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Social impacts of the South Australian Marine Scalefish Fishery

*Report of a case study conducted as part of the ‘Social
Assessment Handbook for the Australian fishing sector’
project*

June 2005

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authority within the portfolio of the federal Minister for
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Australian Government and the fishing industry.

Executive summary

Overview and summary of results

This report provides results of a study examining the social well-being of people working in the South Australian Marine Scalefish Fishery (MSF) and their impacts on the South Australian community. The MSF is a large and diverse fishery stretching across most of South Australia's coastline. Several hundred fishers work in the MSF, contributing significantly to the communities and economies of many coastal regions.

The key findings of this report are that, while most MSF participants have a high quality of life, various pressures – including many related to their fishing work - are reducing this quality of life for many. Quality of life was highly related to work and financial satisfaction, and to the level of involvement fishers had in their local communities. Most fishers do not work in fishing with the goal of earning a high income, but for reasons including enjoyment of the types of tasks undertaken and environment worked in when fishing.

The MSF contributes significantly to many coastal regions of South Australia, but particularly to the West Coast (Ceduna, Thevenard and Streaky Bay), Port Lincoln, the Yorke Peninsula and Kangaroo Island.

Methods

This study gathered data via a mail questionnaire distributed to all licence holders in the MSF, and a series of 12 workshops held across the South Australian coast in October and November 2004. Licence holders were asked to distribute copies of the survey to their employees, as well as completing the survey themselves. An overall response rate of 59% from licence holders was achieved, but there was a much lower response rate from non-licence holders. As this is the first study to attempt to survey non licence-holders in the fishery, the survey returns from this part of the fishery represented a significant step forward in understanding social impacts of the MSF.

Key results

Key results of the study are presented in the tables on the next pages. As shown, MSF participants are predominantly male, although a high number of women work unpaid helping manage fishing businesses. These unpaid workers are part of a significant unpaid workforce in the industry, with the average number of unpaid employees per business being 1.05 persons. Most fishers have achieved low levels of formal education, reflecting that their considerable fishing skills and knowledge have been gained through working in fishing rather than formal training. Respondents had worked in fishing for long periods, on average over 20 years and up to 65 years. Contrary to common perception, only around half reported a family history of involvement in commercial fishing. Dependence on fishing for income is high, with most household income derived from fishing activities. There is considerable variation in the size of fishing businesses, with net fishers tending to have higher business capital value, expenditure and gross sales than other fishers.

Social profile of those working in the MSF

Average age	Licence holders: 50.07 years Non-licence holders: 43.6 years
Gender	Licence holders: Almost all male Paid employees: Mostly male Unpaid employees: Mostly female
Marital status	81.4% married or in de-facto relationship
Average number of dependents (eg children, elderly relatives) per respondent	1.5 per person working in the MSF
Highest level of formal education	Primary school: 23.7% Fourth year high school: 39.6% High school certificate: 20% University/TAFE: 16.6% In 2001, 42% of South Australians had university / TAFE qualifications (ABS)

Fishing profile of those working in the MSF

Average time spent working in commercial fishing	23 years
Average years spent working in the MSF	21.4 years
Percent who are the first generation of their family to have worked in fishing	53.3%
Percent whose family have been involved in fishing for two or more generations	46.7%
Most common methods of acquiring fishing skills	Self-taught, taught by family member or taught by other fishers
Percent who had a member of their household working outside the fishing sector	52.7%
Percent who worked full-time in fishing	Licence holders: 76.9% Non-licence holders: 38.3%
Percent who worked part-time in fishing	Licence holders: 23.1% Non-licence holders: 61.7%

Profile of MSF fishing businesses

Percent with any paid or unpaid employees	67.5%
Percent with any paid employees	37.6%
Average number of paid employees per business	1.16 persons, 0.95 full-time equivalents
Average number of unpaid employees per business	1.05 persons, 0.38 full-time equivalents

Variability in size of MSF fishing businesses

Financial year 2003-04	Mean*	Median**	Range***
Capital value of business	\$122,623	\$64,450	\$2,580,600
Total expenditure of business	\$45,281	\$22,450	\$722,285
Gross sales of business	\$70,324	\$42,173	\$1,101,550
Return to owner from fishing activities	\$21,076	\$14,665	\$439,825
<i>*Mean is the average of all responses (i.e. responses are added together and then divided by the number of responses).</i>			
<i>**Median is the 'middle' value of all responses (eg if there were 500 responses, the median value would be the 251st value if the responses were ranked in order from lowest to highest).</i>			
<i>***Range = highest value – lowest value</i>			

Key differences between different types of licence holders

Fishers who had endorsements to fish using nets generally had larger businesses than fishers who had endorsements to fish using lines only, particularly those with B-class licences.

Quality of life in general

The large majority of respondents reported being very satisfied with their life overall, while having lower overall satisfaction with their fishing work. Most reported feeling a strong or very strong attachment to their local community, and rated their local community as a good or excellent place to live. Most also reported having relatively good access to services such as schools, health, banks and police, and good levels of communication with family and friends.

All of these measures indicate a high quality of life. However, only 49.5% reported being members of a community group and, in workshops, many discussed being limited in their ability to spend time with family, friends, and to be involved in community groups, due to the irregularity of their fishing hours.

Most fishers believed they were perceived negatively in the general community in their role as commercial fishers. The presence of these negative perceptions reduced their quality of life, as they felt less accepted as a part of the broader community.

Quality of working life

While most MSF participants reported being generally satisfied with their fishing work, this satisfaction was qualified. Most enjoyed the tasks they undertook and the environment they worked in, but expressed dissatisfaction with the external pressures affecting their work, and the income they were able to earn from fishing. In the workshops, many participants reported feeling significant uncertainty and anxiety about potential management changes and that this was negatively impacting on their quality of life.

Many respondents reported experiencing a range of health problems including headaches, stress and anxiety, excessive fatigue and difficulty sleeping. Most had not sought medical attention for these problems. However, a large majority (79%) reported experiencing back pain with many seeking medical assistance for this problem.

Opportunities for interaction with other fishers tend to be fragmented, with fishers often interacting mainly via informal local networks of fishing acquaintances. Membership of fishing representative groups was low, as was attendance at meetings of these groups. This

limits opportunities for transfer of knowledge and skills within the fishery, and the ability of the fishery to take actions on issues of concerns as a united group.

Impacts of the MSF on different South Australian regions

This research seeks to measure the MSF's regional impacts of its labour force, household spending, business-related spending, historical linkages to the community and community and fishing group membership.

Key regions in which the MSF has a high impact, both in terms of economic spending and membership of community groups and historical links to the local area, are the West Coast (principally Ceduna, Thevenard and Streaky Bay), Port Lincoln, the Yorke Peninsula and Kangaroo Island. In Western Adelaide there is a high impact primarily via delivery of catch to fish receivers, but also through a relatively high number of MSF participants resident in the region.

The following two tables provide key statistics on the impact of the MSF on different South Australian regions. The first table provides the raw data with the second table providing proportions. Shaded parts of the table indicate the regions with highest impact.

Acknowledgments

The authors would like to thank all the members of the MSF who completed surveys and attended workshops; those who helped design the survey and encouraged others to complete it; and the Fisheries Research and Development Corporation and Marine Scalefish Fishery Management Committee for funding the study.

Impact of the MSF on different South Australian regions

Region	Est number of active MSF licence holders	Est. number of non-licence holders working in the fishery (paid or unpaid)	Est. number of FTE employees working in the fishery (paid or unpaid)	Est. total household spending derived from MSF fishing income	Est. spending on operating costs by MSF businesses	Est. \$GVP of catch delivered to fish receivers in the region
South Australia	388	857	514.9	\$8,839,700	\$16,364,900	\$20,667,000
Outside South Australia	N/A	N/A	N/A	\$131,600	\$10,000	\$4,323,100
Northern and Eastern Adelaide	15	19	9.5	\$118,500	\$600,700	Nil
Western Adelaide	37	74	38	\$1,136,500	\$1,692,200	\$11,452,161
Southern Adelaide	19	30	15.2	\$497,300	\$774,900	\$312,000
Fleurieu Peninsula (including Victor Harbour & Yankalilla)	14	23	11.4	\$202,200	\$1,271,300	\$393,700
Wakefield	10	17	8.6	\$377,000	\$272,100	\$74,100
Kangaroo Island	19	36	18.1	\$448,100	\$355,700	\$266,200
Barunga West & Copper Coast	46	87	44.6	\$1,031,400	\$1,209,100	\$173,700
Yorke Peninsula	58	114	58	\$1,527,100	\$2,356,800	\$97,200
Whyalla	8	30	15.2	\$359,600	\$676,200	\$110,200
Port Pirie City and Districts	15	28	14.3	\$369,000	\$609,100	\$105,200
Port Lincoln	62	95	48.5	\$1,298,500	\$3,004,700	\$5,749,400
Greater Lincoln area (exc. Port Lincoln)	30	57	29.4	\$211,700	\$2,199,700	\$5500
West Coast	57	106	54.1	\$1,193,300	\$1,644,200	\$1,451,600

Region	% of regional population working (part-time or full-time) in the fishery	Avg number of years lived in the region by MSF participants	Avg number of generations lived in the region by MSF participants	% respondents planning to still live in the region in five years time	Number of community group memberships of MSF participants*	% who are members of community groups	% who are members of fishing groups
South Australia	0.085%	30	2.1	90.7%	833	49.5%	36.8%
Northern and Eastern Adelaide	0.0061%	31	1.2	80%	36	80%	20%
Western Adelaide	0.055%	25.4	1.9	89%	56	44%	39%
Southern Adelaide	0.016%	24.8	1.4	100%	16	36.4%	20%
Fleurieu Peninsula (including Victor Harbour & Yankalilla)	0.16%	25	1.7	83.3%	33	41.7%	41.7%
Wakefield	0.43%	31.9	2.7	76.9%	39	61.5%	30.8%
Kangaroo Island	1.3%	28	1.9	78.6%	28	46%	33.3%
Barunga West and Copper Coast	1.02%	33.5	3.0	85.7%	71	37.1%	40.6%
Yorke Peninsula	1.56%	32.4	2.3	89.5%	224	59.6%	33.9%
Whyalla	0.18%	20.8	1.9	70%	19	30%	30%
Port Pirie City and Districts	0.25%	38.5	2.6	100%	30	45.5%	30%
Port Lincoln	1.19%	34.9	1.8	92%	97	52%	36%
Greater Lincoln area (exc. Port Lincoln)	0.81%	21.6	1.7	92.6%	94	59.3%	37%
West Coast	2.88%	31.4	1.9	89.5%	90	42.1%	51.4%

* As some people were members of more than one community group, this number may be higher than the number of people involved in the MSF

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Introduction

In recent years, understanding the social side of fisheries and fishing industries has become increasingly important, particularly as part of processes reporting on ecologically sustainable development. Improved understanding of the communities directly and indirectly dependent on fishing and fishing industries, their quality of life, and the values and attitudes of different groups towards fishing, can help decision-makers communicate the importance of fishing activities, improve quality of life for fishing communities, and develop responses to particular issues.

This report presents results of one of the two case studies undertaken as part of the *Social Assessment Handbook for Australian Fisheries* project. The goals of the overall project were to develop best practice advice on approaches to designing and undertaking social assessments in the Australian fishing sector. The project was funded by the Fisheries Research and Development Corporation, with additional funding for this case study provided by the Marine Scalefish Fishery Management Committee.

The findings of this case study and a second case study of the East Gippsland region in Victoria (Schirmer and Pickworth 2005) were used in the development of the *Social Assessment Handbook: A guide to methods and approaches for assessing the social sustainability of fisheries in Australia* (Schirmer and Casey 2005). The Handbook provides a guide to undertaking a rigorous social assessment, including an overview of the different types and levels of social assessment that can meet a range of needs, and methods appropriate to a range of time and resource constraints. The Handbook also provides a guide to assessing social assessment proposals and reports.

This case study reports on a social assessment of the South Australian commercial Marine Scalefish Fishery (MSF), undertaken from August to November 2004. The MSF was an ideal case study for testing methods of social assessment as it is a complex fishery with diverse operators spread across a wide region.

The goals of the case study were:

- to test proposed methods and evaluate their appropriateness and effectiveness for use in social assessment of a commercial fishery; and
- to provide a detailed assessment of both the well-being of those dependent on the MSF, and of the contributions of the MSF to the broader community.

This report provides a detailed description of both the methods used and their appropriateness and effectiveness, as well as detailed results on the social wellbeing and contributions of those involved in the MSF to the broader community.

Overview of the Marine Scalefish Fishery

The South Australian Marine Scalefish Fishery (MSF) stretches the length of South Australia's coastline. The fishery is diverse, targeting multiple species and involving a wide range of fishing methods and gear types, as well as a large number of fishers.

The history and management of the MSF is described in detail in Noell *et al.* (2005). Except where otherwise indicated, this overview is based on their work.

Because this study focussed on commercial fishing for marine scalefish species in South Australia, only the history and management of the commercial MSF sector are discussed here. Considerable recreational fishing for marine scalefish species also occurs along the South Australian coast.

Fishing for scalefish species has occurred in South Australia (SA) since the time of first settlement, with commercial fishing fleets establishing and growing along with the colony. By 1900, approximately 500 people were employed in scalefish fishing in SA.

In 1904, a licensing system was introduced and 476 people became licensed fishers. The number of licensed fishers increased dramatically in the 1930s during the Depression, reaching 1463 licences, with overexploitation of fish stocks occurring. Increasing technology, particularly the development of engines and use of ice, enabled the use of larger and faster vessels over time.

A number of management changes since the 1970s to management of the MSF have restricted entry to the fishery. These are summarised in Table 1. Key amongst these changes were a freeze placed on issue of new licences in 1977, which made the MSF a limited entry fishery, and a shift to licence transferability, allowing sale of licences between fishers (previously, licences could not be sold). A number of restrictions on use of gear, particularly nets, and management controls for particular species including size limits and periodic closures, have been implemented over time.

Table 1: Management History of the Commercial Marine Scalefish Fishery

Source: Noell *et al.* (2005)

Date	Management change implemented
1958	A number of areas closed to net fishing, including Denial Bay, Smoky Bay, Baird's Bay and Venus Bay.
Early 1970s	A State-wide ban on netting in areas of less than five metre water depth was introduced.
1977	A freeze was placed on issue of new commercial licences, making the MSF a limited entry fishery.
1977	'B'-class licence holders were able to convert to 'A'-class licences if they met criteria for conversion. A 'B'-class licence is a more restricted licence than 'A' class.
1977-1982	During this period, licence holders needed to have a minimum amount of activity in the fishery to qualify for renewal of their licence.
1979-80	Some employees of MSF licence holders were allowed to apply for MSF licences.
1980	A number of restrictions to net fishing were implemented. These included a limit of total net length; regulation preventing nets being joined to other nets excepting drain-off shots; net endorsements were made non-transferable and a

Date	Management change implemented
	freeze on issuing new endorsements for net use on MSF licences was implemented; B class holders were restricted to using only bait nets; and net use by northern zone rock lobster licence holders was restricted.
1980	B-class MSF licences became non-transferable.
1980	The MSF became an 'owner-operator' fishery with licences only useable by owner-operators. In other words, MSF licences could not be purchased and then leased or rented to other people who undertook the fishing, except in case of illness. The exception to this was where a person owned more than one MSF licence, in which case another person could be the registered master on the second and subsequent licences.
1980	Limited transferability was introduced for A-class MSF licences, with within-family transfers permitted.
1982	Licences became fully transferable, although net endorsements were not transferable with the licence unless a family transfer occurred, and B-class licences were still not transferable within families.
1983	The Inshore Fisheries Advisory Committee was established.
1983	A number of aquatic reserves (closed to both line and net fishing) and restricted netting areas were introduced.
1987	The maximum number of hooks permitted on long lines was restricted to 400 in all gulf waters, and attendance of long lines was required. This was extended to all State waters in 1997.
1987	A ban on long lining within 0.5 nautical miles of prescribed artificial reefs was introduced.
1987	New management controls were introduced for snapper, with minimum legal length increased from 28cm to 38cm.
1989	Minimum size limits of 38mm were set for mud cockles in Coffin Bay.
1992	New management controls were introduced for snapper, King George whiting and squid (southern calamary).
1993	A ban on net fishing for snapper was imposed.
1994	The Licence Amalgamation Scheme was introduced. Under this system, new entrants to the fishery must acquire two or more licences of the same type with a minimum number of 'points' in order to be issued a single MSF licence, thereby forcing reduction in total number of licences in the fishery. Under the points system, A-class MSF licences are worth more than B-class restricted MSF licences. By 2003, 84 amalgamations had occurred, with 22 net and 62 line licences surrendered as a result of the scheme.
1994	Further areas closed to net fishing in Coffin Bay and areas near Adelaide.
1995	King George whiting minimum size limit was increased from 28cm to 30cm.
1995-6	Further netting restrictions were introduced.
1997	A further eight areas were closed to net fishing (Fowlers Bay, Edithburgh, Coobowie, Stansbury, Bay of Shoals, Germain Bay, Tumby Bay and Port Neill)
1997	Jurisdiction over some species was transferred from the State to the Commonwealth.
1998-9	A restructure of the MSF began.
1998	A closure (April to September) on northern Spencer Gulf cuttlefish and squid was implemented.
1999	Two three-week snapper closures were introduced during August and November.
2000	Jurisdiction over shark species was transferred from the State to the Commonwealth.
2002	The Coffin Bay sand crab pot fishery was approved, with MSF fishers allowed to use crab traps in specified offshore waters.

Date	Management change implemented
2002	Scallop dredges were removed.
2003	A closure of snapper fishing during the month of November was implemented, with the August closure no longer implemented.

At 1 October 2003, there were 720 licence holders permitted to take species permitted in the MSF. Of these, 414 had a licence to operate in the MSF, with 119 of these having an endorsement on their licence allowing them to use nets (either mesh, haul or gill nets) as well as lines, while the remainder had only line endorsements. Fourteen of these had an endorsement to fish for pilchards, 14 had access to the blue crab fishery, and 19 had a miscellaneous fishery licence allowing them to harvest miscellaneous species including seaweed, worms, sea urchins and scallops.

MSF fishers are restricted to taking only species listed in Schedule 1 of the *Scheme of Management (Marine Scalefish Fisheries) Regulations 1991* within all State controlled waters from the border with Victoria to the border with Western Australia. Key species targeted (based on value of catch in 2002/03) include King George Whiting, garfish, snapper, and squid (southern calamary), along with a number of other species such as Yellow Fin Whiting, Yellow Eye Mullet, Tommy Ruff, Australian Salmon, Snook, Ocean leather jackets, Shark, Blue Swimmer Crabs, Sand Crabs, and Pipi (cockles).

The remaining 306 licences were licence holders in other fisheries (the Northern Zone Rock Lobster Fishery, Southern Zone Rock Lobster Fishery and Lakes and Coorong Fishery) who were also permitted to fish for marine scalefish species.

MSF licences have endorsements for use of particular gear, with all fishing gear required to be registered on a licence before it is allowed to be used. At present, additional gear cannot be endorsed on a licence. A number of gear restrictions apply in the fishery, including restrictions on types of gear permitted, the types of gear than can be used at the same time, the number of nets to be carried on board at any one time, and areas where different types of gear can be used.

The licence amalgamation scheme (see Table 1) has resulted in a declining number of licences in the fishery since 1994, with 84 licences removed from the fishery during this time.

The fishery is currently managed by the State government through the Department of Primary Industries and Resources, South Australia.

The Marine Scalefish Fishery Management Committee (MSFMC), is an advisory body for the fishery, operating under the *Fisheries Act 1982*. The MSFMC ‘provides advice to the Minister for Agriculture, Food and Fisheries on matters related to the ongoing sustainability and sound management of the Marine Scalefish Fishery. The Committee is the principal forum in which matters associated with the fishery are considered’ (MSFMC 2004). Members of the MSFMC include representatives of the commercial and recreational MSF sectors and government.

It can be seen from the brief overview given above that the MSF is a large and diverse fishery in terms of the number of operators involved, the geographic range of the fishery, species targeted, and the fishing methods and gear used. There have been a number of changes to regulation and management of the fishery, particularly over the past 20 years, which have had the potential to affect the social and economic well-being of fishers.

This study was designed to capture the complexity of the MSF, and to explore how factors such as the region fishers live and work in, the gear they use and the regulation and management they operate under, affect their social well-being and their contributions to the broader community.

Methods

This section briefly outlines the methods used in this research. **Appendix 4** provides detailed information on these methods.

The goals of this study were two-fold: to test different methods of social assessment, and to assess the quality of life of those involved in the MSF and their links to the wider community.

Available sources of secondary data were limited, and so it was necessary to gather primary data on the MSF in order to understand the social characteristics of the fishery. This was done through a mail questionnaire and a series of workshops.

Mail questionnaire

Because of the large size of the MSF, and the diversity within the fishery, achieving a thorough understanding of social dimensions of the fishery was best achieved by undertaking a quantitative survey of all fishers. The questionnaire design and mail-out process broadly followed Dillman's (2000) *Tailored Design Method*, in which survey questions are pre-tested by peers and mail out of surveys is followed by regular reminder cards encouraging completion of the survey.

Design and testing of the questionnaire

The design and testing of the questionnaire involved the initial questions being reviewed by four people involved in the MSF, followed by five fishers, with the questionnaire redrafted in response to the feedback provided. This process ensured questions were phrased appropriately and covered relevant topics. The survey questions have been attached to this report (**Appendix 1**).

Mail survey process

The mail questionnaire was designed to be answered by both licence holders and others working in the MSF. The names and addresses of all licence holders were accessible, but there were no details available for non-licence holders involved in either paid or unpaid work in the MSF. Three copies of the survey were distributed to the entire population of 'A' and 'B' Class MSF licence holders, together with a request that they ask employees and partners involved in their fishing business to complete copies of the survey as well as completing one themselves.

The survey was sent with a covering letter (attached in **Appendix 2**) signed by key members of the MSF, encouraging fishers to complete the survey. After the initial mail-out, reminder cards were mailed weekly for five weeks to ask respondents to complete and return the survey. A second copy of the survey was sent with the third reminder.

Response rate

Licence holders

An initial sample frame of 416 licence holders was surveyed. There were 24 legitimate non-respondents (including people who were selling their licences or were too ill to complete the survey), reducing the overall sample frame to 392. A total of 230 MSF licence holders responded to the survey, giving an overall response rate of 59%.

Non-licence holders

It was possible to analyse the response rate of non-licence holders to some extent¹. A total of 50 surveys were received from non-licence holders. Based on the licence-holders' survey responses, it was possible to estimate that approximately 450 non-licence holders have either part-time or full-time employment in the fishery, and 407 unpaid non-licence holders work either part-time or full-time in the fishery. This indicates that there was a response rate of approximately 5.8% from non-licence holders. While response rates of non-licence holders were low, they are useful to provide a picture of the overall fishery.

Non-response bias

With any quantitative survey, there is the possibility that those who complete the survey are not representative of the population being surveyed – in other words, for bias to occur as a result of some sectors of the sample frame not responding to the questionnaire. There was no bias detected by licence type, gender, age or geographic location. Further information is contained in **Appendix 4**.

Statistical analysis of survey data

Findings in this report are presented so they can be easily understood without a need for knowledge of the statistical methods used in the data analysis. An overview of key statistical tests used is provided in **Appendix 4**.

Methods for estimating regional impacts

When estimating the impacts of the MSF on different South Australian regions, it was necessary to scale up results from the responses received to estimate the impacts of the entire fishery. **Appendix 4** details the methods used to calculate spending and other impacts for the total fishery from the survey responses received.

Qualitative workshops

All fishers were invited to attend workshops held in South Australia during October and early November 2004 to discuss the early survey results and for us to ask further questions aimed at explaining survey responses in more depth.

Attendance at the 12 workshops was variable, as can be seen from Table 2. A wide range of fishers attended, including both net and line fishers, fishers of different ages, and fishers with varying histories of involvement with commercial fishing – ranging from only a few months of fishing to over 50 years.

Table 2: Workshop dates, locations and attendance

Date (2004)	Location	Venue	Number of attendees
13/10	Wallaroo	Prince Edward Hotel	2
14/10	Maitland	Hotel Maitland	5
15/10	Edithburgh	Football Club	6

¹ It should be emphasised here that the survey did not target those involved in processing of catch, with a small number of respondents worked in MSF fishing businesses that undertook their own processing. The term 'non-licence holders' is used throughout this report to refer to those who undertake work associated with catching and transporting catch to fish receivers but do not hold an MSF licence. It does not refer to those employed in processing.

Date (2004)	Location	Venue	Number of attendees
20/10 and 21/10	Ceduna	Foreshore Hotel (20/10) and fish processor (21/10)	10
21/10	Streaky Bay	Streaky Bay Hotel	10
22/10	Whyalla	Hotel Spencer	0
27/10	Port Lincoln	Spencer TAFE	0
28/10	Port Pirie	Port Side Tavern	8
29/10	Port Wakefield	Port Wakefield Golf Club	3
3/11	Kingscote	Ozone Hotel	4
4/11	Victor Harbour	Hotel Victor	3
5/11	Adelaide	SAFIC	3

In each workshop, attendees were presented with a number of graphs showing descriptive analysis of the early results of the survey. For each area of results, they were asked (a) if they thought the results seemed appropriate, and (b) what had caused the patterns seen.

The data gathered in the workshops allowed a much richer qualitative interpretation of the survey results, and analysis of the historical and contextual factors leading to current levels of social well-being and quality of life for fishers. The results are presented together with statistical results for each survey topic.

Effectiveness of different methods

A specific goal of this study was to assess the effectiveness of different approaches for use in social assessment of commercial fishing.

Effectiveness of mail survey process

Overall, the mail survey approach used was very effective. The use of a traditional mail questionnaire with reminders sent out weekly and a toll-free phone number available for respondents to ring for assistance achieved a 59% response rate from licence holders. The analysis of non-response bias showed that there was no significant non-response bias by region, age, or licence type.

In addition, the survey was completed by some non-licence holders involved in the fishery. While the number who completed the survey was small, this still represents a major advance over having data only from licence holders, and added considerably to the breadth of results of the survey.

Effectiveness of workshops

The workshops, while gathering useful qualitative data for the study, did not achieve the attendance hoped for, as can be seen by the record of attendance in Table 2. Variable attendance occurred at different locations.

A system with more reminders about workshops, and flexible timing of workshops, perhaps even structuring workshops as ‘drop-in’ sessions held over several hours or on multiple days – might help improve attendance. However, it should be recognised that the overall cynicism and disillusionment of fishers with consultation and meetings presents a barrier to achieving workshop attendance that is hard to overcome.

Appropriateness of survey questions

The majority of survey questions were answered relatively easily by fishers. Discussion at the workshops revealed that respondents had interpreted most questions in the way intended when the survey was designed.

The approach taken to designing the questionnaire, in which questions were designed to be specifically applicable to those working in the MSF was clearly successful. This highlights the importance of working with those in the fishery to design meaningful questions, rather than using existing question sets from previous surveys which may not be applicable.

However, a small proportion of the questions asked in the questionnaire were problematic and may need re-design in future surveys (refer to **Appendix 4**). There were also some suggestions at workshops for additional questions that could be included in future surveys.

Results

The results of the study are presented in two parts. First, overall results on the demographics and well-being of those involved in the fishery are presented by topic.

The second part present profiles of the contribution of the MSF to 13 different coastal regions in South Australia, as well as details of key socio-demographics characteristics of each region which may impact on the well-being of those involved in the MSF.

The discussion section then synthesises the results of survey, workshops and regional analysis to evaluate (a) the quality of life of those involved in the MSF, (b) the contributions of the MSF to the broader community in different regions, and (c) the implications of this study's results for the management of the fishery.

The relationships identified and discussed throughout this report are strong and statistically significant at the $p \leq 0.05$ level. The p values are included throughout the report. Further statistical information is available upon request.

Social characteristics and well-being of people working in the MSF

This section presents results relating to the demographic characteristics and the well-being of people working in the MSF. The results of the survey and workshops are presented in several sections below, which provide information on the:

- demographic profile of those working in the MSF;
- level of satisfaction with life in general;
- level of satisfaction with different aspects of work in the MSF;
- health problems and perceived risks involved in fishing work;
- social capital available to MSF participants (focusing on formal and informal networks related to family and friends, fishing community, local community and broader community);
- household spending patterns of MSF participants;
- fishing history including the types of work undertaken, length of involvement in fishing, and methods by which fishing skills have been developed;
- fishing business profiles including business size, expenditure and income, homeport and fish receivers, paid and unpaid employees; and
- changes affecting fishing business viability.

Demographic profile of respondents

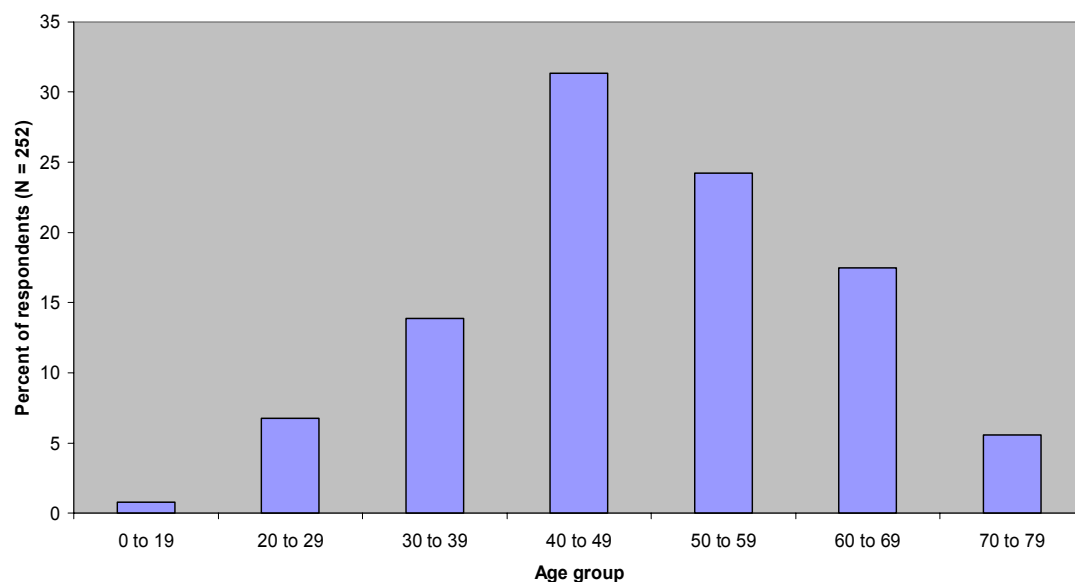
Age

The age of respondents to the questionnaire varied from 17 to 79 years of age, with an mean age of 49 years. The variation in age of respondents is shown in Figure 1.

Licence holders had a mean age of 50.07 years while the mean age of non-licence holders was 43.6 years.

The age of respondents was significantly related to many aspects of their fishing business and social wellbeing. These relationships are discussed throughout the results below.

Figure 1: Age profile of MSF participants



Gender

All but one respondent provided details of their gender, with 88.8% of respondents male and 11.2% female. This reflects the composition of licence holders in the fishery, where most licence holders are male. It also reflects the low response rate from non-licence holders involved in the fishery, particularly unpaid family employees, who are more likely to be female.

Marital status

The large majority of respondents (81.4%) were currently married or in a de facto relationship, while 9.1% were separated, divorced or widowed, and 9.5% had never been in a de facto relationship or married.

Children and dependents

The majority of respondents had children, with only 16.8% having no children. Of those who had children, 7.3% had one child, 38.3% two, 23.7% three and 14% four or more children. The majority of children were over 15 years of age, and almost half were over 20 years of

age. This is reflected in the low number of dependent children, with 52% of respondents stating that none of their children were dependent on them.

Similarly, 56.3% reported that they had no non-child dependents (e.g. partners, elderly parents). Of those who had non-child dependents, 43.7% had one dependent.

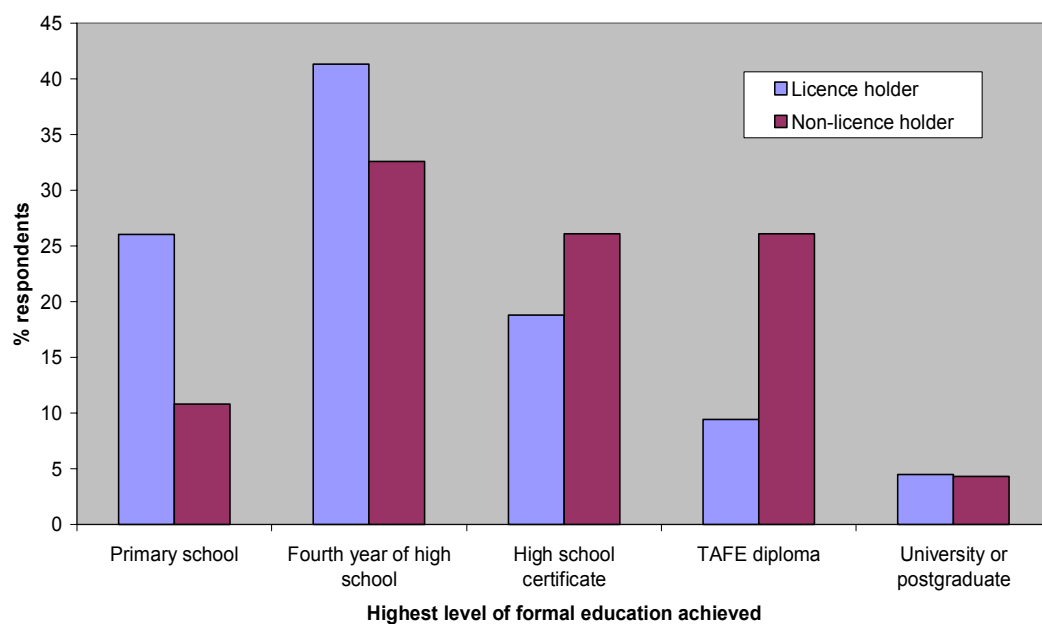
Formal education

Only 36.6% of respondents had achieved a formal education equivalent to a high school certificate or higher, with licence holders generally having lower levels of formal education than non-licence holders, as shown in Figure 2. The highest level of formal education achieved by 23.7% of respondents was primary school, while 39.6% had achieved the fourth year of high school.

Level of education was significantly related to age of respondents, with older respondents less likely to have achieved higher levels of formal education ($p < 0.001$).

Female respondents had achieved a higher average level of formal education than male respondents ($p < 0.001$).

Figure 2: Formal education levels of licence holders and non licence holders working in the MSF



Type of fishing

Of 281 respondents, 82.4% were licence holders, and 17.6% other participants in the MSF. Of the respondents, 61.2% were line fishers who owned or worked in businesses operating with 'A-class' Marine Scalefish licences, 33% net and line fishers who owned or worked in businesses operating with 'A-class' licences, and 5.8% owned or worked in businesses operating with a 'B-class', or Restricted Marine Scalefish, licence.

Life satisfaction

Respondents were asked to rate their satisfaction with five dimensions of their life – their life in general, their financial situation, their own health, their family's health, and the local area they lived in. Figure 3 shows the results.

The large majority of respondents were satisfied or very satisfied with their life, with the exception of their financial situation, where 42.5% were satisfied, while 34.8% were unsatisfied. In particular, the overwhelming majority of respondents – 85.1% - were satisfied with the local area they lived in, with only 4.7% dissatisfied.

Overall, this showed a high general level of satisfaction with life in general, with the exception of respondents' financial situation. Those who reported lower levels of satisfaction with their finances reported significantly lower satisfaction with all other dimensions of life satisfaction ($p < 0.001$ to 0.001), indicating a relationship between satisfaction with finances and overall life satisfaction.

An overall score of life satisfaction was generated from the five questions, and tested for relationships with other variables.

Respondents who reported an overall higher level of satisfaction with their life were significantly more likely to:

- be members of one or more community groups ($p = 0.017$);
- be satisfied with their work ($p < 0.001$);
- report fewer health problems related to their work in fishing ($p < 0.001$);
- report their fishing work overall involved very small or small risk ($p < 0.001$);
- rate their local community as an 'excellent' or 'good' place to live ($p < 0.001$); and
- have a 'very strong' or 'strong' attachment to their local community ($p = 0.003$).

