

ECONOMIC RESULTS OF THE AUSTRALIAN NATIONAL RECREATIONAL FISHING SURVEY¹

DAVID CAMPBELL, DCafe dcampbell.fish@bigpond.com

ABSTRACT

Recreational fishing is a compound activity that includes the expectancy and catching of fish. The Australian National Recreational Fishing Survey provides catch and economic data for this activity for the 12 months May 2000 to April 2001. In addition to catch behavioural data, the survey provides economic data for that proportion of expenditure attributed by recreational fishers to recreational fishing. The estimated 3.36 million Australian residents who participated in this activity over the period of the survey spent an estimated \$1.85 billion. Expenditure on boats and trailers of \$940 million made up half of the expenditure attributed to fishing. The next most important expenditure classification, at \$445 million, was travel and accommodation; while expenditure directly involved in fishing made up only 12 per cent (\$229 million) of the incurred expenditure. This, and other behavioural and expenditure information is important to policy decisions makers at the national, state and regional levels and to decisions by public and private enterprises on the provision of goods and services to those participating in recreational fishing activities. This includes what uses and to which users fish and associated resources are to be made available; and the policy question of the impact of expenditure attributable to recreational fishing on regional economic activity. Such information is also useful in decisions concerning the provision of goods and services used in recreational fishing, including the public provision of roads and access to waterways, and the private provision of accommodation and fishing gear.

Keywords: recreational fishing; multiple use; social contribution; recreational expenditure;

BACKGROUND

Introduction

Three and a third million Australian recreational fishers aged five years and older spent an estimated \$1.85 billion over the 12 months May 2000 through April 2001. This involved 20.6 million fisher days of effort and the harvest of 136 million aquatic animals (Henry and Lyle 2003).

The National Recreational Fishing Survey provides a robust, and up to now, unavailable data set on an important national recreational activity. Such information is useful to decisions concerning the allocation of fish resources between competing uses. Such information is also important to the provision of goods and services including, at a broad scale, the public provision of roads and access to waterways, and the private provision of boats, accommodation and fishing gear.

This paper presents a summary of the expenditure data collected in the National Recreational Fishing Survey and is derived from the larger report by Campbell and Murphy (2004). The companion document Henry and Lyle (2003) provides a detailed background to the survey and the methodology used to collect and a detail catch and effort report (also, see Lyle, Coleman, West, Campbell, and Henry 2002).

Survey context and methodology

Objective

¹ Acknowledgement, and thanks is given to those recreational fishers who, without reward, put themselves to twelve months of interviews. Acknowledgement is also given to Lawrie West, Kewagama Research, and Jeremy Lyle, Tasmanian Aquaculture and Fisheries Institute, University of Tasmania, for their professionalism and the extra time and effort they provided to ensure the success of the survey.

To collect nationally consistent and comparable recreationally fishery statistics (fish catch, expenditure data, species composition and fishing effort) for the non-commercial components of Australian fisheries (Henry and Lyle 2003).

Survey structure

The scope of the survey was to collect data on recreational fishing activity for Australian residents aged five years and older resident in private dwellings. Recreational fishing was defined as the capture or attempted capture of aquatic animals² in Australian waters other than for commercial purposes. The survey included the collection of expenditure, social, demographic, catch by species, and fishing behaviour data. The population sample of private households was taken from the white pages telephone directory and was based on single-stage cluster sampling, where the randomly selected household was the primary sampling unit, with recreational fishers, within the household, the secondary unit.

Approximately 44,000 respondents were selected for the initial screening survey. All sampled households were given a structured screening survey prior to inviting those family members likely to participate in recreational fishing in the following 12 months, to participate in the ongoing 'diary' survey. Members of 6,578 households agreed to participate in the survey. Telephone interviews were held with co-operating diarists at least once monthly, with earlier interviews being carried out more often for avid fishers. A supplementary survey was used to collect data on food and drink and vehicle expenses (fuel, oil, and repairs) for fishing related activities that occurred 'away from home' (greater than 40 km by road), but was found unsuitable and is not included in the survey results.

Use of recreational fisher expenditure data

The nature of the expenditure Data

In providing expenditure³ information respondents identified the item or service, the price paid, and when and where the expenditure occurred. For practical reasons, distance travelled was employed to estimate private vehicle use and a rate of \$0.50 per kilometre applied to cover vehicle costs.

