

Economic Indicators
for the
Lakes and Coorong Fishery
2008/09

A report prepared for
Primary Industries and Resources South Australia

Prepared by



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Abbreviations

ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
CPI	Consumer Price Index
fte	full time equivalent
GPHA	Goolwa Pipi Harvesters Association
GRP	Gross Regional Product
GSP	Gross State Product
GVP	Gross Value of Production
MSC	Marine Stewardship Council
PIRSA	Primary Industries and Resources South Australia
R&M	Repairs and Maintenance
SA	South Australia
SARDI	South Australian Research and Development Institute
SASQAP	South Australian Shellfish Quality Assurance Program
SFA	Southern Fishermen's Association

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Estimation of economic indicators for the Lakes and Coorong Fishery for 2002/03 to 2004/05 are based on the analysis undertaken for the Southern Fishermen's Association (SFA), and presented in the report *Lakes and Coorong Fishery: "Wild Fisheries with a Future", Current Economic Value and Value-Adding Opportunities, Final Report* (EconSearch 2004a), funded by the Commonwealth Department of Transport and Regional Services' Regional Assistance Program. In the preparation of economic indicators for the period 2005/06 to 2008/09, EconSearch relied heavily on the voluntary cooperation of fishing operators in providing data for the 2006 and 2010 surveys. The input, guidance and support provided by members of the SFA, particularly Garry Hera-Singh and Tracy and Glen Hill and by members of the GPHA is greatly appreciated.

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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 by the Minister for Agriculture, Food and Fisheries to meet the obligations of section 7 of the *Fisheries Management Act 2007*.

This report, *Economic Indicators for the Lakes and Coorong Fishery, 2008/09*, is the seventh detailed economic indicators report prepared for the Lakes and Coorong Fishery, the first having been prepared for 2002/03 (EconSearch 2004b). The 2002/03 economic indicators were derived from a report prepared for the Southern Fishermen's Association (SFA), entitled *Lakes and Coorong Fishery: "Wild Fisheries with a Future", Current Economic Value and Value-Adding Opportunities, Final Report* (EconSearch 2004a), funded by the Commonwealth Department of Transport and Regional Services' Regional Assistance Program. The second and third reports, prepared for 2003/04 and 2004/05, respectively (EconSearch 2005a and 2006), provided an update of the survey based indicators. The fourth report, prepared for 2005/06 (EconSearch 2007), provided an update of the indicators based on a second survey of licence holders conducted in October 2006. The fifth and sixth reports, prepared for 2006/07 and 2007/08, respectively (EconSearch 2008a and 2009), provided an update of the economic indicators based on the second licence holder survey.

For earlier years, a limited number of economic indicators for the Lakes and Coorong Fishery were prepared in conjunction with the River Murray commercial fishery. The first report, entitled *Economic Indicators for the SA Inland Waters Fisheries 1997/98*, summarised information obtained from SARDI Aquatic Sciences and PIRSA Fisheries (EconSearch 1999). The second to fifth annual reports, prepared for the years 1998/99 to 2001/02, respectively, provided an update of the 1997/98 economic indicators (EconSearch 2000, 2001, 2002 and 2003).

The objective of this report, *Economic Indicators for the Lakes and Coorong Fishery, 2008/09*, was to outline the fishery's recent economic performance derived from the 2010 survey of licence holders.

The aim of all the studies has been 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;
- financial performance indicators (income, costs, profit and return on investment);
- the economic impact of the fishery, both local and state;
- economic rent;
- external factors that influence the economic condition of the fishery;
- prices in local and interstate 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 2007/08, are presented in Appendix 3.

2. Method of Analysis and Definition of Terms

2.1 Survey of Lakes and Coorong Licence Holders, 2010

The questionnaire for the survey of licence holders in 2010 was based on the survey conducted in 2006. The questionnaire for the survey was drafted by the consultants and subsequently modified after consultation with members of the Southern Fishermen's Association (SFA) and Goolwa Piri Harvesters Association (GPHA). The sampling frame for the survey included all licence holders in the Lakes and Coorong Fishery (36 licences in total). The time period for which information was sought was the 2008/09 financial year.

Licence holders were sent an introductory letter from EconSearch outlining the project and seeking their support. Telephone calls were then made by EconSearch representatives to each licence holder seeking their participation in the survey. Interview times were arranged with willing participants. EconSearch representatives visited licence holders to conduct face-to-face interviews over the period February to March 2010.

A total of 17 usable responses were collected; 19 licence holders did not provide a response to the survey for the following reasons:

- not contactable/did not return calls (12);
- not interested in participating in the survey (2);
- too busy to participate in the survey (3);
- minimal fishing days during 2008/09 and was unable to provide financial records (1); and
- licence sold recently (1).

A total of 17 useable licence holders represented almost half of the licences in the fishery.

2.2 Definition of Terms ¹

Total Boat Income (TBI): refers to the cash receipts received by an individual firm and is expressed in dollar terms. Total boat income is calculated as catch (kg) multiplied by 'beach price' (\$/kg). Total boat income is the contribution of an individual licence holder to the GVP of a fishing sector or fishery.

Total Boat Variable Costs: are costs which are dependent upon the level of catch or, more commonly, the amount of time spent fishing. As catch or fishing time increases, variable costs also increase. Variable costs are measured in current dollar terms and include the following individual cost items:

- fuel, oil and grease for the boat (net of diesel fuel rebate)
- ice
- provisions
- crew payments

¹ Where possible definitions have been kept consistent with those used by Brown (1997) in ABARE's *Australian Fisheries Survey Report*.

- fishing equipment, purchase and repairs
- repairs & maintenance: ongoing (slipping, painting, motor)

Boat Gross Margin: is defined as *Total Boat Income* less *Total Boat Variable Costs*. This is a basic measure of profit which assumes that capital has no alternative use and that as fishing activity (days fished) varies there is no change in capital or fixed costs.

Total Boat Fixed Costs: are costs that remain fixed regardless of the level of catch or the amount of time spent fishing. As such these costs, measured in current dollar terms, are likely to remain relatively constant from one year to the next. Examples of fixed cost include:

- insurance
- licence and industry fees
- office & business administration (communication, stationery, accountancy fees)
- interest on loan repayments and overdraft
- leasing

Total Boat Cash Costs (TBCC): defined as *Total Boat Variable Costs* plus *Total Boat Fixed Costs*

Gross Operating Surplus: (GOS) is defined as *Total Boat Income* less *Total Boat Cash Costs* and is expressed in current dollar terms. GOS may be used interchangeably with the term Gross Boat Profit. A GOS value of zero represents a breakeven position for the business, where TBCC equals TBI. If GOS is a negative value the firm is operating at a cash loss and if positive the firm is making a cash profit. GOS does not include a value for owner/operator wages, unpaid family work, or depreciation.

Owner-operator and Unpaid Family Labour: in many fishing businesses there is a component of labour that does not draw a direct wage or salary from the business. This will generally include owner/operator labour and often also include some unpaid family labour. The value of this labour needs to be accounted which involves imputing a labour cost based on the amount of time and equivalent wages rate. In the above calculations this labour cost can be included simply as another cost so that Gross Operating Surplus takes account of this cost. Alternatively, it can be deducted from GOS to give a separate indicator called Boat Cash Income. Owner-operator and unpaid family labour is separated into variable labour (fishing and repairs and maintenance) and overhead labour (management and administration).

Boat Cash Income: is defined as *Gross Operating Surplus* less *imputed wages for owner-operator and unpaid family labour*.

Boat Capital: includes capital items that are required by the licence holder to earn the boat income. It includes boat hull, engine, electronics and other permanent fixtures and tender boats. Other capital items such as motor vehicles, sheds, cold-rooms, and jetty/moorings can be included to the extent that they are used in the fishing business. The fishing licence/permit value is included in total boat capital.

Depreciation: Depreciation refers to the annual reduction in the value of boat capital due to general wear and tear or the reduction in value of an item over time.

Boat Business Profit: is defined as *GOS less Depreciation less Owner-operator and Unpaid Family Labour*. Boat Business Profit represents a more complete picture of the actual financial status of an individual firm, compared with GOS, which represents the cash in-cash out situation only.

Profit at Full Equity: is calculated as *Boat Business Profit plus rent, interest and lease payments*. Profit at Full Equity represents the profitability of an individual licence holder, assuming the licence holder has full equity in the operation, i.e. there is no outstanding debt associated with the investment in boat capital. Profit at Full Equity is a useful absolute measure of the economic performance of fishing firms.

Rate of Return to Capital: is calculated as *Profit at Full Equity divided by Boat Capital multiplied by 100*. This measure is expressed in percentage terms and is calculated for an individual licence holder. It refers to the economic return to the total investment in capital items, and is a useful relative measure of the performance of individual firms. Rate of return to capital is useful to compare the performance of various licence holders, and to compare the performance of other types of operators, and with other industries.

Gross value of production (GVP): refers to the value of the total annual catch for individual fisheries, fishing sectors or the fishing industry as a whole, and is measured in dollar terms. GVP, generally reported on an annual basis, is the quantity of catch for the year multiplied by the average monthly landed beach prices.

Beach price: refers to the price received by commercial fishers at the "port level" for their catch, and is generally expressed in terms of \$/kg. Processing costs are not included in the beach price, as processing operations are assumed to occur further along the value chain. The use of beach prices also removes the effect of transfer pricing by the firm if it is vertically integrated into the value chain.

Cost of management services: in a commercial fishery management services will generally include biological monitoring and reporting; policy, regulation and legislation development; compliance and enforcement services; licensing services; and research. Where a commercial fishery operates under full cost recovery, licence fees will be set to cover the cost of managing the fishery or at least the commercial sector's share of the resource.

In fisheries where there is full cost recovery, it can be assumed that the cost of providing these management services to the commercial sector will be equal to the gross receipts from licence fees in the fishery. With information on licence fee receipts, GVP, catch and the number of commercial fishers in the fishery, the following indicators can be readily calculated:

- aggregate licence fee receipts for the fishery (\$)
- licence fee/GVP (%)
- licence fee/catch (\$/kg)
- licence fee/licence holder (\$/licence holder)

3. Economic Indicators for the Lakes and Coorong Fishery

3.1 Gross Value of Production and Catch

The principal information used to estimate the gross value of production (GVP) for the South Australian Lakes and Coorong Fishery is derived from the catch and effort database administered by SARDI Aquatic Sciences.

It is acknowledged that SARDI's estimates of the GVP of fish harvested from the Lakes and Coorong Fishery are underestimated because average values are based on wholesale prices received at the Adelaide market. Baker and Pierce (1998) believed this to be an unrealistic premise. They suggested that a significant proportion of some of the more financially important species are marketed either at the Sydney and Melbourne markets or locally, where prices received are considerably higher than can be obtained at the Adelaide market. Licence holders participating in the surveys in 2003, 2006 and 2010 confirmed that fish are marketed at a wide variety of locations, including the Sydney and Melbourne fish markets.

Baker and Pierce (1998) re-assessed 1996/97 SARDI catch data using prices from local and interstate markets, as well as individual estimates of local value-adding provided by the fishers to account for the higher prices received at alternative markets. For the purpose of this study, SARDI estimates of GVP for the period 1992/93 to 2001/02 have been re-valued using Baker and Pierce's (1998) method. However, as these readjustment factors were derived from 1996/97 data, SARDI estimates of GVP for 2002/03 to 2004/05 have been revised using updated readjustment factors derived from a weighted average of 2002/03 fish prices from the Adelaide, Sydney and Melbourne fish markets. The market weightings were derived from the EconSearch survey of licence holders in 2003. The SARDI estimates of GVP for 2005/06 to 2008/09 have also been revised using readjustment factors based on weighted averages of Adelaide, Sydney and Melbourne market prices. Weightings were based on the 2006 survey of licence holders.

The reported catch levels of species caught by fishers in the Lakes and Coorong Fishery for the period 1992/93 to 2008/09 are shown in Table 3.1. The total catch of fish in 2008/09 was 2,023 tonnes, slightly less than the total weight of fish caught in 1992/93. Table 3.1 and Figures 3.1 and 3.2 demonstrate that catch levels have fluctuated significantly in the 17 years from 1992/93 to 2008/09.

The estimated GVP of species caught by fishers in the Lakes and Coorong Fishery for the period 1992/93 to 2008/09 is shown in Table 3.2. The estimated GVP of the fishery increased by 137 per cent in nominal terms from \$3.5 million in 1992/93 to over \$8.4 million in 2008/09. While the Lakes and Coorong Fishery's GVP trended upwards in nominal terms, the consumer price index for Adelaide also increased (by 53 per cent) over the same period (ABS 2009a). This means that, in real terms (i.e. in 1992/93 dollars), the value of the catch in the Lakes and Coorong Fishery in 2008/09 was 55 per cent higher than in 1992/93.

Table 3.1 Reported catch of the Lakes and Coorong Fishery, 1992/93 to 2008/09 (tonnes) ^a

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Australian Salmon	3	1	0	5	3	4	3	4	2	1	1	2	4	3	4	6	10
Black Bream	3	3	3	4	4	4	3	4	7	8	12	10	6	7	4	4	2
Bony Bream	612	695	838	706	688	757	609	429	474	298	212	279	340	318	382	416	425
Callop	100	104	207	173	137	151	98	57	71	36	38	82	103	123	152	117	87
European Carp	673	842	816	767	767	635	444	269	274	210	404	579	567	737	697	713	792
Goolwa Cockle (Pipi)	445	465	396	473	485	669	635	756	873	783	1,086	1,070	1,066	1,052	989	605	437
Flounder	27	10	4	30	15	11	28	40	19	26	6	6	9	7	5	2	1
Yellow-Eye Mullet	210	181	239	195	161	158	139	150	127	155	167	111	110	126	141	216	210
Mulloway	34	85	78	57	56	50	95	69	136	109	45	31	39	38	44	32	30
Redfin	36	64	43	22	30	22	44	24	25	10	6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Other Species	9	3	2	3	8	4	4	5	5	4	2	10	14	29	25	35	29
Total	2,152	2,453	2,626	2,435	2,354	2,465	2,102	1,807	2,013	1,640	1,979	2,180	2,258	2,440	2,443	2,146	2,023

^a The River Fishery was closed from July 2003. There are 6 River Fishery licences with access to non-native species and their production is included in this table.

