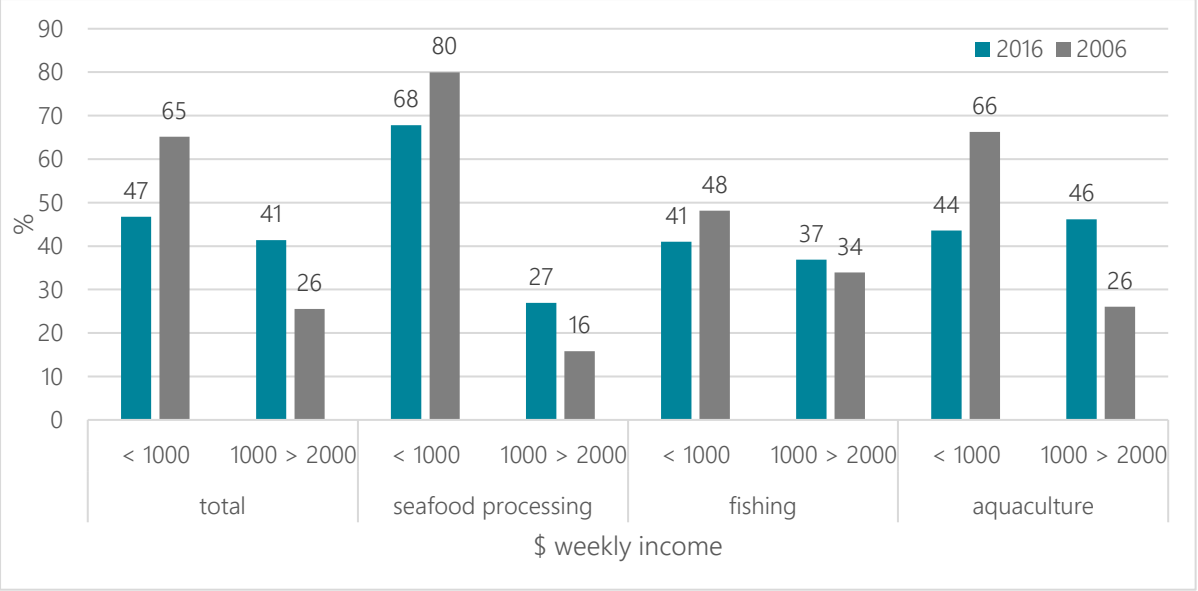
CHANGE SINCE 2006

Compared with 2006, and after adjusting for CPI, the seafood workforce in 2016, had higher average levels of income across all sub-sectors.

For all sub-sectors there was a considerable decrease in the proportion of the workforce with income less than $1,000 per week (18 percentage points), in real terms, and an increase in the proportion of the workforce earning between $1,000 and $2,000 per week (15 percentage points), in real terms, particularly for the seafood processing and aquaculture sub-sectors.

Figure 13. Income, seafood workforce, Tasmania, 2016 and 2006

[4] Income as measured in the Census includes all forms of income other than just wages and salaries.

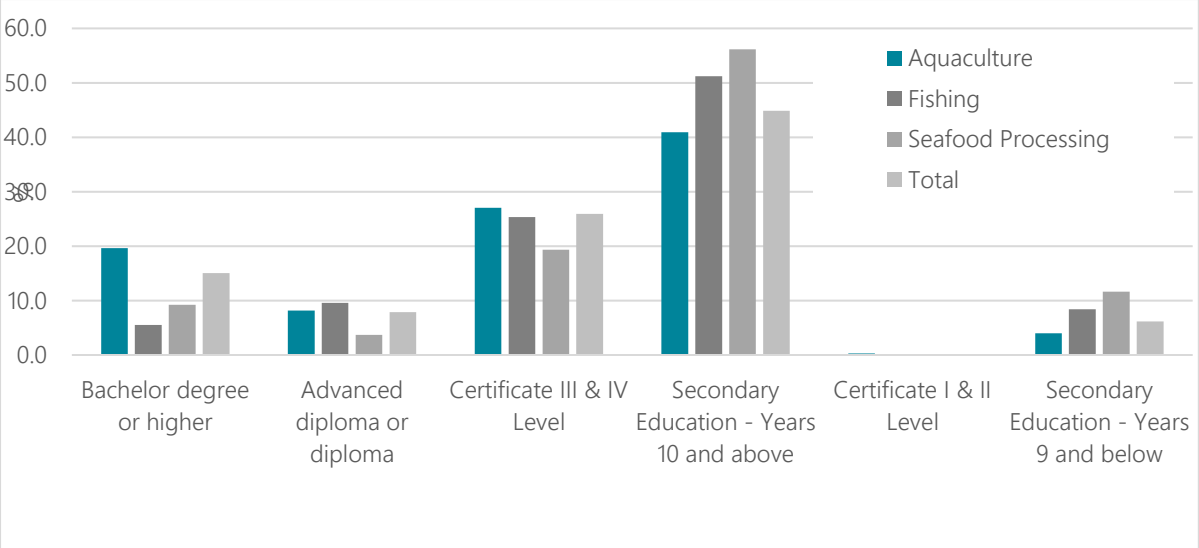


EDUCATIONAL ATTAINMENT

Around half (51.0%) of the seafood workforce's highest level of educational attainment was completing secondary education – years 10 and above (44.9%) and years 9 and below (6.2%). Around a quarter had achieved a vocational qualification; a certificate III or IV (25.9%) or an advanced diploma or diploma (7.8%), and 15.1% had completed a bachelor's degree or higher.

The highest level of educational attainment differs by seafood sub-sector. Those working in aquaculture were more likely to have completed a bachelor degree or higher (19.6%) while those working in the seafood processing sector were more likely to have completed secondary schooling (67.8%). Two thirds of workers in the seafood processing sector had no post-school qualifications, compared with 44.9% in the aquaculture sector.

