

Economic Indicators
for the SA
Marine Scalefish Fishery
2006/07

A report prepared for
Primary Industries and Resources South Australia

Prepared by



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Acknowledgments

Estimation of economic indicators for the SA Marine Scalefish Fishery for 2003/04 relied heavily on the results of a survey carried out by the Bureau of Rural Sciences (BRS), as a part of a project '*Social Impacts of the South Australian Marine Scalefish Fishery*' (Schirmer and Pickworth 2005).

In the preparation of economic indicators for the period 1997/98 to 2002/03 and 2006/07, EconSearch has relied heavily on the voluntary cooperation of fishing operators in providing data for the surveys and is indebted to various individuals and institutions for providing the necessary information for updating the indicators between survey years. The continuing advice provided by industry representatives and the support of the South Australian Fishing Industry Council (SAFIC) and the Marine Fishers Association (MFA) is greatly appreciated. In the task of updating the indicators, EconSearch is indebted to various individuals and institutions for providing necessary information. PIRSA and SARDI officers provided assistance, were supportive of the data collection and offered valuable advice.

Abbreviations

ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
BRS	Bureau of Rural Sciences
CPI	consumer price index
EBIT	earnings before interest and tax
FMC	Fishery Management Committee
FRDC	Fisheries Research and Development Corporation
fte	full time equivalent
GRP	gross regional product
GSP	gross state product
GVP	gross value of production
PIRSA	Primary Industries and Resources South Australia
R&M	repairs and maintenance
SA	South Australia
SARDI	South Australian Research and Development Institute

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Executive Summary

The objective of this report is to present a set of economic performance indicators for the South Australian Marine Scalefish Fishery for 2006/07 as well as to develop a consistent time series of economic information to aid management of the fishery in future years. The economic indicators detailed in this report are summarised below.

Gross value of production

- The total catch of marine scalefish species in 2006/07 was 2,978 tonnes, down 7 per cent from the previous year.
- The gross value of production of the Marine Scalefish Fishery in 2006/07 was almost \$19.9 million, a 14 per cent increase from the previous year.
- The average price per kilogram of marine scalefish species increased between 2005/06 and 2006/07, from \$5.48/kg to \$6.66/kg an increase of 22 per cent.

The cost of management of the fishery

- Average fees paid per licence holder increased by \$156 per licence holder between 2005/06 and 2006/07.
- Between 2006/07 and 2007/08 average fees per licence holder increased by \$239 to \$4,423 per licence holder.

Financial performance indicators

- Based on the results of a survey of licence holders conducted in 2007, it was estimated that the average gross income per surveyed boat in the Marine Scalefish Fishery in 2006/07 was approximately \$95,000, more than double that of the previous year.
- It was estimated that average total cash costs per boat increased by 47 per cent between 2005/06 and 2006/07.
- For the Marine Scalefish Fishery as a whole, the average rate of return to total capital was -2.8 per cent in 2006/07 (-8.1 per cent in 2005/06). For fishers with net and line entitlements the rate of return to total capital was 4.2 per cent and for line only fishers it was -6.9 per cent.

Economic impact of the fishery

- Total Marine Scalefish Fishery related contribution to GSP in the South Australian economy was approximately \$30.0 million in 2006/07; \$6.1 million generated by the Marine Scalefish Fishery directly, \$3.5 million generated by downstream activities and another \$20.4 million generated in other sectors of the economy.
- Total direct employment in the fishery in 2006/07 was estimated to be 540 fte and downstream activities created employment of 73 fte state-wide. Flow-on business activity was estimated to generate a further 235 fte jobs in the state to give total employment of 848 fte jobs state-wide in 2006/07.

Economic rent

- It was estimated that there was no economic rent generated in the South Australian Marine Scalefish Fishery in 2006/07, with a calculated value of -\$4.5 million (-\$10.3 million in 2005/06).

1. Introduction

All the major fisheries in South Australia (SA) operate in accordance with fishery management plans that determine the primary management objectives of the fishery. Economic performance indicators are a feature of these plans and annual reports on them are required for the Minister for Agriculture, Food and Fisheries to meet the obligations of section 7 of the *Fisheries Act 2007*.

This report is the tenth annual economic indicators report for the South Australian Marine Scalefish Fishery. The first report, *Economic Indicators for the SA Marine Scalefish Fishery 1997/98* (EconSearch 1999), reported on the results of an initial economic survey of the fishery. The second and third annual reports, prepared for 1998/99 and 1999/00 respectively, provided an update of the 1997/98 economic indicators (EconSearch 2000 and 2001). The fourth annual report outlined the fishery's recent economic performance based on the results of an additional survey of licence holders (EconSearch 2002). The fifth and sixth reports, prepared for 2001/02 and 2002/03, provided an update of the 2000/01 economic indicators based on the second survey of the fishery (EconSearch 2003 and 2004). The seventh, eighth and ninth reports outlined the fishery's economic performance from 2003/04 to 2005/06 based on the 2004 Bureau of Rural Sciences survey of licence holders (EconSearch 2006 and 2007a).

The objective of this report, *Economic Indicators for the SA Marine Scalefish Fishery 2006/07*, was to outline the fishery's recent economic performance derived from the 2007 survey of licence holders.

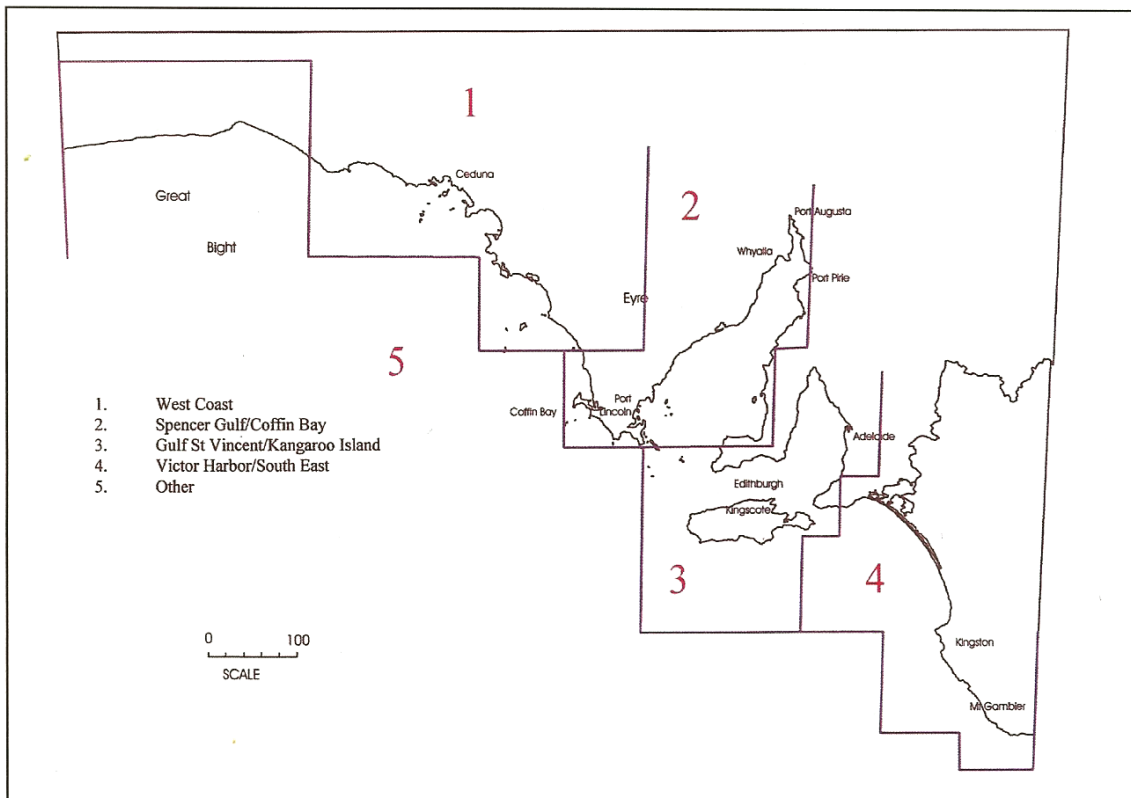
The aim of all the studies is to present a set of economic performance indicators for the fishery as well as to develop a consistent time series of economic information to aid management of the fishery in future years. The economic indicators detailed in this report include:

- gross value of production (catch and price);
- the cost of management of the fishery;
- a summary of factors that affect costs in the fishery;
- financial performance indicators (income, costs, profit and return on investment);
- the economic impact of the fishery;
- economic rent;
- external factors that influence the economic condition of the fishery;
- prices for Marine Scalefish Fishery products in SA and other domestic markets;
- contribution to the community; and
- a range of demographic and other indicators.

For purposes of comparison, summary economic indicators for all South Australian commercial fisheries, up to 2005/06, are presented in Appendix 2.

Financial performance estimates and economic impacts are presented on a regional basis in accordance with SARDI's region classifications. Fishing regions for the SA Marine Scalefish Fishery are illustrated in Figure 1.1.

Figure 1.1 Fishing regions, SA Marine Scalefish Fishery, 2006/07



Source: SARDI Aquatic Sciences

Regional economic indicators have not been reported for fishing regions 4 and 5 as there were insufficient survey responses from these regions. Responses from these regions have, however, been included in the results for the state as a whole.

Financial performance estimates have also been presented as an average for the whole state and by fishing method. Estimates are presented for those licence holders who hold a line entitlement (Restricted and non-restricted MS licence) but no net entitlement and for those who hold both a net and line entitlement.

2. Survey and Definition of Terms

2.1 Survey of Licence Holders in the Fishery, 2007

Financial performance indicators for the fishery in 2006/07 were based on the results of two separate surveys. The sample for each survey was based on the entitlements held by the licence holder. Licence holders were divided into two groups:

- line only licence holders (licence holder who owns a line entitlement but no net entitlement); and
- net licence holders (licence holder who holds both a net and line licence).

The survey of line only licence holders was undertaken for the sole purpose of preparing this report. The survey of net licence holders was a part of a broader study undertaken to assess the ecological, social and economic impacts of the net licence buyback and area closures.

The questionnaire used for both net and line only licence holders was based on the previous survey conducted in 2004 by BRS as part of a broader study into the social well-being of people working in the South Australian Marine Scalefish Fishery.¹

In September 2007, all licence holders in the fishery were sent an introductory letter outlining the survey and encouraging them to participate. Licence holders were then contacted and face-to-face surveys were carried out. A total of 117 usable responses were received; 80 from line only licence holders and 37 from net licence holders. The completed survey responses represented 37 per cent of the total active licence holders in the fishery.²

Responses were obtained from licence holders from four of the fishing regions, the number of respondents from each region is summarised in Table 2.1.

Table 2.1 Survey responses by fishing region, 2007

Region	Survey Total	Region Total	% of Total
Spencer Gulf/Coffin Bay	63	161	39%
Gulf St Vincent/KI	33	107	31%
West Coast	14	49	29%
Victor Harbor/South East	7	17	41%
Total	117	335	35%

¹ The full project report is available from the Bureau of Rural Sciences website, at www.brs.gov.au. A summary of the social issues facing the Marine Scalefish Fishery is provided in EconSearch 2006a.

² A licence holder is considered 'active' if they fished for one day or more during the 2006/07 financial year.

Of the 335 licence holders in the fishery, 218 did not provide a response to the survey for the following reasons:

- could not contact (174);
- licence holder not active (22); and
- not interested in participating in the survey (22).

A summary of survey responses and how they are representative of the fishery are summarised in Table 2.2.

Table 2.2 Survey of Marine Scalefish Fishery licence holders, 2007

	Survey Total	Fishery Total	% of Total
Line Entitlement Only			
Catch (tonnes)	968	1,863	52%
Value of Catch (\$m)	5.5	14.2	39%
Days Fished ^a	9,956	n.a.	-
Number of Licence Holders	80	286	28%
Net Entitlement			
Catch (tonnes)	631	1,115	57%
Value of Catch (\$m)	3.7	5.7	66%
Days Fished ^a	5,883	n.a.	-
Number of Licence Holders	37	49	76%
Total Fishery			
Catch (tonnes)	1,599	2,978	54%
Value of Catch (\$m)	9.3	19.8	47%
Days Fished ^a	15,839	30,319	52%
Number of Licence Holders	117	335	35%

^a Measured as the number of 'boat days' fished.

Source: 2007 survey responses, SARDI Aquatic Sciences and PIRSA Fisheries.

The 117 completed responses account for 35 per cent of the total number of licence holders (28 per cent of total licence holders in the line only sector and 76 per cent in the net sector). Catch by survey respondents accounted for 54 per cent of the total quantity and 47 per cent of the total value of the total marine scale fishery catch (Table 2.2).

2.2 Definition of Terms³

Gross value of production (GVP) is the total year's catch for the whole fishery valued at the landed beach price.

Gross income (Total boat cash receipts) is the income received by the individual licence holder from the sale of fish prior to any deductions for freight and selling charges.

Cash costs (Total boat variable and fixed costs) include the payments for hired labour and materials and services (including payments on capital items subject to leasing, rent, interest, licence fees and repairs and maintenance). If family or other labour were unpaid, an estimate of the cost of labour was made based on the time spent on fishing business related activity.

Cash operating surplus (Boat cash income) is the difference between gross income and total cash costs. It has been calculated both with and without the imputed value of unpaid labour included in cash costs.

Depreciation is a non-cash cost representing the wear and tear on capital items during the year. Participants in the 2007 survey were asked for information on the age and current value. This was to be used to determine the depreciation rate of fishing equipment⁴.

Earnings before tax is defined as cash operating surplus less depreciation.

Earnings before interest and tax (Boat business profit) is defined as cash operating surplus less depreciation plus interest.

Capital is defined as the value placed on assets employed by the fishing business. It includes the total gross value of the boat, including the value of the hull, engine and other on-board and shore based plant, equipment and structures. Estimates are also reported for the value of licences although these data were not collected as part of the BRS survey.

Rate of return to fishing gear and equipment is calculated by expressing earnings before interest and tax as a percentage of the capital value of fishing gear and equipment. The rate of return to fishing gear and equipment provides an indication of the impact of management changes on the fishery.

Rate of return to total capital is calculated by expressing earnings before interest and tax as a percentage of total capital. This gives a measure of the economic performance of the fishery for those interested in investing in a boat and licence.

³ Where possible definitions have been kept consistent with those used by Brown (1997) in the *Australian Fisheries Survey Report*.

⁴ An *allowance* for depreciation of a capital item was estimated using the formula $(R-C)/A$ where R = replacement cost of the item, C = current value of the item and A = age of the item in years

3. Economic Indicators for the SA Marine Scalefish Fishery

3.1 Gross Value of Production

The principal information used to estimate the gross value of production for the South Australian Marine Scalefish Fishery is derived from the catch and effort database provided by SARDI Aquatic Sciences. Production figures are collated from the monthly fishing returns provided by commercial fishers while average values are based on Adelaide market prices.

Table 3.1 shows the catch of marine scalefish species each year since 2000/01, together with the estimated gross value of production and the average unit values. Care is required in using the catch and effort database in deriving the gross value of production for the Marine Scalefish Fishery.

SARDI's estimates of the GVP of fish harvested from the Marine Scalefish Fishery are underestimated because average values are based on wholesale prices received at the Adelaide market. Survey information indicates that a significant proportion of some species are marketed either at the Sydney or Melbourne markets or locally, where prices received are often higher than can be obtained at the Adelaide market. For the purpose of this study, SARDI's estimates of GVP have been re-valued using weighted average prices from Sydney and Melbourne markets and price data obtained from fishers.

The catch levels and gross values of the major marine scalefish species shown in Table 3.1 represent the catch of all marine scalefish species taken by licence holders in the SA Marine Scalefish Fishery. Adjustments have been made to exclude the catch of blue swimmer crabs and sardines taken by specialist fishers⁵.

The total catch of marine scalefish species in 2006/07 was 2,978 tonnes. This represents a 7 per cent decrease compared with the catch in the previous year⁶. The gross value of production of the Marine Scalefish Fishery in 2006/07 was approximately \$19.9 million, a 14 per cent increase from 2005/06. The increase in GVP, despite a decrease in catch, was in response to the average price per kilogram of marine scalefish species increasing by 22 per cent (\$5.48/kg in 2005/06 to \$6.66/kg 2006/07).

Estimates of catch and GVP for the Marine Scalefish Fishery for the period 1998/99 to 2003/04 include blue crabs caught by Marine Scalefish licence holders. To prevent double counting, estimates of catch and GVP for the period 2004/05 to 2006/07 do not include any blue crab catch.

⁵ Separate economic indicators are prepared for the Blue Crab and Sardine fisheries.

⁶ SARDI's estimates of catch for 2004/05 to 2006/07 do not include pilchards or blue crabs. Estimates may include catch taken by licence holders in other fisheries (i.e. Rock Lobster) who have access to marine scalefish gear and equipment.