Attribution of expenditure

Recreational fishing is a form of activity involving the consumption of commodity items and environmentally, publicly, and privately provided services to people who travel to destinations away from their normal place of accommodation or work (Corcoran *et al*, 1998). A recreational trip that includes fishing can involve people who did not participate in recreational fishing. At the same time, the trip might be for the sole purpose of recreational fishing or it might include a range of other activities such as visiting friends and relatives, touring, walking, boating, swimming, camping, sightseeing and work. Accordingly, diarists were asked to provide an estimation of that proportion of their expenditure that was directly attributable to participation in recreational fishing. This estimated value was used as a proportional coefficient or weighting to provide an estimate of the amount of associated expenditure to be attributed to (or explained by the respondent's participation in) recreational fishing. All people benefiting from the expenditure were to be taken into account in making this assessment.

ATTRIBUTABLE EXPENDITURE ACCORDING TO RESPONDENT'S RESIDENCE

Attributable expenditure by item and service category

Australian recreational fishers reported expenditure on more than 45 categories of goods and services. These expenditure items were grouped into ten main categories (table 1). At \$940 million, boats and trailers constitute over half of the estimated total expenditure attributed by respondents to recreational

² The term 'fish' is used in this report to refer to aquatic animals in general including those species having gills and fins.

³ Expenditure data were collected on a household basis, while demographic, social, catch and fishing behaviour data was collected on the basis of the individual fisher.

fishing. A third of the attributable expenditure on boats and trailers was by New South Wales residents, while the estimated highest per fisher mean attributable expenditure on boats and trailers was by Western Australian residents (\$418) followed by Northern Territory residents (\$370).

Table 1: Attributable fishing expenditure by item/service grouping by State or Territory of residence

Category	Attributable expenditure \$M								
	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Accommodation	17.74	13.02	6.26	2.93	8.35	0.69	0.23	1.13	50.33
Camping gear	36.23	30.38	21.38	13.61	26.68	3.27	0.52	1.88	133.97
Bait & Berley	11.98	8.33	8.21	3.77	6.98	0.36	0.37	0.56	40.58
Boats & Trailers	303.90	158.64	160.58	72.61	200.61	24.35	16.29	2.97	939.97
Clothing	6.51	9.47	4.57	1.78	1.58	1.01	0.12	0.50	25.60
Dive Gear	0.65	0.01	0.80	0.53	3.20	0.53	0.00	0.00	5.72
Fees & Licences	8.72	8.25	2.74	1.01	3.20	1.60	0.91	0.51	26.93
Fishing Gear	56.71	34.39	39.88	11.15	30.95	5.13	2.22	2.47	182.88
Travel	107.52	97.45	64.54	40.15	55.62	14.69	5.84	9.21	395.01
Other	4.23	36.34	10.60	0.94	1.20	0.18	0.20	0.14	53.83
Total	554.20	396.27	319.57	148.48	338.38	51.86	26.70	19.36	1,854.83

The second highest expenditure grouping of \$395 million was travel, of which about 95% was for private vehicle travel. At \$108 million, the highest level of travel expenditure was by New South Wales residents, with the highest levels of expenditure per fisher of \$177 and \$172 being for Victoria and the Australian Capital Territory, respectively. Expenditure on fishing gear ranked third at \$183 million, which, when added to bait and berley, provides an estimate of direct, or 100 per cent of expenditure on recreational fishing of \$223 million nationally (table 1).

Attributable expenditure according to residence

By state and territory

Total expenditure patterns were generally related to fisher population size, with New South Wales residents accounting for about 30% of the fisher population and 30% of the national expenditure attributed to fishing (table 2). Victoria (21%), Western Australia (18%) and Queensland (17%) followed in the proportion of national expenditure attributed to recreational fishers. On average, Australian recreational fishers spent \$552 per fisher per annum with the highest average expenditure by residents of Victoria (\$721) followed by Western Australia (\$706) and Northern Territory (\$608) (table 2). Average per capita expenditure levels below the national average emerged in South Australia (\$452), Tasmania (\$416), Queensland (\$407) and the Australian Capital Territory (\$362).