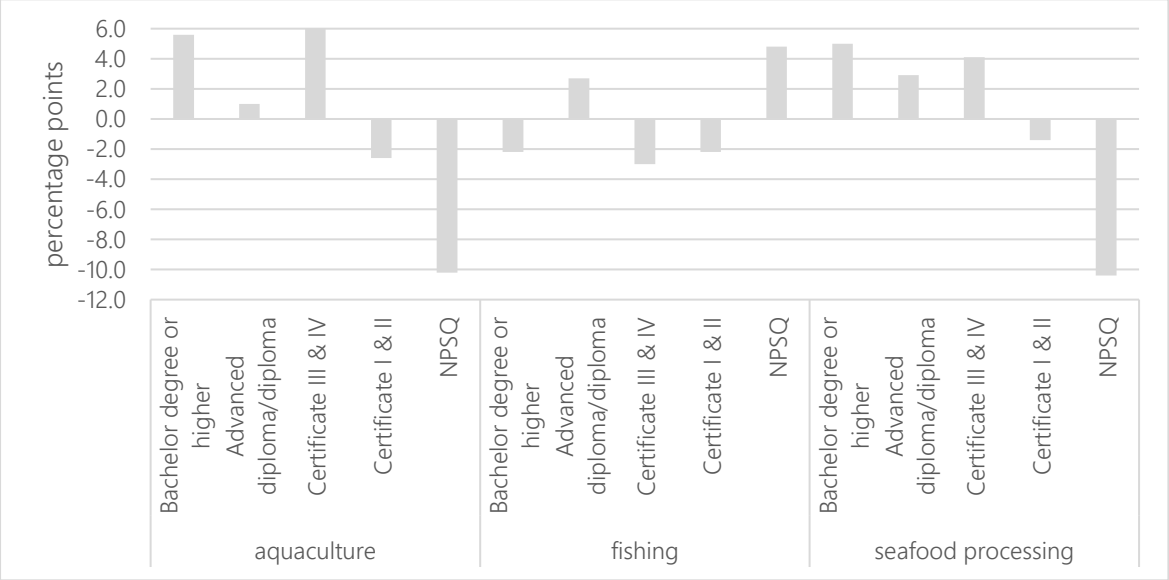
Figure 14. Highest level of educational attainment, seafood workforce by sub-sector, Tasmania, 2016



Change since 2006

Since 2006, the seafood workforce has become more highly educated. The proportion of the workforce who had completed post-school qualifications increased by 9.1 percentage points over the decade from 39.9% to 49.0%. The increase in higher educational attainment was evident from the increase in the completion of bachelor degree or higher qualifications (4.7 percentage points) and Certificate III and IV qualifications (4.7 percentage points), most notably in both the aquaculture and seafood processing sub-sectors.

Figure 15. Change in share of the highest level of educational attainment, seafood workforce by sub-sector, Tasmania, 2016



FIELD OF STUDY

Almost half of the seafood workforce had not completed post school further education or training. For those which had, aquaculture and marine craft operations were the top two fields of study (8.9% and 5.7% respectively), with higher proportions for their respective sub-sector. The remainder of the top 10 fields of study reflect the increasing demand for business acumen, science and engineering in the seafood industry.

Table 7. Top 10 fields of study, seafood workforce by sub-sector, Tasmania, 2016

	Aquaculture	Fishing	Seafood Processing	Total
Aquaculture	12.9	1.2	2.3	8.9
Marine Craft Operation	3.0	17.6	0.9	5.7
Business and Management	2.9	0.8	1.1	2.3
Engineering and Related Technologies	1.7	1.6	0.0	1.7
Agricultural Science	2.0	0.6	0.9	1.4
Sport and Recreation Activities	1.6	0.6	0.0	1.2
Boilermaking and Welding	1.1	0.6	0.0	1.1
Carpentry and Joinery	0.9	1.8	0.0	1.1
Accounting	1.2	0.0	1.4	1.0
Cookery	0.9	0.6	1.7	1.0

AQUACULTURE

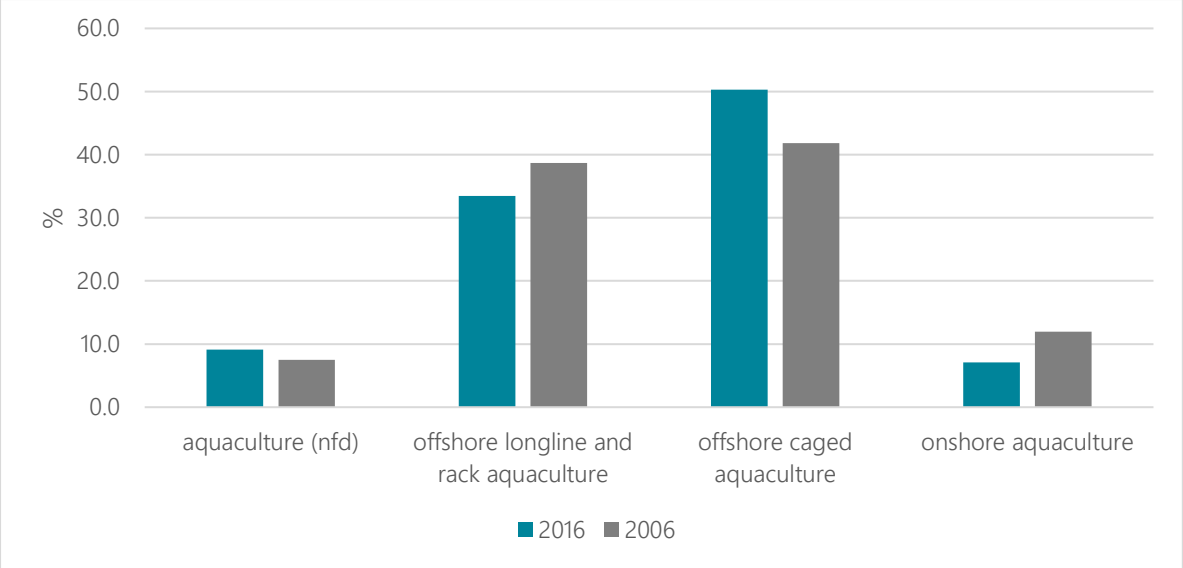
The aquaculture sub-sector comprises offshore longline and rack aquaculture, offshore caged aquaculture and onshore aquaculture as well as other aquaculture.

