AN EVALUATION OF MOTIVATIONS, ATTITUDES AND AWARENESS OF TASMANIAN RECREATIONAL FISHERS

S. Frijlink & J.M. Lyle

November 2010

Tasmanian Aquaculture and Fisheries Institute, University of Tasmania, Private Bag 49, Hobart, Tasmania 7001. E-mail: Jeremy.Lyle@utas.edu.au

Ph. (03) 6227 7277 Fax (03) 6227 8035

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EXECUTIVE SUMMARY

During 2007/08 a comprehensive survey of recreational fishing was undertaken in Tasmania. While the primary focus of this survey was to provide a socio-demographic profile of fishers and estimate catch and effort, it also provided an opportunity to examine motivations and attitudes of recreational fishers. Since a similar survey was undertaken as part of general fishing survey conducted in 2000/01 it has also been possible to examine whether fisher's values, awareness and attitudes have changed over the past decade or so.

Motivations for recreational fishing relate to both catch and non-catch aspects of the fishing experience. Overall, Tasmanian recreational fishers assigned the highest importance to non-catch related motives – "being outdoors" and "relaxing/unwinding" - followed by catch-related motives – "catching fish for food" and "for enjoyment/sport". Social motives – "spending time with family" and "spending time with friends" - were next in importance. Generally, the motive to compete in fishing competitions was of low importance for most fishers. On average, respondents rated the two main catch and two main social motives more highly in 2007/08 when compared with responses to a similar survey conducted in 2000/01. The greatest difference between these surveys was for the importance associated with the item "catching fish for food" implying a growing focus on consuming recreationally caught fish amongst Tasmanian fishers.

Aggregated survey data can mask the underlying diversity within fisher populations. To address this, the diversity among respondents was explored by grouping them according to gender, age, region of residence, the type(s) of water fished, their fishing intensity (avidity) and main motivation for fishing. This analysis revealed that males were more likely to be motivated by the sporting dimensions of fishing, being outdoors and spending time with friends, while spending time with family members was of greater relative importance for females. Older fishers were more motivated to catch fish for food whereas relaxing/unwinding and spending time with both family and friends were less important for older fishers than for other age groups. Spending time with family and friends was of greatest importance among fishers aged between 30 and 44; an age range consistent with raising children. With regard to avidity, the results suggested that solitude, fishing in competitions, and fishing for both sport and food became increasingly important motivators as avidity increased.

Within the context of recreational fishing, consumptive orientation is the degree to which fishers value the catch-related aspects of the fishing experience. There was strong agreement from respondents that fishing could be satisfying regardless of whether any fish were caught. While this observation reinforces the sentiment that fishers derive benefits from the fishing experience that are unrelated to catching fish, they should not be interpreted such that resource-related aspects are unimportant or incidental.

Respondents demonstrated a clear preference for catching large fish over catching many fish – an observation consistent with many other studies across a broad spectrum of recreational fisheries. The vast majority of respondents also indicated that they preferred to retain enough fish for immediate consumption than keep all fish allowed with possession limits; a finding consistent with the message "catch just enough for a feed".

Factors such as gender, age, residence and water body fished were, however, significant factors in influencing responses relating to consumptive orientation: Overall, males expressed a greater degree of consumptive orientation than females. Other observations are as follows:

- younger fishers attributed greater importance to catching many fish but also indicated that they were more likely to release fish;
- fishers aged between 30-59 years were more likely to keep just enough fish for a feed than retain the possession limit;
- freshwater fishers were less oriented to catching large fish but expressed a greater orientation to retaining bag limits than saltwater fishers.

Time demands relating to work/ business were overwhelmingly the most frequently cited constraints causing respondents to fish less often than in previous years. Activity constraints relating to fishing associated costs, crowding and a lack of accessible fishing opportunities were not prominent issues. In regard to opportunities facilitating respondents to fish more often, changes to work and family environments, recreational preferences/ priorities and access related issues, such as the purchase of boats and the re-opening of previously closed fishing areas, were prominent.

The vast majority of respondents indicated that they were at least quite satisfied with the overall quality of recreational fishing during 2007/08, a general increase in the underlying level of satisfaction compared with 2000/01. Satisfaction with the management of the recreational fishery was also very high, with average scores indicating an overall increase when compared with 2000/01.

Government brochures and publications, other fishers, print media (excluding fishing magazines), and government internet sites were identified as the main sources of information by which fishers learnt about fishing regulations. Significantly, the proportion of respondents who identified government publications as their main source of information had more than doubled since 2000/01, confirming the effectiveness of recent initiatives to improve and promote these publications. Accordingly, about 60% of saltwater fishers were aware of the annual sea fishing booklet while about 80% of freshwater fishers were aware of the freshwater fishing booklet. In regard to other recreational fisheries products, over 75% of respondents were aware of the plastic fish measuring ruler and stick-on measurer while almost 90% of respondents who fished/dived for lobster, abalone and/or scallops were aware of their respective measuring gauges. In terms of accessing government products and publications, Service Tasmania, via licence renewal, and from tackle stores were the most frequently identified sources.

General awareness of the Fishcare Volunteer program had almost doubled since 2000/01, to just over 40% of respondents being at least aware of the program. The proportion of respondents who reported direct contact with Fishcare volunteers had also doubled, to nearly 10%.

Around one in five respondents were aware of TARFish. There were, however, differences based on sub-population groups; more avid fishers and those based in southern Tasmania (including Hobart) indicated greater awareness.

Awareness of selected fishing regulations was assessed for key fish species. Over half of all respondents were fully aware of the size limit for flathead whereas awareness of the size limit for Australian salmon was just over 10% - in both cases these levels were around twice those for 2000/01. General awareness of possession limits was substantially lower. This observation probably reflects the fact that size limits apply to each fish caught whereas possession limits are relatively high and few fishers retain (catch) sufficient numbers of fish on a given fishing trip to require them to be mindful of possession limits.

When provided with a hypothetical management scenario that required the recreational catch to be reduced, respondents tended to be more supportive of options that permitted some level of access, albeit more restricted (reduced bag limit, increased size limit), rather than restrictions that prevented temporal or spatial access (closed seasons or closed areas).

Overall, support for the continued use of recreational gillnets was just over 40% of respondents, only slightly lower than in 2000/01. This finding is even more significant when taken in the context that less than 10% of respondents reported any gillnet fishing in the 12 months prior to interview. There was some regional variation in the level of support, with strongest support (over half of respondents) amongst residents of rural south-eastern, eastern and north-western Tasmania.

Noting that several restrictions on gillnet usage have been implemented to improve fishing practices and reduce wastage in recent years, around one third of respondents agreed that further restrictions were necessary. Of three hypothetical options, greatest support was for the prohibition of gillnets from selected areas and for the implementation of maximum soak times. The lowest level of support was for a requirement that fishers remain in sight of their nets at all times.

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1. Introduction

During 2000/01, the first comprehensive assessment of Australia's recreational fisheries – the *National Recreational Fishing Survey* (NRFS) – was undertaken (Henry and Lyle, 2003). The study used a telephone-diary survey methodology to collect data on catch and effort, expenditure and demographic characteristics of participants. An additional survey component, the 'wash-up survey', collected data on attitudes and awareness of recreational fishers to issues relevant to the fishery. In Tasmania, the same methodological approach was also undertaken in 2007/08. While the data pertaining to the 'main' component of the 2007/08 survey has been reported by Lyle *et al*. (2009), the current report focuses on data collected through the 2007/08 'wash-up survey'. Accordingly, this report may be viewed as an adjunct to Lyle *et al*. (2009). Furthermore, the presence of numerous identical questions between the two 'wash-up surveys' has enabled comparisons of attitudes and awareness of respondents between 2000/01 and 2007/08 to be undertaken.

With regard to participation, expenditure and attitudes, the NRIFS confirmed what has long been intuitively understood by many recreational fishers – that recreational fishing is a pastime undertaken by millions of Australians with considerable social, cultural and economic implications. The importance of understanding these implications for recreational fisheries, and incorporating these insights within the decision making process, has gained recognition over recent years. A key principle of the *National Policy for Recreational Fishing 1994* states that "fisheries management decisions should be based on sound information including fish biology, fishing activity, catches and economic and social values of recreational fishing" (NRFWG, 1994). In regard to Tasmania, Schedule 1 of the *Living Marine Resources Act 1995* prescribes that fisheries need to be managed in a way "which enables people and communities to provide for their social, economic and cultural well-being". This objective is furthermore consistent with the core objectives and guiding principles of Ecologically Sustainable Development (ESD), which underpins the management of natural resources in Australia.

This study reports on data pertaining to the following aspects of recreational fishing: motivations, consumptive orientation, constraints, satisfaction (with fishing quality and management), general attitudes to regulations, and attitudes to recreational gillnetting in Tasmania. Respondents were also surveyed about their awareness of management products and publications, the Fishcare volunteer program, the Tasmanian Association of Recreational Fishing (TARFish) and regulations specific to popular recreational species. Broadly speaking, a better understanding of fisher's physical and psychological relationship with fishing and how they perceive and navigate the regulatory framework may contribute to a more effective distribution of resources, greater compliance with regulations and reduce uncertainty associated with policy changes. This type of information may also inform the effective development and delivery of education and awareness programs and/or products plus facilitate the evaluation of existing programs and/or products. As such, some of the data reported in this study may be viewed as performance indicators for products, publications and programs designed to encourage compliance with regulations and/or responsible fishing practices.

While a few studies focusing on human dimensions of recreational fishing have been undertaken on specific Tasmanian fisheries (Winter, 1985; Frijlink and Lyle, 2009;

Frijlink, 2010), this represents the first comprehensive study encompassing all Tasmanian recreational fisheries. While this 'big picture' approach provides valuable information on recreational fishing in Tasmania, it is acknowledged that targeted surveys are required to provide more precise data for specialised or localised activities. Nonetheless, efforts were undertaken in this study to analyse data in a manner that considers diversity within the survey population. In addition to analysing and reporting data as an aggregate profile of respondents, fishers were assigned to various subgroups based on age, gender, area of residence, avidity, the type(s) of water fished, and main fishing motivation: comparisons between sub-groups enabled a more detailed understanding of the results. This approach is consistent with the growing consensus among researchers that recreational fishing populations are not homogenous assemblages. Studies designed to explore diversity within angling populations generally identify heterogeneous groups of individuals with different values, behaviours, attitudes and resource requirements. If understood, this inherent diversity can be addressed by the management framework to allocate resources more effectively, maximise acceptance of and compliance with regulations, and better predict how different subgroups will be differentially impacted by regulation changes. Programs designed to disseminate information or other 'products' may also be conducted more effectively by identifying and targeting groups differentially.

Comparisons with data from 2000/01 enabled exploration of whether fisher's values, awareness, attitudes and resource requirements have changed over the eight years between surveys. Again, the identification and comparison of fishing sub-groups allows a more detailed understanding of changes and/or similarities between the two survey populations. Few longitudinal studies of recreational fishing populations have been published, and most of these have focussed on participation. The small number of published studies using a longitudinal approach to assess fisher motivations (i.e. Schramm and Gerard, 2004; Schuett *et al*. 2010) have been challenged by recall and/or response bias issues. In the current survey, the minimisation of these issues through the use of a telephone-diary survey methodology, provides an excellent opportunity to detect and attend to emerging trends in values, awareness, attitudes and resource requirements among Tasmanian fishers.

2. Materials and Methods

The data used in this study were collected as part of the 'wash-up' component of the 2007/08 survey of recreational fishing in Tasmania. The recreational survey used a telephone administered diary methodology to monitor the fishing activity of 1037 Tasmanian households over a 12-month period (December 2007 to November 2008). The 'wash-up' interview was conducted by telephone with diarists at the end of the diary-survey period (January/February 2009) and was designed to assess fishers attitudes and awareness relating to management performance, fishing regulations, government publications and products, the Fishwise volunteer program and TARFish. The survey was furthermore designed to gain a better understanding of fisher's motivations, consumptive orientations and factors constraining and/or facilitating fishing activity. The wash-up survey was limited to households that had reported some fishing activity during the diary period and included at least one active fisher who was aged 16 years or older. All information was collected directly from the main/key fisher in the household (no proxy interviews).

Design principles, sample selection, operational aspects and response profiles of the 2007/08 survey are detailed by Lyle *et al*. (2009), and the design philosophy underpinning the telephone-diary survey is discussed in Lyle *et al*. (2002). While the reader is encouraged to source these references for a comprehensive understanding of the survey methodology, the following points should help contextualise the results presented in this report.

- Recreational fishing was defined as the capture or attempted capture of aquatic animals in Tasmanian waters (freshwater, estuarine and marine) other than for commercial purposes. All recreational fishing and harvesting techniques, including dive and hand collection, the use of pots, nets and spears in addition to line fishing, were considered.
- An initial screening survey of Tasmanian households (based on random sampling of white page telephone listings) was undertaken (October-November 2007) to determine demographics (age and gender) and previous fishing participation for all household members. Households that included any member who expressed an intention to go fishing within the 12 months following screening were invited to participate in a diary survey in which the fishing activity of all household members was monitored in detail.
- The underlying design philosophy of the telephone-diary survey is focussed on minimising respondent burden and maximising response and data quality. Consistent with this, and based on eligible households at screening, an overall diary response rate of 85% was achieved. The combination of random selection from the general population and high response rates means that at the household level, the diary sample was representative of the broader recreational fisher population of Tasmania, subject to non-response and calibration adjustments (refer Lyle *et al*. 2009).
- Out of the 1037 households which participated in the diary survey, 833 (80%) reported some fishing activity in Tasmania and were thus eligible to participate in the wash-up survey[1].

[1] An abbreviated wash-up survey to establish the main reason for not fishing was conducted with 186 households that reported no fishing during the diary survey; results are reported in Section 3.4.

- Within each household, respondent selection was based on the main fisher or main diary reporter during the diary survey period. Fishers under the age of 16 years at the time of the wash-up survey (equivalent to 15 years or younger at screening) were excluded from the sample, resulting in a potential sample of 814 households, from which 776 responses were obtained, equivalent to a response rate of 95%.
- Similar response analysis for the 2000/01 survey indicated that of the 850 households that completed the diary survey, 714 (84%) did some fishing[2]. Unlike the 2007/08 survey, respondent selection was random within each household resulting in the inclusion of non-fishers within some fisher households. However, when non-fishers and respondents under the age of 16 years were excluded, the potential sample size was 616, from which 604 responses were obtained, representing a response rate of 98%.

2.1 Data Analysis

To explore diversity within the survey population, respondents were grouped into discrete categories according to six grouping variables: gender, age, residential area, water type fished, avidity and main fishing motivation. Accordingly, for each assessment undertaken in this report, results were reported for aggregated data as well as being tested for differences between sub-groups within a grouping category. This approach engenders a more detailed understanding of how different 'types' of fishers respond to each of the questions. In total, the six grouping categories encompassed 23 sub-groups, which are detailed below.

Gender

Gender of all respondents was noted.

Age

The age categories used by Lyle *et al*. (2009) to examine age based participation were also used in the current study and were based on respondent's age at the time of screening (October/November 2007) for the telephone-diary survey. Persons under the age of 15 years (at screening) were, however, excluded from the 'wash-up survey', resulting in the youngest age category (5-14 years) used by Lyle *et al.* (2009) being excluded. Accordingly, the four age groups used were as follows: 15-29; 30-44; 45-59; and ≥ 60 years of age.

Residential Area

Respondents were categorised by their residential address (primary residence) at the time of the screening for the phone/diary survey according to the four Tasmanian Australian Bureau of Statistics' (ABS) Statistical Divisions (SD): Greater Hobart, Southern, Northern and Mersey-Lyell (Fig. 1).

[2] Fishing in the 2000/01 survey included fishing interstate as well as Tasmania

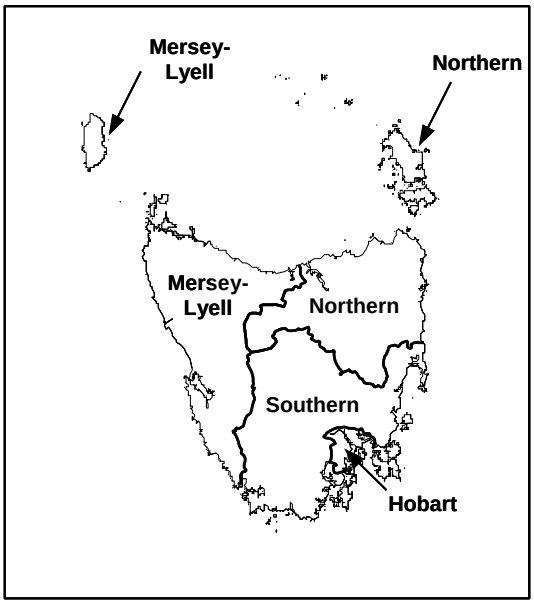


Fig. 1. Map of Tasmania showing ABS Statistical Divisions

Avidity

Fisher's frequency of participation is often implicated as a mediating factor in the formation of attitudes about fisheries management, fishing motivations and consumptive orientation (Graefe, 1980; Ditton *et al*. 1992). Respondents were classified into five avidity based sub-groups according to the actual number of days fished during the 12 month diary survey: 1-4; 5-9; 10-14; 15-19; and ≥ 20 days. In addition, the actual number of days fished was used as a continuous variable for selected analyses.

Water Type Fished

Each fishing episode (event) reported during the 12 month diary survey was characterised as saltwater or freshwater. Accordingly, respondents were able to be assigned to one of three categories based on the type(s) of water they had fished during the diary period: saltwater only; freshwater only; and both freshwater and saltwater.

Main Motivation

Understanding the motivations of Tasmanian fishers was a core objective of this study. To do this, respondents were asked to rate the importance of eight individual motivational items in relation to fishing (Table 1). Motivational group affiliation was then based on the motivational item for which the respondent assigned the highest importance. If more than one item shared the highest value given, the respondent was asked by the interviewer to nominate from these items which was their main reason for going fishing.

The eight motivational items were collapsed into five motivational categories. This was done based on the theoretical commonality between some items and to create motivational groups with more robust sample sizes. The five motivational groups – 'escapists', 'nature lovers', 'social fishers', 'sport fishers' and 'keepers' – and the items from which they were developed, are presented in Table 1. Respondents who were unable to identify a single motivational group as being their main motivation for fishing (n = 50) were excluded from analyses based on motivation.

Table 1. Motivational items and categories

Item	*n*	Category	*n*
To relax or unwind	200	escapists	210
To be on your own…to get away from people	10	escapists	
To be outdoors…..in the fresh air….to enjoy nature	103	nature lovers	103
To spend time with family	196	social fishers	232
To spend time with other friends	36	social fishers	
To compete in fishing competitions of any kind	0	N/A	0
For the enjoyment or sport of catching fish, lobsters etc.	89	sport fishers	89
To catch fresh fish, lobsters etc for food	133	keepers	133

Group comparisons and significance levels

The type of test chosen to make comparisons between sub-groups was dependent on the type of data being compared. For continuous data, student t-tests for independence and one-way ANOVA tests were used depending on whether two or more groups were compared, respectively. When conducting ANOVA tests, post-hoc analyses were performed using Tukey's tests. For categorical data, such as "yes" and "no" responses, chi-square tests for independence were used.

Multiple linear regression models were developed to determine the relative impacts of different fisher groups on motivations (Section 3.2) and consumptive orientation (Section 3.3). A logistic regression model was developed to better understand factors influencing the tendency for fishers to experience constraints to their fishing activity (Section 3.4).

For all analyses, differences were assessed according to three levels of significance: $p < 0.05$ (*); $p < 0.01$ (**), and; $p < 0.001$ (***).