Table 3.1 Catch and gross value of production of the SA Marine Scalefish Fishery, 2000/01 to 2006/07

Species	2000/01			2001/02			2002/03			2003/04 ^a			2004/05 ^a			2005/06 ^a			2006/07 ^a		
	catch '000 kg	value \$,'000	avg value \$/kg	catch '000 kg	value \$,'000	avg value \$/kg	catch '000 kg	value \$,'000	avg value \$/kg	catch '000 kg	value \$,'000	avg value \$/kg	catch '000 kg	value \$,'000	avg value \$/kg	catch '000 kg	value \$,'000	avg value \$/kg	catch '000 kg	value \$,'000	avg value \$/kg
King George whiting	456	4,835	\$10.60	390	4,684	\$12.01	398	5,476	\$13.76	355	4,239	\$11.94	347	3,507	\$10.11	336	4,033	\$12.00	361	4,969	\$13.76
snapper	563	3,263	\$5.80	648	3,314	\$5.11	533	3,174	\$5.95	413	3,915	\$9.48	504	4,614	\$9.16	529	3,376	\$6.38	644	4,330	\$6.72
southern calamari	488	2,421	\$4.96	340	1,839	\$5.41	346	2,950	\$8.53	303	2,586	\$8.54	504	2,852	\$5.66	311	2,200	\$7.07	297	2,860	\$9.63
garfish	532	1,995	\$3.75	470	2,028	\$4.31	332	1,940	\$5.84	321	2,536	\$7.90	364	2,673	\$7.34	369	2,139	\$5.80	293	1,881	\$6.42
shark	343	1,099	\$3.20	203	544	\$2.68	202	573	\$2.84	204	583	\$2.86	190	595	\$3.13	152	585	\$3.85	181	680	\$3.76
salmon	578	767	\$1.33	455	550	\$1.21	576	693	\$1.20	158	435	\$2.75	133	360	\$2.71	177	338	\$1.91	157	254	\$1.62
sand crabs	163	532	\$3.26	127	437	\$3.44	93	427	\$4.59	96	382	\$3.98	148	534	\$3.61	142	539	\$3.80	83	378	\$4.56
oceanjacket	260	501	\$1.93	395	583	\$1.48	202	411	\$2.03	498	1,345	\$2.70	308	980	\$3.18	149	185	\$1.24	54	61	\$1.13
yellowfin whiting	152	719	\$4.73	148	863	\$5.83	181	1,067	\$5.90	163	910	\$5.58	138	764	\$5.54	130	805	\$6.19	85	687	\$8.08
Goolwa cockle	376	423	\$1.13	302	292	\$0.97	101	117	\$1.16	3	3	\$1.00	37	47	\$1.27	1	1	\$1.00	5	10	\$2.00
blue crabs	87	479	\$5.51	79	486	\$6.15	68	417	\$6.13	53	253	\$4.77	0	0	\$0.00	0	0	\$0.00	0	0	na
Australian herring (tommy ruff)	229	302	\$1.32	262	328	\$1.25	197	289	\$1.47	152	315	\$2.07	183	367	\$2.00	126	318	\$2.52	105	333	\$3.17
mud cockle	158	326	\$2.06	227	467	\$2.06	na	na	na	na	na	na	346	1,225	4	385	1,250	\$3.25	282	1,227	\$4.35
snook	107	233	\$2.18	99	242	\$2.44	112	263	\$2.35	81	279	\$3.45	83	254	\$3.06	61	171	\$2.80	64	226	\$3.53
yelloweye mullet	72	194	\$2.69	57	141	\$2.47	47	119	\$2.53	44	110	\$2.50	50	116	\$2.32	38	100	\$2.63	36	102	\$2.84
leatherjackets	38	53	\$1.39	27	43	\$1.59	na	na	na	na	na	na	na	na	na	na	0	na	na	0	na
mulloway	9	42	\$4.67	5	24	\$4.80	na	na	na	na	na	na	5	32	6	5	28	\$5.60	5	39	\$7.80
cuttlefish	19	29	\$1.53	27	27	\$1.00	na	na	na	na	na	na	9	17	2	7	21	\$3.00	11	21	\$1.91
other species	625	2,829	\$4.53	461	2,135	\$4.63	728	2,884	\$3.96	921	4,025	\$4.37	461	1,941	\$4.21	268	1,358	\$5.07	315	1,789	\$5.68
TOTAL^b	5,255	21,042	\$4.00	4,722	19,027	\$4.03	4,116	20,800	\$5.05	3,765	21,916	\$5.82	3,810	20,878	\$5.48	3,186	17,446	\$5.48	2,978	19,847	\$6.66
No. Licence Holders	450			428			408			397			394			384			349		
Average per Licence Holder	11,678	\$46,760		11,033	\$44,456		10,088	\$50,980		9,484	\$55,203		9,670	\$52,990		8,297	\$45,433		8,533	\$56,869	

^a SARDI estimates of GVP for 2003/04 to 2006/07 have been re-valued to reflect price differentials between Adelaide, interstate and local markets.

^b Does not include sardines. Includes marine scalefish species harvested by all licence holders and could include catch taken by Rock Lobster licence holders who have access to marine scalefish gear. Estimates of catch and GVP for the Marine Scalefish Fishery for the period 1998/99 to 2003/04 include blue crabs caught by marine scale licence holders. To prevent double counting, estimates of catch and GVP for 2004/05 to 2006/07 do not include any blue crab catch.

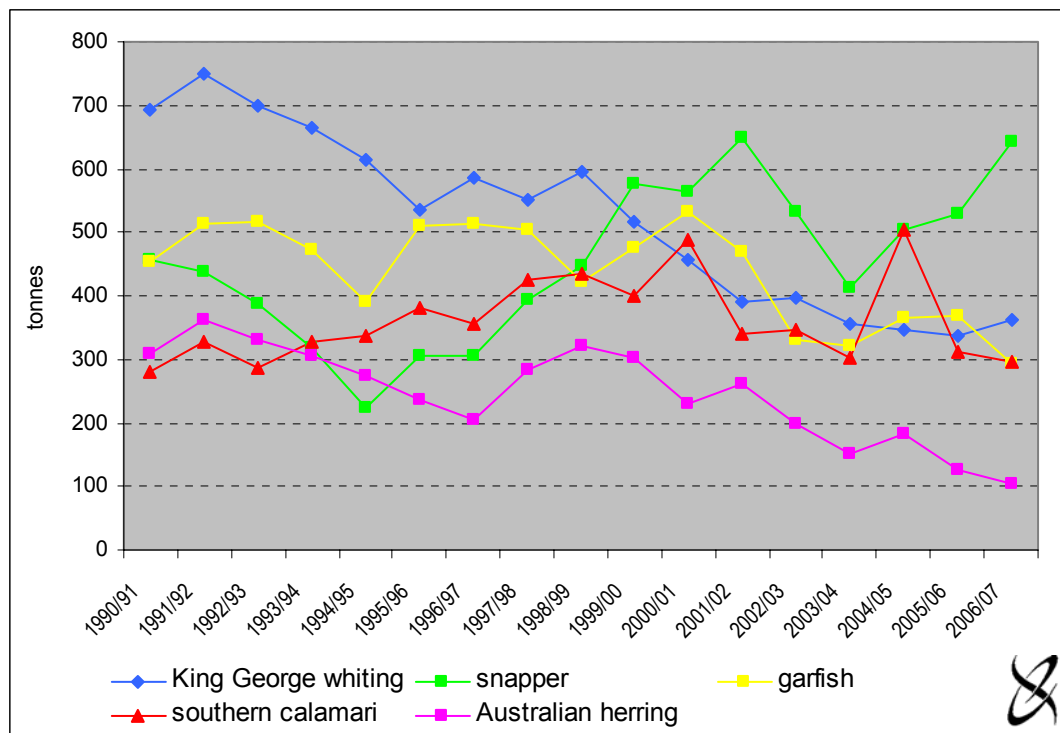
Source: SARDI Aquatic Sciences, PIRSA Fisheries, Samantha Dawes (DPI – NSW pers. comm.), Melbourne Fish Market (Tim Rieniets, Melbourne Wholesale Fish Market, pers. comm.), Alan Suter (Marine Scalefish Licence Holder, pers. comm.) and EconSearch analysis.

The total number of licence holders decreased by 9 per cent between 2005/06 and 2006/07, from 384 to 349. As mentioned previously the GVP of the fishery increased by 14 per cent in 2006/07 compared to the previous year. As a result the average gross value of production per licence holder increased from \$45,433 in 2005/06 to \$56,869 in 2006/07, an increase of 25 per cent.

The long term trends in the catch of five of the main species are shown in Figure 3.1. Notable trends include:

- a steady decrease in King George whiting and Australian herring over the sixteen-year period;
- a considerable increase in the catch of snapper between 1994/95 and 2001/02, a decline over the period 2001/02 and 2003/04 and an increase in catch in subsequent years; and
- significant annual variability in garfish catch, but evidence of long term decline.

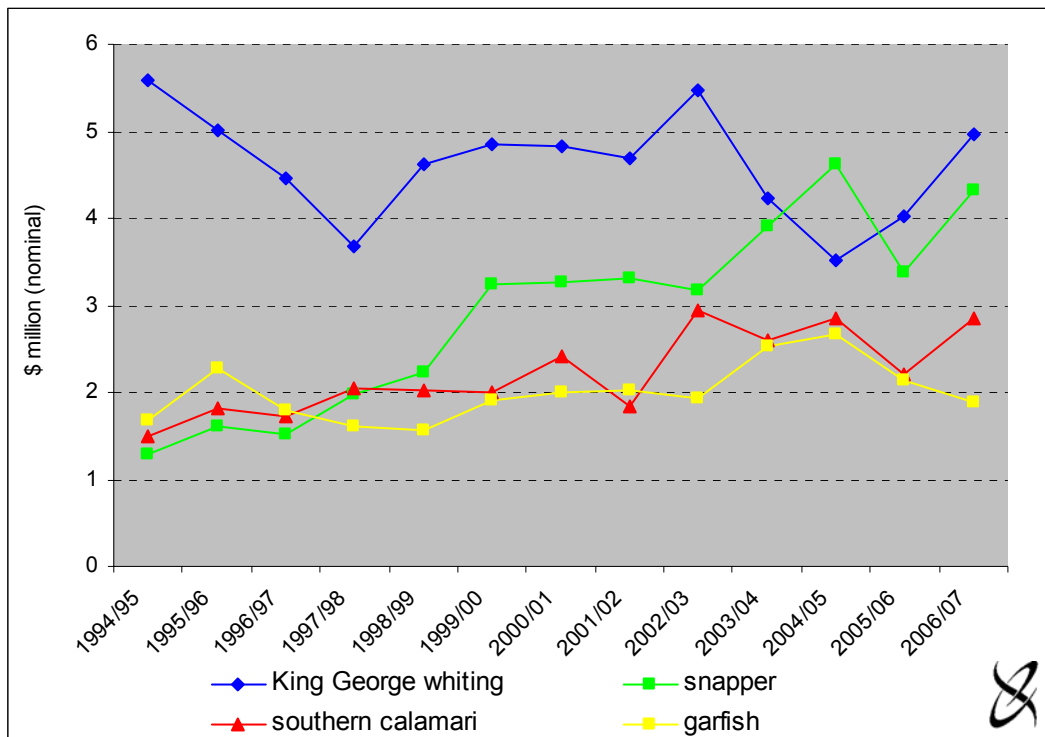
Figure 3.1 Catch of major marine scalefish species, South Australia, 1990/91 to 2006/07



Source: SARDI Aquatic Sciences

Figure 3.2 outlines the gross value of production of the four most important species over the period 1994/95 to 2006/07. King George whiting, snapper, calamari and garfish accounted for approximately 71 per cent of the total value of the SA Marine Scalefish Fishery in 2006/07.

Figure 3.2 Gross value of production of major marine scalefish species, South Australia, 1994/95 to 2006/07

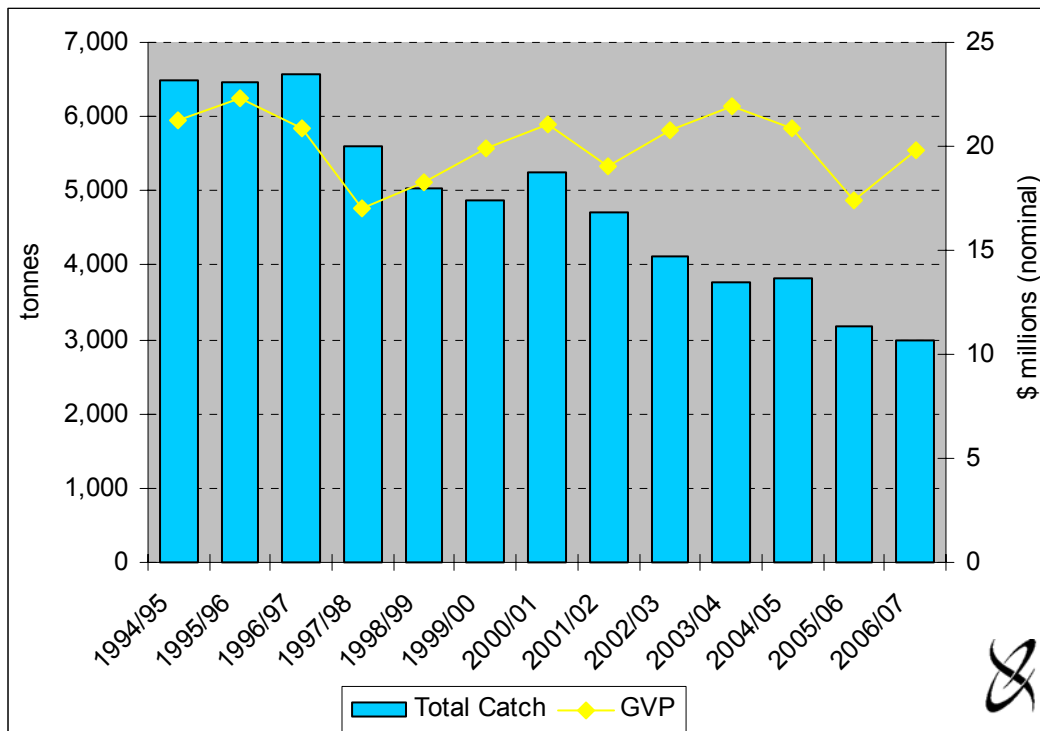


Source: SARDI Aquatic Sciences and EconSearch analysis.

Figure 3.3 shows the total catch and landed value of all marine scalefish species taken by licence holders in the SA Marine Scalefish Fishery since 1994/95. After a sharp decrease in 2005/06, GVP increased by 14 per cent in 2006/07, due to a substantial increase in price offsetting the reduction in catch.

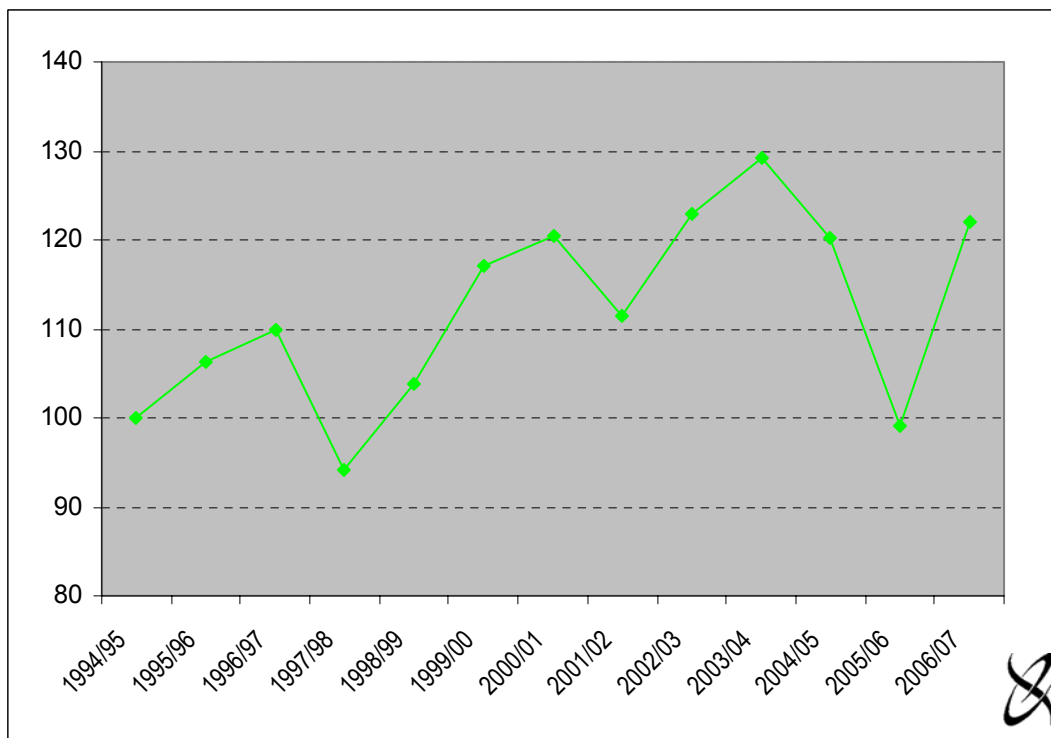
Figure 3.4 illustrates the upward trend in average real value of catch per licence holder over the period 1994/95 to 2003/04 with a decline from 2003/04 to 2005/06. The substantial increase in 2006/07 was principally due to an increase in price and a reduction in the number of licence holders (9 per cent decrease from the previous year).