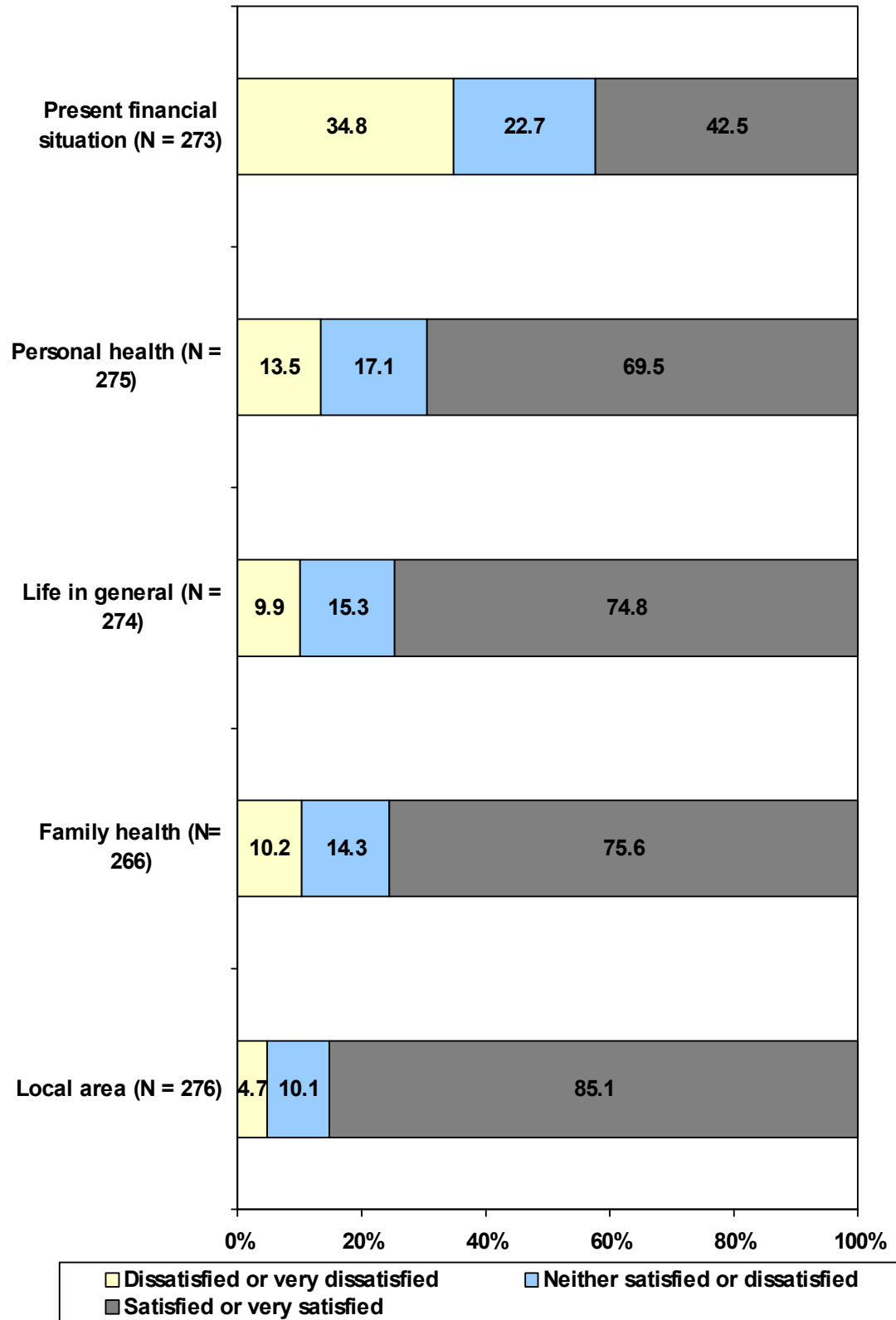
This presents a picture in which having positive perceptions of and active links to the community lived in, and having satisfying work, contribute significantly to an increased satisfaction with life overall.

Satisfaction with overall finances was separately tested against other variables, as responses to this question differed to the responses to other questions about life satisfaction. Higher overall satisfaction with household finances was significantly related to:

- higher work satisfaction ($p < 0.001$);
- fewer reported health problems ($p < 0.001$);
- lower ratings of risk presented by fishing work ($p < 0.001$);
- higher ratings of the respondents local community as a place to live ($p = 0.005$) and higher attachment to their local community ($p = 0.005$); and
- age, with older respondents more likely to be satisfied or very satisfied with their finances ($p = 0.025$).

This suggests that those with a higher overall satisfaction with household finances also have higher satisfaction with their work, fewer health problems, lower perception of risk, greater satisfaction with (and attachment to) their local community and be older.

Figure 3: Respondent's reported level of satisfaction with different aspects of their 'life in general'



Work satisfaction

Respondents were asked about (a) how important a range of aspects of their commercial fishing work were, and (b) how satisfied they were with a number of different aspects of their work in commercial fishing.

Important aspects of work in commercial fishing

Figure 4 shows respondent's ratings of the importance of different aspects of their work in commercial fishing. The most important aspects were fair and consistent management of the fishery, the ability to exercise independent control over their fishing work, and achieving a good balance between work and home life. These were followed by long-term job security, a sense of worthwhile accomplishment and stimulating and challenging work. Fewer respondents – although still a majority – reported interactions with the public and achieving a high income to be important or very important aspects of their work.

These responses indicate a strong preference for stability in management of the fishery, an issue which was often raised in workshops. This was followed by the desire for the tasks and type of work to be rewarding, with less importance attached to achieving high monetary returns from fishing or high levels of positive interactions with the public.

Satisfaction with different aspects of work in commercial fishing

Figure 5 shows respondent's ratings of their satisfaction with a range of aspects of their work in commercial fishing.

From Figure 5 it can be seen that a majority of respondents were satisfied or very satisfied with the amount of challenge in their fishing work, the freedom they had to choose their methods of working, the balance between their work and home life, the feeling of accomplishment achieved from fishing work and the people they interacted with in the course of their work.

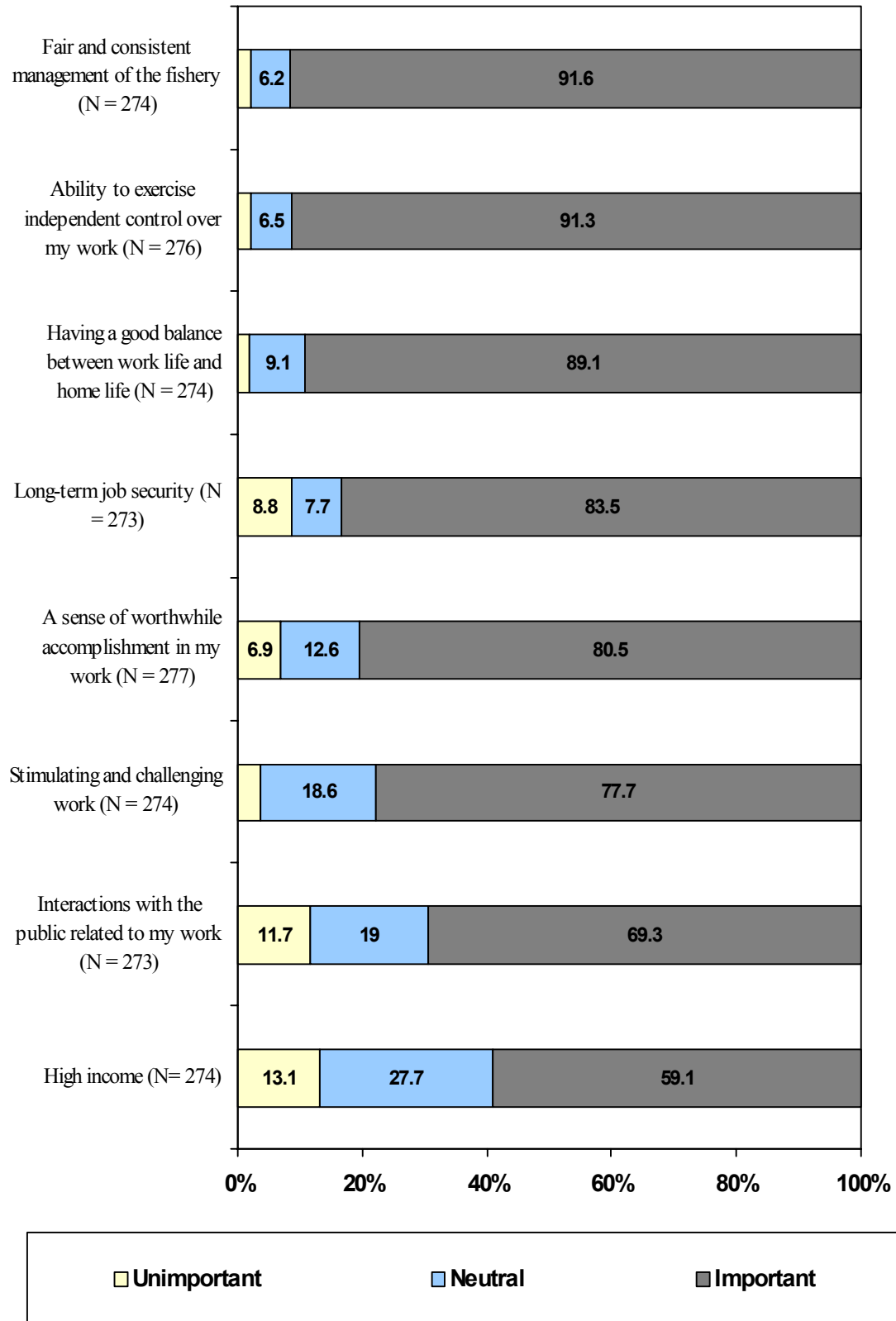
However, a majority were dissatisfied with the level of support received for commercial fishing from other organisations, the rules set on how fishers can operate, the viability of fishing, job security and income received from fishing.

Overall work satisfaction was significantly higher for respondents who:

- had higher life satisfaction ($p < 0.001$), particularly a higher satisfaction with their overall finances ($p < 0.001$);
- reported fewer health problems related to their fishing work ($p < 0.001$);
- perceived less risk in their fishing work overall ($p < 0.001$);
- achieved a higher return to the fishing business owner from fishing (defined as the gross sales of the fishing business less commissions to fish receivers and business operating expenses) ($p = 0.039$); and
- had a higher rating of their local community as a place to live ($p < 0.001$) and attachment to their local community ($p < 0.001$). Interestingly, 46.3% were 'neither satisfied or dissatisfied' with the amount of support and guidance received from other people working in fishing. When questioned about this response in workshops,

attendees usually explained that support and guidance were not necessarily sought from others in fishing, with fishers tending to operate independently.

Figure 4: Respondents' rating of the importance of different aspects of their fishing work



The questions asked about work satisfaction related to four main dimensions of fishing work:

- Satisfaction with the tasks involved in the work;
- Satisfaction with time spent working;
- Satisfaction with income; and
- Satisfaction with the management of commercial fishing by the government.

Figure 6 compares the level of satisfaction with these four dimensions, as well as showing the composite score of overall work satisfaction across all the questions asked, with 1 being very unsatisfied and 5 being very satisfied. There was overall a higher level of satisfaction with the tasks involved in fishing and the time spent working to make a living, and considerably lower satisfaction with the income received from fishing and the external influences affecting commercial fishing.

Figure 5: Respondents' rating of their satisfaction with different aspects of their fishing work

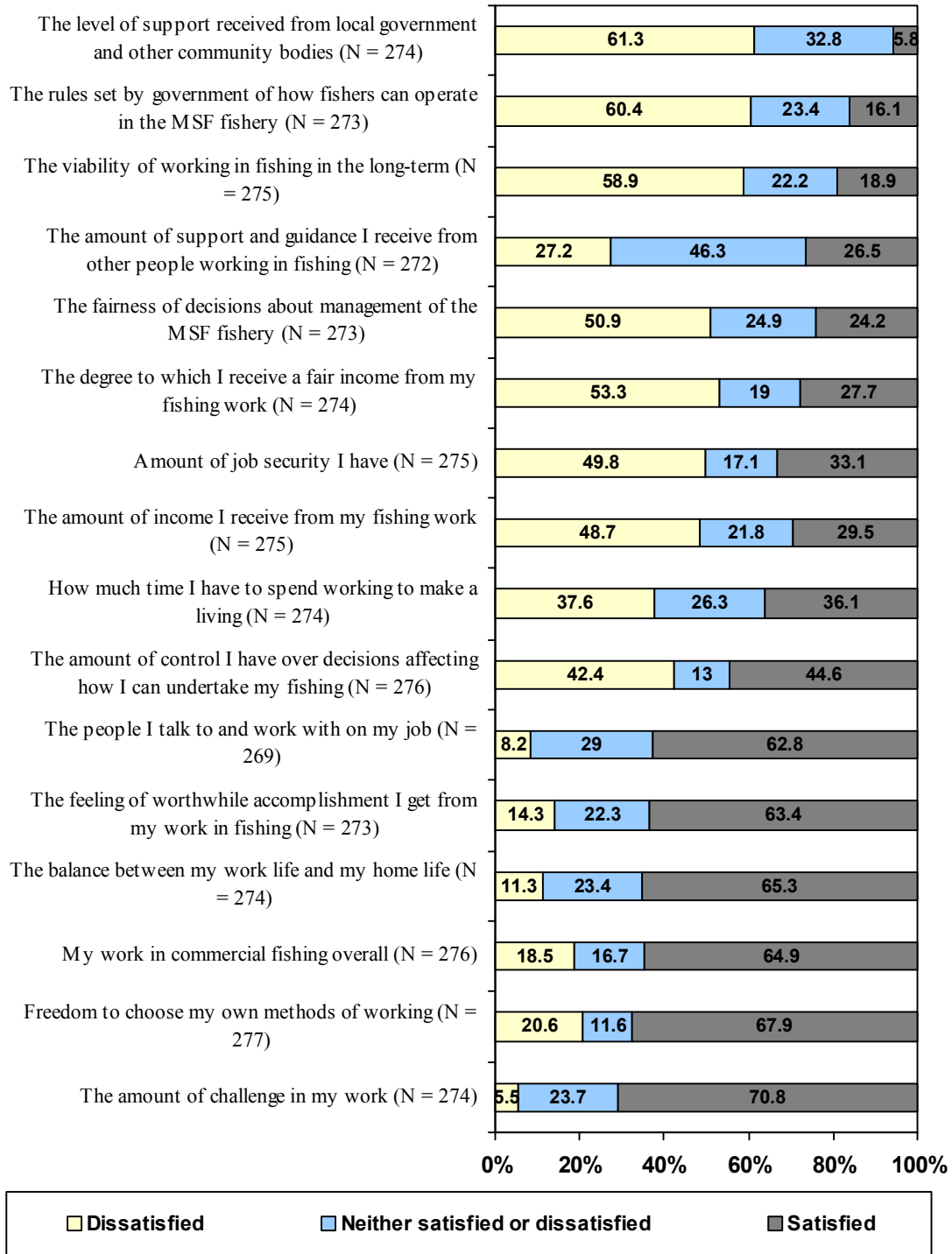
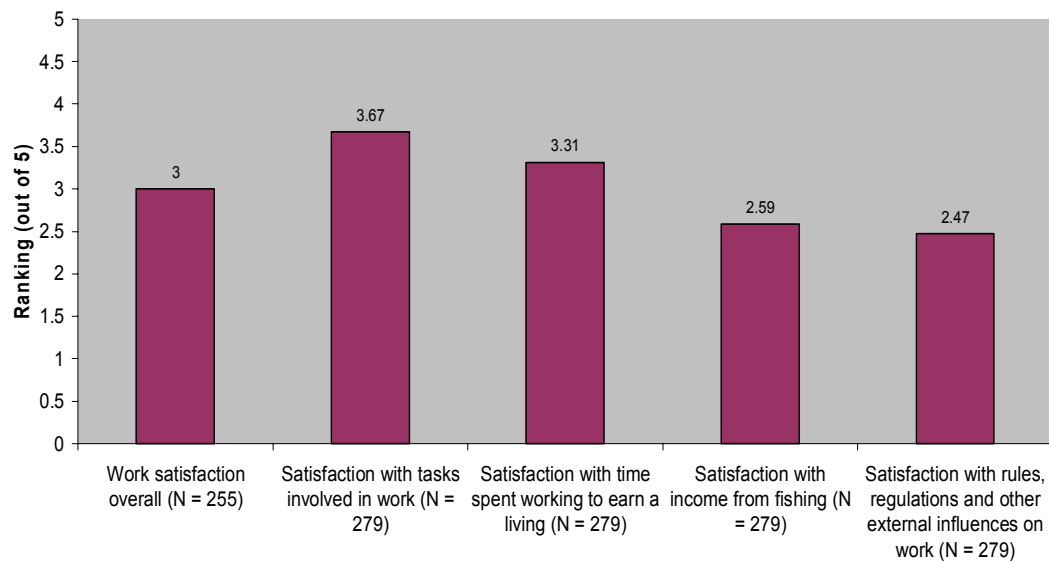


Figure 6: Overall reported satisfaction with life and work reported by those in the MSF



This difference was emphasised in workshops as well. When fishers were asked why they worked in commercial fishing, the most common responses were that fishing was chosen as a profession because:

- ‘I love fishing’ or ‘I never wanted to do anything else’ – they enjoyed the process of fishing and the challenges fishing presented; and/or
- ‘I wanted to be independent’ or ‘I’m master of my own destiny’ – the ability to direct their own work, rather than being directed by others in a large organisation, was a key reason why many chose fishing as a living.

When fishers were asked about the biggest challenges facing fishing, the top challenges and difficulties usually involved external agents. The most commonly discussed challenges and stresses were:

- increasing competition for catch from recreational fishers;
- market pressures, with increasing operating expenses not matched by increasing prices for catch;
- restrictions placed by the government on how MSF participants can fish; and
- negative perceptions of fishing by the general public.

Higher satisfaction with tasks undertaken in fishing was significantly related to:

- higher overall life satisfaction ($p < 0.001$), particularly higher satisfaction with overall finances ($p < 0.001$);
- fewer reported health problems related to fishing ($p = 0.002$);
- lower perceived risk of fishing work overall ($p < 0.001$);

- higher attachment to local community ($p = 0.016$) and higher rating of local community as a place to live ($p = 0.025$);
- higher number of paid employees working in the fishing business ($p = 0.006$);
- higher number of fish receivers ($p = 0.042$); and
- higher return to owner from fishing ($p = 0.007$) and fishing business expenditure ($p = 0.036$).

Lower satisfaction with external influences affecting their work² was significantly related to:

- higher levels of reported health problems (which included both physical health problems and mental health problems such as stress, depression and anxiety) ($p = 0.029$);
- higher perceived risk in fishing work overall ($p < 0.001$);
- higher sales, expenditure and capital value ($p = 0.044, 0.006$ and 0.031 respectively); and
- generational involvement involved in fishing ($p < 0.001$).

²This includes changes to management of the fishery, changes to market prices and changes to input prices.

Health issues and work risks

Health problems experienced

Respondents were asked to identify whether they had experienced any of a range of health problems over the past year, and if they had, if they had seen a medical professional about the problem. Figure 7 illustrates the responses.

Over half of all respondents reported experiencing back pain, excessive fatigue or difficulty sleeping over the past year although, with the exception of back pain, medical assistance had not generally been sought. Depression, stress or anxiety had been experienced by 48.8% of respondents and 9% had sought medical assistance for this, while headaches were experienced less often – but still by 45.5% of respondents.

Almost a quarter of respondents – 24.9% - had sought medical assistance for back pain in the past year, and this was the most commonly reported health problem overall, with 78.4% reporting they experienced back pain.

The least commonly reported health problem was physical injury incurred while fishing or handling fish catch, with 42.6% of respondents incurring some type of physical injury and 11% seeking medical assistance for the injury in the year prior to completing the survey.

Respondents were given the option of describing any other health problems experienced in the last year. A small number of respondents (19) indicated they had experienced health problems other than those listed.

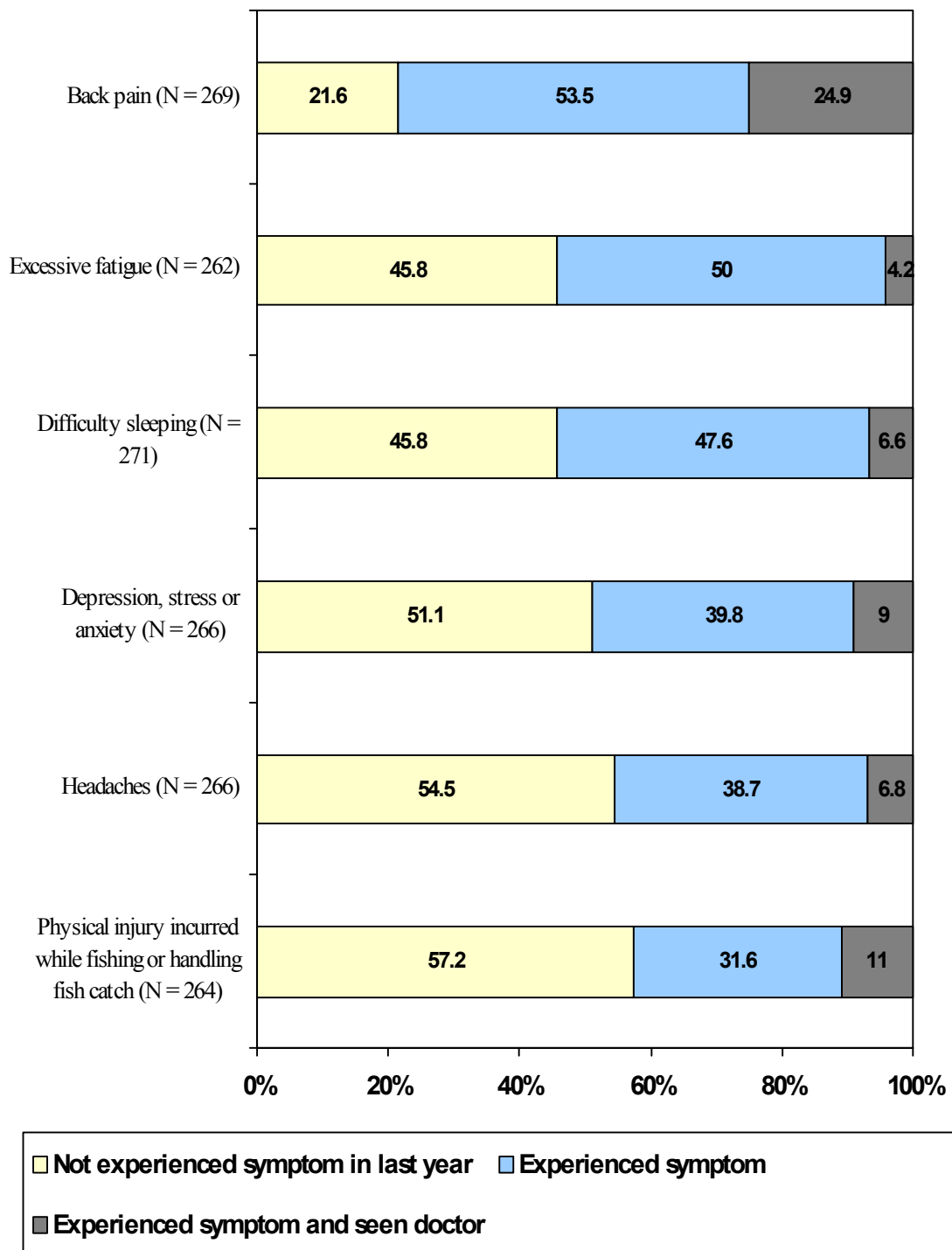
When this question was discussed in workshops, however, several fishers discussed injuries received while fishing that they considered too minor to ‘count’ as a physical injury, and had not included when completing the questionnaire. These included back injuries, cuts and sprains. This indicates that survey responses may have underestimated the total number of physical injuries incurred while fishing.

A composite index of overall health was developed, derived from the number of health problems reported and their severity (based on whether respondents had sought medical assistance for the problem or not). This composite index was used to explore relationships between health and other aspects of well-being were explored. A higher number and/or severity of health problems was significantly related to:

- lower overall life satisfaction ($p < 0.001$);
- lower work satisfaction overall ($p < 0.001$) including task satisfaction ($p = 0.002$);
- number of employees in the fishing business (paid and unpaid), with higher numbers of employees in those businesses where the licence holder reported higher levels of health problems ($p = 0.019$);
- higher reported risk of fishing work overall ($p < 0.001$);
- age, with younger respondents reporting more health problems ($p = 0.049$);
- perceptions of their local community as a place to live, with higher ratings linked to better reported health ($p = 0.044$);

- respondents who were not members of any local community group ($p = 0.049$). Those who were members of higher numbers of community groups were more likely to report better health ($p = 0.024$);
- lower satisfaction with overall household finances ($p < 0.001$);
- lower satisfaction with external management of the fishery ($p < 0.001$); and
- membership of fishing groups, with those who reported fewer health problems reporting membership in a higher number of fishing groups ($p = 0.023$).

Figure 7: Health problems experienced in the year prior to completing the survey



Health risks in fishing

Respondents were asked to identify the level of risk posed by a range of aspects of fishing work. Responses are shown in Figure 8. The highest rated risk was weather conditions, with 41.2% of respondents rating weather conditions as presenting a high or very high risk.

The next highest rated risk was the physical conditions involved in fishing work – which in workshops was usually interpreted as including weather conditions and the physical tasks undertaken when fishing, so most likely reflects the high rating of risk given to weather conditions.

Stress and the number of hours worked were rated as high or very high risks by 30.3% and 26.9% of respondents respectively.

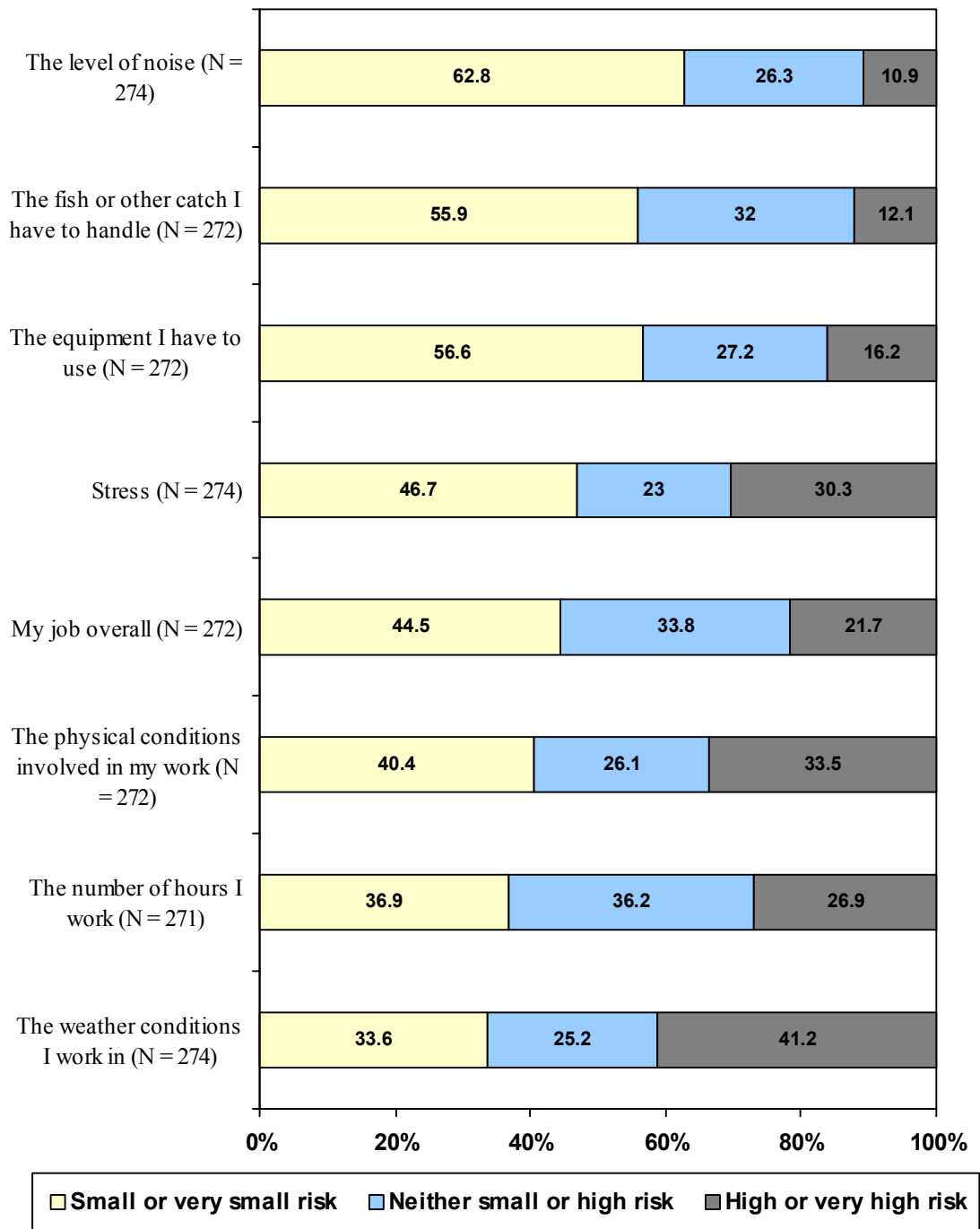
Equipment used, fish and catch handled, and noise levels were not generally rated a high risk by respondents.

Perhaps the most striking aspect of the responses was the variability of the rating of risk, which can be seen from Figure 11. Fishers had very different perceptions of the risk presented by the various aspects of their fishing work.

In workshops, attendees were asked to discuss these results. Interestingly, the discussions revealed considerable variation, with attendees commonly debating the risk presented by different aspects of fishing work and some reporting difficulty in rating risks. Many believed that fishers tend to underrate the risk involved in various aspects of their work. The suggested reasons for this include becoming ‘used to it’ through their own and/or their families’ experiences, as well as learning their limitations through their experience. From the survey and workshop results, it appears likely that risk perception is a key issue in the fishery, with much variation and possible underrating of risks by many fishers.

Attendees also reported that fishers accept varying levels of risk in their work. The relatively high rate of physical injury reported, and the variation in perception of risk presented by different elements of fishing work indicate variations in the risks being taken in the course of fishing work. When asked if this was the case, workshop attendees tended to believe that people under financial pressure, particularly those with high debt levels or supporting families, were forced to fish in more adverse conditions and therefore placed themselves at more risk than others who did not have to fish as ‘hard’ to make a living. This was consistent with the survey results in which stress and hours worked were more likely to be perceived as risk factors than many other dimensions of fishing work.

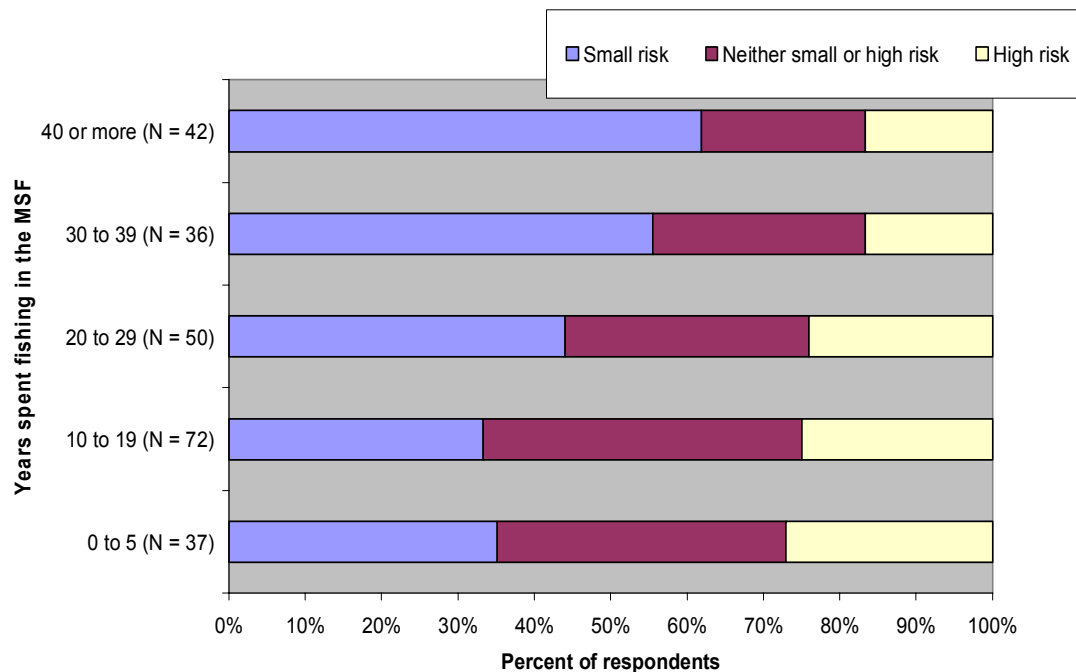
Figure 8: Respondent's ratings of the risk presented by different aspects of their fishing work



Perception of the overall risk of fishing work varied significantly in relation to:

- life and work satisfaction, with lower life and work satisfaction related to a higher perceived overall risk in fishing work ($p < 0.001$);
- fishing related health problems, with those reporting higher health problems more likely to report that their work involved high or very high risks ($p < 0.001$);
- gross sales, with higher risk perceptions related to higher gross sales ($p = 0.023$), and expenditure ($p = 0.001$);
- number of paid employees, with those who had higher numbers of paid employees generally perceiving fishing work as having a greater level of risk ($p = 0.012$);
- age, with younger respondents reporting a higher perception of risk ($p = 0.004$);
- attachment to and rating of local community, with lower attachment & ratings correlated to higher perceptions of risk ($p = 0.001$ and 0.017); and
- years spent fishing in the MSF, with those who had fished longer reporting a lower level of perceived risk, as shown in Figure 9 ($p = 0.003$). This is related to age differences, with those who had fished in the MSF longer generally being older.

Figure 9: Perception of risks of fishing work by respondents who had fished for different lengths of time



Social capital

The term ‘social capital’ has various definitions. Some representative definitions include:

The degree to which a community or society collaborates and cooperates (through such mechanisms as networks, shared trust, norms and values) to achieve mutual benefits.³

Social capital represents the degree of social cohesion which exists in communities. It refers to the processes between people which establish networks, norms, and social trust, and facilitate coordination and cooperation for mutual benefit.⁴

Social capital represents the networks and shared interactions that individuals can use for a range of purposes, including gaining new knowledge, interacting socially and receiving various types of support – emotional, physical and otherwise.

For this study, four dimensions of social capital were examined:

- Interactions with family and friends;
- Interactions with others in the fishing community;
- Interactions in the local community; and
- Links to the broader community.

The inclusion of work-related networks as a vital part of social networks is a shift in the examination of social capital which usually excludes work-related networks. Fishers indicated that an important part of their social lives often comes from informal and formal interaction with other fishers, and so it was important to include this as a dimension of social capital.

