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State-wide survey of boat-based recreational fishing in Western Australia 2013/14

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Executive Summary

Based on the outcomes of an international workshop on recreational fishing survey methods in 2010, the Department of Fisheries developed an integrated survey involving several methods to provide a robust and cost-effective approach for obtaining annual estimates of recreational catch by boat-based fishers at both state-wide and bioregional levels. These recreational fishing surveys use the Recreational Fishing from Boat Licence (RFBL) as the basis for sampling and are the most comprehensive ever conducted in Western Australia. The integrated design of the survey allows for the validation of catch and effort estimates across the various methods. This report presents results from the survey conducted in 2013/14 and makes comparisons with the previous state-wide survey conducted from 1 March 2011 to 29 February 2012.

The integrated survey includes three complementary components: (i) off-site phone surveys (encompassing an initial Screening Survey, a 12-month Phone-Diary Survey, followed by post-enumeration surveys (including Wash-Up/Attitudinal, Non Intending Fisher and Benchmark Surveys)); (ii) on-site Boat-Ramp surveys (including a state-wide Biological Survey); and (iii) a Remote Camera Survey. For this survey, the Phone-Diary, boat-ramp and Camera Surveys were all conducted in the 12-month period from 1 May 2013 to 30 April 2014. A total of 3,036 fishers completed the Phone-Diary Survey, with 242,953 fish kept or released, and 4,425 fishers were interviewed at boat-ramps, with 10,972 fish measured. Fishing activity reported by fishers during the Phone-Diary Survey included 14,013 fishing events across every day of the survey year and the majority of the state's coastline.

There were significant changes in recreational fishing rules between the two survey periods as a result of a state-wide review of recreational fishing. Key changes introduced on 1 February 2013 included: a mixed bag limit of 16 nearshore and estuarine fish across Western Australia (previously up to 30); a mixed bag limit of five demersal species outside the West Coast Bioregion (previously seven); a mixed bag limit of three large pelagic fish across Western Australia (previously two in the West Coast and South Coast Bioregions and four in the North Coast and Gascoyne Coast Bioregions; and no use of commercial couriers to transport unaccompanied fish (previously recreational fishers could transport up to the possession limit of 20kg of fillets by courier).

The majority of the estimated state-wide boat-based fishing effort (measured in boat days) during 2013/14 took place during summer (33%) and autumn (31%) with lower levels taking place in winter (21%) and spring (15%). There were, however, marked differences in this pattern among bioregions with autumn and winter being the most active seasons in terms of fishing effort in the North Coast (72%) and Gascoyne Coast (82%), respectively. In the lower half of the State, summer and autumn were the most active seasons for fishing effort in the West Coast (72%) and South Coast (64%), respectively. At a state-wide level, the majority of the estimated boat-based recreational fishing effort (measured in boat days) during 2013/14 occurred in nearshore (<20m depth) (54%), followed by inshore demersal (26%) and estuarine (16%) habitats. The remainder of fishing effort was offshore demersal (2%) and pelagic (1%). Inland effort (freshwater) was minimal (<1%) as shore-based fishing activity

was not collected as part of this survey. The majority of the estimated boat-based fishing effort (boat days) was from line fishing (67%), followed by pots (27%), diving (4%) and nets (2%), but there were differences among bioregions.

Boat-based recreational fishers caught a diverse range of species/taxa during the 12-month survey, including scalefish (195 species/taxa), elasmobranchs (20), crustaceans (nine) and molluscs (six). The estimated total recreational catch of 3.4 million individual aquatic animals included a wide variety of taxa. A similar proportion of the total catch was kept (approx. 1.5 million or 43.5%) and released (approx. 1.9 million or 56.5%). Species/taxa were released for a range of reasons including size or bag limits, catch and release fishing, or personal preference. Approximately 60% of the recreational catch comprised finfish (2.0 million) in comparison to invertebrates (1.4 million). A similar proportion of the catch of finfish (including sharks and rays) (56%) and invertebrates (57%) were released.