Figure 3.3 Catch and gross value of production of all marine scalefish species, South Australia, 1994/95 to 2006/07



Source: SARDI Aquatic Sciences and EconSearch analysis.

Figure 3.4 Index of average real value of catch per licence holder for the SA Marine Scalefish Fishery (1994/95=100)



Source: Derived from information in Table 3.1. Real value of catch calculated using the consumer price index for Adelaide (ABS 2007).

3.2 Cost of Management

South Australian commercial fisheries operate under full cost recovery. Accordingly, licence fees are set to cover the cost of managing the fishery. Management services include:

- annual reports on biological and economic indicators;
- policy and management services;
- regulatory/legislation and licensing services;
- compliance services;
- directorate services;
- extension services;
- research services (including the FRDC levy); and
- services of the various fishery management committees.

For the purpose of this analysis, the cost of providing these management services has been assumed to be equal to the gross receipts from licence fees in the fishery (Will Zacharin, pers. comm.). Table 3.2 shows actual licence fee receipts for the fishery for the period 1996/97 to 2007/08.

Table 3.2 Cost of management in the SA Marine Scalefish Fishery, 1996/97 to 2007/08

	Licence Fee (\$'000)	Gross Value of Production (\$'000)	Fee/GVP (%)	Catch (tonnes)	Fee/Catch (\$/kg)	Licence Holders (No.)	Fee/Licence Holder (\$/licence)
1996/97	\$1,419	\$20,879	6.8%	6,563	\$0.22	535	\$2,652
1997/98	\$1,646	\$17,049	9.7%	5,594	\$0.29	513	\$3,209
1998/99	\$1,559	\$18,293	8.5%	5,036	\$0.31	492	\$3,169
1999/00	\$1,476	\$19,897	7.4%	4,869	\$0.30	463	\$3,188
2000/01	\$1,460	\$21,042	6.9%	5,255	\$0.28	450	\$3,244
2001/02	\$1,407	\$19,027	7.4%	4,722	\$0.30	428	\$3,287
2002/03	\$1,218	\$20,800	5.9%	4,116	\$0.30	408	\$2,986
2003/04	\$1,398	\$21,916	6.4%	3,765	\$0.37	397	\$3,521
2004/05	\$1,469	\$20,878	7.0%	3,810	\$0.39	394	\$3,728
2005/06	\$1,547	\$17,446	8.9%	3,186	\$0.49	384	\$4,028
2006/07	\$1,460	\$19,847	7.4%	2,978	\$0.49	349	\$4,184
2007/08	\$1,517	n.a.	-	n.a.	-	343	\$4,423

Source: PIRSA Fisheries, SARDI Aquatic Sciences.

- For 2006/07, the cost of management was \$1.46 million, which is a 6 per cent decrease from the previous year. However, the cost of management increased by 4 per cent between 2006/07 and 2007/08 to almost \$1.52 million.
- Licence fees as a percentage of gross value of production decreased to 7.4 per cent in 2006/07 compared to a rate of 8.9 per cent the previous year. This reflects both a decrease in total licence fees and an increase in gross value of production in the fishery.
- The management cost per kilogram of fish caught was relatively constant for the period 1997/98 to 2002/03. It has followed an increasing trend since 2002/03 and was \$0.49/kg in 2005/06 and 2006/07. This reflects both an increase in licence fees and fall in catch in the fishery in these latter years.
- Over the period 1996/97 to 2006/07 the number of licence holders in the fishery has declined by 186 (35 per cent) due to natural attrition in the restricted Marine Scalefish Fishery, the licence amalgamation scheme in the transferable Marine Scalefish Fishery and the 2005 voluntary net buyback scheme. Under a system of full cost recovery, this has contributed to an increase in the average fees paid per licence holder for this period. The average fee per licence increased between 2005/06 and 2006/07, from \$4,028 to \$4,184.

The average fee per licence holder increased a further 6 per cent between 2006/07 and 2007/08 from \$4,184 to \$4,423.

3.3 Financial Performance Indicators

The major measures of financial performance of licence holders in the SA Marine Scalefish Fishery for the years 2002/03 to 2006/07 are shown in Table 3.3. Financial performance estimates for 1997/98 to 2001/02, are provided in Appendix 3.

Estimates for 2002/03 were imputed based on the 2000/01 survey results. The 2003/04 to 2005/06 estimates of financial performance were derived from the 2004 BRS survey of licence holders. This survey was carried out as a part of a broader project '*Social Impacts of the South Australian Marine Scalefish Fishery*' (Schirmer and Pickworth 2005). The 2006/07 estimates of financial performance were derived from the 2007 survey of licence holders.

Estimates of financial performance are presented for all licence holders, on a regional basis and by fishing method in Tables 3.3 to 3.5.

As a result of the large sample size it was possible to divide the 2006/07 survey responses for line only licence holders (80 in total) into four groups (quartiles) according to rate of return to capital. Responses from net licence holders (37 in total) were also divided into four groups (quartiles) according to rate of return to capital. The first quartile comprises the 25 per cent of boats with the lowest rate of return and the fourth quartile includes the 25 per cent with the highest return to capital. The financial performance measures for 'return to capital' quartiles for 2006/07 are provided in Tables 3.6 and 3.7.

As financial performance estimates for 2003/04 to 2006/07 were based on different survey samples and techniques compared to earlier years, some of the differences between these and earlier years is, therefore, attributable to sampling variability.

Table 3.3 Financial performance in the SA Marine Scalefish Fishery, 2002/03 to 2006/07 (average per boat) ^a

	2002/03		2003/04		2004/05		2005/06		2006/07	
	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC
Gross Income	\$53,330		\$57,280		\$54,984		\$47,143		\$95,080	
Costs										
Fuel	\$6,048	12%	\$6,135	11%	\$6,433	11%	\$6,237	11%	\$11,172	13%
R&M	\$4,783	10%	\$5,822	10%	\$5,949	10%	\$5,619	10%	\$8,681	10%
Bait	\$1,870	4%	\$2,130	4%	\$2,256	4%	\$2,052	4%	\$2,266	3%
Provisions	\$1,280	3%	n.a.	-	n.a.	-	n.a.	-	\$689	1%
Labour	\$24,377	49%	\$30,582	52%	\$31,247	53%	\$29,515	51%	\$41,973	49%
Licence fee	\$3,310	7%	\$4,092	7%	\$3,728	6%	\$4,028	7%	\$5,012	6%
Insurance	\$1,896	4%	\$1,781	3%	\$1,823	3%	\$1,892	3%	\$1,864	2%
Interest ^b	\$250	1%	\$256	0%	\$263	0%	\$266	0%	\$4,518	5%
Admin and Other	\$5,785	12%	\$7,610	13%	\$7,786	13%	\$8,083	14%	\$8,741	10%
Total Cash Costs	\$49,599	100%	\$58,409	100%	\$59,483	100%	\$57,692	100%	\$84,916	100%
Cash Operating Surplus (excl unpaid labour)	\$20,717		\$22,326		\$19,465		\$12,086		\$34,832	
Cash Operating Surplus (incl unpaid labour)	\$3,730		-\$1,129		-\$4,500		-\$10,550		\$5,028	
Depreciation	\$8,235		\$8,652		\$8,852		\$8,814		\$18,286	
Earnings Before Tax	-\$4,504		-\$9,781		-\$13,352		-\$19,364		-\$13,258	
Earnings Before Interest & Tax	-\$4,255		-\$9,524		-\$13,089		-\$19,098		-\$8,740	
Capital										
Fishing Gear & Equipment	\$65,877		\$86,235		\$88,229		\$87,851		\$130,077	
Licence Value ^c	\$91,824		\$98,627		\$93,957		\$146,565		\$183,867	
Total Capital	\$157,702		\$184,862		\$182,186		\$234,415		\$313,944	
Rate of Return to Fishing Gear & Equip	-6.5%		-11.0%		-14.8%		-21.7%		-6.7%	
Rate of Return to Total Capital	-2.7%		-5.2%		-7.2%		-8.1%		-2.8%	

^a Financial performance estimates for 2002/03 are based on the May 2002 survey of licence holders. Financial performance estimates for 2003/04 to 2005/06 are based on the 2004 BRS survey of licence holders. Financial performance estimates for 2006/07 are based on the 2007 survey of licence holders. Estimates for 1997/98 to 2001/02 are provided in Appendix 3 of this report. To incorporate revised effort and licence holder numbers the 2004/05 estimates have been revised.

^b Interest costs were not itemised in the 2004 survey data. Estimates for 2003/04 to 2005/06 were calculated using the 2002 licence holder survey data and adjusted for changes in the ABS indicator lending rate. Estimates for 2006/07 were based on the 2007 licence holder survey responses.

^c An estimate of the licence value for 2001/02 to 2004/05 was derived from the fisher's estimate of the value of their licence in the May 2002 survey and adjusted for changes in the average gross income per licence holder between 2000/01 and 2004/05. The 2005/06 estimated licence value was based on information provided by Rob Field (Elders, pers. comm.) on the value of licence traded in 2005/06. The 2006/07 estimated licence value was derived from the fisher's estimate of the value of their licence in the 2007 survey.

Source: Schirmer and Pickworth (2005) and EconSearch analysis.

Table 3.4 Financial performance in the SA Marine Scalefish Fishery, by fishing region, 2006/07 (average per boat)

	West Coast		Gulf St Vincent / Kangaroo Island		Spencer Gulf / Coffin Bay		South Australia	
	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC
Gross Income	\$43,702		\$87,437		\$110,283		\$95,080	
Costs								
Fuel	\$8,385	15%	\$7,770	10%	\$14,046	14%	\$11,172	13%
R&M	\$3,061	5%	\$7,532	10%	\$10,664	11%	\$8,681	10%
Bait and Ice	\$1,521	3%	\$1,496	2%	\$2,940	3%	\$2,266	3%
Provisions	\$341	1%	\$281	0%	\$1,031	1%	\$689	1%
Labour	\$29,922	53%	\$40,710	54%	\$45,326	46%	\$41,973	49%
Licence fee	\$3,774	7%	\$5,611	8%	\$4,893	5%	\$5,012	6%
Insurance	\$901	2%	\$1,139	2%	\$2,547	3%	\$1,864	2%
Interest	\$1,772	3%	\$2,473	3%	\$6,437	7%	\$4,518	5%
Admin and Other	\$6,380	11%	\$7,753	10%	\$9,924	10%	\$8,741	10%
Total Cash Costs	\$56,058	100%	\$74,766	100%	\$97,808	100%	\$84,916	100%
Cash Operating Surplus (excl unpaid labour)	\$15,019		\$40,029		\$34,677		\$34,832	
Cash Operating Surplus (incl unpaid labour)	-\$14,074		\$9,712		\$5,166		\$5,028	
Depreciation	\$9,903		\$15,818		\$21,571		\$18,286	
Earnings Before Tax	-\$23,977		-\$6,107		-\$16,405		-\$13,258	
Earnings Before Interest & Tax	-\$22,205		-\$3,633		-\$9,968		-\$8,740	
Capital								
Fishing Gear & Equipment	\$102,398		\$90,807		\$160,868		\$130,077	
Licence Value	\$124,615		\$203,610		\$183,297		\$183,867	
Total Capital	\$227,013		\$294,417		\$344,165		\$313,944	
Rate of Return to Fishing Gear & Equip	-21.7%		-4.0%		-6.2%		-6.7%	
Rate of Return to Total Capital	-9.8%		-1.2%		-2.9%		-2.8%	

Source: EconSearch analysis.

Table 3.5 Financial performance in the SA Marine Scalefish Fishery, by fishing method, 2006/07 (average per boat)

	Line Entitlement Only		Net and Line Entitlement		South Australia, All Methods	
	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC
Gross Income	\$67,711		\$154,256		\$95,080	
Costs						
Fuel	\$9,905	14%	\$13,913	12%	\$11,172	13%
R&M	\$6,527	9%	\$13,338	12%	\$8,681	10%
Bait and Ice	\$1,952	3%	\$2,944	3%	\$2,266	3%
Provisions	\$780	1%	\$491	0%	\$689	1%
Labour	\$34,843	49%	\$57,390	50%	\$41,973	49%
Licence fee	\$3,893	5%	\$7,431	7%	\$5,012	6%
Insurance	\$1,800	3%	\$2,004	2%	\$1,864	2%
Interest	\$5,041	7%	\$3,386	3%	\$4,518	5%
Admin and Other	\$6,824	10%	\$12,886	11%	\$8,741	10%
Total Cash Costs	\$71,566	100%	\$113,783	100%	\$84,916	100%
Cash Operating Surplus (excl unpaid labour)	\$19,181		\$75,049		\$34,832	
Cash Operating Surplus (incl unpaid labour)	-\$8,416		\$40,473		\$5,028	
Depreciation	\$14,687		\$26,068		\$18,286	
Earnings Before Tax	-\$23,102		\$14,405		-\$13,258	
Earnings Before Interest & Tax	-\$18,061		\$17,792		-\$8,740	
Capital						
Fishing Gear & Equipment	\$124,077		\$143,051		\$130,077	
Licence Value ^a	\$139,337		\$280,147		\$183,867	
Total Capital	\$263,414		\$423,198		\$313,944	
Rate of Return to Fishing Gear & Equip	-14.6%		12.4%		-6.7%	
Rate of Return to Total Capital	-6.9%		4.2%		-2.8%	

^a The 2005/06 estimated licence value was based on information provided by Rob Field (Elders, pers. comm.) on the value of licence traded in 2005/06. The 2006/07 estimated licence values were based on the fishers own estimates of the value of their licence provided in the 2007 survey.

Source: EconSearch analysis.

Table 3.6 Financial performance by line entitlement only licence holders by return to capital quartile, 2006/07 (average per boat)

	Average per Boat ^a				All Boats
	Lowest 25%	Second Quartile	Third Quartile	Highest 25%	
Gross Income	\$32,728	\$49,264	\$94,468	\$94,383	\$67,711
Costs					
Fuel	\$9,658	\$9,932	\$12,071	\$7,958	\$9,905
R&M	\$6,578	\$8,792	\$8,240	\$2,499	\$6,527
Bait	\$2,095	\$1,518	\$2,011	\$2,186	\$1,952
Provisions	\$875	\$534	\$1,377	\$334	\$780
Labour	\$30,678	\$31,293	\$45,983	\$31,419	\$34,843
Licence fee	\$3,764	\$3,850	\$3,953	\$4,005	\$3,893
Insurance	\$2,079	\$1,730	\$2,493	\$898	\$1,800
Interest	\$5,672	\$5,815	\$6,235	\$2,443	\$5,041
Admin and Other	\$7,666	\$6,605	\$7,634	\$5,390	\$6,824
Total Cash Costs	\$69,066	\$70,069	\$89,997	\$57,131	\$71,566
Cash Operating Surplus	-\$38,825	-\$24,561	-\$3,487	\$33,212	-\$8,416
Depreciation	\$18,057	\$18,953	\$12,386	\$9,351	\$14,687
Earnings Before Tax	-\$56,882	-\$43,514	-\$15,873	\$23,861	-\$23,102
Earnings Before Interest & Tax	-\$51,210	-\$37,700	-\$9,638	\$26,304	-\$18,061
Capital					
Fishing Gear & Equipment	\$107,443	\$181,899	\$117,730	\$89,238	\$124,077
Licence Value	\$122,583	\$148,513	\$151,003	\$135,250	\$139,337
Total Capital	\$230,026	\$330,411	\$268,733	\$224,488	\$263,414
Rate of Return to Fishing Gear & Equip	-47.7%	-20.7%	-8.2%	29.5%	-14.6%
Rate of Return to Total Capital	-22.3%	-11.4%	-3.6%	11.7%	-6.9%

^a Totals may not sum due to rounding.

Source: EconSearch analysis.