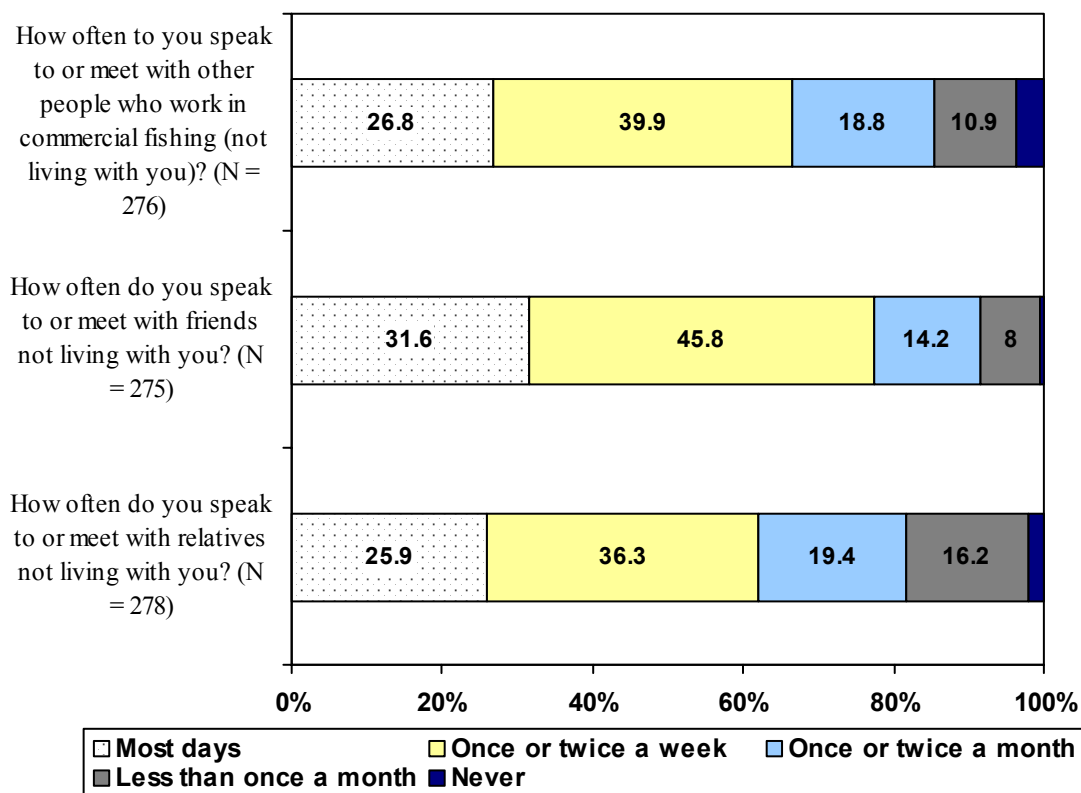
Family and friends

The majority of respondents reported speaking to or meeting with friends and relatives who didn’t live with them either ‘most days’ or ‘once or twice a week’ (see Figure 10). There therefore seems to be a good level of communication and informal networks with family and friends.

³ Public Health Agency of Canada (2003), *Partnership with the Voluntary Sector: Glossary of Terms*, <http://www.hc-sc.gc.ca/hppb/voluntarysector/glossary.html>

⁴ World Health Organisation (1998), *Health Promotion Glossary*, http://www.who.int/hpr/NPH/docs/hp_glossary_en.pdf

Figure 10: Communication with family, friends and other people working in fishing



In workshops, however, some attendees discussed feeling unable to be as big a part of friend and family networks as they would prefer, due to their fishing work requiring them to work at many times when family and friends met socially.

Fishing community

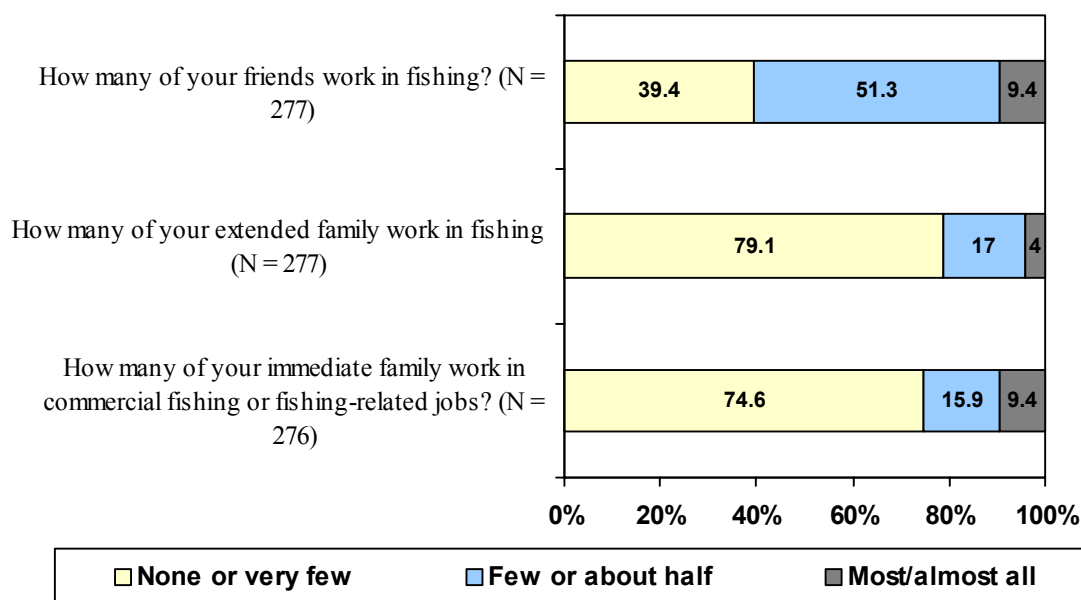
Several aspects of the formal and informal networks existing in the fishing community were examined, including communication with other people working in fishing, the proportion of friends and family working in fishing, and membership of fishing representative groups.

The majority of respondents reported speaking to or meeting with other people who work in commercial fishing either ‘most days’ or ‘once or twice a week’, as shown in Figure 10. Given that many fishing businesses are run by single owner-operators, this indicates there are relatively strong informal localised social networks of fishers in most regions. In workshops, there were varying opinions about the level of support provided by fishers to other fishers. Many believed that there was strong competitiveness between fishers and little support in terms of providing advice or assistance, while others believed there was more positive interaction. MSF fishers in some regions were believed to be highly competitive and antagonistic towards each other, while in others they were described as more co-operative as a group.

Figure 11 shows the number of friends and family of respondents who worked in fishing. Despite common perceptions that fishing work tended to be undertaken by several generations of the same family, only 25.3% of respondents reported having few to most of their immediate family working in fishing, while 21% reporting having few to most of their

extended family working in fishing. This compared to 60.7% who reported that between ‘few’ and ‘almost all’ of their friends worked in fishing.

Figure 11: Proportion of friends and family working in fishing



This indicates that the social networks in fishing are in fact highly dependent on friendships, rather than on family links, although for some the family links form a strong part of their fishing social network.

This topic was discussed in workshops, and a common explanation for the lower than expected family involvement in fishing was that in the past two decades, particularly since management changes in the mid-1980s, fishing has become less of a family tradition, and there has been increasing numbers of new entrants into the fishery who had no history of commercial fishing.

Membership of fishing representative groups

The majority of respondents (63.2%) were not members of any fishing representative groups. Of those who were members of a fishing group, 53.5% were members of one group, 28.4% of two groups, and 18.4% of three groups or more.

Owner-operators (who were almost all licence holders, with a very small number operating someone else’s licence under a leasing arrangement) were significantly more likely to be members of fishing groups than other respondents ($p = 0.006$). While 40.7% of licence holders were members of fishing groups, only 18.4% of non-licence holders reported membership in one or more fishing groups. Net fishers were more likely to be members than A-class line fishers or B-class fishers.

Part-time fishers were significantly less likely to be members of fishing groups than full-time fishers ($p < 0.001$), with only 15.4% of part-time fishers reporting membership of a fishing group compared to 46.4% of full-time fishers.

Those who were members of one or more fishing groups were significantly more likely to report a strong or very strong attachment to their local community ($p < 0.001$), to be members

of local community groups ($p = 0.021$), and had lived in their local community longer on average than those who were not members ($p = 0.01$).

The nature of the respondent's fishing business was significantly related to membership of fishing groups. Those who were owner operators of fishing businesses which had paid employees were more likely to be members of fishing groups ($p < 0.001$), as were those with higher gross sales ($p < 0.001$), higher business expenditure ($p = 0.018$), higher net profit ($p = 0.004$), a higher number of fish receivers ($p = 0.011$) and higher total capital value of their business ($p = 0.031$). In other words, owner-operators of larger fishing businesses with higher than average turnover were more likely to be members of fishing groups.

Respondent's length of time working in commercial fishing was also significantly related to membership of fishing groups. Those respondents who reported a higher number of years working in fishing in general and in the MSF were more likely to be members of fishing groups ($p = 0.001$ and 0.004 respectively), while respondents with a higher number of generations of their family who had worked in fishing were also more likely to be members ($p < 0.001$).

Of the 36.8% of respondents who were members of fishing groups, most were members of one or more of five groups – SAFIC, Commsec, the Marine Scale Net Fisher's Association, West Coast Professional Fishermen's Association and the Women's Industry Network – Seafood Community (shown in Figure 12). Of those who were members of fishing representative groups, 77.8% held no office bearing positions, while 12.2% reporting holding an office bearing position in one group, and 9.9% held an office bearing position in two or more fishing groups.

The level of interaction occurring via fishing groups was often relatively low, with an average of four meetings attended across all fishing groups by those who were members of one or more groups, with an average of two meetings annually per group. 14.8% of members of fishing groups had attended no meetings in the past year, as can be seen from Figure 13.

Those who attended workshops explained that there is often low attendance at meetings and an unwillingness to join fishing representative groups due to a high level of disillusionment with these types of groups and processes. Many fishers feel that previous participation did not bring them the benefits or results they hoped for, and are also asked to attend a large number of meetings – resulting in 'participation fatigue' that may partly explained declining membership and involvement in groups. Many who attended workshops reported that in the past, membership of representative groups, attendance at meetings and interaction amongst MSF fishers in general had been much higher, and that participation and interaction had declined over the past two decades in particular.

Figure 12: Proportion of respondents reporting membership of different fishing groups

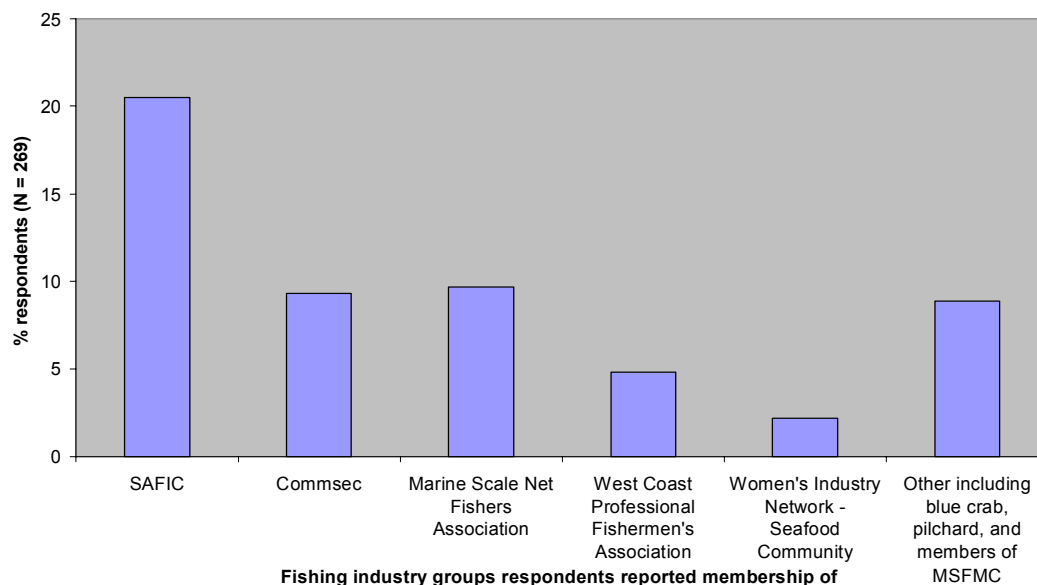
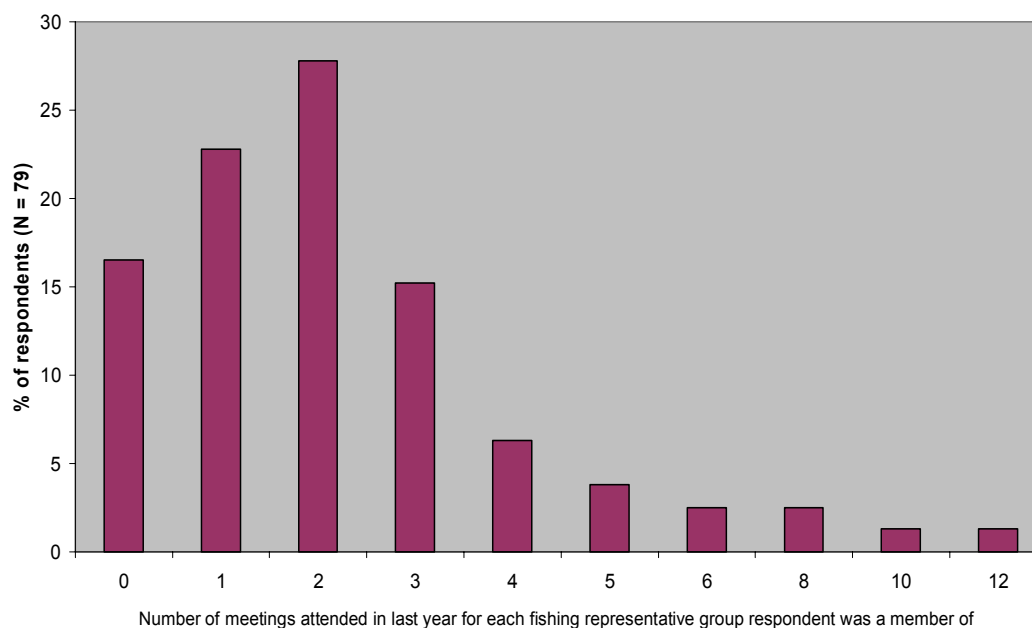


Figure 13: Number of meetings attended by members of fishing representative groups



The spread of membership across a number of fishing representative groups reflects a relatively fragmented fishery without a cohesive voice, according to many of those who attended workshops. They tended to describe the fishery as being characterised by internal conflict between members, and MSF fishers as being unable to work together effectively to achieve changes they thought were needed to the management of the fishery and to perceptions of the fishery by the general community.

The low membership by non-licence holders, part-time workers, smaller business operators and more recent entrants to the fishery means that there are few opportunities for these participants in the fishery to share experiences and skills through formal networks.

Local community

Respondents had very positive perceptions of their local communities, as can be seen from Figure 14. A total of 83.9% of respondents felt their local community was an 'excellent' or 'good' place to live. 56.5% of respondents reported feeling strong or very strong attachment to their local community, and 29.5% some attachment.

Respondents had lived in their area for between one and 76 years, with an average of 30 years. Female respondents had lived in their local area a shorter time on average than male respondents ($p = 0.005$). The large majority (90.7% of respondents) expected to still be living in the same place in five years time.

Respondents had lived in their local area for an average of 2.12 generations, with some variation between regions (discussed further in the regional impacts section of this report).

Perceptions of and attachment to local community

As stated above, most respondents rated their local community highly as a place to live, and felt a strong or very strong attachment to their local area. There was a strong, significant relationship ($p < 0.001$) between how respondents rated their local community (as excellent, good, fair or poor) and their feelings of attachment to their local community (very strong to no attachment), as can be seen from Figure 14.

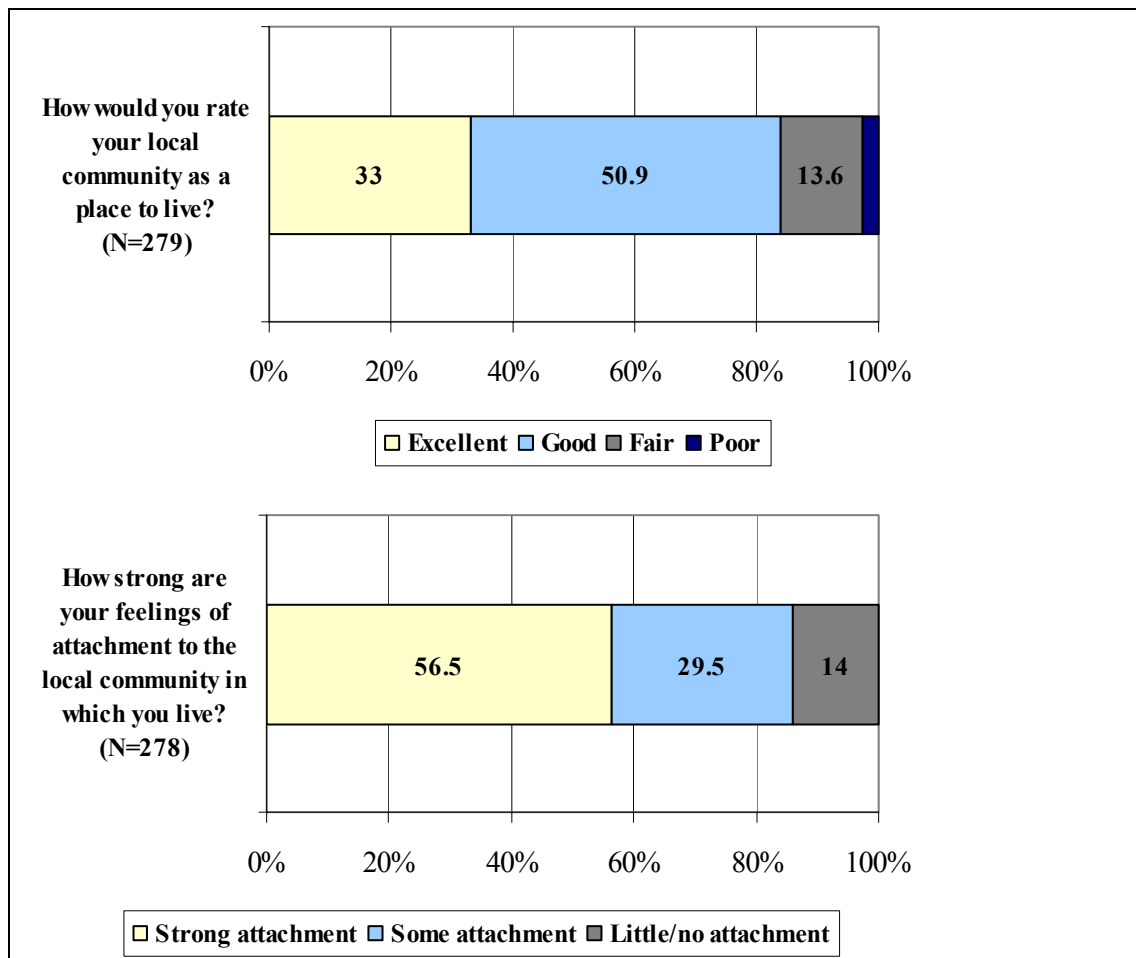
Relationships to other variables were usually the same for both ratings of and attachment to community. Therefore only significant relationships with respondents' level of attachment to their local community are presented below. These are in most cases very similar to the relationships found with a respondent's rating of their local community as a place to live.

Respondents who reported a high level of attachment (strong or very strong) to their local community were significantly more likely to:

- report higher life satisfaction ($p = 0.003$);
- report high satisfaction with their overall finances ($p = 0.003$);
- report higher levels of task satisfaction ($p = 0.003$), fishing income satisfaction ($p = 0.043$) and time satisfaction ($p = 0.016$) but not higher overall satisfaction with other dimensions of their fishing work;
- have a lower perception of the risk presented by fishing work ($p = 0.018$);
- have higher gross sales ($p = 0.018$) and higher returns to the owner after expenses from fishing ($p = 0.045$);
- be a member of a fishing group ($p = 0.001$) and a community group ($p < 0.001$);
- have worked for a high number of years in commercial fishing ($p = 0.015$) and in the MSF ($p = 0.006$); and
- report that their family had been involved in fishing for more than one generation ($p = 0.007$).

No significant relationship was found between age of respondent and attachment to their community.

Figure 14: Respondent's perception of and attachment to their local community



Access to services

Details of level of access to services in different regions are given in the second part of the results. In general, access to services was reported to be good by most respondents, probably reflecting the fact that most MSF fishers live in towns which have most basic services. This can be seen from Figure 15. In some more remote areas some respondents did report having to travel some distance to access services. In particular, dental, doctor, TAFE / university, and bank services were less accessible for areas of the Yorke Peninsula and Greater Lincoln area, particularly Cleve, Franklin Harbour and Tumby Bay.

In workshops, most respondents reported being satisfied with their level of access to most services, with the exception of dental services. In some regions, while dentists did operate in the region, they were often booked several weeks in advance, making it difficult to get an appointment.

Membership of community groups

Of the respondents, 49.5% belonged to at least one community group, while 50.5% were not members of any. Of those who were members, 32.5% were members of one group, while 16.9% were members of two or more groups.

The most common type of group respondents belonged to were sporting clubs, with 32.9% reporting membership, as can be seen in Figure 16. Of those who were members of sporting groups, 28.2% were members of two or three sporting groups. There was a spread of membership of other types of groups such as civic, religious, cultural, school, and emergency services groups.

Those who were members of community groups attended an average of 19 meetings across all the groups they were members of over the year prior to completing the survey, and an average of 14 meetings per group they were a member of.

Almost half of those who were members of community groups (48%) held an office-bearing position in at least one of the groups they were a member of, with 12% holding an office bearing position in two or more groups.

Respondents who were members of one or more community groups:

- were more likely to work part-time than full-time in their fishing work ($p = 0.044$);
- reported higher overall satisfaction with their lives ($p = 0.017$);
- reported fewer health problems related to fishing ($p = 0.049$);
- had a higher level of attachment to their local community than non-members ($p = 0.044$); and
- were more likely to be a member of a fishing group than those who were not community group members ($p = 0.021$).

Figure 15: Distance respondents had to travel to access services

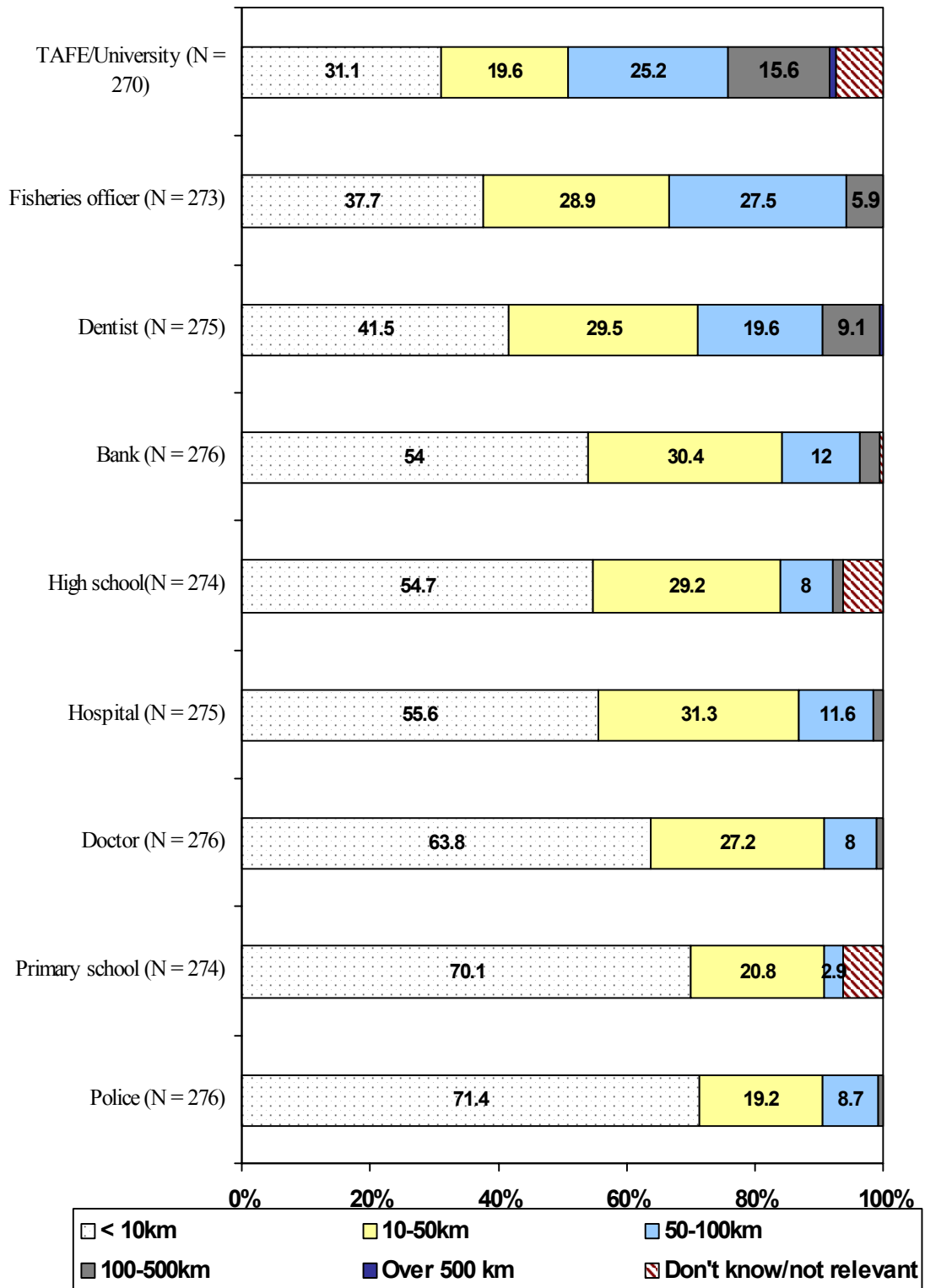
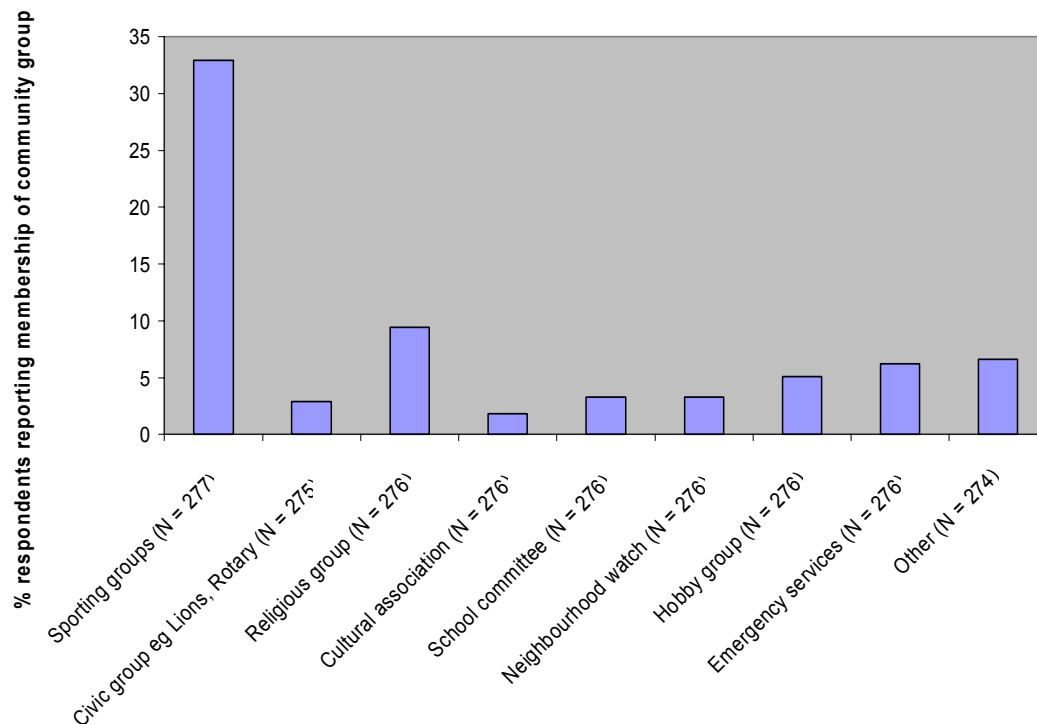


Figure 16: Types of community groups MSF members belong to



In workshops, attendees described difficulty participating in community groups due to their irregular hours spent fishing. Membership of sporting groups was difficult when it sometimes meant decisions had to be made between playing a game and going out fishing. This may go some way to explaining why more part-time than full-time fishers are members of community groups, as they are less constrained by the hours they need to work in fishing.

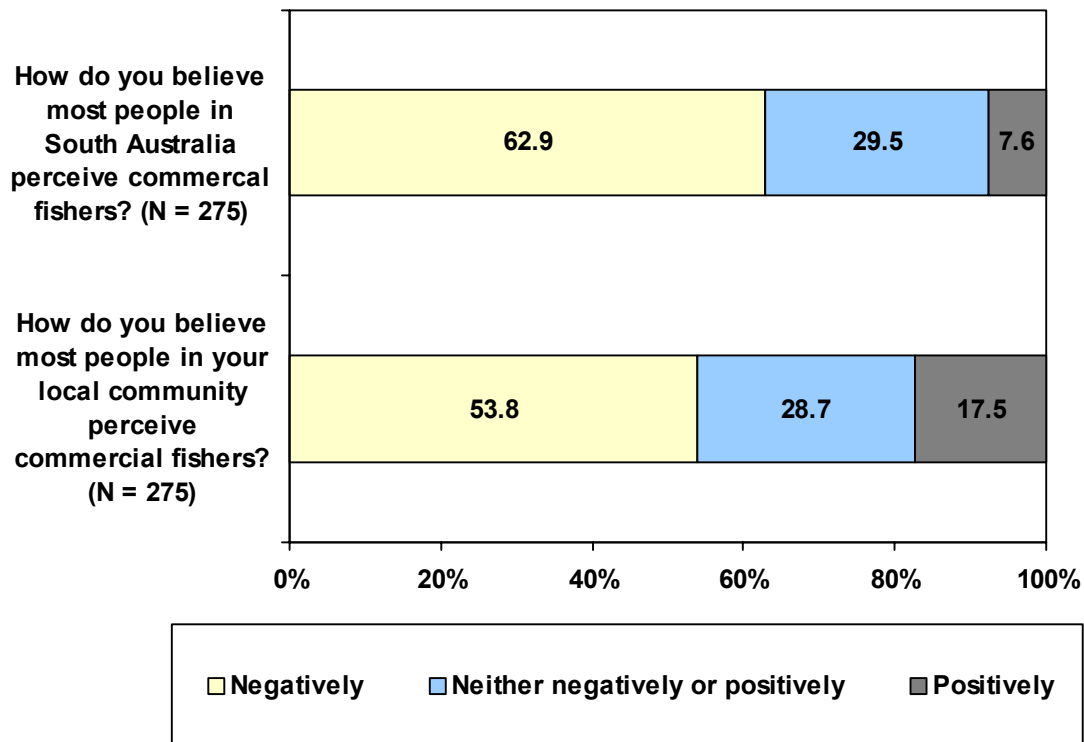
Broader community

When asked how they believed the a) South Australian community and b) broader local community perceived commercial fishers, the majority of respondents (62.9% and 53.8% and respectively) believed that commercial fishing is perceived negatively or very negatively, as shown in Figure 17.

Respondents were more likely to report that members of local communities had positive perceptions of commercial fishing than members of the South Australian community in general. In workshops, attendees tended to distinguish between long-term resident locals and recently arrived locals, with recent arrivals believed to have more negative perceptions of commercial fishing.

When asked to discuss perceptions of commercial fishing by the broader community, workshop attendees tended to view their interactions with the broader community negatively. In particular, members of the general community were described as erroneously perceiving commercial fishing, particularly net fishing, to be destructive to the environment, and fishers as deliberately harming the environment in pursuit of profit. Fishers generally felt helpless to influence these views, believing they were perceived so negatively that any attempts to argue against these negative perceptions would be dismissed.

Figure 17: How respondents believe the broader community perceives commercial fishers



Some, though, described activities they were undertaking that they felt improved interactions between commercial fishers and the broader community. These included selling their fish at local markets and using the opportunity to explain the fishing methods used, and setting up stalls and activities at local fairs and other events to give members of the community an opportunity to interact with commercial fishers.

Household spending patterns

Respondents were asked about their household spending patterns. Household spending by region is reported on in the second part of the results.

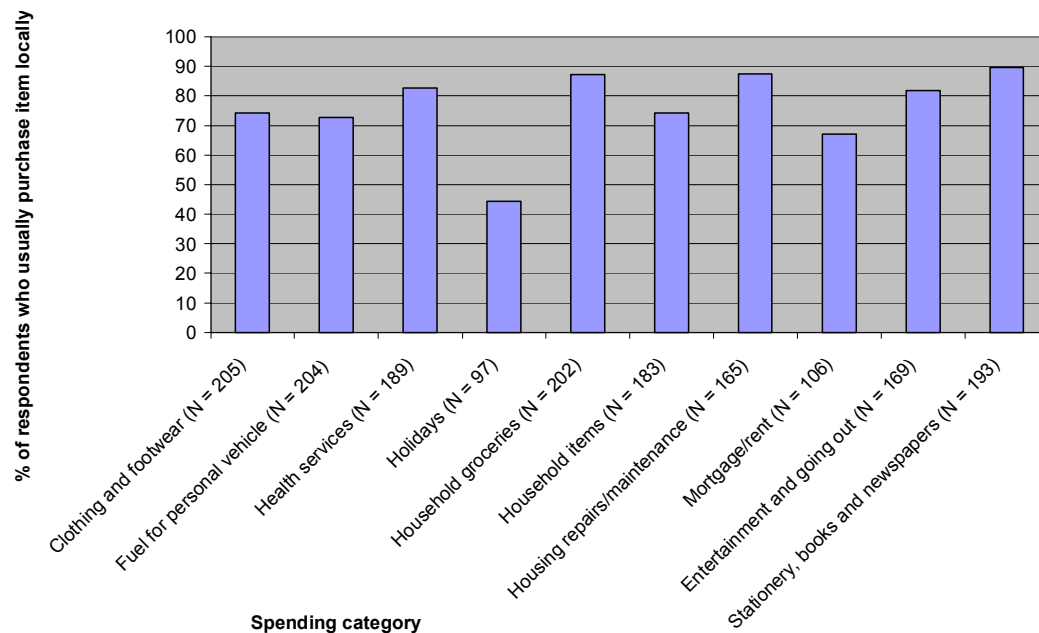
On average, 70.3% of household income was derived from fishing activities, and 42% of respondents reported that 100% of their household income came from fishing.

Respondents were asked if they usually purchased particular household items in their local area (defined as the postcode they lived in) or outside. Figure 18 shows the results.

With the exception of holidays and mortgage/rent payments, 70% or more of respondents purchased most of their household items locally. Expenses such as mortgage and rent payments often went to organisations not specifically locally based and were difficult to report as 'local' or 'non-local' payments. When respondents reported spending further afield than their local area, they generally reported purchasing items in the nearest town which had the items in question available. In workshops, attendees explained they generally only purchased non-locally if items were not available in their local area.

There was considerable variability in the amount reported spent by different households, indicating high variability in purchasing power across different households.

Figure 18: Proportion of household expenditure occurring in respondent's local area



Profile of fishers and fishing in the MSF

This section focuses on profiling the social history and characteristics of the fishing work undertaken by those in the MSF, and key differences in social characteristics of the participants in the fishery.

Years worked in fishing

Most respondents had worked primarily in the MSF although many had worked in other fisheries before shifting to work in the MSF. Respondents had worked in commercial fishing for an average of 23 years but in the MSF for a slightly shorter time on average (21.4 years). The years worked in both commercial fishing and the MSF ranged from only a few months for some new entrants to fishing, up to 65 years for some of the older respondents.

Female respondents had usually worked less years in commercial fishing than male respondents ($p = 0.005$).

Those who had worked more years in commercial fishing were significantly more likely to have worked in the MSF for longer years ($p < 0.001$), indicating that the MSF was the main fishery the majority had worked in.

Because of this strong relationship, the variables that were significantly related to years worked in commercial fishing in general were substantially similar to those that were related to the years the respondent had worked in the MSF.

Those who had worked for more years in commercial fishing (and also in the MSF) were significantly more likely than those who had fished for fewer years to:

- deliver catch to only one fish receiver rather than multiple fish receivers ($p = 0.027$);
- be members of one or more fishing groups ($p = 0.003$);
- have been involved in fishing for more than one generation ($p < 0.001$); and
- report a strong or very strong attachment to their local community ($p = 0.015$).

Family involvement in fishing

When asked how many generations of their family had worked in fishing, 53.3% reported being the first generation to have worked in commercial fishing, while 38% reported two to three generations of fishing in their family and 8.9% four or more. As mentioned previously, there was some confusion in the answers to questions about the number of generations in a family involved in fishing activities, with some respondents answering '0' when the question asked for a response of '1' if they were the first generation. To minimise the impact of this confusion, the analysis categorises responses into '1' generation and '2 or more' generations.

Those who had fished for two or more generations compared to those who were the first generation:

- reported significantly lower satisfaction with external regulation of the MSF ($p < 0.001$);
- reported significantly higher gross sales ($p < 0.001$), fishing business expenditure ($p = 0.013$), fishing business capital value ($p = 0.015$), and return to owner ($p = 0.043$);
- were significantly more likely to have paid employees in their business than those who had fished for one generation ($p = 0.024$);
- were significantly more likely to be members of fishing groups ($p = 0.001$);
- were significantly more likely to report a strong or very strong attachment to their local community ($p = 0.007$); and
- had generally worked more years in commercial fishing in general ($p < 0.001$) and in the MSF ($p < 0.001$).