SUB-SECTORS

In 2016, over half (50.3%) of Tasmania's aquaculture workforce was in offshore caged aquaculture. Compared with 2006, the offshore caged aquaculture workforce doubled in size from 385 to 799 (107.5% growth) and increased its share of the aquaculture workforce by 8.4 percentage points, increasing from 41.8% in 2006.

The offshore longline and aquaculture workforce also increased; growing by 49.4% to 532 from 356 in 2006. The onshore aquaculture workforce increased by 3 to 113 over the decade.

Figure 16. Aquaculture workforce by sub-sector, 2006 and 2016, Tasmania



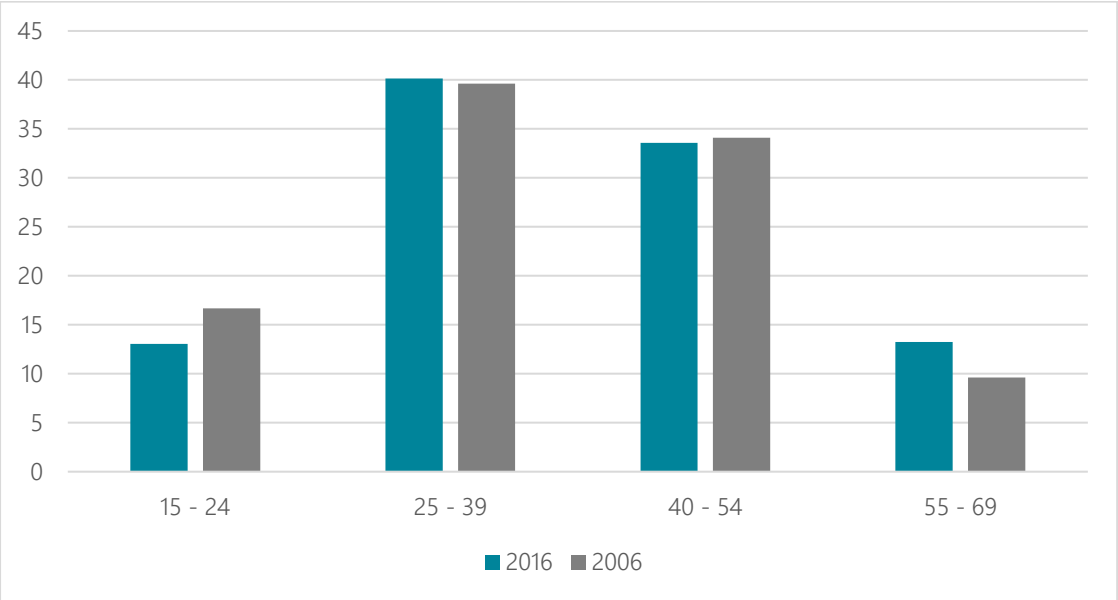
AGE STRUCTURE OF THE WORKFORCE

The average age of the aquaculture workforce increased to 38.1 years in 2016 from 37.8 in 2006.

Nearly half the aquaculture workforce was aged over 40 (46.8%) in 2006, compared with 43.7% in 2006.

Around two in five workers (40.1%) were aged between 25 and 39 years, a slight increased compared with 2006. Around 13.0% of the aquaculture workforce was aged 15 to 24 years, compared with 16.7% in 2006.

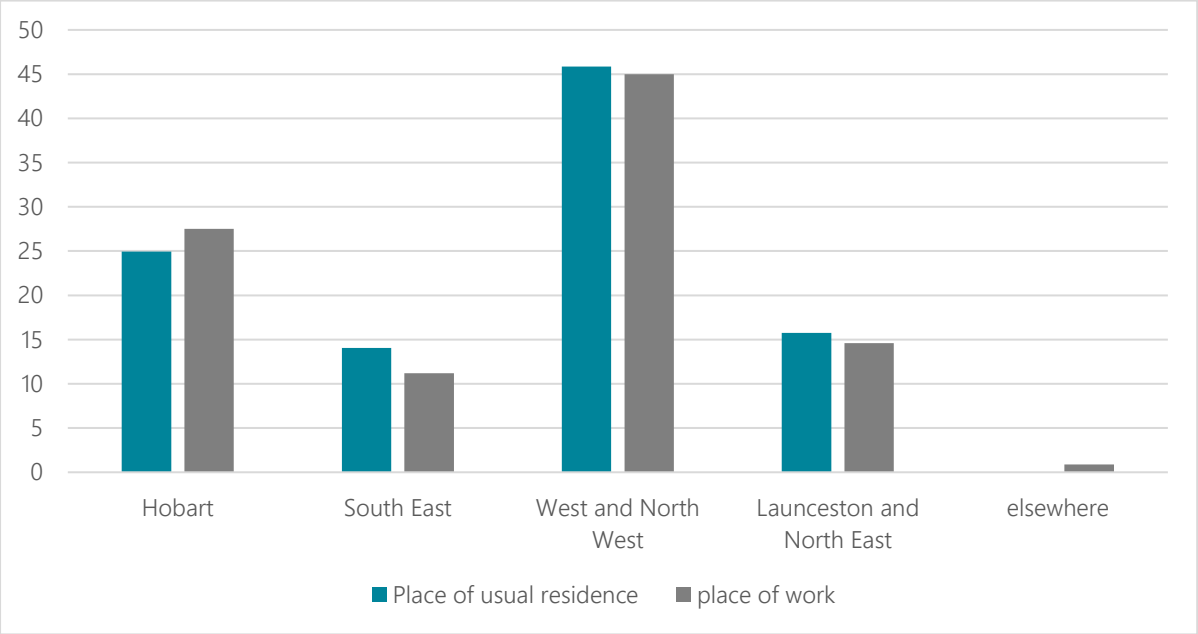
Figure 17. Age structure, aquaculture workforce, 2006 and 2016, Tasmania



PLACE OF USUAL RESIDENCE AND PLACE OF WORK

Most aquaculture workers live and work in Hobart and the South East of Tasmania. The data suggests that around one in ten of the workforce lives in Hobart but works in another region of the state.