Table 2: Total estimated total and average attributable fishing expenditure by state of residence

State/ Territory	Attributable expenditure \$m (rse) ^a	Proportion of national expenditure %	Fishers no.	Proportion of national participation %	Average Fisher Expenditure \$	Ranking
NSW	554.204 (11.9%)	30	998,501	30	555	4
VIC	396.27 (9.5%)	21	549,803	16	721	1
QLD	319.57 (7.3%)	17	785,045	23	407	7
SA	148.48 (9.5%)	8	328,227	10	452	5
WA	338.38 (13.4%)	18	479,425	14	706	2
TAS	51.83 (9.6%)	3	124,590	4	416	6
NT	26.70 (12.9%)	2	43,932	1	608	3
ACT	19.36 (16.8%)	1	53,467	2	362	8
Total	1,854.80 (5.0%)	100	3,362,990	100	552	

a. rse – relative standard error

Capital city or regional residence

A number of differences in attributable expenditure can be observed between state and territory residents and between capital city and non-capital city or regional residents (table 3). Such differences can occur as a result of a number of factors including income (See table 11), individual preference, and relative differences in fishing and non-fishing options. Differences in the availability of fishing opportunities can come about as a result of differences in proximity to suitable waters, transport and boat access, availability of other desirable infrastructure and/or services including food and accommodation, and access to coastal and river bank fishing sites. Preferences can differ according to factors including age, experience and cultural norms.

Table 3: Attributable fishing expenditure according to capital city/regional residence

State or Territory of Residence	Attributable expenditure			Capital city % of expenditure	% of fishers in capital city	% of population in capital city b.
	Total \$M (rse)	Capital city (\$M)	Regional (\$M) a.			
New South Wales	554.2 (11.9%)	314.52	239.68	57	45	39
Victoria	396.27 (9.5%)	266.57	129.70	67	52	42
Queensland	319.57 (7.3%)	139.92	179.64	44	41	31
South Australia.	148.48 (9.5%)	83.98	64.50	57	61	42
Western Australia	338.38 (13.4%)	229.55	108.83	68	62	42
Tasmania	51.83 (9.6%)	20.21	31.63	39	37	29
Northern Territory	26.70 (12.9%)	22.13	4.57	83	72	35
Australian Capital Terr.	19.36 (16.8%)	19.36	NA	NA	NA	NA
Total	1,854.80 (5.0)	1,076.89	777.92	58	64	39

NA. Not Available. **a.** The term 'Regional' is made up of areas outside of the capital city. **b.** Australian Bureau of Statistics (2003b) pp. 3-4.

In terms of intra-state distribution, 58 per cent of attributable fishing expenditure was by capital city residents. This compares with the 53 per cent of the total population of recreational fishers resident in capital cities and indicates disproportionately higher expenditure on recreational fishing activities by capital city residents relative to regional residents. The exceptions to this general pattern were Queensland and Tasmania where it was estimated that 56 per cent of Queensland attributable expenditure was by regional residents, while 61 per cent of Tasmanian attributable expenditure was by regional residents. At the other extreme, 83 per cent of Northern Territory expenditure was by Darwin residents, while the capital cities of Perth (Western Australia) and Melbourne (Victoria), at 68 per cent and 67 per cent, had the next highest levels of capital city expenditure (table 3).

These observed relative differences might be due to a number of factors, including differences in income. For instance mean household income is higher in the capital cities (Australian Bureau of Statistics 2003a, table 12, pp. 24-25). The higher participation rates of capital city residents is consistent with recreation,

including recreational fishing, being a superior good. All capital cities, aside from Canberra, are located on the coast and provide ready public transport, and greater access from off piers and boat ramps to marine fishing. Conversely, capital city residents have greater access to alternative recreational activities.

ATTRIBUTABLE EXPENDITURE PATTERNS: WHERE AND WHEN

Information on the geographic and seasonal distribution of that proportion of expenditure attributed to recreational fishing is presented in regard to: expenditure by economic zone, whether it occurred within or outside of the home local, the distribution of expenditure within and outside of capital cities, expenditure by out-of-state residents, expenditure according to waters fished and expenditure by month.

Attributable expenditure according to economic zone

Each state and territory was broken up into a number of economic zones. Recreational fishing, by attracting people and expenditure to a location, can be important in generating economic activity to that location. Such expenditure may be by residents within an economic zone, but at a location away from home (more than 40 kilometres travel by road from the fisher’s normal residence); those who are resident in some other economic zone including capital city residents; those who have come into the state or territory from another state or territory; and visitors from overseas.