Comparisons with the 2000/01 survey

The 2007/08 Tasmanian recreational fishing survey was modelled on the Tasmanian component of the *National Recreational and Indigenous Fishing Survey* conducted in 2000/01 (Henry and Lyle, 2003). As such, many of the questions in the 'wash-up' section of the 2007/08 survey were identical to the corresponding section of the 2000/01 survey. This enabled comparisons to be made for numerous questions between surveys. Comparisons were made at an aggregate level, and at a sub-population level. For the latter, corresponding sub-populations were compared between surveys, consistent with the methods described above. This approach was developed to facilitate a more nuanced understanding of observed changes between surveys.

3. Results and Discussion

3.1 General

The results presented in this section pertain to the sample population only and may be viewed in association with quantitative demographic and behavioural information on Tasmanian fishers outlined in Lyle *et al.* (2009). In their report, Lyle *et al.* (2009) analysed rates of participation relative to gender, age and residential area. The collection of participation data from all survey respondents, coupled with low rates of non-response, enabled these relationships with fishing participation to be extrapolated to the wider Tasmanian community. In the current study, however, sampling was restricted to the main/key fisher in participating fishing households only. Accordingly, the relative proportions of each sub-group used to describe the sample will not be representative of the wider Tasmanian fishing community. Nonetheless, the characteristics as described for each of the fishing sub-groups are assumed to be representative of the relevant sub-group since initial household selection was based on probability sampling and non-response rates were very low (Henry and Lyle 2003; Lyle *et al.* 2009).

The respondent population was described with reference to the six categories of variables outlined in Section 2.1 and the characteristics of the sample are presented in detail in Appendix 1.

3.2 Fisher Motivations

From previous studies on the motivations of recreational fishers (i.e. Knopf, 1973; Fedler and Ditton, 1994; Calvert, 2001) there emerges a general consensus that fishing is not merely a recreational activity – it is also a cultural, social, and naturalistic experience. Therefore, motivations for recreational fishing are often complex, multi-faceted and relate to both catch and non-catch aspects of the fishing experience. For management authorities to attend to the expectations and aspirations of recreational fishers and/or promote quality fishing opportunities, an understanding of fisher motivations is clearly advantageous. If ignored, management authorities increase the likelihood of disenfranchising constituent groups within the fishing population and contribute to non-compliance of regulations.

The importance that Tasmanian fishers ascribed to eight motivational items was determined in the 2007/08 survey (Fig. 2). The items were chosen to represent eight facets of the fishing experience – both catch and non-catch related – that are commonly used in motivational studies of fishers. Respondents rated the importance of each item on a scale from 1 (not at all important) to 4 (very important).

In terms of mean scores, 'being outdoors' and 'relaxing/unwinding' – two non-catch related motivations – were rated highest in importance. Two catch-related motives – 'catching fish for food' and 'for enjoyment/sport' – were the next most important motivational items. The mean scores for the next highest scoring motives – 'spending time with family' and 'spending time with friends' – were also above 3, suggesting that overall, six of the eight items were at least 'quite important' to most fishers. When the two social motives are viewed in association with the lower mean score for the item 'to be

on your own / to get away from people', it is clear that, for most fishers, fishing has greater value as a social rather than an anti-social activity. The very low mean score for competing in fishing competitions as a motive is consistent with the low proportion of respondents who had reported being affiliated with a fishing club and/or association (6%).

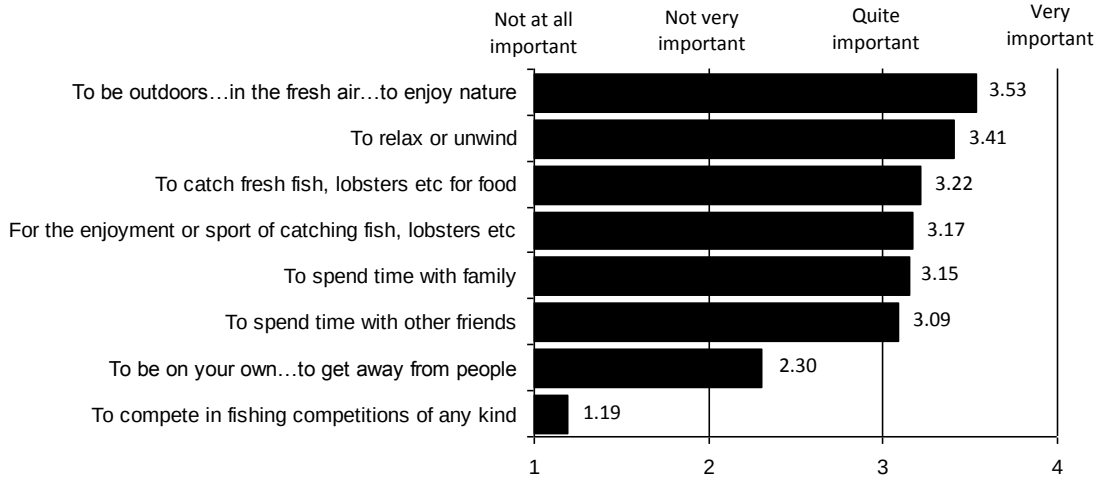


Fig. 2. Mean scores for the importance of eight items as motivational items for recreational fishing. Mean scores for all items were based on responses to the following response categories; 1 = Not at all important, 2 = Not very important, 3 = Quite important, 4 = Very important

Factors influencing motivations

For each of the eight motivational items, a multiple linear regression model was developed to evaluate whether item responses were influenced differentially by demographic and behavioural variables (Table 2: see Appendix 2 for coefficient values and model parameters). With regard to gender, male fishers were more likely to be motivated by the sporting dimensions of fishing, being outdoors and spending time with friends. Conversely, spending time with family members was of greater relative importance for females. By region of residence, Southern SD fishers also ascribed greater importance to socialising with family members, as well as catching fish for food whereas Northern SD residents rated solitude significantly higher than fishers from other regions.

By age group, fishers in the two highest age categories (i.e. 45-59 and ≥ 60 years) were significantly more motivated to catch fish for food than other age groups. Furthermore, fishers ≥60 years of age indicated that relaxing/unwinding and spending time with both family and friends were less important than for the other age groups. Fishers in the 30-44 age group rated spending time with family and competing in fishing competitions to be of greater importance than other fishers. The former result is intuitive in view of the age at which most people raise children, noting that in Tasmania the highest rate of fishing participation was in the 5-14 age group (Lyle *et al*. 2009). The latter result is consistent with research demonstrating that tournament fishers are generally younger than non-tournament fishers (Loomis and Ditton, 1987; Wilde *et al*. 1998).

Respondents who fished solely in saltwater expressed a greater inclination to spend time with family members and fish for food, but were less motivated to fish on their own.

Despite the low overall motivation scores relating to competitive fishing, freshwater only fishers rated the importance of this item significantly higher than other fishers.

With regard to avidity, the actual number of days fished during the 12-month diary survey was included in regression models along with the four avidity categories. This dual approach was undertaken to determine whether differences were peculiar to individual groups and/or whether there was a broader relationship between motivation and avidity. Of the latter, the results suggest that solitude, fishing in competitions, and fishing for both sport and food were significantly more important for more avid fishers. The results for sport and competitive fishing are supportive of related studies (i.e. Loomis and Ditton, 1987; Chipman and Helfrich, 1988; Falk *et al*. 1989). However, the observed positive relationship between avidity and catching fish to eat is contrary to previous research which has shown that the importance associated with fishing for food tends to decline with increased avidity (i.e. Bryan, 1977; Chipman and Helfrich, 1988; Wilde *et al*. 1998; Schramm and Gerard, 2004). The most avid group (i.e. ≥ 20 days) were significantly less motivated to fish by themselves despite a significant positive overall relationship between avidity and fishing alone.

Table 2. Results of linear regression analyses to determine factors influencing importance values attributed to motivational items.

Significant results are represented by positive (+) and negative (-) signs. Degree of significance among significant values are represented as follows: $p < 0.05$ (+/-); $p < 0.01$ (++/--), and; $p < 0.001$ (+++/---). Non-significant results are not presented. Coefficients and model parameters are presented in Appendix 2.

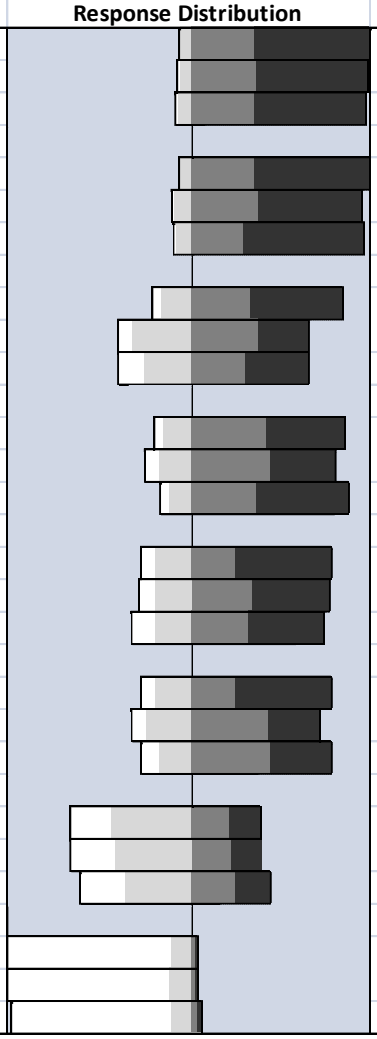
	Gender		Region				Age				Water Type			Avidity					
	Males	Females	Gr Hobart	Southern	Northern	Mersey-Lyell	15-29 y/o	30-44 y/o	45-59 y/o	60+ y/o	Saltwater	Freshwater	Both	Avidity	1-4 d	5-9 d	10-14 d	15-19 d	20+ d
To relax or unwind									--										
To be outdoors..in the fresh air..to enjoy nature	++	--																	
To be on your own..to get away from people					++					-			+						-
To spend time with family	-	+		++			+++		---	+++									
To spend time with other friends	+++	---							-										
To compete in fishing competitions							++				+		+++						
For the enjoyment or sport of fishing	++	--											++						
To catch fresh fresh fish, lobsters etc for food				++				+	+	++			+						

Comparisons with 2000/01

Schramm and Gerard (2004) demonstrated that motivations within a fishing population can change over time. Motivational results from the 2007/08 survey were compared with corresponding results from the 2000/01 survey – both the Tasmanian component and data aggregated from all States and Territories (Henry and Lyle 2003) (Fig. 3). Mean scores for each motivational item were compared between the two Tasmanian surveys: raw data from the national survey were not available for analytical purposes but mean values as reported by Henry and Lyle (2003) are provided for context.

Overall, mean scores and response distributions were similar across the three surveys. Between the two Tasmanian surveys, significant differences were observed for four of the eight motivational items – "to catch fresh fish for food", "for the enjoyment or sport of catching fish", "to spend time with family" and "to spend time with friends". For all four items, respondents to the 2007/08 survey rated these items to be of greater importance than 2000/01 respondents. In fact, 2007/08 respondents also rated the non-significant items slightly higher.

The greatest motivational difference between the two State-wide surveys was for the item "to catch fresh fish for food". The reason for the greater importance attributed to catching fish for food in the later survey is not entirely clear but could be linked to increases in retail seafood prices during the period between surveys as well as reflecting a growing community awareness of health benefits relating to seafood consumption.

Motivational Items	Survey	Mean	Rank	Response Distribution	t*	sig.
To be outdoors…in the fresh air…to enjoy nature	2007/08	3.53	1		1.466	0.143
	2000/01 (Tas.)	3.48	1			
	2000/01 (Aust.)	3.47	2			
To relax or unwind	2007/08	3.41	2		0.091	0.928
	2000/01 (Tas.)	3.41	2			
	2000/01 (Aust.)	3.51	1			
To catch fresh fish, lobsters etc for food	2007/08	3.22	3		9.823	0.000
	2000/01 (Tas.)	2.77	5			
	2000/01 (Aust.)	2.80	6			
For the enjoyment or sport of catching fish, lobsters etc	2007/08	3.17	4		3.764	0.000
	2000/01 (Tas.)	3.01	3			
	2000/01 (Aust.)	3.23	3			
To spend time with family	2007/08	3.15	5		2.804	0.005
	2000/01 (Tas.)	3.01	3			
	2000/01 (Aust.)	2.97	4			
To spend time with other friends	2007/08	3.09	6		4.778	0.000
	2000/01 (Tas.)	2.87	4			
	2000/01 (Aust.)	2.95	5			
To be on your own…to get away from people	2007/08	2.30	7		0.871	0.384
	2000/01 (Tas.)	2.26	6			
	2000/01 (Aust.)	2.39	7			
To compete in fishing competitions of any kind	2007/08	1.19	8		0.413	0.681
	2000/01 (Tas.)	1.18	7			
	2000/01 (Aust.)	1.23	8			

* Students t-tests were performed to compare mean scores between the two Tasmanian surveys

Fig. 3. Mean scores and response distribution for the importance of eight items as motivational factors for recreational fishing. Results are presented from two Tasmanian state-wide surveys (2000/01 and 2007/08) and aggregated data from the 2000/01 National Recreational Fishing Survey. Mean scores for all items were based on responses to the following response categories; 1 = Not at all important, 2 = Not very important, 3 = Quite important, 4 = Very important

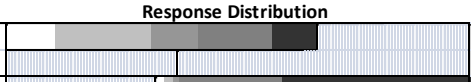
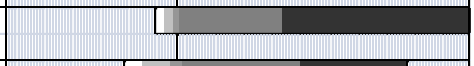
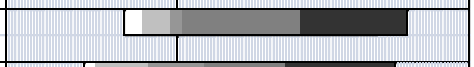
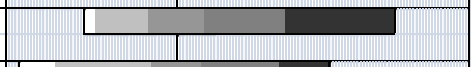
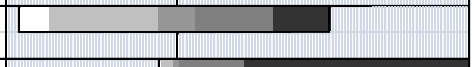
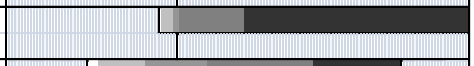
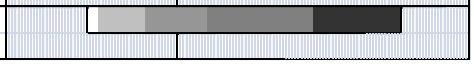
3.3 Consumptive Orientation of Fishers

Within the context of recreational fishing, consumptive orientation is the degree to which fishers value the catch-related aspects of the fishing experience. Originally developed by Graefe (1980) and refined in subsequent studies, the concept of consumptive orientation is typically used to evaluate fisher's attitudes to four experiential components: (1) catching 'something' as a factor contributing to a satisfying fishing experience; (2) catching numbers of fish; (3) catching large fish, and; (4) retaining fish. Item statements pertaining to each of these components were used, plus an additional item to measure fisher's attitudes to catching different types of fish. For each of the eight statements used in this study, respondents indicated a level of agreement on a scale from 1 (strongly disagree) to 5 (strongly agree), with 3 being neutral (neither agree nor disagree).

There was overall agreement that fishing could be satisfying regardless of whether fish were caught (Fig. 4). In fact, 82% of respondents indicated that they would still go fishing on a trip if they thought they would not catch any fish. While these results reinforce the sentiment that fishers derive benefits from the fishing experience that are unrelated to catching fish, they should not be interpreted such that resource-related aspects are unimportant or incidental. Matlock *et al.* (1988) and Green (1991) contend that standard question formats used to measure motivations and consumptive orientation routinely underestimate the importance of catch and retention factors. They further suggest that while catch and retention may not be the most important contributors to a satisfying fishing trip, the reasonable possibility of catching a fish is very important and somewhat defines the fishing experience. In relation to the 82% of respondents who indicated that they would still go fishing if they *thought* they would not catch a fish, responses would likely be quite different if the statement was worded such that fishers *knew* they would not catch a fish.

Overall, respondents demonstrated a preference for catching large fish over catching many fish – an observation consistent with many consumptive orientation studies across a broad spectrum of recreational fisheries (i.e. Ditton *et al.* 1978; Fisher and Ditton, 1992; Graefe and Ditton, 1997; Wilde *et al.* 1998: Sutton and Ditton, 2001; Hutt and Bettoli, 2007). About 21% of fishers preferred to catch "ten smaller fish" instead of "one or two bigger fish". Nonetheless, 43% of fishers suggested that they generally chose their fishing location based on the probability of catching larger fish.

The vast majority of respondents (93%) indicated that they like to retain enough fish for immediate consumption rather than keep all fish allowed with possession limits. This result imparts a degree of clarity to the related item, "I like to release most of the fish I catch", whereby agreement levels were more evenly divided. Together, the responses may be viewed such that the 'average' fisher is willing to release fish after enough are retained "for a feed": as to whether the proportion released constitutes "most" of the catch likely depends on the number and type of fish caught and relevant possession limits. Clearly, attitudes to releasing/retaining fish are highly dependent on the fish species (see Lyle *et al*. 2009). Demographic and behavioural factors influencing one's orientation to releasing fish and other consumptive dimensions are reported in the following section.

Domain	Consumptive Orientation Items	Mean	Rank	Response Distribution
Catching numbers of fish	The more fish I catch, the happier I am	2.88	5	
Catching 'something'	A fishing trip can still be sucessful, even if no fish are caught*	1.55*	7	
	if I though I would not catch any fish on a trip, I would still go fishing*	1.95*	6	
Catching large fish	I'd rather catch one or two bigger fish than ten smaller fish	3.70	1	
	I prefer to fish where I know I may catch a very large one	3.03	3	
Retaining fish	I like to release most of the fish I catch	2.94*	4	
	I would rather keep just enough fish for a feed than take the bag limit	1.51*	8	
Variety	I like to fish where there are several kinds of fish to catch	3.69	2	

* Mean scores were reverese coded to enable consistency among items. Accordingly, an increase in score should be interpreted as an increase in the consumptive orientation for a particular item.

Response Key: strongly disagree mildly disagree neither mildly agree strongly agree

Fig 4. Mean scores and response distribution for the importance of eight recreational fishing consumptive orientation items. Mean scores for all items were based on responses to the following response categories; 1 = strongly disagree, 2 = mildly disagree, 3 = neither, 4 = mildly agree, 5 = strongly agree

Factors influencing consumptive orientation

For each of the eight consumptive orientation statements, a multiple linear regression model was developed to evaluate whether responses were influenced differently by different fishing sub-populations (Table 3: see Appendix 3 for coefficient values and model parameters). Perhaps unexpectedly, consumptive orientation was not related to either of the avidity measures (i.e. continuous or grouped data).

With regard to gender, males expressed a greater level of preference for fishing where there are several species to catch and where large fish may be caught. Females indicated that they would be less likely to forego a fishing trip if they thought they would not catch fish and were more willing to consider a fishing trip to be "successful" if no fish were caught. In short, males appeared to be more consumptively oriented than females.

Significant differences were also observed between fishers residing in different regions, and these differences presumably reflect the fishing opportunities available within each region. For both statements that refer to catching large fish, Northern SD respondents expressed less concern over catching large fish. Southern SD fishers indicated that having the opportunity to catch several species was relatively more important than fishers from other regions, while fishers from Greater Hobart were less likely to consider a fishing trip to be successful if no fish were caught. Fishers from the Mersey-Lyell region were more likely to go fishing if they thought they would not catch fish.

In relation to age group, youngest fishers (i.e. 15-29 years) attributed greater importance to catching many fish; however, compared to other age groups, they also expressed that they were more likely to release fish. Fishers between 30-59 years of age were more likely to keep just enough fish for a feed than retain the possession limit.