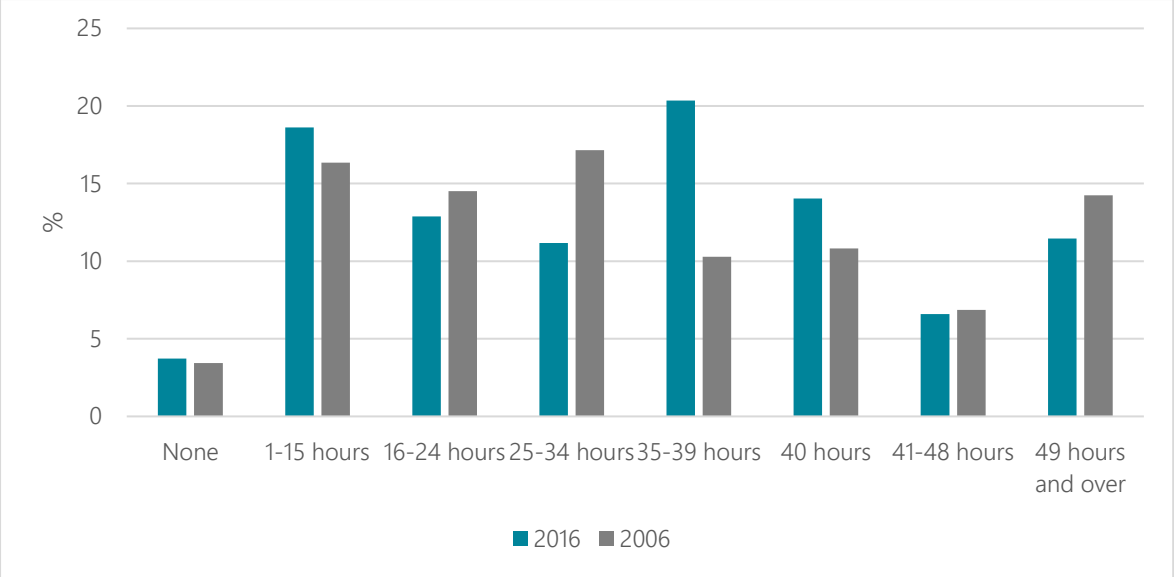
Figure 18. Place of usual residence and place of work, aquaculture workforce, 2006 and 2016, Tasmania



HOURS WORKED

Over three in five aquaculture workers (63.1%) worked more than 40 hours, an increase of 3.4 percentage points since 2006.

Figure 19. Hours worked, aquaculture workforce, 2006 and 2016, Tasmania



EDUCATION AND TRAINING MATCH

An analysis of skill level and highest level of educational attainment for the aquaculture workforce reveals a high level of education and training mismatch.

Table 8 is a matrix of job skill level and the highest level of educational attainment completed by the person in that job. The dark blue represents a match between job skill level and highest level of educational attainment. The cells to the left-hand side of the dark blue represent over-qualification and the cells to the right-hand side of the dark blue cells represent under-qualification. This matrix does not take into account field of study nor incorporate tacit knowledge or skills and knowledge acquired through experience gained on the job. However, it does indicate where investment in education and/or training may improve the productivity and safety of the aquaculture workforce and/or provide opportunities for career development and advancement within the industry.

Nearly three quarters (74.4%) of workers in skill level 1 jobs are under-qualified.

Half of the workers in skill level 2 jobs are also under-qualified (51.4%) while four in ten (42.9%) are over-qualified.

Every worker in a skill level 4 job is either over- qualified (26.4%) or under-qualified (73.6%).

A third of skill level 5 workers are over-qualified (32.7%); 7.0% completed a bachelor degree or higher, 1.8% have an associate diploma or diploma and a quarter have a certificate III or IV.

Table 8. Job skill level and highest level of education and training, aquaculture workforce, Tasmania, 2016

	Bachelor degree or higher	Associate Diploma or Diploma	Certificate IV or III	Certificate I or II	NPSQ
skill level 1	25.6	9.3	22.3	0.0	42.8
skill level 2	42.9	5.7	24.3	0.0	27.1
skill level 3	2.7	9.1	67.3	0.0	20.9
skill level 4	0.0	4.1	22.3	0.0	73.6
skill level 5	7.0	1.8	24.0	0.0	67.3

FISHING

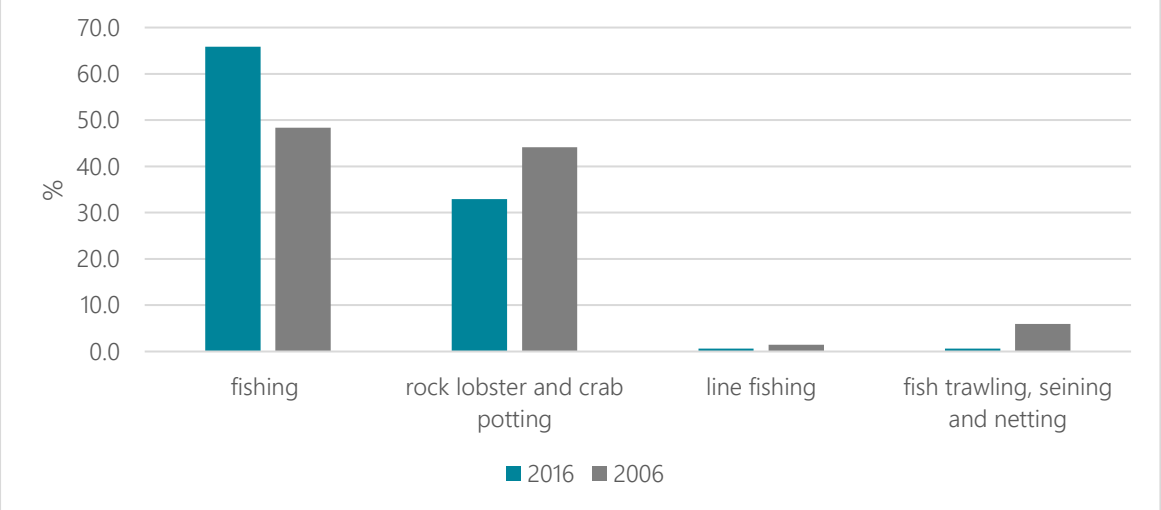
The fishing sector is comprised of fishing, rock lobster and pot setting, line fishing and fish trawling, seining and netting.