Estimated attributable expenditure in northern Australia

While about two fifths of the Australian continent lies above the Tropic of Capricorn, the population is concentrated below the Tropic. Recreational, fishing is often considered as a means of encouraging north of the Tropic economic activity. In keeping with the low population numbers above the Tropic, estimated attributable expenditure above the Tropic of Capricorn was seven per cent (table 4).

Table 4: Proportion of attributable expenditure in Northern Australia a

	Queensland	Western Australia	Northern Territory	Total
Value \$	74,311,124	21,763,169	29,198,238	125,272,531
(% State total)	(23)	(8)	(100)	(7)

a. Location of expenditure is defined according to whether the economic zone in which the expenditure occurred is primarily north of or south of the Tropic of Capricorn

At home or way from home expenditure

The estimated expenditure attributable to recreational fishing is presented in table 5 for each state and territory according to home location and away from home location. That is, whether the expenditure occurred within 40 kilometres or more than 40 kilometres by road away from home. In total, 55 per cent, or most of the attributable expenditure, occurred within the home region. The distribution of away from home expenditure forms three distinct groupings. Queensland, at 38 per cent had the highest incidence of away from home expenditure, New South Wales, Victoria and South Australia were grouped around the national average of 24 per cent of the remaining states and territories grouped around 10 to 14 per cent.

Two factors need to be taken into account when considering at home and away from home expenditure. First, these values take no account of expenditure on items, such as food and drink. Such expenditure would have occurred regardless of participation in recreational fishing and are therefore not attributable to recreational fishing⁴. However, that it occurred away from home would be as a result of participation in recreational fishing. Secondly, the allocation of vehicle expenditure is not included in either the home

⁴ While expenditure on food and drink when participating in recreational fishing was different to that which would have occurred without having participated in recreational fishing, there is no certainty as to whether difference would have been greater than or less than what would have otherwise occurred. It is likely that accommodation costs do include some food and drink expenditure.

expenditure or the away from home expenditure. Instead, it is included as a separate line item. The reason for this is that while most of the expenditure on fuel, oil and repairs is likely to have occurred within the home region, it was not possible to identify what proportion of expenditure did occur outside of the home region.

Table 5: At home & away from home attributable expenditure

Location	NSW \$m.	Vic. \$m.	Qld \$m.	SA \$m.	WA \$m.	Tas. \$m.	NT \$m.	ACT \$m.	Total \$m.
Home region	347.15	230.54	159.60	82.78	246.09	32.12	18.92	5.63	1,122.87
%	77	75	62	76	86	86	90		55
Away from	103.72	78.40	97.04	26.60	5.29	2.19	2.19	4.64	356.37
%	23	25	38	24	14	14	10	10	24
Vehicle expenditure a	103.29	87.34	62.92	39.10	53.78	14.43	5.59	9.09	375,55

a. Provided separately as it was not possible to identify what proportion of expenditure did occur outside of the home region.

Expenditure by capital city residents in regional Australia

With 58 per cent of total attributable expenditure being by capital city residents, a relevant policy question is the net impact of capital city residents on the regional economic zones in the respective state or territory. Excluding private vehicle expenditure⁵, it was estimated that capital city residents spent \$28.7 million more in regional Australia than what regional residents spent in the capital cities (table 6). The net impact of capital city expenditure, however, differed from jurisdiction to jurisdiction. While expenditure in regional New South Wales by recreational fishers resident in Sydney resulted in a net increase in expenditure of 14 per cent, or \$24 million, in regional New South Wales, there was a net loss of 23 per cent or \$11 million by regional South Australian recreational fishers in Adelaide.

It is important to note that a large proportion of expenditure by recreational fishers resident in capital cities may have occurred outside of their respective state or territory. For instance, while 13 per cent of the attributable expenditure by recreational fishers resident in Sydney was spent in regional New South Wales, 33 per cent of the estimated Sydney resident attributable expenditure was spent outside of Sydney, with the difference being spent interstate. For Melbourne, the equivalent values were, respectively, 5 per cent and 31 per cent.

Table 6: Net non-private vehicle attributable expenditure by capital city residents outside of their home economic zone

	NSW Sydney \$'000	Vic. Melb- ourne \$'000	Qld Brisb- ane \$'000	SA Adel- aide \$'000	WA Perth \$'000	Tas. Hob- art \$'000	NT Dar- win \$'000	Total \$'000
Total Capital city	223,056	177,450	118,887	59,081	196,751	14,974	17,246	807,445
Capital city regional expenditure	28,799	9,204	5,949	4,974	23,218	919	531	73,594
Total state regional expenditure	174,525	74,894	128,746	48,092	86,464	21,712	3,430	537,863

⁵ Because the location of expenditure on fuel, oil and repairs is unknown, private vehicle expenditure has not been included.