Source: Knight et al. (2004) and SARDI Aquatic Sciences.

Table 3.2 Gross value of production of the Lakes and Coorong Fishery, 1992/93 to 2008/09 (\$'000) ^a

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Australian Salmon	3	1	0	6	4	5	4	5	2	1	1	3	5	4	6	10	22
Black Bream	17	21	25	33	34	42	30	37	58	70	110	100	55	69	51	41	18
Bony Bream	479	497	694	566	553	661	542	479	512	564	227	234	286	318	382	416	425
Callop	571	644	1,738	1,640	1,638	1,691	1,190	851	892	271	583	1,176	1,464	1,094	2,297	2,055	1,832
European Carp	653	720	991	667	662	590	650	562	502	463	748	1,030	960	952	884	1,141	863
Goolwa Cockle (Pipi)	752	672	572	692	647	712	1,098	1,096	1,710	1,315	2,013	2,305	2,092	2,757	2,662	2,807	4,157
Flounder	106	45	18	137	74	62	132	219	113	183	53	49	78	62	51	20	16
Yellow-Eye Mullet	599	592	715	638	612	544	581	773	704	795	392	257	245	310	401	621	705
Mulloway	182	444	455	328	310	303	570	482	824	736	306	192	256	231	286	239	240
Redfin	178	290	259	154	200	137	295	166	193	80	25	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Other Species	9	5	4	4	13	9	13	18	14	24	7	35	54	127	123	194	134
Total (Nominal)	3,548	3,930	5,471	4,865	4,747	4,756	5,107	4,689	5,525	4,502	4,466	5,382	5,495	5,924	7,143	7,544	8,412
Total (Real) ^b	3,548	3,854	5,204	4,463	4,316	4,349	4,609	4,128	4,602	3,649	3,480	4,071	4,063	4,180	4,955	5,005	5,493

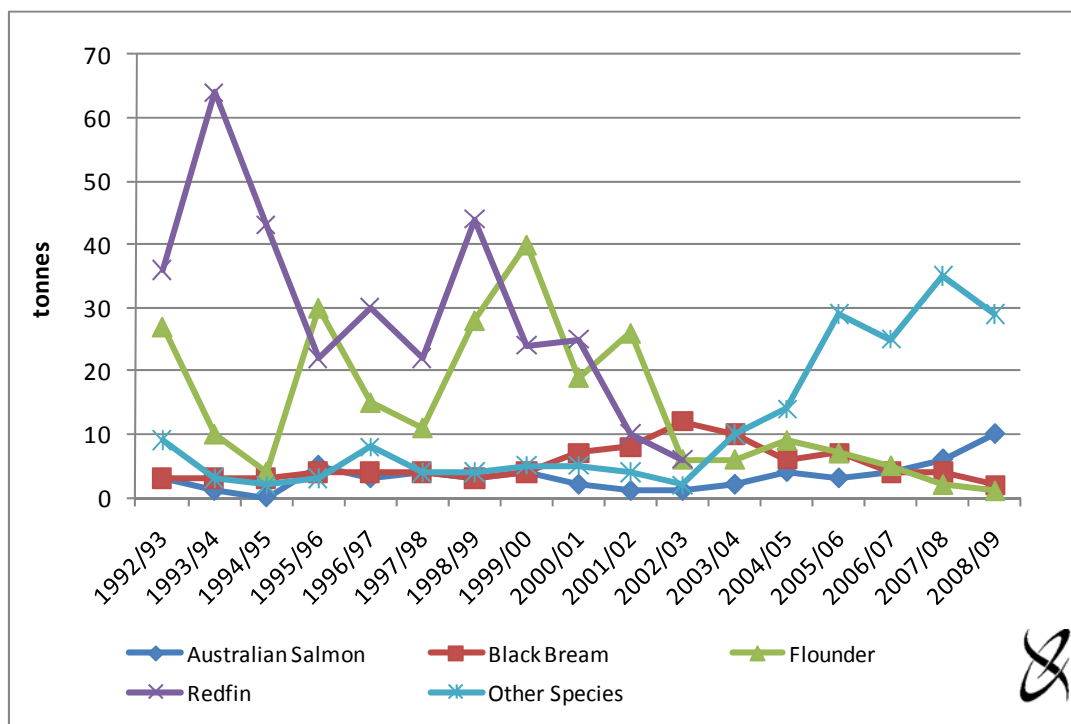
^a GVP estimates for 1992/93 to 2001/02 are based on re-estimated SARDI values using readjustment factors outlined in Baker and Pierce (1998). As these readjustment factors were derived from 1996/97 data, SARDI's GVP estimates for 2002/03 to 2004/05 have been revised using updated readjustment factors derived from a weighted average of 2002/03 fish prices from the Adelaide, Sydney and Melbourne fish markets. The market weightings were derived from the 2003 EconSearch survey of licence holders. SARDI's estimates of GVP for 2006/07 and 2008/09 have been revised based on updated readjustments factors derived from Adelaide, Melbourne and Sydney market prices and market weightings from the 2006 licence holder survey. Information provided by licence holders in the 2006 survey suggests that re-valued estimates of GVP for some species may have been overstated in previous years.

^b In 1992/93 dollars.

Source: Knight et al. (2004), Baker and Pierce (1998), SARDI Aquatic Sciences and EconSearch analysis

The catch of lower volume species in the fishery over the period 1992/93 to 2008/09 is shown in Figure 3.1. Catch levels of flounder and redfin have fluctuated significantly from year to year. A long-term decline in the quantity of redfin caught is evident. Very small quantities of flounder, black bream and Australian salmon were caught in 2008/09, relative to other species, as a result of the low number of days fished for these species.

Figure 3.1 Catch of lower volume species, Lakes and Coorong Fishery, 1992/93 to 2008/09 ^a

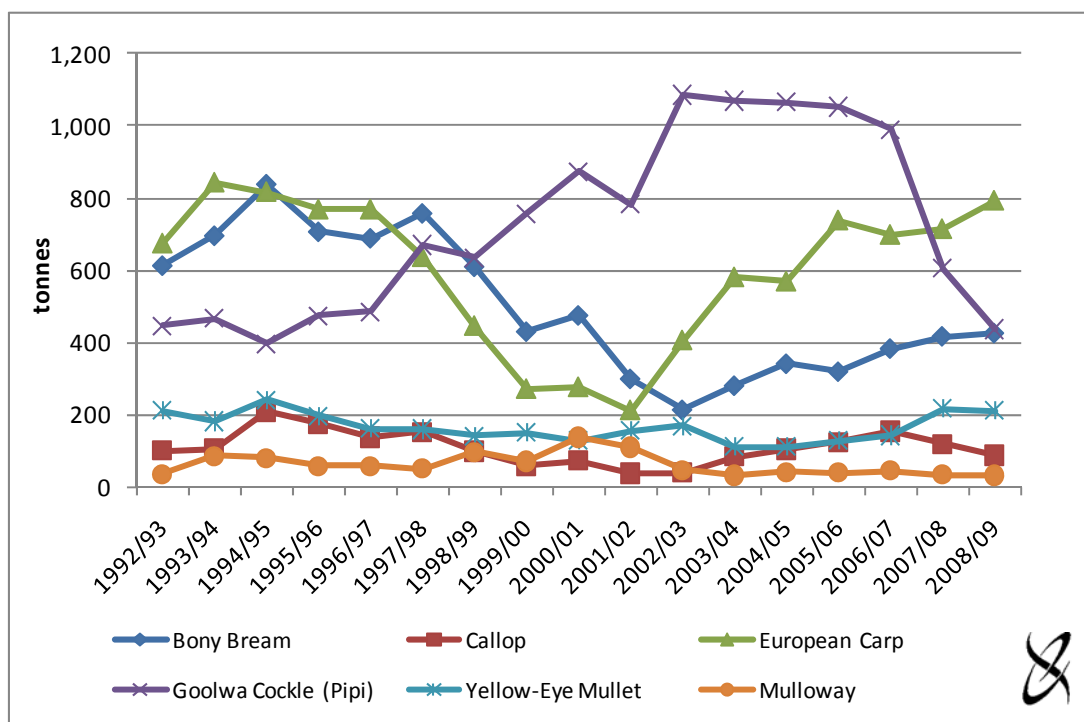


^a Note that Redfin catch was not published separately in 2003/04 to 2008/09 and has been included in the 'other species' category.

Source: Knight et al. (2004) and SARDI Aquatic Sciences.

Figure 3.2 outlines the catch of higher volume species over the period 1992/93 to 2008/09. Notable trends include the significant increase in the quantity of pipis harvested between 1992/93 and 2002/03 and a decline in pipi catch in subsequent years. There was a significant decline in the reported catch of bony bream and European carp between 1992/93 and 2002/03 with catch levels increasing in subsequent years. Yellow-eye mullet catch decreased significantly from 1994/95 to 2003/04 but increased steadily in the following five years.

Figure 3.2 Catch of higher volume species, Lakes and Coorong Fishery, 1992/93 to 2008/09



Source: Knight et al. (2004) and SARDI Aquatic Sciences.

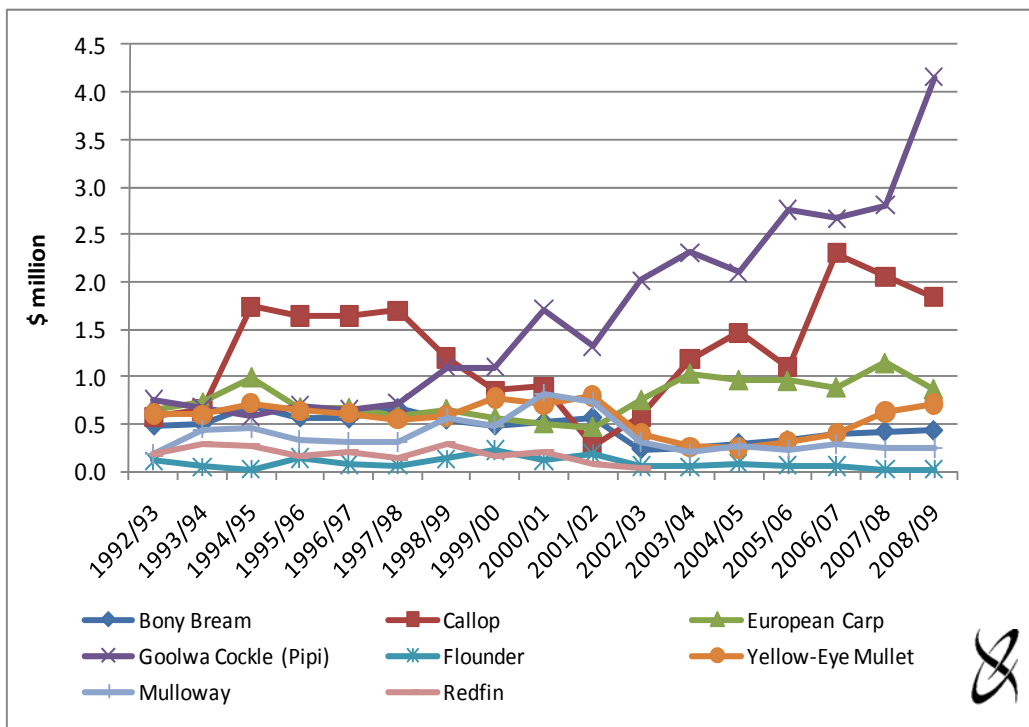
Figure 3.3 outlines the gross value of production of the most significant species over the period 1992/93 to 2008/09. As with catch, GVP by species has fluctuated significantly².

Figure 3.4 outlines the total catch and value of all species taken by licence holders in the Lakes and Coorong Fishery over the period 1992/93 to 2008/09. These data, together with the information shown in Table 3.1, are interesting as they demonstrate the high level of variability of catch for individual species and total catch over time. Figure 3.4 also shows that aggregate income has remained relatively steady over that time, which suggests that effort has switched from financially unviable species to more lucrative species in response to changing market and environmental conditions.

In recent years GVP has increased steadily from approximately \$4.5 million in 2002/03 to \$8.4 million in 2008/09 (in nominal terms). This has been the result of an increase in both catch and price over the period. Even in real terms (prices adjusted for inflation), GVP has increased by approximately 58 per cent over that 6-year period.

² Factors other than abundance, such as annual variations in ‘catchability’, effort targeting and market conditions (especially supply of competitive product) also contribute to the variability shown in Figures 3.3 and 3.4.

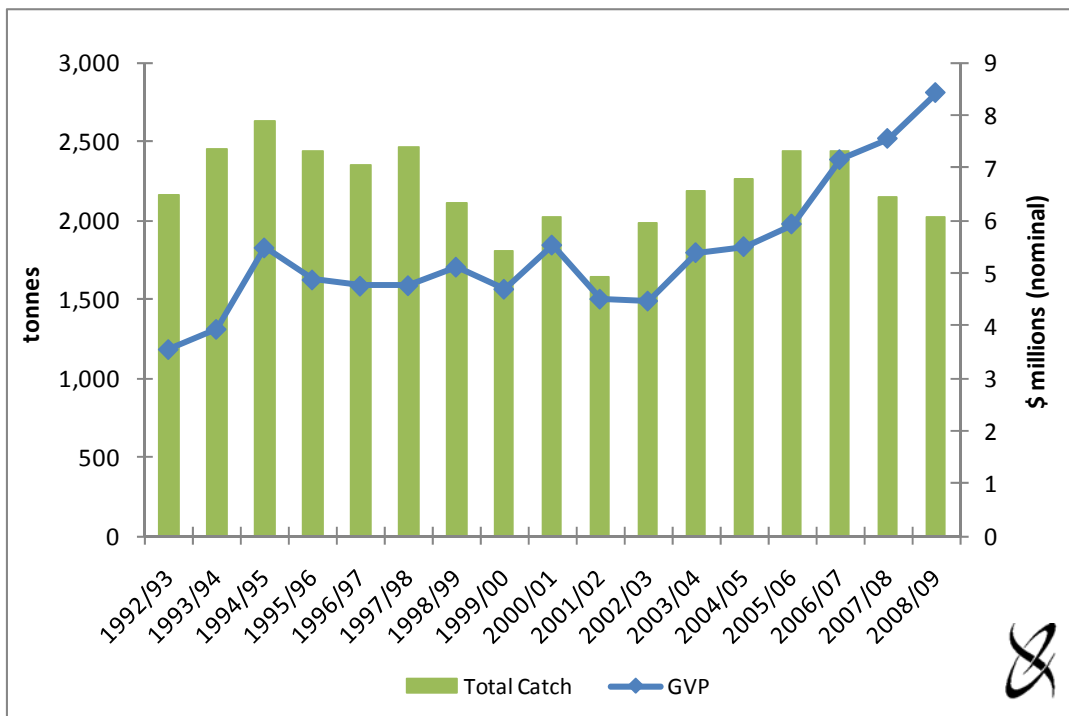
Figure 3.3 Gross value of production of major species, Lakes and Coorong Fishery, 1992/93 to 2008/09 ^a



^a Redfin value of production was not published separately in 2003/04 to 2008/09 and has been included in the other species category (Figure 3.2).