SUB-SECTORS

In 2016, other fishing accounted for two thirds of the wild-catch workforce (65.9%), increasing from 195 fishers in 2006 to 328 in 2016. Other fishing increased its share of the total fishing workforce by 17.5 percentage points.

The number of rock lobster and cray potting fishermen declined over the decade to 164 in 2016 from 178 in 2006, reducing its share of the fishing workforce to 32.9% from 44.2%.

Figure 20. Fishing workforce by sub-sector, 2006 and 2016, Tasmania

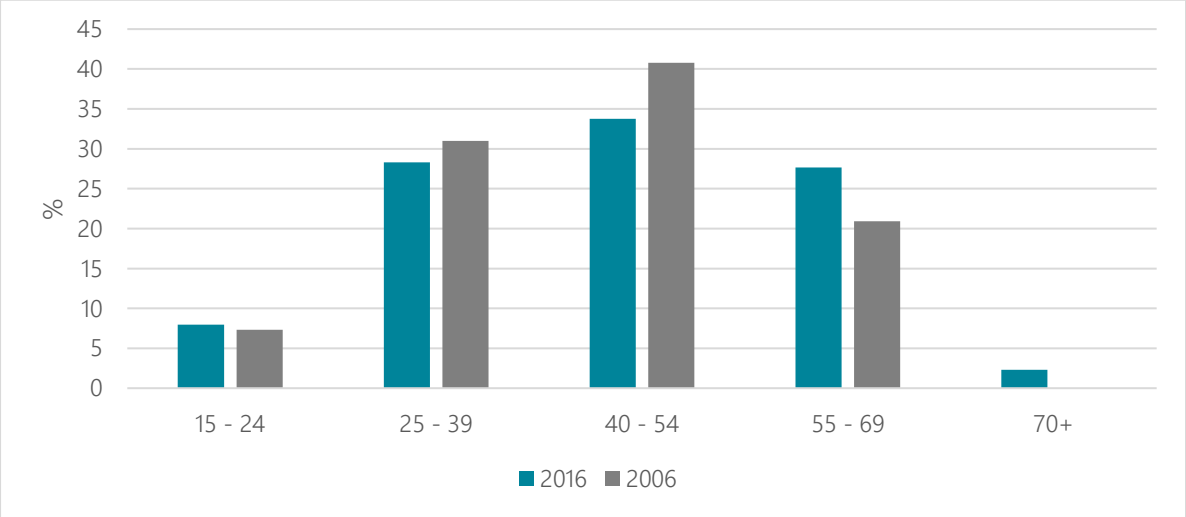


AGE STRUCTURE OF THE WORKFORCE

In 2016, the average age of the fishing sub-sector was 43.8 years, slightly older than in 2006 (43.6 years).

More than three in five fishermen were aged 40 or older (63.7%), compared with 61.7% in 2006. The proportion of fishermen aged between 55 and 64 increased by 6.7 percentage points and 2.3% were aged 70 or older, explained by a 9.7 percentage point decline in the proportion aged 25 to 39 years.

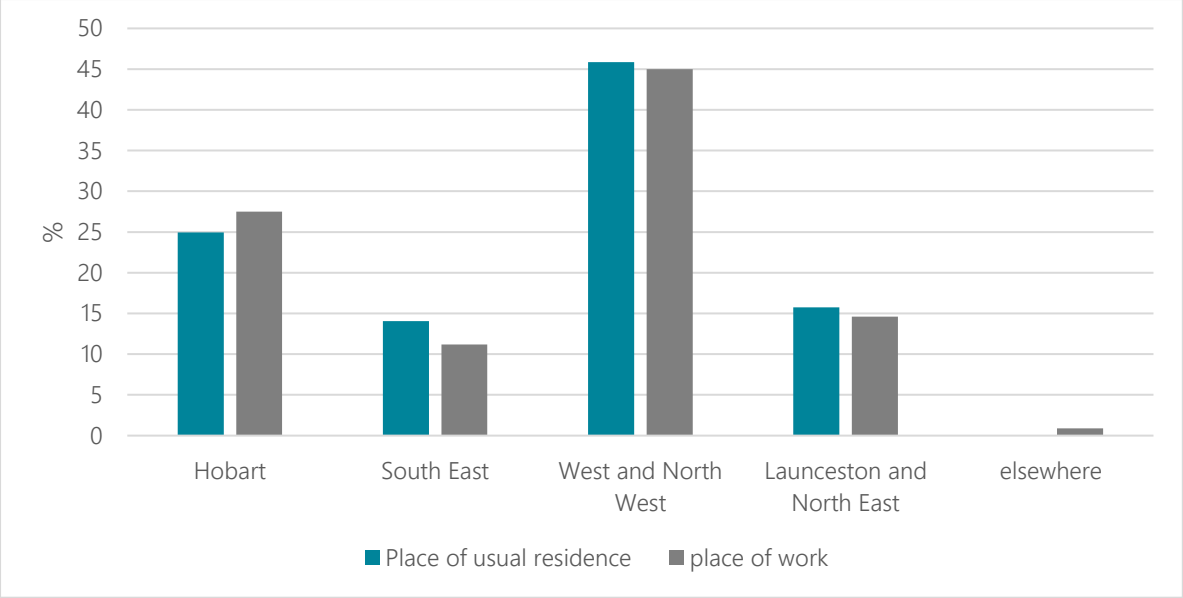
Figure 21. Age structure, fishing workforce, 2006 and 2016, Tasmania



PLACE OF USUAL RESIDENCE AND PLACE OF WORK

A third (33.3%) of fishermen live in Hobart and a quarter (23.4%) on the north west or west coast, while around one in five (19.4%) live in Launceston or the North East. However, for many, their place of work differs to where they live. Almost three in ten (29.7%) fishers work elsewhere other than their region of residence, most likely at sea.