The results also demonstrated four significant differences in consumptive orientation between freshwater only and 'other' fishers. The observation of greatest statistical significance suggests that freshwater fishers were less concerned about fishing where several species were available to be caught. This is intuitive given the overwhelming

predominance of trout species among fish targeted and caught by freshwater fishers (Lyle *et al*. 2009). Freshwater fishers also indicated being less oriented to catching large fish but a greater orientation to retaining possession limits. These results were unexpected given the often regarded status of trout as 'sport' fish and the well established culture of catch and release fishing within many trout fisheries (Salz and Loomis, 2005). Previous research suggests that the tendency for trout fishers to practice catch and release fishing and to target larger fish is positively related to their level of fishing specialisation (Bryan, 1977); however, highly specialised fishers typically represent a small fraction of the overall number of participants within a fishery (Bryan, 2000).

Table 3. Results of linear regression analyses to determine factors influencing fisher's agreement with eight consumptive orientation statements.

Significant results are represented by positive (+) and negative (-) signs. Degree of significance among significant values are represented as follows: $p < 0.05$ (+/-); $p < 0.01$ (++/--), and; $p < 0.001$ (+++/---). Non-significant results are not presented. Coefficients and model parameters are presented in Appendix 3.

	Gender		Region				Age					Water Type			Avidity					
	Males	Females	Gr Hobart	Southern	Northern	Mersey-Lyell	15-29 y/o	30-44 y/o	45-59 y/o	60+ y/o	Saltwater	Freshwater	Both	Avidity	1-4 d	5-9 d	10-14 d	15-19 d	20+ d
A fishing trip can still be sucessful if no fish are caught	--	++	-																
I'd rather catch 1 or 2 bigger fish than 10 smaller fish					---							-							
I like to fish where there are several kinds of fish to catch	+++	---		++								---							
If I though I would not catch any fish, I would still go fishing	-	+				+													
The more fish I catch the happier I am							+												
I like to release most of the fish I catch							++												
I prefer to fish where I know I may catch a very large fish	++	--			-							--							
I would rather keep just enough fish for a feed than take the limit								+	+			--							

3.4 Constraints and Opportunities

Respondents were asked to make an assessment as to whether their amount of fishing undertaken during the 2007/08 survey period was 'more', 'less' or 'about the same' as was undertaken during the previous year (i.e. 2006/07). Overall 16% of respondents stated that they had fished more, 51% fished less and 33% about the same. Those respondents who indicated fishing either more or less than during the previous 12 months were asked to identify the main reasons for this change. Reasons attributed to decreasing participation were termed 'constraints', which Sutton (2007: p 74) defines as "factors that interfere with individuals ability and/or desire to participate or their ability to achieve the satisfactions or benefits they seek". Conversely, reasons attributed to increasing participation were termed 'opportunities'.

Time demands relating to work/ business were overwhelmingly the most frequent reasons cited by respondents to fish less often during 2007/08 (Table 4). Of secondary significance were time demands imposed by one's family and issues relating to personal health and fitness. Constraints imposed by work and family commitments were also the most prevalent constraints identified for recreational fishers in Queensland (Sutton, 2007). However, unlike the study by Sutton (2007), activity constraints relating to fishing associated costs, crowding and a lack of accessible fishing opportunities were not prominent among Tasmanian respondents. The results from this study were consistent with other studies that have also used an 'open-ended' survey approach to ascertain

primary reasons for a reduction in fishing activity (i.e. Bissell *et al.* 1988; Fedler and Ditton, 2001) insofar that the most prominent constraints were not resource-based; they mainly comprised interpersonal and intrapersonal constraints. These findings, and the motivational results discussed earlier, concur with a recent report on access and constraints by the American Sportfishing Association (2010) which suggests that fishing promotional strategies that focus on the social, psychological and naturalistic aspects of fishing are likely be more successful than programs focussing solely on resource issues.

In regard to facilitating respondents to fish more often, the four most prominent factors were changes to one's work and family environments, changes to recreational preferences/ priorities and "other 'access' related issues". The latter pertained to all factors enabling access to fishing opportunities other than by virtue of respondents changing residential address. These included the purchase of boats and the re-opening of previously closed fishing areas.

For those households that participated in the diary survey but did not fish at all during 2007/08, an abbreviated wash-up survey was conducted to establish the main reason for not fishing. Time demands relating to work/ business was by far the most commonly cited constraining factor, followed by issues relating to personal health and fitness and demands of home and family (Table 4). These findings highlight the general consistency in the relative importance of constraining factors that either prevented participation or restricted the level of participation amongst fishers.

Table 4. Main reasons for change (constraints and opportunities) in the level of fishing activity between 2006/07 and 2007/08 for fishers, and main reasons (constraints) for no fishing activity during 2007/08 (% of respondents).

	Constraints		Opportunities
	Fishers (%)	**No fishing (%)**	**Fishers (%)**
Work/ business related	48.1	47.3	14.4
Home/ family related	13.1	9.1	14.4
Personal health/ fitness	10.9	12.4	1.7
Weather	5.4	2.7	0.8
Personal preference	4.9	7.0	18.6
Social related	3.5	5.9	10.2
Fishing quality/ catch rates	3.5	1.1	0.8
Other 'access' related	3.2	4.3	18.6
Environmental	3.0	0.5	-
Other	1.7	-	7.6
Location related	1.2	2.2	4.2
Fuel costs	0.5	-	-
Other cost related	0.5	1.1	-
Time/opportunity (reasons unspecified)	0.5	4.8	2.5
Different kinds of fishing/targeting	-	-	2.5
No reason/unsure	-	1.6	3.4
No. respondents	**405**	**186**	**118**

Factors influencing constraints

A logistic regression model was developed to better understand the factors implicated in the propensity for fishers to face constraints to their fishing activities (Table 5). To do this, the binomial dependent variable distinguished between individuals indicating the presence of constraints and those who did not[3]. The independent variables used were all sub-population groups within the six grouping categories and number of days fished (avidity) used as a continuous variable.

Four variables demonstrated significant effects. Males were 1.75 times more likely to have faced constraints than females while respondents in the youngest age group (15-29 years) were twice as likely to have faced constraints as fishers in other age groups. Furthermore, more avid fishers and 'social fishers' were less likely to experience constraints than less avid fishers and differently motivated fishers, respectively. While the relationship between constraints and frequency of fishing participation is self-evident, explanations for 'social fishers' are less clear. It is plausible however, that if fishing is primarily used as a vehicle for social activity, fishers may be less committed to the act of fishing *per se* resulting in an increased ability to substitute fishing with non-fishing activities according to one's social agenda.

Table 5. Results of logistic regression analysis testing the effects of demographic, behavioural and motivational factors on the likelihood of respondents being constrained in their fishing activity.
Only significant independent variables are displayed.

Variable	*B*	SE	Wald	*p*	Odds Ratio	95.0% C.I. for Odds Ratio	
						Lower	Upper
Constant	0.353	0.223	2.494	0.114	1.423		
Gender (male/female)	0.557	0.204	7.431	0.006	1.754	1.169	2.605
Age Group1 (15-29 yrs)	0.692	0.271	6.525	0.011	1.997	1.175	3.395
Avidity	-0.357	0.068	27.675	0.000	0.700	0.613	0.799
Social Fishers	-0.591	0.168	12.454	0.000	0.554	0.399	0.769

Model $X^2(5, n=733) = 50.616$, $p < 0.001$
Cox and Snell $R^2 = 0.067$, Nagelkerke $R^2 = 0.089$
Concordance = 59.8%

3.5 Fisher Satisfaction

Satisfaction with Fishing

The satisfaction of fishers has clear implications for the management of fisheries: in short, satisfaction with fishing refers to the extent to which the benefits that people expect to obtain from the fishery are being obtained. In this study, respondents were asked to rate their satisfaction with the "overall quality of fishing" during the 2007/08 survey period. Four response categories were provided: 'very satisfied', 'quite satisfied', 'not very satisfied' or 'not at all satisfied'. Respondents who were uncertain about how to respond were coded as 'unsure'. The four response categories were sequentially coded between 1 and 4 to enable the calculation of mean scores and comparisons between categories within

[3] Respondents who indicated "personal preference" type reasons for fishing less often were removed for analysis as, in a strict sense, they were not considered to be 'constraints' for the purposes of this study i.e. they were factors under the volitional control of individuals.

the sub-population groups[4]. Respondents expressing dissatisfaction were asked to provide up to two reasons to support their response.

The vast majority (81%) of respondents indicated that they were at least quite satisfied with the overall quality of fishing during 2007/08 while less than 18% expressed some dissatisfaction with fishing (Fig. 5). From comparisons of mean scores[5] within sub-population groups, the only significant effect observed related to the age of respondents: F (3, 804) = 2.867, p = 0.045. Post-hoc tests indicated that the difference was limited to between the 30-44 (M = 3.12, SD = 0.61) and ≥ 60 years of age groups (M = 2.95, SD = 0.83). The overall pattern of satisfaction across age groups indicated a decrease in fisher satisfaction with age (see Appendix 4). This result may be due in part to older fishers, who generally have had more years of fishing experience, having a greater temporal frame of reference from which to draw comparisons of fishing quality.

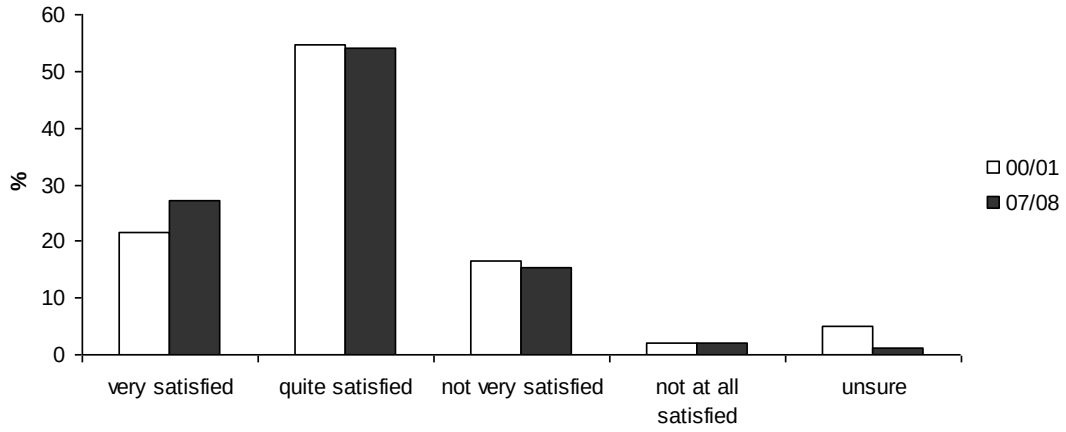


Fig. 5. Response category distribution for satisfaction with fishing: 2000/01 and 2007/08

Comparisons with 2000/01

Overall mean satisfaction scores were significantly higher among respondents in 2007/08 (M = 3.04, SD = 0.78) compared with 2000/01 (M = 2.86, SD = 0.95): t (1497) = 4.134, p = 0.000. From observing the distribution of responses (Fig. 5), it appears that the difference was largely due to the greater proportion of "very satisfied" respondents in 2007/08.

Mean scores of sub-population groups were also compared between surveys. Significant differences were restricted to two groups: residents from the Southern region and respondents in the 30-44 age group. In regard to Southern fishers, satisfaction levels were significantly higher in 2007/08 (M = 3.21, SD = 0.73) compared with 2000/01 (M = 3.03, SD = 0.67): t (265) = 1.975, p = 0.049. Among 30-44 year old respondents, satisfaction scores were also higher in 2007/08 (M = 3.12, SD = 0.75) than in 2000/01 (M = 2.95, SD = 0.64): t = 2.710, p = 0.007. Results for the comparison of mean values for all sub-population groups are presented in Appendix 5.

[4] The category 'unsure' was not assigned a value
[5] All responses of 'unsure' were not included in mean score calculations

Reasons for fisher dissatisfaction (2007/08 and 2000/01)

Factors contributing to respondent dissatisfaction were quite similar between the surveys. Responses from both surveys were collapsed into seven categories (Fig. 6). Overwhelmingly, the main cause of dissatisfaction related to perceptions about resource status and, in particular, that the number of fish available was insufficient and/or declining - a situation largely attributed to perceptions of overfishing. Responses pertaining to environmental conditions and quality or condition of fish were made primarily in reference to freshwater fishing. 'General' comments included statements such as "it has got worse" and "very disappointing" but were not assigned to a perceived cause or problem.

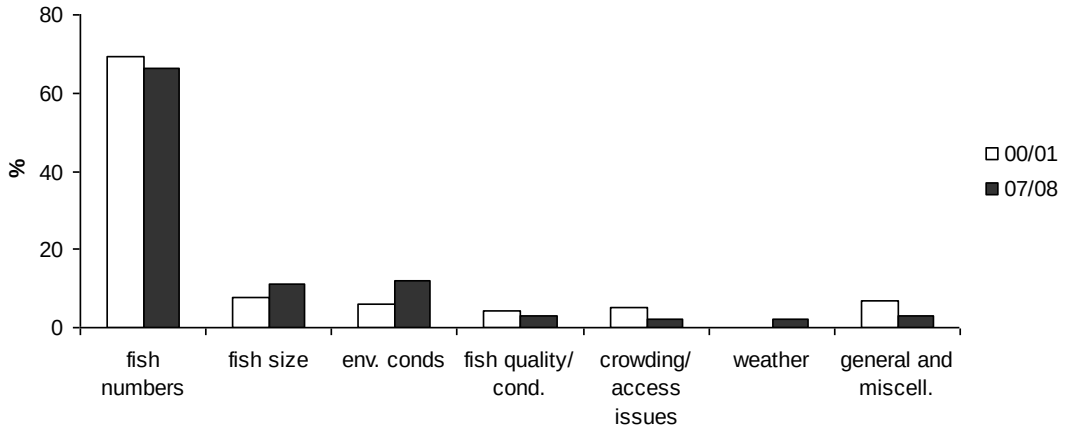


Fig. 6. Reasons for fisher dissatisfaction with the "overall quality of fishing": 2000/01 and 2007/08.

Satisfaction with Fisheries Management

The treatment of data was identical to that described for the previous section. From the 2007/08 survey, over 82% of respondents indicated that they were either 'very satisfied' or 'quite satisfied' with the management of Tasmania's recreational fisheries (Fig. 7). About 13% expressed dissatisfaction, while a further 5% of respondents were unsure.

From comparisons of mean scores of sub-population groups within categorical divisions, a significant difference among differently motivated fishers was observed: F (4, 766) = 3.61, p = 0.006. Post-hoc comparisons indicated that this difference was between 'sport fishers' (M = 3.17, SD = 0.70) and 'keepers' (M = 2.69, SD = 1.11). The lower satisfaction for 'keepers' may be related to regulations introduced in the mid-2000s which included implementation of possession and bag limits for many species, restrictions on the use of gillnets and seasonal and area closures for some species. Clearly, fishers who are primarily motivated to retain fish would be disproportionately impacted by such changes. Conversely, fishers motivated by sporting reasons would be less impacted by measures constraining fish retention. Mean satisfaction scores of each sub-population and results of statistical comparisons are presented in Appendix 6.

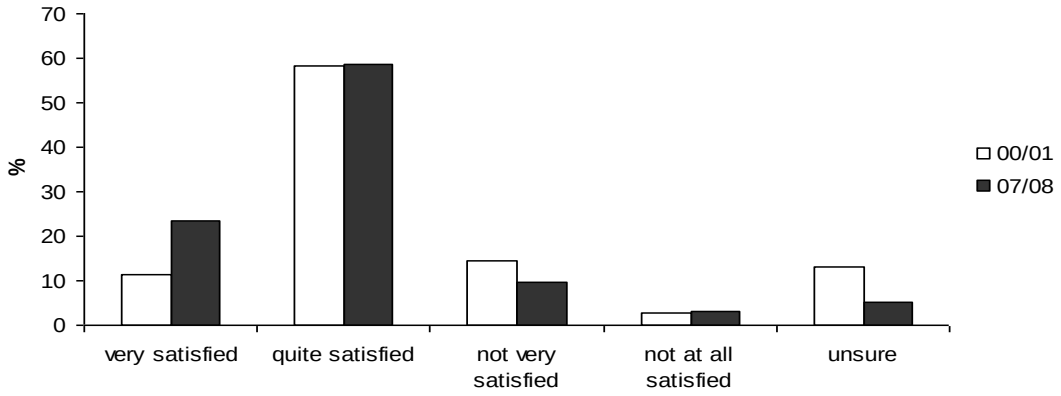


Fig. 7. Response category distribution for satisfaction with fisheries management: 2000/01 and 2007/08.

Comparisons with 2000/01

Overall mean satisfaction scores were significantly higher among respondents to the 2007/08 survey (M = 3.08, SD = 0.69) compared with the 2000/01 survey (M = 2.90, SD = 0.64): t (1497) = 5.193, p = 0.000. Similar to overall fishery satisfaction, differences were largely due to the greater proportion of 'very satisfied' respondents in 2007/08 (Fig. 7). While 'unsure' responses were not included in mean score comparisons, the results indicate that a higher proportion of respondents to the 2000/01 survey fell within this category.

Compared with 2000/01, higher levels of satisfaction with management in the 2007/08 survey were apparent for all 23 sub-population categories; 18 of these differences were significant (see Appendix 7). Non-significant differences were mainly observed for sub-populations with relatively low respondent numbers.

Reasons for fisher dissatisfaction (2007/08 and 2000/01)

Reasons for fisher dissatisfaction were diverse and were distributed across 19 categories (Table 6). For both surveys, issues pertaining to the management of commercial fishing were most prominent. In particular, many respondents expressed concern about the perceived impacts of commercial vessels being permitted to fish in inshore waters. Overall, the distribution of responses was quite similar between surveys. Perhaps the most notable difference was in relation to the restrictiveness of regulations; proportionally more respondents in 2000/01 expressed dissatisfaction that regulations were too restrictive than those who thought regulations were too lenient. By contrast in 2007/08 there was a more even split between respondents who considered regulations as being too restrictive or too lenient.

Table 6. Reasons for fisher dissatisfaction with recreational fisheries management: 2000/01 and 2007/08

	2000/01		2007/08	
	No.	**%**	**No.**	**%**
Poor management of commercial fishing impacts	25	13.9	18	16.7
Regulations - too many/restrictive, confusing, changes	26	14.4	15	13.9
Regulations - too few, or insufficiently restrictive	10	5.6	13	12.0
Insufficient enforcement/compliance activity	19	10.6	9	8.3
Too much enforcement/compliance activity	4	2.2	3	2.8
General comments regarding poor management	3	1.7	9	8.3
Recreational netting	8	4.4	8	7.4
Fishing access and facilities	15	8.3	7	6.5
General comments re fishing quality deterioration	13	7.2	6	5.6
Lake and river level management (freshwater)	6	3.3	5	4.6
Cost of licences/ too many licences required	14	7.8	5	4.6
Rec fishing management is underfunded/ resourced	2	1.1	2	1.9
Irresponsible fishers and boaters	5	2.8	1	0.9
Lack of understanding of fishers by management	3	1.7	1	0.9
Impacts of marine farms on rec fishing	2	1.1	1	0.9
Artificial fish stocking required (freshwater)	4	2.2	1	0.9
Insufficient resources dedicated to fisher education	3	1.7	1	0.9
Licence money poorly spent	5	2.8	1	0.9
Miscellaneous	13	7.2	2	1.9
Total	**180**	**100**	**108**	**100**

3.6 Accessing Information about Fishing Regulations

Respondents were asked to nominate up to two main sources of information by which they learn about "things to do with fishing" in Tasmania. Overall, and in descending order, the four main sources mentioned were Government brochures and publications (36%), other fishers (21%), print media other than Government publications and fishing magazines (13%), and Government internet sites (9%). The only grouping category whereby a significant difference was observed in the relative proportions of responses was among the age groups (Fig. 8). Most notably, there was a general trend of increasing reliance on government publications with age. Conversely, younger fishers were more reliant on information derived from Government internet websites. This age related trend among Tasmanian fishers was consistent with that observed by EMRS (2007).