School Whiting (*Sillago bassensis, S. vittata* and *S. schomburgkii*) were the most commonly caught finfish species state-wide with an estimated total recreational catch of 352,115 (276,229 kept and 75,886 released), followed by Australian Herring (*Arripis georgianus*) with 173,408 (132,155 kept and 41,253 released), Pink Snapper (*Chrysophrys auratus*) with 148,782 (25,200 kept and 123,582 released), Black Bream (*Acanthopagrus butcheri*) with 125,629* rounded (11,653 kept and 113,977 released), King George Whiting (*Sillaginodes punctata*) with 102,080* (74,329 kept and 27,750 released), Silver Trevally (*Pseudocaranx dentex*) with 62,267 (34,948 kept and 27,319 released), Western King Wrasse (*Coris auricularis*) with 60,159* (9,075 kept and 51,083 released), West Australian Dhufish (*Glaucosoma hebraicum*) with 59,911* (18,907 kept and 41,003 released), Grass Emperor (*Lethrinus laticaudis*) with 57,814 (21,060 kept and 36,754 released), and Spangled Emperor (*Lethrinus nebulosus*) with 40,178 (12,364 kept and 27,814 released). The estimated recreational catch for inland, estuarine and nearshore species provided in this report, particularly those harvested with high proportions of shore-based effort, will be underestimated.

High release rates were observed for many of these species, including Black Bream (91%), Western King Wrasse (85%), Pink Snapper (83%), Spangled Emperor (69%), West Australian Dhufish (68%) and Grass Emperor (64%). Release rates were lower for Silver Trevally (44%), King George Whiting (27%), Australian Herring (24%) and School Whiting (22%). Black Bream releases were attributed to catch and release fishing (47% of the released catch by number) and under-size (37%), while Western King Wrasse were attributed to other reasons, i.e. unwanted (51%) and too many (31%). The majority of Pink Snapper releases were attributed to under-size (78%), Spangled Emperor to under-size (65%) and too small (13%), West Australian Dhufish to under-size (71%) and over-limit (16%), and Grass Emperor to under-size (75%). The majority of Silver Trevally releases were attributed to too many (42%) or under-size (32%), King George Whiting to under-size (77%) or too small (16%), Australian Herring to too small (28%), under-size (23%) or too many (23%), and School Whiting to too small (56%) or under-size (28%).

Blue Swimmer Crab (*Portunus armatus*) was the most commonly caught invertebrate species (and most commonly caught of all species) state-wide with an estimated total recreational catch of 901,458 (285,202 kept and 616,256 released), followed by Western Rock Lobster (*Panulirus cygnus*) with 341,277 (201,486 kept and 139,791 released), Squid (Order

Teuthoidea) with 78,857 (73,197 kept and 5,660 released), and Mud Crab (*Scylla olivacea* and *S. serrata*) with 24,768 (11,172 kept and 13,596 released). The recreational catch for Western Rock Lobster determined by this survey will be an underestimate of the total recreational catch because harvesting this species requires a Rock Lobster licence and the majority of rock lobster fishers do not hold a RFBL. High release rates were observed for Blue Swimmer Crab (68%) and Mud Crab (55%) compared with Western Rock Lobster (41%) and Squid (7%). The majority of Blue Swimmer Crab releases were attributed to under-size (80%) or other (i.e. female or berried) (14%), Mud Crab to under-size (68%) or too small (13%), Squid to too small (64%) or too many (20%), and Western Rock Lobster to under-size (53%) or other (i.e. female or berried) (32%).

The overall estimated level of effort decreased from 439,029 boat days in 2011-12 to 383,107 in 2013/14, and the overall estimated number of hours fished decreased from 1,400,150 hours in 2011-12 to 1,209,263 in 2013/14. This can be attributed to a decline in effort during March to April 2014 compared with March to April 2012, particularly for line fishing. The catch of some individual species differed between years while others remained constant. Blue swimmer crab was the most commonly caught species by boat-based fishers in both surveys. While the estimated total recreational catch of blue swimmer crab state-wide was consistent between the two surveys; the kept number of crabs decreased from 424,474 (by number) in 2011-12 to 285,202 in 2013/14, but those released increased from 446,341 to 616,256 with release rates increasing from 51 to 68%. The ability to compare catches over time will provide invaluable information on the trends in recreational fishing and provide an indication of the effectiveness of management arrangements. Overall the recreational sector is meeting its current catch targets for demersal species in the West Coast Bioregion. The estimated kept catches for indicator species for the West Coast Demersal Scalefish Resource remained steady with estimated recreational harvests for West Australian Dhufish of 74 t (95% confidence intervals from 63─85) and 81 t (70─93), Pink Snapper 33 t (28─38) and 30 t (25─36), and Baldchin Groper 29 t (23─34) to 20 t (17─24), in 2011/12 and 2013/14 respectively.