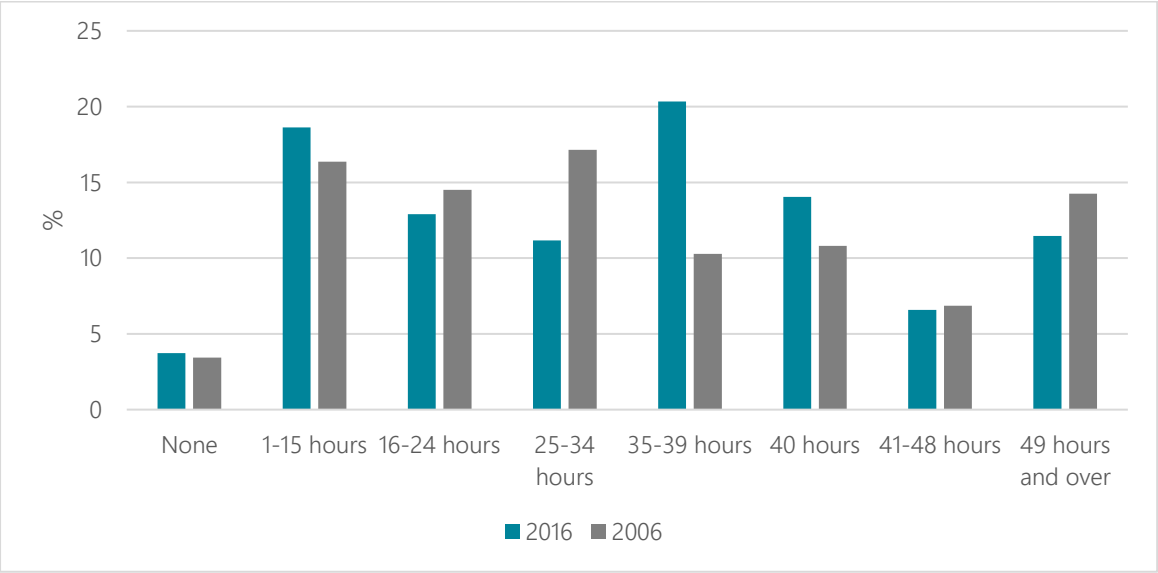
Figure 22. Place of usual residence and place of work, fishing workforce, Tasmania, 2016



HOURS WORKED

Over two in five fishermen worked over 40 hours in the week preceding the 2016 Census and around one in ten worked no hours at all. Given the high proportion of fisherean 'employed, but away from work' at the time of the Census and the time of year in which the Census is undertaken (mid-winter), hours worked in the fishing sub-sector of the seafood workforce are not likely to be truly reflective of the sector over the course of a year.

Figure 23. Hours worked, fishing workforce, Tasmania, 2006 and 2016



EDUCATION AND TRAINING MATCH

An analysis of skill level and highest level of educational attainment for the fishing workforce reveals a high level of education and training mismatch.

Table 9 is a matrix of job skill level and the highest level of educational attainment completed by the person in that job. The dark blue represents a match between job skill level and highest level of educational attainment. The cells to the left-hand side of the dark blue represent over-qualification and the cells to the right-hand side of the dark blue cells represent under-qualification. This matrix does not take into account field of study nor incorporate tacit knowledge or skills and knowledge acquired through experience gained on the job. However, it does indicate where investment in education and/or training may improve the productivity and safety of the fishing workforce and/or provide opportunities for career development and advancement within the industry.

Every worker in a skill level 1 job was under-qualified (49 fishermen) and skill level 2 jobs (5 fishermen).

Half the workers (50.0%) in skill level 3 jobs requiring a certificate III or IV were under-qualified.

Seven in 10 workers in a skill level 4 job were under-qualified (71.4%) while the remainder were over-qualified.

Four in ten (42.9%) of workers in a skill level 5 job which requires no post-school qualifications to undertake was over-qualified.

Table 9. Job skill level and highest level of education and training, fishing workforce, Tasmania, 2016

	Bachelors degree or higher	Associate Diploma or Diploma	Certificate IV or III	Certificate I or II	NPSQ
skill level 1	0.0	0.0	40.8	0.0	59.2
skill level 2	0.0	0.0	0.0	0.0	100.0
skill level 3	7.9	0.0	42.1	0.0	50.0
skill level 4	1.4	7.2	20.0	0.0	71.4
skill level 5	0.0	23.8	19.0	0.0	57.1

SEAFOOD PROCESSING

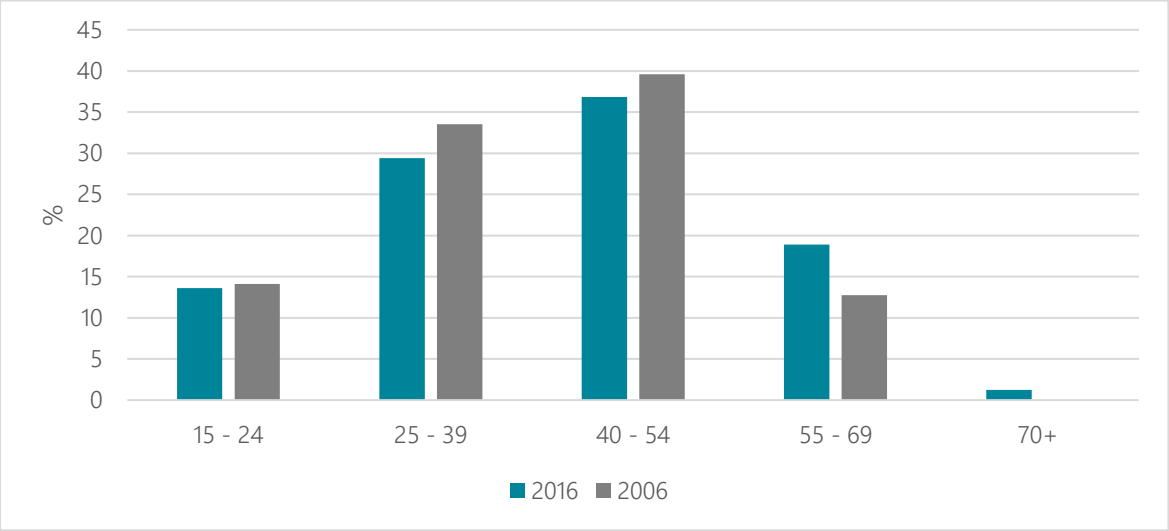
The seafood processing sector has no sub-sectors like aquaculture and fishing.