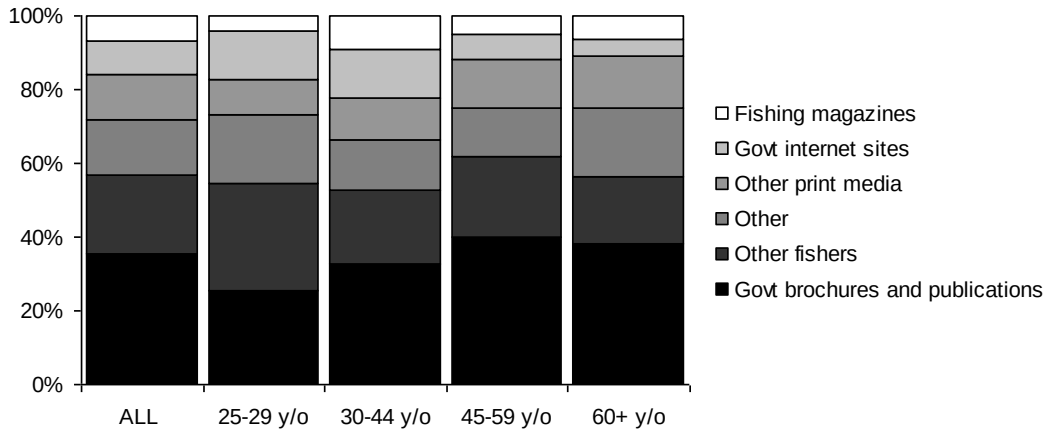


Fig. 8. Main sources of fishing related information: 2007/08

Comparisons with 2000/01

The relative proportions of main information sources used by respondents to access fisheries related information were significantly different between the 2000/01 and 2007/08 surveys: χ^2 (12, n = 1624) = 223.68, p = 0.000. The results presented in Fig. 9 indicate that the proportion of fishers identifying Government publications as a main source of information has more than doubled over the period between the surveys. Also increased has been the reliance on Government internet sites; just 0.4% of respondents nominated this source during the 2000/01 survey compared to 9% for the 2007/08 survey. The most notable information sources in which reliance has decreased are 'other fishers' and 'other print media'.

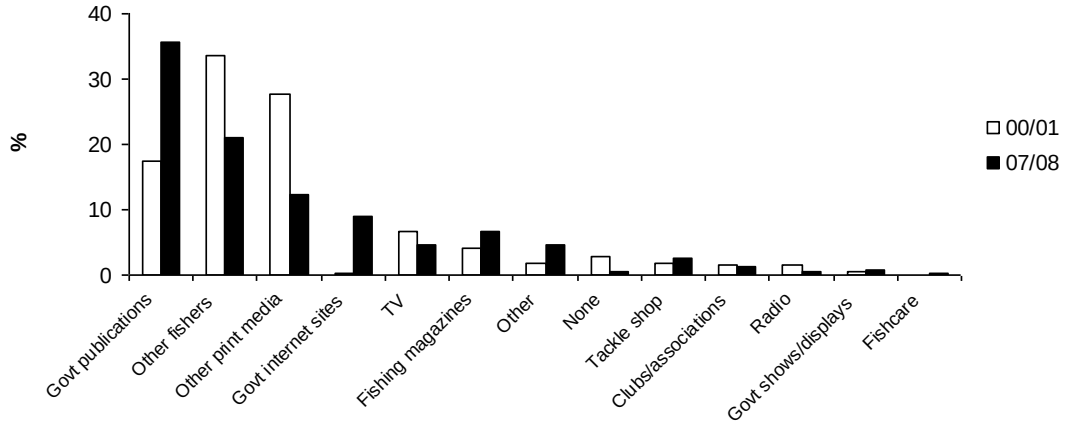


Fig. 9. A comparison of main information sources: 2000/01 and 2007/08

3.7 Familiarity with Recreational Fishing Products and Publications

Respondents were asked whether or not they were familiar with five different publications and products produced by State management agencies to promote legal and responsible fishing practices: (1) the annual booklet for sea fishing; (2) the annual booklet

for freshwater fishing; (3) the plastic fish measuring ruler; (4) the stick-on fish measuring ruler, and; (5) the plastic gauges for measuring rock lobster, abalone and scallops.

The annual booklet for sea fishing

Overall, 51% of respondents reported that they recalled seeing the annual sea fishing booklet (Fig. 10). Among categorical groupings, significant differences were reported according to gender, water type fished and avidity. Males were more familiar with the booklet than females while there was an increasing familiarity with avidity. Not unexpectedly, freshwater only fishers were significantly less familiar with the sea fishing booklet.

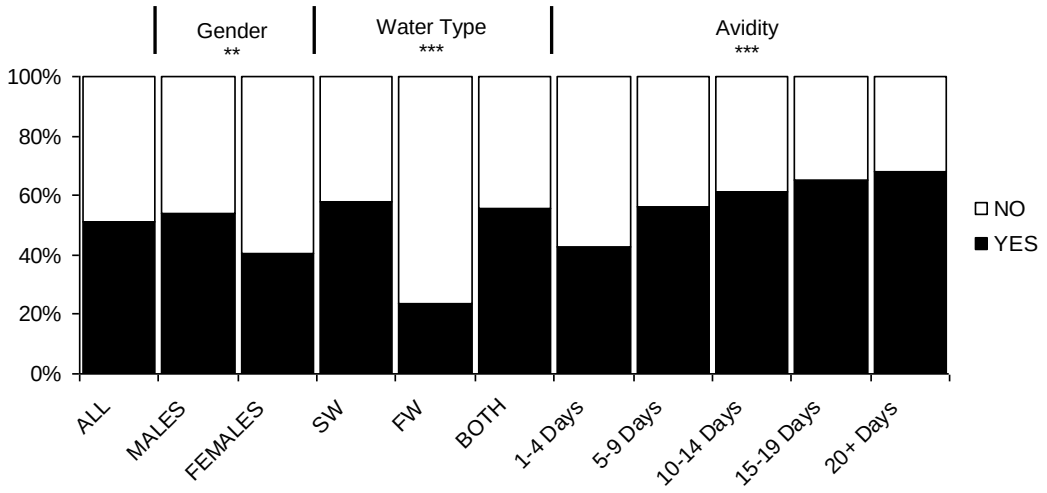


Fig. 10. Familiarity with the annual sea fishing booklet: 2007/08

The annual booklet for freshwater fishing

Overall, 39% of respondents reported awareness of the annual freshwater fishing booklet (Fig. 11). Significant differences in the proportion of responses were evident within five of the six grouping categories. As expected, freshwater fishers (freshwater only and both) were considerably more familiar with the booklet than saltwater only fishers. The greater percentage of positive responses recorded from fishers from the Northern and Mersey-Lyell regions appears to be related to the relatively high level of freshwater (trout) fishing activity recorded within these regions (see Appendix 1, Table A3). The results pertaining to fisher's main motivation are furthermore consistent with the relationship between fishing motivations and water type fished outlined in Appendix 1 (Table A6).

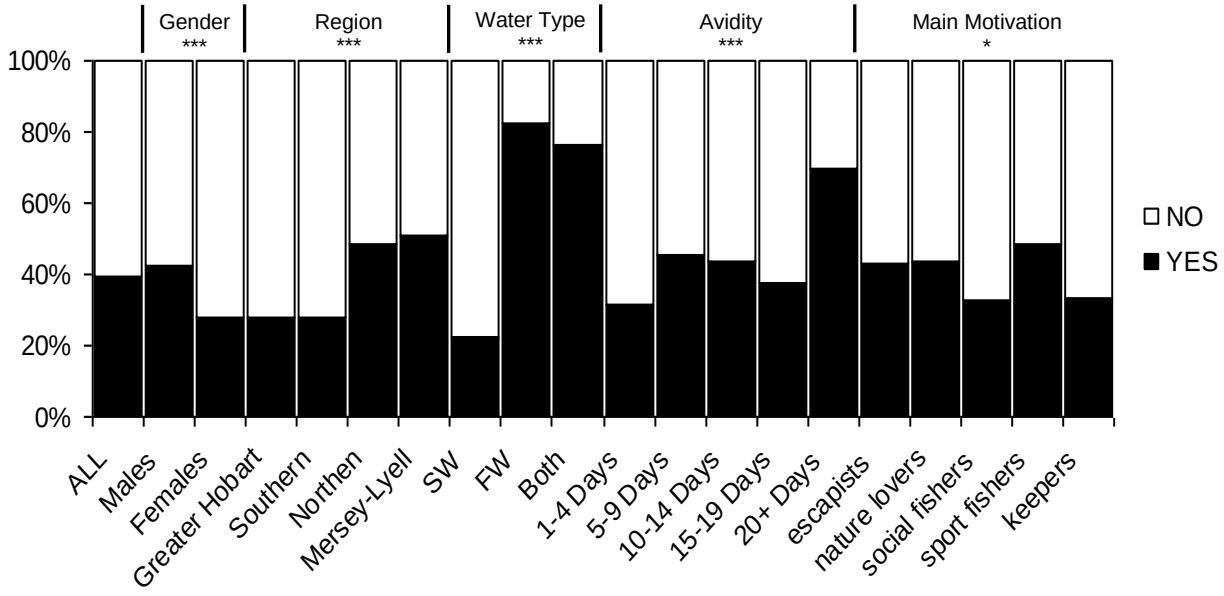


Fig. 11. Familiarity with the annual freshwater fishing booklet among respondents to the 2007/08 survey

The plastic fish measuring ruler

Since the mid 1990s the Department of Primary Industries, Parks, Water and Environment (DPIPWE) has distributed a plastic ruler for measuring fish via a number of sources including Service Tasmania, Fishcare volunteers and shows/events. More recently, a stick-on ruler was introduced for fishers to use in boats. Overall, 87% of respondents reported being aware of the plastic fish measuring ruler (Fig. 12). As expected, significant differences among respondent groups were evident for water type fished. Nonetheless, the observation that almost 72% of freshwater only fishers were familiar with the ruler suggests that this product may be also sought by many freshwater fishers.

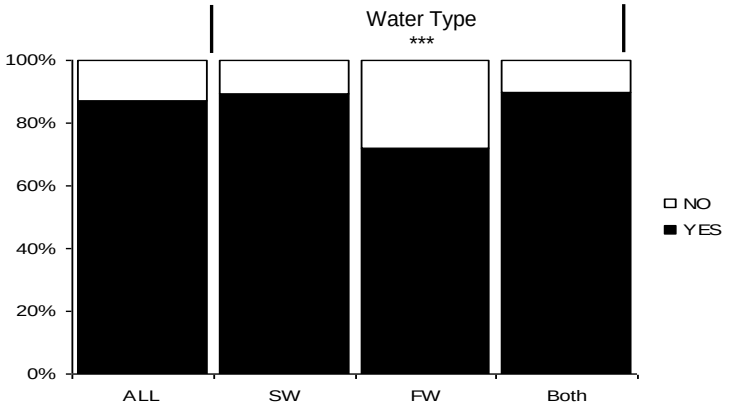


Fig. 12. Familiarity with the plastic measuring ruler: 2007/08

The stick-on fish measuring ruler

Overall, 76% of respondents reported being familiar with the stick-on fish measuring ruler (Fig. 13). Significant differences were observed according to gender, water type fished, age and avidity. While freshwater fishers were less familiar with the ruler than fishers of other water types, the observation that over 64% of freshwater only fishers were familiar with the ruler produced for marine fisheries suggests that rulers are also being obtained by freshwater fishers. Not unexpectedly, the most avid fishers tended to have the greatest awareness of the ruler. The general trend of decreasing familiarity with age is less easily explained, particularly in light of the general relationship observed between age and avidity (see Appendix 1, Table A2). However, it is plausible that younger fishers may be more receptive to 'new' products, particularly when functional substitutes are readily available.

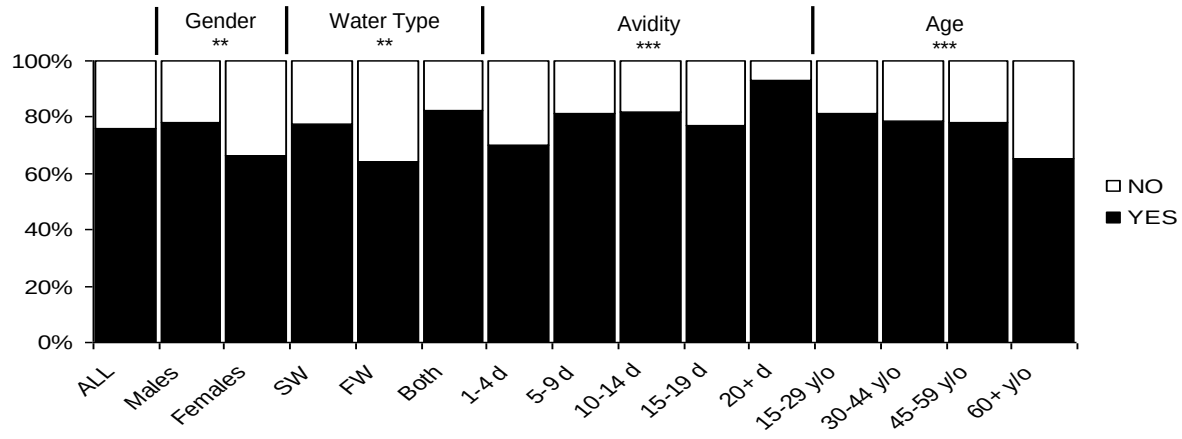


Fig. 13. Familiarity with the stick-on measuring ruler: 2007/08

Plastic measuring gauges for lobster, abalone and scallops

DPIPWE commenced distribution of plastic measuring gauges for popular non-finfish species in 2006. Overall, 51% of all respondents to the 2007/08 survey reported being familiar with the gauges (Fig. 14). When respondents who reported fishing activity for lobster, abalone or scallops in the 2007/08 diary survey were analysed separately, awareness increased to 89%. Significant differences in awareness were observed according to residential area, water type fished and age. While the results for water type are self-evident, the results for residential area concur with differences in fishing activities from respondents residing in different regions (see Appendix 1, Table A3): a greater proportion of residents from Greater Hobart and Southern regions fished in saltwater than residents from the Northern and Mersey-Lyell regions.

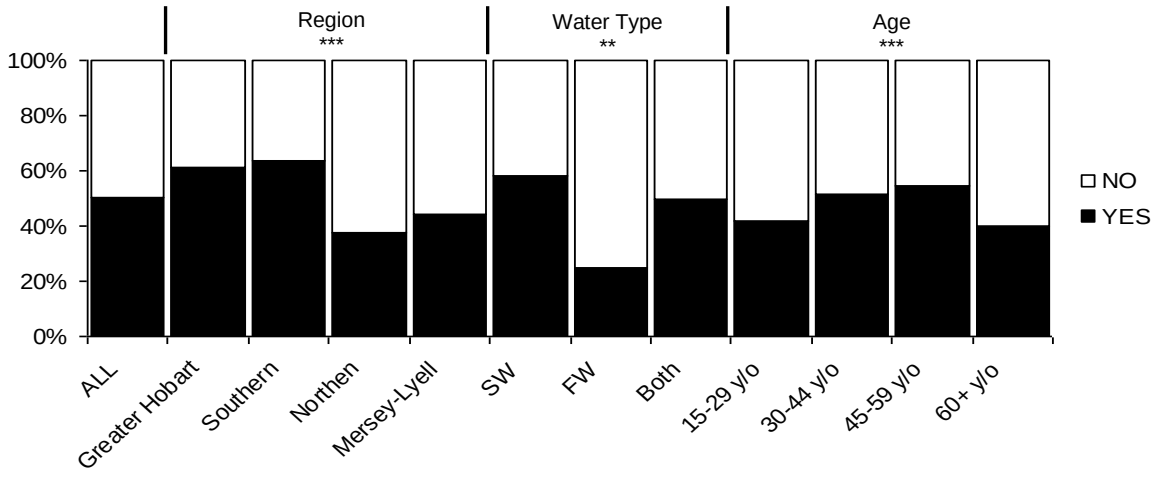


Fig.14. Familiarity with the measuring gauges: 2007/08

Comparisons with 2000/01

Respondent awareness of the above mentioned products and publications was compared across surveys (Fig. 15). For the saltwater[6] and freshwater annual handbooks, differences between surveys were not significant. However, the proportions of fishers familiar with both ruler types were significantly greater among 2007/08 respondents. Inter-survey comparisons were not made for gauges as they were not available at the time of the earlier survey.

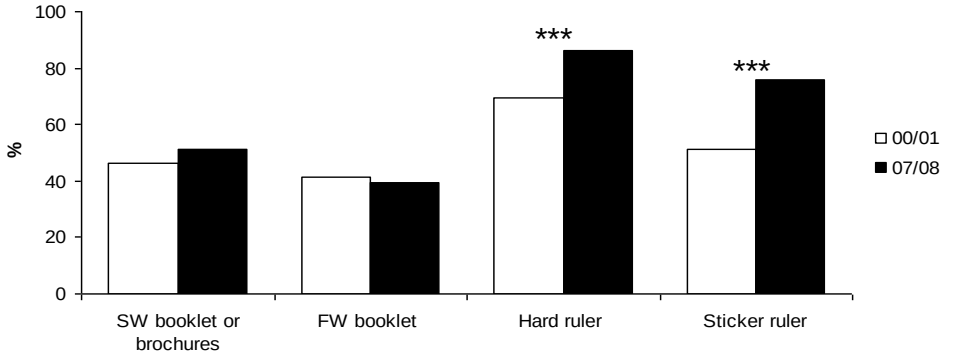


Fig. 15. Awareness of recreational fishing products and publications: 2000/01 and 2007/08

[6] The annual saltwater handbook – the *Recreational Sea Fishing Guide* – was not printed in its current format until 2001/02. Prior to that, fishing information was printed as a series of brochures pertaining to specific fisheries.

3.8 Obtaining Recreational Fishing Products and Publications

Respondents who indicated awareness of any of the products and publications outlined in the previous section were asked whether they recalled where they had obtained them. Overall, the three most prominent responses were Service Tasmania (31%), sent with fishing licence renewals (28%), and from tackle stores (15%). Significant differences in the relative proportions among response categories were observed according to gender, age, water type fished, avidity and residential region (Fig. 16). There was a general positive trend towards obtaining materials through Service Tasmania and receiving materials with fishing licences with both increases in age and fishing frequency. Younger fishers were more likely to access materials through tackle shops and 'other fishers' than older fishers, while less avid fishers reported obtaining materials from Government shows and displays more often than more avid fishers. The latter result implies that shows and displays were more successful in reaching occasional, presumably less experienced fishers. With regard to region, respondents residing in the Greater Hobart and Southern regions were more likely to obtain materials through Service Tasmania than residents from the Northern and Mersey-Lyell regions, where tackle stores represented a relatively important source for information products.