The last relationship indicates that new entrants to the fishery often have little history of fishing. This was supported by the perceptions of those who attended workshops, who observed that new entrants into the fishery in recent years in their local area often had undertaken little or no previous work in commercial fishing.

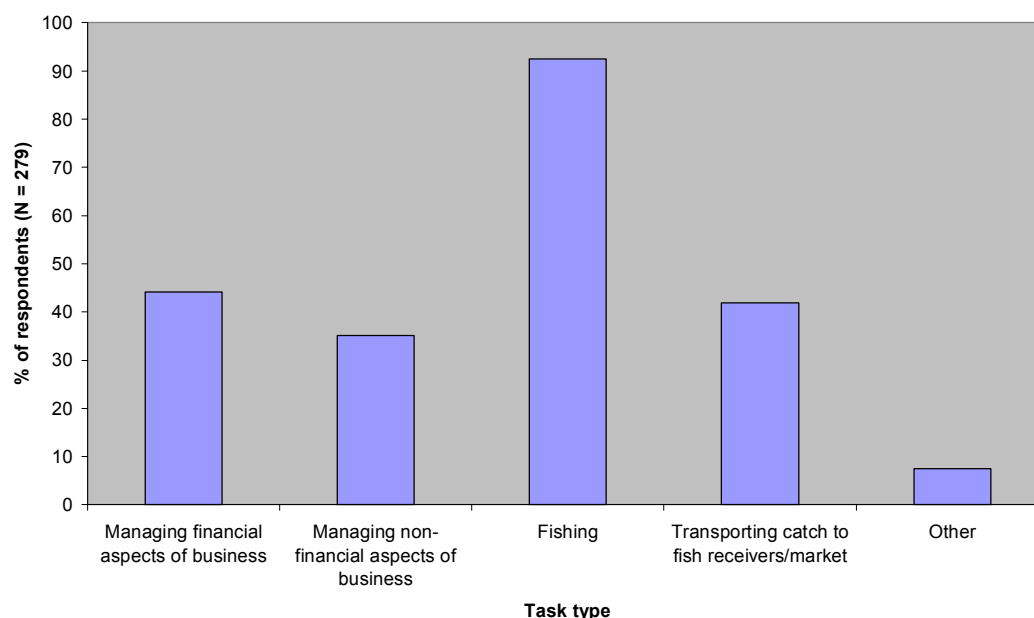
Types of work undertaken in MSF

Figure 19 shows the key types of work respondents reported undertaking in the MSF. The different percentages reflect the different types of work undertaken by respondents, *not* the actual distribution of different types of work in the fishery.

Most respondents (92%) reported undertaking fishing work, reflecting the high proportion of survey respondents who were owner-operators (the large majority of licence holders were owner-operators, with a small number leasing their licences). Only 44.1% of those who undertook fishing work also identified themselves as managers of the financial aspects of the business, and 35.1% the non-financial aspects, despite 81.5% of respondents describing themselves as owner-operators of a fishing business. When this was discussed in workshops, most attendees reported having a partner who handled the financial management and some

logistical aspects of their fishing business, but who usually did not go out fishing with them. Others managed their business finances but did not define themselves as business managers. The differences indicate that there are a considerable number of people who are involved in managing the financial and non-financial aspects MSF fishing businesses but who do not directly undertake fishing activity.

Figure 19: Types of tasks undertaken in the MSF by survey respondents



There were some significant differences between respondents who were owner-operators and other respondents. Owner operators were significantly more likely to:

- perceive fishing work as involving high or very high risk ($p = 0.008$) This may be related to differences in the types of tasks undertaken by owner-operators and other respondents, with many non-owner operators primarily involved in managing the business financially without going out on the boat;
- be male, with most female respondents not owner-operators ($p < 0.001$);
- have achieved a lower level of formal education than non-owner operators ($p = 0.015$); and
- be older ($p = 0.011$), have worked longer in fishing in general ($p < 0.001$) and in the MSF ($p < 0.001$) and have lived longer in the local community ($p = 0.002$).

A small number of respondents reported that they undertook their own processing as part of their fishing business.

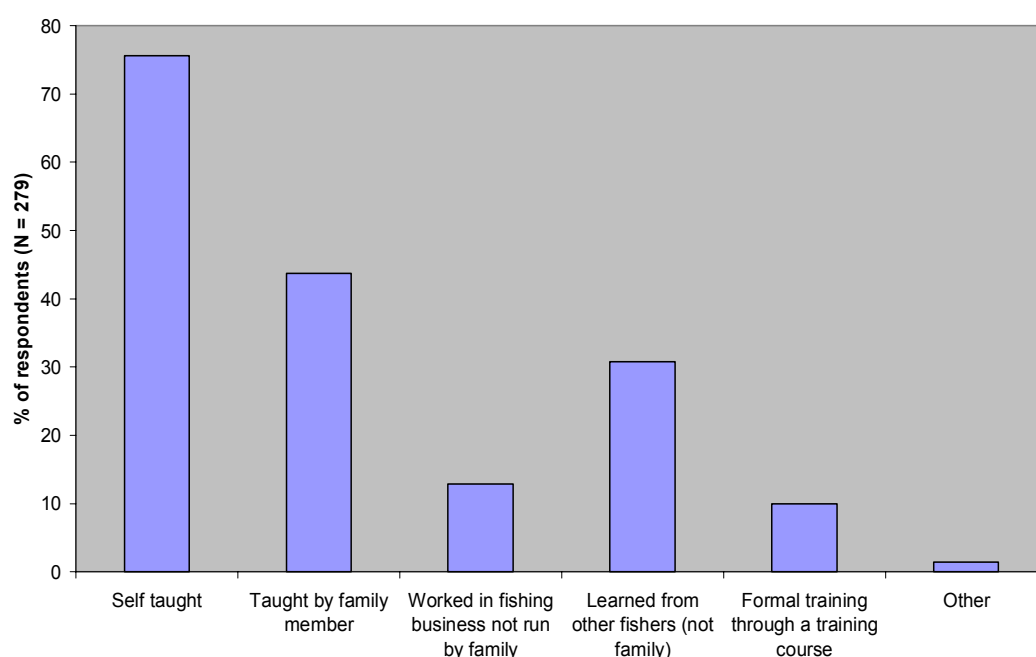
Skills development

Respondents were asked how they had learned their fishing skills. Responses are shown in Figure 20 (responses add up to more than 100% as respondents could identify more than one method of learning skills). The most common way of learning fishing skills was through working in fishing. The second most common was being taught by family members, or

learning from fishers who were not family members. Few had learned skills by working in a fishing business not run by their family or through formal training, and only four reported having attained fishing skills using methods other than those already discussed.

Mechanisms for transferring fishing skills are clearly based around learning skills through going out fishing – with those who have skilled family members or other fishers to help them learn probably gaining skills more rapidly than those who acquire skills by trial and error without this type of assistance. However, 76% of respondents identified ‘self-taught’ as a learning method.

Figure 20: Methods by which respondents acquired fishing skills



Dependence on fishing

52.7% of respondents reported that a member of their household had work outside commercial fishing, while 47.3% reported having no members of their household who worked outside commercial fishing. Those who worked part-time in fishing were more likely to have a member of the household who worked outside the fishing sector ($p = 0.006$).

The average proportion of household income derived from commercial fishing was 70.3%, with 42% reporting 100% of their household income came from commercial fishing⁵.

70.1% of respondents reported that their fishing work was full-time, and 29.9% that they worked part-time in fishing. Women were significantly more likely to be part-time workers than men ($p < 0.001$). Owner operators were more likely than other respondents to be working full-time ($p < 0.001$). Part-time workers:

⁵ 5.3% of those who reported no members of their household working outside commercial fishing did not receive 100% of their household income from fishing. This difference may reflect households receiving income from sources other than workforce employment, such as welfare benefits, superannuation etc.

- were more satisfied with their overall financial situation than full-time workers ($p < 0.001$);
- were more satisfied with their life than full-time workers ($p = 0.002$);
- generally perceived their fishing work as having lower risk than full-time workers ($p = 0.002$), which may be related to the different types of work done by part-time and full-time workers, with part-time workers more likely to describe themselves as business or financial managers;
- had worked less years in commercial fishing ($p = 0.001$) and in the MSF ($p = 0.007$) on average than full-time workers;
- had been involved in fishing for fewer generations than full-time fishers on average ($p < 0.001$);
- where they were an owner-operator, reported lower gross sales ($p < 0.001$) and fishing business expenditure ($p = 0.00$) than full-time respondents; and
- were significantly more likely to send catch to only one fish receiver rather than multiple fish receivers ($p = 0.008$).

While the measures of dependence on fishing described above revolve around financial dependence, dependence on fishing was based around more than simply earning income. Fishers described having been drawn to fishing as a lifestyle, wanting to have a job that gave them independence and the opportunity to spend time on the water, developing and testing their skills. Several described abhorring the idea of having a different type of job. Most wanted a 'fair' income but did not believe their goal was to become rich from fishing, instead wanting to make a living so they could keep working in a job they loved. This can be seen from the high level of satisfaction reported with fishing tasks, and the lower level of importance attached by respondents to achieving a high income from fishing compared to other dimensions of fishing work.

Key differences within the fishery

During analysis of the results, several key differences were found in the social activities and characteristics of:

- respondents who were licence holders and non-licence holders;
- respondents who held different types of fishing licences in the MSF; and
- respondents who worked in only the MSF and those who worked in the MSF and in other fisheries.

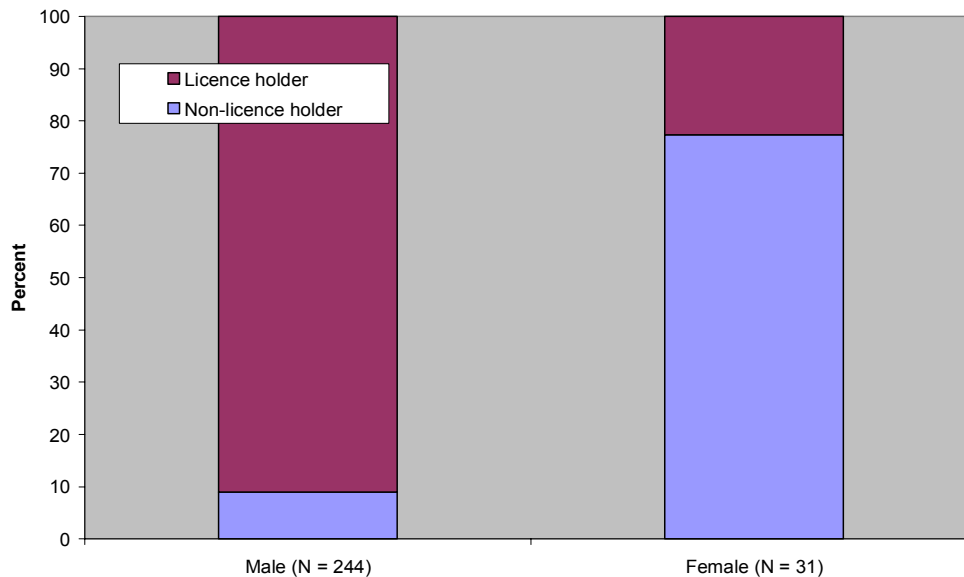
Differences between licence holders and non-licence holders

While only a small proportion of respondents (17.6%) were non-licence holders, the results of the survey were analysed to examine whether there were any different characteristics between licence holders and non-licence holders.

Perhaps the biggest difference was gender. As can be seen in Figure 21, only 9% of male respondents were non-licence holders while 77.4% of female respondents were non-licence holders, which was a significant difference ($p < 0.001$). While the low response rate from

non-licence holders makes it difficult to assess the validity of the non-licence holder data, fishers attending workshops confirmed that many women undertake work in the fishery, often managing a range of aspects of the business such as catch transport and business finances. This would indicate that the figures estimated based on the survey responses have validity.

Figure 21: Gender of licence holders and non-licence holders in the fishery



There was a significant difference in the age of licence holders and non-licence holders ($p = 0.007$), with non-licence holders tending to be younger than licence holders.

Respondents who did not hold a fishing licence had achieved a significantly higher level of formal education than licence holders ($p = 0.012$). This is likely to reflect the generally younger age of non-licence holders, as younger respondents overall had achieved higher levels of formal education.

As might be expected from the relationship with age, there was also a significant differences in the number of years spent fishing, with licence holders significantly likely to have spent more years working in commercial fishing ($p < 0.001$), and in the MSF, than non-licence holders ($p < 0.001$).

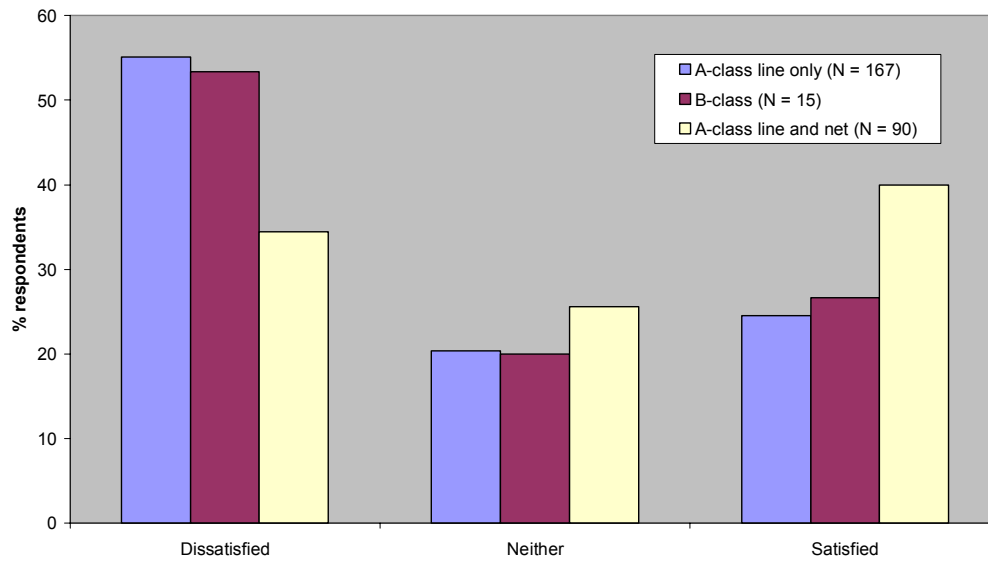
MSF licence types

There were some significant differences between respondents who were A-class licence holders with line only endorsements, A-class with line and net endorsements (referred to from here on as 'net fishers'), and B-class licence holders.

B-class licence holders were all over 50 years of age, significantly older than both other groups ($p < 0.001$). This reflects the lack of transferability of B-class licences over time, and that no new B-class licences have been issued in recent decades. New entrants to the MSF do so by purchase of an A-class licence (as described in the overview of the MSF).

Net fishers were significantly more likely to be satisfied with their fishing income than both other groups ($p = 0.013$), as can be seen from Figure 22.

Figure 22: Satisfaction of different types of fishers with their fishing income



Net fishers were significantly more likely to have paid employees than A-class line fishers or B-class fishers ($p < 0.001$), with 58.3% of net fishers having paid employees, compared to 31.7% of A-class line fishers and none of the B-class fishers who responded to the survey.

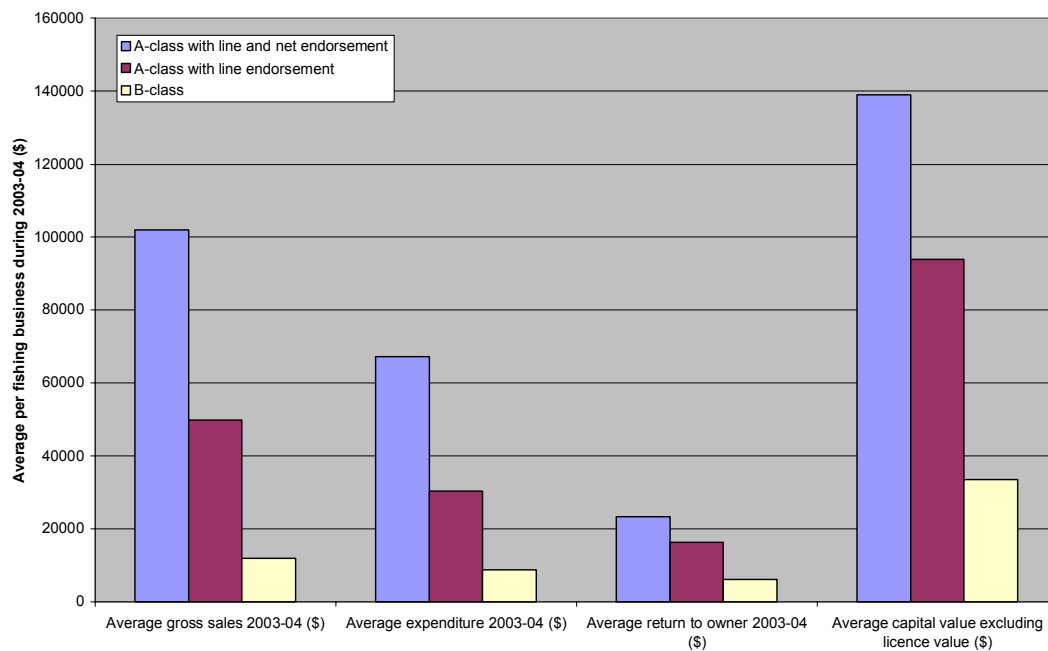
Net fishers were significantly more likely to be a member of a fishing group than A-class line fishers or B-class fishers ($p = 0.002$), with 51.7% of net fisher respondents reporting membership of one or more fishing representative groups compared to 30.9% of A-class line fishers and 20% of B-class licence holders.

There were significant differences in the proportion of respondents who reported that someone in their household had a job outside fishing. Only 31.2% of B-class licence holders and 44.3% of net fishers had someone working outside fishing, compared to 58.9% of A-class line fishers. The difference was significant ($p = 0.018$).

There were significant differences between the gross sales ($p < 0.001$), total fishing business expenditure ($p < 0.001$), total fishing business capital value ($p = 0.013$) and return to fishing business owners after paying expenses and wages to employees ($p = 0.048$).

Figure 23 shows the difference in average gross sales, fishing business expenditure, return to owner and capital value of the fishing business between different licence types. Net fishers reported higher expenditure, return and capital values than the other two types of licence holders, while B-class licence holders reported much lower expenditure, sales and capital value.

Figure 23: Fishing business size, expenditure and sales by licence type*



* The underlying data is drawn from averages that exclude data from one business of considerably larger size than the norm which would otherwise have skewed the average upwards considerably.

Commercial fisheries worked in

Respondents were asked details of the fisheries in which they held a licence to fish or worked. The majority of respondents, 83.9% only held a licence to fish and/or worked in the MSF. Of the 16.1% who held licences or worked in fisheries other than the MSF:

- 2.4% worked in prawn fishing;
- 1.2% worked in the rock lobster fishery;
- 1.2% worked in abalone fishing;
- 2% worked in aquaculture;
- 6.7% caught blue crabs; and
- 5.9% worked in or held a licence to fish in a Commonwealth fishery (usually a shark licence).

Those respondents who reported holding a licence in or working in both the MSF and other fisheries were significantly more likely to:

- have paid employees working in their fishing business ($p < 0.001$); and
- have a fishing business with higher gross sales ($p = 0.026$), expenditure ($p = 0.001$) and total capital value ($p = 0.021$), than respondents who only worked in the MSF.

In workshops, several attendees stated that having more flexibility in the number of fisheries and geographic areas they could operate in, which enabled them to target different species on

a rotating basis, would be desirable. Many felt this would allow them to fish more sustainably, particularly as different species could be targeted when market prices fell for currently targeted species, whereas many reported that they currently have to fish a species more intensively if catch price fell.

Fishing businesses

Respondents who managed fishing businesses were asked to provide details on the gross sales, operating costs, commissions to fish receivers, and capital value of their business in financial year 2003-04. 147 respondents provided all of these details.

These figures should be treated with some caution. In some questions, the survey asked for approximate spending over the previous financial year so there may be inaccuracies due to the difficulty of estimating past expenditure. In addition, some respondents may have been unwilling to provide accurate figures due to concerns that their responses would be provided to other government departments (despite confidentiality assurances), and so some results may over-or under-estimate certain costs or income.

From the figures provided, a 'return to owner' was calculated for those owner-operators who provided details of sales, operating costs and commissions (a total of 147 respondents provided all these details). This return to owner reflects the income available to the owner-operator.

In general, larger fishing businesses tended to report higher net returns to fishing owner, have younger owner-operators, and have owner-operators whose families have been involved in fishing for more than one generation. There were also some significant differences based on the type of licence held in the MSF.

There is a clear difference between the gross sales, expenditure, net profit and capital value of net fishing, A-class line fishing and B-class fishing businesses, with net fishers reporting higher gross sales, expenditure, return to owner and business capital value than A-class line fishers. B-class fishers generally reported considerably smaller gross sales, expenditure and capital value than other fishers.

Business spending and capital investment

Fishing business managers were asked to provide details of their expenditure on operating costs, and to estimate the value of different capital items they had invested in for their business. A total of 164 respondents provided costings of expenditure, while 157 provided details of capital value of their business. Tables 3 and 4 detail the average spending and range of spending reported on different items.

There is considerable variability in the size of fishing businesses in the MSF, with expenditure of most types varying considerably, and total capital value of businesses varying from a reported \$4400 to \$2.5 million. The average capital value across respondents was \$122,620, although the median capital value was \$64,450, indicating that the high capital value of a few very large businesses skewed the average figure upwards considerably.

A similar variability in operating expenditure was evident, with large MSF businesses reporting spending more than 100 times more than the smallest MSF businesses. Some of this difference can be explained by the types of fishing undertaken, with net fishers generally having higher gross sales, expenditure and capital value than A-class line fishers, and B-class fishers having lower sales, expenditure and business value. However, there was still considerable variability in business value and activity within each fishing type.

The estimated total expenditure and capital investment by the sector are discussed further in subsequent parts of this report.

Table 3: Fishing business operating costs

Expenditure item	% fishing businesses reporting any expenditure	Median (\$)	Mean (\$)	Range (difference between smallest and largest reported expenditure) (\$) ⁶
Boat fuel	92.3	5000	7988.6	185155
Ice	74.4	1000	1659.3	9980
Bait	63.5	500	1393.3	13460
Motor repairs	76.9	1000	2277.6	59950
Boat repairs	71.8	1000	4062.7	199970
Motor vehicle maintenance	84	1000	1333.7	7900
Motor vehicle fuel	84.6	2000	2680	12400
Accommodation while fishing	13.5	926	921.2	2900
Mooring fees	10.3	381	938.7	6990
Licence fees	100	3000	4909.1	66697
Insurance fees	65.4	1200	3135.1	45900
Wages or catch share (measured by dollar value)	25.6	18000	33902.1	250069
Freight costs	60.3	1209.5	3552.2	49970
Phone/fax/stationary	77.6	1000	1372.6	10120
Professional fees eg accountant	90.4	720	1373.6	26910
Vehicle/trailer registration	91.7	700	874.7	8950
Fishing gear replacement/repairs	87.8	1000	2959.4	29980
Total running costs		22450	45281.4	722285

⁶ A range is reported rather than specific figures for minimum and maximum operating costs, to ensure confidentiality of respondents

Table 4: Fishing business capital value

	% fishing businesses reporting a value for this item	Mean (\$)	Median (\$)	Range (difference between smallest and largest reported expenditure) (\$)
Boat 1 (inc. survey gear)	100	61072.15	18000	2499970
Boat 2 (inc. survey gear)	55.7	20873.26	13000	199900
Motor 1	92.1	13446.11	10000	59950
Motor 2	51.4	9245.958	6000	46900
GPS	69.3	1706.186	800	19950
Plotter	20	3218.571	2000	14950
Radar	18.6	7117.308	4750	27800
Echo sounder	75	1749.619	1200	9980
Holding tanks	10.7	3320	2000	9800
Tractor	36.4	3789.216	3000	18000
Trailer	82.9	3207.983	2250	19900
Motor vehicle 1	98.6	12401.37	10000	59680
Motor vehicle 2	44.3	11276.11	6000	49500
Total capital		122623.1	64450	2580600

The majority of expenditure was undertaken locally. The second part of the results provides details of regional spending from MSF businesses.

For most types of capital, less than 30% of respondents were planning to replace the items in 'the next few years'.

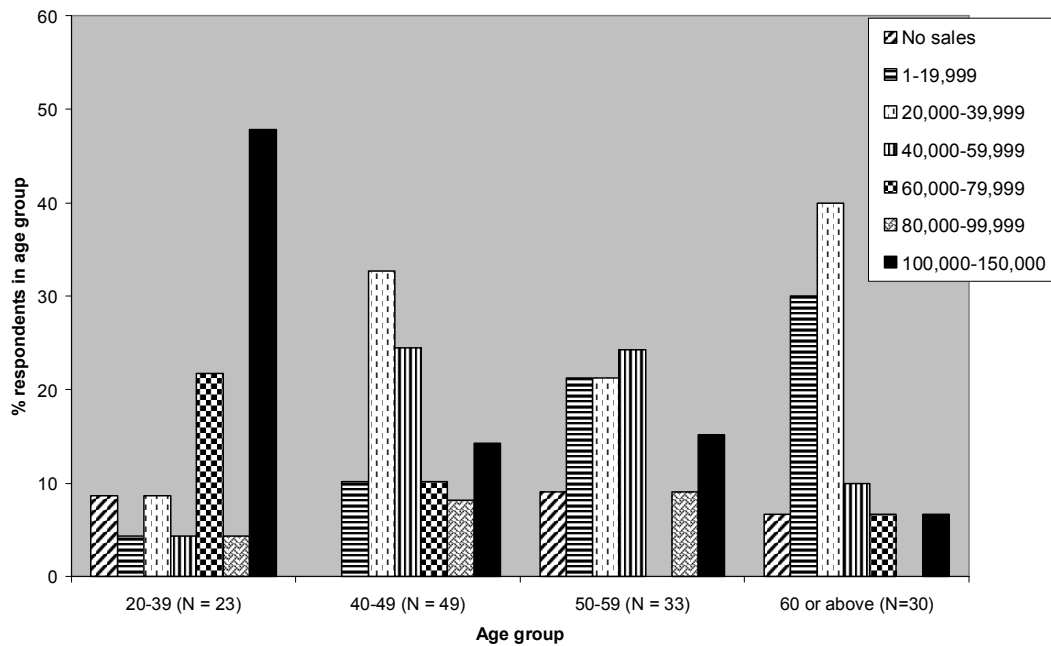
Gross sales and return to owner

A total of 146 respondents provided details of the gross sales of their fishing business in financial year 2003-04. The total gross sales ranged from nil, with some reporting no activity in their fishing business in that year, to over \$1 million. A small number of businesses reported considerably higher gross sales than was reported by the rest of respondents. The average gross sales of those who reported having some activity in their fishing business during 2003-04 was \$66,420.

A higher level of gross sales was significantly related to:

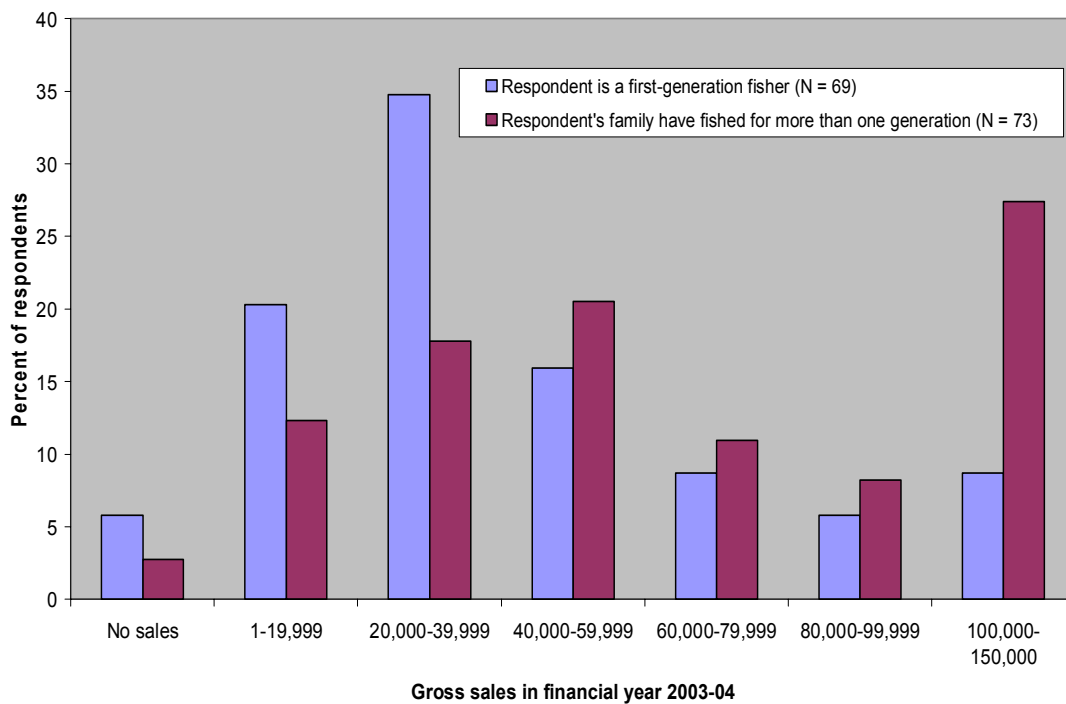
- higher return to owners of the fishing business ($p < 0.001$);
- higher expenditure and capital respectively ($p < 0.001$ and < 0.001);
- younger fishers ($p < 0.001$), as can be seen in Figure 24;
- those whose family had been involved in fishing for more than one generation reporting ($p < 0.001$), as can be seen in Figure 25;
- membership of fishing groups ($p < 0.001$);
- businesses that had paid employees ($p < 0.001$);
- higher satisfaction with work income ($p = 0.018$); and
- reporting that their fishing work involved high or very high risk ($p = 0.023$).

Figure 24: Gross sales by age group



The return to owner was calculated by subtracting reported fishing business expenditure and commissions from reported gross sales. This return reflects the income available to the owner-operator from fishing, as the large majority of respondents did not include a personal wage to the owner-operator as part of their fishing business expenditure.

Figure 25: Gross sales of those with and without an inter-generational history of fishing



The level of return to owner was significantly related to:

- age, with older respondents reporting lower returns ($p = 0.034$);
- family involvement in fishing, with those reporting intergenerational involvement reporting higher returns ($p = 0.043$);
- type of fishing licence held, with net fishers reporting higher returns than A-class licence holders with only line endorsements, and B-class licence holders reporting significantly lower returns than the other two types of licence holders ($p = 0.048$);
- work satisfaction, with higher returns related to higher reported work satisfaction ($p = 0.039$). The dimensions of work satisfaction that were most related were task satisfaction ($p = 0.007$), time satisfaction ($p = 0.008$) and income satisfaction ($p = 0.006$);
- gross sales ($p < 0.001$) with higher sales related to higher return to owner; and
- higher number of fish receivers was linked to higher return to owner ($p < 0.001$).

Fishing business expenditure was not linked to return to owner in a linear way, with some who reported very high expenditure reporting very low net profit.

Fishing businesses that reported a higher total capital value were more likely to have:

- higher gross sales and expenditure ($p < 0.001$);
- paid employees ($p < 0.001$); and
- more than one fish receiver ($p = 0.003$).

In summary, fishing businesses with higher total capital value are more likely to have paid employees, higher gross sales and expenditure, and more than one fishing receiver.

The owner-operators of fishing businesses that reported a higher total capital value were significantly likely to:

- have an intergenerational family history of fishing ($p = 0.015$);
- be younger than owner-operators who had fishing businesses with lower capital value ($p = 0.009$); and
- be members of one or more fishing groups ($p = 0.024$).

Therefore, owner-operators with higher capital value were more likely to be members of a fishing group, be younger and have a family history of fishing.

Fish receivers

Of the 190 respondents who gave details of their fish receivers, 65.8% reported they sent catch to one fish receiver, while 34.2% reported that they sent catch to two or more receivers.

There were some significant differences between those who reported only one fish receiver and those who sent their catch to multiple fish receivers. Those who had multiple fish receivers:

- had significantly higher gross sales than those who reported only one receiver ($p < 0.001$);
- were more likely to have paid employees than those who sent catch to one receiver ($p = 0.004$);
- reported higher returns to owner of the business than those with one receiver ($p < 0.001$);
- had higher total capital value of their fishing business ($p = 0.014$) and higher total expenditure ($p < 0.001$) than those with a single receiver;
- were generally younger ($p < 0.001$) and had worked fewer years in fishing in general ($p = 0.019$) and in the MSF ($p = 0.004$) than those who sent catch to a single receiver;
- were more likely to be members of a fishing representative group than those with a single receiver ($p = 0.020$); and
- reported a higher level of satisfaction with their fishing tasks than those with a single receiver ($p = 0.029$).

Employees

Respondents who were licence holders and/or fishing business managers were asked how many employees – both paid and unpaid – worked in their fishing business.

The majority of respondents (67.5%) reported having some type of employee, whilst 32.5% reported having no paid or unpaid employees. Of the 67.5% of respondents that had some type of employee, 37.6% had paid employees, 46.4% unpaid family members and 16.3% unpaid non-family employees (some reported both paid and unpaid employees).

On average, MSF fishing businesses had:

- 1.16 paid part-time or full-time employees, although when a small number of businesses with considerably more employees than usual were removed, the average was 0.67 paid employees per business. 53% of paid employees were full-time while the 47% who were part-time worked an average of 3.09 days per week;
- 0.71 unpaid family employees, who usually worked part-time for an average of 1.78 days per week; and
- 0.34 non-family unpaid employees, who usually worked part-time for an average of 1.79 days per week.

Figure 26 profiles the level of different types of employment reported by respondents.

The large majority of unpaid work was part-time, and a smaller majority of paid employees worked part-time, as can be seen from Figure 27.