Although the RFBL was introduced in March 2010, there is no licence covering shore-based recreational fishing. As a result, there are no contemporary estimates of the total boat- and shore-based catch. Future research will investigate approaches to assess shore-based fishing activity. The Department of Fisheries recognises that the survey needs to be flexible enough to accommodate changes in recreational fishing patterns and has therefore developed a collaborative research agreement with Edith Cowan University to investigate some of these issues and methods for improving the accuracy and precision of catch estimates. Additionally, the Department of Fisheries will be working collaboratively with Recfishwest to identify whether additional information might also be collected that could contribute to a better understanding of recreational fishing in Western Australia.

1 Introduction

1.1 Importance of recreational fishing in Western Australia

Recreational fishing is a popular activity in Western Australia, providing significant economic benefits to the State's population. The estimated number of recreational fishers increased from 315,000 in 1989/90 (Lindner and McLeod 1991) to 711,000 in 2014/15 (Department of Fisheries 2014). The participation rate of Western Australian residents is generally above the national average, with an estimated 26.6% of the population (aged 15 years or older) fishing in 1989/90 and 28.5% (aged 5 years or older) fishing in 2000/01 (Lindner and McLeod 1991, Henry and Lyle 2003). The annual Community Survey of participation rate for recreational fishing in Western Australia has been estimated as 29.6% in 2013/14 and has remained constant for the last five years (Department of Fisheries 2015). The expenditure attributable to recreational fishing in Western Australia has been estimated at $55–130 million in 1989/90 and $338 million in 2000/01, with an average fisher expenditure of $415 and $706 pa, respectively (Lindner and McLeod 1991, Henry and Lyle 2003).

Recreational fishers often have important catch-related motives such as fishing to 'obtain a feed' or 'for fresh seafood'. However, there are also significant social benefits from recreational fishing. In 2000/01, the majority of recreational fishers in Western Australia (68%) cited non-catch related motives (e.g. to relax and unwind, to be outdoors, for solitude, or to be with family and friends) as their primary motive for fishing (Henry and Lyle 2003). While most recreational fishers only catch a relatively small number of individuals, collectively the recreational catch can be substantial. In 2000/01, the estimated total recreational harvest in Western Australia included over 10.4 million finfish (by number), 2.3 million crabs, 0.9 million prawns, 0.4 million lobster, and 0.2 million cephalopods by boat- and shore-based fishers (Henry and Lyle 2003). In 2011/12, the estimated total catch from boat-based recreational fishers included 2.35 million finfish (by number) and 1.36 million invertebrates (crabs, prawns, lobster, and cephalopods).

1.2 Need for recreational fishing information

An understanding of the level of recreational fishing catch and effort is used to inform a number of fisheries management processes. These include stock assessments, resource allocation between commercial and recreational sectors, resource management (development, implementation and review), and industry development. Effective management of exploited fish stocks requires that suitable estimates of the catch taken by all sectors are available; therefore a high priority has been placed on the collection of data over the past decade for the key recreational fishing sectors in Western Australia (Wise and Fletcher 2013).

Obtaining suitable recreational data in Western Australia is challenging because of the State's large coastline (20,781 km) and rapid regional development, which is changing the distribution and intensity of recreational fishing activity. In 2013/14, approximately one third of the Western Australian population participated in recreational fishing, with the majority of effort (62.3%) in the West Coast bioregion, centred around the capital city (Perth) and several of the State's large regional centres (Bunbury, Busselton and Geraldton). Recreational fishing

effort in marine waters was lower in the South Coast (19.9%), Gascoyne Coast (5.5%) and North Coast bioregions (7.5%) (Department of Fisheries 2014).

Estimating the total catch taken by recreational fishers can be logistically difficult and is often relatively costly. These difficulties are especially apparent where there is no licence available to use as a sampling frame to easily identify participants. Until recently, in Western Australia recreational fishers only needed a licence to fish for rock lobster, abalone and marron and to participate in freshwater angling and netting. Although the Recreational Fishing from Boat Licence (RFBL) was introduced in March 2010, there is still no licence required for shore-based recreational fishing. As a result, there are no contemporary estimates of the total boat- and shore-based catch. Importantly, in 2000/01, 57% of fishing effort and 54% of the recreational harvest was attributable to shore-based fishers (Henry and Lyle 2003). It is likely that shore-based recreational fishing continues to represent more than 50% of the total recreational effort and harvest.