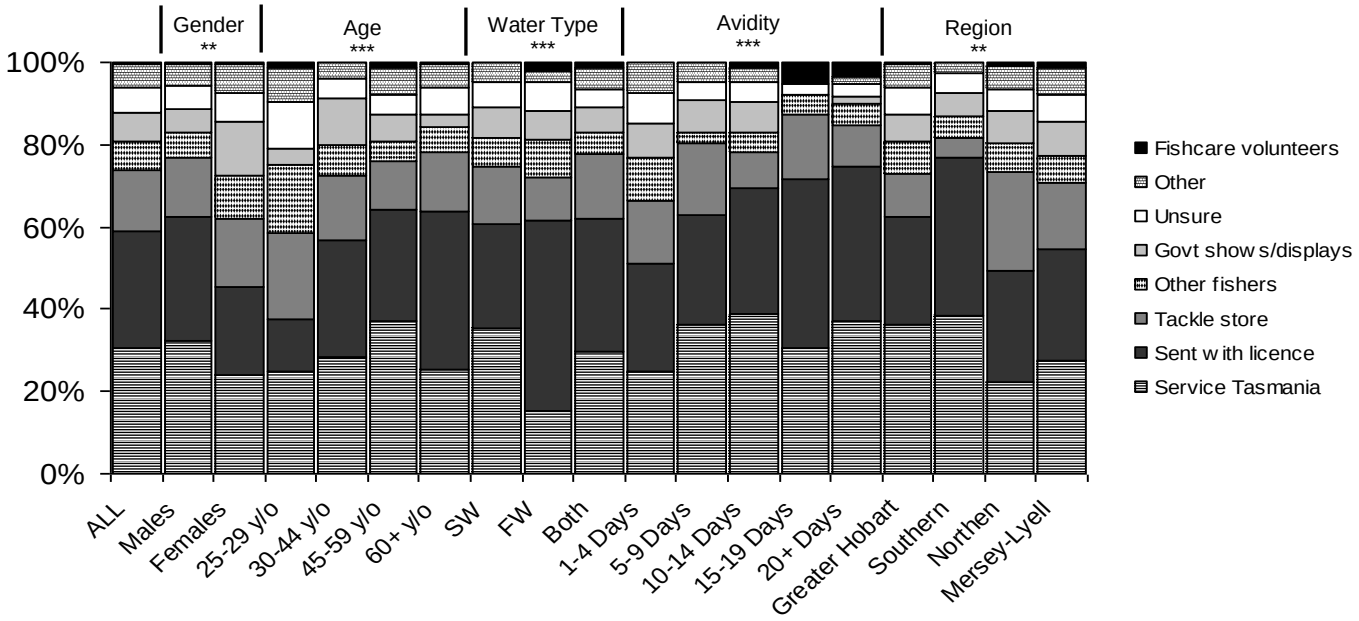


Fig. 16. Where respondent obtained/ accessed recreational fishing products and publications

3.9 Awareness of the Fishcare Volunteer Program

The Fishcare Volunteer Program commenced in 1999 and is an educational recreational fishing program administered by DPIPWE. The program consists of volunteers who are trained to educate recreational fishers about fishing regulations and responsible fishing practices. Fishcare volunteers engage with fishers in a number of ways including patrolling fishing sites, conducting fishing clinics, school visits and displays at events such as boat shows, community fairs and displays.

Survey participants were asked whether or not they recalled "ever seeing or hearing" about the Fishcare volunteer program. Overall, 43% of respondents were familiar with the program. Significant differences were observed according to gender, water type fished and avidity. Males, respondents who fished in saltwater and avid fishers were more familiar with Fishcare than females, freshwater only fishers and less avid fishers, respectively (Fig. 17). While the positive relationship between Fishcare familiarity and avidity is self-evident, it is likely that greater familiarity among males than females is a function of greater overall participation frequency among males (Appendix 1, Table A1). In relation to water type, the result is not unexpected since the Fishcare program has primarily focussed on marine fishers.

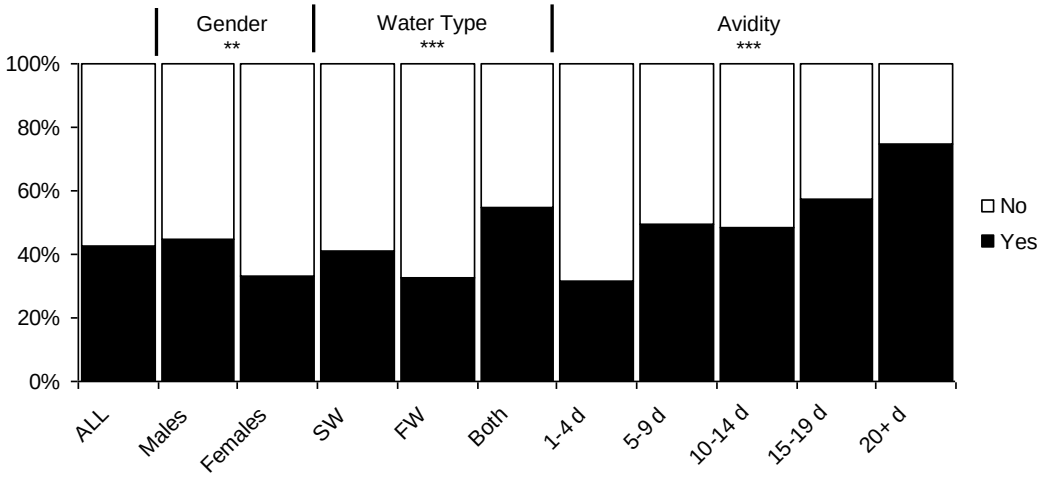


Fig. 17. Awareness of the Fishcare volunteer program: 2007/08

Comparisons with 2000/01

Overall, 25% of respondents in 2000/01 reported being familiar with the Fishcare program. The proportions of fishers indicating awareness were compared between surveys for all sub-groups within categorical groups except for main motivation (Fig. 18). Of the 18 groups, significant differences were observed for all groups except for two – fishers aged ≥60 years and fishers who reported fishing between 15-19 days during the survey period. The latter result, which is inconsistent with the overall trend between avidity and familiarity, is difficult to interpret but may be partially attributed to the relatively low sample size for that group (n = 81).

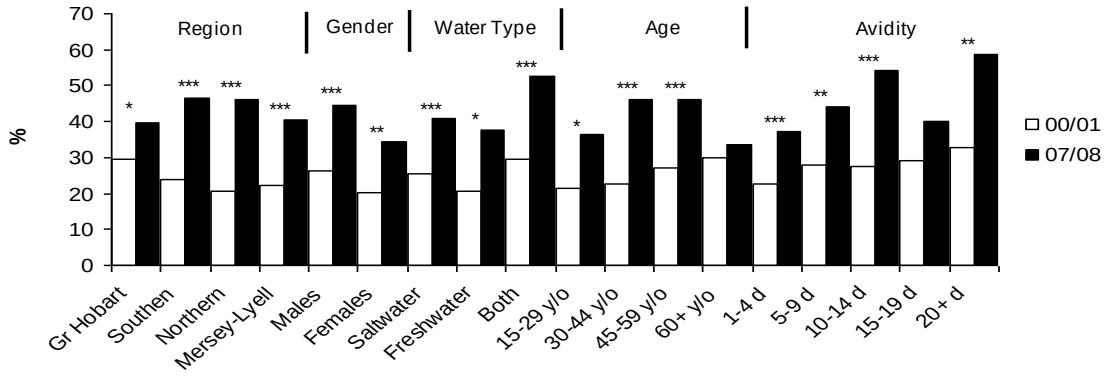


Fig. 18. Awareness of the Fishcare volunteer program: a comparison between the 2000/01 and 2007/8 surveys

In both surveys, respondents were asked whether or not they had any kind of contact with a Fishcare volunteer. Overall, affirmative responses were 4 and 8% for the 2000/01 and 2007/08 surveys, respectively. The difference was statistically significant: $\chi^2_{(1, 1651)} = 15.816$, $p = 0.000$[7]. Comaprisons were not made between sub-groups due to the low numbers of respondents who indicated having contact with Fishcare volunteers. This implies that while general awareness of the program may be relatively high, the proportion of fishers who have interacted directly with Fishcare volunteers is relatively low.

3.10 Awareness of TARFish

The Tasmanian Association for Recreational Fishing (TARFish) is an independent peak body representing the interests of marine recreational fishers in Tasmania. Established in 2004, TARfish identifies its six core objectives as follows: (1) to provide a forum for recreational fishers to raise relevant issues; (2) to represent the interests of recreational marine fishers in communication with stakeholders; (3) to communicate information to recreational marine fishers; (4) to educate the community on environmental and recreational marine fishing issues; (5) to promote the sustainable use and conservation of fish stocks and habitat, and; (6) to promote research into recreational marine fishing issues.

Respondents were asked if they had ever heard of TARFish, with 17% of respondents indicating some familiarity (Fig. 19). Significant differences in awareness were observed according to water type fished, avidity and region. Interestingly, there was little difference between saltwater only (16%) and freshwater only fishers (15%), despite TARFish being a peak representative body for marine fishers. The substantially higher awareness amongst fishers in both salt and freshwater (25%) appears to be mediated by the generally higher avidity levels reported for this group (see Appendix 1, Table A5). The greatest level of awareness among the most avid fishers was not unexpected – frequency of participation has been demonstrated to be a reliable indicator of fisher's social and political involvement with fishing (Ditton *et al*. 1992). With regard to region, the greater

[7] Comparisons were not made between sub-groups due to the low numbers of fishers who indicated having contact with Fishcare volunteers

levels of awareness within the Greater Hobart and Southern regions probably reflects the basing of TARFish in Hobart coupled with the highest proportion of saltwater fishing respondents within these regions.

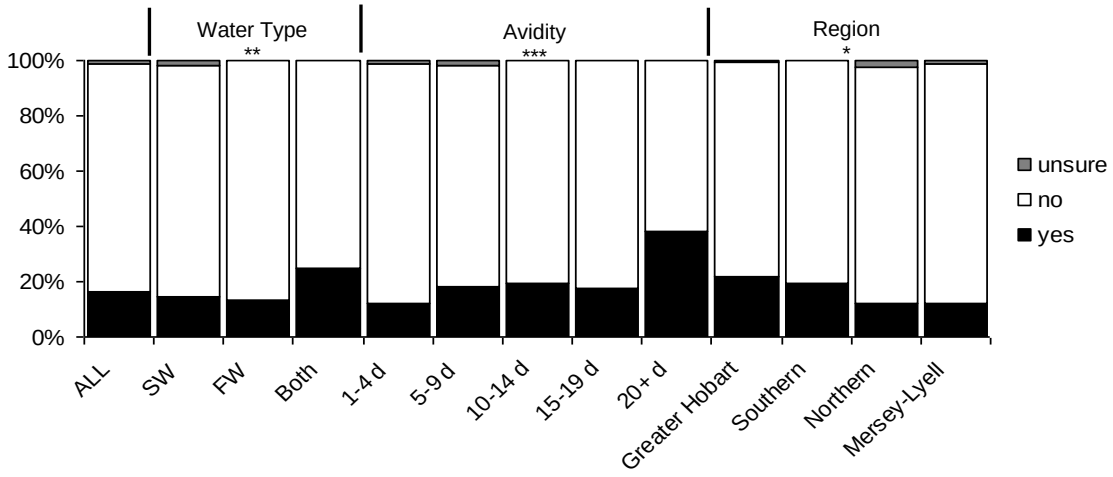


Fig. 19. Awareness of the Tasmanian Association for Recreational Fishing (TARFish): 2007/08

3.11 Awareness of Fishing Regulations

Respondents were asked four questions to gauge their understanding of fishing regulations that were effective at the time of the 2007/08 survey. The questions related to size and possession limits for flathead and Australian salmon – the two most commonly caught marine species by recreational fishers in Tasmania (Lyle 2005; Lyle *et al*. 2009). For each question, respondents were deemed to be 'aware (unaided)' if they correctly answered the question unprompted; 'aware (aided)' if, when prompted with the correct answer, they confirmed that they recalled having seen or heard something about it; or unaware ('no awareness') if the respondent indicated no prior awareness of the regulation. As the questions relating to size limits were also used in the 2000/01 survey, inter-survey comparisons were enabled[8].

Size limits for flathead

Overall, 52% of respondents were fully aware of the size limit for flathead (i.e. 300 mm), 27% were aware but required prompting, and 21% were unaware (Fig. 20). Significant differences among sub-groups were observed according to gender, water type fished, avidity and residential region. Not unexpectedly, saltwater fishers and more avid fishers demonstrated a greater level of awareness. The greater awareness among respondents from Greater Hobart and Southern regions is likely to reflect the high catches of flathead from waters adjacent to these regions (83% of the state-wide recreational total: Lyle *et al*. 2009) and the greater percentage of saltwater fishing respondents from these regions (Appendix 1, Table A4).

[8] At the time of the 200/01 survey there were no possession limits in place for either flathead or Australian salmon in Tasmania.

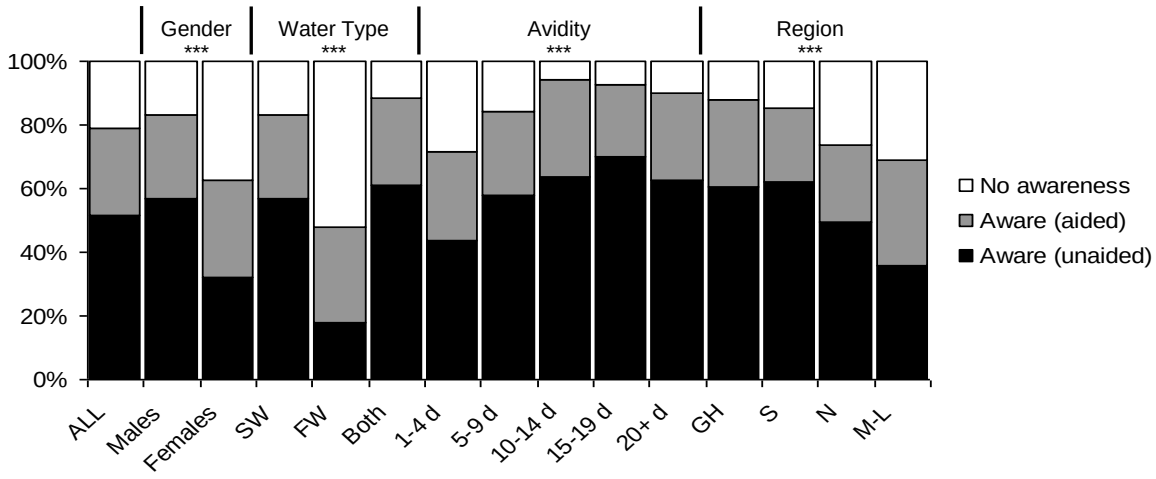


Fig. 20. Awareness of size limits for flathead: 2007/08

Comparisons with 2000/01

For the 2000/01 survey, 29% of respondents were aware of the size limit for flathead, 38% were aware but required prompting, and 33% were unaware. At an aggregate level, the difference in awareness between both surveys was statistically significant: χ^2 (2, n = 1623) = 87.562, p = 0.000.

The relative proportions of unaided awareness were compared between surveys for all sub-groups within sub-group categories except for main motivation (Fig. 21). Increases in awareness over time were observed for all 18 groups, 14 of which were significant. The four sub-groups for which there was not a significant difference were freshwater only fishers, respondents aged over 60 years, and respondents in the two highest avidity groups, i.e. 15-19 days and ≥ 20 days.

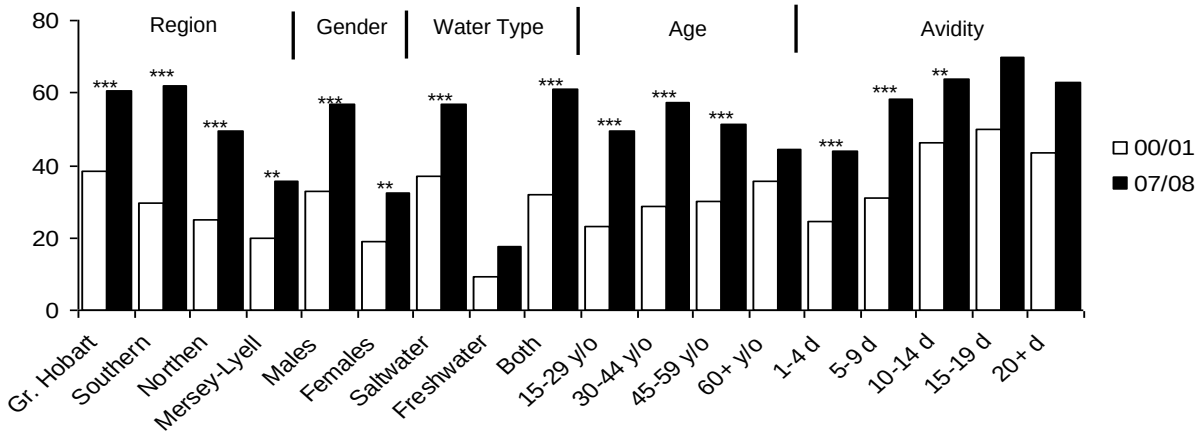


Fig. 21. Unaided awareness of the size limit for flathead: 2000/01 and 2007/08

Possession limit for flathead

Overall, 25% of respondents were fully aware of the possession limit for flathead (30 fish), 38% were aware but required prompting, and 37% were unaware of the limit. Significant differences were observed among sub-groups for all categories with the exception of age (Fig. 22). The greatest level of awareness was among fishers who reported fishing more than 20 days per year. Similar to respondent's awareness of flathead size limits, awareness of possession limits was greater for residents of the Greater Hobart and Southern regions. Among motivational groups, the greatest level of awareness was among 'keepers'. This result is plausible when one considers that flathead are considered to be a 'bread and butter' species commonly targeted for food.

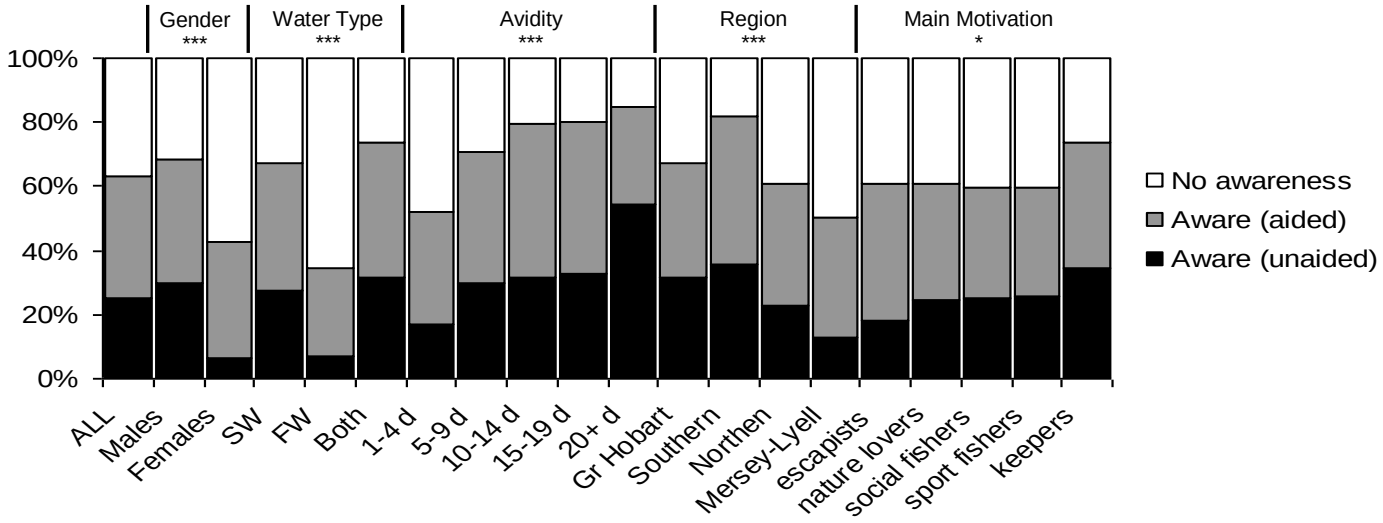


Fig. 22. Awareness of possession limits for flathead: 2007/08

Size limits for Australian Salmon

Overall, 11% of respondents were fully aware of the size limit for Australian salmon (200 mm TL), 40% were aware but required prompting and 49% were unaware (Fig. 23). The lower rate of awareness compared to flathead size limits is consistent with the difference in state-wide effort attributed to fishing for these two species (Lyle *et al*. 2009). Significant differences among sub-groups were apparent according to gender, water type fished and avidity; with males, saltwater and the more avid fishers having higher levels of awareness of the size limit.