Figure 26: Proportion of MSF businesses that had paid or unpaid employees

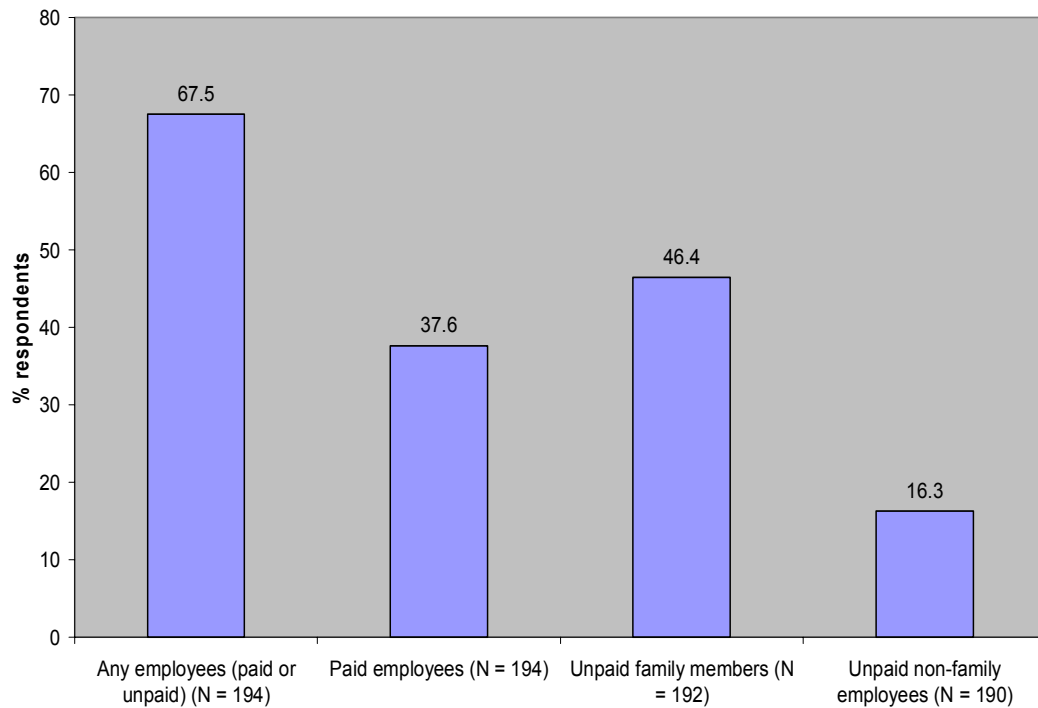
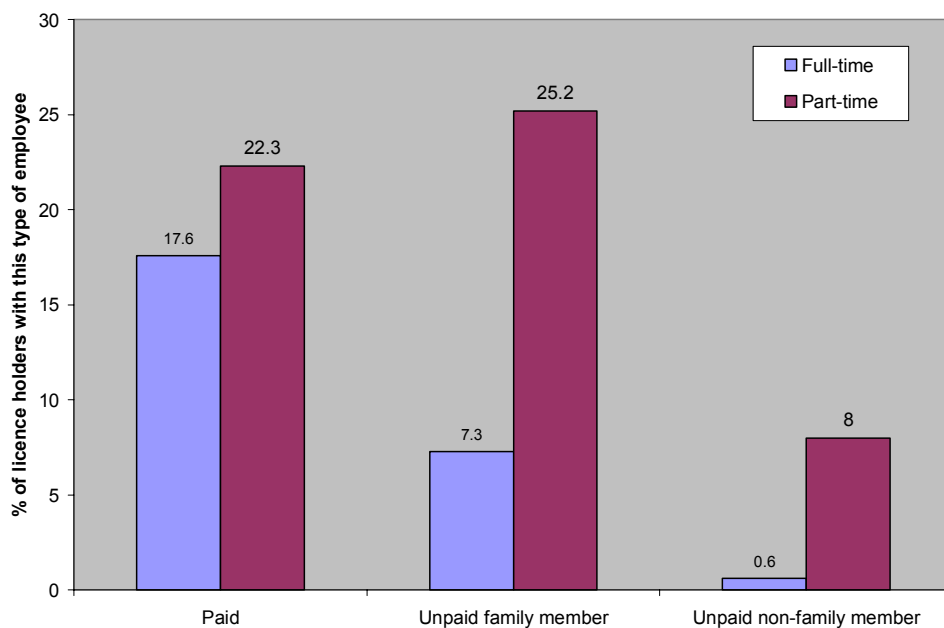


Figure 27: Levels of part-time and full-time work by employees working in fishing businesses

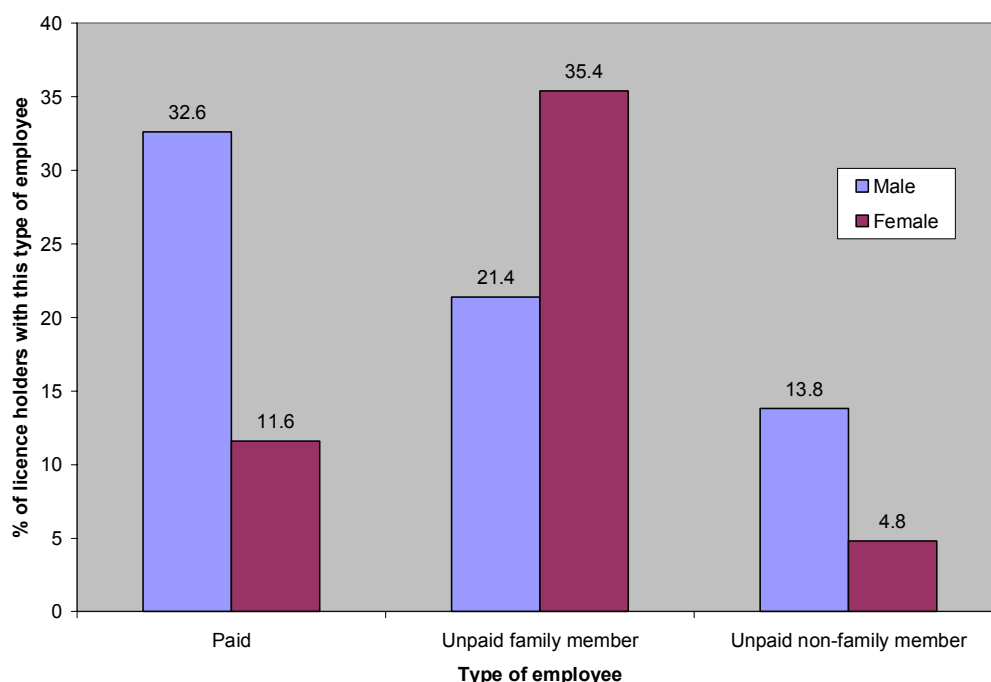


There was a significant gender difference in type of employment. Figure 28, which is based on total respondents, shows the percentage of respondents with that type of employee. Of

paid employees, 73.8% were male while 26.2% were female. Of unpaid non-family employees, 74.2% were male and 25.8% female, with the factors explaining this gender split being unclear and requiring further research to understand these factors.

Of unpaid family employees, however, 62.3% were female and 37.7% male. Women were clearly more involved in the fishery as unpaid family employees, often sharing in household income but not considered formally to be employees in the business despite often taking on a considerable part of the financial and other management of the fishing business.

Figure 28: Gender of employees in MSF businesses



There was some variability in the level of employment, with a small number of businesses reporting considerably more than the average level of employment⁷. This small number employed a large number of part-time paid employees and also in general reported considerably higher capital investment and gross spending than others MSF fishing businesses.

Those who reported having any employees (paid or unpaid) were significantly more likely to be highly satisfied with the tasks they undertook in their fishing work ($p = 0.011$).

Those respondents who reported that they were owner-operators of fishing businesses with paid employees differed from other respondents in that they were significantly more likely:

- to be net fishers than line-only fishers ($p = 0.001$);
- to report a high level of task satisfaction ($p = 0.015$);
- to have had more than one generation of their family involved in fishing ($p = 0.024$);

⁷ Specific details of employment numbers or the numbers of these larger businesses are not provided to ensure confidentiality of respondents.

- to have a larger fishing business, with higher gross sales ($p < 0.001$), expenditure ($p < 0.001$), business capital value ($p < 0.001$) and to sell to a higher number of fish receivers ($p = 0.009$);
- to be satisfied or highly satisfied with their fishing income ($p = 0.009$);
- to be younger, with older respondents less likely to have paid employees ($p = 0.009$);
- to be younger than respondents who had no paid employees ($p = 0.017$);
- to report that their fishing work involved high or very high risk ($p = 0.011$);
- to have a higher number of fish receivers ($p = 0.004$); and
- to be a member of a fishing group than those without paid employees ($p < 0.001$).

Changes affecting fishing business viability

Fishing business owners or co-owners were asked whether a range of changes occurring in recent years had increased, reduced or had no effect on the viability of their fishing business. Responses are shown in Figure 29.

The majority of respondents reported that changes had decreased viability of their fishing business, with the exception of size limit changes and netting closures.

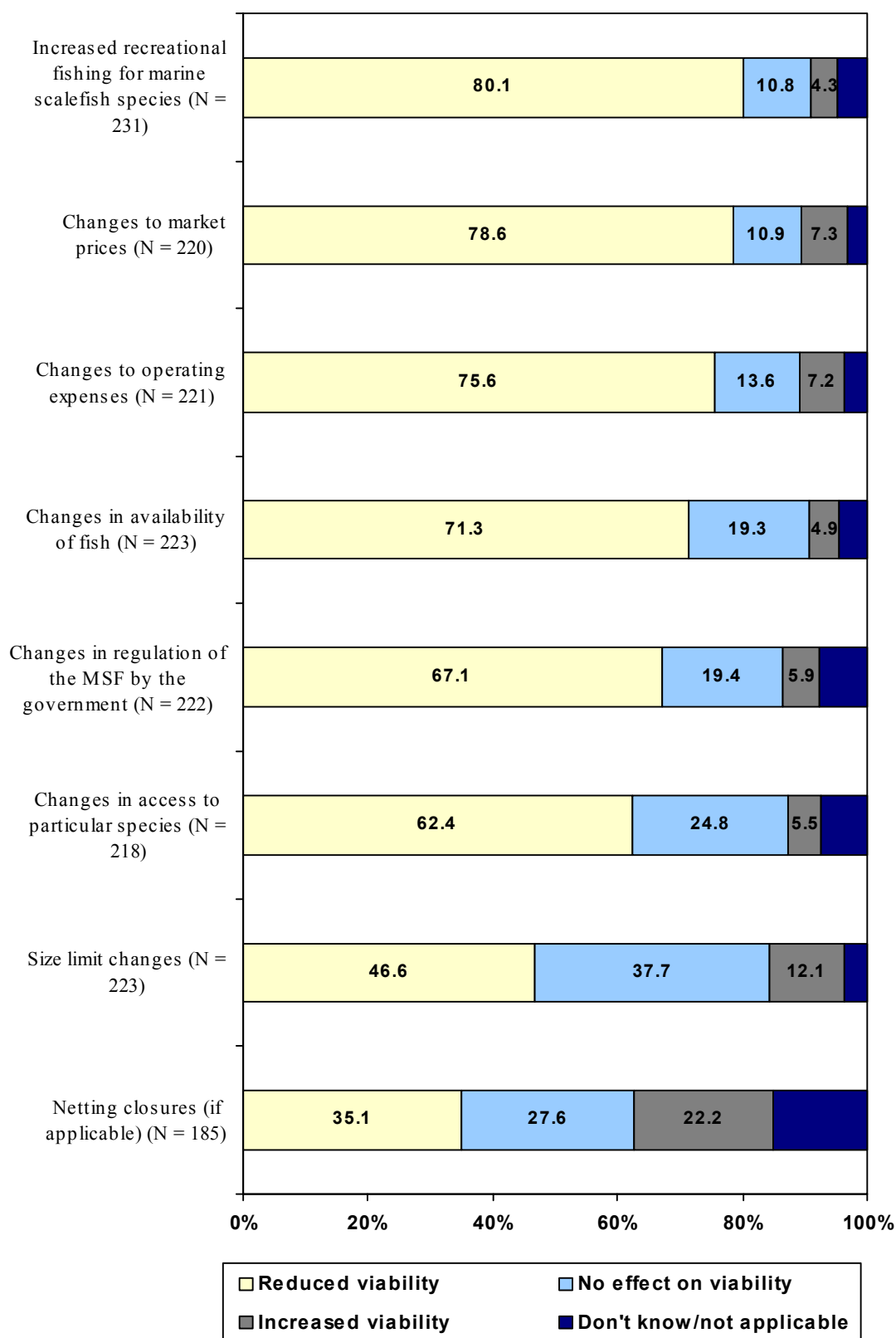
Increased recreational fishing was reported to have reduced viability for 80.1% of respondents, while changes to market prices had for 78.6% of respondents. The latter figure may reflect poor prices for some key MSF species during the months immediately prior to and during distribution of the questionnaire.

Changes to operating expenses (which have generally increased over time), changes in availability of fish, changes in regulation and changes in access to particular species were reported by over 62% of respondents to have reduced their business viability.

Only 46.6% stated that size limit changes had reduced their business viability, while 12.1% believed they had increased business viability. A large proportion (37.7%) stated there had been no effect on viability. This may reflect the length of time since size limits had been changed, with any impacts of previous changes occurring some time in the past.

The impact of netting closures was analysed by type of fisher. Netting closures were reported to have reduced viability for 80.9% of net fishing respondents, and only 9.9% of A-class line and 12.5% of B-class fishers. Of A-class line fishers, 32.4% believed netting closures had increased their fishing business viability.

Figure 29: Effects of different changes on fishing business viability



Future of fishing in the MSF

Respondents were asked if they would encourage young people to enter the MSF. The majority – 64.8% - responded that they would not. In the workshops, attendees outlined several reasons for this response including the underlying uncertainty associated with fishing and the lack of future security associated with fishing. Others mentioned that they would want their children to have other skills, training or education to ‘fall back on’ rather than only learning fishing skills which may or may not support them into the future.

When asked if it has become easier or harder to enter the MSF over time, 94.9% responded that it has become harder. In workshops, attendees said that the high cost of purchasing a licence made it difficult to enter the fishery, as well as the high cost of purchasing capital items for the business. A small number of attendees mentioned that they had answered that it had become easier because it had become administratively easier to enter the fishery, but financially harder. Several older attendees commented that they did not believe they would be able to make a living from fishing if they had had to invest as much in the start-up of the business as new entrants have to today.

Socio-economic contributions of the MSF to coastal communities

Introduction

This section reports on the impacts of the MSF and distribution of social and economic impacts of the fishery by region.

Regions have been defined based on boundaries used in reporting by the Australian Bureau of Statistics (ABS), to allow comparison of ABS figures and the results of the survey. Where possible, the regions reported on below were given the same boundaries as local government areas (LGAs). However, in some LGAs less than five responses were received from MSF participants, and reporting the results by LGA might have allowed identification of individual respondents. In these cases, larger regions incorporating two or more LGAs have been defined and reported on.

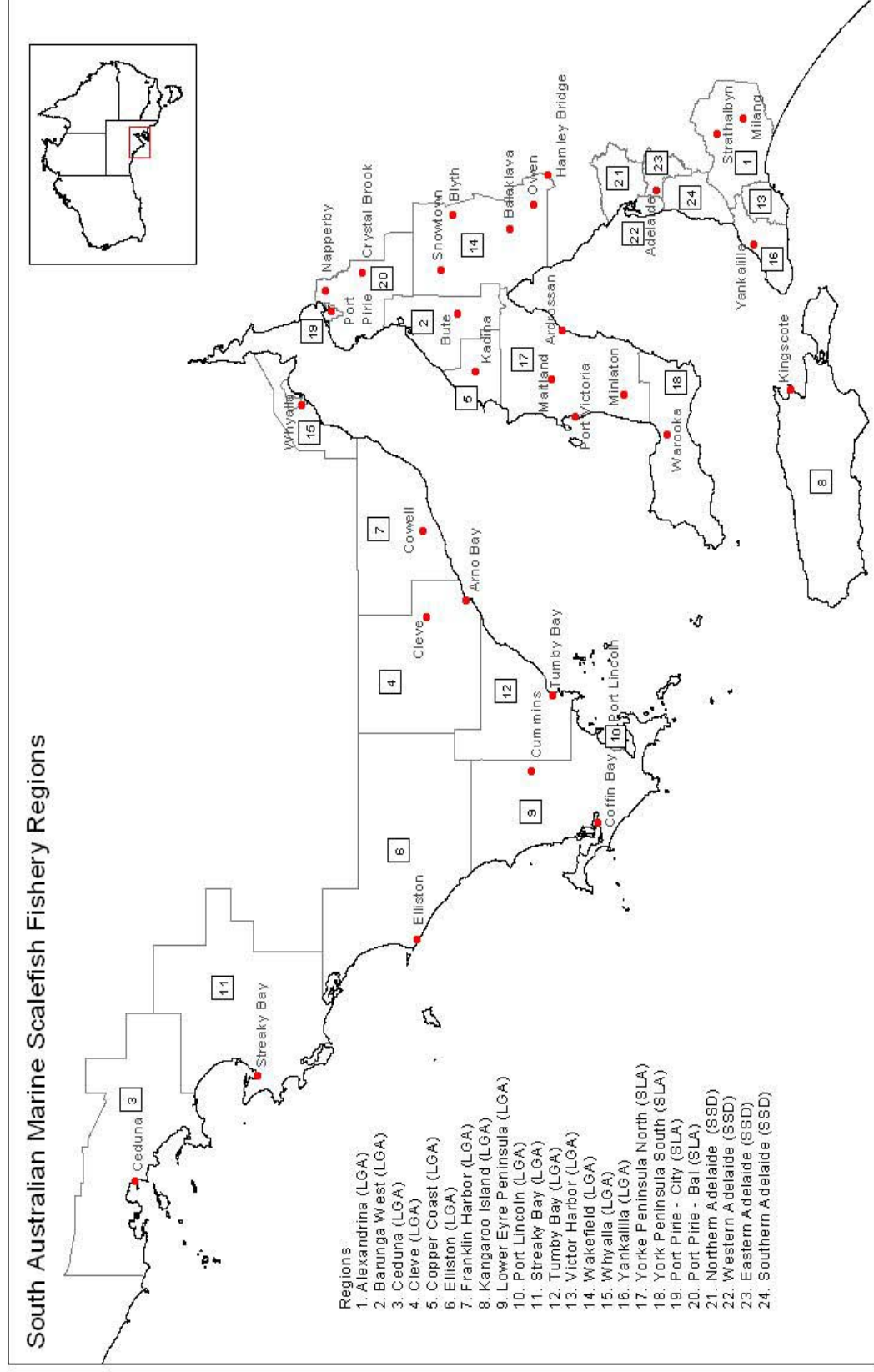
Thirteen key regions were identified in which MSF activity takes place, effectively covering the coast of South Australia from the Fleurieu Peninsula through to just west of Ceduna, as shown in **Figure 30**. There was some activity in the South-East (i.e., east of the Fleurieu Peninsula), but too few responses were received to be able to report on this area, and the total population of MSF licence holders in this region is very low. As a result, the region is not reported on.

The following sections provide key statistics and descriptions of MSF impact on South Australia as a whole and for each of the thirteen regions. A large number of statistics are given in the tables provided for each region.

Appendix 3 provides a detailed description of the statistics, data sources, and key limitations of the data where there are any, which should be referred to when interpreting the regional information.

All ABS figures provided are sourced from the most recent Census of Population and Housing, undertaken in August 2001, and sometimes from changes between the 1996 and 2001 Census. They therefore reflect data that was accurate three years prior to this study being undertaken. This should be kept in mind when examining the data, as in some cases changes since 2001 may have resulted in different social characteristics than those presented here.

Figure 30: Map of South Australian Marine Scalefish Fishery Regions



South Australia

The tables below give key characteristics of the South Australian population, and of the MSF population, as well as key impacts of the MSF outside South Australia. These figures should be interpreted with some caution. A total of 176 respondents provided information on their household spending. Some of the information provided was incomplete, as some of these respondents did not provide estimates for all of the categories of household spending in the questionnaire. In addition, the survey asked for estimated annual expenditure, so there is likely to be some error in the figures provided due to difficulty estimating past expenditure.

The South Australian figures provided below are used as comparison when examining the thirteen regions.

From the following tables, it can be seen that almost all household and fishing business spending from the MSF occurs within South Australia, and almost 83% of catch by reported value goes initially to fish receivers located in South Australia. While this study did not examine multiplier effects of catch processing and distribution beyond initial delivery to fish receivers, this indicates that most of the initial flow-on impacts of the MSF are captured by the South Australian economy.

Socio-demographic characteristics of South Australia

Region	South Australia
Total population, 2001	1,458,354
Annual population growth 1996-2001	+0.5
Total dependency ratio, 2001 ⁸	51.9
Median age of total population, 2001	37
Change in the median age of total population 1996-2001	+2
Sex ratio 2001	97.0
% of households earning < \$300/week, 2001	16.4
% of households earning > \$1200/week, 2001	23.2
Unemployment rate, 2001	7.6
Economic diversity, 2001	40.7
SEIFA Index 2001	995.2

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in South Australia

Type of impact	Estimated impact	
Estimated number of active MSF licence holders living in region	388	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 450	FTE*: 369.2
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 407	FTE: 145.7

⁸ It should be noted that the figures on dependency ratios for the total population of the region, and average number of dependents per person employed in the MSF, are not comparable as they have been measured in different ways.

Estimated proportion of regional population employed full-time or part-time in MSF ⁹ (including licence holders, paid and unpaid employees but not processors or their employees)	0.085%	
Average number of dependents per person involved in MSF	1.5	
Total MSF household spending in region	Total: \$14,368,400	Derived from fishing income: \$8,839,700
Total fishing business spending in region	\$16,364,900	
Estimated GVP of MSF catch landed and commission paid to fish receivers	GVP: \$20,667,000	Commission: \$2,289,900
% of MSF participants who are members of one or more community groups	Percent: 49.5	
% of MSF participants who are members of fishing representative groups	Percent: 36.8	
Average number of years and generations MSF members have lived in local area	Years: 30	Generations: 2.12
% of MSF members planning to still live in the region in 5 years time	90.7	
Average rating of MSF residents of the local region as a place to live (/4)	3.2	
Average level of attachment to local community reported by MSF residents (/5)	4.4	

* Full-time equivalent

Socio-economic impacts of the MSF outside South Australia

Type of impact	Estimated impact	
Total household spending	Total: \$202,400	Derived from fishing income: \$131,600
Total fishing business spending	\$10,000	
Estimated GVP of MSF catch delivered to receivers in the region, and commission paid to fish receivers	GVP – Sydney: \$2,151,600 GVP – Melbourne: \$2,013,400 GVP – Other Vic: \$158,100	Commission – Sydney: \$238,400 Commission – Melb: \$223,100 Commission: - Other Vic: \$17,500

⁹ These figures are given as a proportion of the total population, rather than the labour force, as many of the employees, particularly unpaid employees, may not be counted as part of the labour force in ABS statistics.

Northern and Eastern Adelaide

This region contains much of the metropolitan population of Adelaide, while few MSF licence holders live in the region. As such, the contribution of spending by MSF residents to the region is very small. No catch was reported to be landed in the region.

In 2001, both Northern and Eastern Adelaide were characterised by reasonable population growth, low proportions of child and aged dependents compared to most other areas of South Australia and a lower proportion of the population earning a weekly household income below \$300 per week. Eastern Adelaide had a particularly high proportion of households earning over \$1200 per week compared to the South Australian average. Eastern Adelaide also had a low unemployment rate, and both Northern and Eastern Adelaide had high economic diversity compared to other South Australian coastal regions. The median age of the population in Northern Adelaide was lower than that of the population of South Australia.

MSF respondents in this region tended to be members of more community groups than those in other regions, although reported fishing group membership was lower than the average across the whole fishery. Respondents were more likely to have lived in the area for only one generation than was average across the fishery, although they had lived in the region on average for 31 years compared to an average of 30 across all regions. Fewer than average planned to still live in the region in five years time (80%, compared to an average of 90.7% across all respondents). However, a high level of attachment of the region as a place to live was reported by respondents.

Access to services was generally very good, with most services accessible within 10km.

Socio-demographic characteristics of the region

Statistical divisions (as there are several local government areas in this region, data is presented by SD. Each SD contains several LGAs)	Northern Adelaide	Eastern Adelaide
Total population, 2001	337580*	218714*
Annual population growth 1996-2001	+1.0*	+0.4*
Total dependency ratio, 2001	49.1	47.3
Median age of total population, 2001	34	39
Change in the median age of total population 1996-2001	+2*	
Sex ratio 2001	97.0	95.1
% of households earning < \$300/week, 2001	14.6	15.5
% of households earning > \$1200/week, 2001	21.9	32.3
Unemployment rate, 2001	9*	6
Change in unemployment rate, 1996-2001	-3.1%*	
Economic diversity, 2001	44.3	42.1
SEIFA Index 2001	900.6*	

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in the region

Type of impact	Estimated impact	
Estimated MSF licence holders living in region	15	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 10	FTE: 5.2
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 9	FTE: 4.3
Estimated proportion of regional population employed full-time or part-time in MSF (including licence holders, paid and unpaid employees but not processors or their employees)	0.0061%	
Average number of dependents per person involved in MSF	0.4	
Total MSF household spending in region	Total: \$401600	Derived from fishing income: \$118500
Total fishing business spending in region	\$600700	
Estimated GVP of MSF catch landed in region and commission paid to fish receivers	GVP: \$0	Commission: \$0
Number of community groups MSF participants belong to, and % of MSF participants who are members of one or more groups	Number: 36	Percent: 80
Number and % of MSF participants who are members of fishing representative groups	Number: 7	Percent: 20
Average number of years and generations MSF members have lived in local area	Years: 31	Generations: 1.2
% of MSF members planning to still live in the region in 5 years time	80	
Average rating of MSF residents of the local region as a place to live (/4)	3	
Average level of attachment to local community reported by MSF residents (/5)	4.6	

Access to services in region

Service/facility	Average distance travelled to access service
Primary school	Less than 10km
High school	Less than 10km
TAFE/University	Less than 10km
Doctor	Less than 10km
Hospital	Less than 10km
Bank	Less than 10km
Fisheries officer	10km to 50km
Police	Less than 10km
Dentist	Less than 10km

Western Adelaide

The majority of MSF licence holders who lived in Adelaide were based in the Western Adelaide region. This region, while overall not highly dependent on the household and spending of MSF participants, is the point to which almost half of all MSF catch is initially delivered for sale, largely to SAFCOL. There is also considerable spending on fishing business operating costs from fishing businesses based outside the region, and in addition many respondents indicated they would purchase replacement capital items for their fishing business from this region.

In 2001, the region was characterised by low population growth and a higher proportion of the population earning a weekly household income below \$300 per week than the average for South Australia – the only Adelaide region to have this characteristic, and the only Adelaide region to have a lower proportion of households earning over \$1200 per week than the South Australian average.

Western Adelaide also had a slightly higher unemployment rate than the South Australian average in 2001, but high economic diversity compared to other South Australian coastal regions.

MSF respondents had lived in the region for fewer years than was average – 25.4 years compared to 30 years on average across all respondents. Otherwise they generally had similar characteristics to the average across all respondents. Interestingly, while the general characteristics of the region would indicate a lower quality of life than for other Adelaide regions, the rating of respondents of the area as a place to live was not lower than for other Adelaide regions, although the level of attachment reported to the region was lower than the average across all respondents.

Access to services was generally very good, with most services accessible within 10km.

Socio-demographic characteristics of the region

Statistical divisions (as there are several local government areas in this region, data is presented by SD. Each SD contains several LGAs)	Western Adelaide
Total population, 2001	202648
Annual population growth 1996-2001	+0.2
Total dependency ratio, 2001	53.3
Median age of total population	39
Sex ratio 2001	97.5
% of households earning < \$300/week, 2001	20.3
% of households earning > \$1200/week, 2001	20.1
Unemployment rate, 2001	9
Economic diversity, 2001	37.5

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in the region

Type of impact	Estimated impact	
Estimated MSF licence holders living in region	37	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 39	FTE: 20.8
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 35	FTE: 17.2
Estimated proportion of regional population employed full-time or part-time in MSF (including licence holders, paid and unpaid employees but not processors or their employees)	0.055%	
Average number of dependents per person involved in MSF	1.8	
Total MSF household spending in region	Total: \$2,081,600	Derived from fishing income: \$1,136,500
Total fishing business spending in region	\$1,692,200	
Estimated GVP of MSF catch landed in region and commission paid to fish receivers	GVP: \$11,452,161	Commission: \$1,268,900
Number of community groups MSF participants belong to, and % of MSF participants who are members of one or more groups	Number: 56	Percent: 44
Number and % of MSF participants who are members of fishing representative groups	Number: 55	Percent: 39
Average number of years and generations MSF members have lived in local area	Years: 25.4	Generations: 1.9
% of MSF members planning to still live in the region in 5 years time	89	
Average rating of MSF residents of the local region as a place to live (/4)	3.1	
Average level of attachment to local community reported by MSF residents (/5)	3.8	

Access to services in region

Service/facility	Average distance travelled to access service
Primary school	Less than 10km
High school	Less than 10km
TAFE/University	0km to 50km
Doctor	Less than 10km
Hospital	0km to 50km
Bank	Less than 10km
Fisheries officer	0km to 50km
Police	Less than 10km
Dentist	Less than 10km

Southern Adelaide

This region contains much of the metropolitan population of Adelaide, while very few MSF licence holders live in the region. As such, the contribution of spending by MSF residents to the region is relatively small, although higher than for Northern and Eastern Adelaide. Little catch is landed in the region, with most catch going to Western Adelaide.

In 2001, Southern Adelaide was characterised by reasonable population growth, low levels of child and aged dependents compared to most other areas where MSF participants live, and a higher proportion of households earning over \$1200 per week than the South Australian average.

MSF respondents in this region tended to be members of fewer community and fishing representative groups than the average for the whole fishery. Respondents tended to have lived in the region for fewer years and fewer generations of their family than was the case for other regions. However, more than average planned to still live in the region in five years time (100%, compared to an average of 90.7% across all respondents).

Access to services was generally very good, with most services accessible within 10km.

Socio-demographic characteristics of the region

Statistical divisions (as there are several local government areas in this region, data is presented by SD. Each SD contains several LGAs)	Southern Adelaide
Total population, 2001	313643
Annual population growth 1996-2001	+0.5*
Total dependency ratio, 2001	51.4
Median age of total population	38
Sex ratio 2001	92.4
% of households earning < \$300/week, 2001	15.0
% of households earning > \$1200/week, 2001	25.4
Unemployment rate, 2001	7
Economic diversity, 2001	43.8

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in the region

Type of impact	Estimated impact	
Estimated MSF licence holders living in region	19	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 16	FTE: 8.3
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 14	FTE: 6.9
Estimated proportion of regional population employed full-time or part-time in MSF (including licence holders, paid and unpaid employees but not processors or their employees)	0.016%	
Average number of dependents per person involved in MSF	1.4	
Total MSF household spending in region	Total: \$736,200	Derived from fishing income: \$497,300
Total fishing business spending in region	\$774,900	
Estimated GVP of MSF catch landed in region and commission paid to fish receivers	GVP: \$312,000	Commission: \$34,600
Number of community groups MSF participants belong to, and % of MSF participants who are members of one or more groups	Number: 16	Percent: 36.4
Number and % of MSF participants who are members of fishing representative groups	Number: 8	Percent: 20
Average number of years and generations MSF members have lived in local area	Years: 24.8	Generations: 1.4
% of MSF members planning to still live in the region in 5 years time	100	
Average rating of MSF residents of the local region as a place to live (/4)	3.3	
Average level of attachment to local community reported by MSF residents (/5)	4.1	

Access to services in region

Service/facility	Average distance travelled to access service
Primary school	Less than 10km
High school	Less than 10km
TAFE/University	0km to 5km
Doctor	Less than 10km
Hospital	0km to 50km
Bank	Less than 10km
Fisheries officer	10km to 50km
Police	Less than 10km
Dentist	Less than 10km

Fleurieu Peninsula

While higher than for the Adelaide regions, the proportion of the population of the Fleurieu Peninsula working in the MSF either full-time or part-time (including both paid and unpaid employees) is fairly low at 0.16%.

In 2001, the region was characterised by high population growth, and a high proportion of the population over 65 years of age in Alexandrina and Victor Harbour. The median age of all three local government areas was considerably higher than the South Australian average. MSF respondents in the region did not report having a higher number of dependents than was average across the MSF. A slightly higher proportion of households than average earned less than \$300 per week than the South Australian average, and less households earned over \$1200 per week than the South Australian average.

There are fairly low levels of MSF-dependent household spending in the region, reflecting the relatively low numbers of MSF participants resident in the region. There is, however, almost as much spending on fishing business running costs as in Western Adelaide, with a number of fishing businesses based outside the region purchasing supplies in the Fleurieu Peninsula. Relatively little catch was reported delivered to fish receivers in the region.

MSF respondents in the region were fairly representative of those across the State, with the exception that they had generally lived in the local region for only 25 years, lower than the average of 30, and only 83.3% planned to still live in the region in five years time, compared to 90% of all respondents across South Australia. Respondents rated the area higher than average as a place to live – 3.4 compared to an average 3.2. There was also relatively low membership of community groups by MSF respondents in the region.

The distance travelled to access most services was under 50km but more than 10km for some, including dentists and doctors, while some respondents had to travel over 50km to access a hospital. The nearest fisheries officers were based more than 50km away.

Socio-demographic characteristics of the region

Local Government Area	Alexandrina	Victor Harbour	Yankalilla
Total population, 2001	9243	10517	3620
Annual population growth 1996-2001	+3.1	+3.9	+0.7
Total dependency ratio, 2001	65.3	83.4	54.1
Median age of total population	44	49	43
Change in the median age of total population 1996-2001	+3	+4	+4
Sex ratio 2001	98.3	91.5	102.2
% of households earning < \$300/week, 2001	19.1	18.4	17.7
% of households earning > \$1200/week, 2001	10.2	11.3	12.7
Unemployment rate, 2001	9.1	7.3	8.4
Change in unemployment rate, 1991-2001	-5.4	-4.9	-0.6
Economic diversity, 2001	38.8	39.9	48.8
SEIFA Index 2001	991.52	1011.36	1007.76

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in the region

Type of impact	Estimated impact	
Estimated MSF licence holders living in region	14	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 12	FTE: 6.2
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 11	FTE: 5.2
Estimated proportion of regional population employed full-time or part-time in MSF (including licence holders, paid and unpaid employees but not processors or their employees)	0.16%	
Average number of dependents per person involved in MSF	1.5	
Total MSF household spending in region	Total: \$292,000	Derived from fishing income: \$202,200
Total fishing business spending in region	\$1,271,300	
Estimated GVP of MSF catch landed in region and commission paid to fish receivers	GVP: \$393,700	Commission: \$43,600
Number of community groups MSF participants belong to, and % of MSF participants who are members of one or more groups	Number: 33	Percent: 41.7
Number and % of MSF participants who are members of fishing representative groups	Number: 9	Percent: 41.7
Average number of years and generations MSF members have lived in local area	Years: 25	Generations: 1.7
% of MSF members planning to still live in the region in 5 years time	83.3	
Average rating of MSF residents of the local region as a place to live (/4)	3.4	
Average level of attachment to local community reported by MSF residents (/5)	4.5	

Access to services in region

Service/facility	Average distance travelled to access service
Primary school	0km to 50km
High school	0km to 50km
TAFE/University	50km to 100km
Doctor	10km to 50km
Hospital	10km to 100km
Bank	0km to 50km
Fisheries officer	50km to 100km
Police	0km to 50km
Dentist	10km to 50km

Wakefield

With 0.43% of the Wakefield population working in the MSF, and a higher than average number of dependents reported by MSF respondents in the region, there is a reasonably moderate impact of the MSF on the local community.

In 2001, the region's population was characterised by moderate population decline, and higher proportion of children and people aged over 65 than the South Australian average. Like most of the non-metropolitan regions MSF respondents work in, there were more households earning under \$300 per week and less households earning over \$1200 per week than the South Australian average. The area had relatively low economic diversity, and a low SEIFA ranking compared to the South Australian average.

Given the small population of the region (6275), the small numbers of MSF participants have a relatively large impact, with both household spending and a small but significant amount of fishing business spending contributing to the local economy. Little MSF catch goes to fish receivers in the region.

A higher than average number of MSF respondents reported membership of community groups, and respondents rated the region higher than average as a place to live and also reported a very high attachment to the local area. MSF respondents had also usually lived in the area for multiple generations – an average of 2.7, higher than the average across all MSF respondents of 2.1 generations. However, only 76.9% reported planning to live in the area in five years time, low compared to the overall average of 90.7%. Fewer were members of fishing groups than the average across the MSF.

Access to most services is relatively good, although respondents reported travelling more than 10km to access most health services.

Socio-demographic characteristics of the region

Local government area	Wakefield
Total population, 2001	6265
Annual population growth 1996-2001	-0.4
Total dependency ratio, 2001	63.4
Median age of total population	39
Change in the median age of total population 1996-2001	+3
Sex ratio 2001	102.2
% of households earning < \$300/week, 2001	19.4
% of households earning > \$1200/week, 2001	15.1
Unemployment rate, 2001	7.8
Change in unemployment rate, 1991-2001	-4.6
Economic diversity, 2001	52.5
SEIFA Index 2001	976.48

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in the region

Type of impact	Estimated impact	
Estimated MSF licence holders living in region	10	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 9	FTE: 4.7
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 8	FTE: 3.9
Estimated proportion of regional population employed full-time or part-time in MSF (including licence holders, paid and unpaid employees but not processors or their employees)	0.43%	
Average number of dependents per person involved in MSF	1.9	
Total MSF household spending in region	Total: \$532,700	Derived from fishing income: \$377,000
Total fishing business spending in region	\$272,100	
Estimated GVP of MSF catch landed in region and commission paid to fish receivers	GVP: \$74,100	Commission: \$8200
Number of community groups MSF participants belong to, and % of MSF participants who are members of one or more groups	Number: 39	Percent: 61.5
Number and % of MSF participants who are members of fishing representative groups	Number: 27	Percent: 30.8
Average number of years and generations MSF members have lived in local area	Years: 31.9	Generations: 2.7
% of MSF members planning to still live in the region in 5 years time	76.9	
Average rating of MSF residents of the local region as a place to live (/4)	3.5	
Average level of attachment to local community reported by MSF residents (/5)	4.8	

Access to services in region

Service/facility	Average distance travelled to access service
Primary school	Less than 10km
High school	10km to 50km
TAFE/University	10km to 100km
Doctor	0km to 50km
Hospital	10km to 50km
Bank	10km to 50km
Fisheries officer	10km to 50km
Police	Less than 10km
Dentist	10km to 50km

Kangaroo Island

With 1.3% of the Kangaroo Island population working in the MSF, and a moderate amount of catch delivered to fish receivers in the region (adding further employment dependent on the MSF), there is a high impact of the MSF on this region compared to most others. Only the West Coast and Yorke Peninsula had a higher estimated proportion of the population working in the MSF.