Source: Knight et al. (2004), Baker and Pierce (1998), SARDI Aquatic Sciences and EconSearch analysis.

Figure 3.4 Total catch and gross value of production, Lakes and Coorong Fishery, 1992/93 to 2008/09



Source: Knight et al. (2004), Baker and Pierce (1998) SARDI Aquatic Sciences and EconSearch analysis.

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; and
- research services, including the Fisheries Research and Development Corporation (FRDC) levy.

For the purpose of this analysis, the cost of providing management services has been assumed to be equal to the gross receipts from licence fees in the fishery.

Table 3.3 shows the cost of management for the fishery for the period 1996/97 to 2009/10.

The following can be observed for the fishery for the period 1996/97 to 2008/09.

- Actual licence fee receipts increased 108 per cent from approximately \$136,000 in 1996/97 to just over \$282,000 in 2007/08. Total licence fees were \$437,000 in 2008/09, an increase of 55 per cent compared to the previous year.
- Licence fees as a percentage of GVP increased from 2.9 per cent in 1996/97 to 4.5 per cent in 2005/06, despite an increase in GVP, reflecting a significant increase in licence fees. Licence fees as a proportion of GVP decreased slightly in 2006/07 and 2007/08 before increasing to 5.2 per cent in 2008/09.
- The management cost per kilogram of catch increased from \$0.06/kg in 1996/97 to \$0.13/kg in 2007/08. Management cost per kilogram increased significantly in 2008/09 to \$0.22/kg reflecting a significant increase in licence fees and a decrease in catch.
- The average management cost per licence holder increased from \$3,478 in 1996/97 to \$7,614 in 2007/08, reflecting a decrease in the number of licence holders (from 39 to 36) and a rise in total management costs³. Average cost per licence holder was \$12,144 in 2008/09, an increase of 59 per cent compared to the previous year, as a result of increased management requirements for the Pipi fishery.

Average fee per licence holder decreased by approximately 10 per cent between 2008/09 and 2009/10, from \$12,144 to \$10,918, as a result of a decline in total licence fees.

³ Note that the average management cost per licence holder excludes the \$40,000 in drought relief funds received in 2003/04 and 2004/05. If this was included, the average management cost per licence holder would have been \$6,396 in 2003/04 and \$7,643 in 2004/05.

In 2009/10 the Lakes and Coorong Fishery licence fees were comprised of a base fee of \$3,749 (applicable to 36 licences), a marine scale net fee of \$1,782 (applicable to 19 licences), a Goolwa Cockle base fee of \$1,000 (applicable to 32 licences) and a Pipi unit fee of \$204 per unit (applicable to 32 quota holders).

Table 3.3 Cost of management in the Lakes and Coorong Fishery, 1996/97 to 2009/10 ^a

	Licence Fees ^b	Gross Value of Production	Fees/GVP	Catch	Fees/Catch	Licence Holders	Average Fees/Licence Holder
	(\$'000)	(\$'000)	(%)	('000kg)	(\$/kg)	(no.)	(\$/licence)
1996/97	136	4,747	2.9%	2,354	\$0.06	39	\$3,478
1997/98	171	4,756	3.6%	2,465	\$0.07	39	\$4,395
1998/99	150	5,107	2.9%	2,102	\$0.07	38	\$3,940
1999/00	173	4,689	3.7%	1,807	\$0.10	38	\$4,549
2000/01	179	5,525	3.2%	2,013	\$0.09	38	\$4,698
2001/02	175	4,502	3.9%	1,640	\$0.11	38	\$4,595
2002/03	185	4,466	4.1%	1,979	\$0.09	37	\$5,001
2003/04 ^c	197	5,382	3.7%	2,180	\$0.09	37	\$5,315
2004/05 ^c	243	5,495	4.4%	2,258	\$0.11	37	\$6,562
2005/06 ^c	265	5,924	4.5%	2,440	\$0.11	37	\$7,175
2006/07 ^c	299	7,143	4.2%	2,443	\$0.12	37	\$8,094
2007/08	282	7,544	3.7%	2,146	\$0.13	37	\$7,614
2008/09	437	8,412	5.2%	2,023	\$0.22	36	\$12,144
2009/10	393	n.a.	-	n.a.	-	36	\$10,918

^a In addition to licence fees collected, \$40,000 in drought relief funds were received in both 2003/04 and 2004/05 from the SA Government to assist in the management of the fishery (Alice Fistr PIRSA, pers comm.).

^b Comprised of base licence fees, marine scale net fees, Goolwa cockle base fees and pipi unit fees in 2008/09 and 2009/10.

^c Includes South Australian Shellfish Quality Assurance Program (SASQAP) fee incurred by licence holders with access to Pipsis.

Source: PIRSA Fisheries, SARDI Aquatic Sciences.

In 2007/08 all licence holders with access to pipsis were no longer required to pay the SASQAP fee. Fishers who catch pipsis for human consumption now must be accredited under the Seafood Food Safety Scheme. In 2008/09 there were 8 businesses accredited under the scheme, covering 11 fishing licences. To obtain and maintain accreditation each fisher must comply with certain requirements relating to the harvest and handling of pipsis. Each fisher must also pay an application fee and an annual fee to maintain accreditation. The fees associated with the food safety scheme are detailed in Table 3.4.

Table 3.4 Food safety schemes accreditation fees, 2008/09

Description	Fee (\$)
Application for accreditation, for approval of a food safety arrangement other than in conjunction with an application for accreditation or for variation of an approved food safety arrangement	\$410
Annual Fee	
- per business	\$176
- per licence	\$1,433

Source: *Primary Produce (Food Safety Schemes) (Seafood) Regulations 2006*.

3.3 Financial Performance Indicators

The major measures of the financial performance of licence holders in the Lakes and Coorong Fishery for the period 2006/07 to 2008/09 are shown in Table 3.5. Financial performance estimates for 2006/07 to 2007/08 were based on a second licence holder survey conducted in 2006. Estimates of financial performance for 2008/09 were based on the 2010 survey of licence holders. Financial performance estimates for 2002/03 to 2005/06 are detailed in Appendix 2. Estimates of financial performance are based on different survey results. Some of the differences between years are, therefore, attributable to sampling variability.

Income...

The average gross income per surveyed licence in the Lakes and Coorong Fishery in 2008/09 was approximately \$222,000 (Table 3.5), 3 per cent lower than 2007/08.

Costs...

Table 3.5 shows total boat costs separated into variable and fixed costs. Variable costs (77 per cent of total boat cash costs in 2008/09) represented a significantly greater proportion of total boat cash costs than fixed costs (23 per cent).

It was estimated that average total boat cash costs increased by approximately 4 per cent between 2007/08 and 2008/09. Notable changes include a decline in fuel costs (20 per cent) and interest payments (46 per cent) and an increase in bait/ice costs (63 per cent) and repairs and maintenance costs (31 per cent) (Table 3.5)⁴.

In 2008/09 approximately 57 per cent of total cash costs were attributable to fixed and variable labour costs (almost \$89,000 including unpaid labour), by far the largest individual cost item. The labour costs reported in Table 3.5 are comprised of payments to licence owners and crew as well as an imputed wage to those licence owners and other family members who are not paid a wage directly by the business. Imputed unpaid labour (almost \$56,000 per licence for 2008/09) was divided into variable (fishing and repairs and maintenance) and fixed (management and administration) components based on the 2010 licence holder survey.

⁴ Financial performance estimates for 2006/07 to 2007/08 and 2008/09 were based on different survey samples, accordingly some of the variability between these two years is attributable to sampling variation.

Table 3.5 Financial performance in the Lakes and Coorong Fishery, 2006/07 to 2008/09 (average per licence) ^a

	2006/07		2007/08		2008/09	
	Average per Licence	Share of TBCC ^b	Average per Licence	Share of TBCC ^b	Average per Licence	Share of TBCC ^b
(1) Total Boat Gross Income	\$216,341		\$228,485		\$222,385	
Variable Costs						
Fuel	\$14,811	10%	\$14,779	10%	\$11,808	8%
Repairs & Maintenance ^c	\$6,801	5%	\$6,773	5%	\$8,851	6%
Bait/Ice	\$1,390	1%	\$1,384	1%	\$2,255	1%
Provisions	\$246	0%	\$245	0%	\$482	0%
Labour - paid	\$33,225	22%	\$33,152	22%	\$32,959	21%
(2) - unpaid ^d	\$41,833	28%	\$41,742	28%	\$46,313	30%
Other	\$16,193	11%	\$16,930	11%	\$17,977	12%
(3) Total Variable Costs	\$114,499	77%	\$115,006	77%	\$120,645	77%
Fixed Costs						
Licence Fee ^e	\$9,770	7%	\$9,191	6%	\$8,386	5%
Insurance	\$1,620	1%	\$1,694	1%	\$1,355	1%
(4) Interest	\$5,258	4%	\$5,915	4%	\$3,174	2%
(5) Labour - unpaid ^d	\$7,004	5%	\$7,336	5%	\$9,645	6%
Legal & Accounting	\$1,969	1%	\$2,059	1%	\$2,326	1%
Telephone etc.	\$2,232	2%	\$2,333	2%	\$3,227	2%
Slipping & Mooring	\$64	0%	\$66	0%	\$15	0%
Travel	\$958	1%	\$1,001	1%	\$412	0%
Office & Admin	\$4,927	3%	\$5,151	3%	\$6,989	4%
(6) Total Fixed Costs	\$33,800	23%	\$34,747	23%	\$35,527	23%
(7) Total Boat Cash Costs (3 + 6)	\$148,299	100%	\$149,753	100%	\$156,172	100%
Boat Gross Margin (1 - 3)	\$101,842		\$113,479		\$101,740	
(8) Total Unpaid Labour (2 + 5)	\$48,837		\$49,078		\$55,957	
Gross Operating Surplus (1 - 7 + 8)	\$116,879		\$127,810		\$122,171	
(9) Boat Cash Income (1 - 7)	\$68,042		\$78,731		\$66,213	
(10) Depreciation	\$21,962		\$24,811		\$18,809	
(11) Boat Business Profit (9 - 10)	\$46,079		\$53,920		\$47,404	
(12) Profit at Full Equity (11 + 4)	\$51,338		\$59,835		\$50,578	
Boat Capital						
(13) Fishing Gear & Equip	\$148,056		\$167,262		\$103,463	
Licence Value	\$214,026		\$226,040		\$272,941	
(14) Total Boat Capital	\$362,082		\$393,303		\$376,404	
Rate of Return on Fishing Gear & Equip (12 / 13 * 100)	34.7%		35.8%		48.9%	
Rate of Return on Total Boat Capital (12 / 14 * 100)	14.2%		15.2%		13.4%	

^a Estimates of financial performance for 2008/09 are based on the 2010 survey of licence holders. Estimates for 2006/07 and 2008/09 are based on the 2006 licence holder survey.

^b Total boat cash costs.

^c Repairs and maintenance costs have been classified as a variable cost although it is noted that some of these costs may be fixed (e.g. regulated maintenance).

^d Unpaid labour was divided between variable (time spent fishing and on repairs and maintenance) and fixed (management and administrative duties) based on the 2006 survey responses for 2006/07 and 2007/08 and on the 2010 survey responses for 2008/09.

^e Licence fees reported for 2006/07 to 2007/08 have been calculated based on the cost indicated by licence holders in the 2006 survey responses and changes in average fees per licence holder (Table 3.4). Licence fees reported for 2008/09 were based on the cost indicated by licence holders in the 2010 survey responses.

Source: Licence holder survey and EconSearch analysis.

Other significant cash costs were fuel (8 per cent of total boat cash costs), repairs and maintenance (6 per cent) and licence fees (5 per cent).

Cash Income and Profit...

The separation of variable and fixed costs from total cash costs enables the calculation of boat gross margin (total boat income less total boat variable costs) as a basic measure of profit (assuming that capital has no alternative use and that as fishing activity varies there is no change in capital or fixed costs). There was a decrease in boat gross margin in 2008/09 (\$102,000) compared to the previous year (\$113,000) mainly due to the decrease in boat gross income in 2008/09.

Gross operating surplus (GOS) was calculated excluding imputed wages for operator and family members. The average GOS of all boats in 2008/09 was estimated to be approximately \$122,000, 4 per cent lower than 2007/08 (Table 3.5).

Boat cash income is measured as gross operating surplus with imputed wages (unpaid labour) included as cash costs. The estimated average boat cash income in 2008/09 was approximately \$66,000 per boat, down from almost \$79,000 in 2007/08.

Gross operating surplus and boat business profit give an indication of the capacity of the operator to remain in the fishery in the short to medium term. In 2008/09, the average boat business profit was approximately \$47,000, also down from the previous year's estimate of \$54,000.

Profit at full equity is a measure of the profitability of an individual licence holder, assuming the licence holder has full equity in the operation. It is a useful absolute measure of the economic performance of fishing firms. Profit at full equity in 2008/09 (\$50,578) was less than the previous year (\$59,835), a decrease of around 15 per cent.