Table 3.7 Financial performance by net licence holders by return to capital quartile, 2006/07 (average per boat)

	Average per Boat ^a				All Boats
	Lowest 25%	Second Quartile	Third Quartile	Highest 25%	
Gross Income	\$111,339	\$99,085	\$134,685	\$260,149	\$154,256
Costs					
Fuel	\$19,257	\$11,328	\$12,302	\$12,879	\$13,913
Repairs and Maintenance	\$25,916	\$7,510	\$9,949	\$10,314	\$13,338
Bait & Ice	\$5,745	\$1,573	\$1,234	\$3,196	\$2,944
Provisions	\$657	\$122	\$730	\$458	\$491
Labour	\$70,638	\$51,112	\$50,797	\$57,051	\$57,390
Licence fee	\$7,403	\$6,935	\$6,970	\$8,317	\$7,431
Insurance	\$3,116	\$1,648	\$1,116	\$2,121	\$2,004
Interest	\$4,778	\$4,396	\$3,145	\$1,442	\$3,386
Administration and Other	\$21,905	\$6,132	\$9,910	\$13,526	\$12,886
Total Cash Costs	\$159,413	\$90,757	\$96,155	\$109,304	\$113,783
Cash Operating Surplus (excl unpaid labour)	\$1,313	\$33,995	\$70,917	\$182,081	\$75,049
Cash Operating Surplus (incl unpaid labour)	-\$48,074	\$8,328	\$38,530	\$150,845	\$40,473
Depreciation	\$39,147	\$16,738	\$19,794	\$28,339	\$26,068
Earnings Before Tax	-\$87,221	-\$8,410	\$18,736	\$122,506	\$14,405
Earnings Before Interest and Tax	-\$82,443	-\$4,015	\$21,881	\$123,948	\$17,792
Capital					
Fishing Gear and Equipment	\$217,929	\$111,168	\$84,272	\$157,257	\$143,051
Licence Value	\$285,556	\$343,905	\$257,810	\$238,000	\$280,147
Total Capital	\$503,485	\$455,073	\$342,083	\$395,257	\$423,198
Rate of Return to Fishing Gear and Equipment	-37.8%	-3.6%	26.0%	78.8%	12.4%
Rate of Return to Total Capital	-16.4%	-0.9%	6.4%	31.4%	4.2%

^a Totals may not sum due to rounding.

Source: EconSearch analysis.

Income...

Total recorded gross receipts from the sale of catch increased by 14 per cent between 2005/06 and 2006/07 (Table 3.1) despite a decrease in total catch of 7 per cent. The total number of licence holders in the fishery decreased from 384 in 2005/06 to 349 in 2006/07 (Table 3.2). The average gross income per boat in the South Australian Marine Scalefish Fishery in 2006/07, based on the 2006/07 licence holder survey, was just over \$95,000 approximately double the previous year's estimated average (Table 3.3). Despite the decrease in catch, a price increase of 22 per cent and a decrease in the number of licence holders have led to the substantial increase in average gross income per boat from 2005/06 to 2006/07.

There was some variation in gross income between regions. Estimated mean gross income ranged from almost \$44,000 in the West Coast (WC) region to just over \$110,000 in the Spencer Gulf/Coffin Bay (SG/CB) region (Table 3.4).

Financial performance estimates by method (Table 3.5) highlight the significant difference in average gross income between fishing methods. The average gross income for fishers with a line entitlement only was estimated to be almost \$68,000 in 2006/07, while fishers with both a line and net entitlement were estimated to have an average income of approximately \$154,000 (Table 3.5).

In 2006/07, the average income for boats with line entitlements only in the first quartile was almost 52 per cent below the average, while in the fourth quartile, average gross income was approximately 39 per cent above the average recorded for line entitled surveyed boats (Table 3.6). The average gross income for boats with net entitlements in the first quartile was almost 28 per cent below the average, while in the fourth quartile, average gross income was almost 69 per cent above the average recorded for net entitled boats (Table 3.7).

Costs...

In 2006/07, for the fishery as a whole, approximately 49 per cent of total cash costs were attributable to labour costs, by far the largest individual cost item. Labour costs include an imputed wage to operators and other family members who are not paid a wage directly by the business. The average imputed unpaid labour costs for the fishery in 2006/07 was approximately \$29,800⁷.

Average total cash costs were significantly higher in the SG/CB region when compared to the other fishing regions in SA. In 2006/07 total cash costs in the SG/CB region were estimated to be almost \$98,000, 15 per cent higher than the fishery average (Table 3.4).

Average total cash costs for fishers with both a net and line entitlement were 34 per cent higher than the fishery average. In 2006/07, average total cash costs for fishers with both a net and line entitlement were estimated to be almost \$114,000 and for line entitlement only fishers total cash costs were almost \$72,000 (Table 3.5).

⁷ That is, the difference between cash operating surplus excluding labour and cash operating surplus including unpaid labour in Table 3.3.

While for line only licence holders average income for boats in the first quartile was around 65 per cent below that of boats in the fourth quartile, average total cash costs were around 21 per cent higher. The cost items where the largest differences occurred between the first and fourth quartiles were repairs and maintenance (163 per cent higher in the first quartile), interest (132 per cent), insurance (132 per cent) and fuel (21 per cent) (Table 3.6).

While for net licence holders average income for boats in the first quartile was around 57 per cent below that of boats in the fourth quartile, average total cash costs were around 46 per cent higher. The cost items where the largest differences occurred between the first and fourth quartiles were interest (231 per cent higher in the first quartile), repairs and maintenance (151 per cent), bait and ice (80 per cent) and fuel (50 per cent) (Table 3.7).

Overall, total cash costs per boat increased by approximately 47 per cent, up from almost \$58,000 in 2005/06 to approximately \$85,000 in 2006/07. The main drivers of the increase have been the increase in labour, fuel, interest and repairs and maintenance costs reported by fishers in the 2007 survey (Table 3.3).

Cash Income and Profit...

Cash operating surplus was calculated using two methods. First, excluding imputed wages for operator and family members, the average cash operating surplus of all boats for 2006/07 was almost \$35,000. If the imputed wages were included as cash costs, the estimated average cash operating surplus for all boats in 2006/07 was estimated to be approximately \$5,000 per boat (Table 3.3).

For 2006/07 the average cash operating surplus excluding imputed wages for operator and family members was greatest in the Gulf St Vincent/Kangaroo Island (GSV/KI) fishing region at approximately \$40,000 (\$10,000, including unpaid labour). The lowest cash operating surplus was in the WC region, approximately \$15,000 (-\$14,000 including unpaid labour) in 2006/07 (Table 3.4).

In 2006/07, fishers with a line entitlement only reported an average cash operating surplus of approximately \$19,000 (-\$8,000 including unpaid labour) which was 45 per cent lower than for the fishery as a whole. Fishers with both a net and line entitlement reported a cash operating surplus that was almost double the fishery average, over \$75,000 (\$40,000 if unpaid labour is included) for 2006/07 (Table 3.5).

In 2006/07, the average cash operating surplus (excluding unpaid labour) for boats with line entitlement only in the first quartile was almost -\$39,000. This is significantly less than the average cash operating surplus for boats in the fourth quartile (approximately \$33,000 in 2006/07) (Table 3.6).

The average cash operating surplus (excluding unpaid labour) for boats with net and line entitlements in the first quartile was approximately \$1,300. This is considerably less than the average cash operating surplus for boats in the fourth quartile (approximately \$182,000 in 2006/07) (Table 3.7).

Cash operating surplus and earnings before tax (business profit) gives an indication of the capacity of the operator to remain in the fishery in the short to medium term. On average it appears that many line entitlement only fishers are "lifestyle" fishers.

Return on Investment...

There are a number of interpretations of the concept of return on investment. For the purpose of this analysis it is appropriate to consider the investment as the capital employed by an average licence holder in the fishery. Capital includes boats, licence/quota, fishing gear, sheds, vehicles and other capital items used as part of the fishing enterprise. It does not include working capital or capital associated with other businesses operated by the licence holder.

The average total investment in fishing gear and licence in the SA Marine Scalefish Fishery in 2006/07 was estimated to be almost \$314,000 per fisher. An estimate of the 2006/07 licence value (\$184,000) was based on the fishers own estimates of the value of their licence provided in the 2007 survey of licence holders.

For the SA Marine Scalefish Fishery as a whole, the average rate of return to total capital was estimated to be -2.8 per cent in 2006/07 (Table 3.3). For fishers with net and line entitlements the average rate of return to total capital was 4.2 per cent, whereas for line entitlement only fishers it was -6.9 per cent (Table 3.5). The average rate of return to total capital for line entitlement only fishers was estimated to be -22.3 per cent in the first quartile and 11.7 per cent in the fourth quartile (Table 3.6). The average rate of return to total capital for net fishers was estimated to be -16.4 per cent in the first quartile and 31.4 per cent in the fourth quartile (Table 3.7).

Licence Values...

The value of licences represents a significant proportion of the total capital used by each licence holder in the fishery. The reported average licence value of almost \$184,000 for 2006/07 for all licence types was based on the fishers own estimates of the value of their licence provided in the 2007 survey of licence holders. The value of a line entitlement only licence ranges from \$65,000 for an unamalgamated licence to \$300,000 for an amalgamated licence with valuable endorsements. The value of each individual licence varies depending on the number of fishing points allocated to the licence and, more importantly, the endorsements and entitlements on the licence (Rob Field, Elders Fisheries and Aquaculture Broker, pers. comm.). The PIRSA Fisheries record of licence transfers for 2006/07 indicates that there were 40 licence transfers over the 12-month period.

3.4 State and Regional Economic Impact

Estimates of the economic impact of the SA Marine Scalefish fishing industry on the South Australian and regional economies in 2006/07 are outlined below.

3.4.1 Measuring direct and flow-on effects

Estimates of the direct economic impact of the SA Marine Scalefish Fishery are consistent with the method employed in PIRSA's *Food for the Future* value-chain analysis, 2004/05⁸.

⁸ The relevant information was obtained from Jack Langberg (PIRSA, pers. comm.).

The following stages in the marketing chain have, therefore, been included in the quantifiable economic impact:

- the landed beach value of production; and
- downstream impacts, including the:
 - net value of local (state and regional) processing;
 - value of local transport services at all stages of the marketing chain; and
 - net value of local retail and food service (e.g. hotels & restaurants) trade⁹.

Each of these activities generates flow-on effects to other sectors through purchases of inputs and the employment of labour. These flow-on effects have been estimated using input-output analysis. Input-output analysis is widely used in economic impact analysis and is a practicable method for measuring economic impacts at regional and state levels.

Economic impacts at the state and regional levels were based on input-output models prepared for the Regional Communities Consultative Committee, Local Government Association of South Australia and Regional Development SA (EconSearch 2005).

In order to compile a representative cost structure for the fishing sector, costs per boat were derived from data provided by operators in the fishery in a financial survey for 2006/07, as described earlier. On an item-by-item basis, the expenditures were allocated between those occurring in the fishing region, those occurring in South Australia and those goods and services imported from outside the state.

These adjusted data were then incorporated into the state and regional input-output models to estimate the flow-on or indirect economic impacts of the Marine Scalefish Fishery in South Australia and individual fishing regions in 2006/07.

Estimates of the net value of local (i.e. regional and state) processing margins and retail and food service trade margins were derived from PIRSA's *Food for the Future* value-chain analysis (*Seafood Scorecard, 2005/06*) (Jack Langberg, PIRSA, pers. comm.). Estimates of the net value of local transport margins and capital expenditure per licence holder were derived from the survey of licence holders.

Economic impacts have been specified in terms of the following economic indicators:

- value of output;
- employment;
- household income; and
- contribution to gross state or regional product.

Value of output is a measure of the gross revenue of goods and services produced by commercial organisations plus gross expenditure by government agencies. This indicator needs to be used with care as it includes elements of double counting.

Employment is a measure of the number of working proprietors, managers, directors and other employees, in terms of the number of full-time equivalent jobs.

⁹ Estimates of economic impact prepared for this and other commercial fisheries in South Australia (except Lakes and Coorong) for the period 1997/98 to 2002/03 do not include the impact of local retail and food service trade.

Household income is a measure of the wages and salaries, drawings by owner operators and other payments to labour including overtime payments and income tax, but excluding payroll tax. It is a component of Gross Regional Product (GRP) and Gross State Product (GSP).

Contribution to GSP or GRP is a measure of the net contribution of an activity to the state/regional economy. Contribution to GSP or GRP is measured as value of output less the cost of goods and services (including imports) used in producing the output. It can also be measured as household income plus other value added (gross operating surplus and all taxes, less subsidies). It represents payments to the primary inputs of production (labour, capital and land). Using contribution to GSP or GRP as a measure of economic impact avoids the problem of double counting that may arise from using value of output for this purpose.

3.4.2 Economic impact of the fishery

Estimates of the economic impact generated in 2006/07 by the SA Marine Scalefish fishing industry in South Australia and in the West Coast, Spencer Gulf/Coffin Bay and Gulf St Vincent/Kangaroo Island regions are outlined in Tables 3.8 to 3.11, respectively.

The direct impact measures fishing and downstream activities (fish processing, transport, retail/food services and capital expenditure). The flow-on impact measures the economic effects in other sectors of the economy (trade, manufacturing, etc.) generated by the fishing industry activities, that is, the multiplier effect.

Some interpretation of the results of the impact analysis at the state level (Table 3.8) is provided below. Interpretation of the results at the regional level (Tables 3.9 to 3.11) is similar to that at the state level.

Table 3.8 Economic impact of the SA Marine Scalefish Fishery on the South Australian economy, 2006/07

Sector	Output		Employment ^a		Household Income		Contribution to GSP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	19.8	27.3%	540	63.7%	6.1	30.5%	6.1	20.4%
Processing	3.6	4.9%	11	1.3%	0.5	2.6%	0.8	2.8%
Transport	0.5	0.7%	2	0.3%	0.2	0.8%	0.2	0.8%
Retail	2.2	3.1%	33	3.9%	0.9	4.6%	1.1	3.7%
Food services	1.1	1.5%	9	1.1%	0.3	1.4%	0.4	1.4%
Capital expenditure ^b	2.1	2.9%	18	2.1%	0.6	3.2%	0.9	2.9%
Total Direct ^c	29.4	37.5%	613	70.2%	8.7	39.9%	9.6	29.2%
Flow-on effects								
Trade	6.2	8.5%	66	7.8%	2.3	11.4%	2.9	9.5%
Manufacturing	10.4	14.2%	33	3.8%	1.5	7.6%	2.4	8.1%
Business Services	4.7	6.4%	28	3.3%	1.7	8.5%	2.2	7.5%
Transport	2.5	3.4%	11	1.3%	0.8	4.0%	1.2	3.9%
Other Sectors	19.8	27.1%	98	11.5%	5.1	25.5%	11.7	38.9%
Total Flow-on ^c	43.4	59.7%	235	27.7%	11.4	56.9%	20.4	67.9%
Total ^c	72.8	100.0%	848	100.0%	20.1	100.0%	30.0	100.0%
Total/Direct	2.5	-	1.4	-	2.3	-	3.1	-
Total/Tonne	\$24,400	-	0.28	-	\$6,700	-	\$10,066	-

^a Full-time equivalent jobs. Direct employment in the fishing sector was comprised of 133 full-time jobs and 293 part-time jobs, that is, 426 jobs in aggregate.

^b Capital expenditure includes expenditure on boats, fishing gear and equipment, sheds and buildings, motor vehicles and other equipment.

^c Totals may not sum due to rounding.

Source: EconSearch analysis.

Table 3.9 Economic impact of the SA Marine Scalefish Fishery on the West Coast fishing region, 2006/07

Sector	Output		Employment ^a		Household Income		Contribution to GRP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	2.7	54.4%	40	71.7%	1.5	69.7%	1.5	56.9%
Processing	0.2	3.6%	1	1.5%	0.0	1.6%	0.1	1.9%
Transport	0.0	1.0%	0	0.5%	0.0	0.8%	0.0	0.9%
Retail	0.0	0.2%	0	0.3%	0.0	0.2%	0.0	0.2%
Food services	0.0	0.1%	0	0.1%	0.0	0.1%	0.0	0.1%
Capital expenditure ^b	0.1	1.8%	1	1.7%	0.0	1.5%	0.0	1.7%
Total Direct^c	3.1	61.1%	42	74.1%	1.5	72.3%	1.7	60.0%
Flow-on effects								
Trade	0.4	7.9%	5	9.2%	0.1	7.1%	0.2	7.0%
Manufacturing	0.2	4.0%	1	1.7%	0.0	1.8%	0.1	2.1%
Business Services	0.1	2.7%	1	1.7%	0.0	2.3%	0.1	2.4%
Transport	0.1	1.9%	1	1.0%	0.0	1.6%	0.0	1.8%
Other Sectors	1.1	22.4%	6	10.7%	0.3	13.3%	0.7	24.9%
Total Flow-on^c	2.0	38.9%	14	24.2%	0.5	26.1%	1.0	38.3%
Total^c	5.0	100.0%	56	100.0%	2.1	100.0%	2.7	100.0%
Total/Direct	1.7	-	1.4	-	1.4	-	1.7	-
Total/Tonne	\$16,900	-	0.19	-	\$7,000	-	\$9,000	-

^a Full-time equivalent jobs. Direct employment in the fishing sector was comprised of 10 full-time jobs and 49 part-time jobs, that is, 59 jobs in aggregate.