In 2001, the region is characterised by moderate population growth. Like most of the non-metropolitan regions MSF respondents work in, there were more households earning under \$300 per week and less households earning over \$1200 per week than the South Australian average. The region also had a slightly lower economic diversity than the South Australian average.

Given the small population of the region (4237), the MSF participants have a relatively large impact, with both household spending and a small but significant amount of fishing business spending contributing to the local economy. Some MSF catch goes to fish receivers in the region, adding further dependence on the MSF.

Respondents rated the region a little higher than average as a place to live. However, only 78.6% reported planning to live in the area in five years time, low compared to the overall average of 90.7%. Fewer were members of fishing groups than the average across the MSF.

Access to most services is very good, with almost all services accessible to MSF respondents within 10 kilometres of their home, although TAFE / university access was more variable. This perhaps reflects the physical distance of the nearest universities but the proximity of a TAFE centre in Kingscote, as well as the accessibility to study some courses from home.

Socio-demographic characteristics of the region

Local government area	Kangaroo Island
Total population, 2001	4237
Annual population growth 1996-2001	+0.8
Total dependency ratio, 2001	54.9
Median age of total population	39
Change in the median age of total population 1996-2001	+3 years
Sex ratio 2001	107.4
% of households earning < \$300/week, 2001	18.6
% of households earning > \$1200/week, 2001	14.9
Unemployment rate, 2001	7.8
Change in unemployment rate, 1991-2001	-8.0
Economic diversity, 2001	47.6
SEIFA Index 2001	1000.80

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in the region

Type of impact	Estimated impact	
Estimated MSF licence holders living in region	19	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 19	FTE: 9.9
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 17	FTE: 8.2
Estimated proportion of regional population employed full-time or part-time in MSF (including licence holders, paid and unpaid employees but not processors or their employees)	1.3%	
Average number of dependents per person involved in MSF	1.1	
Total MSF household spending in region	Total: \$628,100	Derived from fishing income: \$448,100
Total fishing business spending in region	\$355,700	
Estimated GVP of MSF catch landed in region and commission paid to fish receivers	GVP: \$266,200	Commission: \$29,500
Number of community groups MSF participants belong to, and % of MSF participants who are members of one or more groups	Number: 28	Percent: 46
Number and % of MSF participants who are members of fishing representative groups	Number: 15	Percent: 33.3
Average number of years and generations MSF members have lived in local area	Years: 28	Generations: 1.9
% of MSF members planning to still live in the region in 5 years time	78.6	
Average rating of MSF residents of the local region as a place to live (/4)	3.4	
Average level of attachment to local community reported by MSF residents (/5)	4.5	

Access to services in region

Service/facility	Average distance travelled to access service
Primary school	Less than 10km
High school	Less than 10km
TAFE/University	Less than 10km or 100km to 500km
Doctor	Less than 10km
Hospital	Less than 10km
Bank	Less than 10km
Fisheries officer	Less than 10km
Police	Less than 10km
Dentist	Less than 10km

Barunga West and Copper Coast

Barunga West and the Copper Coast, at the northern end of the Yorke Peninsula, have an estimated 1.02% of their population employed part-time or full-time working in some way in the MSF – the fifth highest of the thirteen regions examined.

In 2001, the region was characterised by high population growth compared to most of the other regions, with only the Fleurieu Peninsula and Port Lincoln experiencing higher population growth. The population had a higher proportion of children and people aged over 65 than the South Australian average. Compared to both the South Australian average and to the other regions where MSF respondents live, there were more households earning under \$300 per week and less households earning over \$1200 per week than average. Like most non-metropolitan regions, the median age of the general population was higher than the South Australian average.

In 2001 there was higher than average unemployment in the Copper Coast. Barunga West had relatively low economic diversity while Copper Coast had higher economic diversity in 2001. The Copper Coast had a lower than average SEIFA ranking compared to the South Australian average.

Given the high numbers of MSF participants, the MSF has a relatively large impact in the region. This impact came primarily from household and fishing business spending, with little MSF catch going to fish receivers in the region. This impact is particularly high in light of the high numbers of the population below the age of 15 and above the age of 65.

A lower than average number of MSF respondents reported membership of community groups, and the rating of the region as a place to live was slightly lower than average (although still usually ranked as 'good' by respondents). MSF respondents had also usually lived in the area for multiple generations – an average of 3.0, much higher than the average across all MSF respondents of 2.1 generations.

Access to most services is very good, with most services accessible within 10 kilometres of respondent's homes, although dentists were less accessible and some respondents lived some distance from the nearest fisheries officer or TAFE/university.

Socio-demographic characteristics of the region

Local government area	Barunga West	Copper Coast
Total population, 2001	2485	10531
Annual population growth 1996-2001	+1.8	+1.3
Total dependency ratio, 2001	70.1	69.4
Median age of total population	43	43
Change in the median age of total population 1996-2001	+1	+2
Sex ratio 2001	108.6	96.3
% of households earning < \$300/week, 2001	20.6	21.7
% of households earning > \$1200/week, 2001	14.1	10.6
Unemployment rate, 2001	6.5	11.3
Change in unemployment rate, 1991-2001	-5.9	-7.7
Economic diversity, 2001	60.3	42.4
SEIFA Index 2001	1007.12	966

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in the region

Type of impact	Estimated impact	
Estimated MSF licence holders living in region	46	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 46	FTE: 24.4
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 41	FTE: 20.2
Estimated proportion of regional population employed full-time or part-time in MSF (including licence holders, paid and unpaid employees but not processors or their employees)	1.02%	
Average number of dependents per person involved in MSF	1.6	
Total MSF household spending in region	Total: \$1,706,900	Derived from fishing income: \$1,031,400
Total fishing business spending in region	\$1,209,100	
Estimated GVP of MSF catch landed in region and commission paid to fish receivers	GVP: \$173,700	Commission: \$19,200
Number of community groups MSF participants belong to, and % of MSF participants who are members of one or more groups	Number: 71	Percent: 37.1
Number and % of MSF participants who are members of fishing representative groups	Number: 50	Percent: 40.6
Average number of years and generations MSF members have lived in local area	Years: 33.5	Generations: 3.0
% of MSF members planning to still live in the region in 5 years time	85.7	
Average rating of MSF residents of the local region as a place to live (/4)	3.0	
Average level of attachment to local community reported by MSF residents (/5)	4.5	

Access to services in region

Service/facility	Average distance travelled to access service
Primary school	Less than 10km
High school	Less than 10km
TAFE/University	0km to 100km
Doctor	Less than 10km
Hospital	Less than 10km
Bank	Less than 10km
Fisheries officer	0km to 100km
Police	Less than 10km
Dentist	10km to 50km

Yorke Peninsula (excluding Barunga West and Copper Coast)

With 1.56% of the Yorke Peninsula population working in the MSF – the highest proportion for any region except the West Coast - there is a high impact of the MSF in the region.

This region includes several small towns, with no major regional centre. This region was characterised by slight population decline in the south and very slight population growth in the north between 1996 and 2001, and by a higher proportion of the population made up of children and people aged over 65 than the South Australian average. This means the impact of the fishery in terms of proportion of labour force is likely to be considerably higher than indicated by the figure of 1.56% of the total population being involved in directly working in the MSF. Perhaps reflecting the higher numbers of older people, the average age of the population in 2001 was 45 – eight years higher than the South Australian average of 37.

Like most of the non-metropolitan regions MSF respondents work in, there were more households earning under \$300 per week and less households earning over \$1200 per week in 2001 than the South Australian average, particularly in the southern part of the region. The southern part of the region had the lowest proportion of households earning over \$1200 per week of any of the regions where MSF respondents lived, and also had higher than average unemployment in 2001. The region as a whole had relatively low economic diversity.

MSF participants have a relatively large impact on the region, primarily via household spending and fishing business spending from both those living in the region and from fishing businesses based outside the region. Respondents in the region reported fewer dependents in their households than was average across the MSF – one person per respondent compared to 1.5 on average. Very little MSF catch was reported to be delivered to fish receivers in the region. A higher than average number of MSF respondents reported membership of community groups.

Access to most services is relatively good, although respondents usually had to travel more than 10 kilometres to access health services, particularly dental services, and access to fisheries officers varied. This variation reflects the large size of the region and broad spread of MSF respondents within it, with respondents living in many small towns in the Yorke Peninsula rather than concentrated in a particular town centre as was the case in several other regions.

Socio-demographic characteristics of the region

Statistical local area (the local government area of Yorke Peninsula is split into two SLAs)	Yorke Peninsula - North	Yorke Peninsula – South
Total population, 2001	7201	3840
Annual population growth 1996-2001	+0.1	-0.4
Total dependency ratio, 2001	69.4	71.2
Median age of total population	45	45
Change in the median age of total population 1996-2001	+3	+2
Sex ratio 2001	105.6	105.0
% of households earning < \$300/week, 2001	19.2	23.0
% of households earning > \$1200/week, 2001	13.4	8.7
Unemployment rate, 2001	7.5	10.7
Change in unemployment rate, 1991-2001	-4.9	-2.3
Economic diversity, 2001	56.0	50.5

Statistical local area (the local government area of Yorke Peninsula is split into two SLAs)	Yorke Peninsula - North	Yorke Peninsula – South
SEIFA Index 2001	1009.76	985.36

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in the region

Type of impact	Estimated impact	
Estimated MSF licence holders living in region	58	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 60	FTE: 31.7
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 54	FTE: 26.3
Estimated proportion of regional population employed full-time or part-time in MSF (including licence holders, paid and unpaid employees but not processors or their employees)	1.56%	
Average number of dependents per person involved in MSF	1.0	
Total MSF household spending in region	Total: \$2,166,400	Derived from fishing income: \$1,527,100
Total fishing business spending in region	\$2,356,800	
Estimated GVP of MSF catch landed in region and commission paid to fish receivers	GVP: \$97,200	Commission: \$10,800
Number of community groups MSF participants belong to, and % of MSF participants who are members of one or more groups	Number: 224	Percent: 59.6
Number and % of MSF participants who are members of fishing representative groups	Number: 88	Percent: 33.9
Average number of years and generations MSF members have lived in local area	Years: 32.4	Generations: 2.3
% of MSF members planning to still live in the region in 5 years time	89.5	
Average rating of MSF residents of the local region as a place to live (/4)	3.2	
Average level of attachment to local community reported by MSF residents (/5)	4.5	

Access to services in region

Service/facility	Average distance travelled to access service
Primary school	0km to 50km
High school	10km to 50km
TAFE/University	50km to 100km
Doctor	10km to 50km
Hospital	10km to 50km
Bank	10km to 50km
Fisheries officer	10km to 100km
Police	0km to 50km
Dentist	10km to 100km

Whyalla

With only 0.18% of the Whyalla population working in the MSF, and a lower than average number of dependents reported by MSF respondents in the region, there is a reasonably low impact of the MSF on the region.

The region was characterised by high population decline between 1996 and 2001 compared to both the other regions where MSF respondents live and to the South Australian average. There were more households earning under \$300 per week than in most other regions MSF respondents lived in, as well as less households earning over \$1200 per week than the South Australian average. In 2001 there was high unemployment compared to the South Australian average, relatively low economic diversity, and a very low SEIFA ranking compared to the South Australian average.

Given the small numbers of MSF participants and amount of catch delivered to fish receivers in the region, and low participation in community groups, the MSF has a relatively small impact on the region, although there is fishing business spending in the area by MSF businesses based outside the region.

A lower than average number of MSF respondents reported membership of community groups or fishing representative groups. MSF respondents had also usually lived in the area for fewer years than the average – 20.8 years compared to the average of 30 across all regions. Only 70% reported planning to live in the area in five years time, low compared to the overall average of 90.7%.

With a low number of respondents, contradictory information about access to services was given, making it difficult to assess the average distance to services for people living in the region.

Socio-demographic characteristics of the region

Local government area	Whyalla
Total population, 2001	21554
Annual population growth 1996-2001	-1.8
Total dependency ratio, 2001	53.5
Median age of total population	35
Change in the median age of total population 1996-2001	+3
Sex ratio 2001	101.9
% of households earning < \$300/week, 2001	23.2
% of households earning > \$1200/week, 2001	18.7
Unemployment rate, 2001	13.1
Change in unemployment rate, 1991-2001	-1.8
Economic diversity, 2001	51.7
SEIFA Index 2001	911.20

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in the region

Type of impact	Estimated impact	
Estimated MSF licence holders living in region	8	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 16	FTE: 8.3
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 14	FTE: 6.9
Estimated proportion of regional population employed full-time or part-time in MSF (including licence holders, paid and unpaid employees but not processors or their employees)	0.18%	
Average number of dependents per person involved in MSF	1.1	
Total MSF household spending in region	Total: \$443,200	Derived from fishing income: \$359,600
Total fishing business spending in region	\$676,200	
Estimated GVP of MSF catch landed in region and commission paid to fish receivers	GVP: \$110,200	Commission: \$12,200
Number of community groups MSF participants belong to, and % of MSF participants who are members of one or more groups	Number: 19	Percent: 30
Number and % of MSF participants who are members of fishing representative groups	Number: 17	Percent: 30
Average number of years and generations MSF members have lived in local area	Years: 20.8	Generations: 1.9
% of MSF members planning to still live in the region in 5 years time	70	
Average rating of MSF residents of the local region as a place to live (/4)	3.1	
Average level of attachment to local community reported by MSF residents (/5)	4.4	

Access to services in region

Service/facility	Average distance travelled to access service
Primary school	Either under 10km or 50km to 100km
High school	Either under 10km or 50km to 100km
TAFE/University	Either under 10km or 50km to 100km
Doctor	Either under 10km or 50km to 100km
Hospital	Either under 10km or 50km to 100km
Bank	Either under 10km or 50km to 100km
Fisheries officer	Either under 10km or 50km to 100km
Police	Either under 10km or 50km to 100km
Dentist	Either under 10km or 50km to 100km

Port Pirie City and Districts

With 0.25% of the population of the Port Pirie City and Districts region working in the MSF, there is a relatively low impact of the MSF on the local community.

In 2001, the region was characterised by moderate population decline, and higher than SA average numbers of children and people aged over 65 compared to those between 15 and 64 years of age. There was a higher proportion of households earning under \$300 per week than usual for the regions in which MSF respondents lived and the South Australian average, as well as fewer households earning over \$1200 per week than the South Australian average. The region had higher than average rates of unemployment in 2001, relatively low economic diversity, and the city of Port Pirie had a very low SEIFA ranking compared to the South Australian average.

Given the small numbers of MSF participants as a proportion of the regional population, and the low amount of catch going to fish receivers in the region, there is a relatively low impact of the MSF in the region overall. However, in a region of high unemployment such as this, the employment contribution of the MSF should not be downplayed.

MSF respondents had lived in the region for an average 38.5 years – much higher than the average 30 years – and had lived in the area for an average of 2.6 generations, higher than the average across all MSF respondents of 2.1 generations. MSF respondents also reported supporting a higher than average number of dependents. All respondents planned to still live in the area in five years time, despite rating the area slightly lower as a place to live and having slightly lower attachment to the region than was usual across all regions.

Access to most services is relatively good, although respondents reported travelling more than 10km to access most health services.

Socio-demographic characteristics of the region

Statistical local area (the local government area of Port Pirie City and Districts is split into two SLAs)	Port Pirie City and Districts - City	Port Pirie City and Districts – Balance
Total population, 2001	13565	3492
Annual population growth 1996-2001	-0.6	-0.3
Total dependency ratio, 2001	59.6	61.2
Median age of total population	37	39
Change in median age of total population 1996-2001	+2	+3
Sex ratio 2001	97.9	105.7
% of households earning < \$300/week, 2001	22.2	16.6
% of households earning > \$1200/week, 2001	15.2	16.8
Unemployment rate, 2001	13.9	9.8
Change in unemployment rate, 1991-2001	-1.7	-3.1
Economic diversity, 2001	51.2	45.5
SEIFA Index 2001	920.80	999.92

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in the region

Type of impact	Estimated impact	
Estimated MSF licence holders living in region	15	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 15	FTE: 7.8
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 13	FTE: 6.5
Estimated proportion of regional population employed full-time or part-time in MSF (including licence holders, paid and unpaid employees but not processors or their employees)	0.25%	
Average number of dependents per person involved in MSF	1.9	
Total MSF household spending in region	Total: \$634,800	Derived from fishing income: \$369,000
Total fishing business spending in region	\$609,100	
Estimated GVP of MSF catch landed in region and commission paid to fish receivers	GVP: \$105,200	Commission: \$11,700
Number of community groups MSF participants belong to, and % of MSF participants who are members of one or more groups	Number: 30	Percent: 45.5
Number and % of MSF participants who are members of fishing representative groups	Number: 8	Percent: 30
Average number of years and generations MSF members have lived in local area	Years: 38.5	Generations: 2.6
% of MSF members planning to still live in the region in 5 years time	100	
Average rating of MSF residents of the local region as a place to live (/4)	2.9	
Average level of attachment to local community reported by MSF residents (/5)	4.2	

Access to services in region

Service/facility	Average distance travelled to access service
Primary school	Less than 10km
High school	Less than 10km
TAFE/University	Less than 10km
Doctor	Less than 10km
Hospital	Less than 10km
Bank	Less than 10km
Fisheries officer	Less than 10km
Police	Less than 10km
Dentist	Less than 10km

Port Lincoln

With 1.19% of the Port Lincoln population working in the MSF, high spending on fishing business running costs by both those based in the region and MSF businesses from outside the region, and approximately 23% of catch by value from the MSF going to fish receivers in the region, there is a high impact of the MSF on Port Lincoln. Port Lincoln is the second major receiver centre after Adelaide for MSF catch, with considerably more catch going to fish receiver in Port Lincoln than to either Sydney or Melbourne, the next highest receivers by value. The overall proportion of the population in some way dependent on the MSF is higher than indicated by the 1.19% figure, as many people employed in downstream processing are also dependent on the fishery.

Port Lincoln was characterised by higher than average population growth between 1996 and 2001 compared to South Australia as a whole, and a slightly lower median age than average for South Australia. Like most of the non-metropolitan regions MSF respondents work in, there were more households earning under \$300 and less households earning over \$1200 per week than the South Australian average. Port Lincoln also had slightly higher than average unemployment, a lower SEIFA ranking than the South Australian average, but higher economic diversity than most regions where MSF respondents live.

MSF respondents were in general representative of those across most regions – approximately 52% were members of one or more community groups and 36% members of fishing representative groups; most rated the city highly as a place to live and reported strong attachment to the area. Respondents had lived in the region on average for 34.9 years, longer than average, and 1.8 generations.

Access to most services is very good, with all respondents reporting they could access all the listed services within 10 kilometres. This reflects the fact that the region is entirely made up of a town, whereas most regions included both town and rural areas, or in the case of Adelaide regions, covered a larger geographic area.

Socio-demographic characteristics of the region

Local government area	Port Lincoln
Total population, 2001	13200
Annual population growth 1996-2001	+1.7
Total dependency ratio, 2001	55.9
Median age of total population	34
Change in the median age of total population 1996-2001	+1
Sex ratio 2001	98.8
% of households earning < \$300/week, 2001	18.6
% of households earning > \$1200/week, 2001	20.5
Unemployment rate, 2001	8.8
Change in unemployment rate, 1991-2001	-7.9
Economic diversity, 2001	39.8
SEIFA Index 2001	957.28

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in the region

Type of impact	Estimated impact	
Estimated MSF licence holders living in region	62	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 50	FTE: 26.5
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 45	FTE: 22.0
Estimated proportion of regional population employed full-time or part-time in MSF (including licence holders, paid and unpaid employees but not processors or their employees)	1.19%	
Average number of dependents per person involved in MSF	1.5	
Total MSF household spending in region	Total: \$2,327,000	Derived from fishing income: \$1,298,500
Total fishing business spending in region	\$3,004,700	
Estimated GVP of MSF catch landed in region and commission paid to fish receivers	GVP: \$5,749,400	Commission: \$637,000
Number of community groups MSF participants belong to, and % of MSF participants who are members of one or more groups	Number: 97	Percent: 52
Number and % of MSF participants who are members of fishing representative groups	Number: 59	Percent: 36
Average number of years and generations MSF members have lived in local area	Years: 34.9	Generations: 1.8
% of MSF members planning to still live in the region in 5 years time	92	
Average rating of MSF residents of the local region as a place to live (/4)	3.4	
Average level of attachment to local community reported by MSF residents (/5)	4.5	

Access to services in region

Service/facility	Average distance travelled to access service
Primary school	Less than 10km
High school	Less than 10km
TAFE/University	Less than 10km
Doctor	Less than 10km
Hospital	Less than 10km
Bank	Less than 10km
Fisheries officer	Less than 10km
Police	Less than 10km
Dentist	Less than 10km

Greater Lincoln area (excluding Port Lincoln)

With 0.81% of the Greater Lincoln area population working in the MSF, and high fishing business spending in the region, there is a moderate to high impact of the MSF on the region. The region is made up of five local government areas and covers a wide geographic area.

In 2001, the region was characterised by moderate population decline in all areas except the Greater Lincoln area Local government area (surrounding Port Lincoln), and a slightly higher proportion of the population made up of children and people aged over 65 than average for South Australia. Like most of the non-metropolitan regions MSF respondents work in, there were more households earning under \$300 per week and less households earning over \$1200 per week than the South Australian average. The area had relatively low unemployment, generally low economic diversity, and all five areas within the region had a higher SEIFA ranking in 2001 than the South Australian average.

Household spending in the region was low given the number of people working in the MSF, likely reflecting considerable spending in the regional centre of Port Lincoln. Fishing business spending, however, was relatively high, with fishing businesses based outside the region reporting spending activity in Cleve, Elliston, Tumby Bay and Franklin Harbour. Negligible catch was delivered to fish receivers in the region, with the majority of catch going to Port Lincoln.

A higher than average number of MSF respondents reported membership of community groups. MSF respondents had lived in the area for only 21.6 years on average, less than usual, although reported living in the area for an average 1.7 generations, less than the average across all MSF respondents.

Access to services varied widely, reflecting the large area of the region and spread of population within it across several small towns and communities. However, despite the large area, most respondents reported being able to access health and financial services (other than dentists) within 50km. Some travelled considerably longer distances to access bank and dental services.

Socio-demographic characteristics of the region

Local government area	Cleve	Elliston	Franklin Harbour	Lower Eyre Peninsula	Tumby Bay
Total population, 2001	1830	1201	1258	4073	2457
Annual population growth 1996-2001	-0.6	-0.1	+0.6	+1.1	-0.7
Total dependency ratio, 2001	61.4	59.1	59.6	56.7	65.5
Median age of total population	38	38	40	38	43
Change in the median age of total population 1996-2001	+3	+3	-1	+3	+4
Sex ratio 2001	111.1	122.4	112.5	113.4	105.8
% of households earning < \$300/week, 2001	18.4	20.0	19.9	14.6	19.2
% of households earning > \$1200/week, 2001	14	12.8	12.9	19.7	13.8
Unemployment rate, 2001	3.3	5.8	4.2	6.3	6.4

Local government area	Cleve	Elliston	Franklin Harbour	Lower Eyre Peninsula	Tumby Bay
Change in unemployment rate, 1991-2001	-5.8	-6.1	-6.6	-6.7	-7.7
Economic diversity, 2001	64.3	68	60.7	51.8	59.9
SEIFA Index 2001	1035.44	1008.72	1023.28	1029.20	1032.88

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in the region

Type of impact	Estimated impact	
Estimated MSF licence holders living in region	30	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 31	FTE: 16.1
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 27	FTE: 13.3
Estimated proportion of regional population employed full-time or part-time in MSF (including licence holders, paid and unpaid employees but not processors or their employees)	0.81%	
Average number of dependents per person involved in MSF	1.3	
Total MSF household spending in region	Total: \$364,200	Derived from fishing income: \$211,700
Total fishing business spending in region	\$2,199,700	
Estimated GVP of MSF catch landed in region and commission paid to fish receivers	GVP: \$5500	Commission: \$600
Number of community groups MSF participants belong to, and % of MSF participants who are members of one or more groups	Number: 94	Percent: 59.3
Number and % of MSF participants who are members of fishing representative groups	Number: 38	Percent: 37
Average number of years and generations MSF members have lived in local area	Years: 21.6	Generations: 1.7
% of MSF members planning to still live in the region in 5 years time	92.6	
Average rating of MSF residents of the local region as a place to live (/4)	3.2	
Average level of attachment to local community reported by MSF residents (/5)	4.6	

Access to services in region

Service/facility	Average distance travelled to access service
Primary school	0km to 50km
High school	0km to 50km (and over 50km for 1/3)
TAFE/University	50km to 500km
Doctor	0km to 50km
Hospital	0km to 50km
Bank	10km to 500km
Fisheries officer	50km to 500km
Police	0km to 50km
Dentist	10km to 500km

West Coast

With an estimated 2.88% of the West Coast population working in the MSF, and almost \$1.5 million of catch delivered to fish receivers in the region, the region has a high dependence on the MSF – the highest of all the regions examined, with the potential exception of Port Lincoln, which receives more catch but has a lower proportion of the population involved directly in fishing activities.

The region was characterised by moderate population growth from 1996 to 2001 and a slightly lower median age in 2001 than average for the South Australian population. Unlike most of the non-metropolitan regions MSF respondents work in, in 2001 there were less households earning under \$300 per week than the South Australian average, although like most non-metropolitan areas there was a lower proportion of households earning over \$1200 per week than the South Australian average. The area had a relatively low unemployment rate in 2001, and a slightly lower SEIFA ranking than the South Australian average.

There is a high amount of household and fishing business spending in the region, predominantly by businesses based in the region, and the region is the fifth highest in terms of value of MSF catch delivered to fish receivers (after Adelaide, Port Lincoln, Sydney and Melbourne).

A higher than average number of MSF respondents reported membership of community groups and considerably more than average – 51.4% compared to an average 36.8% - were members of fishing representative groups. Respondents rated the region slightly lower than the average rating of 3.2 (out of 4) as a place to live.

Access to most services is very good, with most respondents able to access key services within 10 kilometres. This reflects the fact that most respondents lived in Ceduna/Thevenard or the town of Streaky Bay, where most services in the West Coast region are located. The only services difficult to access for some respondents were TAFE/university, due to the physical distances to facilities, and dental services with some travelling considerable distances to visit a dentist. In the West Coast workshop, this was explained as resulting from difficulty obtaining appointments with local dental services when dental problems occurred, due to the services being fully booked weeks or sometimes months in advance.

Socio-demographic characteristics of the region

Local government area	Ceduna	Streaky Bay
Total population, 2001	3677	1980
Annual population growth 1996-2001	+0.7	+0.7
Total dependency ratio, 2001	54.8	58.8
Median age of total population	35	38
Change in the median age of total population 1996-2001	+3	+2
Sex ratio 2001	105.4	119.8
% of households earning < \$300/week, 2001	13.8	20.6
% of households earning > \$1200/week, 2001	16.6	13.2
Unemployment rate, 2001	4.7	7.3
Change in unemployment rate, 1991-2001	-6.5	-8.0
Economic diversity, 2001	43.1	55.0
SEIFA Index 2001	979.20	1005.04

Source: ABS 2001 *Census of Population and Housing*

Socio-economic impacts of the MSF in the region

Type of impact	Estimated impact	
Estimated MSF licence holders living in region	57	
Estimated total number of paid non-licence holders working in MSF in the region	Persons: 56	FTE: 29.6
Estimated total number of unpaid non-licence holders working in MSF in the region	Persons: 50	FTE: 24.5
Average number of dependents per person involved in MSF	1.3	
Estimated proportion of regional population employed full-time or part-time in MSF (including licence holders, paid and unpaid employees but not processors or their employees)	2.88%	
Total MSF household spending in region	Total: \$1,894,100	Derived from fishing income: \$1,193,300
Total fishing business spending in region	\$1,644,200	
Estimated GVP of MSF catch landed in region and commission paid to fish receivers	GVP: \$1,451,600	Commission: \$160,800
Number of community groups MSF participants belong to, and % of MSF participants who are members of one or more groups	Number: 90	Percent: 42.1
Number and % of MSF participants who are members of fishing representative groups	Number: 78	Percent: 51.4
Average number of years and generations MSF members have lived in local area	Years: 31.4	Generations: 1.9
% of MSF members planning to still live in the region in 5 years time	89.5	
Average rating of MSF residents of the local region as a place to live (/4)	3.0	
Average level of attachment to local community reported by MSF residents (/5)	4.5	

Access to services in region

Service/facility	Average distance travelled to access service
Primary school	Less than 10km
High school	Less than 10km
TAFE/University	Less than 10km or over 100km
Doctor	Less than 10km
Hospital	Less than 10km
Bank	Less than 10km
Fisheries officer	Less than 10km
Police	Less than 10km
Dentist	Less than 10km or over 100km

Discussion and conclusions

Quality of life and social well-being of MSF fishers and employees

Concepts such as ‘quality of life’ or ‘social well-being’ are often viewed as nebulous concepts that are difficult to measure. The questionnaire used in this study examined several dimensions thought to impact on people’s quality of life and social well-being, including their satisfaction with life and work, access to social capital, income and key stressors affecting their work in the MSF.

The results show that many of these key concepts are related to each other – for example, respondents who reported more health problems also reported lower overall life and work satisfaction, and lower levels of attachment to their local community. This indicates that all interact with each other, and hence affect overall well-being and quality of life.

This study was limited in its ability to examine the overall ‘level’ of quality of life in the fishery, in that there are few data to compare the results of the study to. Therefore analysing whether quality of life has increased or decreased over time relied on qualitative reports of fishers of how their lives have changed in recent decades. Undertaking a follow-up survey in two to five years time would allow a detailed assessment of how well-being and quality of life are changing over time.

The results of the questionnaire indicate that those working in the MSF have a generally high quality of life, but are facing significant stresses and challenges which place pressure on this quality of life and, for many, reduce it significantly.

Overall, the majority of respondents reported being satisfied or very satisfied with their life. They rated their local areas highly as places to live, and had mostly good access to key services. Respondents also tended to be in long-term, stable relationships, with 81.4% married or in a de facto relationship. People who are married or in long-term relationships have been shown by many studies to experience generally higher levels of happiness and well-being than for those people who are single or divorced.

However, survey respondents tended to be less satisfied with their overall household finances than with other aspects of their lives, indicating that many households in the MSF are experiencing some financial stress. Given that those who reported lower satisfaction with their finances were significantly more likely to report lower satisfaction with all other dimensions of life satisfaction, including their health and the local area they live in, this financial stress is clearly related to satisfaction with other aspects of life. Similar results were found for fishing income, with higher income significantly related to higher satisfaction with work, including the tasks undertaken while working, time spent working, and income received from work.

Social well-being for those in the fishery was therefore clearly related to their overall financial well-being.

Having strong links to the local community and social networks was significantly related to higher reported life satisfaction, indicating that strong, stable links to local areas form a major part of social well-being for MSF participants.

One of the most important findings was a strong link between work satisfaction and life satisfaction. If respondents were happy in their work, they were more likely to be happy with their life overall.

The most important factors contributing to overall work satisfaction were related to the ability to work independently without supervision, and the type of tasks undertaken, skills used and environment worked in when fishing. The challenge of fishing successfully and the enjoyment of going out on the boat were described by several workshop attendees as the most satisfying aspects of their work. Income was the least important factor motivating people to work in fishing, although a lack of adequate income certainly created significant stress and lowered well-being.

When overall levels of work satisfaction were broken down into different dimensions of work satisfaction, some of the stressors affecting the quality of life of fishers could be seen clearly. While respondents to the questionnaire had high levels of satisfaction with the tasks undertaken while fishing and time spent working, their satisfaction with external management and influences on the fishery, and with income from fishing, were significantly lower.

In workshops, three key types of external influence were commonly reported to be reducing business viability or causing stress – competition and pressure from recreational fishing for scalefish species, market pressures resulting from increasing business running costs without associated rises in prices received for catch, past changes to regulations and management of the fishery, and the impacts of future management changes on their right and ability to keep fishing. These pressures are creating considerable levels of stress for those dependent on the MSF, many of whom perceive an uncertain future for the fishery as a result of them.

A further pressure causing stress and negative self-image is the strong belief of commercial fishers that they are perceived negatively by the general community. This creates a feeling for some fishers that they are ‘under siege’ and that they are being unfairly cast in a negative light as causing damage to the environment. Many felt this community perception contributed to the fishery being isolated and under threat, including politically, which increased their sense of uncertainty about the fishery’s future. This was discussed in most workshops as a key problem causing stress for fishers.

Health and safety are also related to overall well-being. Respondents who reported more health problems also tended to have lower overall reported satisfaction with their life and work, and lower levels of attachment to and interactions in their local community and in fishing groups.

Health problems reduced well-being for many fishers. Of particular concern were reports from some workshop attendees that earning higher fishing income in many cases requires taking higher risks with health and safety in the course of fishing work. The implication is that those who are under financial pressure may be more likely to place themselves in situations that have a higher risk of physical injury, e.g. by fishing during poor weather conditions, or may experience health problems resulting from working excessively long hours.

While fishers reported having good levels of interaction with family and friends, many stated that the irregular and unpredictable fishing hours they worked reduced their ability to interact with family, friends, and be a part of community groups. The cost of attending a social event in place of going fishing was often a day’s income. Despite this, almost half of the respondents were still members of at least one community group.

Part-time workers in the fishery were more likely to be members of community groups than full-time fishers indicating that, while they may not contribute high income to their local regions, these individuals contribute significantly to social capital and hence quality of life in their local communities.

Social networks in fishing tended to be informal and localised. While most fishers spoke to other fishers regularly, most were not members of fishing representative groups. Those who were members were spread across a number of different groups. Existing informal networks were declining in some areas, and new entrants to the fishery in particular often reported little interaction with other fishers.

When asked at workshops why there was such low membership of groups and attendance at meetings held for MSF fishers, attendees described feeling disillusioned with meetings and a perception that representative groups were unable to achieve significant results for fishers. This disillusionment was linked to a sense of powerlessness resulting from past changes that had been made in the fishery against the wishes of many fishers, and a belief that commercial fishers were perceived negatively by government and the general community and therefore had little ability to influence decisions made about the fishery. Many believed this was a 'chicken and egg' problem – that if more fishers became active members of groups, there would be a greater potential to use these groups to achieve change.

The results showed that there were distinct groups within the MSF whose well-being and quality of life should be considered separately. In particular, fishers of different ages and genders had different characteristics, as did fishers who had different types of gear endorsements on their fishing licences, and those who were new entrants to the fishing industry versus those with an intergenerational history of involvement in commercial fishing.

Older respondents across all licence types tended to report lower fishing effort and have smaller fishing businesses with lower gross sales, expenditure, numbers of paid employees, capital value and profit than younger respondents. However, they reported fewer work related health problems, and higher overall satisfaction with their level of finances. They were also less likely to report that their fishing work presented high or very high risk to their health. This may be related to the lower level of overall fishing effort by older respondents, implying that older fishers are less likely to go out fishing during poor weather conditions or in other adverse conditions.

This also suggests that younger fishers are in general experiencing higher levels of stress and financial difficulties than older fishers, a result backed up by the perceptions of those who attended workshops. This was believed to result from higher levels of debt held by younger fishers as a result of investing in the capital and licence needed to fish in the MSF, and younger fishers needing higher overall income to support dependents, with older fishers less likely to be financially supporting their children.