Return on Investment...

For the purpose of this analysis, 'investment' is considered to be the capital employed by a licence holder in the fishery. Capital includes boats, licence, 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 Lakes and Coorong Fishery in 2008/09 was estimated to be approximately \$376,000 per fisher. This included the licence holder's estimate of the value of their licence⁵ (almost \$273,000⁶) and estimated investment in boats and fishing gear (approximately \$103,000 per licence).

⁵ Estimates of the 2006/07 and 2007/08 licence value reflect licence holders estimates of the value of their licence in the 2006 survey updated for changes in the gross value of the fishery. Estimates of the 2008/09 licence value reflect licence holders estimates of the value of their licence from the 2010 survey. As there have been a limited number of licences traded in recent years it is difficult to estimate the actual market value of a fishing licence.

⁶ As indicated during the 2010 survey of licence holders, there are a few licence holders who hold 50 or 75 net licences who under current legislation can only sell their licences as 25 net licences. If these licences could be sold with the full net endorsements the value of the licences would be significantly greater.

Licence holders indicated that, due to the inherent variability in the fishery, little money is spent on boats and gear in difficult years, as fishers try to keep costs to a minimum. In more profitable years, however, investment in boats and gear increases, with surplus supplies being purchased and stored for use in years when fishing incomes decline.

Qualitative information from the 2006 and 2010 surveys indicated that investment in boats and fishing equipment had been relatively low in recent years (and hence a relatively low level of depreciation (Table 3.5)). It is estimated, based on information gathered from the 2010 licence holder survey, the value of fishing gear and equipment per licence holder decreased in 2008/09.

For the Lakes and Coorong Fishery as a whole, the average rate of return to fishing gear and equipment was estimated to be 48.9 per cent in 2008/09. Rate of return to total capital (gear and licence) was estimated to be 13.4 per cent⁷. The increase in the rate of return to fishing gear and equipment can be principally attributed to the significant decrease in the estimated value of fishing gear and equipment. The slight decrease in the rate of return to total capital can be attributed to a decrease in earnings in the fishery being greater than the rate of increase in the value of capital⁸.

The question of what is a 'reasonable' average rate of return should be considered in light of the riskiness of the industry. Operating a fishing business is a relatively high-risk activity, with some of the major risks arising from market uncertainty (price risk), seasonal variability (environmental risk) and uncertainty regarding long-term resource security (institutional risk).

3.4 State and Regional Economic Impact

Estimates of the economic impact of the Lakes and Coorong fishing industry on the South Australian and regional (Fleurieu/Kangaroo Island (KI)) and Murray/Mallee⁹ economies in 2008/09 are outlined below.

3.4.1 Measuring direct and flow-on effects

Estimates of the direct economic impact of the Lakes and Coorong fishery are consistent with the method employed in PIRSA's *Value-added ScoreCard*, 2006/07¹⁰.

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

⁷ These estimates, as with those made elsewhere in this report, are sensitive to the accuracy of survey responses and assumptions made in calculating depreciation and labour costs.

⁸ As the number of new boats registered in the fishery was not available for 2006/07 or 2007/08, change in the value of fishing gear and equipment in those years has been estimated based on the average number of boats purchased by licence holders over the previous 5 years. The value of fishing gear and equipment in 2008/09 has been estimated based on fishers own estimates from the 2010 survey of licence holders.

⁹ The Fleurieu/KI and Murray/Mallee regions are consistent with the SA Government Regions, as defined by the Department of Planning and Local Government.

¹⁰ The relevant information was obtained from Rob Esvelt (PIRSA, pers. comm.).

- net value of local retail and food service (e.g. hotels & restaurants) trade¹¹.

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 practical method for measuring economic impacts at regional and state levels.

Economic impacts at the state and regional levels were based on models for the state as a whole and for the Fleurieu/KI and Murray/Mallee State Government regions, prepared for the Department of Trade and Economic Development (EconSearch 2009c).

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 the financial survey for 2008/09, described earlier. On an item-by-item basis, the expenditures were allocated between those occurring in the regional economies, those occurring in South Australia and those goods and services imported from outside the state.

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 *value-added ScoreCard (Seafood Scorecard, 2006/07)* (Rob Esvelt, PIRSA, pers. comm.). Estimates of the net value of local transport margins and capital expenditure per licence holder were derived from the 2010 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 (fte) jobs.

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

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

¹¹ 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.

of economic impact avoids the problem of double counting that may arise from using value of output for this purpose.

3.4.2 Economic impacts at the state and regional levels

Estimates of the economic impact generated in 2008/09 by the Lakes and Coorong fishing industry in South Australia are detailed in Table 3.6. Estimates of the economic impact in the Fleurieu/KI and Murray/Mallee regions are outlined in Tables 3.7 and 3.8, respectively.

For each measure of economic activity, the impacts at the state level are greater than regional level impacts. This is to be expected, as the regional impact is simply a component, albeit a significant one, of the total state impact.

The direct impact measures fishing and downstream activities (i.e. 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 effects.

Table 3.6 The economic impact of the Lakes and Coorong fishing industry in South Australia, 2008/09

Sector	Output		Employment ^a		Household Income		Contribution to GSP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	8.4	23.9%	62	31.0%	3.2	30.7%	6.1	32.6%
Processing	3.6	10.3%	13	6.5%	0.8	7.8%	1.2	6.3%
Transport	1.1	3.1%	4	2.1%	0.3	2.4%	0.5	2.5%
Retail	1.8	5.1%	20	10.0%	0.7	6.4%	0.9	4.9%
Food services	0.9	2.5%	6	3.0%	0.2	2.1%	0.4	2.0%
Capital expenditure ^b	0.3	1.0%	2	1.1%	0.1	0.9%	0.1	0.7%
Total Direct ^c	16.1	44.8%	108	52.7%	5.2	49.4%	9.1	48.4%
Flow-on effects								
Trade	3.2	9.2%	27	13.7%	1.1	10.2%	1.5	8.2%
Manufacturing	3.9	11.1%	14	7.1%	0.9	8.4%	1.3	6.8%
Business Services	2.9	8.1%	13	6.4%	1.0	9.6%	1.4	7.3%
Transport	1.0	3.0%	4	2.0%	0.2	2.3%	0.4	2.4%
Other Sectors	8.1	22.9%	34	17.0%	2.0	19.2%	4.9	26.2%
Total Flow-on ^c	19.1	54.2%	92	46.2%	5.2	49.7%	9.5	50.9%
Total ^c	35.2	100.0%	200	100.0%	10.4	100.0%	18.6	100.0%
Total/Direct	2.2	-	1.9	-	2.0	-	2.0	-
Total/Tonne	\$17,400	-	0.10	-	\$5,100	-	\$9,209	-

^a Full-time equivalent jobs. Direct employment in the fishing industry was comprised of 45 full-time jobs and 44 part-time jobs, that is, 89 jobs in aggregate, which was estimated to be equal to 62 fte jobs.

^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 3.7 The economic impact of the Lakes and Coorong fishing industry in the Fleurieu/KI region, 2008/09

Sector	Output		Employment ^a		Household Income		Contribution to GRP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	3.3	49.1%	24	57.5%	1.2	60.1%	2.4	60.1%
Processing	0.7	10.6%	3	6.2%	0.2	7.4%	0.2	5.9%
Transport	0.2	3.1%	1	2.1%	0.0	2.3%	0.1	2.2%
Retail	0.0	0.3%	0	0.6%	0.0	0.4%	0.0	0.3%
Food services	0.0	0.2%	0	0.2%	0.0	0.1%	0.0	0.1%
Capital expenditure ^b	0.1	1.0%	1	1.7%	0.0	1.1%	0.0	0.8%
Total Direct ^c	4.3	63.3%	29	66.6%	1.5	70.2%	2.7	68.5%
Flow-on effects								
Trade	0.5	1.4%	5	2.4%	0.2	1.6%	0.2	1.3%
Manufacturing	0.4	1.0%	1	0.7%	0.1	0.8%	0.1	0.6%
Business Services	0.3	0.8%	1	0.6%	0.1	0.7%	0.1	0.7%
Transport	0.1	0.4%	1	0.3%	0.0	0.3%	0.1	0.3%
Other Sectors	1.1	3.1%	5	2.7%	0.2	2.3%	0.7	3.5%
Total Flow-on ^c	2.4	6.7%	13	6.7%	0.6	5.7%	1.2	6.5%
Total ^c	6.7	71.1%	42	74.9%	2.1	77.0%	3.9	75.8%
Total/Direct	1.6	-	1.5	-	1.4	-	1.4	-
Total/Tonne	\$8,400	-	0.05	-	\$2,600	-	\$5,000	-

^a Full-time equivalent jobs. Direct employment in the fishing industry was comprised of 17 full-time jobs and 17 part-time jobs, that is, 35 jobs in aggregate, which was estimated to be equal to 24 fte jobs.

^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 and the Fleurieu/KI and Murray/Mallee regions by Lakes and Coorong fishing enterprises summed to \$8.4 million in 2008/09 (Tables 3.6 to 3.8), while output generated in South Australia by associated downstream activities (processing, transport, retail/food services and capital expenditure) summed to \$7.7 million (\$1.0 million in the Fleurieu/KI region and \$1.6 in the Murray/Mallee region, Tables 3.7 and 3.8, respectively).

Flow-ons to other sectors of the state economy added another \$19.1 million in output (\$2.4 million in the Fleurieu/KI region and \$4.0 in the Murray/Mallee region). The sectors most affected were the manufacturing, trade, business services and transport sectors.

Table 3.8 The economic impact of the Lakes and Coorong fishing industry in the Murray/Mallee region, 2008/09

Sector	Output		Employment ^a		Household Income		Contribution to GRP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	5.1	48.0%	38	54.6%	2.0	59.3%	3.7	58.9%
Processing	1.1	10.3%	4	5.2%	0.2	6.2%	0.3	5.0%
Transport	0.3	3.1%	2	2.4%	0.1	2.5%	0.1	2.2%
Retail	0.0	0.3%	0	0.6%	0.0	0.4%	0.0	0.3%
Food services	0.0	0.1%	0	0.2%	0.0	0.1%	0.0	0.1%
Capital expenditure ^b	0.1	1.0%	1	1.7%	0.0	1.1%	0.0	0.8%
Total Direct ^c	6.7	61.8%	45	63.0%	2.3	68.4%	4.2	66.5%
Flow-on effects								
Trade	1.0	2.9%	11	5.3%	0.3	3.3%	0.5	2.6%
Manufacturing	0.6	1.7%	2	1.0%	0.1	1.0%	0.2	0.9%
Business Services	0.4	1.1%	2	0.9%	0.1	1.1%	0.2	0.9%
Transport	0.2	0.6%	1	0.5%	0.0	0.5%	0.1	0.4%
Other Sectors	1.8	5.2%	9	4.6%	0.4	3.8%	1.2	6.2%
Total Flow-on ^c	4.0	11.3%	25	12.3%	1.0	9.7%	2.1	11.1%
Total ^c	10.7	74.1%	69	77.0%	3.3	79.1%	6.3	78.3%
Total/Direct	1.6	-	1.5	-	1.4	-	1.5	-
Total/Tonne	\$8,600	-	0.06	-	\$2,600	-	\$5,100	-

^a Full-time equivalent jobs. Direct employment in the fishing industry was comprised of 27 full-time jobs and 27 part-time jobs, that is, 54 jobs in aggregate, which was estimated to be equal to 38 fte jobs.

^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.

Employment and household income...

In 2008/09, the Lakes and Coorong Fishery was responsible for direct employment of around 62 full-time equivalents and downstream activities created employment of around 46 fte jobs state-wide. Flow-on business activity was estimated to generate a further 92 fte jobs state-wide (25 jobs in the Murray/Mallee and 13 jobs in the Fleurieu/KI). These state-wide jobs were concentrated in the trade (27), manufacturing (14) and business services (13) sectors.

Personal income of \$3.2 million was earned in the fishing sector (wages of employees and estimated drawings by owner/operators) and \$2.0 million in downstream activities in SA. An additional \$5.2 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 \$10.4 million in SA (\$2.1 million in the Fleurieu/KI region and \$3.3 million in the Murray/Mallee region).

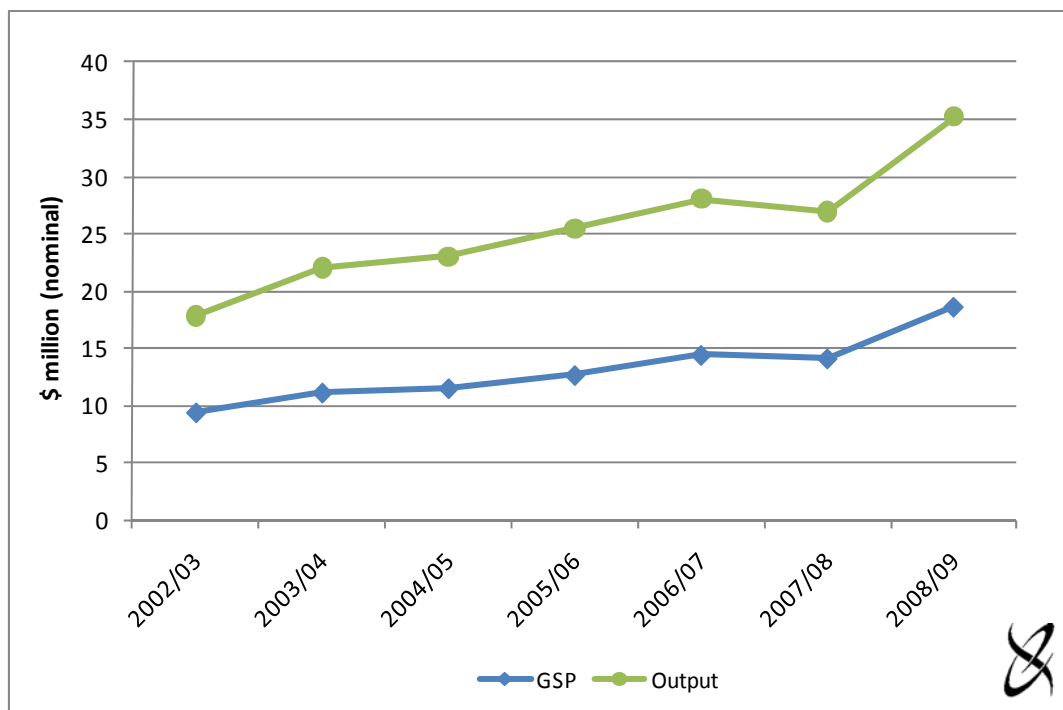
Contribution to GSP and GRP...