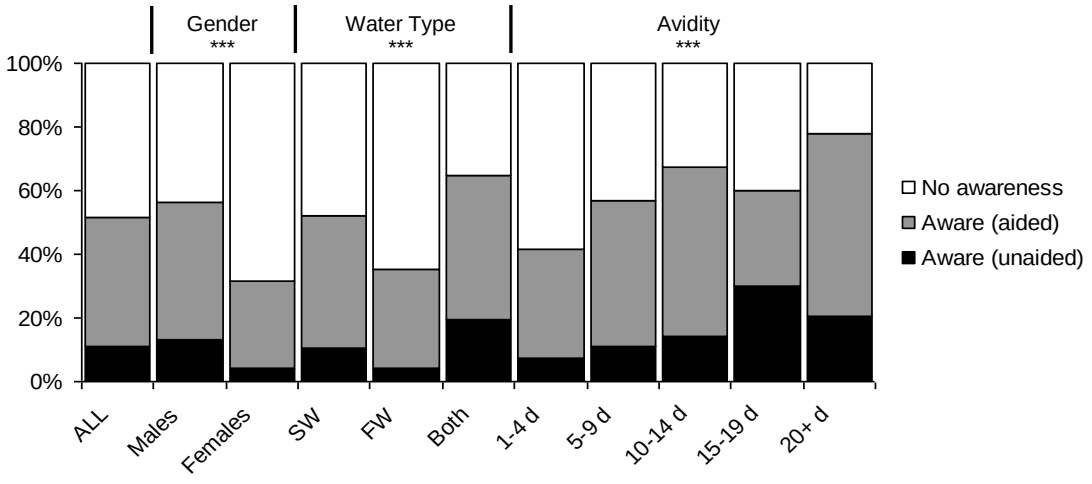


Fig. 23. Awareness of size limits for Australian salmon: 2007/08

Comparisons with 2000/01

For the 2000/01 survey, 7% of respondents were aware of the size limit for Australian salmon, 36% were aware but required prompting, and 57% were unaware. At an aggregate level, the increase in awareness over time was significant: χ^2 (2, n = 1622) = 16.540, p = 0.000. The relative proportions of 'unaided awareness' fishers were compared between surveys for all sub-groups within the six grouping categories (Fig. 24). Of the 23 sub-groups compared, significant differences were observed for eight. The highest levels of significance ($p < 0.001$) were for males and social fishers. Reasons for the results for social fishers (and nature lovers), relative to other motivational 'types' are unclear. Also difficult to explain are the results for age groups: significant increases in awareness were observed for all groups except for respondents ≥ 60 years of age, where a (non-significant) decrease in awareness was observed. Among avidity-based groups, greatest increase in awareness was among the most avid respondents.

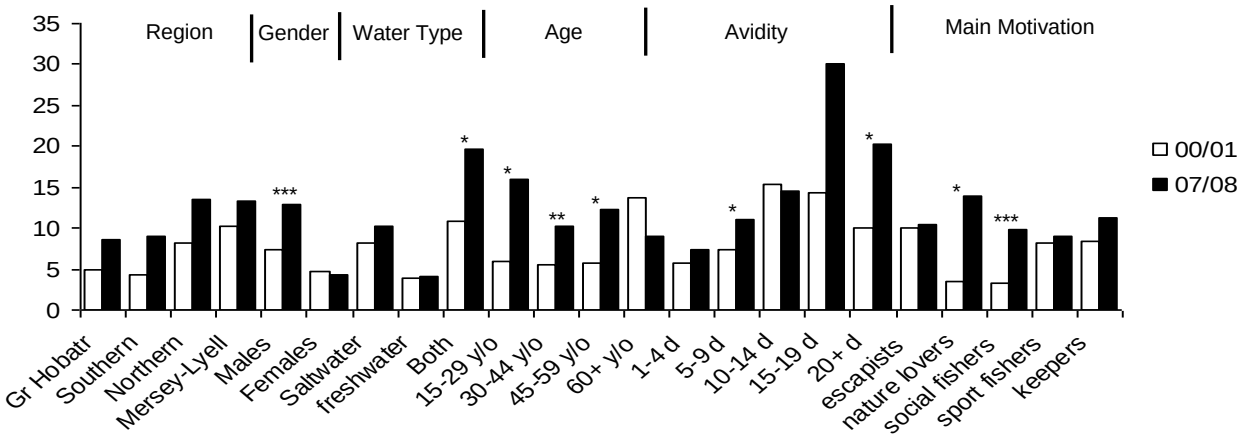


Fig. 24. Unaided awareness of the size limit for Australian salmon: 2000/01 and 2007

Possession limit for Australian salmon

At an aggregate level, just 5% of respondents were fully aware of the possession limit for Australian salmon (15 fish), 35% were aware but required prompting and 60% were unaware. Significant differences were observed according to gender, water type fished and avidity, with higher awareness amongst males, saltwater fishers and more avid fishers (Fig. 25).

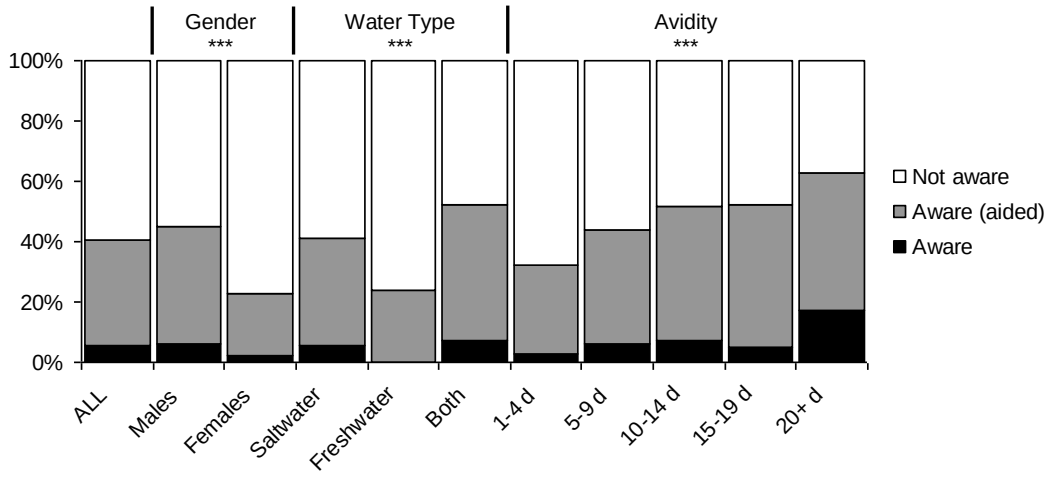


Fig. 25. Awareness of possession limits for flathead: 2007/08

A possible explanation for the low level of awareness of possession limits for both Australian salmon and flathead compared with awareness of size limits is that size limits apply to each fish caught whereas possession limits are relatively high and few fishers tend to retain large numbers of fish for a given fishing trip (Lyle *et al*. 2009). In other words, possession limits are not generally seen as limiting by recreational fishers for these species at least.

3.12 Attitudes to Fishing Regulations

Respondents were provided with a scenario in which there was a demonstrated need to reduce the recreational catch of a particular species due to concerns over declining stock abundance. They were then asked to nominate their most preferred and least preferred management option from a list of six commonly used management options: increased size limits, reduced bag limits, introduction of boat catch limits, closed seasons, closed areas, or further limits on fishing gear. Respondents who indicated no preference, either for their most or least preferred options were recorded as having 'no preference'.

Reducing bag limits was the most popular option (38%) followed by increased size limits (17%) (Fig. 26). Closed fishing seasons and closed areas were the two least preferred management options (22 and 17%, respectively), suggesting that fishers would be more supportive of options permitting some level of access, albeit more restricted, rather than restrictions that prevented temporal or spatial access to fishing opportunities.

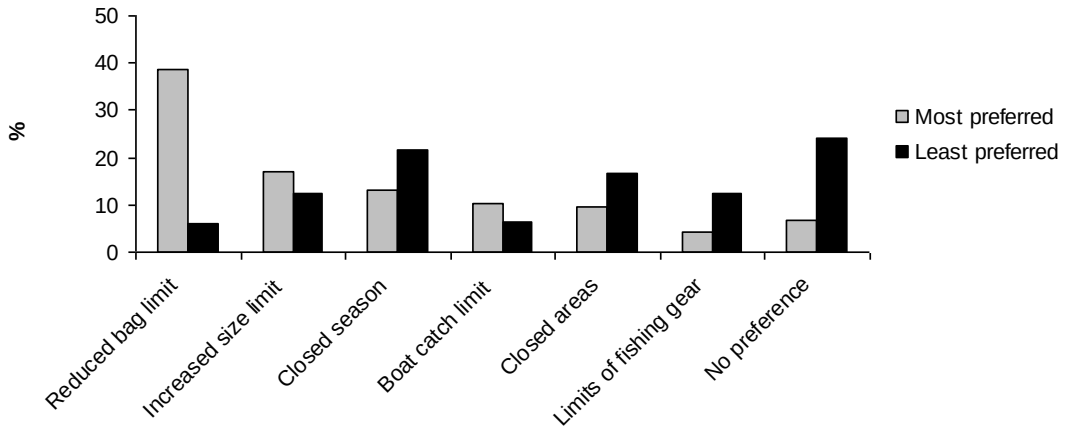


Fig. 26. Most and least preferred management option to constrain catches

3.13 Attitudes to Recreational Gillnetting

Respondents were asked a series of questions about their general level of support for recreational gillnetting in Tasmania and their attitudes to the implementation of further activity restrictions. Overall, 43% of respondents supported the continued use of recreational gillnets (Fig. 27), despite just 9% of respondents reporting gillnetting activity during the diary survey period. Significant differences in support were observed for all categories of grouping variables except for main motivation. Clear differences were observed among residents of different regions: residents of Southern (59%) and Mersey-Lyell (50%) regions were more supportive of gillnet use than residents of Greater Hobart (44%) and Northern regions (30%). While strong support among Southern SD fishers corresponded with a relatively high rate of gillnetting participation (Appendix 8), high participation among Greater Hobart SD respondents did not result in correspondingly high levels of support among respondents. Higher overall support was evident among respondents from Mersey-Lyell SD, where participation was considerably lower. The mismatch between attitudes and behaviour suggests that recreational gillnetting activity among Mersey-Lyell residents may be more prevalent if fishers had ready access to sheltered waters more suitable for gillnetting, such as those found of the east coast.

A positive relationship between support for gillnet use and respondent's age was also observed. This observation is consistent with the relationship between gillnetting activity and age (Appendix 8), and previous research on Tasmanian fishers which suggests that gillnet fishing is more popular among older fishers (EMRS, 2007).

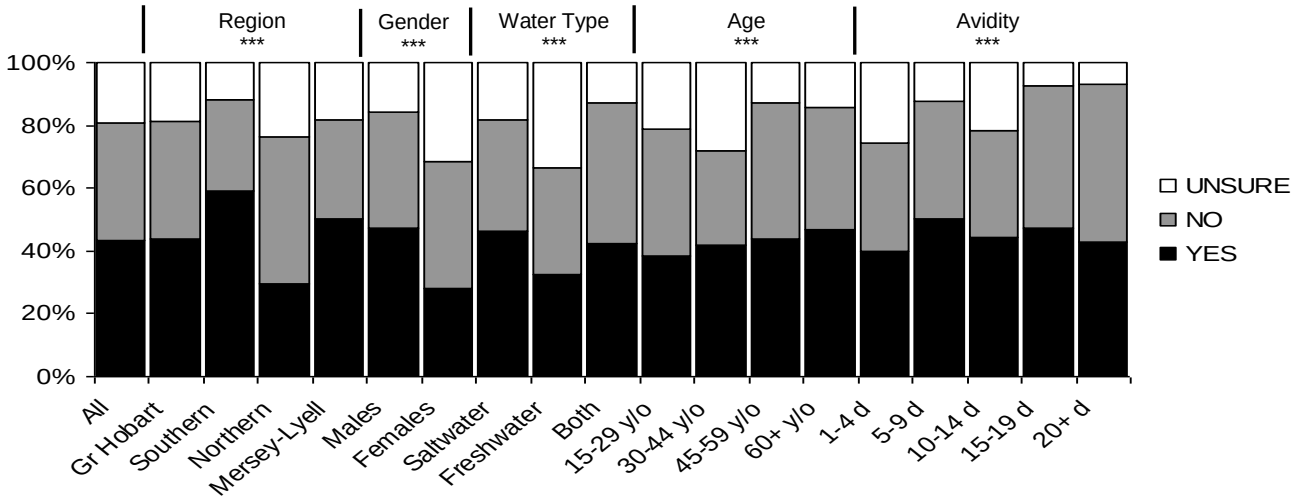


Fig. 27. Support for the continued use of recreational gillnets: 2007/08

Comparisons with 2000/01

From the 2000/01 survey, 48% of respondents supported the continued use of gillnets, 36% opposed it, and 16% were unsure. The differences in the relative proportions of responses between surveys were not significant: χ^2 (2, n = 1622) = 4.959, p = 0.084. There were however significant differences in support for gillnetting according to the following sub-groups; females, least avid fishers (i.e. 1-4 days) and fishers in the 30-44 and 45-59 age groups (Fig. 28); in each case support for gillnetting was lower in the 2007/08 survey.

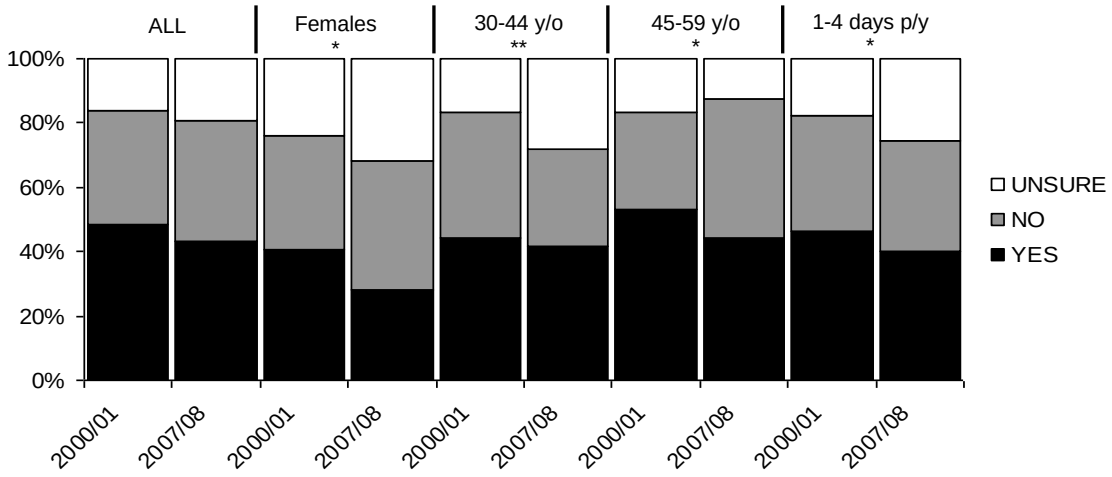


Fig. 28. Significant differences in level of support for the continued use of recreational gillnets between the 2000/01 and 2007/08 surveys

Additional restrictions on gillnetting

Respondents to the 2007/08 survey were advised that a ban on setting gillnets at night in most areas had been introduced in 2004 to reduce by-catch and wastage. Respondents were then asked whether they considered there was a need for additional restrictions; 48% said no, 30% yes, and 23% were unsure (Fig. 29). Significant differences in attitudes were evident among sub-groups within all categories except for water type fished. Similar to

the pattern observed for general support for gillnetting, respondents residing in the Greater Hobart and Northern regions were more likely to support the need for additional restrictions on gillnetting activities. Support for further restrictions also increased with age, despite the positive relationship between age and support for the continued use of gillnets, above. The degree of uncertainty (i.e. proportion of "unsure" responses) also decreased with age. In relation to avidity, the greatest level of support and lowest level of uncertainty were apparent for the two most avid groups. While a greater level of support for further netting restrictions was expected among non-net fishers, there was also limited support for further restrictions from gillnet fishers.

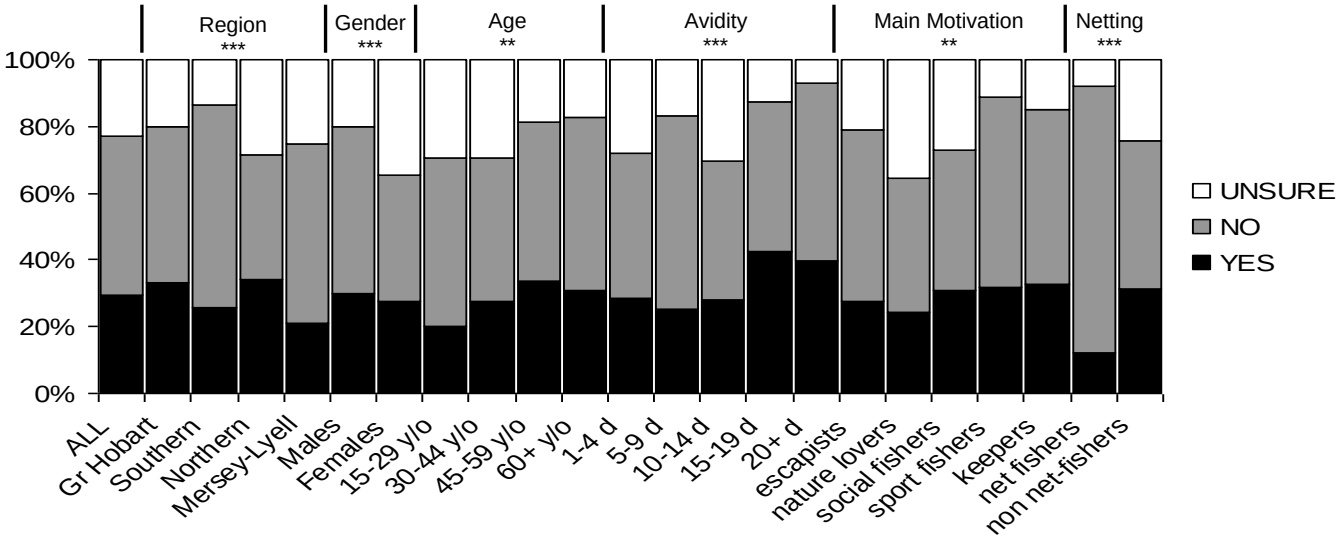


Fig. 29. Support for further restrictions on recreational gillnetting: 2007/08

Respondents who supported the implementation of further restrictions (*n* = 239) were asked whether or not they agreed with three proposals: (1) that gillnetting be prohibited in selected areas; (2) that fishers remain in sight of their nets at all times; and (3) that a maximum soak time be specified, requiring gillnets to be checked and cleared of fish within a specified timeframe. In addition to 'agree', 'disagree' and 'unsure' response categories, a further category 'totally against gillnets' was applied when respondents indicated that they opposed any use of gillnets by recreational fishers. About one third of respondents nominated this category for each of the three management options (Fig. 30). Over half of those respondents who supported the implementation of further restrictions were in favour of the prohibition of netting from selected areas and the implementation of maximum soak times. Lowest support (and greatest opposition) was for the requirement for fishers to remain in sight of nets at all times.