^b Capital expenditure includes expenditure on boats, fishing gear and equipment, sheds and buildings, motor vehicles and other equipment.

^c Totals may not sum due to rounding.

Source: EconSearch analysis.

Table 3.10 Economic impact of the SA Marine Scalefish Fishery on the Spencer Gulf/Coffin Bay fishing region, 2006/07

Sector	Output		Employment ^a		Household Income		Contribution to GRP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	10.9	46.7%	294	77.5%	1.7	33.6%	1.7	22.9%
Processing	1.1	4.6%	5	1.3%	0.2	3.8%	0.3	4.0%
Transport	0.3	1.3%	2	0.4%	0.1	1.9%	0.1	2.0%
Retail	0.1	0.3%	1	0.3%	0.0	0.5%	0.0	0.4%
Food services	0.0	0.1%	0	0.1%	0.0	0.2%	0.0	0.2%
Capital expenditure ^b	1.0	4.3%	11	2.9%	0.4	6.9%	0.5	6.7%
Total Direct ^c	13.3	57.2%	314	82.6%	2.4	47.1%	2.7	36.1%
Flow-on effects								
Trade	1.9	8.0%	22	5.9%	0.7	13.3%	0.9	11.6%
Manufacturing	1.9	8.2%	9	2.3%	0.4	6.9%	0.5	7.1%
Business Services	0.7	3.2%	5	1.3%	0.3	5.2%	0.4	4.8%
Transport	0.6	2.7%	4	1.0%	0.2	4.2%	0.3	4.3%
Other Sectors	4.8	20.7%	26	6.9%	1.2	23.3%	2.7	36.1%
Total Flow-on ^c	10.0	42.8%	66	17.4%	2.7	52.9%	4.8	63.9%
Total ^c	23.3	100.0%	380	100.0%	5.1	100.0%	7.5	100.0%
Total/Direct	1.9	-	1.3	-	2.5	-	3.4	-
Total/Tonne	\$13,200	-	0.22	-	\$2,900	-	\$4,200	-

^a Full-time equivalent jobs. Direct employment in the fishing sector was comprised of 104 full-time jobs and 122 part-time jobs, that is, 226 jobs in aggregate.

^b Capital expenditure includes expenditure on boats, fishing gear and equipment, sheds and buildings, motor vehicles and other equipment.

^c Totals may not sum due to rounding.

Source: EconSearch analysis.

Table 3.11 Economic impact of the SA Marine Scalefish Fishery on the Gulf St Vincent/Kangaroo Island fishing region, 2006/07

Sector	Output		Employment ^a		Household Income		Contribution to GRP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	5.8	46.6%	293	85.6%	0.5	21.1%	0.5	13.4%
Processing	0.5	4.3%	2	0.7%	0.1	3.8%	0.1	3.9%
Transport	0.1	1.2%	1	0.3%	0.1	2.4%	0.1	2.1%
Retail	0.0	0.3%	1	0.2%	0.0	0.6%	0.0	0.5%
Food services	0.0	0.1%	0	0.1%	0.0	0.2%	0.0	0.2%
Capital expenditure ^b	0.5	4.4%	8	2.4%	0.2	9.4%	0.3	7.8%
Total Direct ^c	7.1	56.9%	305	89.2%	0.8	37.4%	1.0	27.8%
Flow-on effects								
Trade	1.0	7.7%	12	3.5%	0.3	15.5%	0.4	12.7%
Manufacturing	1.3	10.2%	6	1.6%	0.2	8.9%	0.3	9.1%
Business Services	0.4	3.5%	3	0.9%	0.1	6.7%	0.2	5.9%
Transport	0.2	1.9%	2	0.5%	0.1	3.7%	0.1	3.2%
Other Sectors	2.5	19.9%	15	4.3%	0.6	27.7%	1.5	41.3%
Total Flow-on ^c	5.4	43.1%	37	10.8%	1.4	62.6%	2.5	72.2%
Total ^c	12.4	100.0%	342	100.0%	2.2	100.0%	3.5	100.0%
Total/Direct	1.9	-	1.2	-	3.6	-	5.1	-
Total/Tonne	\$13,900	-	0.38	-	\$2,500	-	\$3,900	-

^a Full-time equivalent jobs. Direct employment in the fishing sector was comprised of 33 full-time jobs and 174 part-time jobs, that is, 208 jobs in aggregate.

^b Capital expenditure includes expenditure on boats, fishing gear and equipment, sheds and buildings, motor vehicles and other equipment.

^c Totals may not sum due to rounding.

Source: EconSearch analysis.

Value of output...

The value of output generated directly in South Australia by marine scalefish fishing enterprises summed to \$19.8 million in 2006/07 (Table 3.8), while output generated in South Australia by associated downstream activities (processing, transport, retail/food services and capital expenditure) summed to \$9.5 million.

Flow-ons to other sectors of the state economy added another \$43.4 million in output. The sectors most affected were the manufacturing (\$10.4 million), trade (\$6.2 million) business services (\$4.7 million) and transport sectors (\$2.5 million).

Employment and household income...

In 2006/07, the Marine Scalefish Fishery was responsible for the direct employment of around 540 full-time equivalents (fte) and downstream activities created employment of around 73 fte jobs state-wide. Flow-on business activity was estimated to generate a further 235 fte jobs state-wide. These state-wide jobs were concentrated in the trade (66), manufacturing (33), business services (28) and transport (11) sectors.

Personal income of \$6.1 million was earned in the fishing sector (wages of employees and estimated drawings by owner/operators) and \$2.5 million in downstream activities in SA. An additional \$11.4 million was earned by wage earners in other businesses in the state as a result of fishing and associated downstream activities. The total household income impact was \$20.1 million in South Australia.

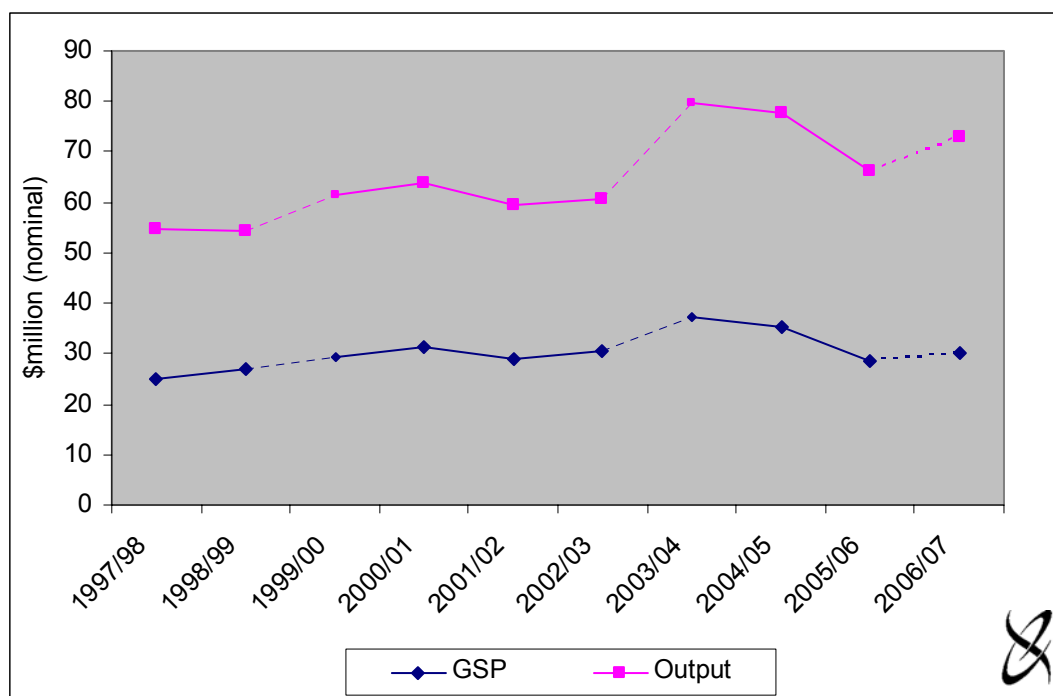
Contribution to GSP and GRP...

As noted above, contribution to GSP or GRP is measured as value of output less the cost of goods and services (including imports) used in producing the output. In 2006/07, total marine scalefish fishing industry related contribution to GSP in South Australia was \$30.0 million, \$6.1 million generated by fishing directly, \$3.5 million generated by downstream activities and \$20.4 million generated in other sectors of the state economy.

Total impacts over time...

Figures 3.5 and 3.6 illustrate the total economic impact of the fishery on the SA economy for the nine-year period, 1997/98 to 2006/07. Estimates of economic impact are expressed in nominal terms. No adjustment has been made to reflect inflation.

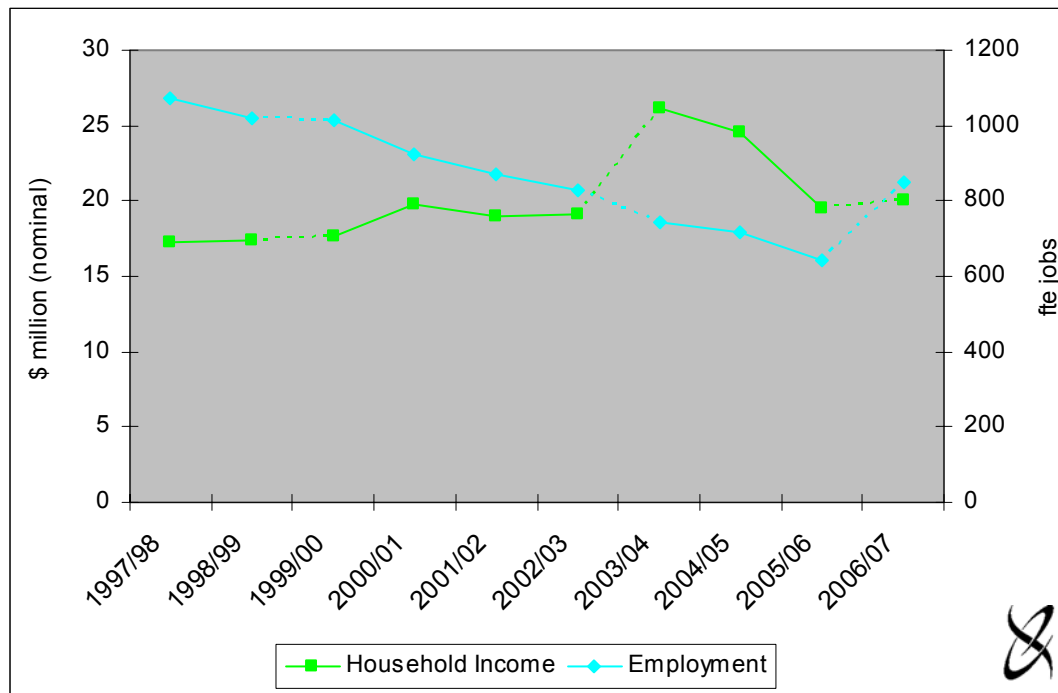
Figure 3.5 Total gross state product and output impact of the SA Marine Scalefish Fishery on the SA economy, 1997/98 to 2006/07 ^a



^a The economic impact of the SA Marine Scalefish Fishery in 1997/98 and 1998/99 does not include the direct and flow-on effects of estimated capital expenditure by licensees; these effects have been included in subsequent years. Estimates of economic impact for the period 1997/98 to 2002/03 do not include the impact of local retail and food service trade; these effects have been included in subsequent years.

Source: EconSearch (2007a) and EconSearch analysis.

Figure 3.6 Total employment and household income impact of the SA Marine Scalefish Fishery on the SA economy, 1997/98 to 2006/07



^a See footnote for Figure 3.5.

Source: EconSearch (2007a) and EconSearch analysis.

Estimates of economic impact for 1997/98 to 1999/00 are based on the October 1998 survey of licence holders. Estimates for 2000/01 to 2002/02 are based on a second survey of licence holders conducted in May 2002. Estimates for 2003/04 to 2005/06 are based on the survey of licence holders conducted by BRS in 2004. Estimates for 2006/07 are based on the most recent survey of licence holders conducted in 2007.

The economic impact of the SA Marine Scalefish Fishery in 1997/98 and 1998/99 does not include the direct and flow-on effects of estimated capital expenditure by licensees; these effects have been included in subsequent years. Estimates of economic impact for the period 1997/98 to 2002/03 do not include the impact of local retail and food service trade; these effects have been included in subsequent years.

As economic impact estimates for the years 1997/98 to 2006/07 are based on different survey samples and techniques, some of the variability between years, is therefore, attributable to sampling variability.

Care should be taken when using value of output as a measure of economic impact as it includes elements of double counting. Using contribution to GSP is the preferred measure of net contribution to the SA economy.

There has been a significant decrease in the total employment impact of the fishery between 1997/98 and 2005/06 as illustrated in Figure 3.8. This reflects the reduction in the number of licence holders (direct employment) in the fishery (see Table 3.2) and potentially some productivity improvements in other sectors of the economy, which results in a reduction of indirect employment. However, in 2006/07, total employment increased significantly in response to an increase in output.

3.5 Economic Rent

Economic rent¹⁰ is defined as the difference between the price of a good produced using a natural resource and the unit costs of turning that natural resource into the good. In this case the natural resource is the Marine Scalefish Fishery and the good produced is the landed fish.

The unit costs or long-term costs all need to be covered if the licence holder is to remain in the fishery. These long-term costs include direct operating costs such as fuel, labour (including the opportunity cost of a self employed fisher's own labour), bait and overheads such as administration and licences and the cost of capital invested in the boat and gear (excluding licence). Capital cost includes depreciation and the opportunity cost of the capital applied to the fishery. The opportunity cost is equivalent to what the fisher's investment could have earned in the next best alternative use.

Determining the opportunity cost of capital involves an assessment of the degree of financial risk involved in the activity. For a risk-free operation, an appropriate opportunity cost of capital might be the long-term real rate of return on government bonds. The greater the risks involved, the greater is the necessary return on capital to justify the investment in that particular activity. For this analysis, the long-term (10 year) real rate of return on government (treasury) bonds of 5 per cent has been used and a risk premium of 5 per cent has been applied.

Given the relatively high-risk nature of the industry (weak property rights therefore short time horizons, exposure to exchange rate fluctuations, general price volatility, problems of resource sustainability and political risk in export countries) an argument could be made for a higher required rate of return.

What remains after the value of these inputs (labour, capital, materials, and services) has been netted out is the value of the natural resource itself. It was estimated that there was no economic rent generated in the SA Marine Scalefish Fishery in 2006/07 (calculated value of -\$4.5 million), nor in the period 1997/98 to 2005/06 (Table 3.12).

¹⁰ Economic rent is comprised of three types of rent: entrepreneurial rent, quasi-rent and resource rent. As in any business some operators are more skilful than others and will therefore earn more profit. These profits, which are one component of economic rent, are *entrepreneurial rents*. In the short-term fishers may earn large surpluses over costs, which may provide prima facie evidence of substantial resource rents. However, there are some circumstances where such surpluses can occur but they are not true rents. These are referred to as *quasi-rents*. One example is where a fishery is developing or recovering and there may be under-investment in the fishery. Another example is where there is a short-term but unsustainable increase in price due to, for example, exchange rate fluctuations. However, some profits will be obtained because the natural resource being used (i.e. the fishery) has a value. These profits are described as *resource rents* and are also a component of economic rent.

Table 3.12 Economic rent in the SA Marine Scalefish Fishery, 1997/98 to 2006/07, (\$'000)

	Gross Income	Less Labour	Less Cash Costs ^a	Less Depreciation	Less Opportunity Cost of Capital (@10%)	Economic Rent
1997/98	16,711	8,542	10,858	3,770	3,016	-9,475
1998/99	18,293	7,843	9,948	3,668	2,934	-6,100
1999/00	19,897	7,905	10,845	3,654	2,923	-5,431
2000/01	21,042	9,547	10,232	3,314	2,651	-4,702
2001/02	19,027	9,274	9,829	3,239	2,591	-5,906
2002/03	20,800	9,508	9,740	3,212	2,569	-4,229
2003/04	21,916	11,701	10,548	3,310	3,299	-6,943
2004/05	20,878	11,865	10,852	3,361	3,350	-8,550
2005/06	17,446	10,923	10,329	3,262	3,251	-10,319
2006/07	19,847	8,762	9,093	3,817	2,715	-4,540

^a Cash costs include costs of materials and services and exclude labour and interest costs.

Source: EconSearch analysis.

4. Other Indicators

4.1 External Factors Influencing the Economic Condition of the Fishery

There are a number of factors in 2006/07 that may have impacted on the economic performance of the fishery. Most of these are likely to continue to affect economic outcomes in the future.

4.1.1 Southern Calamari Stock

Comparison of the 2005/06 catch and effort data against the prescribed performance indicators for the species identified several breaches of limit reference points. All of these breaches favour the calamari fishery (Steer et al. 2006a). The reference points breached in 2005/06 were mostly due to record catches and catch rates observed for 2005/06 (Steer et al. 2006a).