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 2008/09, total Lakes and Coorong fishing industry related contribution to GSP in South Australia was \$18.6 million (\$3.9 million in the Fleurieu/KI region and \$6.3 million in the Murray/Mallee region), \$6.1 million generated by fishing directly, \$3.1 million generated by downstream activities and \$9.5 million generated in other sectors of the state economy.

Total impact over time...

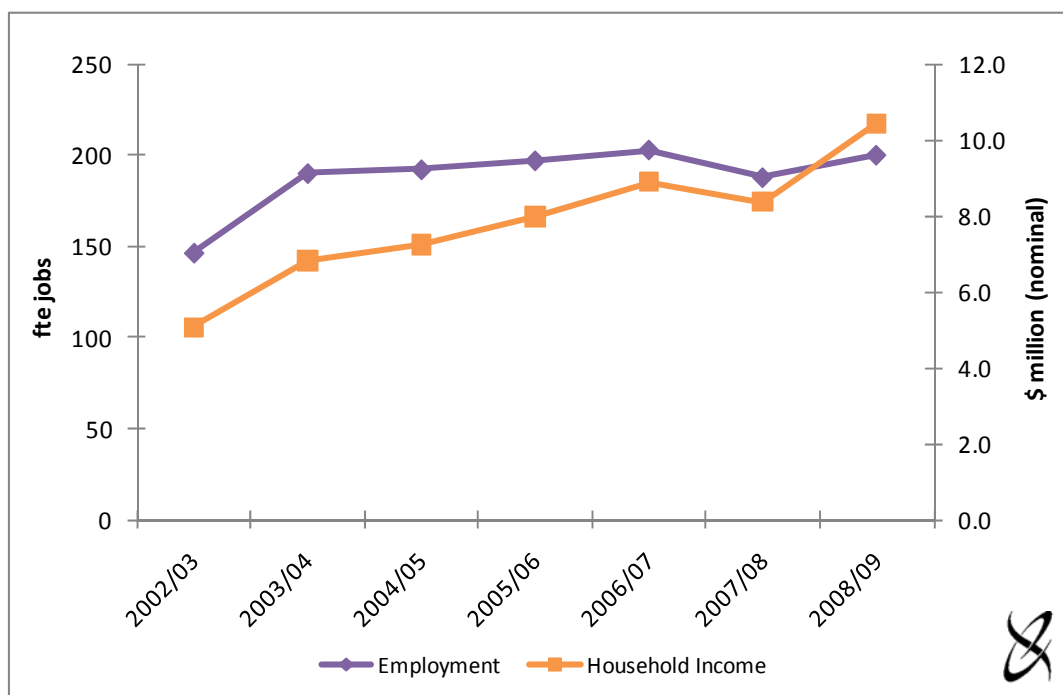
Figures 3.5 and 3.6 illustrate the total economic impact of the fishery on the SA economy for the six-year period, 2002/03 to 2008/09. Estimates of economic impact are expressed in nominal terms. No adjustment has been made for inflation.

Figure 3.5 Total gross state product and output impact of the Lakes and Coorong fishery on the SA economy, 2002/03 to 2008/09



Source: EconSearch (2009a) and EconSearch analysis.

Figure 3.6 Total employment and household income impact of the Lakes and Coorong fishery on the SA economy, 2002/03 to 2008/09



Source: EconSearch (2009a) and EconSearch analysis.

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

Estimates of economic impact for 2002/03 to 2004/05 are based on the first survey of licence holders conducted in October 2003. Estimates for 2005/06 to 2007/08 are based on a second survey of licence holders conducted in October 2006. Estimates for 2008/09 are based on a third survey of licence holders conducted in February 2010.

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.

The change in total output and GSP impacts are closely related to changes in price and fishery GVP (Figure 3.5). All measures of economic impact followed an increasing trend between 2002/03 and 2008/09 (Figures 3.5 and 3.6).

3.5 Economic Rent

Economic rent¹² is a measure of the economic efficiency with which a resource is utilised. If there are too many boats in a fishery, too much gear and too many people employed in a fishery, relative to the sustainable catch, business profits will be poor and economic rent will be correspondingly low or negative. With the prosperity of licence holders and legislative objectives in mind, a fishery should be managed in a manner that aims to maximise economic rent¹³.

The 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, overheads such as administration and licence fees 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.

The economic rent for the years 2002/03 to 2008/09 for the Lakes and Coorong Fishery is outlined in Table 3.9. The economic rent generated in the Lakes and Coorong Fishery was estimated to be approximately \$1.5 million in 2008/09 (Table 3.9), a 7 per cent increase compared to the previous year.

Table 3.9 Economic rent in the Lakes and Coorong Fishery, 2002/03 to 2008/09 ^a

	Economic Rent (\$'000)						
	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Gross Income	4,466	5,382	5,495	5,924	7,143	7,544	8,412
Less Labour	1,972	2,087	2,259	2,168	2,709	2,715	3,363
Less Cash Costs (materials and services less labour and interest)	1,530	1,591	1,717	1,785	2,013	2,034	2,424
Less Depreciation	504	519	650	556	725	819	711
Less Opportunity Cost of Capital (@10%)	303	312	391	375	489	552	391
Economic Rent	156	872	479	1,039	1,206	1,423	1,522

^a Adjusted for bias.

Source: EconSearch analysis.

¹² Economic rent 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 Lakes and Coorong Fishery and the good produced is the landed fish.

¹³ Where a fishery has limited entry and transferable licences (as with the Lakes and Coorong Fishery), the licences will carry a value that reflects the economic rents generated by the fishery. That is to say, the rents are capitalised into the licence values. As many licence holders view their licence as, at least, one component of their retirement or superannuation fund, it is important that the fishery is managed in a way that maximises the rents generated by the fishery.

4. Other Indicators

4.1 Prices for Lakes and Coorong Fishery Product

4.1.1 Wholesale prices for Lakes and Coorong Fishery species in SA

An outline of wholesale prices for fish species in South Australia for the period 1992/93 to 2008/09 is provided in Table 4.1. Wholesale prices in SA have trended upwards during this period for most species.

4.1.2 Prices for Lakes and Coorong Fishery product in other domestic markets

As stated in Section 3.1, the gross value of catch data sourced from SARDI Aquatic Sciences are estimated on the basis of information provided by processors in South Australia.

The differential between wholesale prices in Adelaide and in the Sydney and Melbourne fish markets is illustrated in Table 4.2 for the three years 2006/07 to 2008/09 and in Figure 4.1 for 2008/09. Even after allowing for freight and commission, it is likely that the gross value of production estimates for the Lakes and Coorong Fishery, as estimated by SARDI Aquatic Sciences (Knight et al. 2004), have been underestimated.

Table 4.1 Average annual wholesale price for Lakes and Coorong Fishery species, South Australia, 1992/93 to 2008/09 (\$/kg)

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Australian Salmon	\$1.00	\$1.00	-	\$1.20	\$1.33	\$1.25	\$1.33	\$1.25	\$1.00	\$1.00	\$1.00	\$1.50	\$1.25	\$1.33	\$1.50	\$1.67	\$2.20
Black Bream	\$5.67	\$7.00	\$8.33	\$8.25	\$8.50	\$10.50	\$10.00	\$9.25	\$8.29	\$8.75	\$9.17	\$10.00	\$9.17	\$9.86	\$12.75	\$10.25	\$9.00
Bony Bream	\$0.36	\$0.33	\$0.38	\$0.37	\$0.37	\$0.40	\$0.41	\$0.52	\$0.50	\$0.87	\$1.07	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
Callop	\$3.75	\$4.07	\$5.52	\$6.23	\$7.85	\$7.36	\$7.98	\$9.81	\$8.25	\$4.94	\$10.89	\$10.18	\$10.09	\$9.93	\$9.30	\$10.80	\$12.95
European Carp	\$0.42	\$0.37	\$0.52	\$0.38	\$0.37	\$0.40	\$0.63	\$0.90	\$0.79	\$0.95	\$0.72	\$0.70	\$0.66	\$1.24	\$1.19	\$1.50	\$1.02
Goolwa Cockle	\$0.97	\$0.83	\$0.83	\$0.84	\$0.77	\$0.61	\$0.99	\$0.83	\$1.13	\$0.97	\$1.16	\$1.34	\$1.22	\$1.61	\$1.95	\$3.37	\$6.90
Flounder	\$3.93	\$4.50	\$4.50	\$4.57	\$4.93	\$5.64	\$4.71	\$5.48	\$5.95	\$7.04	\$8.83	\$8.17	\$8.67	\$8.86	\$10.20	\$10.00	\$16.00
Yellow-Eye Mullet	\$1.30	\$1.49	\$1.36	\$1.49	\$1.73	\$1.56	\$1.90	\$2.34	\$2.52	\$2.33	\$2.35	\$2.32	\$2.23	\$2.46	\$2.84	\$2.88	\$3.36
Mulloway	\$3.88	\$3.79	\$4.23	\$4.18	\$4.02	\$4.40	\$4.36	\$5.07	\$4.40	\$4.90	\$5.73	\$5.23	\$5.54	\$5.08	\$6.20	\$7.13	\$7.63
Redfin	\$2.03	\$1.86	\$2.47	\$2.86	\$2.73	\$2.55	\$2.75	\$2.83	\$3.16	\$3.30	\$4.17	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Other Species	\$1.00	\$1.67	\$2.00	\$1.33	\$1.63	\$2.25	\$3.25	\$3.60	\$2.80	\$6.00	\$3.50	\$3.50	\$3.86	\$4.38	\$4.92	\$5.54	\$4.62
Average	\$0.89	\$0.87	\$1.15	\$1.15	\$1.15	\$1.10	\$1.39	\$1.49	\$1.59	\$1.59	\$1.53	\$1.63	\$1.64	\$2.02	\$2.23	\$2.75	\$3.21

Source: Derived from Knight et al. (2004) and SARDI Aquatic Sciences.

The lower prices obtained in Adelaide for some species can be attributed to two interrelated factors. One is that the average quality of fish sold in Adelaide is not as high as that being marketed interstate. The second factor is that consumer numbers in specialist markets (e.g. Asian and Jewish) are much lower in Adelaide than interstate and, therefore, there is not the demand to support prices for the high quality product sought in these markets.

In years where the catch of some species is low Adelaide prices reach a similar level to Melbourne and Sydney. Catch of Black Bream dropped to 7 tonnes in 2006/07 (Table 3.1). Accordingly, there was only a small difference in price between Adelaide, Sydney and Melbourne in that year.

Table 4.2 Prices for Lakes and Coorong Fishery species; wholesale prices in South Australia and the Melbourne and Sydney fish markets, 2006/07 to 2008/09 ^a

Major Species	Adelaide			Melbourne ^b			Sydney ^{b,c}		
	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09	2006/07	2007/08	2008/09
Australian Salmon	\$1.50	\$1.67	\$2.20	\$1.60	\$1.38	\$1.36	\$1.52	\$1.38	-
Black Bream	\$12.75	\$10.25	\$9.00	\$10.82	\$9.42	\$11.11	\$10.15	\$11.23	-
Bony Bream	\$1.00	\$1.00	\$1.00	-	-	-	\$2.38	\$2.74	-
Callop	\$9.30	\$10.80	\$12.95	\$11.76	\$13.64	\$13.05	\$17.41	\$19.52	-
European Carp	\$1.19	\$1.50	\$1.02	\$1.27	\$1.11	\$1.16	\$2.12	\$2.11	-
Goolwa Cockle	\$1.95	\$3.37	\$6.90	\$5.01	\$6.99	\$10.84	\$9.99	\$17.15	-
Flounder	\$10.20	\$10.00	\$16.00	\$7.59	\$8.13	\$9.07	\$5.53	\$3.08	-
Yellow-Eye Mullet	\$2.84	\$2.88	\$3.36	\$1.36	\$2.96	\$2.98	\$2.58	\$3.04	-
Mulloway	\$6.20	\$7.13	\$7.63	\$4.41	\$5.04	\$6.08	\$8.80	\$10.33	-
Redfin	-	-	-	\$6.00	\$6.50	-	\$13.63	\$11.41	-

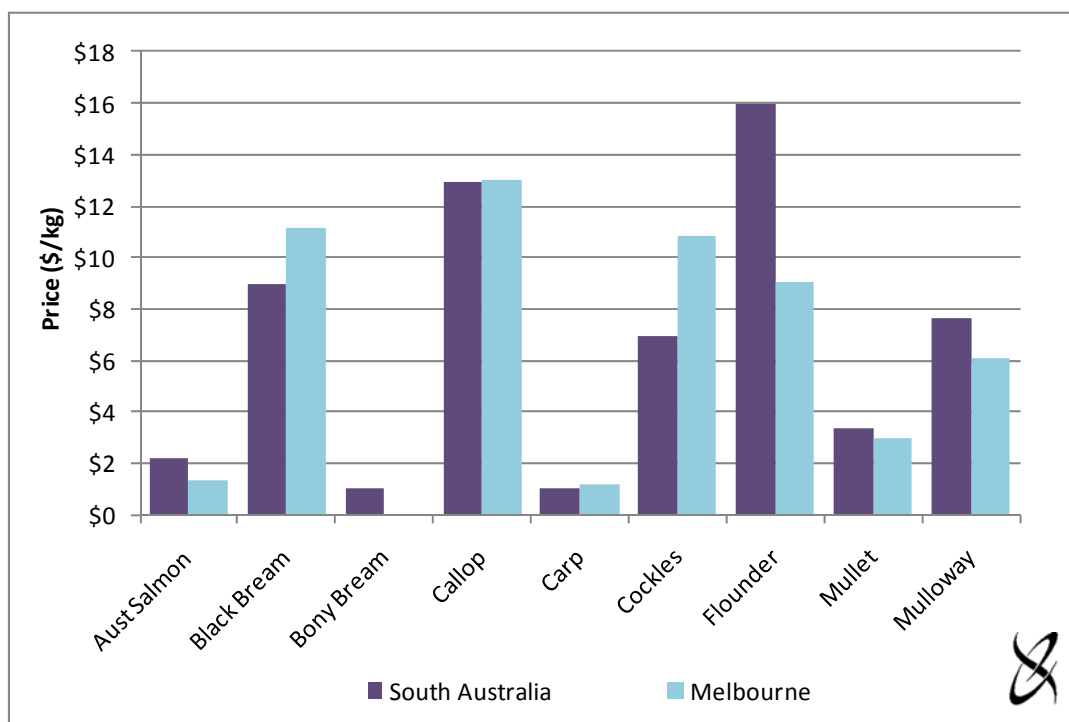
^a Weighted average nominal prices.