AGE STRUCTURE OF THE WORKFORCE

The average age of the seafood processing workforce was 39.3 years in 2016, slightly younger than in 2006.

Nearly three in five workers (56.9%) were aged over 40 years, compared with 52.4% in 2006. Considerably more workers were aged between 55 and 69 years of age (18.9% compared with 12.7%).

Figure 24. Age structure, seafood processing workforce, Tasmania, 2006 and 2016



PLACE OF USUAL RESIDENCE AND PLACE OF WORK

The seafood processing workforce largely works in the same region in which they live.

Almost half the seafood processing workforce lived in the north west or west coast of Tasmania (45.8%) while around a quarter (24.9%) lived in Hobart.

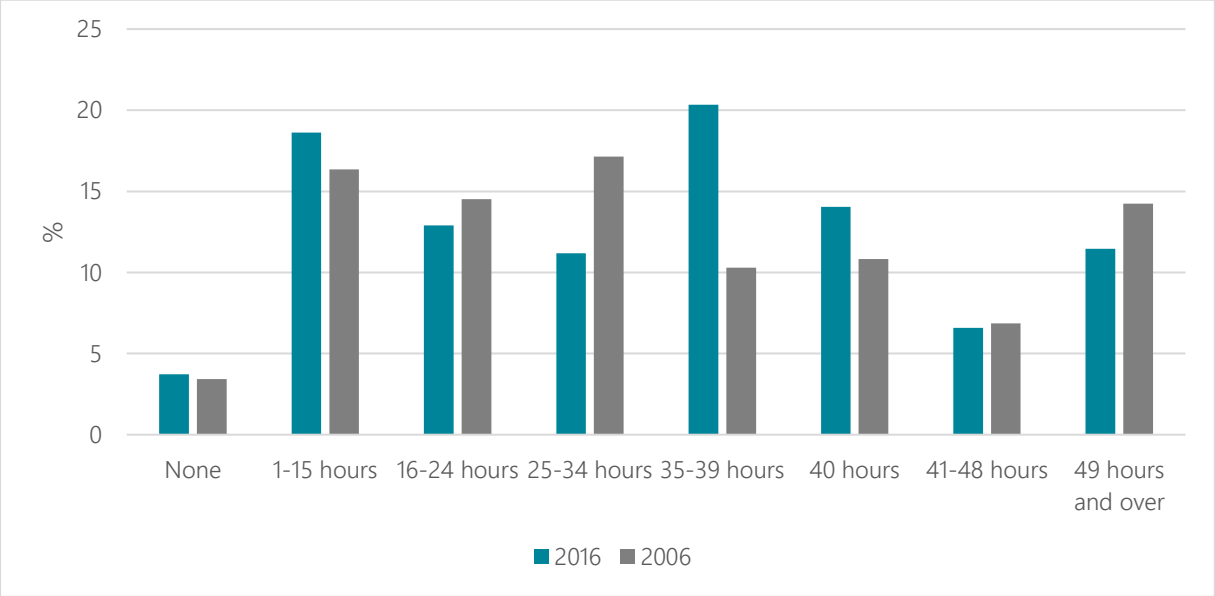
Figure 25. Place of usual residence and place of work, fishing workforce, Tasmania, 2006 and 2016

HOURS WORKED

The hours worked by the seafood processing workforce in 2016 changed considerable over the decade since 2006.

While a similar proportion of the workforce worked 40 hours or more (32.1% in 2016 and 31.9% in 2006), the distribution of the workforce is very different. The proportion working between 35 and 39 hours per week almost doubled, increasing by 10.0 percentage points from 10.3% to 20.3%, explained by a decline in the proportion working between 16 and 34 hours.

Figure 26. Hours worked, fishing workforce, Tasmania, 2006 and 2016



EDUCATION AND TRAINING MATCH

An analysis of skill level and highest level of educational attainment for the seafood processing workforce reveals a high level of education and training mismatch.

Table 10 is a matrix of job skill level and the highest level of educational attainment completed by the person in that job. The dark blue represents a match between job skill level and highest level of educational attainment. The cells to the left-hand side of the dark blue represent over-qualification and the cells to the right-hand side of the dark blue cells represent under-qualification. This matrix does not take into account field of study nor incorporate tacit knowledge or skills and knowledge acquired through experience gained on the job. However, it does indicate where investment in education and/or training may improve the productivity and safety of the seafood processing workforce and/or provide opportunities for career development and advancement within the industry.

Every worker in a skill level 1 job was under-qualified (14 workers), skill level 2 jobs (4 workers) and skill level 4 jobs (26 workers).

Nearly one in five workers (18.0%) in a skill level 5 job which requires no post-school qualifications to undertake was over-qualified (32 workers).

Table 10. Job skill level and highest level of education and training, seafood processing workforce, Tasmania, 2016

	Bachelors degree or higher	Associate Diploma or Diploma	Certificate IV or III	Certificate I or II	NPSQ
skill level 1	0.0	0.0	78.6	0.0	21.4
skill level 2	0.0	0.0	0.0	0.0	100.0
skill level 3	0.0	0.0	0.0	0.0	0.0
skill level 4	0.0	0.0	0.0	0.0	100.0
skill level 5	7.3	0.0	10.7	0.0	82.0

Consultation with the three major aquaculture companies; Huon Aquaculture, Petuna Seafoods and Tassal, confirmed the findings of analysis of the ABS Census of Population and Housing to profile the seafood industry workforce in Tasmania.

All companies confirmed that the change in the composition of the seafood industry workforce over the decade from 2006 reflected the change in their own organisations. The demographic profile of the workforce, including age and sex and place of work and residence also accurately reflected the profile of the organisations.