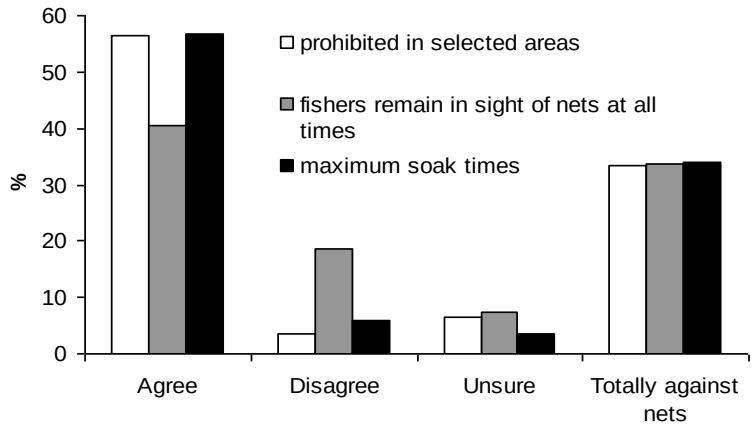


Fig.30. Level of agreement to three proposed modifications to restrictions on recreational gillnetting: 2007/08

All respondents who indicated support for maximum soak times (*n* = 146), were asked what they considered to be a "reasonable maximum soak time". The mode, median and mean values were 2, 4 and 4.6 hours respectively (Fig. 31).

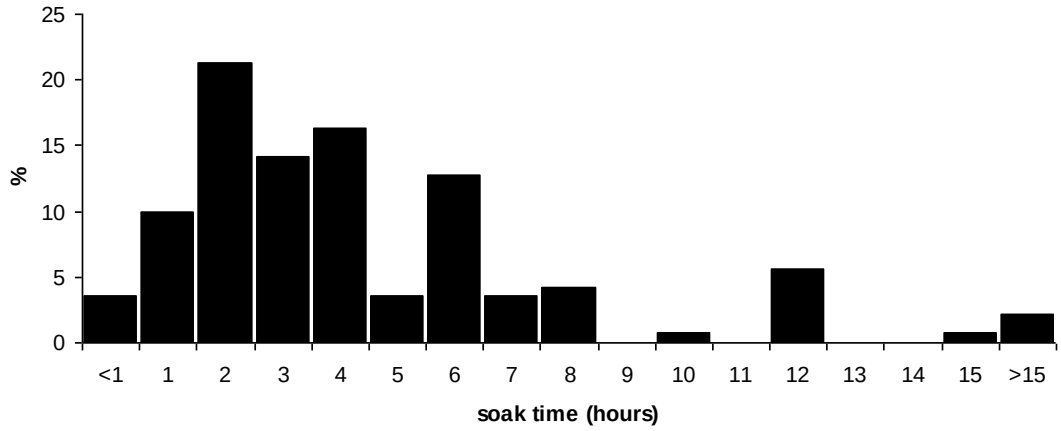


Fig. 31. Suggestions for a reasonable maximum soak time among respondents who indicated support for maximum soak times

4. Summary and Conclusions

Motivation for Fishing

Motivations for recreational fishing relate to both catch and non-catch aspects of the fishing experience. Overall, Tasmanian recreational fishers assigned the highest importance to non-catch related motives – "being outdoors" and "relaxing/unwinding" - followed by catch-related motives – "catching fish for food" and "for enjoyment/sport". Social motives – "spending time with family" and "spending time with friends" - were next in importance and more highly rated than "getting away from people". Generally, the motive to compete in fishing competitions was of low importance for most fishers. On average, respondents rated the two main catch and the two main social motives more highly in 2007/08 when compared with responses to a similar survey conducted in 2000/01. The greatest difference between these surveys was for the importance associated with the item "catching fish for food", which may be linked to the increased cost of seafood in general and growing awareness of the health benefits of consuming fish.

Aggregated data can, however, mask the underlying diversity within the fisher population and, in order to explore this diversity, respondents were grouped according to gender, age, where they reside, the type(s) of water fished, their fishing intensity (avidity) and main motivation for fishing. This analysis revealed that males were more likely to be motivated by the sporting dimensions of fishing, being outdoors and spending time with friends, while spending time with family members was of greater relative importance for females. Older fishers were more motivated to catch fish for food than other age groups whereas relaxing/unwinding and spending time with both family and friends were less important than for other age groups. Fishers in the 30-44 age group rated spending time with family of greater importance, this being the age group at which many people are involved with raising children. With regard to avidity, the results suggested that solitude, fishing in competitions, and fishing for both sport and for food became increasingly important motivators as avidity increased.

There was strong agreement from respondents that fishing could be satisfying regardless of whether any fish were caught. While this observation reinforces the sentiment that fishers derive benefits from the fishing experience that are unrelated to catching fish, they should not be interpreted such that resource-related aspects are unimportant or incidental. Thus, while catch and retention may not be the most important contributors to a satisfying fishing trip, the reasonable possibility of catching a fish is nevertheless important and somewhat defines the fishing experience.

Consumptive Orientation

Respondents demonstrated a clear preference for catching large fish over catching many fish – an observation consistent with many other studies across a broad spectrum of recreational fisheries. The vast majority of respondents also indicated that they prefer to retain enough fish for immediate consumption rather than keep all fish allowed with possession limits; a finding consistent with the message "catch just enough for a feed".

Unexpectedly, avidity did not emerge as a significant factor in influencing responses relating to consumptive orientation. Factors such as gender, age, residence and water

body fished were, however, significant. Some of the most prominent results influencing consumptive orientation are outlined in point-form, below.

- Males were generally characterised as being more consumptively oriented than females. For instance, males expressed a stronger preference for fishing where there were several species to catch and where very large fish may be caught. On the other hand, females indicated that they would be less likely to forego a fishing trip if they thought they would not catch fish and were more willing to consider a fishing trip to be 'successful' if no fish were caught.
- Younger fishers attributed greater importance to catching many fish; however, compared to other age groups, they also indicated that they were more likely to release fish. Fishers aged between 30-59 years were more likely to keep just enough fish for a feed than retain the possession limit.
- Freshwater fishers were less concerned about fishing where several species were available to be caught, reflecting the comparative lack of diversity of available freshwater angling species. Freshwater fishers also indicated being less oriented to catching large fish but a greater orientation to retaining possession limits. These results were unexpected given the status of trout as 'sport' fish and the well established culture of catch and release fishing within many trout fisheries.

Constraints and Opportunities

Time demands relating to work/ business were overwhelmingly the most frequently cited constraints leading to respondents fishing less often during 2007/08 than in the previous year. Of secondary significance were time demands imposed by one's family and issues relating to personal health and fitness. In contrast to some previous studies, activity constraints relating to fishing associated costs, crowding and a lack of accessible fishing opportunities were not prominent.

In regard to opportunities facilitating respondents to fish more often, the four most prominent factors were changes to one's work and family environments, changes to recreational preferences/ priorities and other 'access' related issues, such as the purchase of boats and the re-opening of previously closed fishing areas.

Fisher Satisfaction

The vast majority of respondents indicated that they were at least quite satisfied with the overall quality of recreational fishing during 2007/08. Within sub-population groups, the only significant effect observed related to the age of respondents, with fisher satisfaction declining with age. By comparison with 2000/01, there had been a general increase in the underlying level of satisfaction with the quality of recreational fishing in Tasmania, which is an encouraging finding.

When dissatisfaction was expressed, it was primarily related to perceptions about resource status: concerns about environmental conditions and the health/ condition of individual fish were primarily expressed in reference to freshwater fisheries. At the time of the survey, Tasmania was experiencing drought conditions which are likely to have influenced fisher's responses.

Satisfaction with the management of the recreational fishery was also very high amongst fishers and importantly, mean scores indicated an overall increase when compared with

2000/01. Reasons for fisher dissatisfaction were diverse but issues pertaining to the management of commercial fishing were particularly prominent.

Information about Fishing Regulations

Government brochures and publications, other fishers, print media (excluding fishing magazines), and government internet sites were the main sources of information by which fishers familiarised themselves with fishing regulations and other fisheries-based information. Significantly, the proportion of respondents who identified government publications as a main source had more than doubled since the 2000/01 survey, confirming the effectiveness of recent initiatives to improve and promote the information products. The survey also highlighted the potential of the internet as an effective information source, especially amongst younger fishers.

Recreational Fishing Products and Publications

There was a high level of awareness of several key recreational products and publications especially amongst the target fisher groups. Not surprisingly, the vast majority of freshwater fishers were aware of the freshwater fishing booklet which is issued with licences. About 60% of saltwater fishers were aware of the annual sea fishing booklet, which indicates a distribution of the publication beyond licence-holders, who account for a much smaller proportion of marine recreational fishers. The level of awareness of both publications did not differ significantly when compared with the 2000/01 survey.

The vast majority of respondents were aware of the plastic fish measuring ruler, with slightly lower awareness of the stick-on measurer. For both products, there had been a significant increase in respondent awareness compared with 2000/01.

About half of all respondents indicated awareness of the measuring gauges for lobster, abalone and/or scallops. Among those who fished for these species, awareness was very high (90%), indicating strong appropriation of these products.

In terms of accessing products and publications to do with fisheries management, Service Tasmania, fishing licence renewals, and tackle stores were the most frequently identified sources.

Fishcare Volunteer Program

General awareness of the Fishcare Volunteer program had almost doubled since 2000/01, to just over 40% of respondents being at least aware of the program in 2007/08. The proportion of respondents who reported direct contact with Fishcare volunteers had also doubled, to nearly 10%.

TARFish

Less than one in five respondents were aware of TARFish. There were, however, differences based on sub-population groups; more avid fishers and those based in southern Tasmania (including Hobart) indicated greater awareness than less avid fishers and fishers based in other regions.

Fishing Regulations

Awareness of selected fishing regulations was assessed for key fish species. Over half of all respondents were fully aware of the size limit for flathead whereas awareness of the size limit for Australian salmon was just over 10%. In both instances these levels were around twice those for 2000/01. General awareness of possession limits were substantially lower - an observation that probably reflects the fact that size limits apply to each fish caught whereas possession limits are relatively high and few fishers retain (catch) sufficient numbers of fish on a given fishing trip to require them to be mindful of possession limits

When provided with a hypothetical management scenario requiring a reduction of catch and/or effort, respondents tended to be more supportive of options that permitted some level of access, albeit more restricted (reduced bag limit, increased size limit), rather than restrictions that prevented temporal or spatial access to fishing opportunities (closed seasons or closed areas).

Recreational Gillnetting

Overall, support for the continued use of recreational gillnets was just over 40% of respondents and only slightly lower than in 2000/01. This finding is even more significant when taken in the context that less than 10% of respondents reported any gillnet fishing in the 12 months prior to interview. There was some regional variation in the level of support, with strongest support (over half of respondents) amongst residents of rural south-eastern, eastern and north-western Tasmania.

Noting that several restrictions on gillnet usage have been implemented to improve fishing practices and reduce wastage in recent years, only one third of respondents agreed that further restrictions were necessary. Of three hypothetical options, greatest support was for the prohibition of gillnets from selected areas and for the implementation of maximum soak times. The lowest level of support was for a requirement that fishers remain in sight of their nets at all times.

Acknowledgements

We gratefully acknowledge the recreational fishers of Tasmania who willingly participated in the 2000/01 and 2007/08 State-wide surveys. Thanks are extended to Sean Tracey, Kelly Bolch and Jane Forward who assisted with survey management and to Laurie West (Kewagama Research) for assistance with survey design and questionnaire development. Excellent response rates and data quality are the result of the efforts of our team of experienced and dedicated survey interviewers.

Rod Pearn (DPIPWE) provided valuable information on management issues pertaining to Tasmania's recreational fisheries and guidance for the project.

Funding assistance for this study was provided from the Fishwise Resource Management Fund administered by the DPIPWE. The 2000/01 survey was also supported with funding from the Fisheries Research and Development Corporation and National Heritage Trust.

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Appendix 1. Description of Respondent Sub-groups

Gender

Males dominated (80%) the overall sample (Table A1). While there was little variation in the gender ratio among respondents from the different regions, notable variations were observed according to avidity, age, water type fished and main motivation. The mean number of days fished for males and females was 7.8 and 4.9, respectively. There was a general trend of decreasing female representation in the sample with increasing age and avidity and the ratio of females who reported fishing in both salt and freshwater types was very low (6%) compared with saltwater only (21%) and freshwater only sub-groups (19%). With regard to main motivation, relative to the overall gender ratio, female participation was highest among 'nature lovers', whilst male participation was highest among 'sport fishers'.

Table A1 Gender split within sub-population groups

	males (n)	females (n)	males %	females %
ALL	648	165	79.7	20.3
Greater Hobart	222	59	79.0	21.0
Southern	85	24	78.0	22.0
Northern	191	44	81.3	18.7
Mersey-Lyell	150	38	79.8	20.2
15-29 y/o	50	24	67.6	32.4
30-44 y/o	210	63	76.9	23.1
45-59 y/o	230	57	80.1	19.9
60+ y/o	158	20	88.8	11.2
1-4 days	294	87	77.2	22.8
5-9 days	188	30	86.2	13.8
10-14 days	69	14	83.1	16.9
15-19 days	34	6	85.0	15.0
20+ days	57	2	96.6	3.4
saltwater only	424	112	79.1	20.9
freshwater only	79	18	81.4	18.6
both	139	9	93.9	6.1
escapists	165	45	78.6	21.4
nature lovers	76	27	73.8	26.2
social fishers	181	50	78.4	21.6
sport fishers	80	9	89.9	10.1
keepers	108	25	81.2	18.8

Age

The percentage of respondents by age group were as follows: 15-29 years (9%); 30-44 years (34%); 45-59 years (35%); and ≥ 60 years (22%) (Table A2). There were, however, some differences in the relative proportions of these age groups within each of the descriptive parameters. There was a disproportionally higher representation of females in the two youngest age groups and disproportionally fewer females in the oldest age group. By contrast, there were disproportionally fewer males represented in the youngest age

group, largely offset by a slight increase in the oldest age group. Regionally, age distributions were consistent for all but the Southern region where there were proportionally fewer respondents in the 30-44 age group and disproportionally more in the 45-59 age group. In relation to water type, the most notable difference was in relation to the youngest age group; with generally lower representation among freshwater only fishers.

The youngest age group was disproportionally over-represented with respondents from the two lowest avidity groups. Conversely, the highest age group was disproportionally over-represented by respondents from the two highest avidity groups. 'Keepers' were over-represented among older respondents and under-represented among younger fishers, possibly reflecting the growing popularity of catch and release fishing (Arlinghaus, *et al*. 2007). 'Social fishers' were disproportionately represented in the 30-44 age group, the group mostly involved in raising young families, but markedly under-represented among the oldest age group.

Table A2 Cross-tabulation of age by sub-population group

	15-29 y/o (n)	30-44 y/o (n)	45-59 y/o (n)	60+ y/o (n)	15-29 y/o (%)	30-44 y/o (%)	45-59 y/o (%)	60+ y/o (%)
ALL	75	273	286	178	9.2	33.6	35.2	21.9
males	50	210	230	158	7.7	32.4	35.5	24.4
females	24	63	57	20	14.6	38.4	34.8	12.2
Greater Hobart	23	101	94	62	8.2	36.1	33.6	22.1
Southern	9	25	47	28	8.3	22.9	43.1	25.7
Northern	24	80	83	48	10.2	34.0	35.3	20.4
Mersey-Lyell	19	67	62	40	10.1	35.6	33.0	21.3
saltwater	48	182	190	113	9.0	34.1	35.6	21.2
freshwater	7	31	34	25	7.2	32.0	35.1	25.8
both	17	46	51	33	11.6	31.3	34.7	22.4
1-4 days	41	131	123	84	10.8	34.6	32.5	22.2
5-9 days	20	74	81	41	9.3	34.3	37.5	19.0
10-14 days	4	32	31	16	4.8	38.6	37.3	19.3
15-19 days	2	10	13	15	5.0	25.0	32.5	37.5
20+ days	5	12	27	15	8.5	20.3	45.8	25.4
escapists	18	72	73	47	8.6	34.3	34.8	22.4
nature lovers	11	26	38	26	10.9	25.7	37.6	25.7
social fishers	24	115	74	18	10.4	49.8	32.0	7.8
sport fishers	13	21	27	27	14.8	23.9	30.7	30.7
keepers	5	24	55	48	3.8	18.2	41.7	36.4

Residential Area

The percentage of respondents that resided within the following ABS SDs were as follows: Greater Hobart (34%); Northern (29%); Mersey-Lyell (23%); and Southern (14%) (Table A3). With respect to the relative proportions of sub-population groups residing in each area, the Southern region was under-represented by fishers in the 30-44 age group and the most avid group (≥20 days); however the region was over-represented by 'keepers'. The Greater Hobart region was over-represented by saltwater only fishers but under-represented by freshwater only and fishers reporting activity from both water types. A reverse of this situation was observed for Northern and Mersey-Lyell regions,

where disproportionally more respondents did at least some freshwater fishing. This regional difference presumably reflects the breadth of fishing opportunities available in the respective areas. For fishers from the Mersey-Lyell region, there was an over-representation of avid fishers and under-representation of 'keepers' among the respondents.

Table A3 Cross-tabulation of residential area by sub-population group

	Gr. Hobart (n)	Southern (n)	Northern (n)	Mersey-Lyell (n)	Gr. Hobart %	Southern %	Northern %	Mersey-Lyell %
ALL	281	110	236	189	34.4	13.5	28.9	23.2
Males	222	85	191	150	34.3	13.1	29.5	23.1
Females	59	24	44	38	35.8	14.5	26.7	23.0
15-29 y/o	23	9	24	19	30.7	12.0	32.0	25.3
30-44 y/o	101	25	80	67	37.0	9.2	29.3	24.5
45-59 y/o	94	47	83	62	32.9	16.4	29.0	21.7
60+ y/o	62	28	48	40	34.8	15.7	27.0	22.5
1-4 days	149	48	106	78	39.1	12.6	27.8	20.5
5-9 days	66	31	63	58	30.3	14.2	28.9	26.6
10-14 days	25	17	26	15	30.1	20.5	31.3	18.1
15-19 days	11	6	12	11	27.5	15.0	30.0	27.5
20+ days	18	5	19	17	30.5	8.5	32.2	28.8
saltwater	224	86	130	96	41.8	16.0	24.3	17.9
freshwater	11	11	38	37	11.3	11.3	39.2	38.1
both	34	10	58	46	23.0	6.8	39.2	31.1
escapists	79	23	61	47	37.6	11.0	29.0	22.4
nature lovers	33	15	27	28	32.0	14.6	26.2	27.2
social fishers	77	31	70	54	33.2	13.4	30.2	23.3
sport fishers	27	9	31	22	30.3	10.1	34.8	24.7
keepers	47	26	35	24	35.6	19.7	26.5	18.2

Water Type Fished

Saltwater only fishers represented over two thirds of the sample, with freshwater only fishers accounting for a further 12% and fishers in both salt and freshwater fishers 19% (Table A4). Overall, this equated to 88 and 31% of respondents fishing at least once in saltwater and freshwater during the diary survey period, respectively. Saltwater only fishers were considerably over-represented by females, less avid fishers, 'keepers', and respondents from both the Greater Hobart and Southern regions. Conversely, saltwater only fishers were under-represented by males, avid fishers and respondents from the Northern and Mersey-Lyell regions.

Among freshwater only fishers, the following sub-groups were over-represented: fishers from the Northern and Mersey-Lyell regions and both 'nature lovers' and 'sport fishers' and under-represented by 'keepers'. Respondents who fished in both water types were overwhelmingly over-represented by highly avid fishers; however, they were under-represented by females and residents of the Greater Hobart and Southern regions.