^b 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. Melbourne and Sydney market prices are for product from all sources within Australia.

^c Sydney market prices were not available for 2008 and 2009. Prices reported for 2007/08 are for July to December 2007 only.

Source: SARDI Aquatic Sciences, Tim Rieniets (Melbourne Wholesale Fish Markets, pers. comm.) and Samantha Dawes (DPI – NSW Fisheries, pers. comm.)

Figure 4.1 Prices for Lakes and Coorong Fishery species in South Australia and Melbourne, 2008/09^a



^a Where data have been omitted it were either unavailable or no product was sold in that market.

Source: SARDI Aquatic Sciences and Tim Rieniets (Melbourne Wholesale Fish Markets, pers. comm.)

4.2 Contribution to the Community

In addition to the economic contribution made to the regional and state economies (Section 3.5), the Lakes and Coorong Fishery also contributes to the social, environmental and heritage values of the region, through involvement in community-support activities and contribution to the provision, maintenance and expansion of local and regional services and businesses.

4.2.1 Community-support activities

The estimated time spent on community-support activities by licence holders (including licence holder's family members and employees) in 2008/09 is summarised in Table 4.3.

On average, each licence holder (including family members and employees) spent over 3 days (27 hours) per month on community-support activities. Over 12 hours per month were spent attending fishing and Lakes and Coorong region related meetings, etc. However, the amount of time spent attending fishing and Lakes and Coorong region related meetings is likely to be heavily weighted by 2 to 3 licence holders.

Lakes and Coorong Fishery licence holders, in aggregate, spent a total of almost 1,000 hours per month on community-support activities.

Table 4.3 Estimated time per month spent on community-support activities, 2008/09

Community Activity	Hours per month	
	Average Per Licence Holder	All Licence Holders ^a
Conservation activities (e.g. bird watch, water watch)	5	163
Marine rescue and recovery	1	23
Attending meetings, seminars, workshops	13	452
Compiling fishing-related information for research purposes	3	91
Provision of technical advice to committees, panels	1	33
Volunteering for community services (e.g. CFS, SES)	3	104
Other	3	119
Total ^b	27	984

^a Calculation based on scaling up average hours per month per licence holder for all 36 licence holders.

^b Totals may not sum due to rounding.

Source: 2010 survey response.

Assuming the value of time foregone is approximately \$23 per hour ¹⁴, the average value of each licence holder's time spent on community-support activities was at least \$629 per month or \$7,544 for the full year (2008/09). On a whole of fishery basis, the aggregate value of time spent on community-support activities was at least \$22,600 per month or around \$272,000 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 Lakes and Coorong Fishery contributes to social, environmental and heritage values of the local community including:

- assisting local sporting clubs (e.g. coaching, fundraising, social events);
- removal of introduced pest species of fish (i.e. carp, redfin);
- removal of rubbish from water, lake banks etc.;
- donating fish to community groups for fundraising, school camps etc.;
- caring for the elderly (e.g. cooking, donating fish, Meals on Wheels);
- 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, supervising school camps, taking students on tours of the Coorong), etc.;
- raising awareness of environmental issues through the MSC certification;

¹⁴ 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 \$23 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 \$20.85/hr to \$24.32/hr in 2009 dollars (inflated from 1997 estimates (Ironmonger 2002, p. 3)).

- 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 Lakes and Coorong environment and the fishing industry to local residents from outside the fishing community, tourists and recreational fishers.

4.2.2 Local and regional services/businesses

The operation of the Lakes and Coorong 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 Lakes and Coorong Fishery's contribution to various services and businesses is provided in Table 4.4.

Note that some of the fishery's contribution to the community is quantified in section 3.6, 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 survey¹⁵ there were 32 children (under the age of 18) who were members of fishing families and fishing families' employees in 2008/09. Nineteen children belonged to licence holder families and 13 were children of employees. Of these 32 children, 31 of them attended local schools. Thirteen children assisted with fishing operations.

¹⁵ Approximately 50 per cent of licence holders participated in the survey.

Table 4.4 Fishery contribution to local and regional services/businesses, 2008/09

Service/Business	Location	Fishery Contribution
School	Pinaroo, Keith, Lameroo, Milang	Work experience for students Education on fishing industry Built educational aquarium
Schools/Universities	Adelaide, Meningie	Speak about environment Collect specimens
Hospitality/food service industry	Meningie	Supply fish
Sporting Clubs/Community Groups/Fundraisers	Goolwa, Meningie, Murray Bridge	Supply fish
Fish buyers	Adelaide, Meningie	Supply fish
Fish processing	Meningie, Murray Bridge	Supply fish
Marine supplies dealers	Goolwa, Murray Bridge	Outboard purchases
Fuel suppliers	Meningie, Goolwa, Strathalbyn, Murray Bridge	Purchase fuel for boats and vehicles
Hospital	Meningie	Supply fish
Fish retailers (e.g. supermarkets, butchers, fish shops)	Meningie	Supply fish
Freight carriers	Adelaide, Goolwa, Meningie, Murray Bridge	Transport fish to markets
Ice suppliers	Meningie, Murray Bridge	Purchase ice
Mechanics	Goolwa, Strathalbyn, Murray Bridge	Vehicle and boat maintenance
SZ rock lobster licence holders	Kingston SE	Supply bait
Supermarkets/local stores	Meningie	Purchase provisions

Source: 2010 survey response.

4.3 Factors Influencing the Economic Condition of the Lakes and Coorong Fishery

There are a number of factors in 2008/09 that have impacted on the economic performance of the fishery. Most of these are likely to continue to affect economic outcomes in the future.

Environmental/climatic conditions

In the both the 2006 and 2010 licence holder surveys, the respondents highlighted drought as a factor that influences economic returns. Reduction in catch as a result of drought generally affects finfish species. Drought conditions can also have a negative influence on pipi recruitment. Rough weather periods and hot weather affects the oxygen levels and can influence the ability to catch some species.

Due to the individual needs of many native fish species in the Lakes and Coorong Fishery, the volume, timing, duration, frequency and quality of water released into the lower lakes and Coorong is critical to spawning and recruitment success, overall population health and productivity levels (Pierce and Doonan 1999). Reduced river flows from the River Murray are also likely to affect the migration of fish into some areas of the Coorong. Reduced flows and less frequent flooding have caused sand to build up in and around the Murray Mouth that impedes migration of marine species into the Lakes and Coorong and reduces water quality. Dredging operations have been undertaken to maintain the Murray Mouth since 2003.

Fish-ways have been constructed into barrages to allow fish movement between marine environments and freshwater systems. The introduction of pilot fish ways will be beneficial to the Lakes and Coorong Fishery in the medium to long term.

Stock assessment

A status report for all key species in the Lakes and Coorong Fishery is undertaken on an annual basis. In these reports fishery-dependent data are used to assess the performance of the Lakes and Coorong Fishery against the performance indicators prescribed in the Management Plan (Sloan 2005).

Further information about the condition of the stocks of key species can be found in the Fishery Stock Status Report prepared by SARDI for PIRSA (Ferguson 2010).

Pipi quota management system

An increase in catch and effort in the commercial harvest of pipi (Goolwa Cockles) led to a review of the management arrangements. In December 2007, pipi moved to a quota management system. There was an extended period following this where the quota system was administered by licence conditions because the regulations were initially disallowed. However, following a select committee investigation that supported the regulations, they were re-introduced and passed by Parliament.

Marine Stewardship Council certification

In June 2008 Marine Stewardship Council (MSC) certification was awarded to selected species targeted by Lakes and Coorong Fishery licence holders, namely:

- Mulloway;
- Cockle (Pipi);
- Golden Perch (Callop); and
- Yellow Eyed Mullet.

The MSC certification is awarded to fisheries that meet certain standards for sustainable fishing and seafood traceability. MSC certification can be used as a marketing tool by the licence holders in the fishery to improve the value of their products.

4.4 Licence Holder Comments

A number of licence holders, who participated in the February 2010 survey, raised several key issues that they felt affected the economic performance of their individual operations and the performance of the Lakes and Coorong Fishery as a whole.

Environmental issues

Licence holders, particularly those who had been fishing for several years, noted several environmental issues in the Lakes and Coorong system. Several licence holders indicated that the increasingly low water levels in the Lower Lakes could be putting pressure on fish stocks in the area.

A lack of fresh water flows from the River Murray has also led to environmental issues in the Lakes and Coorong system. Several licence holders noted the lack of freshwater flows resulting from an over allocation of the river water and drought over the entire system. Licence holders emphasised the need for fresh water flows into the Lakes and Coorong to maintain fish stocks and the health of the system.

A lack of flows into the Coorong from the Murray Mouth was also raised as a serious issue. The lack of fresh water flows has led to poor water quality in the Coorong, particularly in the Southern Lagoon. Management strategies employed for the River Murray can have serious implications for the fishery. Licence holders indicated that just one significant flood was enough to ensure good fishing for 6 or 7 years.

Several licence holders mentioned the increased number of seals in the Coorong. Fishers have had to change how and where they operate in the Coorong because of the damage the seals have caused to fishing nets.

Value-adding in the fishery

Several licence holders recognised the need for increased value-adding of product caught in the fishery. Licence holders understood that there was potential to obtain a higher financial return through value-adding. Exploring alternative value-adding opportunities and developing a market for products requires significant capital investment. There would need to be a significant increase in the profitability of the fishery to fund innovation and development in the fishery.

A few licence holders expressed interest in investing in value-adding opportunities but were concerned regarding the security of access to the fishery resource.

Some areas of potential for value-adding product from the fishery highlighted during the 2010 survey include:

- making better use of the MSC label;
- sending carp to Melbourne markets for human consumption;
- harvesting carp roe;
- smoking fish fillets;
- selling frozen mullet fillets in vacuum packs; and
- filleting of fish.

Significant investment has already been made in equipment and market development for pipis for human consumption. Investment has also been made in developing markets for live export of pipis.

Management

The majority of the licence holders who responded found it difficult to plan for the future due to the uncertainty relating to long term access to the fishery, particularly with the current environmental issues. Many licence holders indicated that they would invest further in the fishery if they could be given some assurances about sustainability and access to the resource.

Profitability

Of concern to some licence holders was the future profitability of the fishery due to the uncertainty of environmental conditions which affect catch and the uncertainty of market conditions which affect both product prices and operating costs. It was indicated that there are licence holders who have had to seek alternative employment away from the fishery.

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.

Time in fishery

The number of years that individual licence holders in the Lakes and Coorong Fishery had owned fishing licences ranged from 5 to 48 years, with an average length of ownership of 23 years. The corresponding average length of ownership by licence holders for the 2003 and 2006 surveys were 14 and 15 years, respectively.

Several fishing families have held licences for a number of generations. On average, each family had held a licence for 25 years, however, some licences had been held by fishing families for up to 60 years. The corresponding average length of ownership by fishing families for the 2003 and 2006 surveys were 15 and 17 years, respectively.

Age of licence holders

The majority of licence holders were aged between 36 and 55 years at the time of the 2010 survey, with the highest number of licence holders in the 41-45 year age bracket (35 per cent). In 2002/03 the highest number of licence holders were in the 36-40 year age bracket, whereas in 2005/06 there was a greater proportion of licence holders in the 41-45 and 46-50 year age brackets (Table 4.5).

The average age of Lakes and Coorong Fishery licence holders is considerably lower than that for South Australian owner/managers of broad acre and livestock properties. In 2007/08, the average age of farm owner/managers was 54 years (ABARE 2009).

Table 4.5 Age of Lakes and Coorong Fishery licence holders, 2002/03, 2005/06 and 2008/09

Age Bracket (years)	2002/03		2005/06		2008/09	
	Number from Survey Sample	Proportion	Number from Survey Sample	Proportion	Number from Survey Sample	Proportion
< 25	0	0%	0	0%	0	0%
26-30	0	0%	0	0%	0	0%
31-35	4	14%	1	4%	0	0%
36-40	11	38%	6	25%	2	12%
41-45	4	14%	4	17%	6	35%
46-50	3	10%	6	25%	4	24%
51-55	2	7%	2	8%	3	18%
55-60	4	14%	1	4%	0	0%
> 60	1	3%	4	17%	2	12%
Total	29	100%	24	100%	17	100%

Source: 2003, 2006 and 2010 survey responses.

Fishing location

Survey respondents fished in three locations: the lakes (i.e. Lakes Alexandrina and Albert), the Coorong and the Southern Ocean (near the River Murray mouth). The majority of licence holders (approximately 65 per cent) indicated that they fished in more than one of these locations during the 2008/09 season. In 2008/09, the lakes and the Coorong were equally popular fishing locations. Seventy-six per cent of survey respondents (13 licence holders) indicated that they fished in the lakes, 76 per cent (13 licence holders) fished in the Coorong and 47 per cent fished in the ocean (8 licence holders). Survey respondents advised that the ability of licence holders to shift effort between environments and between species contributes to the long-term viability and sustainability of the resource.

Value of catch and effort data

Catch and effort data, recorded and submitted monthly to SARDI by Lakes and Coorong Fishery licence holders, are used in stock assessment and stock status reports. These data may also be used for other research, for example, these data are of particular interest to recreational fishers and for researchers monitoring the impact of changes in river management (i.e. changes in salinity, flow rates, river height etc.) on the health of the lakes and Coorong ecosystem.