Significant fluctuations in calamari catch have been recorded in the fishery over the last 22 years. Similar fluctuations experienced in other squid fisheries worldwide have been linked to environmental variation (Steer et al. 2006a).

4.1.2 King George Whiting Stock

King George whiting is the most significant species caught in the Marine Scalefish Fishery in terms of contribution to the gross value of production (GVP) (Table 3.1).

King George whiting catch has fallen slightly over the last 5 years; in 2006/07 catch was 361 tonnes compared to 390 tonnes in 2001/02 (Table 3.1). This decline in catch corresponds with a decrease in the number of days spent fishing for the species. This is most likely due to fishers targeting other more abundant species or competition for the resource from non-commercial operators (recreational fishers).

The biological performance indicators for the King George whiting fishery are:

- catch, effort and catch per unit of effort (CPUE) reported by commercial fishermen;
- population age structure from fishery independent monitoring; and
- estimated recruitment and biomass from fishery model 'WhitEst'.

All three of these performance indicators showed either no change or a marginal increase in 2003 and 2004 (McGarvey et al. 2005).

Although catch of King George whiting has decreased slightly, estimates of state-wide CPUE increased marginally in 2003 and 2004. CPUE provides an indication of the abundance and fishable biomass of King George Whiting in South Australia. Fishers generally target 3 year old fish as they grow past 30cm¹¹. The CPUE constitutes an estimate of the strength of a particular year-class. There were declining trends in CPUE over the period 1999 to 2002. This trend was thought to have been the result of recruitment overfishing. The increases in CPUE in 2003 and 2004 indicate that the declining trend has been reversed (McGarvey et al. 2005).

¹¹ The legal size limit for King George whiting is 30cm for areas west of Port Lincoln and 31cm for the remainder of South Australia (Andrew Sullivan PIRSA Fisheries, pers. comm.).

Catch and effort data for 2005/06 indicate that statewide commercial catch of the species has reached a record low, despite a small increase in catch for 2006/07. Recent stock assessment indicates that catch rates have been at their highest ever recorded level (Fowler et al. 2007b). A full stock assessment of the species will be undertaken in 2007/08 to determine whether there has been a change in the stock structure of the species (Steer et al. 2006b).

4.1.3 Snapper Stock

Snapper is the second most significant species caught in the Marine Scalefish Fishery in terms of contribution to GVP, following King George whiting (Table 3.1).

Catch of snapper declined significantly in the 2002/03 and 2003/04 seasons although catch has since followed an increasing trend. In 2001/02 catch was 648 tonnes but fell to only 413 tonnes in 2003/04. Snapper catch in 2006/07 was approximately 644 tonnes (Table 3.1). Prior to the decline over the period 2001/02 to 2003/04, there had been an increasing trend in catch levels (Fowler et al. 2007a).

In order to assess the status of snapper in South Australia focus is directed towards the catch and effort data provided by fishers and biomass estimates derived from the fishery model 'SnapEst', which takes into consideration fishery independent data.

Some key points to note from the most recent catch and effort data and 'SnapEst' estimates are summarised below.

- Catch and catch rates in the Northern Spencer Gulf were indicative of a high biomass of fish.
- In the Southern Spencer Gulf there was a significant increase in catch and CPUE in the late 1990's and early 2000's. In 2002/03, however, estimates of catch and CPUE declined considerably.
- Estimated biomass for the Gulf St Vincent has been relatively stable, although it is significantly lower than the Spencer Gulf estimates.

For 2006/07 there were numerous breaches of the limit reference points that indicate a switch in the significance of the handline and long line fishers (Fowler et al. 2007b).

4.1.4 Net Closures

A voluntary net buyback scheme was undertaken in the fishery in 2005. Out of the 113 net licences in the fishery, 61 net endorsements or licences were relinquished under the scheme.

As a result of the buyback, in August 2005, three permanent netting closures were introduced:

- West Coast;
- Tumby Bay to Dutton Bay; and
- waters surrounding Yorke Peninsula.

Licence holders who traditionally fished in these areas and did not participate in the buyback scheme were given additional time to adjust their fishing operations to the closures. Potential impacts on affected licence holders include increased travelling time to reach fishing grounds and costs associated with adjusting fishing operations to new grounds and different target species (i.e. fuel and labour) (Andrew Sullivan, PIRSA Fisheries, pers. comm.). The impact of the netting closures are highlighted in the results of the 2007 licence holder survey.

4.2 Licence Holder Comments

A number of the respondents to the November 2007 survey raised a range of issues that they felt affected the economic performance of their individual operations and the performance of the Marine Scalefish Fishery as a whole. The views expressed are the opinions of those individuals who participated in the 2007 survey and may not reflect the views of all licence holders in the fishery.

4.2.1 Business viability

Many licence holders indicated that fish prices in 2006/07 were higher and more stable than in previous years. However, a few survey participants indicated that the price they receive for fish is low compared to the retail price of fish. Despite the increase in fish prices, many survey respondents felt that increasing direct fishing costs (e.g. fuel) were negatively impacting on their rate of return to investment. Some licence holders felt that changing regulations may adversely affect the viability of their fishing business in the future.

4.2.2 Management

Some survey respondents regarded the owner-operator policy as restrictive and wanted to use their licence as an asset to gain return rather than as a lifestyle. Some survey respondents indicated that they felt the licence amalgamation scheme had completed what it set out to achieve and that it should be discontinued. Some indicated that the scheme had a negative effect on the value of their fishing licence and restricted entry and exit to the fishery. Some respondents suggested that an endorsement trading scheme would be beneficial to the fishery.

A small number of participants, particularly part-time operators, felt that licence fees did not fully reflect cost recovery for the fishery. For small-scale and part-time operators licence fees make up a significant proportion of their total costs. One licence holder suggested that licence fees could be calculated based on catch or days fished and that recreational fishers should pay their own compliance fees.

Respondents generally wanted more consultation from Government on decisions being made about the fishery. A number of licence holders suggested that consultation was often undertaken at times when it was difficult for fishers to attend (e.g. during peak fishing times).

Many survey participants indicated that a number of recreational fishers were not complying with bag limits and some sold fish to processors. Some survey participants indicated that there was a need for heavier restrictions and greater compliance monitoring on recreational fishers.

4.2.3 Area closures and marine parks

Following the August 2005 netting closures many survey participants were concerned about the introduction of new marine parks in 2008 and potential effects on their fishing business. Some net fishers, who lived in areas which are now closed to netting, travel long distances to fish. With the price of fuel rising, many indicated that this was not viable. Many survey respondents felt that as a result of the area closures, net fishers have been pushed into a smaller fishing area, increasing competition and fishing effort amongst the remaining licence holders. Some respondents felt that the proposed marine parks have caused insecurity among licence holders regarding access to the fishery.

Many survey respondents felt that the current snapper season closure during November has a negative impact upon market access. When the season re-opens at the beginning of December, the market for snapper is flooded and the price drops to around \$3/kg. Some fishers indicated that they stop fishing for snapper during this period because the price received isn't enough to cover costs. Fishers generally recognised the need for management of the snapper stock but some suggestions for alternative management tools included a daily trip limit or, less favourably, a quota system.

Some licence holders, particularly those with a low catch history and part-time fishers, indicated that the introduction of quota systems based on catch history would devalue their licence. These licence holders indicated that they would like to see quota being allocated equally across the fishery. Licence holders with a strong catch history were generally supportive of quota allocations based on catch history.

4.2.4 Environmental issues

Comments from survey participants regarding environmental issues and stock levels include:

- the 2006/07 fishing season was reported by some fishers to have been poor for whiting, calamari and garfish;
- the dredging of the Port River in 2006/07 led to lower catch of Marine Scalefish species due to dirty water; and
- fish habitats (e.g. sea grass meadows) have been damaged by prawn trawlers and sediment from stormwater.

4.3 Prices of Marine Scalefish Fishery Catch in Domestic Markets

This section of the report provides further analysis of prices for marine scalefish species in the Adelaide, Melbourne and Sydney domestic markets. It provides some indication of:

- the seasonality of prices; and
- price differentials between Adelaide, Melbourne and Sydney.

4.3.1 Average monthly beach prices for marine scalefish species in SA

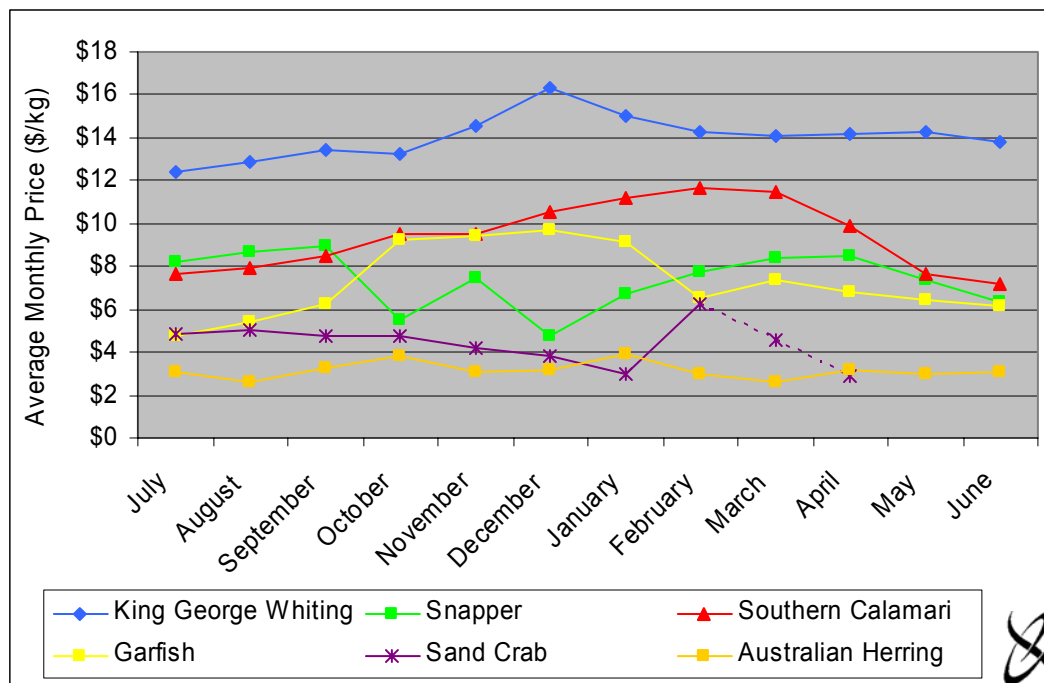
An outline of the seasonality of prices in SA (by month) for 2006/07 is provided in Table 4.1 and Figure 4.1. Across the species, beach prices in SA tend to peak in the warmer months from November to February and be at their lowest in June/July.

Table 4.1 Average monthly prices for major marine scalefish species, South Australia, 2006/07

Month	Average Monthly Price (\$/kg)					
	King George Whiting	Snapper	Southern Calamari	Garfish	Sand Crab	Australian Herring
July	\$12.44	\$8.24	\$7.68	\$4.74	\$4.88	\$3.06
August	\$12.85	\$8.70	\$7.90	\$5.39	\$5.07	\$2.57
September	\$13.43	\$8.98	\$8.49	\$6.26	\$4.79	\$3.28
October	\$13.28	\$5.53	\$9.47	\$9.19	\$4.78	\$3.80
November	\$14.58	\$7.42	\$9.55	\$9.43	\$4.24	\$3.12
December	\$16.28	\$4.77	\$10.58	\$9.67	\$3.81	\$3.18
January	\$15.02	\$6.75	\$11.17	\$9.11	\$2.99	\$3.88
February	\$14.30	\$7.73	\$11.70	\$6.51	\$6.21	\$3.02
March	\$14.09	\$8.36	\$11.45	\$7.36		\$2.63
April	\$14.20	\$8.49	\$9.85	\$6.78	\$2.94	\$3.21
May	\$14.23	\$7.40	\$7.65	\$6.42		\$2.94
June	\$13.80	\$6.39	\$7.14	\$6.18		\$3.04
Average	\$14.04	\$7.40	\$9.39	\$7.25	\$4.43	\$3.14

Source: SARDI Aquatic Sciences

Figure 4.1 Average monthly prices for major marine scalefish species, South Australia, 2006/07



N.B. Data with broken lines correspond with months in which no fish were sold or prices were unavailable. These values have been imputed (for graphical purposes) on the basis of a simple average of the previous and subsequent months.

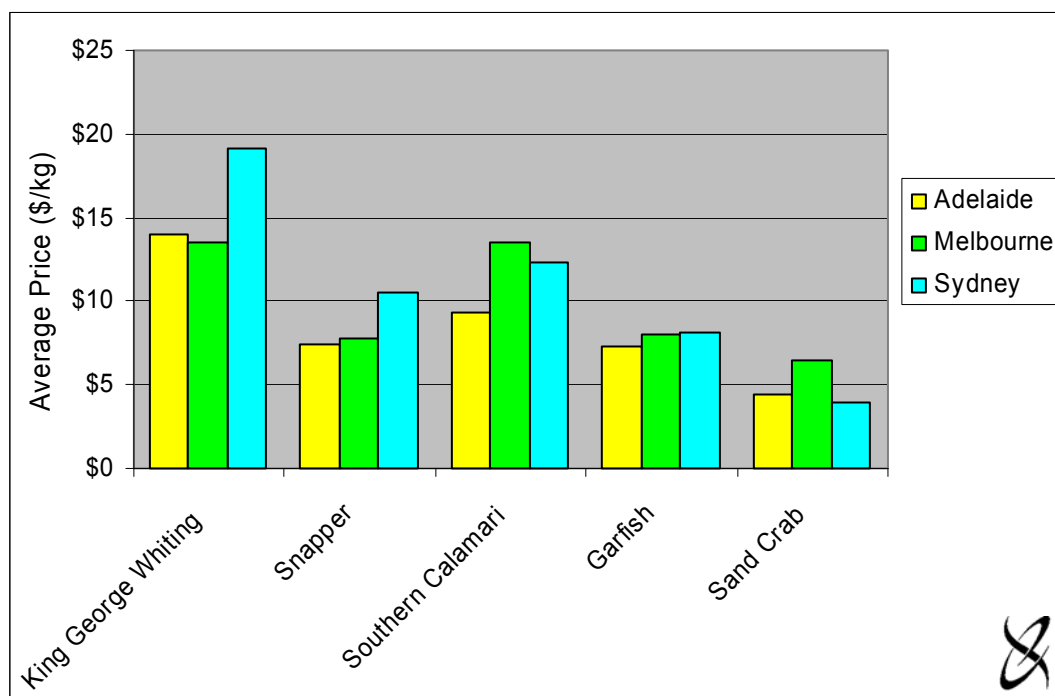
Source: SARDI Aquatic Sciences

4.3.2 Average monthly prices for marine scalefish species in SA and other domestic markets

The value of marine scale catch data sourced from SARDI Aquatic Sciences are estimated on the basis of information provided by processors in South Australia. Many species caught in the Marine Scalefish Fishery are sold in the Melbourne and Sydney markets. The average price of any particular species varies between the different markets.

The price differentials between the beach price in SA and the wholesale market prices in Sydney and Melbourne are illustrated in Figure 4.2 and (on a monthly basis) in Table 4.2.

Figure 4.2 Average price of major marine scalefish species, beach prices for SA and wholesale market prices for Sydney and Melbourne, 2006/07 ^a



^a All prices reported from Sydney and Melbourne Fish Markets are wholesale, that is, before commission is taken into account. Currently, Sydney Fish Markets charges 9 per cent commission plus an environmental levy of 0.025 per cent. Melbourne Fish Market charges 11 per cent commission. Sydney market prices are for product sourced from South Australia, while Melbourne market prices are for product sourced from anywhere within Australia.

Source: SARDI Aquatic Sciences, Samantha Dawes (NSW Department of Primary Industries pers. comm.) and Melbourne Fish Market (Tim Rieniets, Melbourne Wholesale Fish Market, pers. comm.).