Women were more likely to be working unpaid in a fishing business, usually part-time. While often described as unpaid, the work undertaken by women usually results in financial gain for their household - MSF fishing businesses often operate as a household level business run by a husband and wife who undertake different tasks. The description of some of the work undertaken in the business as unpaid means that the contribution of women often goes unacknowledged. The impact of changes to fishing on these participants in the fishery needs to be better understood, and would be a useful subject for further study.

Net fishers tended to run larger businesses with higher turnover and higher numbers of employees than line fishers. They also tended to report a higher satisfaction with their life than A-class line fishers, although B-class line fishers reported overall higher satisfaction with

life than either of the other groups. Net fishers were more satisfied with their fishing income than other fishers, and also more likely to be members of a fishing group. Compared to A-class line fishers, they were more dependent on fishing income overall, with 44.3% of net fishers reporting someone in their household had a job outside fishing compared to 58.9% of A-class line fishers.

B-class licence holders had much lower business size and activity than other licence holders, and were also more highly dependent on fishing income than either of the other licence type, with only 31.2% reporting someone in their household had work outside fishing. Despite their overall lower income, they tended to report a high satisfaction with the life overall.

This indicates that, while net fishers overall have higher quality of life in terms of fishing income and strong fishing networks, they are more vulnerable to changes in fishing due to their high dependence on fishing income. B-class licence holders, despite reporting lower levels of income from non-fishing sources, appear less actively involved in fishing networks and in fishing generally, with lower turnover and activity in fishing, perhaps reflecting that some were in a state of semi-retirement. A-class line fishers are more likely to have a partner working outside fishing or to work outside fishing themselves, and to report high levels of stress and fatigue.

Finally, there are differences in the quality of life of newer entrants to the fishery and those with longer experience in fishing. People who reported fewer years of experience fishing were making less money, more likely to perceive their fishing work as involving high risk. Although questions about levels of fishing business debt were not asked in the questionnaire, anecdotal reports at workshops suggested that more recent entrants to the fishery, particularly those without a family history in fishing, are more likely to be servicing high levels of debt than others in the fishery. They were also believed to be 'going broke' on a regular basis, with more experienced fishers observing many new entrants coming into the fishery and exiting within a few years in recent years.

The apparent shift from inter-generational fishing participation, in which fishing skills have been passed down among family members, to increasing numbers of new entrants in the fishery who do not have a family history of fishing, may result in decreasing well-being. This is because new entrants have fewer avenues for learning fishing skills and hence making a reasonable financial return from fishing. This is borne out by results showing that those who had worked for only one generation in fishing reported significantly lower business activity, including gross sales, than those with inter-generational histories of fishing. An alternative explanation for this pattern is that some new entrants are taking up commercial fishing as a lifestyle choice, rather than to run a profitable business.

Those who reported inter-generational history of fishing, while being less satisfied with external influences on the fishery, reported higher income, business size and links to fishing networks than newer entrants, indicating a higher quality of life overall.

Contributions of the MSF to coastal regions of South Australia

The regions in which people working in the MSF live range from large metropolitan areas of Adelaide to small, isolated coastal towns. Licence holders and employees are spread across the South Australian coastline. However, while those working in this large, diverse fishery are spread across a large area, they are concentrated in some key areas. Four regions had more than 45 licence holders living in them – Port Lincoln, the West Coast (with licence holders mostly living in Ceduna and Thevenard), the Yorke Peninsula (in which licence holders were living in many smaller towns), and Barunga West and the Copper Coast at the top of the

Yorke Peninsula. The thirty licence holders living in the Greater Lincoln area often made purchases for their household and fishing business, and usually sold their catch in Port Lincoln. All the other regions had around 10 to 20 licence holders living in them.

MSF respondents did not show many obvious differences across regions, and where differences occurred there were usually not obvious explanations. Further qualitative work would be required to explore differences in regional characteristics and the most striking result is the similarity of respondents across different regions.

MSF respondents across different regions shared several important characteristics. The large majority had lived in their local area for at least two decades, and reported high levels of satisfaction with the area they lived in as well as a high level of attachment to the local area. This was the case even for communities which had low rankings on indicators often thought to reflect the social well-being of an area, such as unemployment and the SEIFA index. For example, Whyalla has a low SEIFA ranking and yet most MSF respondents living in the region rated the area as an 'excellent' or 'good' place to live.

However, in two regions with high unemployment and a low SEIFA ranking in 2001 (Wakefield and Whyalla), fewer respondents than average planned to still live in the region in five year's time. This may indicate that these local areas were not as satisfactory to live in as some of the other NSF regions. However, Kangaroo Island, which had a higher level of employment and SEIFA ranking, also had a lower proportion of respondents than average planning to still be resident in the region in five year's time.

Perhaps the biggest difference across regions was the reported family history of fishing, and length of residence in the local community by MSF members. Regions in which respondents reported their families had lived for longer than the average of 2.1 generations included Barunga West and Copper Coast; Wakefield; the Yorke Peninsula; and Port Pirie City and Districts. These adjacent regions appear to be those with the greatest history of intergenerational fishing. Respondents had lived for fewer generations than average in Northern and Eastern Adelaide and Southern Adelaide, perhaps reflecting a more recent shift to fishers living in these areas, with Western Adelaide the area fishers have traditionally lived in until recent decades.

Respondents had lived for fewer years than average in Western Adelaide, Southern Adelaide, the Fleurieu Peninsula, Whyalla and the Greater Lincoln area. Explaining the differences in years lived in these regions would require further qualitative exploration of the results.

Importantly, part-time employees in the fishery were more often members of community groups indicating that, while they may not contribute high income to their local regions, these individuals contribute significantly to social capital in their local regions.

Respondents in some LGA regions had to travel significantly longer distances to access the following services:

- Dentists: Barunga West, Copper Coast, Yorke Peninsula, Whyalla, Franklin Harbour, Ceduna, Streaky Bay and Elliston residents travelled further than average;
- Police: Yorke Peninsula, Whyalla, Greater Lincoln area, Cleve and Tumby Bay residents travelled further than average;
- Doctors: Yorke Peninsula, Whyalla, Greater Lincoln area, Cleve, Tumby Bay, Ceduna, Streaky Bay and Elliston residents travelled further than average; and

- Banks: Yorke Peninsula and Ceduna/Thevenard/Streaky Bay residents tended to travel further and Adelaide, Kangaroo Island and Port Pirie residents travelled less to access banks than average.

The regional impacts of the MSF may be examined in a number of ways. In terms of numbers of people employed either part-time or full-time, paid or unpaid, as a proportion of the total population, the regions of highest impact are:

- the West Coast, where 2.88% of the population¹⁰ works in some way in the MSF;
- the Yorke Peninsula (1.56% of the population works in some way in the MSF);
- Kangaroo Island (1.3% of the population);
- Port Lincoln (1.19% of the population);
- Barunga West and the Copper Coast (1.02% of the population); and
- the Greater Lincoln area excluding Port Lincoln (0.81% of the population).

Annual household spending derived from fishing income by members of the MSF is highest in the following regions:

- Yorke Peninsula (\$1,527,100);
- Port Lincoln (\$1,298,500);
- West Coast (\$1,193,300);
- Western Adelaide (\$1,136,500); and
- Barunga West and Copper Coast (\$1,031,400).

Fishing business spending, however, has a slightly different pattern, with spending highest in:

- Port Lincoln (\$3,004,700);
- Yorke Peninsula (\$2,356,800);
- Greater Lincoln area excluding Port Lincoln (\$2,199,700), and
- West Coast region (\$1,644,200).

In terms of value of fish catch delivered to receivers, the pattern is quite different again, with the highest levels of activity reported in the following regions:

- Western Adelaide (receiving an estimated \$11,452,000, almost half the total estimated value of catch);
- Port Lincoln (\$5,749,400);

¹⁰ These figures are given as a proportion of the total population, rather than the labour force, as many of the employees, particularly unpaid employees, may not be counted as part of the labour force in ABS statistics.

- Sydney (\$2,151,600);
- Melbourne (\$2,013,400); and
- the West Coast (\$1,451,600).

In terms of per-capita impact, the MSF is most significant in the West Coast region and Port Lincoln, with both having a high proportion of population working in the MSF as well as a significant amount of catch going to fish receivers in the region. The MSF also had a high impact on the Yorke Peninsula through high household spending and spending by fishing businesses in the region.

As well as dollar impact, it is clear that MSF participants form members of many community groups, particularly in smaller regions with lower overall population.

This study did not examine downstream impacts via employment in fish processing and sales activity, but it is clear that the Western Adelaide, Port Lincoln and West Coast regions are the key regions within South Australia where this flow-on impact occurs, while flow-on impacts also occur in Sydney and Melbourne.

Implications for management and future direction of the MSF

This section discusses implications of this study's results for the management and future directions of the MSF. The key implications relate to the motivations for choosing fishing as a career; changing nature of participants in the fishery; transfer of fishing skills; networks and communication amongst fishers; and pressures facing those dependent on fishing.

The primary motivations for working in fishing were related to the tasks and setting of the work undertaken – not to the income received from fishing. This has important implications for management of the fishery, as it means fishers are unlikely to respond to financial incentives in the ways expected. Many fishers are willing to continue working in fishing even when they are consistently making very low returns from fishing. This needs to be taken into account when considering management changes to the fishery, and the assumption should not be made that fishers respond solely, or even primarily, to financial incentives or disincentives.

The nature of participation in the MSF is changing. There is a shift from participants with a strong family history of fishing to new entrants who do not have previous experience fishing commercially. The shift away from inter-generational fishers has a range of implications. Firstly, it is those fishers with higher generational involvement who tend to have larger businesses and report higher returns to business owners. They are also likely to have more fishing knowledge and skills, and this may mean they fish more sustainably than some more recent entrants to fishing.

A specific issue arising from the shift in participants is that fishing skills may not be passed on to new fishers. Most current fishers learned their fishing skills either from family members, or through trial and error while out fishing. Some learned from other fishers who were not family members. Given that those who make more money tend to have higher inter-generational involvement in fishing, which implies higher fishing skills, it is possible that with the shift to new inexperienced entrants, fishing skills and knowledge may be lost. Consideration needs to be given to potential approaches for encouraging and assisting new entrants to the fishery to gain relevant knowledge and skills, particularly knowledge assisting them to fish sustainably.

Fishing networks and support systems are fragmented and many fishers rely heavily on informal, localised networks to gain information and knowledge about activities and changes happening in the fishery. The large number of paid and unpaid employees of licence holders working in the MSF are not generally members of fishing representative groups. A high level of disillusionment with meetings and groups contributes to the low membership of groups and interactions between fishers beyond localised informal networks. In addition, those who are members of fishing groups tend to have larger fishing businesses and higher family involvement in fishing. It would likely benefit the fishery if more new entrants to the fishery and employees of licence holders became members of fishing groups, and were able to gain skills and knowledge via these groups as well as raise issues relevant to them. From the workshops, suggestions for encouraging participation in fishing groups and attendance at meetings included organising meetings for bad weather days so that fishers do not have to forego income to attend; developing a database of contact details including fax numbers to more easily and efficiently contact fishers including to remind them of events; meeting them at places and times where they already are likely to be (e.g. processors); and ensuring that fishing representative groups explicitly target (and are seen to target) the issues facing the fishers.

Fishers reported being under market pressure, with rising operating costs for their businesses but no similar rises in prices received. This led to a need for many fishers to fish more intensively to stay in business, particularly for those who were servicing debt for their business.

They also reported having little flexibility in their businesses as a result of management regulations. These management regulations had the unintended effect of limiting the ability of fishers to expand their businesses through targeting a broader range of species in response to changing market prices. In some cases fishers believe it has limited their ability to fish sustainably as they have had to repeatedly target the same species or areas rather than shifting their fishing effort across a wider range of species or areas over time.

Commercial fishers also reported increasing levels of competition with recreational fishers. Some fishers reported fishing in poor weather conditions to avoid interactions with recreational fishers, a practice which placed them at higher risk of physical injury while fishing.

Of particular concern is the finding that younger fishers – who tended to make more money, and to have larger businesses in terms of capital value – also tended to report more health problems related to fishing. These younger fishers may be taking higher risks in the course of their fishing work in order to make higher returns needed to service debt and support families. The high cost of entering the fishery leads to some of these pressures.

In general, while fishers were highly satisfied with the tasks they undertake while fishing, they felt constrained by a range of external pressures. Some management arrangements may have unintended impacts on the social and economic well-being of fishers by constraining their ability to adapt to the changes occurring in markets and the fishery. More support networks for new and younger entrants to the fishery, and for the many employees, particularly women, in the fishery, would help to ensure knowledge and skills are disseminated more effectively through the fishery.

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Appendices

Appendix 1: Mail questionnaire

The questions asked in the questionnaire have been included in this Appendix. The questions were presented in a B5 booklet with a colour cover, formatted to allow easy completion of questions.

Social Impacts of the South Australian Marine Scalefish Fishery

This survey is a vital part of efforts to understand the social impacts current fisheries management and market conditions have on fishing communities, and the ways fishers and their families contribute to coastal communities. This information will help your representatives to better communicate to government and the general community the importance of the Marine Scalefish Fishery to coastal communities, and the challenges faced by fishers.

There is no other way to obtain this information, as existing data about social impacts of fishing is very limited.

Surveys have been sent to all current holders of South Australian Marine Scalefish Fishery and Restricted Marine Scalefish Fishery licences. It is important that you complete and return your survey. You are assured of complete confidentiality. Your name will never be placed on the survey or used in any reports. No group outside the Bureau of Rural Sciences will have access to the surveys.

The person(s) to whom the letter was addressed should complete the survey, except where that person's licence is being operated by another person under a leasing arrangement, in which case the lessee should complete the survey.

If you need assistance with the survey or wish to make specific comments about it, please use the toll free number **1800 723 777** to contact a member of the research team at the Bureau of Rural Sciences during business hours (9am to 5pm, Monday to Friday).

Thank you for your assistance,

Jacki Schirmer
Social Sciences Program
Bureau of Rural Sciences
Canberra ACT 2601
Jacki.Schirmer@brs.gov.au

1. QUALITY OF LIFE OF FISHERS

The following sets of questions aim to understand your overall **quality of life** in terms of your overall **life satisfaction**, your **work satisfaction** and **work priorities**, and your **health**.

1A. Life satisfaction

How **satisfied** are you with the following aspects of your **life in general**?

(Tick one box only for each statement)

	Very dissatisfied	Somewhat dissatisfied	Neither satisfied or dissatisfied	Somewhat satisfied	Very satisfied
Life in general	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your present financial situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your own health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The health of members of your family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The local area you live in	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1B. Work satisfaction

How **important** are the following aspects of your work in commercial fishing?

(Tick one box only for each statement)

	Unimportant	Somewhat unimportant	Neutral	Somewhat important	Very important
A sense of worthwhile accomplishment in my work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High income	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Long-term job security	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fair and consistent management of the fishery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to exercise independent control over my job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stimulating and challenging work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having a good balance between work life and home life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interactions with the public related to my work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How satisfied are you with each of the following aspects of your work in commercial fishing?

(Tick one box only for each statement)

Statement	Very unsatisfied	Somewhat unsatisfied	Neither satisfied or unsatisfied	Somewhat satisfied	Very satisfied
The amount of challenge in my job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Freedom to choose my own methods of working	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amount of job security I have	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The balance between my work life and my home life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My work in commercial fishing overall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The amount of control I have over decisions affecting how I can undertake my fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The people I talk to and work with on my job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The amount of income I receive from fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The feeling of worthwhile accomplishment I get from fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The fairness of decisions about management of the MSF fishery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How much time I have to spend working to make a living	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The degree to which I receive a fair income from fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The rules set by government on how I can fish in the MSF fishery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The viability of fishing as a long-term occupation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The amount of support and guidance I receive from other fishers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The level of support received from local government and other community bodies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1C. Your health

The following questions ask about your **health**. We will compare the level of life and work satisfaction you have reported above to your self-reported health.

Have you experienced any of the following symptoms in the last year?

(Tick one box only for each statement)

	I have not experienced this symptom	I have experienced this symptom	I have experienced this symptom and seen a medical professional about it
Difficulty sleeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Headaches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Depression, stress or anxiety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Excessive fatigue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Back pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical injury incurred while fishing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please describe symptom):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How much of a risk is each of the following aspects of your commercial fishing work to your health or well-being?

(Tick one box only for each statement)

	Very small risk	Small risk	Neither small or big risk	Big risk	Very big risk
The physical conditions involved in my work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The number of hours I work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The weather conditions I work in	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The fish or other catch I have to handle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The equipment I have to use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The level of noise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stress	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My job overall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None of these	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Don't know	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other risk (please specify type of risk below)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. SOCIAL CAPITAL

Increasingly, people are interested in understanding how connected individuals are to particular communities, and the level of services – formal and informal – available to them in their personal, work, and geographic communities. The following questions ask about your connections to (a) the local community you live in and (b) the fishing community.

2A Family and friends

The following questions ask about your family and friends (Tick one box only for each question)

	Most days	Once or twice a week	Once or twice a month	Less than once a month	Never
How often do you speak to or meet with relatives not living with you?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How often do you speak to or meet with friends not living with you?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How often do you speak to or meet with other fishers not living with you?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	None	Very few	Few	About half	Most	Almost all
How many of your immediate family (parents, siblings, children) work in commercial fishing or fishing-related jobs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How many of your extended family (cousins, aunts/uncles, grandparents, nieces/nephews) work in commercial fishing or fishing related jobs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How many of your friends work in commercial fishing or fishing related jobs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2B. Fishing community

Are you a member of any fishing associations/organisations/management committees? (please circle one)

YES NO

If YES, please fill in details of organisations below (if NO, go to next question):

Name of association/organisation/committee	Have you held an office bearing position in the last year? (please circle)	How many meetings/activities did you attend in financial year 2003-04?
	YES NO	
	YES NO	
	YES NO	

How did you learn your commercial fishing skills? (tick all that apply)

- ☐ Self taught
- ☐ Taught by family member
- ☐ Worked in fishing business not run by family
- ☐ Learned from other fishers (not family)
- ☐ Formal training through a training course
- ☐ Other (please specify): _____

2C. Perceptions of fishers & fishing

	Very negatively	Negatively	Neither negatively or positively	Positively	Very positively
How do you believe most people in your local community perceive commercial fishers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How do you believe most people in South Australia perceive commercial fishers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2D. Your local community

How would you rate your local community as a place to live? (tick one box only)

- ☐ Excellent
 ☐ Good
 ☐ Fair
 ☐ Poor

How strong are your feelings of attachment to the local community in which you live?

(tick one box only)

- ☐ Very strong attachment
 ☐ Strong attachment
 ☐ Some attachment
 ☐ Little attachment
 ☐ No attachment

What postcode do you live in?.....

____ _

How many years have you lived in your local community? (defined as the postcode you live in).....

_____ years

How many generations of your family have lived in the area where you now live? (if you are the first to have lived in the area, please write 'one')

_____ generations

Do you expect to be living in the same place five years from now?
(please circle one).....

YES NO

How far from your home do you have to travel to access the nearest of each of the following services? (Tick one box only for each service)

	Less than 10km	10 to 50km	50 to 100km	100 to 500km	Over 500km	Don't know/ not relevant for me
Primary school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TAFE or university	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Doctor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hospital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fisheries officer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Police	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dentist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please indicate what, if any, of the following types of group you are a member of:

Type of group	I am a member of this type of group	Have you held an office bearing position in the last year? (please circle)	How many meetings/ activities did you attend in financial year 2003- 04?
Sports group (please list types of sports groups):	<input type="checkbox"/>	YES NO	
Civic group eg Lions, Rotary	<input type="checkbox"/>	YES NO	
Religious group	<input type="checkbox"/>	YES NO	
Cultural association	<input type="checkbox"/>	YES NO	
School committee	<input type="checkbox"/>	YES NO	
Neighbourhood watch	<input type="checkbox"/>	YES NO	
Hobby group	<input type="checkbox"/>	YES NO	
Emergency services eg CFS/SES/ Ambulance/Sea Rescue/other	<input type="checkbox"/>	YES NO	
Other (please list):	<input type="checkbox"/>	YES NO	

3. YOUR FISHING HISTORY

How many years have you fished commercially?.....

_____ years

How many years have you fished in the South Australian Marine Scale Fishery?.....

_____ years

How many generations of your family have fished commercially?.....

_____generations

(if you are the only member of your family, please write 'one')

Does anyone in your household have a job outside commercial fishing?
(please circle one).....

YES NO

Is your work in commercial fishing (please tick one).....

☐ Full-time ☐ Part-time/
casual

What percent of your annual household income was from commercial fishing in 2003-04?

_____ %

Which of the following best describes your work in commercial fishing?

(tick all that apply):

☐ Owner-operator ☐ Non-fishing owner ☐ Employee skipper ☐ Crew member ☐ Other

In financial year 2003-04, in which of the following fisheries did you hold a licence to fish or undertake fishing employment? (tick multiple boxes if applicable):

☐ **South Australian fisheries (tick all applicable fisheries below):**

☐ Marine Scalefish Fishery ☐ Miscellaneous
☐ Prawn ☐ Aquaculture
☐ Rock lobster ☐ Inland waters
☐ Abalone ☐ Blue crab

☐ **Commonwealth (AFMA) or fisheries in States other than South Australia**
(please specify fishery/ fisheries below):

4. CURRENT CHALLENGES AND FUTURE OF COMMERCIAL FISHING_____

Would you encourage young people to fish in the Marine Scalefish Fishery? (please circle one).....

YES NO

Has it become easier or harder to enter the Marine Scalefish Fishery over time? (please circle one).....

EASIER HARDER

5. YOUR HOUSEHOLD SPENDING PATTERNS

To better understand how fishers contribute economically to different communities, we want to ask a series of questions about where your family income is spent. This helps us identify how widespread the impacts of fishing are.

How much did your household spend on each of the following items over financial year 2003-04 and where did you usually purchase each item?

Expenditure item	Approx. spending over the last year	I usually purchase this item locally*	If you do not usually purchase this item locally, where would you usually purchase it?
Clothing & footwear	\$	<input type="checkbox"/>	Town or region:
Fuel for personal vehicle	\$	<input type="checkbox"/>	Town or region:
Health services (doctor, hospital)	\$	<input type="checkbox"/>	Town or region:
Holidays	\$	<input type="checkbox"/>	Town or region:
Household groceries	\$	<input type="checkbox"/>	Town or region:
Household items eg furniture, kitchen goods, hardware	\$	<input type="checkbox"/>	Town or region:
Housing repairs/maintenance	\$	<input type="checkbox"/>	Town or region:
Mortgage repayment or rent	\$	<input type="checkbox"/>	Town or region:
Entertainment and going out eg restaurants, clubs, movies	\$	<input type="checkbox"/>	Town or region:
Stationery, books, newspapers	\$	<input type="checkbox"/>	Town or region:

* The local area is defined as the area within your local postcode.

If you are not a fishing business owner, please go to PAGE 14 and complete the final questions there. If you are a fishing business owner, please complete the questions on PAGES 10-13

6. YOUR FISHING BUSINESS

The following questions are for owners/managers of fishing businesses only. If you are not comfortable answering some questions, we would request you return the survey even if you choose not to answer those questions you are uncomfortable with.

What is the name of your homeport?.....

What was the total of the gross sales of the fishing business in financial year 2003-04? (before commissions and handling costs).....

\$ _____

What percentage of your gross sales was paid in commissions or handling costs to fish receivers in financial year 2003-04?.....

_____ %

What percentage of the gross sales came from the Marine Scalefish Fishery in financial year 2003-04?.....

_____ %

In financial year 2003-04, how many people worked (paid or unpaid) in your fishing business?

(Please include all people involved in fishing, delivery of fish, maintenance of equipment, bookkeeping and other fishing business related activities)

	Number working full-time	Number working part-time/casual	If part-time/casual, average number of days worked per week
Paid employees apart from yourself			
Unpaid family members			
Unpaid other employees			

For the Marine Scalefish Fishery only, where were your fish receivers located, and what percentage of catch went to receivers in each location, in financial year 2003-04?

Location of receiver (give port or town name)	% of gross value of catch that goes to this receiver

Fishing business running costs

We are interested in finding out where you purchase different equipment and supplies for your fishing business. This will let us calculate the extent of downstream businesses supported by commercial fishing, and get a better picture of the impacts caused if changes occur to commercial fishing.

Expenditure item	Approx. spending over the last year	I usually purchase this item locally*	If you do not usually purchase this item locally, where would you usually purchase it?
Boat fuel	\$	<input type="checkbox"/>	Town or region:
Ice	\$	<input type="checkbox"/>	Town or region:
Bait	\$	<input type="checkbox"/>	Town or region:
Motor repairs	\$	<input type="checkbox"/>	Town or region:
Boat repairs	\$	<input type="checkbox"/>	Town or region:
Motor vehicle maintenance	\$	<input type="checkbox"/>	Town or region:
Motor vehicle fuel	\$	<input type="checkbox"/>	Town or region:

Accommodation while fishing	\$	<input type="checkbox"/>	Town or region:
Mooring fees	\$	<input type="checkbox"/>	Town or region:
Licence fees	\$	<input type="checkbox"/>	Town or region:
Insurance fees	\$	<input type="checkbox"/>	Town or region:
Wages or catch share to employees	\$	<input type="checkbox"/>	Town or region:
Freight costs	\$	<input type="checkbox"/>	Town or region:
Phone/fax/stationary	\$	<input type="checkbox"/>	Town or region:
Professional fees eg accountant	\$	<input type="checkbox"/>	Town or region:
Vehicle/trailer registration	\$	<input type="checkbox"/>	Town or region:
Fishing gear replacement/repairs	\$	<input type="checkbox"/>	Town or region:
Other fishing business running costs (describe below):	\$	<input type="checkbox"/>	Town or region:

* The local area is defined as the postcode you live in.

Fishing business capital costs

Capital item	Age of current gear (years)	Current value (if known)	Are you planning to replace this gear in the next few years (please circle one)?	If yes, where would you purchase replacement gear?
Boat 1(inc. survey gear)	years	\$	YES NO	
Boat 2(inc. survey gear)	years	\$	YES NO	
Motor 1	years	\$	YES NO	
Motor 2	years	\$	YES NO	
GPS	years	\$	YES NO	
Plotter	years	\$	YES NO	
Radar	years	\$	YES NO	
VMS	years	\$	YES NO	
Echo sounder	years	\$	YES NO	
Bait tanks	years	\$	YES NO	
Holding tanks	years	\$	YES NO	

Capital item	Age of current gear (years)	Current value (if known)	Are you planning to replace this gear in the next few years (please circle one)?	If yes, where would you purchase replacement gear?
Tractor	years	\$	YES NO	
Trailer	years	\$	YES NO	
Motor vehicle 1	years	\$	YES NO	
Motor vehicle 2	years	\$	YES NO	
Other capital (please specify type of capital in rows below)	years	\$	YES NO	
	years	\$	YES NO	
	years	\$	YES NO	

* The local area is defined as the postcode you live in.

How have the following changes affected your **fishing business viability**?

	Reduced viability	No effect on viability	Increased viability	Don't know/ not applicable
Increased recreational fishing for marine scalefish species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changes in regulation of the MSF by government in general	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Netting closures (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Size limit changes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changes in access to particular species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changes to operating expenses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changes in availability of fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changes to market prices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please describe below)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. DEMOGRAPHIC INFORMATION ABOUT MSF FISHERS _____

To help us better understand the characteristics of fishing communities compared to the broader Australian community, we would like to ask you some questions that will allow us to compare MSF fishers to the general population.

What year were you born?

What is your gender?.....

Male ☐ Female ☐

How many children do you have? (if none, please indicate '0').....

No of children:_____

If you have children, how old are they?.....

Ages of children_____

How many of your children are financially dependent on you?.....

How many people other than your children, if any, are financially dependent on you?.....

Please tick which of the following best describes you at present:

☐ Currently married
or de facto

☐ Never married or de
facto

☐ Separated/
divorced

☐ Widowed

Please tick the **highest** education level you have achieved from the following list:

☐ Primary school

☐ TAFE diploma (post high-school)

☐ Fourth year of high school

☐ University degree

☐ High school certificate

☐ Postgraduate degree

How long has it taken you to complete this survey?.....

_____ minutes

8. Other comments_____

Do you have any other comments about any of the topics covered in the survey, or other social aspects of the Marine Scalefish Fishery? Please attach any extra comments to this survey booklet. Any comments you make will be recorded and considered.

THANK YOU FOR YOUR TIME_____

We appreciate the time you have spent answering the questions. Please return the completed survey in the envelope provided.

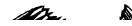
A summary of survey findings will be available in early 2005 and will be mailed to all survey respondents.

Appendix 2: Cover letter sent to respondents with questionnaire



WEST COAST PROFESSIONAL

FISHERMAN'S ASSOCIATION



Australian Government

Bureau of Rural Sciences

Fisheries Research and
Development Corporation

31st August 2004

We are writing to ask for your help with a survey that will provide vital information about the social impacts of the South Australian Marine Scalefish Fishery (MSF). Copies of the survey are enclosed with this letter.

The goal of this survey is to gather information that can be communicated to government and other decision makers about the ways in which the MSF contributes to South Australian communities, and which can be used to analyse potential impacts of changes proposed to the MSF. The results of the survey will be made freely available.

The survey is supported by the South Australian Fishing Industry Council (SAFIC), the Marine Scalefish Industry Working Group, the Marine Scalefish Fishery Management Committee (MSFMC), PIRSA and the West Coast Professional Fisherman's Association. The survey is being conducted by Bureau of Rural Sciences (BRS) with funding from the Fisheries Research and Development Corporation (FRDC) and the MSFMC.

There is no other way for us to obtain this information, as there is very little existing data on social impacts of commercial fishing in Australia.

We have posted surveys to all holders of South Australian Marine Scalefish Fishery licences (including restricted licences). Your participation is important if we are to obtain reliable information. All respondents to the survey will be sent a summary of the findings.

We want to encourage all licence holders and all those who work in their fishing business – paid or unpaid – to complete and return a survey. We have sent you three surveys to allow all those involved in your business to complete a survey. Please provide a copy of the survey to any crew members and business partners, including those doing unpaid work in your fishing business.

The survey data you provide will be kept completely confidential, and only BRS will have access to your individual survey returns – no other organisation will be given access to them. Your name will never be placed on the survey or used in any reports. The survey has an identification number on the back cover that allows BRS to check who has returned surveys. This identification number is not linked to the data you provide, ensuring that your individual data remains confidential.

Please use the enclosed stamped envelope to return the survey by September 15th. If you have any questions about the survey, please use the toll free number 1800 723 777 to contact a member of the research team from the Bureau of Rural Sciences, or call one of us on the numbers below.

Yours sincerely,



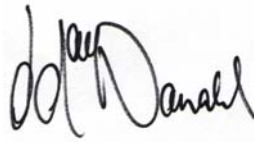
Allan Suter

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Appendix 3: Explanations of regional statistics data

The table below provides detailed descriptions of the statistics provided in the regional data in the report, and should be used to help assist in interpreting this data.

Statistic	Description	Source
Region	Regions are based on either <i>Statistical local areas (SLAs)</i> , <i>Local government areas (LGAs)</i> , or <i>Statistical Sub-Divisions (SSDs)</i> . For an explanation of these geographical boundaries, go to www.abs.gov.au In this study, SLAs were either smaller than or equal to LGAs in size (eg an LGA was made up of 1 or 2 SLAs), while there were several LGAs in an SSD.	Based on the Australian Standard Geographical Classification (ASGC) developed by the Australian Bureau of Statistics (ABS)
Total population, 2001	Total population of the region on Census night in August 2001	ABS 2001 <i>Census of Population and Housing</i>
Annual population growth 1996-2001	Average annual change (%) in population between 1996 and 2001	ABS 1996, 2001 <i>Census of Population and Housing</i>
Total dependency ratio 2001	The total number of the population under the age of 15 and over the age of 65 relative to the total number of the population aged between 15 and 64	ABS 2001 <i>Census of Population and Housing</i>
Median age of total population, 2001	The 'middle' age of the population (eg if the population consisted of 1001 people, the median age would be the age of the 501 st person if the ages were ranked in order from lowest to highest)	ABS 2001 <i>Census of Population and Housing</i>
Change in the median age of total population 1996-2001	The difference between the median age of the population in 2001 and the median age of the population in 1996	ABS 1996, 2001 <i>Census of Population and Housing</i>
Sex ratio 2001	The number of males per 100 females in the region	ABS 2001 <i>Census of Population and Housing</i>

% of households earning < \$300/week, 2001	The proportion of all households in the region that earned less than \$300 per week	ABS 2001 <i>Census of Population and Housing</i>
% of households earning > \$1200/week, 2001	The proportion of all households in the region that earned more than \$1200 per week	ABS 2001 <i>Census of Population and Housing</i>
Unemployment rate, 2001	The proportion of the labour force (which is the number of people actively seeking work) without employment	ABS 2001 <i>Census of Population and Housing</i>
Change in unemployment rate, 1991-2001	Change in the unemployment rate (as defined above) between 1991 and 2001	ABS 1991, 2001 <i>Census of Population and Housing</i>
Economic diversity, 2001	The proportion of employed people employed in the 'top three' industries of employment in the region. If the number is higher, this indicates lower economic diversity as a larger number of people are dependent on the 'top three' industries.	ABS 2001 <i>Census of Population and Housing</i>
SEIFA Index 2001	The Socio-Economic Index for Areas is a measure of the relative advantage/disadvantage of a region. It is an index based on a number of measures. Detailed information on the SEIFA can be found at www.abs.gov.au	ABS 2001 <i>Census of Population and Housing</i>
Estimated MSF licence holders living in region	Estimated MSF licence holders living in region, based on PIRSA licence data as at November 2004. This PIRSA database was adjusted slightly based on the MSF survey response data, which indicated some respondents lived in different postcodes to those their survey was sent to.	PIRSA licence data as at November 2004, adjusted based on differences in the MSF survey response data indicating some respondents lived in different postcodes to those their survey was sent to.

Estimated total number of paid non-licence holders working in MSF in the region (number of persons and full-time equivalent)	This estimate was based on respondent's reported number of paid employees, scaled up by regional response rate. Full-time equivalents were based on proportion of the week worked by employees. See the Methods section for a more detailed description of how this indicator was calculated.	MSF survey
Estimated total number of paid non-licence holders working in MSF in the region (number of persons and full-time equivalent)	This estimate was based on respondent's reported number of unpaid employees, scaled up by regional response rate. Full-time equivalents were based on proportion of the week worked by employees. See the Methods section for a more detailed description of how this indicator was calculated.	MSF survey
Average number of dependents per person involved in MSF	Based on respondent's reported number of 'child' and 'other' dependents. Calculated based on average of all respondents in region	MSF survey
Total household spending – total	Estimate of total household spending in region (including both spending by those living in region, and spending by other MSF participants who live outside region). See the Methods section for a more detailed description of how the total figure for the fishery was estimated from the survey responses.	MSF survey
Total household spending – derived from fishing income	Estimate of total household spending derived from fishing income in region (including both spending by those living in region, and spending by other MSF participants who live outside region). For example, if a respondent reported that 70% of their household income was from commercial fishing, their household spending was multiplied by 0.7 to derive the total household spending that is derived from fishing income. See the Methods section for a more detailed description of how the total figure for the fishery was estimated from the survey responses.	MSF survey
Total fishing business spending in the region	Estimate of total fishing business spending on operating costs (not including capital purchase or replacement costs) by region (including both spending by those living in region, and spending by other MSF participants who live outside region). See the Methods section for a detailed description of how the total figure for the fishery was estimated from the survey responses.	MSF survey

Estimated GVP of MSF catch landed in region	Estimate of total price received by MSF fishers from fish receivers (defined as sale price received by fishers after commissions are paid to fish receivers) in region. See the Methods section for a detailed description of how the total figure for the fishery was estimated from the survey responses.	MSF survey
Estimated GVP of commission paid to fish receivers in region	Estimate of total commission paid to fish receivers in region, inferred based on average commission reported by respondents. Should be used with care as not all sales involve payment of a specified commission to a fish receiver, so this approach has imputed a 'equivalent commission' based on limited data. See the Methods section for a detailed description of how the total figure for the fishery was estimated from the survey responses.	MSF survey
Number of community groups MSF participants belong to	Total number of community groups with an MSF member in region, based on respondents' reported memberships in each region. Note that an MSF member may be a member of more than one community group, so the total membership has the potential to exceed the number of MSF participants living in the region.	MSF survey
% of MSF participants who are members of one or more community groups	Based on proportion of respondents in the region reporting membership of one or more community groups.	MSF survey
Number of MSF participants who are members of fishing representative groups	Total number likely to be members of a fishing group, based on a scaling up of the responses received from (a) licence holders and (b) non-licence holders as the two groups had different overall levels of membership of fishing groups. See the Methods section for a detailed description of how the total figure for the fishery was estimated from the survey responses.	MSF survey
% of MSF participations who are members of fishing representative groups	Based on proportion of respondents in the region reporting membership of one or more fishing representative groups.	MSF survey
Average number of years and generations MSF members have lived in area	Average of all respondents in that region	MSF survey

% of MSF members planning to still live in the region in 5 years time	Proportion of respondents who answered 'yes' when asked if they planned to still live in the region in five years time.	MSF survey
Average rating of MSF residents of the local region as a place to live (/4)	Each respondent's rating of their local region (poor, fair, good, excellent) was converted to a 4 point scale (1,2,3,4) and the average score was calculated across all respondents in the region.	MSF survey
Average level of attachment to local community reported by MSF residents (/5)	Each respondent's attachment to their local region (no attachment, little attachment, some attachment, strong attachment, very strong attachment) was converted to a 5 point scale (1,2,3,4,5) and the average score was calculated across all respondents in the region.	MSF survey
Average distance travelled to access service	Calculated based on most frequently reported distance by respondents in region. Where two categories of distances were reported by a similar number of respondents, both were included. Note that respondents could only choose from five categories of distances, hence a wide range of distances is given.	MSF survey

Appendix 4: Methods

The goals of this study were two-fold: to test different methods of social assessment, and to assess the quality of life of those involved in the MSF and their links to the wider community.