It was estimated from the 2010 survey of licence holders that, in total, licence holders spent approximately 91 hours per month compiling catch and effort data in 2008/09, which equated to 1,090 hours for the year. The value of licence holders' time spent on the collection of catch and effort data was approximately \$25,000¹⁶ in total in 2008/09.

¹⁶ Assuming the value of licence holder's time foregone is approximately \$23/hour (section 4.3.1).

References

- ABARE 2009, *AGSurf*, Canberra, April.
- Australian Bureau of Statistics (ABS) 2000, *Unpaid Work and the Australian Economy*, 1997 Cat 4240.0, Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (ABS) 2009a, *Consumer Price Index, Australia*, Cat. No. 6401.0.
- Australian Bureau of Statistics (ABS) 2009b, *Labour Price Index, Australia*, Cat. No. 6345.0, Canberra.
- Baker, D. and Pierce, B. 1998, *Reassessment of the Gross Economic Value of the South Australian Inland Fisheries Harvest*, SARDI Aquatic Sciences
- Brown, D. 1997, *Australian Fisheries Surveys Report: Physical and financial performance in selected Australian Fisheries 1994-95 to 1996-97*, ABARE Report, Canberra.
- EconSearch 1999, *Economic Indicators for the SA Inland Waters Fisheries, 1997/98*, report prepared for Primary Industries and Resources South Australia, PIRSA, July.
- EconSearch 2000, *Economic Indicators for the SA Inland Waters Fisheries, 1998/99*, report prepared for Primary Industries and Resources South Australia, PIRSA, June.
- EconSearch 2001, *Economic Indicators for the SA Inland Waters Fisheries, 1999/00*, report prepared for Primary Industries and Resources South Australia, PIRSA, June.
- EconSearch 2002, *Economic Indicators for the SA Inland Waters Fisheries, 2000/01*, report prepared for Primary Industries and Resources South Australia, PIRSA, September.
- EconSearch 2003, *Economic Indicators for the SA Inland Waters Fisheries, 2001/02*, report prepared for Primary Industries and Resources South Australia, PIRSA, July.
- EconSearch 2004a, *Lakes and Coorong Fishery: "Wild Fisheries with a Future", Current Economic Value and Value-Adding Opportunities, Final Report*, a report prepared for the Southern Fishermen's Association.
- EconSearch 2004b, *Economic Indicators for the Lakes and Coorong Fishery 2002/03*, report prepared for Primary Industries and Resources South Australia, June.
- EconSearch 2005, *Economic Indicators for the Lakes and Coorong Fishery 2003/04*, report prepared for Primary Industries and Resources South Australia, August.
- EconSearch 2006, *Economic Indicators for the Lakes and Coorong Fishery 2004/05*, report prepared for Primary Industries and Resources South Australia, June.
- EconSearch 2007, *Economic Indicators for the Lakes and Coorong Fishery 2005/06*, report prepared for Primary Industries and Resources South Australia, June.
- EconSearch 2008, *Economic Indicators for the Lakes and Coorong Fishery 2006/07*, report prepared for Primary Industries and Resources South Australia, June.
- EconSearch 2009a, *Economic Indicators for the Lakes and Coorong Fishery 2007/08*, report prepared for Primary Industries and Resources South Australia, May.

- EconSearch 2009b, *Economic Indicators for the South Australian Commercial Fisheries 2007/08*, report prepared for Primary Industries and Resources South Australia, June.
- EconSearch 2009c, *Economic and Environmental Indicators for South Australia and its Regions, 2006/07*, report prepared for the Department of Trade and Economic Development, May.
- Ferguson, G. 2010, *The South Australian Lakes and Coorong Fishery, Fishery Stock Status Report for PIRSA Fisheries*, SARDI (Aquatic Sciences), Adelaide, January.
- Ironmonger, D. 2002, *The Economic Value of Volunteering in South Australia*, report prepared for the Office for Volunteers, Government of South Australia.
- Knight, M.A. Tsolos, A. and Doonan, A.M. 2004, *South Australian Fisheries and Aquaculture Information and Statistics Report*, SARDI Research Report, Adelaide.
- Pierce, B.E. & Doonan, A.M. 1999, A summary report on the status of selected species in the River Murray and Lakes and Coorong Fisheries. South Australian Fisheries Assessment Series 99/1. SARDI Aquatic Sciences; Adelaide.
- Sloan, S. 2005, *Management Plan for the South Australian Lakes and Coorong Fishery*, prepared by PIRSA in association with the Inland Fisheries Management Committee, South Australia, April.

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Appendix 1 Economic Impact of the Lakes and Coorong Fishery, 2007/08

Appendix Table 1.1 The economic impact of the Lakes and Coorong fishing industry in South Australia, 2007/08

Sector	Output		Employment ^a		Household Income		Contribution to GSP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	7.5	28.0%	74	39.3%	3.0	36.4%	5.2	37.0%
Processing	1.3	4.7%	4	2.0%	0.2	2.2%	0.3	2.1%
Transport	1.1	4.0%	5	2.5%	0.3	4.2%	0.5	3.6%
Retail	1.3	4.9%	18	9.8%	0.6	6.6%	0.7	4.7%
Food services	1.4	5.0%	11	5.7%	0.3	4.1%	0.5	3.8%
Capital expenditure ^b	0.4	1.3%	2	1.3%	0.1	1.1%	0.1	0.9%
Total Direct ^c	12.9	46.6%	114	59.3%	4.6	53.5%	7.3	51.1%
Flow-on effects								
Trade	2.2	8.3%	23	12.4%	0.8	10.0%	1.0	7.4%
Manufacturing	2.9	10.6%	8	4.5%	0.4	5.0%	0.7	4.7%
Business Services	1.8	6.7%	10	5.3%	0.7	7.8%	0.9	6.1%
Transport	0.7	2.4%	3	1.5%	0.2	2.6%	0.3	2.2%
Other Sectors	6.5	24.1%	29	15.6%	1.7	20.0%	3.9	27.5%
Total Flow-on ^c	14.0	52.1%	74	39.4%	3.8	45.4%	6.8	47.9%
Total ^c	26.9	100.0%	188	100.0%	8.4	100.0%	14.1	100.0%
Total/Direct	2.1	-	1.6	-	1.8	-	1.9	-
Total/Tonne	\$12,500	-	0.09	-	\$3,800	-	\$6,578	-

^a Full-time equivalent jobs. Direct employment in the fishing industry was comprised of 52 full-time jobs and 51 part-time jobs, that is, 103 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 (2009a).

Appendix Table 1.2 The economic impact of the Lakes and Coorong fishing industry in the Murraylands region, 2007/08

Sector	Output		Employment ^a		Household Income		Contribution to GRP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	7.5	53.0%	74	61.8%	3.0	62.7%	5.2	61.4%
Processing	0.6	4.5%	2	1.6%	0.1	1.7%	0.2	2.0%
Transport	0.5	3.8%	3	2.8%	0.2	3.9%	0.3	3.0%
Retail	0.0	0.3%	1	0.5%	0.0	0.3%	0.0	0.2%
Food services	0.0	0.3%	0	0.3%	0.0	0.2%	0.0	0.2%
Capital expenditure ^b	0.2	1.3%	2	2.0%	0.1	1.4%	0.1	1.1%
Total Direct ^c	9.0	61.8%	82	67.0%	3.4	68.8%	5.8	66.8%
Flow-on effects								
Trade	1.2	8.6%	16	13.1%	0.5	9.4%	0.6	6.8%
Manufacturing	0.6	4.5%	2	1.6%	0.1	1.7%	0.2	2.0%
Business Services	0.4	3.1%	3	2.3%	0.1	3.1%	0.2	2.5%
Transport	0.2	1.3%	1	1.0%	0.1	1.4%	0.1	1.1%
Other Sectors	2.8	19.4%	16	13.1%	0.7	14.1%	1.7	19.7%
Total Flow-on ^c	5.3	36.9%	37	31.0%	1.4	29.7%	2.7	32.1%
Total ^c	14.2	100.0%	119	100.0%	4.9	100.0%	8.5	100.0%
Total/Direct	1.6	-	1.5	-	1.4	-	1.5	-
Total/Tonne	\$6,600	-	0.06	-	\$2,200	-	\$3,900	-

^a Full-time equivalent jobs. Direct employment in the fishing industry was comprised of 52 full-time jobs and 50 part-time jobs, that is, 103 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 (2009a).

Appendix 2 Financial Performance, 2002/03 to 2005/06

Appendix Table 2.1 Financial performance in the Lakes and Coorong Fishery, 2002/03 to 2003/04 ^a

	2002/03		2003/04	
	Average per Licence	Share of TBCC ^b	Average per Licence	Share of TBCC ^b
(1) Total Boat Gross Income	\$132,648		\$159,852	
Variable Costs				
Fuel	\$9,497	9%	\$9,850	9%
Repairs & Maintenance ^c	\$7,134	7%	\$7,497	7%
Bait/Ice	\$1,211	1%	\$1,272	1%
Provisions	\$1,086	1%	\$1,141	1%
Labour - paid	\$25,512	24%	\$27,025	24%
(2) - unpaid ^d	\$30,446	28%	\$32,252	28%
Other	\$13,821	13%	\$14,238	13%
(3) Total Variable Costs	\$88,707	82%	\$93,275	82%
Fixed Costs				
Licence Fee ^e	\$4,870	5%	\$5,175	5%
Insurance	\$1,227	1%	\$1,264	1%
(4) Interest	\$4,177	4%	\$4,285	4%
(5) Labour - unpaid ^d	\$2,617	2%	\$2,718	2%
Legal & Accounting	\$1,423	1%	\$1,465	1%
Telephone etc.	\$1,477	1%	\$1,522	1%
Slipping & Mooring	\$0	0%	\$0	0%
Travel	\$452	0%	\$465	0%
Office & Admin	\$3,262	3%	\$3,360	3%
(6) Total Fixed Costs	\$19,505	18%	\$20,256	18%
(7) Total Boat Cash Costs (3 + 6)	\$108,212	100%	\$113,531	100%
Boat Gross Margin (1 - 3)	\$43,941		\$66,577	
(8) Total Unpaid Labour (2 + 5)	\$33,063		\$34,969	
Gross Operating Surplus (1 - 7 + 8)	\$57,499		\$81,291	
(9) Boat Cash Income (1 - 7)	\$24,436		\$46,321	
(10) Depreciation	\$14,968		\$15,420	
(11) Boat Business Profit (9 - 10)	\$9,468		\$30,902	
(12) Profit at Full Equity (11 + 4)	\$13,644		\$35,187	
Boat Capital				
(13) Fishing Gear & Equip	\$90,014		\$92,727	
Licence Value	\$112,931		\$136,092	
(14) Total Boat Capital	\$202,945		\$228,818	
Rate of Return on Fishing Gear & Equip (12 / 13 * 100)	15.2%		37.9%	
Rate of Return on Total Boat Capital (12 / 14 * 100)	6.7%		15.4%	

^a Estimates of financial performance for 2002/03 and 2003/04 are based on the 2003 survey of licence holders.

^b Total boat cash costs.

^c Repairs and maintenance is classified as a variable cost although it is likely that a proportion of these costs are fixed (e.g. regulatory maintenance).

^d Unpaid labour was divided between variable (time spent fishing and on repairs and maintenance) and fixed (management and administration duties) based on the 2003 survey responses.

^e Licence fees have been calculated based on the cost indicated by licence holders in the 2003 survey and changes in average fees per licence holder (Table 3.4).

Source: EconSearch analysis.

Appendix Table 2.2 Financial performance in the Lakes and Coorong Fishery, 2004/05 to 2005/06 ^a

	2004/05		2005/06	
	Average per Licence	Share of TBCC ^b	Average per Licence	Share of TBCC ^b
(1) Total Boat Gross Income	\$163,222		\$192,547	
Variable Costs				
Fuel	\$10,836	9%	\$13,949	10%
Repairs & Maintenance ^c	\$8,112	7%	\$6,382	5%
Bait/ice	\$1,376	1%	\$1,304	1%
Provisions	\$1,235	1%	\$231	0%
Labour - paid	\$29,307	24%	\$30,518	22%
(2) - unpaid ^d	\$34,974	29%	\$38,425	28%
Other	\$14,702	12%	\$15,920	11%
(3) Total Variable Costs	\$100,542	82%	\$106,728	77%
Fixed Costs				
Licence Fee ^e	\$6,390	5%	\$8,660	6%
Insurance	\$1,306	1%	\$1,593	1%
(4) Interest	\$4,394	4%	\$4,900	4%
(5) Labour - unpaid ^d	\$2,813	2%	\$6,740	5%
Legal & Accounting	\$1,513	1%	\$1,936	1%
Telephone etc.	\$1,572	1%	\$2,194	2%
Slipping & Mooring	\$0	0%	\$63	0%
Travel	\$480	0%	\$942	1%
Office & Admin	\$3,470	3%	\$4,844	3%
(6) Total Fixed Costs	\$21,938	18%	\$31,871	23%
(7) Total Boat Cash Costs (3 + 6)	\$122,480	100%	\$138,599	100%
Boat Gross Margin (1 - 3)	\$62,680		\$85,819	
(8) Total Unpaid Labour (2 + 5)	\$37,787		\$45,165	
Gross Operating Surplus (1 - 7 + 8)	\$78,529		\$99,113	
(9) Boat Cash Income (1 - 7)	\$40,742		\$53,948	
(10) Depreciation	\$19,303		\$18,084	
(11) Boat Business Profit (9 - 10)	\$21,440		\$35,864	
(12) Profit at Full Equity (11 + 4)	\$25,833		\$40,764	
Boat Capital				
(13) Fishing Gear & Equip	\$116,080		\$121,908	
Licence Value	\$138,961		\$177,500	
(14) Total Boat Capital	\$255,041		\$299,408	
Rate of Return on Fishing Gear & Equip (12 / 13 * 100)	22.3%		33.4%	
Rate of Return on Total Boat Capital (12 / 14 * 100)	10.1%		13.6%	

^a Financial performance estimates for 2004/05 are based on the 2003 licence holder survey and those for 2005/06 are based on the 2006 licence holder survey.