Table A4 Cross-tabulation of water type fished by sub-population group

	saltwater (n)	freshwater (n)	both (n)	saltwater (%)	freshwater (%)	both (%)
ALL	536	97	148	68.6	12.4	19.0
Males	424	79	139	66.0	12.3	21.7
Females	112	18	9	80.6	12.9	6.5
Greater Hobart	224	11	34	83.3	4.1	12.6
Southern	86	11	10	80.4	10.3	9.3
Northern	130	38	58	57.5	16.8	25.7
Mersey-Lyell	96	37	46	53.6	20.7	25.7
15-29 y/o	48	7	17	66.7	9.7	23.6
30-44 y/o	182	31	46	70.3	12.0	17.8
45-59 y/o	190	34	51	69.1	12.4	18.5
60+ y/o	113	25	33	66.1	14.6	19.3
1-4 days	304	57	20	79.8	15.0	5.2
5-9 days	142	22	54	65.1	10.1	24.8
10-14 days	49	5	29	59.0	6.0	34.9
15-19 days	23	4	13	57.5	10.0	32.5
20+ days	18	9	32	30.5	15.3	54.2
escapists	125	28	45	63.1	14.1	22.7
nature lovers	64	21	14	64.6	21.2	14.1
social fishers	161	21	41	72.2	9.4	18.4
sport fishers	54	15	17	62.8	17.4	19.8
keepers	98	8	20	77.8	6.3	15.9

Avidity

As observed by Lyle *et al.* (2009), fishers were heavily weighted at the less avid end of the avidity continuum: the proportions of respondents within the following avidity categories were as follows: 1-4 days (49%), 5-9 days (28%), 10-14 days (11%), 15-19 days (5%); and greater than 20 days (8%) (Table A5). Among these groups, the most notable variations to these relative proportions were in relation to the most and least avid fishers. The least avid group was proportionally over-represented by females, and under-represented by respondents who fished in both water types. Conversely, the least avid group comprised a very low percentage of fishers of both water types. With regard to the most avid group, males, fishers of both water types and 'sport fishers' were considerably more prominent than the overall proportion of fishers who spent 20 or more days fishing during the diary survey period.

Table A5 Cross-tabulation of avidity by sub-population group

	1-4 d (n)	5-9 d (n)	10-14 d (n)	15-19 d (n)	20+d (n)	1-4 d (%)	5-9 d (%)	10-14 d (%)	15-19 d (%)	20+ d (%)
ALL	381	218	83	40	59	48.8	27.9	10.6	5.1	7.6
Males	294	188	69	34	57	45.8	29.3	10.7	5.3	8.9
Females	87	30	14	6	2	62.6	21.6	10.1	4.3	1.4
15-29 y/o	41	20	4	2	5	56.9	27.8	5.6	2.8	6.9
30-44 y/o	131	74	32	10	12	50.6	28.6	12.4	3.9	4.6
45-59 y/o	123	81	31	13	27	44.7	29.5	11.3	4.7	9.8
60+ y/o	84	41	16	15	15	49.1	24.0	9.4	8.8	8.8
Greater Hobart	149	66	25	11	18	55.4	24.5	9.3	4.1	6.7
Southern	48	31	17	6	5	44.9	29.0	15.9	5.6	4.7
Northern	106	63	26	12	19	46.9	27.9	11.5	5.3	8.4
Mersey-Lyell	78	58	15	11	17	43.6	32.4	8.4	6.1	9.5
saltwater	304	142	49	23	18	56.7	26.5	9.1	4.3	3.4
freshwater	57	22	5	4	9	58.8	22.7	5.2	4.1	9.3
both	20	54	29	13	32	13.5	36.5	19.6	8.8	21.6
escapists	94	61	19	12	12	47.5	30.8	9.6	6.1	6.1
nature lovers	56	21	12	3	7	56.6	21.2	12.1	3.0	7.1
social fishers	122	58	21	12	11	54.5	25.9	9.4	5.4	4.9
sport fishers	35	25	12	4	10	40.7	29.1	14.0	4.7	11.6
keepers	54	40	13	7	11	43.2	32.0	10.4	5.6	8.8

Main Motivation

The proportion of respondents allocated to the following motivational categories were as follows: 'social fishers' (30%); 'escapists' (27%); 'keepers' (17%), 'nature lovers' (13%); and 'sport fishers' (12%) (Table A6). With the exception of 'escapists', there was a considerable degree of variability imposed by the other grouping variables. Freshwater fishers were over-represented among 'nature lovers'. Among 'social fishers', relatively low proportions of fishers in the highest age and avidity groups were observed while the 30-44 age group was over-represented. Interestingly, a relatively high proportion of oldest and most avid fishers were identified as 'sport fishers' and/or 'keepers' – the two catch-related motivational categories used in this study. In addition, the proportion of 'sport fishers' was relatively low among female respondents but disproportionally high for youngest age group. In regard to 'keepers', Southern respondents were over-represented, while freshwater fishers and respondents in the two youngest age groups were under-represented.

Table A6 Cross-tabulation of main motivation by sub-population group

	escapists (n)	nature lovers (n)	social fishers (n)	sport fishers (n)	keepers (n)	escapists (%)	nature lovers (%)	social fishers (%)	sport fishers (%)	keepers (%)
ALL	210	103	232	89	132	27.4	13.4	30.3	11.6	17.2
Males	165	76	181	80	108	27.0	12.5	29.7	13.1	17.7
Females	45	27	50	9	25	28.8	17.3	32.1	5.8	16.0
saltwater	125	64	161	54	98	24.9	12.7	32.1	10.8	19.5
freshwater	28	21	21	15	8	30.1	22.6	22.6	16.1	8.6
both	45	14	41	17	20	32.8	10.2	29.9	12.4	14.6
Greater Hobart	79	33	77	27	47	30.0	12.5	29.3	10.3	17.9
Southern	23	15	31	9	26	22.1	14.4	29.8	8.7	25.0
Northern	61	27	70	31	35	27.2	12.1	31.3	13.8	15.6
Mersey-Lyell	47	28	54	22	24	26.9	16.0	30.9	12.6	13.7
1-4 days	94	56	122	35	54	26.0	15.5	33.8	9.7	15.0
5-9 days	61	21	58	25	40	29.8	10.2	28.3	12.2	19.5
10-14 days	19	12	21	12	13	24.7	15.6	27.3	15.6	16.9
15-19 days	12	3	12	4	7	31.6	7.9	31.6	10.5	18.4
20+ days	12	7	11	10	11	23.5	13.7	21.6	19.6	21.6
15-29 y/o	18	11	24	13	5	25.4	15.5	33.8	18.3	7.0
30-44 y/o	72	26	115	21	24	27.9	10.1	44.6	8.1	9.3
45-59 y/o	73	38	74	27	55	27.3	14.2	27.7	10.1	20.6
60+ y/o	47	26	18	27	48	28.3	15.7	10.8	16.3	28.9

Appendix 2. Coefficients and model parameters for logistic regression models to determine factors influencing importance values attributed to motivational items.

Only significant results are presented.

	Gender	Gr Hobart	Southern	Northern	Mersey-Lyell	15-29 y/o	30-44 y/o	45-59 y/o	60+ y/o	Saltwater	Freshwater	Both	Avidity	1-4 d	5-9 d	10-14 d	15-19 d	20+ d	ANOVA	F	R^2
To relax or unwind									-0.09										0.009	6.830	0.008
To be outdoors	-0.11																		0.004	5.661	0.014
To be on your own				0.10						-0.08			0.09					-0.07	0.000	5.961	0.021
To spend time with family	-0.08		0.09				0.17		-0.17	0.11									0.000	20.024	0.082
To spend time with friends	0.12								-0.09										0.000	8.117	0.029
to compete in competitions							0.09				0.07		0.14						0.000	8.274	0.030
For enjoyment or sport	0.11												0.11						0.000	11.473	0.028
To catch fish for food			0.10					0.09	0.08	0.12			0.09						0.000	7.010	0.042

Appendix 3. Coefficients and model parameters for logistic regression models to determine factors influencing agreement with consumptive orientation items.

Only significant results are presented. Avidity groups are omitted due to lack of significant coefficients.

	Gender	Gr Hobart	Southern	Northern	Mersey-Lyell	15-29 y/o	30-44 y/o	45-59 y/o	60+ y/o	Saltwater	Freshwater	Both	ANOVA	F	R^2
A fishing trip can still be sucessful if no fish are caught	-0.09	-0.09											0.001	6.631	0.016
I'd rather catch 1 or 2 bigger fish than 10 smaller fish				-0.13							-0.09		0.000	10.335	0.025
I like to fish where there are several kinds of fish to catch	0.11		0.09								-0.18		0.000	14.827	0.052
If I though I would not catch any fish, I would still go fishing	-0.81				0.07								0.010	4.617	0.011
The more fish I catch the happier I am						0.07							0.067	2.717	0.009
I like to release most of the fish I catch						0.10							0.007	5.051	0.012
I prefer to fish where I know I may catch a very large fish	0.11			-0.08							-0.09		0.000	7.153	0.026
I would rather keep just enough fish for a feed than take the bag limit							0.08	0.10			-0.09		0.003	4.558	0.017

Appendix 4. Satisfaction with fishing scores of all sub-population groups - 2007/08.

Mean scores are compared within grouping categories: one way ANOVA tests were used for categories with more than two groups and t-tests were used for 'Gender'.

Category	Sub-group	n	Mean	Std. Dev.	F	t	sig
Area	Greater Hobart	278	3.01	0.72	2.43		0.064
	Southern	108	3.21	0.74			
	Northern	233	3.05	0.74			
	Mersey-Lyell	185	3.12	0.65			
Gender	males	644	3.08	0.72		0.15	0.698
	females	160	3.06	0.70			
Age	15-29	74	3.15	0.61	2.687		0.045
	30-44	272	3.12	0.64			
	45-59	280	3.10	0.73			
	60+	178	2.95	0.83			
Avidity	1-4 days	374	3.04	0.72	1.89		0.11
	5-9 days	215	3.05	0.73			
	10-14 days	83	3.16	0.55			
	15-19 days	40	3.13	0.82			
	20+ days	59	3.29	0.70			
Water	saltwater only	529	3.07	0.72	1.894		0.151
	freshwater only	95	3.21	0.74			
	both water types	147	3.04	0.65			
Motivation	escapists	205	3.07	0.70	0.772		0.544
	nature lovers	101	3.06	0.72			
	social fishers	230	3.15	0.66			
	sport fishers	89	3.06	0.73			
	keepers	131	3.02	0.81			

Appendix 5. Comparison of mean satisfaction with fishing scores between corresponding subpopulation groups: 2000/01 (survey 1) and 2007/08 (survey 2).

Category	Sub-group	Survey	n	Mean	Std. Dev.	t	Sig.
Area	Greater Hobart	1	204	2.96	0.70	0.820	0.413
		2	278	3.01	0.72		
	Southern	1	157	3.03	0.73	1.975	0.049
		2	108	3.21	0.74		
	Northern	1	138	3.04	0.67	0.050	0.960
		2	233	3.05	0.74		
	Mersey-Lyell	1	151	3.03	0.69	1.323	0.187
		2	185	3.12	0.65		
Gender	males	1	495	3.00	0.71	1.895	0.058
		2	644	3.08	0.72		
	females	1	155	3.05	0.67	0.144	0.886
		2	160	3.06	0.70		
Age	15-29	1	124	3.07	0.63	0.838	0.403
		2	74	3.15	0.61		
	30-44	1	243	2.95	0.75	2.710	0.007
		2	272	3.12	0.64		
	45-59	1	183	3.05	0.69	0.621	0.535
		2	280	3.10	0.73		
	60+	1	100	3.00	0.67	-0.556	0.579
		2	178	2.95	0.83		
Avidity	1-4 days	1	281	3.00	0.75	0.734	0.463
		2	374	3.04	0.72		
	5-9 days	1	135	2.98	0.64	0.987	0.324
		2	215	3.05	0.73		
	10-14 days	1	76	2.97	0.65	1.900	0.059
		2	83	3.16	0.55		
	15-19 days	1	43	3.07	0.77	0.316	0.753
		2	40	3.13	0.82		
	20+ days	1	59	3.29	0.59	0.000	1.000
		2	59	3.29	0.70		
	saltwater only	1	375	3.02	0.71	1.083	0.279
Water		2	529	3.07	0.72		
	freshwater only	1	73	3.16	0.71	0.410	0.682
		2	95	3.21	0.74		
	both water types	1	146	2.98	0.70	0.778	0.437
		2	147	3.04	0.65		
	escapists	1	221	2.95	0.69	1.889	0.060
Motivation		2	205	3.07	0.70		
	nature lovers	1	86	3.07	0.70	-0.100	0.921
		2	101	3.06	0.72		
	social fishers	1	140	3.04	0.64	1.612	0.108
		2	230	3.15	0.66		
	sport fishers	1	99	3.10	0.66	-0.440	0.661
		2	89	3.06	0.73		
	keepers	1	58	3.14	0.78	-0.923	0.358
		2	131	3.02	0.81		

Appendix 6. Satisfaction with management scores of all sub-population groups - 2007/08.

Mean scores are compared within grouping categories: one way ANOVA tests were used for categories with more than two groups and t-tests were used for 'Gender'.

Category	Subgroup	n	Mean	Std. Dev.	F	t	sig
Area	Greater Hobart	281	2.81	1.073	1.748		0.156
	Southern	110	3.00	0.995			
	Northern	235	2.98	0.872			
	Mersey-Lyell	188	2.94	0.854			
Gender	males	650	2.92	0.942		0.043	0.966
	females	164	2.92	1.033			
Age	15-29	75	3.01	0.937	1.001		0.392
	30-44	273	2.94	0.889			
	45-59	285	2.93	0.981			
	60+	177	2.81	1.041			
Avidity	1-4 days	380	2.88	1.046	0.542		0.705
	5-9 days	217	2.97	0.841			
	10-14 days	83	2.98	0.962			
	15-19 days	40	2.98	0.891			
	20+ days	59	2.81	0.900			
Water	saltwater only	535	2.92	0.980	0.061		0.941
	freshwater only	96	2.93	0.874			
	both water types	148	2.89	0.970			
Motivation	escapists	209	2.95	0.889	3.614		0.006
	nature lovers	103	2.98	0.896			
	social fishers	232	2.93	0.997			
	sport fishers	89	3.17	0.695			
	keepers	133	2.69	1.109			

Appendix 7. Comparison of mean satisfaction with fishing scores between corresponding subpopulation groups: 2000/01 (survey 1) and 2007/08 (survey 2).

Category	Subgroup	survey	n	Mean	Std. Dev	t	Sig.
	All	1	703	2.10	0.64	5.193	0.000
		2	771	1.92	0.69		
Area	Greater Hobart	1	228	2.13	0.62	3.305	0.001
		2	258	1.93	0.69		
	Southern	1	163	2.09	0.65	2.104	0.037
		2	106	1.89	0.82		
	Northern	1	149	2.06	0.65	2.367	0.019
		2	226	1.90	0.65		
	Mersey-Lyell	1	163	2.10	0.66	2.193	0.029
		2	180	1.95	0.64		
Gender	males	1	537	2.14	0.66	5.063	0.000
		2	619	1.94	0.70		
	females	1	166	1.97	0.56	1.782	0.076
		2	152	1.85	0.65		
Age	15-29	1	133	1.93	0.57	1.309	0.193
		2	71	1.82	0.62		
	30-44	1	268	2.15	0.66	4.357	0.000
		2	260	1.91	0.61		
	45-59	1	193	2.13	0.68	3.108	0.002
		2	271	1.92	0.74		
	60+	1	99	2.16	0.58	2.192	0.029
		2	165	1.98	0.74		
Avidity	1-4 days	1	260	2.10	0.61	4.06	0.000
		2	352	1.89	0.68		
	5-9 days	1	123	2.11	0.56	2.4	0.017
		2	211	1.95	0.69		
	10-14 days	1	73	2.15	0.66	3.059	0.003
		2	78	1.83	0.61		
	15-19 days	1	39	2.08	0.74	0.756	0.452
		2	39	1.95	0.76		
	20+ days	1	58	2.45	0.84	2.443	0.016
		2	57	2.09	0.74		
Water Type Fished	saltwater only	1	345	2.16	0.60	5.351	0.000
		2	506	1.91	0.70		
	freshwater only	1	73	2.12	0.73	1.65	0.101
		2	92	1.95	0.64		
	both water types	1	135	2.12	0.73	2.36	0.019
		2	139	1.92	0.65		
Motivation	escapists	1	239	2.08	0.64	2.34	0.020
		2	201	1.94	0.68		
	nature lovers	1	101	2.06	0.61	2.793	0.006
		2	97	1.84	0.51		
	social fishers	1	149	2.01	0.57	1.694	0.091
		2	219	1.90	0.72		
	sport fishers	1	100	2.15	0.67	3.194	0.002
		2	89	1.83	0.70		
	keepers	1	63	2.24	0.78	1.652	0.101
		2	121	2.04	0.75		

Appendix 8. Recreational Gillnetting Participation

In order to better understand respondent's attitudes to recreational gillnetting in Section 3.13, the proportion of respondents who reported gillnetting activity during the diary survey period was compared relative to each of the fishing sub-groups.

Overall, 9.3% of respondents reported some gillnetting activity during the diary survey. Among sub-groups, considerable differences in participation rates were evident (Fig. A1). Males were much more likely to have participated than females. Respondents from Greater Hobart and Southern regions had higher rates of participation than those from Northern and Mersey-Lyell regions: this was consistent with relative proportions of saltwater fishers observed among regions (Appendix 1). Gillnetting participation increased with age, a finding that is consistent with the trend reported by EMRS (2007).

Gillnetting participation rates were lowest amongst the least avid group and peaked in the mid range category (10-14 days), but were generally consistent between the other groups. The proportion of fishers who fished with gillnets over the survey period showed little variation according to main motivation which was somewhat unexpected, but probably reflects limitations in the sample size of gillnet fishers when disaggregated across each of the motivational categories.

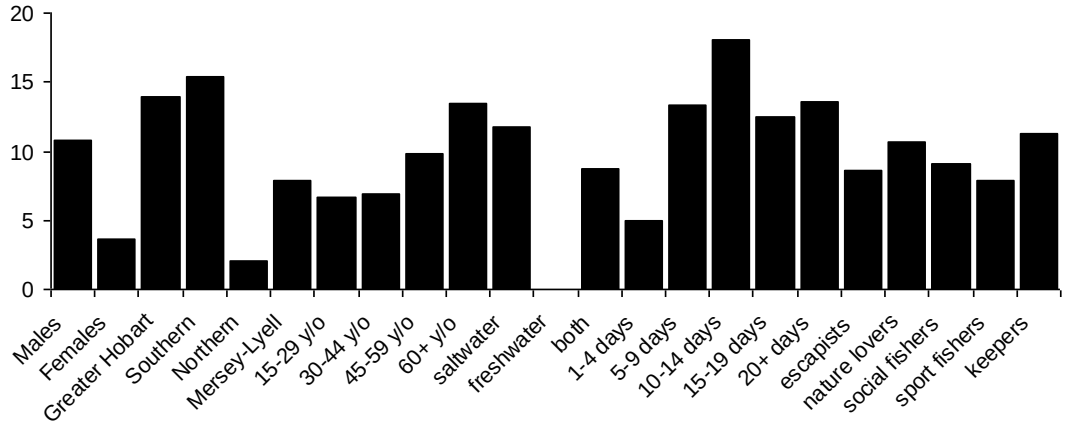

Fig. A1. Participation (% respondents) in gillnet fishing according to fisher sub-groups