Regional expenditure in capital	4,791	3,034	11,492	16,057	7,195	1,566	749	44,884
Net capital city expend. in region	24,008	6,170	-5,527	-11,082	16,023	-647	-218	28,710
(% of regional expenditure)	(14)	(8)	(4)	(23)	(18)	(30)	(6)	(5)

Note: The capital city zones were Sydney – N1; Melbourne V1; Brisbane Q1 through Q6; Adelaide S6; Perth W8; Hobart T1; and Darwin Y1. Canberra was excluded as it has regional characteristics.

Interstate expenditure

A consideration for many state and territory fishery administrators is the relative importance of expenditure by out-of-state visitors. A particular advantage of the national survey is it provides an estimate of interstate as well as intrastate expenditure. The estimated attributable expenditure carried out by recreational fishers outside of their resident state or territory was \$128,256 million or 8 per cent of the \$1,650,318 million⁶ (table 7).

Table 7: Attributable expenditure by out-of-state/territory residents

State/Territory	Total Expenditure \$M	Expenditure by out-of-state residents		Major source of out-of-state attributable expenditure	
		\$M	% of total	Most important State/territory	% of attrib. expenditure
NSW	425.894	24.410	7	Victoria	66
Victoria	254.735	2.341	1	SA NSW	25 23
Queensland	326.201	78.568	24	NSW	59
South Australia	110.205	3.032	3	Victoria	74
WA	289.313	6.097	2	NSW	76
Tasmania	37.664	6.097	3	Victoria	55
NT	29.375	8.710	30	Victoria NSW	89
ACT	5.802	0.174	3	NSW	100
Total	1,650.318	128.256	8	NSW	45

Note: Does not include private vehicle costs

Expenditure by residents from outside Australia or international visitors

Based on estimates provided by the Bureau of Tourism Research, there were 191,131 or 4.17 per cent of overseas visitors, who, during the survey period included recreational fishing among their activities in Australia. No information was available on the amount of fishing effort, the species targeted or caught, where fishing occurred or the expenditure attributable to recreational fishing (Henry 2003, p. 128). While international visitors do not appear to have been important overall, they may be important to the catch and attributable expenditure incurred for specific fisheries, such as the Coral Sea game fishery off Cairns.

Waters fished

Attributable expenditure, on the basis of residence and waters fished were estimated (table 8). This was done by allocating expenditure to the different types of waters fished, whether inland, estuarine, or marine, according to the proportional number of fishing events carried out by household members in these waters. Consistent with living in the driest continent, nearly half (48 %) of the estimated attributable

⁶ One difficulty with providing an estimate of expenditure of out-of-state visitors is that the definition of out-of-state depends on the respondent's address at the time of the original screening survey. Some respondents moved to a new permanent address, including interstate, following the screening survey. Expenditure and catch of such respondents was included as out-of-state.

expenditure related to marine fishing, less than a quarter (20 %) related to inland fishing, while nearly a third was estimated as being related to estuarine fishing. However, this varied between jurisdictions, with 43 per cent of attributable expenditure being related to estuarine fishing in New South Wales, and fishing in estuarine waters being the most important in Victoria (inland waters were nearly as important in Victoria) and the Northern Territory.

Table 8: Waters Fished

State	Families no.	Days effort no.	Kept catch no.	Expenditure \$			
				Estuarine	Marine	Inland	Total
NSW	1,315	5,987,661	30,553,714	238,395,988	210,636,492	105,176,954	544,204,435
Vic.	952	3,502,275	18,738,047	160,464,623	78,950,743	156,852,680	396,268,047
Qld	1,312	4,538,704	39,565,689	111,112,749	175,218,429	33,237,127	319,568,305
SA	1,030	2,002,723	17,731,699	10,381,050	111,334,000	26,769,335	148,484,385
WA	1,180	3,325,820	16,538,921	53,595,218	277,180,973	7,605,288	338,381,480
Tas.	714	815,685	11,480,719	8,971,104	27,286,774	15,576,581	51,834,458
NT	343	220,397	678,674	9,834,637	8,890,953	7,974,105	26,703,695
ACT	215	246,656	621,125	5,084,404	7,442,460	6,831,909	19,358,773
Total	7,061	20,639,921	135,908,588	597,838,772 32%	896,940,824 48%	360,023,97 20%	1,854,804m 100%

Seasonality of attributable expenditure by state and territory

National monthly attributable expenditure varied between \$100 million and \$150 million, throughout the year with expenditure of nearly \$250 million in December (table 9). Initially, this was surprising, as the major holiday period continues through late December through January. However, an increase of around \$100 million was observed for boats and trailers for the month of December occurred at this time; most of which occurred in New South Wales. It appears the jump in expenditure for December is preparatory for the holiday season.