^b Total boat cash costs.

^c Repairs and maintenance is classified as a variable cost although it is likely that a proportion of these costs are fixed (e.g. regulatory maintenance).

^d Unpaid labour was divided between variable (time spent fishing and on repairs and maintenance) and fixed (management and administration duties) based on the 2003 survey responses for 204/05 and the 2006 survey responses for 2005/06.

^e Licence fees have been calculated based on the cost indicated by licence holders in the 2003 survey (for 2004/05) and the 2006 survey (for 2005/06) and changes in average fees per licence holder (Table 3.4).

Source: EconSearch analysis.

Appendix 3 Summary Economic Indicators for SA Commercial Fisheries

Appendix Table 3.1 Commercial fisheries catch, South Australia, 1990/91 to 2007/08 (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
2006/07	883	209	2,024	1,894	492	637	2,443	30,355	2,978	41,915
2007/08	889	229	2,088	1,850	459	668	2,146	29,692	3,002	41,023

^a Excludes the River fishery for the years 2003/04 to 2007/08.

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

Source: EconSearch (2009b)

Appendix Table 3.2 Commercial fisheries gross value of production, South Australia, 1990/91 – 2007/08 (\$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
2006/07	31.5	3.3	39.4	78.8	18.0	5.6	7.1	18.5	19.8	222.1
2007/08	31.0	2.9	33.0	75.7	15.9	5.7	5.9	16.3	20.9	207.5

^a SARDI estimates for the years 1990/91 to 2004/05, revalued SARDI estimates using average monthly processor prices for 2007/08.

^b 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 to 2007/08 Excludes the River fishery for the years 2003/04 to 2007/08

^c SARDI estimates for the years 1990/91 to 2002/03, revalued SARDI estimates for 2003/04 to 2007/08 using weighted average prices from Sydney and Melbourne fish markets and price data obtained from fishers.

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

Source: EconSearch (2009b)

Appendix Table 3.3 Cost of management in South Australian commercial fisheries, 2007/08

	Licence Fees (\$'000)	GVP (\$'000)	Fees/ GVP (%)	Catch ('000kg)	Fees/ Catch (\$/kg)	Licence Holders (no.)	Fees/ Licence (\$/licence)
Abalone	2,530	31,044	8.1%	889	\$2.85	35	\$72,286
GSV Prawns	302	2,924	10.3%	229	\$1.32	10	\$30,204
SG & WC Prawns	1,022	32,950	3.1%	2,088	\$0.49	42	\$24,334
Sth'n Zone Rock Lobster	2,628	75,731	3.5%	1,850	\$1.42	181	\$14,518
Nth'n Zone Rock Lobster	1,175	15,935	7.4%	459	\$2.56	68	\$17,287
Blue Crabs - Pots	228	5,423	4.2%	618	\$0.37	8	\$28,490
Blue Crabs – Marine Scale	11	314	3.4%	50	\$0.21	5	\$2,126
Lakes and Coorong ^a	282	7,544	3.7%	2,146	\$0.13	37	\$7,614
Marine Scalefish	2,010	20,917	12.3%	3,002	\$0.86	343	\$5,968
Sardines	690	16,331	4.2%	29,692	\$0.02	14	\$49,317
Total SA	10,879	209,113	5.2%	41,023	\$0.27	743	\$14,641

^a Excludes the River fishery.

^b Licence fees include access/entitlement fees paid by rock lobster and lakes and Coorong licence holders. Number of licence holders and average fee per licence holder relates only to marine scalefish licence holders and excludes access/entitlement holders from other fisheries.

Source: EconSearch (2009b)

Appendix Table 3.4 Financial performance in South Australian commercial fisheries, 2007/08, (\$'000) (average per boat)

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs ^a	Marine Scalefish ^b	Sardines	Lakes and Coorong
(1) Total Boat Gross Income	877.6	342.3	744.2	486.7	276.8	5,563.6	103.1	1,160.6	228.5
Variable Costs									
Fuel	14.5	42.0	93.6	39.5	42.9	734.7	11.8	200.7	14.8
Repairs & Maintenance ^b	20.6	13.9	35.0	26.9	23.6	610.2	9.1	99.2	6.8
Bait/Ice	0.1	0.0	0.0	18.8	14.0	75.2	2.9	2.3	1.4
Provisions	8.3	0.7	7.7	0.7	11.4	0.0	0.0	8.2	0.2
Labour - paid	243.3	115.7	265.5	108.1	70.3	1,299.7	13.8	465.0	33.2
(2) - unpaid ^c	0.9	8.6	1.9	22.1	21.4	124.6	28.3	2.9	41.7
Other	4.8	0.5	16.3	0.7	1.0	132.8	0.0	35.0	16.9
(3) Total Variable Costs	292.5	181.4	420.0	216.7	184.4	2,977.1	65.9	813.3	115.0
Fixed Costs									
Licence Fee	70.4	30.1	24.2	19.3	20.8	279.7	7.1	48.4	9.2
Insurance	4.2	19.6	18.6	6.5	7.4	105.3	1.9	32.0	1.7
(4) Interest	17.1	18.0	41.6	26.1	42.7	629.1	5.1	97.7	5.9
(5) Labour - unpaid ^c	19.5	12.4	8.2	7.5	8.5	68.2	4.9	10.2	7.3
(6) Leasing	0.0	0.0	0.0	6.2	13.4	0.0	0.0	21.1	0.0
Legal & Accounting	8.4	6.6	9.9	3.8	4.1	23.5	1.3	8.2	2.1
Telephone etc.	2.9	2.6	3.5	1.8	3.1	29.3	1.4	1.8	2.3
Slipping & Mooring	2.0	4.0	2.7	2.8	1.7	0.0	0.8	17.8	0.1
Travel	8.1	0.4	1.4	2.2	3.7	16.7	0.5	0.9	1.0
Office & Admin	8.7	4.0	6.1	4.0	4.3	45.1	5.1	6.6	5.2
(7) Total Fixed Costs	141.3	97.6	116.2	80.2	109.8	1,196.9	28.2	244.7	34.7
(8) Total Boat Cash Costs (3 + 7)	433.8	279.0	536.2	296.9	294.2	4,174.0	94.1	1,058.0	149.8
Boat Gross Margin (1 - 3)	585.0	160.9	324.2	270.0	92.3	2,586.5	37.2	347.3	113.5
(9) Total Unpaid Labour (2 + 5)	20.4	21.0	10.1	29.6	29.8	192.8	33.2	13.2	49.1
Gross Operating Surplus	464.1	84.3	218.1	219.4	12.4	1,582.4	42.2	115.7	127.8
(10) Boat Cash Income (1 - 8)	443.7	63.3	208.0	189.8	-17.4	1,389.6	9.0	102.6	78.7
(11) Depreciation	38.8	95.9	141.5	42.4	46.3	552.0	18.1	217.5	24.8
(12) Boat Business Profit (10 - 11)	404.9	-32.6	66.5	147.4	-63.8	837.7	-9.2	-114.9	53.9
(13) Profit at Full Equity (12 + 4 + 6)	422.0	-14.6	108.1	179.7	-7.6	1,466.7	-4.1	3.9	59.8
Boat Capital									
(14) Fishing Gear & Equip	275.8	1,339.6	1,765.6	418.6	464.7	2,907.6	129.0	2,839.2	167.3
Licence Value	7,958.3	2,425.0	3,690.6	3,272.1	1,252.7	24,255.2	196.3	2,926.9	226.0
(15) Total Boat Capital	8,234.1	3,764.6	5,456.3	3,690.7	1,717.4	27,162.9	325.3	5,766.1	393.3
Rate of Return on Fishing Gear & Equip (13 / 14 * 100)	153.0%	-1.1%	6.1%	42.9%	-1.6%	50.4%	-3.2%	0.1%	35.8%
Rate of Return on Total Boat Capital (13 / 15 * 100)	5.1%	-0.4%	2.0%	4.9%	-0.4%	5.4%	-1.3%	0.1%	15.2%

^a Estimates of financial performance for the blue crab fishery have been presented on a whole of fishery basis.

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

^c Earnings before interest and tax.

Source: EconSearch (2009b)

Appendix Table 3.5 Costs as a percentage of total cash costs in South Australian commercial fisheries, 2007/08

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs	Marine Scalefish ^a	Sardines	Lakes and Coorong
Variable Costs									
Fuel	3%	15%	17%	13%	15%	18%	13%	19%	10%
Repairs & Maintenance	5%	5%	7%	9%	8%	15%	10%	9%	5%
Bait/Ice	0%	0%	0%	6%	5%	2%	3%	0%	1%
Provisions	2%	0%	1%	0%	4%	0%	0%	1%	0%
Labour - paid	56%	41%	50%	36%	24%	31%	15%	44%	22%
- unpaid	0%	3%	0%	7%	7%	3%	30%	0%	28%
Other	1%	0%	3%	0%	0%	3%	0%	3%	11%
Fixed Costs									
Licence Fee	16%	11%	5%	7%	7%	7%	8%	5%	6%
Insurance	1%	7%	3%	2%	3%	3%	2%	3%	1%
Interest	4%	6%	8%	9%	15%	15%	5%	9%	4%
Labour - unpaid	4%	4%	2%	3%	3%	2%	5%	1%	5%
Leasing	0%	0%	0%	2%	5%	0%	0%	2%	0%
Legal & Accounting	2%	2%	2%	1%	1%	1%	1%	1%	1%
Telephone etc.	1%	1%	1%	1%	1%	1%	1%	0%	2%
Slipping & Mooring	0%	1%	1%	1%	1%	0%	1%	2%	0%
Travel	2%	0%	0%	1%	1%	0%	1%	0%	1%
Office & Admin	2%	1%	1%	1%	1%	1%	5%	1%	3%
Total Variable Costs	67%	65%	78%	73%	63%	71%	70%	77%	77%
Total Fixed Costs	33%	35%	22%	27%	37%	29%	30%	23%	23%
Total Cash Costs	100%	100%	100%	100%	100%	100%	100%	100%	100%

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

Source: EconSearch (2009b)

Appendix Table 3.6 Economic impacts of South Australian commercial fisheries, 2007/08

	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	31.0	2.9	32.0	75.7	15.9	5.7	20.9	16.3	7.5	208.2
Downstream ^b	16.4	2.0	16.5	23.5	6.0	3.3	9.6	3.5	5.4	86.3
All other sectors (indirect)	41.9	6.3	50.6	92.1	15.9	9.3	45.5	24.4	14.0	300.2
Total	89.4	11.3	99.1	191.3	37.9	18.4	76.1	44.2	26.9	594.6
Total/Direct	1.9	2.3	2.0	1.9	2.3	2.0	2.5	2.2	2.1	2.0
Total/Tonne (\$)	\$100,500	\$49,100	\$50,500	\$103,400	\$109,800	\$27,500	\$25,300	\$1,400	\$12,500	\$13,210
Contribution to GSP (\$m)										
Direct										
Fishing	25.6	1.6	22.5	54.0	6.7	3.7	5.9	9.3	5.2	134.6
Downstream	4.6	0.8	6.9	9.4	2.4	1.1	3.5	1.5	2.1	32.4
All other sectors (indirect)	20.1	3.1	24.3	44.1	13.5	4.4	21.3	11.6	6.8	149.1
Total	50.2	5.6	53.6	107.5	22.6	9.2	30.8	22.5	14.1	316.1
Total/Direct	1.7	2.3	1.8	1.7	2.5	1.9	3.3	2.1	1.9	1.9
Total/Tonne (\$)	\$56,500	\$24,294	\$27,300	\$58,000	\$49,200	\$13,700	\$10,244	\$740	\$6,578	\$7,022
Employment (fte jobs) ^c										
Direct										
Fishing	90	28	185	414	155	28	531	63	74	1,569
Downstream	56	18	149	130	34	17	70	20	40	535
All other sectors (indirect)	217	33	265	480	150	48	234	127	74	1,628
Total	364	80	598	1,025	339	93	835	211	188	3,732
Total/Direct	2.5	1.7	1.8	1.9	1.8	2.0	1.4	2.5	1.6	1.8
Total/Tonne	0.41	0.35	0.31	0.55	0.74	0.14	0.28	0.01	0.09	0.08
Household Income (\$m)										
Direct										
Fishing	9.2	1.4	11.6	21.4	4.0	1.5	5.9	6.7	3.0	64.8
Downstream	2.9	0.6	4.9	6.5	1.7	0.8	2.6	1.0	1.5	22.5
All other sectors (indirect)	11.2	1.7	13.5	24.2	7.5	2.4	12.0	6.4	3.8	82.7
Total	23.4	3.7	30.0	52.1	13.3	4.7	20.5	14.1	8.4	170.0
Total/Direct	1.9	1.9	1.8	1.9	2.3	2.1	2.4	1.8	1.8	1.9
Total/Tonne (\$)	\$26,300	\$16,000	\$15,200	\$28,100	\$28,800	\$7,000	\$6,800	\$400	\$3,800	\$3,777

^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 625 full-time and 1,161 part-time, that is, 1,786 jobs in total.

Source: EconSearch (2009b)

Appendix Table 3.7 Economic rent in South Australian commercial fisheries, 2007/08 (\$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	30.7	2.9	33.0	75.7	15.9	5.6	20.9	16.3	7.5	208.6
Less Labour	9.2	1.2	12.2	21.3	5.8	1.5	9.5	6.7	2.7	70.2
Less Materials & Services	5.4	1.1	9.7	20.7	8.7	2.1	8.7	6.5	2.0	64.8
Less Depreciation	1.4	0.8	6.3	6.6	2.7	0.6	3.7	3.1	0.8	25.8
Less Opportunity Cost of Capital (@10%)	1.0	1.1	7.8	6.5	2.7	0.3	2.6	4.0	0.6	26.6
Economic Rent	13.8	-1.3	-3.0	20.6	-3.9	1.2	-3.6	-3.9	1.4	21.3

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

Source: EconSearch (2009b)