Table 4.2 Average monthly prices for major marine scalefish species, beach prices in South Australia and wholesale prices in Melbourne and Sydney fish markets, 2006/07 ^a

	King George Whiting			Snapper			Southern Calamari			Garfish			Sand Crab			Yellowfin Whiting		
	Adelaide	Melbourne	Sydney	Adelaide	Melbourne	Sydney	Adelaide	Melbourne	Sydney	Adelaide	Melbourne	Sydney	Adelaide	Melbourne	Sydney	Adelaide	Melbourne	Sydney
July	\$12.44	\$12.58	\$14.70	\$8.24	\$8.89	\$10.74	\$7.68	\$9.60	\$11.15	\$4.74	\$6.67	\$7.95	\$4.88	\$5.32	\$4.06	\$6.59	\$4.00	\$12.66
August	\$12.85	\$11.68	\$15.45	\$8.70	\$8.17	\$10.71	\$7.90	\$10.60	\$12.57	\$5.39	\$6.67	\$8.40	\$5.07	\$6.18	\$7.26	\$8.00	\$3.50	\$12.95
September	\$13.43	\$14.61	\$19.01	\$8.98	\$8.80	\$10.42	\$8.49	\$13.30	\$13.17	\$6.26	\$7.18	\$8.89	\$4.79	\$5.95	\$3.48	\$7.97	-	\$12.02
October	\$13.28	\$13.62	\$18.28	\$5.53	\$8.24	\$10.61	\$9.47	\$12.92	\$16.24	\$9.19	\$8.59	\$10.30	\$4.78	\$6.42	\$3.39	\$9.17	-	\$12.38
November	\$14.58	\$13.23	\$22.91	\$7.42	\$7.66	\$9.52	\$9.55	\$14.08	\$14.83	\$9.43	\$9.70	\$9.50	\$4.24	\$5.92	\$5.03	\$8.68	\$4.50	\$12.62
December	\$16.28	\$11.98	\$25.88	\$4.77	\$6.54	\$7.31	\$10.58	\$15.23	\$16.45	\$9.67	\$12.23	\$9.22	\$3.81	\$7.50	\$5.77	\$8.79	\$3.80	\$13.13
January	\$15.02	\$11.59	\$18.79	\$6.75	\$8.59	\$11.11	\$11.17	\$14.58	\$12.38	\$9.11	\$9.54	\$8.21	\$2.99	\$9.10	\$3.38	\$9.79	\$2.86	\$14.60
February	\$14.30	\$14.08	\$18.79	\$7.73	\$7.22	\$11.49	\$11.70	\$16.08	\$11.82	\$6.51	\$6.67	\$7.02	\$6.21	\$6.41	\$3.40	\$8.57	-	\$13.13
March	\$14.09	\$15.43	\$18.79	\$8.36	\$6.31	\$11.84	\$11.45	\$15.89	\$10.27	\$7.36	\$5.78	\$7.70	-	\$5.46	\$1.85	\$9.92	-	\$14.77
April	\$14.20	\$15.92	\$18.79	\$8.49	\$8.09	\$10.86	\$9.85	\$14.67	\$10.04	\$6.78	\$7.80	\$6.65	\$2.94	\$9.55	\$2.32	\$9.54	\$2.50	\$15.74
May	\$14.23	\$13.40	\$18.79	\$7.40	\$7.08	\$10.38	\$7.65	\$11.52	\$9.00	\$6.42	\$7.03	\$5.73	-	\$3.64	\$2.82	\$8.77	\$10.00	\$12.59
June	\$13.80	-	\$18.79	\$6.39	-	\$10.70	\$7.14	-	\$9.33	\$6.18	-	\$8.60	-	-	\$4.13	\$7.41	-	\$10.74

^a All prices reported from Sydney and Melbourne Fish Markets are wholesale, that is, before commission is taken into account. Currently, Sydney Fish Markets charges 9 per cent commission plus an environmental levy of 0.025 per cent. Melbourne Fish Market charges 11 per cent commission. Sydney market prices are for product sourced from South Australia, while Melbourne market prices are for product sourced from anywhere within Australia.

Source: SARDI Aquatic Sciences, Samantha Dawes (NSW Department of Primary Industries pers. comm.) and Melbourne Fish Market (Tim Rieniets, Melbourne Wholesale Fish Market, pers. comm.).

4.4 Contribution to the Community

In addition to the economic contribution made to the regional and state economies (Section 3.4), the Marine Scalefish Fishery also contributes to the social, environmental and heritage values of the various fishing regions around the state, through involvement in community-support activities and contribution to the provision, maintenance and expansion of local and regional services and businesses.

4.4.1 Community-support activities

The estimated time spent on community-support activities by licence holders (including licence holders' family members and employees) in 2006/07 is summarised for line and net licence holders in Tables 4.3 and 4.4, respectively.

On average, each line only licence holder (including family members and employees) spent approximately 7 hours per month on community-support activities. Approximately 1 hour per month was spent on attending fishing related meetings, seminars and workshops. Marine Scalefish Fishery line licence holders, as a whole, spent a minimum of 2,063 hours per month on community-support activities.

On average, each net licence holder (including family members and employees) spent over 2 days (18 hours) per month on community-support activities. Almost 4 hours per month were spent on attending fishing related meetings, seminars and workshops. Net licence holders, as a whole, spent a minimum of 862 hours per month on community-support activities.

Table 4.3 Estimated time per month spent on community-support activities by line entitlement only licence holders, 2006/07

Community Activity	Hours per month	
	Average Per Licence Holder	All Licence Holders ^a
Conservation activities (e.g. bird watch, water watch)	0.3	72
Marine rescue and recovery	0.1	25
Attending meetings, seminars, workshops	1.0	280
Compiling fishing-related information for research purposes	0.4	115
Provision of technical advice to committees, panels	0.0	7
Volunteering for community services (e.g. CFS, SES)	0.8	217
Other	4.7	1,349
Total^b	7.2	2,063

^a Calculation based on scaling up average hours per month per line licence holder for all 286 line licences.

^b Totals may not sum due to rounding.

Source: 2007 survey response.

Table 4.4 Estimated time per month spent on community-support activities by net licence holders, 2006/07 ^a

Community Activity	Hours per month	
	Average Per Licence Holder	All Licence Holders ^b
Sports group/ club	10.4	510
Civic group	0.5	26
Religious group	1.2	57
Cultural association	0.2	8
School committee	0.6	28
Neighbourhood watch	0.0	0
Hobby group	0.0	0
Emergency services	0.0	0
Environmental group	0.0	0
Attending fishing related meetings, seminars, workshops	3.8	185
Other	1.0	48
Total ^c	17.6	862

^a Different surveys for net and line licence holders resulted in different community activity categories.

^b Calculation based on scaling up average hours per month per line licence holder for all 49 net licences.

^c Totals may not sum due to rounding.

Source: 2007 survey response.

Assuming the value of time foregone is approximately \$20 per hour ¹², the average value of each line licence holder's time spent on community-support activities was approximately \$144 per month or \$1,728 for the full year (2006/07). For all the line licence holders, the aggregate value of time spent on community-support activities was almost \$41,300 per month or around \$495,000 for the full year. The average value of each net licence holder's time spent on community-support activities was around \$352 per month or \$4,224 per year (2006/07). For all the net licence holders, the aggregate value if time spent on community support-activities was around \$17,200 per month or almost \$207,000 for the full year.

In addition to the above mentioned community-support activities, licence holders indicated that there are a number of other ways that the Marine Scalefish Fishery contributes to social, environmental and heritage values of the local community including:

- assisting local sporting clubs (e.g. coaching, fundraising, social events);
- donating fish to community groups for fundraising;
- caring for the elderly (e.g. cooking, donating fish, Meals on Wheels);

¹² Valuation of time is a difficult concept. The key question is whether one should use the value of time in work to value time spent on leisure or other non-work related activities. The use of \$20 per hour is an approximation of the opportunity cost of time in work for the average person (i.e. an approximation of the average wage rate). The Australian Bureau of Statistics used 3 methods to value volunteers' time and produced a range of estimates from \$19.29/hr to \$22.51/hr in 2006 dollars (inflated from 1997 estimates (Ironmonger 2002, p. 3)).

- reporting illegal fishing activities to PIRSA, police and National Parks and Wildlife Service;
- assisting local schools (i.e. taking on work experience students, assisting with reading programs, donating fish for camps), etc.;
- assisting government agencies and university students undertaking research into the fishery;
- identifying aboriginal sites;
- office bearer/member of local associations (i.e. Town Hall, sporting clubs, Local Council, Parents and Friends Committee); and
- passing on valuable knowledge and information regarding the South Australian coastal environment and the fishing industry to local residents from outside the fishing community, tourists and recreational fishers.

4.4.2 Local and regional services/businesses

The operation of the Marine Scalefish Fishery (and the employment the fishery generates and the households it maintains) has either directly or indirectly contributed to the provision, maintenance and expansion of a number of local and regional services and businesses. A summary of the Marine Scalefish Fishery's contribution to various services and businesses is provided in Table 4.5.

Note that some of the fishery's contribution to the community is quantified in section 3.4, but the need for services (e.g. schools, police etc.) and the contributions to various organisations (e.g. hospitals) means the fishery contributes to the community in more ways than just generating income and the direct purchase of goods and services.

While it was difficult to quantify the contribution the fishery makes to local and regional services and businesses, an estimate was made of the number of children from fishing families and fishing families' employees that attended local schools.

Of those who participated in the survey there were 201 children (under the age of 18) who were members of fishing families and fishing families' employees in 2006/07. There were 121 children who belonged to licence holder families and 62 were children of employees. Of these 201 children, 175 of them attended local schools. Ninety-eight children assisted with fishing operations.

Table 4.5 Fishery contribution to local and regional services/businesses, 2006/07

Service/Business	Location	Fishery Contribution
Service stations	Adelaide, Port Augusta, Whyalla, Crystal Brook, Kingscote, Port Lincoln, Wallaroo, Port Hughes, Ceduna, Streaky Bay, Yorke Peninsula, Cowell, Elliston, Cape Jervis	Purchase fuel and service vehicles
Hotels, fish/seafood shops	Adelaide, Port Augusta, Whyalla, Port Wakefield, Wallaroo, Kingscote, Port Pirie, Port Lincoln, Cowell, Ceduna, Cape Jervis	Supply fish
Marine shops	Adelaide, Port Augusta, Whyalla, Port Hughes, Ceduna, Streaky Bay, Yorke Peninsula, Cowell, Elliston, Cape Jervis	Purchase ice, bait, tackle, nets, motors, service boats
Local clubs/sporting groups	Whyalla, Port Pirie, Ceduna	Supply and donate fish
Fish Factory processor	Adelaide	Supply fish
Fish buyers/processors	Adelaide, Port Pirie, Port Lincoln, Thevenard, Streaky Bay	Supply fish and employ people
Transport	Port Lincoln, Yorke Peninsula, Kingscote, Elliston	Transport fish to markets
Local food providers	Port Parham, Port Clinton, Port Lincoln, Kingscote, Cowell, Ceduna, Yorke Peninsula, Port Neill, Cape Jervis	Purchase food
Local community groups	Port Wakefield	Donations
Local charter companies	Cowell, Cleve, Whyalla, Port Lincoln	Supply bait
Star of the sea	Semaphore, Glenelg, Brighton	Donations
Other fishers	Port Hughes	Supply bait
Bait shops	Port Hughes	Supply bait
Tourism	Kangaroo Island	Provision and promotion of local product
Boat/vehicle dealers	Port Lincoln, Whyalla	Purchase boats and vehicles

Source: 2007 survey responses.

4.5 Other Indicators

In addition to financial information, a range of other information was collected from licence holders during the survey regarding their fishing operations.

4.5.1 Time in fishery

The number of years that line only licence holders in the Marine Scalefish Fishery had owned fishing licences ranged from 1 year to 55 years, with an average length of ownership by individual licence holders of 18 years. The number of years that net licence holders in the Marine Scalefish Fishery had owned fishing licences ranged from 7 years to 49 years, with an average length of ownership by individual licence holders of 25 years. For the fishery as a whole the average length of ownership was 21 years.

Several fishing families have had family members working in commercial fishing for a number of generations. The number of generations involved in commercial fishing ranged from 1 to 5, with an average number of almost 2.

4.5.2 Age of licence holders

The majority of line licence holders were aged between 41 and 55 years at the time of the survey, with the highest number of licence holders in the 41-45 year and 51-55 year age bracket (20 per cent in each) (Table 4.6).

The majority of net licence holders were aged between 31 and 55 years at the time of the survey with the highest number of licence holders in the 51-55 year age bracket (19 per cent) (Table 4.6).

Table 4.6 Age of marine scalefish licence holders from the survey sample, 2006/07

Age Bracket (Years)	Net Licence Holders		Line Licence Holders		All Respondents	
	Number of respondents	% of Total	Number of respondents	% of Total	Number of respondents	% of Total
Under 25	0	0%	0	0%	0	0%
26-30	1	3%	3	4%	4	3%
31-35	5	14%	2	3%	7	6%
36-40	6	16%	9	11%	15	13%
41-45	4	11%	16	20%	20	17%
46-50	5	14%	13	16%	18	15%
51-55	7	19%	16	20%	23	20%
56-60	2	5%	7	9%	9	8%
61-65	4	11%	5	6%	9	8%
Over 65	3	8%	9	11%	12	10%
Total	37	100%	80	100%	117	100%

Source: 2007 survey response.

In the younger age brackets (40 or less) there is a higher proportion of net fishers (33 per cent) than line fishers (18 per cent).

In the middle age brackets (41 to 55) there is a higher proportion of line fishers (56 per cent) than net fishers (44 per cent).

In the older age brackets (56 or more) there is a similar proportion of line and net fishers (26 and 24 per cent, respectively).

Across the whole Marine Scalefish Fishery 54 per cent of licence holders were 50 years or younger at the time of the survey. This indicates an average lower than that for South Australian owner/managers of broad acre and livestock properties, which was 53 years in 2004/05 (ABARE 2006).

4.5.3 Fishing location

Survey respondents fished in four locations: the West Coast (i.e. the west coast of Eyre Peninsula to the Western Australian border), Spencer Gulf, Gulf St Vincent and Victor Harbor/South East. Some licence holders (approximately 30 per cent) indicated that they fished in more than one of these locations during the 2006/07 season. This included 37 per cent of net licence holders and 26 per cent of line entitlement only licence holders fishing in more than one fishing location.

In 2006/07, the Spencer Gulf was the most popular location fished. Sixty-four per cent of survey respondents (26 net licence holders and 49 line only licence holders, 75 in total) indicated that they fished in the Spencer Gulf, 46 per cent (24 net licence holders and 30 line only licence holders, 54 in total) fished in the Gulf St Vincent and 23 per cent fished on the West Coast (5 net licence holders and 22 line only licence holders, 27 in total).

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Disclaimer

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Appendix 1 Economic Impact of the SA Marine Scalefish Fishery, 2005/06¹³

Appendix Table 1.1 Economic impact of the SA Marine Scalefish Fishery, 2005/06

	West Coast	Spencer Gulf / Coffin Bay	Gulf St Vincent / Kangaroo Island	South Australia
Output (\$m)				
Direct				
Fishing	2.8	11.1	7.0	17.4
Downstream ^c	0.4	2.2	1.3	9.5
All other sectors (indirect)	1.4	9.2	5.9	39.2
Total	4.5	22.5	14.1	66.1
Total/Direct	1.5	1.8	1.8	2.8
Total/Tonne (\$)	\$11,500	\$10,800	\$10,500	\$15,600
Contribution to GSP (\$m) ^d				
Direct				
Fishing	0.5	4.4	3.6	6.7
Downstream	0.2	0.8	0.5	3.4
All other sectors (indirect)	0.7	4.6	2.9	18.5
Total	1.4	9.9	6.9	28.6
Total/Direct	2.2	2.0	1.8	1.3
Total/Tonne (\$)	\$3,500	\$4,700	\$5,100	\$11,200
Employment (fte jobs) ^e				
Direct				
Fishing	47.5	185.2	124.1	354.1
Downstream	3.7	18.6	10.5	74.0
All other sectors (indirect)	9.4	66.6	42.8	216.0
Total	60.6	270.4	177.4	644.1
Total/Direct	1.2	1.4	1.4	2.0
Total/Tonne	\$0	\$0	\$0	\$0
Household Income (\$m)				
Direct				
Fishing	0.1	4.4	3.5	6.7
Downstream	0.1	0.6	0.3	2.5
All other sectors (indirect)	0.4	2.5	1.5	10.4
Total	0.6	7.6	5.3	19.5
Total/Direct	4.2	1.6	1.4	1.5
Total/Tonne (\$)	\$1,400	\$3,600	\$3,900	\$4,400

Source: EconSearch (2007a)

¹³ Estimates of economic impact for the period 1997/98 to 2004/05 are detailed in EconSearch (2006).