Table 9: Seasonal distribution of attributable expenditure by state and territory

Date	NSW \$'000s %	Victoria \$'000s %	QLD \$'000s %	SA \$'000s %	WA \$'000s %	Tas. \$'000s %	NT \$'000s %	ACT \$'000s %
2000								
4.	24,504 (7)	24,441 (12)	16,915 (6)	7,916 (9)	13,330 (6)	2,082 (6)	2,684 (10)	231,575 (6)
May	19,485 (6)	9,290 (4)	11,695 (4)	7,978 (9)	54,467 (23)	1,292 (4)	2,773 (10)	212,075 (5)
June	14,276 (4)	8,037 (4)	15,406 (5)	12,874 (14)	6,839 (3)	980 (3)	1,676 (6)	788,510 (20)
July	22,114 (6)	6,432 (3)	32,888 (11)	7,366 (8)	10,230 (4)	3,032 (9)	1,341 (5)	146,706 (4)
Aug.	10,086 (3)	26,936 (13)	36,138 (13)	8,434 (9)	18,399 (8)	2,352(7)	4,332 (15)	255,850 (6)
Sept.	16,326 (5)	10,890 (5)	39,845 (14)	4,407 (5)	22,809 (10)	3,853 (12)	1,620 (6)	399,870 (10)
Oct.	16,626 (5)	17,036 (8)	12,774 (4)	10,382 (12)	23,745 (10)	1,809 (6)	1,535 (5)	337,998 (8)
Nov.	14,121 (4)	19,759 (1)	16,536 (6)	4,625 (5)	16,219 (7)	4,782 (15)	2,269 (8)	170,368 (4)
Dec.	120,325 (34)	28,145 (14)	19,300 (7)	6,399 (7)	28,066 (12)	3,670 (11)	593 (2)	570,820 (14)
'01	40,212	12,509	26,188	8,548	14,840	2,906	421	254,909

Jan.	(11)	(6)	(9)	(10)	(6)	(9)	(1)	(6)
Feb.	29,824 (8)	27,887 (14)	18,491 (6)	6,362 (7)	15,143 (6)	3,876 (12)	1,296 (5)	435,212 (11)
Mar.	25,200 (7)	13,112 (6)	41,556 (14)	4,021 (5)	12,800 (5)	1,781 (5)	7,608 (27)	233,815 (6)
Total	353,099	204,477	287,732	89,313	236,888	32,417	28,148	4,038

DISTRIBUTION

Information on the distribution of fish catch and expenditure is presented according to demographic characteristics, employment status and fisher avidity.

Recreational fishers according to age class and gender

Table 10 provides the estimated number of people for each of six age classes, starting from age five to 14, for males and for females. While there are more males participating in recreational fishing in each of the six age classes, the 5 to 14 years age class has the largest recreational fishing participation rate. The next highest is the 30 to 44 years age class, while the two age classes in the age range of 60 years and above, have the lowest participation rate (table 10).

Table 10: Numbers and proportion recreational fisher population according to age class & gender

Age Class	Males	% pop	Females	% pop	Total	% pop
5 to 14	444,675	33.2	289,026	22.8	733,702	28.1
15 to 29	547,232	27.0	252,560	12.7	799,792	19.9
30 to 44	643,710	30.7	319,824	14.9	963,534	22.8
45 to 59	448,380	25.9	167,359	9.7	615,740	17.8
60 to 74	172,677	17.7	46,628	4.5	219,306	11.0
75 plus	26,368	7.2	4,549	0.9	30,918	3.5
Total	2,283,043	26.7	1,079,947	12.4	3,362,990	19.5

From Henry and Lyle (2003, pp. 152-3).

These differences appear to indicate that there are a number of possible factors that might affect participation in recreational fishing at different life history stages. The data results certainly appears to question the hypothesised dream of pre-retirees to spend making more of their time, on retirement, participation in recreational fishing.