The companies estimate that their current, collective workforce is around 1, 890 direct employees either full time, part time or casual, with another 100 to 150 contractors or labour hire personnel at any point in time; in both aquaculture and processing operations. They agreed that the sector is male dominated, however they also commented that the sector is becoming increasingly multi-skilled and diverse which has the potential to increase participation by women.

The aquaculture sector workforce comprises a range of occupations including non-industry specific corporate, administrative and customer service roles, hatchery and farming roles which range in skill from highly technical and scientific to labour and lower skill farm-based work, as well as factory-based, manual work in the seafood processing sector.

Increased use of technology, a changing regulatory environment, greater competition and consumer awareness has contributed to changing the strategic direction of the sector and thus the composition of the workforce, increasing the demand for technical and scientific skills. Technology has enabled the sector to change the way some work is undertaken, moving previously farm-based work such as fish feeding, to office-based work places. Technology has also contributed to reducing the physicality of the work on the farms as well as reducing the safety risks associated with physical, farm-based work. Changing the operationalisation of aspects of the sector has also contributed to the change in workforce demand. For example, using well boats for fish health has changed the mix of roles required.

All companies acknowledge that the sector itself is relatively young and is evolving over time, responding to both opportunities and challenges as they arise. All noted that expanding the operations of the individual organisations is not a gradual process given the nature of the sector. For example, any new lease or farm site requires immediate staffing and a corresponding, proportionate increase in the corporate/administrative functions of the organisation. As yet, none of the organisations have developed a multiplier to ascertain the additional demand for workers across the organisation based on expansion parameters.

Attraction and retention of workers

Each organisation adopts differing recruitment strategies. Each acknowledges that the diverse nature of the sub-sectors within aquaculture require different attraction and retention approaches.

Given the relatively new status of the sector and the lack of experience, breadth and depth, of the aquaculture sector in Tasmania, to avoid 'poaching' expertise from Tasmanian competitors, the organisations do recruit from outside Tasmania, particularly at the corporate and executive level as well as for sector-specific skills and experience.

The regional and relatively remote nature of the farms results in a close connection with the respective communities. This enables the organisations to recruit for farm work from within the community which is supported by having a good working relationship with local training providers such as Seafood Maritime Training and the Huonville Trade Training Centre.

Recruitment in seafood processing roles differs for each organisation. One had a good working relationship with a local labour hire company while another utilises skilled migrants who are reportedly good workers and willing to train and upskill whereas the other prioritises local workforce opportunities and invests in an internal upskilling strategy focusing on creating career pathway options such as farm attendants getting their dive, coxswain or skipper (<35m) tickets.

Workforce development

The two larger organisations are committed to investment in workforce development, including internal on-the-job training as well as accredited training. While the increasing demand for technical and scientific roles has a pre-employment requirement for appropriate tertiary qualifications, the organisations also support professional development and workforce development opportunities. The organisations report a good pipeline of approach technical and scientific skills through the University of Tasmania.

The organisations also encourage workers to gain multiple certificates or tickets so they are able to work across the sector in a range of roles as demand requires it. For harder to recruit roles such as divers, the organisations support gaining the qualifications. All organisations have a focus on safety and ensure that all workers are appropriately inducted and have relevant safety training.

One organisation reports supporting 60 trainees undertake vocational qualifications in fields such as electrotechnology and mechanical engineering.

Workforce challenges

The three organisations identified a number of workforce challenges.

The regional and remote location of much of the work undertaken in the aquaculture sector presents challenges in attracting and retaining workers, particularly when expansion requires an immediate increase in the number of workers. Given the physical nature of the work and

challenging conditions working on the water, it can also be difficult attracting people to specific roles.

The relatively young sector also contributes to a dearth of experienced aquaculture professionals, management and executives in Tasmania. As the organisations expand, the demand for industry specific expertise in strategic technical, scientific and executive roles is increasing significantly, yet the skill set is not available in Tasmania.

The sector also experiences some occupation specific skill shortages such as divers and skippers.

COVID-19 and the effective closure of international borders is anticipated to have an impact on recruiting skilled migrants to the sector.

A lack of appropriate accommodation in regional locations contributes to the challenges of attracting and retaining workers to the sector. This can also result in a reliance on Fly In, Fly Out (FIFO) or Drive In, Drive Out (DIDO) workers which is not good for workers with families and can result in poor retention of workers.

An additional challenge for the sector is the ageing workforce, particularly in relation to the occupations which are physically demanding. Older and less physically able workers can be a risk to themselves or their team. Organisations offer redeployment opportunities where possible in these circumstances and implement succession plans for their workers.

The use of alcohol and drugs by workers in key roles contributes to attrition issues within the sector and adds to challenges to attract and recruit workers.

Another key issue is the low levels of language, literacy and numeracy (LLN) skills in the workforce and the increasing demand for digital literacy skills as the sector increases its use of technology and automation. One organisation is actively involved with 26ten to provide training to workers identified as struggling with LLN skills.

EXPANSION PLANS

Two organisations report intended expansion plans over the next five to ten years while the other reports it is in a consolidation phase, focusing on back-filling positions lost during COVID-19 and transferring labour hire or contractors into direct employees (around 30 to 40).

Between the two expanding organisations, it is anticipated that sector workforce will increase by around 220 workers over the next 5 to 10 years. This expansion will be shared across corporate, farm and processing workforces predominantly.

The organisations expect the composition of the workforce, that is the distribution of skills and occupations, to increase proportionality and not be skewed to either tertiary skilled or farm/processing work. The increase in the workforce will be spread across the skill sets. Farm attendants remain a critical support skill to the operations of the wider sector.

COVID-19 IMPACT

COVID-19 has impacted the wholesale aquaculture market more so that the retail market. Each organisation reports they have adapted well to the challenges the global pandemic has presented by accessing new markets, supporting the workforce by providing flexible ways in which to work, and maintain supply chains.

Organisations report increased trust within their workforces associated with their response to COVID-19.

COVID-19 and the effective closure of international borders is also anticipated to have an impact on recruiting skilled migrants to the sector.