Appendix 2 Summary Economic Indicators for South Australian Commercial Fisheries

Appendix Table 2.1 Commercial fisheries catch, South Australia, 1990/91 – 2005/06 (tonnes)

Year	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lobster	Nth'n Zone Rock Lobster	Blue Swimmer Crabs	Lakes and Coorong ^a	Sardines	Other Marine Species	Total SA Fisheries ^b
1990/91	863	134	1,951	1,562	1,104	434	2,442	n.a.	7,108	15,598
1991/92	885	0	2,155	1,940	1,222	425	3,143	145	7,750	17,665
1992/93	869	0	1,645	1,754	1,064	511	2,640	1,230	7,499	17,212
1993/94	802	226	1,693	1,669	930	544	2,992	2,377	6,719	17,952
1994/95	851	148	1,911	1,720	891	608	2,884	2,803	9,744	21,560
1995/96	902	258	2,013	1,684	903	655	2,720	3,708	6,301	19,144
1996/97	903	211	1,813	1,635	893	464	2,657	3,428	6,507	18,511
1997/98	812	267	2,492	1,680	942	469	2,595	6,041	5,526	20,824
1998/99	933	336	2,425	1,713	1,016	501	2,355	4,465	4,964	18,708
1999/00	889	400	2,016	1,717	1,001	549	1,995	3,836	4,840	17,243
2000/01	867	384	2,603	1,716	846	556	2,293	7,368	5,132	21,765
2001/02	850	322	2,288	1,717	675	559	1,875	12,165	4,644	25,095
2002/03	890	232	1,508	1,766	595	583	2,030	21,741	4,048	33,393
2003/04	879	172	1,958	1,896	504	611	2,120	33,160	3,712	45,012
2004/05	902	213	1,960	1,897	446	632	2,198	56,952	3,810	69,010
2005/06	896	179	1,891	1,889	476	648	2,352	28,626	3,186	40,143

^a Excludes the River fishery for the years 2003/04 and 2004/05.

^b Excludes aquaculture, south east non-trawl, tuna, deep water trawl.

Source: EconSearch (2007b).

Appendix Table 2.2 Commercial fisheries gross value of production, South Australia, 1990/91 – 2005/06 (\$m)

Year	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lobster	Nth'n Zone Rock Lobster	Blue Swimmer Crabs ^a	Inland Waters ^b	Sardines	Other Marine Species ^c	Total SA Fisheries ^d
1990/91	14.0	1.7	20.0	26.7	18.2	1.6	2.3	na	17.8	102.4
1991/92	15.1	0.0	19.7	36.3	21.4	1.4	2.6	0.2	21.3	117.9
1992/93	23.7	0.0	19.7	34.8	20.5	1.6	5.3	0.8	20.3	126.7
1993/94	27.2	3.3	20.9	43.2	23.4	1.8	5.6	1.4	19.2	146.0
1994/95	22.8	1.9	22.6	48.6	25.5	2.2	6.3	1.6	24.5	156.1
1995/96	22.5	3.5	22.9	44.6	23.8	2.5	6.0	2.5	21.8	150.1
1996/97	25.2	2.9	22.2	47.0	24.4	2.1	6.3	2.2	20.6	152.9
1997/98	26.9	4.1	29.2	50.9	27.7	2.2	5.5	3.8	16.7	166.9
1998/99	27.2	5.0	34.6	47.2	26.7	2.2	6.3	2.5	18.0	169.7
1999/00	32.4	7.6	36.1	51.2	29.8	2.5	7.5	2.7	19.2	189.1
2000/01	40.0	6.7	46.0	55.1	28.0	3.1	7.8	5.2	20.2	212.0
2001/02	34.8	5.9	41.5	65.7	26.2	3.5	6.0	8.5	18.5	210.5
2002/03	36.3	4.2	28.2	63.8	18.8	3.6	5.1	17.8	20.4	198.3
2003/04	31.6	3.1	40.4	49.3	12.0	3.6	5.4	22.5	21.9	189.9
2004/05	33.8	3.8	32.0	54.4	11.6	3.6	5.5	28.5	20.9	194.1
2005/06	33.9	2.9	34.0	65.7	15.4	5.2	5.9	16.0	17.4	196.6

^a SARDI estimates for the years 1990/91 and 1991/92, revalued SARDI estimates using Baker and Pierce (1998) for the years 1992/93 to 2001/02 and survey based readjustment factors for 2002/03 and 2003/04.

^b Excludes south east non-trawl, tuna, deep water trawl. SARDI estimates for the years 1990/91 to 2002/03, revalued SARDI estimates for 2003/04 using weighted average prices from Sydney and Melbourne fish markets and price data obtained from fishers.

^c Excludes aquaculture, south east non-trawl, tuna, deep water trawl.

Source: EconSearch (2007b).

Appendix Table 2.3 Cost of management in South Australian commercial fisheries, 2005/06

	Licence Fees (\$'000)	GVP (\$'000)	Fees/ GVP (%)	Catch ('000kg)	Fees/ Catch (\$/kg)	Licence Holders (no.)	Fees/ Licence (\$/licence)
Abalone	2,323	33,859	6.9%	896	\$2.59	35	\$66,359
GSV Prawns	270	2,941	9.2%	179	\$1.51	10	\$27,023
SG & WC Prawns	834	33,968	2.5%	1,891	\$0.44	42	\$19,855
Sth'n Zone Rock Lobster	2,508	65,737	3.8%	1,889	\$1.33	180	\$13,932
Nth'n Zone Rock Lobster	1,088	15,433	7.0%	476	\$2.29	69	\$15,766
Blue Crabs - Pots	240	4,966	4.8%	600	\$0.40	8	\$29,965
Blue Crabs – Marine Scale	55	270	20.4%	48	\$1.15	11	\$5,004
Lakes and Coorong ^a	265	5,924	4.5%	2,352	\$0.11	37	\$7,175
Marine Scalefish	1,547	17,446	8.9%	3,186	\$0.49	384	\$4,028
Sardines	1,005	16,031	6.3%	28,626	\$0.04	14	\$71,814
Total SA	10,135	196,575	5.2%	40,143	\$0.25	790	\$12,829

^a Excludes the River fishery.

Source: EconSearch (2007b).

Appendix Table 2.4 Financial performance in South Australian commercial fisheries, 2005/06, (\$'000) (average per boat)

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs Pot Sector ^a	Blue Crabs MS Sector ^a	Marine Scalefish ^b	Sardines	Lakes and Coorong
Gross Income	1,016,832	289,461	750,619	379,715	294,654	4,965,840	270,000	47,143	1,149,494	192,547
Costs										
Fuel	15,303	26,271	56,862	21,559	45,355	643,257	29,947	6,237	201,916	13,949
R&M	37,217	14,771	47,481	19,228	17,141	554,784	34,805	5,619	92,054	6,382
Bait				9,794	15,877			2,052		
Provisions		871	3,438	346	4,523	74,030	9,306		8,601	231
Labour	259,742	108,665	251,689	105,124	126,650	1,242,761	92,227	29,515	476,843	70,477
Licence fee	65,408	28,283	22,750	15,832	19,588	239,717	55,046	4,028	71,634	8,660
Insurance	6,871	18,993	19,911	6,412	8,843	64,430	9,701	1,892	30,477	1,593
Interest	4,983	28,475	41,784	21,951	31,889	630,348	8,774	266	88,312	4,900
Admin & Other	52,465	24,073	51,700	11,425	30,517	214,071	13,171	8,083	85,518	27,202
Total Cash Costs	441,988	250,401	495,615	211,670	300,384	3,663,397	252,977	57,692	1,055,354	133,393
Cash Operating Surplus	574,844	39,060	255,004	168,045	-5,730	1,302,443	17,023	-10,550	94,139	59,154
Depreciation	65,965	133,534	142,871	45,030	58,002	334,322	38,863	8,814	194,240	59,154
Earnings Before Tax	508,879	-94,475	112,133	123,015	-63,732	968,121	-21,840	-19,364	-100,101	0
EBIT ^c	513,862	-66,000	153,918	144,966	-31,843	1,598,468	-13,067	-19,098	-11,789	4,900
Capital										
Fishing Gear & Equipment	330,981	988,171	1,295,365	330,318	451,237	3,346,480	327,635	87,851	2,621,394	121,908
Licence Value	8,534,578	2,424,116	4,283,669	2,873,997	1,472,307	25,509,890	1,282,274	146,565	3,042,857	177,500
Total Capital	8,865,559	3,412,287	5,579,034	3,204,315	1,923,544	28,856,371	1,609,909	234,415	5,664,251	299,408
Rate of Return to Gear/Equip	155%	-7%	12%	44%	-7%	48%	-4%	-22%	0%	4%
Rate of Return to Capital	6%	-2%	3%	5%	-2%	6%	-1%	-8%	0%	2%

^a Estimates of financial performance for the blue crab fishery have been presented on a whole of sector basis rather than as an average per boat. The survey estimate of gross income for the blue crab – pot sector is higher than the SARDI estimate of \$3.32 million for 2004/05 presented in Appendix Table 2.2. The reason for the difference is likely to be that the SARDI estimate is based on Adelaide prices only, whereas licence holders are selling to the higher priced Sydney and Melbourne markets as well.

^b Excludes the Commonwealth managed fisheries: south east non-trawl, tuna, deep water trawl.

^c Earnings before interest and tax.

Source: EconSearch (2007b).

Appendix Table 2.5 Costs as a percentage of total cash costs in South Australian commercial fisheries, 2005/06

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs Pot Sector	Blue Crabs MS Sector	Marine Scalefish ^a	Sardines	Lakes & Coorong
Fuel	3%	10%	11%	10%	15%	18%	12%	11%	19%	10%
R&M	8%	6%	10%	9%	6%	15%	14%	10%	9%	5%
Labour	59%	43%	51%	50%	42%	34%	36%	51%	45%	53%
Licence fee	15%	11%	5%	7%	7%	7%	22%	7%	7%	6%
Insurance	2%	8%	4%	3%	3%	2%	4%	3%	3%	1%
Interest	1%	11%	8%	10%	11%	17%	3%	0%	8%	4%
Admin & Other	12%	10%	11%	10%	17%	8%	9%	18%	9%	21%
Total Cash Costs	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

^a Excludes Commonwealth managed fisheries: south east non-trawl, tuna, deep water trawl.

Source: EconSearch (2007b).

Appendix Table 2.6 Economic impacts of South Australian commercial fisheries, 2005/06

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs	Marine Scalefish	Sardines	Lakes and Coorong	All Fisheries ^a
Output (\$m)										
Direct										
Fishing	33.9	2.9	34.0	65.7	15.4	5.2	17.4	16.0	5.9	196.6
Downstream ^b	5.1	1.8	16.5	24.5	6.6	3.1	9.5	3.3	5.8	76.2
All other sectors (indirect)	29.6	5.6	48.6	80.1	32.6	9.0	39.2	24.6	13.7	283.1
Total	68.6	10.4	99.0	170.3	54.7	17.4	66.1	43.9	25.5	555.8
Total/Direct	1.8	2.2	2.0	1.9	2.5	2.1	2.5	2.3	2.2	2.0
Total/Tonne (\$)	\$76,500	\$57,900	\$52,300	\$90,100	\$114,800	\$26,700	\$20,700	\$1,500	\$10,800	\$12,348
Contribution to GSP (\$m)										
Direct										
Fishing	27.6	1.8	25.1	49.7	5.2	3.2	6.7	8.9	3.7	131.9
Downstream	1.8	0.7	6.8	9.7	2.6	1.1	3.4	1.5	2.3	29.9
All other sectors (indirect)	14.4	2.8	23.3	38.6	15.6	4.2	18.5	11.7	6.6	135.8
Total	43.8	5.3	55.2	98.0	23.5	8.4	28.6	22.0	12.7	297.6
Total/Direct	1.5	2.1	1.7	1.7	3.0	2.0	2.8	2.1	2.1	1.8
Total/Tonne (\$)	\$48,900	\$29,351	\$29,200	\$51,800	\$49,300	\$13,000	\$8,986	\$769	\$5,382	\$6,612
Employment (fte jobs) ^c										
Direct										
Fishing	123	37	217	421	185	27	354	63	74	1,501
Downstream	23	18	160	141	41	17	74	21	46	542
All other sectors (indirect)	164	31	272	442	182	49	216	139	77	1,572
Total	310	86	649	1,005	408	93	644	222	197	3,615
Total/Direct	2.1	1.6	1.7	1.8	1.8	2.1	1.5	2.7	1.6	1.8
Total/Tonne	0.35	0.48	0.34	0.53	0.86	0.14	0.20	0.01	0.08	0.08
Household Income (\$m)										
Direct										
Fishing	9.1	1.1	10.6	18.9	5.8	1.3	6.7	6.7	2.6	62.8
Downstream	1.2	0.5	4.9	6.7	1.8	0.7	2.5	1.0	1.7	21.0
All other sectors (indirect)	8.0	1.5	13.0	21.1	8.6	2.4	10.4	6.4	3.7	75.1
Total	18.3	3.2	28.4	46.7	16.3	4.4	19.5	14.1	8.0	158.9
Total/Direct	1.8	1.9	1.8	1.8	2.1	2.1	2.1	1.8	1.9	1.9
Total/Tonne (\$)	\$20,400	\$17,600	\$15,000	\$24,700	\$34,200	\$6,800	\$6,100	\$400	\$3,300	\$3,530

^a Excludes the River fishery and the Commonwealth managed fisheries: south-east non-trawl, tuna and deep water trawl.

^b Downstream activities include net value of processing, transport services and retail/food services trade.

^c Full time equivalent jobs. Direct employment in the fishing sector was comprised of 655 full-time and 1,399 part-time, that is, 2,054 jobs in total.

Source: EconSearch (2007b).

Appendix Table 2.7 Economic rent in South Australian commercial fisheries, 2005/06 (\$m)

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs	Marine Scalefish	Sardines	Lakes and Coorong	All Fisheries ^a
Gross Income	35.6	2.9	34.0	65.7	15.4	5.2	17.4	16.0	5.9	198.3
Less Labour	9.1	1.1	11.4	18.2	6.6	1.3	10.9	6.7	2.2	67.5
Less Materials & Services	6.2	1.2	9.1	14.6	7.4	1.9	10.3	6.6	1.8	59.2
Less Depreciation	2.3	1.4	6.5	7.8	3.0	0.4	3.3	2.7	0.6	27.9
Less Opportunity Cost of Capital (@10%)	1.2	1.0	5.9	5.7	2.4	0.4	3.3	3.7	0.4	23.8
Economic Rent	16.8	-1.7	1.1	19.4	-4.0	1.2	-10.3	-3.5	1.0	20.0

^a Excludes the River fishery and the Commonwealth managed fisheries: south east non-trawl, tuna, deep water trawl.

Source: EconSearch (2007b).

Appendix 3 Financial Performance, 1997/98 to 2001/02

Appendix Table 3.1 Financial performance in the Marine Scalefish Fishery, 1997/98 to 2001/02 (average per boat) ^a

	1997/98		1998/99		1999/00		2000/01		2001/02	
	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC
Gross Income	\$35,658		\$40,656		\$45,498		\$48,915		\$46,504	
Costs										
Fuel	\$4,847	11%	\$4,307	10%	\$6,535	15%	\$5,818	13%	\$5,690	12%
R&M	\$6,443	15%	\$6,161	15%	\$6,390	14%	\$4,355	9%	\$4,448	9%
Bait	\$698	2%	\$659	2%	\$667	1%	\$1,666	4%	\$1,666	4%
Provisions	\$706	2%	\$676	2%	\$701	2%	\$1,166	3%	\$1,190	3%
Labour	\$18,226	42%	\$17,431	42%	\$18,077	41%	\$22,193	48%	\$22,666	48%
Licence fee	\$3,418	8%	\$3,169	8%	\$3,188	7%	\$3,596	8%	\$3,644	8%
Insurance	\$806	2%	\$806	2%	\$826	2%	\$1,774	4%	\$1,823	4%
Interest	\$1,701	4%	\$1,570	4%	\$1,738	4%	\$269	1%	\$253	1%
Admin and Other	\$6,250	15%	\$6,332	15%	\$6,491	15%	\$5,412	12%	\$5,562	12%
Total Cash Costs	\$43,095	100%	\$41,110	100%	\$44,614	100%	\$46,248	100%	\$46,942	100%
Cash Operating Surplus (excl unpaid labour)	\$8,686		-\$454		\$885		\$18,132		\$15,357	
Cash Operating Surplus (incl unpaid labour)	-\$7,437		-\$454		\$885		\$2,667		-\$437	
Depreciation	\$8,045		\$8,151		\$8,356		\$7,704		\$7,917	
Earnings Before Tax	-\$15,483		-\$8,606		-\$7,472		-\$5,037		-\$8,355	
Earnings Before Interest & Tax	-\$13,782		-\$7,036		-\$5,734		-\$4,768		-\$8,102	
Capital										
Fishing Gear & Equipment	\$64,364		\$65,211		\$66,852		\$61,630		\$63,338	
Licence Value ^{b, c}	\$34,578		\$37,101		\$40,354		\$84,223		\$80,072	
Total Capital	\$98,942		\$102,312		\$107,205		\$145,853		\$143,410	
Rate of Return to Fishing Gear & Equip	-21.4%		-10.8%		-8.6%		-7.7%		-12.8%	
Rate of Return to Total Capital	-13.9%		-6.9%		-5.3%		-3.3%		-5.6%	

^a Financial performance estimates for 1997/98 to 1999/00 are based on the October 1998 survey of licence holders. Financial performance estimates for 2000/01 and 2001/02 are based on a second licence holder survey conducted in May 2002.

Source: EconSearch (2007a).