Employment and fishing expenditure and participation

While income data was not collected, data on fisher employment status was collected during the screening survey. Households were ranked according to the highest employment status of participating family members. That is, according to the level of employment and type of employment held. While there appears to be some sort of positive relationship between expenditure and income, the kept catch figure of 72 indicates a very high level of fisher participation for part time employed. On examination, part time employed was estimated to have had the highest level of fishing participation (8 days) as compared to the national average of six days (table 11).

Table 11: National Estimated Expenditure, Landing & Days Fished According to Employment Status

Employment status		Number of fishers	Expenditure \$	Expenditure /fisher \$	Kept catch No.	Kept catch/ Fisher no.
Fully Employed	Professional	1,183,377	702,971,925	594	34,810,919	29
	Trade	852,667	594,168,405	697	30,918,939	36
	Labour	460,805	186,724,914	405	14,125,487	33

	Unknown	2,535	1,826,859	721	60,441	24
	Total	2,499,384	1,485,692,103	594	80,915,787	32
Part time employed		752,485	344,546,817	458	54,069,205	72
Unemployed		111,121	24,564,656	221	923,610	8
TOTAL		3,362,990	1,854,803,576	552	135,908,602	40

Attributable expenditure according to fisher avidity

Estimated attributable expenditure, participation, kept catch and waters fished according to fisher avidity is provided in table 12. Households were ranked according to the highest avidity value. That is, if a family had three fishers, one of which was a high avidity fisher, while the other two were of medium avidity, the family was identified as being a high avidity fisher family. Expenditure data on fisher avidity was classified as: low for 1 through 5 trips, as medium for 6 through 15 trips and as high for 16 or more trips.

While high avidity fishers were estimated as making up only 15 per cent of the fisher population, they accounted for most of the retained catch (58 per cent). This compares with those fishers classified as low avidity, who made up 55 per cent of the population and kept 12 per cent of the retained catch. Meanwhile, those fishers classified as medium avidity, were remarkably consistency with 30 per cent of the population, keeping 30 per cent of the retained catch and spending 30 per cent of the total estimated attributable expenditure (table 12).

At 44 per cent, high avidity fishers were estimated to have accounted for the largest proportion of attributable expenditure, while low avidity fishers accounted for 26 per cent. The higher expenditure level by highly avid fishers was demonstrated for all waters, while the estimated attributable expenditure by those grouped as medium fishers was higher than that for low avidity for estuarine and marine waters, but not for inland fishing.

The highest estimated average attributable expenditure per fish kept was for the medium avidity group (\$14). The lowest average expenditure was for the low avidity group (\$3), while the highest avidity group averaged \$10. The different levels of expenditure are unlikely to be directly attributable to the average value each group placed on fish caught, but, rather, to the type of recreational fishing activity participated in.

Table 12: Attributable expenditure according to the level of participation or avidity

Level of avidity a.	Number of fishers no.	Kept catch no.	Expenditure			
			Total \$	Inland \$	Estuarine \$	Marine \$
Low	3,832,934	16,738,381	486,672,444	109,418,755	170,469,315	206,684,374
Per fisher		44	127			
%	55	12	26			
Medium	2,091,029	40,614,179	549,732,206	95,885,458	174,928,104	278,918,644
Per fisher		19	263			
%	30	30	30			
High	996,747	78,556,042	818,498,926	154,719,766	252,441,354	411,337,806
Per fisher		79	821			
%	15	58	44			
Total	6,920,710	135,908,602	1,854,903,576	360,023,979	597,838,773	896,940,824
Per fisher		20	268			
%	100	100	100			

a. Avidity: low is 1-5 trips, medium is 6-15 trips and high is 16 or more trips.

CONCLUSION

The survey results indicate that nationally, recreational fishing is an important recreational activity involving a large amount of economic activity. Examination of the Survey data provides a number of important policy insights in regard to recreational fisher behaviour at broad based national, state and territory, and larger regional perspectives. The observed regional differences in expenditure patterns indicate possibly important differences in fisher behaviour which may provide benefits to further enquiry.

The uniqueness and strength of the National Recreational Fishing Survey is that it provides a robust data set that is applicable to a wide range of national, state and larger regional expenditure issues. An important step taken in the collection of expenditure data is the identification by the respondent of that proportion of expenditure attributable to participation in recreational fishing.

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