Available sources of secondary data were limited, and so it was necessary to gather primary data on the MSF in order to understand the social characteristics of the fishery. This was done through a mail questionnaire and a series of workshops.

Both the questionnaire and workshops asked questions that were developed from a review of approaches and methods of social assessment in fishing and other sectors. The results of this review have been presented by Schirmer and Casey (2005) as a guide to undertaking social assessment in the Australian fishing sector, and are not discussed in detail here.

The review of existing literature found that a number of approaches to social assessment have been undertaken in other studies, focussing on a range of dimensions of social well-being. These dimensions have included:

- people's satisfaction with their life and work;
- people's levels of health, and the safety of their home and work environments;
- attachment to and satisfaction with the local area and community people live in;
- various dimensions of social capital;
- economic factors affecting well-being such as income;
- measures of economic dependence of broader communities on fishing, eg through measures of the spending of fishers in different regions;
- qualitative measures of key stresses arising from employment and other activities impacting well-being; and
- demographic factors and how they relate to all of the above.

This case study was designed to measure all these dimensions of quality of life and social well-being. This entailed specific design of many questions and approaches for the fishing sector, due to the unique nature of employment in commercial fishing and how that employment is structured. Some of the key survey design issues are discussed in the overview of methods below, which includes:

- an overview of the design, implementation, response rate and analysis of results of the mail questionnaire;
- an overview of the design, implementation and attendance at 12 workshops held in October and November 2004; and
- an evaluation of the effectiveness of the methods used.

Mail questionnaire

Because of the large size of the MSF, and the diversity within the fishery, achieving a thorough understanding of social dimensions of the fishery was best achieved by undertaking a quantitative survey of all fishers.

The questionnaire design and mail-out process broadly followed Dillman's (2000) *Tailored Design Method*, in which survey questions are pre-tested by peers and mail out of surveys is followed by regular reminder cards encouraging completion of the survey.

Design and testing of the questionnaire

The questionnaire was designed in a 3-round process:

- Initial questions were designed based on results of the review of social assessment literature discussed above;
- Questions were reviewed by four people involved in the MSF in various capacities, and revised based on their suggestions; and
- Questions were tested on a small group of five fishers, of varying age, who then discussed the questions and suggested changes to them. The questionnaire was revised based on this feedback and discussion.

This process ensured questions were phrased appropriately and covered relevant topics.

The survey questions have been attached to this report (Appendix 1). The broad categories of questions are outlined below. Within each of these categories, specific questions targeted to the fishing sector were designed for the questionnaire, rather than using existing generic question sets which often had limited applicability to fishers¹¹.

The questionnaire topics asked about the respondent's:

- life satisfaction;
- work satisfaction, including satisfaction with external constraints imposed on fishing, actual tasks undertaken while fishing, time spent fishing, and income received from fishing;
- health and safety, including health problems experienced and perceived risks involved in fishing work;
- social capital, including: amount of contact with friends, family and members of the local community; formal and informal links to, and amount of contact with, other fishers; access to services and membership of community groups; and perceived perceptions of the broader community about fishing;
- methods of fishing skills development;

¹¹ Quite often, questions sets on areas such as work satisfaction ask questions that are oriented more towards employees in a large business, and have limited applicability to owner-operators of small businesses such as many fishers in the MSF.

- fishing history and activities, including the length of time respondents had fished in the MSF, inter-generational involvement in fishing and types of tasks undertaken;
- perceptions of the challenges and future of fishing in the MSF;
- household spending patterns including usual location of spending;
- fishing business details including sales, commissions, number of paid and unpaid employees, location and number of fish receivers, and expenditure on running and capital costs;
- perceptions of changes affecting fishing business viability; and
- demographic characteristics (age, gender, dependents, marital status and formal education level).

Mail survey process

The mail questionnaire was designed to be answered by both licence holders and others working in the MSF.

It was possible to access the names and addresses of all licence holders operating in the MSF. However, there were no publicly available records or means of identifying contact details for non-licence holders involved in the fishery as paid or unpaid employees. The only way of reaching non-licence holders was to send multiple copies of the survey to licence holders and request they distribute copies of the survey to others involved in their fishing business. This was done as an exploration of potential methods for surveying all participants in a fishery rather than focussing on licence holders.

Rather than a sampling strategy, a census approach was used to surveying the licence holders. Surveys were distributed to the entire population of 'A' and 'B' Class MSF licence holders. Licence holders in other South Australian fisheries who are allowed to catch marine scalefish species were not surveyed, as in many cases they have little activity in the MSF.

The census approach was used as the likely response rate was unknown, making a larger survey more appropriate to ensure generalisable results. A census also allowed the diversity within the fishery to be fully explored.

Three surveys were sent to each licence holder, together with a request that they ask employees and partners involved in their fishing business to complete copies of the survey as well as completing one themselves. Self-addressed return envelopes were included with the survey.

The survey was sent with a covering letter (attached in Appendix 2) signed by key members of the MSF, encouraging fishers to complete the survey. As there are a large number of Greek fishers in the MSF, the covering letter was also translated into Greek to encourage those members of the fishery who speak Greek as a first language to return the survey. Respondents were also provided with a toll-free number they could call to seek assistance with completing the survey.

After the initial mail-out, reminder cards were mailed weekly for five weeks to ask respondents to complete and return the survey. A second copy of the survey was sent with the third reminder.

Response rate

Licence holders

An initial sample frame of 416 licence holders was surveyed. A total of 30 licences in the MSF were sold or changed hands, and 25 people acquired licences, during the time period when the survey was sent out and responses were received (August 2004 to the first week of November 2004).

Of the licences which changed hands, 5 were in the West Coast region (8.5% turnover rate), 15 in the Eyre Peninsula/Whyalla region (13.9% turnover), 2 in the Yorke Peninsula and Pirie region (1.6% turnover rate), and 8 in the Adelaide region (10.4% turnover rate).

Of the 30 licence holders who sold or transferred licences, 11 responded to the survey, with four of these indicating on the survey that they had recently transferred, or were about to transfer, their licence. Two others had left their address or returned the survey unopened. Six others either rang or returned the survey uncompleted with an explanation that they had sold their licence and would not be responding. These eight were removed from the sample frame. Of the remaining 11 who had sold licences but did not respond or indicate why they hadn't responded, six were removed from the sample frame, based on the assumption that this many were likely to have sold or transferred their licences before having the opportunity to complete the survey. Those removed were removed from each of the five regions identified above using an approach which ensured the number of removed licences from each region was consistent with the turnover rate.

In addition, one licence holder had recently died, and a further two were away during the time the survey was undertaken. A further seven indicated they either: had never fished in the MSF (two); had not fished for some years (four); or had only just purchased a license so had no experience in the MSF on which to base survey responses (one). Three other licence holders stated they were too ill to complete the survey. One stated they were not responding as they were trying to sell their licence, and one rang to explain that illiteracy prevented completion of the survey and declined assistance to complete it. Of these, ten were removed from the sample frame. As the goal was to survey currently active MSF fishers, those who had not fished recently (including those who had been too sick for some time to fish for reasons not related to their fishing work) were not included.

Therefore the overall sample frame was reduced by a total of 24 to 392. A total of 230 MSF licence holders responded to the survey, giving an overall response rate of 59%.

Non-licence holders

It was possible to analyse the response rate of non-licence holders to some extent¹². A total of 50 surveys were received from non-licence holders. However, estimates of the number of non-licence holders working in the fishery (not including those working in fish processing) could be made based on information provided in the questionnaire by licence holders. Based on these survey responses, it was possible to estimate that approximately 450 non-licence holders have either part-time or full-time employment in the fishery, and 407 unpaid non-licence holders work either part-time or full-time in the fishery. This indicates that there was a response rate of approximately 5.8% from non-licence holders.

¹² It should be emphasised here that the survey did not target those involved in processing of catch, with a small number of respondents worked in MSF fishing businesses that undertook their own processing. The term 'non-licence holders' is used throughout this report to refer to those who undertake work associated with catching and transporting catch to fish receivers but do not hold an MSF licence. It does not refer to those employed in processing.

While response rates of non-licence holders were low, they are useful to provide a picture of the overall fishery, rather than simply of licence holders, although they could not be analysed by region to look for significant differences due to the small number of responses from non-licence holders in each region.

Non-response bias

With any quantitative survey, there is the possibility that those who complete the survey are not representative of the population being surveyed – in other words, for bias to occur as a result of some sectors of the sample frame not responding to the questionnaire. Non-response bias could only be examined for licence holders, as no data were available on the demographics or characteristics of the non-licence holder population against which to compare response rates.

Non-response bias was analysed for licence holders by:

- licence type;
- gender;
- age; and
- geographic location.

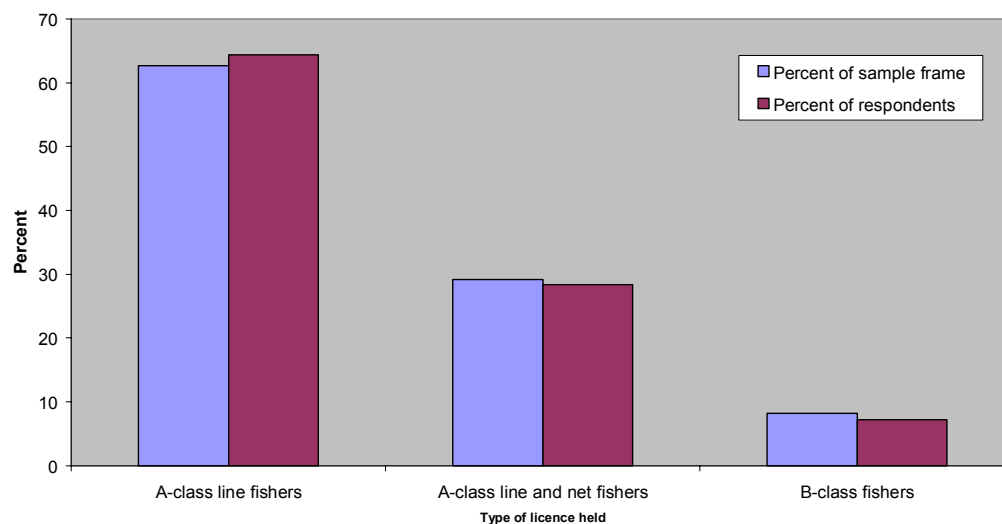
Further analysis of non-response bias would have required directly contacting those who did not respond to the survey to find out some basic details about their fishing business. This was not possible within the timeframe and resources of the study.

Licence type

Similar response rates were achieved from the three different licence types in the fishery. A total of 58.8% of A-class line fishers, 55.8% of A-class line and net fishers and 50% of B-class fishers responded to the survey. The differences in response rates were not statistically significant, and so the differences in response rates did not bias the results of the survey.

Figure 31 shows the distribution of licence types among the sample frame and respondents, and it can be seen that they are very similar.

Figure 31: Response rates from different types of licence holders



Gender

Based on the first names of licence holders, it was estimated that between six and twelve licence holders in the MSF were female. The uncertainty resulted from several people having first names that are common to both men and women. Of the respondents who were licence holders, seven were women.

This indicates that there was a high response rate from female licence holders, while the response rate for males was approx. 57-58% (depending on the total number of licence holders who were male, which could not be determined with total accuracy).

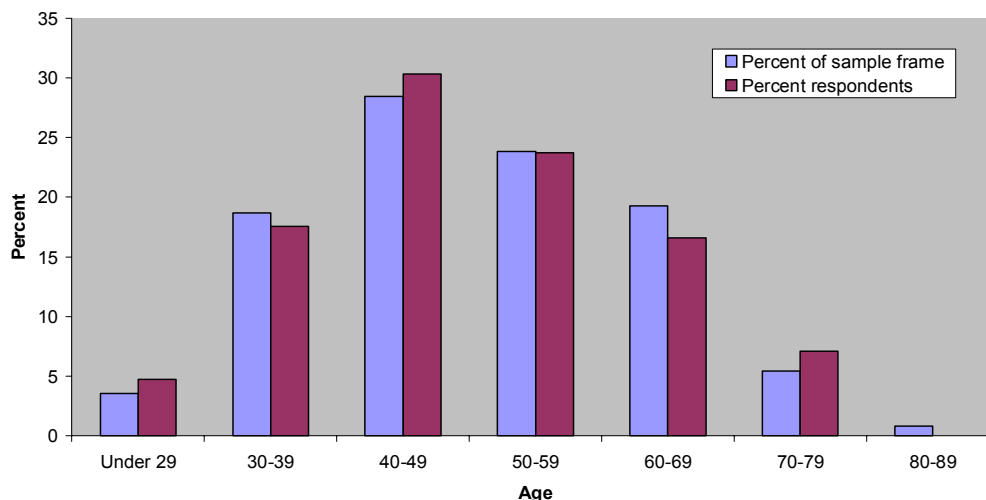
This represents a good response rate for both genders. Because of the low overall number of female licence holders, however, any comparison of responses by gender had to include non-licence holders, of whom a larger proportion were women, to obtain meaningful results. In the results, potential limitations of this combination of licence and non-licence holder populations are outlined where relevant.

Age

Respondents had an almost identical distribution of ages to those in the total population of licence holders, as can be seen in Figure 32. When the age distribution of respondents and the total population of licence holders were compared, no statistically significant difference between the two groups was found, further confirming that the survey achieved a very good response rate from each age group.

This indicates that the mail questionnaire was able to be completed by people of all age groups.

Figure 32: Response rate of different age groups

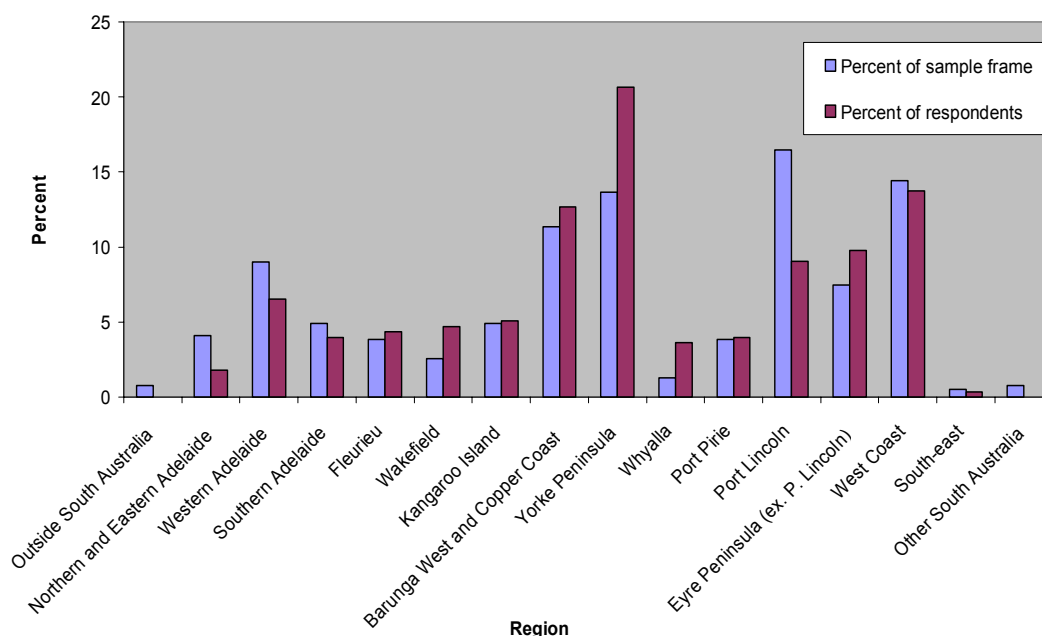


Geographic location

The survey responses were analysed by geographic region. There were some differences between the proportion of surveys distributed to different regions, and proportion of respondents from that region, as can be seen in Figure 33 which shows the proportion of responses from different local government regions against the proportion mailed to each LGA region. However when tested, the differences visible in Figure 33 were not statistically significant.

As well as not being statistically significant, the two regions for which there was a larger difference between the proportion of the sample frame and the proportion of respondents in the region both had larger populations of MSF licence holders. Because populations were larger, a reasonable number of responses was still received, allowing a robust analysis of MSF impacts in each region.

Figure 33: Response rates from different regions



When the self-reported postcodes of respondents were compared to the postcode their survey had been sent to, it was found that a small number of respondents reported living in a different region to that their survey had been posted to. In particular:

- some respondents had mailing addresses in Adelaide but did not live there, while more reported living in the Yorke Peninsula than was expected based on postal addresses to which surveys were sent; and
- some respondents reported living outside Port Lincoln although their mailing address was in Port Lincoln, perhaps indicating why there were more postal addresses in Port Lincoln proportionally than responses received, and less in the rest of the Greater Lincoln area (excluding Port Lincoln) than expected based on respondent's self reported addresses.

In general, the response rate from different regions was relatively similar, and there were no bias problems arising from differences in response from different regions.

Statistical analysis of survey data

Findings in this report are presented so they can be easily understood without a need for knowledge of the statistical methods used in the data analysis. A brief overview is given here of key statistical tests used.

All statistical analysis used the SPSS software package. The types of statistical analysis used were descriptive statistics, Spearman rank order correlations, Gamma correlations, Kruskal-Wallis and Pearson chi squared tests.

Descriptive statistics are used to present and describe the responses provided to questions in the survey. The statistical tests listed above have then been used to explore these results for statistically significant differences in the pattern of occurrence of particular variables. For these statistical tests, results were considered statistically significant if they met the ' $p < 0.05$ ' criteria, where 'p' refers to the probability of a result occurring, and 0.05 refers to the level of likelihood of that result. This criteria meant that the probability of the results occurring randomly had to be less than 5% for results to be considered significant.

Spearman rank order correlations were used to identify hypothesised relationships between variables. For example, fisher age was hypothesised to be related to fishing income. Spearman rank order correlations place respondents on each variable from highest to lowest and determine the extent that there is a relationship between ranks on the two variables. Where relationships between ordinal variables were being examined, Gamma correlations were used. For both types of correlation, a negative correlation coefficient or r_s indicates that a higher score on one variable is linked to a lower score on the other. The value of r_s can range from 1 to -1. Values closer to 1 or -1 indicate a stronger relationship.

Kruskal-Wallis chi-square tests were used to determine the presence of significant differences across continuous variables for two or more independent groups. For example, this test was used to determine if there were significant differences in the ages of members and non-members of fishing groups.

The Pearson chi-square test was used to determine the presence of differences across ordinal or binomial data for two or more independent groups. For example, it was used to determine if there were significant differences in the reported level of satisfaction with work of members and non-members of fishing representative groups.

Methods for estimating regional impacts

When estimating the impacts of the MSF on different South Australian regions, it was necessary to scale up results from the responses received to estimate the impacts of the entire fishery. This section details the methods used to calculate spending and other impacts for the total fishery from the survey responses received.

Estimate of number of licence holders living in region

An estimate of the number of licence holders living in each of 13 South Australian coastal regions was made based on adjusting the MSF licence database to reflect the differences between mailing addresses and residential addresses of those who responded to the survey.

Estimated number of paid and unpaid non-licence holders working in the fishery

The estimated number of paid and unpaid non-licence holders working part-time or full-time in the MSF was calculated by multiplying the number of licence holders in each region by the average number of (a) paid and (b) unpaid employees per licence holder across the entire MSF.

An average across the entire MSF was used as the low number of responses in some regions otherwise may have skewed the regional response to make numbers of employees appear unnaturally high or low.

The full-time equivalent (FTE), i.e. the number of people that would be involved in the fishery if all worked full-time, was calculated based on the same approach. The reported number of days worked per week by part-time employees was used to calculate the FTE of employees - e.g. if a part-time employee worked 3 days per week, they were 0.6 FTE. Where

licence holders indicated they had an employee but provided no details of whether that employee's work was full-time or part-time, the employee was assumed to work half-time (i.e., to be a 0.5 FTE). This was based on the high level of part-time employment reported by those who did provide details on whether their employees were full-time or part-time.

Estimates of community based activities by region (total membership of fishing and community groups)

The total estimated number of MSF participants who were members of community groups in different regions was based on multiplying membership reported in each region by (a) the licence holder response rate per region, and (b) an adjustment factor for paid and unpaid people involved in the fishery, which was constant across all regions rather than based on reported membership of groups in each region by non-licence holders. This was reasonable as membership of community groups was not significantly different across licence holders and non-licence holders. Due to the low response rate from non-licence holders it was inappropriate to calculate a response rate by region for non-licence holders.

When results were scaled up for membership of fishing groups, however, the large difference in membership rates by licence holders and non-licence holders was also taken into account. Only 18.4% of non-licence holders reported membership of fishing groups, while 40.7% of licence holders did. Using a flat adjustment based on proportion of overall response from the two groups to the survey would therefore have overestimated total fishing group membership.

Estimating household spending by region

A total of 181 respondents provided comprehensive details of household spending, including 147 licence holders and 34 non-licence holders (those who reported only some of their household spending were not included).

Response rates of licence holders per region were calculated, and scaled up to the total estimated number of licence holders in the region, adjusted to remove presence of non-licence holders in the spending data. This provided data on household spending by licence holders.

Household spending by non-licence holders was calculated based on the proportion of (a) respondents and (b) overall MSF population represented by non-licence holders. The small number of licence holder responses meant that taking the actual non-licence holder response by region, rather than an average across the whole survey, would have created unrealistic regional estimates due to the fact that only one or two non-licence holders, who may have been unrepresentative, responded per region.

All spending was coded by region. If a respondent did not indicate where spending occurred, it was assumed spending was either (a) local for those goods typically purchased locally, or (b) if an expense usually paid to a business which operates in many regions, eg phone bills are paid to Telstra by phone or on-line, a code for 'unspecified region' was applied. Where a respondent indicated that their spending on an item occurred across more than one region, the amount spent was apportioned equally between those regions.

Household spending was calculated based both on total household spending (including income derived from fishing and outside fishing), and on fishing-dependent spending (based on the proportion of income derived from commercial fishing). For the latter, if a respondent had not indicated what proportion of their household income came from fishing, a value of 70.3% was inputted, reflecting the average proportion of household income from fishing for those who did provide these details.

As there were no significant differences in household spending reported by licence holders and non-licence holders, no adjustment of levels of spending between these two groups was necessary when scaling up the responses to reflect the impact of the entire fishery.

However, as the data was for household, rather than individual, spending, and some people had more than one member of their household working in fishing, some adjustment needed to be made to avoid an overestimate of household spending. Of paid and unpaid employees, an estimated 230 (reflecting an estimate for the whole fishery, rather than the survey respondents only) were family members of licence holders, representing 20.76% of respondents. The total was therefore multiplied by 0.7924 to adjust total figures to reflect the true number of households involved in the MSF.

When calculating the proportion of household spending derived from fishing income, a slightly different adjustment needed to be made. Firstly, total household income was multiplied by the proportion of income derived from fishing.

It was assumed that no unpaid employees derived household spending from fishing work. The responses were scaled up to represent the total number of people in the fishery, then multiplied by 0.693 to remove the 30.69% of people in the fishery who undertake unpaid work.

Estimated fishing business spending

A total of 155 respondents reported in detail on their fishing business expenditure during financial year 2003-04 (a further 30 provided some details of individual expenses but not full expenditure for their business). These details were provided only once for each business, so each of these was assumed to represent a single licence holder.

As there were no significant response biases which might affect expenditure data, with a good spread of respondents of all ages and licence types, there was no need to adjust the data except to apply a simple scaling up from responses to estimate the total impact of the fishery.

The calculation of total spending on running costs by fishing businesses was based on the following process:

- The response rate to the fishing business running costs section of the survey was calculated by region;
- A region code was assigned to each expense. Expenses such as licence fee, phone and internet payments were not assigned to a region but instead given a 'State wide' code to reflect that they are paid to agencies/businesses which operate State-wide and cannot be assigned to a particular region. Where the respondent had not indicated where the expenditure occurred, it was assumed the expenditure was in their local region, excepting for expenses paid to an agency/business operating across the State;
- Expenditure was summed by region; and
- Regional expenditure was scaled up based on the response rate in that region or, for regions in which no MSF respondents lived and for Adelaide regions, by the overall response rate across the whole survey. This approach was used as the majority of spending by respondents was local, with the exception of spending in Adelaide. Respondents who lived in all regions reported spending having some fishing business spending activity in the Adelaide region, and therefore spending occurring in Adelaide

was scaled up by a factor reflecting the total survey response rate, rather than by a regional response rate.

Commissions paid to fish receivers were not included in fishing business running costs, as some fishers reported their gross sales with commission already removed, while others reported commission as a separate expense. Not all paid a formal commission, with many delivering to processors who do not operate on a commission payment basis.

Catch value by region

The catch value by region was estimated based on the data provided by 139 respondents who provided details of their gross sales and location of their fish receivers.

A further seven respondents were removed from the analysis as they had not provided information about the location of their fish receivers. It was not possible to assign a likely catch landing location, as many respondents reported their fish receivers were not located in their homeport or residential region. This left 132 respondents who had provided data about gross sales and fish receiver locations.

It would be useful to compare the catch value data provided by respondents to SARDI data, which would enable assessment of potential limitations of the data and any bias in the catch value of respondents compared to the profile of catch value across the fishery from SARDI data. The representativeness of the catch data provided by respondents is not known, although the high number of respondents and the inclusion of a similar proportion of A-class line, A-class net and line and B-class fishers in the responses indicates a reasonable degree of representativeness.

To ensure consistency, in the catch value by region the gross value has been adjusted so that all figures reflect gross value after any commission reported paid to fish receivers, the only option given that for those respondents who provided a gross value of catch with a commission or return to the fish receiver already factored into the price, it was not possible to infer a commission to the fish receiver.

If respondents had not indicated what proportion of their fish catch was from the MSF, it was assumed 100% was, based on the most frequent response amongst respondents who did provide data. This was reasonable given that only 8 respondents failed to indicate the proportion of return, and of the 131 who indicated the proportion, 120 reported that 99-100% of their catch was from the MSF.

An estimated value of commission to fish receivers or margin to fish processors was calculated based on the average commission reported which was 11.08%.

Qualitative workshops

Twelve workshops were held in South Australia during October and early November 2004 to discuss the early survey results with fishers and ask further questions aimed to explain survey responses in more depth.

Rather than specifically identify fishers to be asked to attend workshops, an open invitation was issued by mail to all fishers to attend the workshop closest to them. As far as practicable, workshops were strategically located to be accessible to the largest number of fishers possible. The mail invitation was received approximately one week prior to the first workshop (although only two to three days prior for some fishers). Both licence holders and others involved in the fishery were encouraged to attend.

Additionally, where possible some fishers were rung in each region prior to workshops being held. Contact details for local fishers were provided by the South Australian Fishing Industry Council and some members of the MSFMC. These fishers were encouraged to attend the workshops, and to encourage others to attend.

Attendance at the workshops was variable, as can be seen from Table 2. A wide range of fishers attended, including both net and line fishers, fishers of different ages, and fishers with varying histories of involvement with commercial fishing – ranging from only a few months of fishing to over 50 years. A small number of female fishers (six in total across the 12 meetings, including both licence and non-licence holders) attended the meetings, with the majority of attendees male. Those who attended the workshops, when asked, stated that those present were the people most active in representing MSF fishers at a number of forums, e.g. through management committees.

Table 5 provides details of the date, location and attendance at workshops. All workshops were held in the evening, from 7pm onwards. At each workshop, some food and drinks were provided for attendees. The workshops tended to run for some time – often finishing as late as 10.30 or 11pm, with meetings running as long as attendees wished to stay.

Table 5: Workshop dates, locations and attendance

Date (2004)	Location	Venue	Number of attendees
13/10	Wallaroo	Prince Edward Hotel	2
14/10	Maitland	Hotel Maitland	5
15/10	Edithburgh	Football Club	6
20/10 and 21/10	Ceduna	Foreshore Hotel (20/10) and fish processor (21/10)	10
21/10	Streaky Bay	Streaky Bay Hotel	10
22/10	Whyalla	Hotel Spencer	0
27/10	Port Lincoln	Spencer TAFE	0
28/10	Port Pirie	Port Side Tavern	8
29/10	Port Wakefield	Port Wakefield Golf Club	3
3/11	Kingscote	Ozone Hotel	4
4/11	Victor Harbour	Hotel Victor	3
5/11	Adelaide	SAFIC	3

In each workshop, attendees were presented with a number of graphs showing descriptive analysis of the early results of the survey. For each area of results, they were asked (a) if they thought the results seemed appropriate, and (b) what had caused the patterns seen. For example, fishers were asked why the majority of respondents were reporting a high level of satisfaction with their life overall, and a lower satisfaction with the income they received from their fishing work. The questions were open-ended and attendees were encouraged to discuss issues for some time and explore potential explanations.

The information provided was very useful in identifying the factors leading to particular survey results, and where responses to questions reflected different interpretations of the survey questions.

The data gathered in the workshops allowed a much richer qualitative interpretation of the survey results, and analysis of the historical and contextual factors leading to current levels of social well-being and quality of life for fishers.

The workshop data was analysed qualitatively, with data coded into key categories raised at the workshops. The results are presented together with statistical results for each survey topic.

Effectiveness of different methods

A specific goal of this study was to assess the effectiveness of different approaches for use in social assessment of commercial fishing. The following aspects needed to be assessed:

- Effectiveness of using a mail questionnaire;
- Effectiveness of workshops; and
- Appropriateness of questions and topics.

Effectiveness of mail survey process

Overall, the mail survey approach used was very effective. The use of a traditional mail questionnaire with reminders sent out weekly and a toll-free phone number available for respondents to ring for assistance achieved a 59% response rate from licence holders.

The analysis of non-response bias showed that there was no significant non-response bias by region, age, or licence type. This shows that the Dillman style mail questionnaire process worked very effectively to achieve responses from different types of fishers.

In addition, the survey was completed by some non-licence holders involved in the fishery. While the number who completed the survey was small, this still represents a significant advantage over having data only from licence holders, and added considerably to the breadth of results of the survey.

In future more methods of targeting non-licence holders should be explored, although in this study no options for accessing non-licence holders other than via licence holders could be found.

Effectiveness of workshops

The workshops, while gathering useful qualitative data for the study, did not achieve the attendance hoped for, as can be seen by the record of attendance in Table 2. Variable attendance occurred at different locations. This variation was probably related to a number of factors, including:

- Weather conditions, with fishers more likely to be out fishing if weather conditions were good and therefore less willing/able to attend the workshops. Moon phases may also have affected attendance, with more out fishing during particular phases. When the workshops coincided with poor weather, attendance was generally higher;
- A general reluctance to attend any meetings relating to fishing, resulting from overall disillusionment with consultation processes;
- Difficulty travelling to meetings. Despite meetings being held in several locations, fishers located in more remote and smaller communities still had to travel some

distance to attend, and were unlikely to make this effort - particularly if fishing conditions were good; and

- People forgetting workshops were on. Several attendees suggested that reminders in the day or two prior to the workshop were necessary to achieve attendance. Higher attendance generally occurred when a local fisher had been contacted who then encouraged others to attend the workshop in the day or two immediately prior to the workshop being held.

It would be preferable to time workshops flexibly so they could occur during periods of bad weather, when more fishers are likely to attend. This is, however, difficult to achieve in practice. One effective approach was to ensure time was available the day after the workshop was held to visit any fishers who hadn't attended the workshop, but who had indicated they wished to provide input to the study. In Ceduna, for example, only one person attended the scheduled workshop, with others out fishing or at other events. However, that fisher suggested that the next day we visit one of the local fish processors where fishers tended to gather. The next day at the processor we were able to talk to nine fishers for over two hours.

A system with more reminders about workshops, and flexible timing of workshops, perhaps even structuring workshops as 'drop-in' sessions held over several hours or on multiple days – might help improve attendance. However, it should be recognised that the overall cynicism and disillusionment of fishers with consultation and meetings presents a barrier to achieving workshop attendance that is hard to overcome.

Appropriateness of survey questions

The majority of survey questions were answered relatively easily by fishers. Discussion at the workshops revealed that respondents had interpreted most questions in the way intended when the survey was designed.

The approach taken to designing the questionnaire, in which questions were designed to be specifically applicable to those working in the MSF, and to answer more general questions about social well-being, was clearly successful. Use of more generic question sets, for example some of those on work satisfaction that are commonly used for large organisations, would probably have reduced the response rate, based on responses received to more generic questions during the questionnaire testing phase.

This highlights the importance of working with those in the fishery to design meaningful questions, rather than using existing question sets from previous surveys which may not be applicable.

However, a small proportion of the questions asked in the questionnaire were problematic and may need re-design in future surveys. There were also some suggestions at workshops for additional questions that could be included in future surveys.

Problematic questions included:

- Questions on experiences of injuries and work-related health problems. Some workshop attendees questioned the broadness of the health symptom categories included in the survey, although others believed they were appropriate. Additional categories were suggested, including particularly questions about joint problems – particularly knee problems – resulting from fishing work;

- Perceptions of risk of fishing work. Invariably the perceptions of risk reported were relatively low compared to the types of risks reported in workshops, indicating that answers to this question do not reflect a consistent ranking of risk. To compare risk of fishing work to other industries, other indicators should be used, such as occupational health and safety records;
- The ‘very few, few, about half, most, almost all’ categories provided in questions about communication with family, friends and other people working in fishing were difficult for some respondents to answer. The categories provided in these questions should be revised in any future surveys to better reflect whether family members work in fishing jobs;
- Many respondents did not completely answer questions about their level of activity in fishing and community organisations, indicating the questions asked for too much detail;
- There was some confusion in answers to questions about the number of generations in a family involved in fishing activities or living in the local area where the respondent now lives, with some respondents answering ‘0’ when the question asked for a response of ‘1’ if they were the first generation;
- There also seemed to be some confusion with the definition of dependents. Some respondents who provided 100% of the household income did not list their wife/husband/de facto partners as dependents, suggesting that either their partners were supported through other means or that respondents were unclear about who to define as ‘dependents’;
- The question ‘What year were you born?’ (with a blank line for responses) was sometimes misread as ‘Where were you born?’ with some respondents providing town and city names. To minimise this, it is recommended that future surveys provide a more structured response category such as ‘19__’.
- There was some difficulty identifying whether particular items were purchased locally if they had been purchased via mail or electronic payment, e.g. for fishing licence fees or payments of phone bills.

Suggestions for additional questions in future surveys included:

- Questions about plans and intentions with regard to fishing in the future, eg asking whether fishers were planning to remain in the fishery; and
- Questions asking about the level of debt of the fishing business to assist in analysing how vulnerable fishers are to changes affecting their income.