Recreational fishing licence fees raised $7 million in 2013/14 (Department of Fisheries 2014). Funds generated by these licences are invested in a number of initiatives of direct benefit to recreational fishers in Western Australia including contributing funding to recreational fishing surveys. These surveys are providing the necessary harvest estimates and socio-economic information to inform management, policy and research. These surveys also assist the implementation of Integrated Fisheries Management (IFM), which is designed to ensure sustainable fish resources are best shared between competing fishing sectors (Department of Fisheries 2010). To date, explicit resource allocations have been developed for: Western Rock Lobster (5% recreational, 95% commercial); metropolitan Roes' Abalone (40t recreational, 36t commercial); and the West Coast Demersal Scalefish Fishery (36% recreational, 64% commercial). The proposed new Fisheries Act will require that all new resource management plans have explicit sectoral allocations (Department of Fisheries 2010).

Long-term monitoring of recreational fishing information will provide a greater understanding of the temporal variability and trends in catch and effort and is essential for the assessment of stocks, resource allocation and management setting within the broad context of Ecologically Sustainable Development and Ecosystem Based Fisheries Management (Department of Fisheries 2012, Fletcher and Santoro 2014).

1.3 Recreational fishing surveys in Australia

The spatial resolution of monitoring recreational fishing needs to be matched to the spatial scale at which fisheries are managed. For many jurisdictions, this requires off-site methods, which are most appropriate for recreational fisheries that cover large geographical areas, with numerous access points to the fishery and many recreational fishing participants (Pollock *et al.* 1994). The sampling frame used to randomly select recreational fishers for an off-site survey can range from a general population list (e.g. White Pages telephone directories) or specific lists (e.g. list of licensed fishers).

An important consideration for recreational fishing survey design is determining the most appropriate method of contacting fishers (Malvestuto 1996). White Pages sampling requires excess sampling of non-fishing households to locate fishing households, whereas licence

frames have a higher probability of contacting fishers. Additionally, the Electronic White Pages directory is not readily available, and fishing households with unlisted (silent or mobile) numbers or without a telephone are out-of-scope for the survey. Furthermore, the proportion of listed and unlisted residents among the population is unknown. Similarly, the effectiveness of licence databases is determined by exemptions, data availability and non-compliance (Ryan *et al.* 2009, Hartill *et al.* 2012).

The National Recreational and Indigenous Fishing Survey (NRFS) provided state-wide estimates of boat- and shore-based recreational fishing across Australia from 1 May 2000 to 30 April 2001 (Henry and Lyle 2003). This survey used telephone interviews of fishers who were randomly selected from White Pages telephone directories. This methodology has been employed in state-wide repeat surveys in: South Australia from 1 November 2007 to 31 October 2008 (Jones 2009) and 1 December 2013 to 30 November 2014 (Conron *et al.* in prep); Tasmania from 1 December 2007 to 30 November 2008 (Lyle *et al.* 2009) and 1 November 2012 to 31 October 2013 (Lyle *et al.* 2014); New South Wales from 1 June 2013 to 31 May 2014 (Murphy *et al.* in prep); Northern Territory from 1 April 2009 to 31 March 2010 (West *et al.* 2012); and Queensland from 1 October 2010 to 30 September 2011 (Taylor *et al.* 2012) and 1 November 2013 to 31 October 2014 (Webley *et al.* in prep).

Licence databases can also be used as sampling frames for off-site surveys. This approach has been routinely used to estimate the total recreational catch for many specialised, low participation, licensed fisheries (e.g. abalone, rock lobster and scallops) in Australia (e.g. Melville-Smith and Anderton 2000, Currie *et al.* 2006, de Lestang *et al.* 2012, Lyle and Tracey 2010, Ryan *et al.* 2009, Tracey and Lyle 2008). The advantages of sampling from a licence database include: reduced costs for the initial screening survey, high response rates (reducing non-response bias), and the ability to use an optimal survey design where avid fishers were oversampled, which can effectively increase the number of fishing events in the sample and improve precision (Ryan *et al.* 2009).

1.4 Recreational fishing surveys in Western Australia

This report presents results from a 12-month state-wide survey conducted from 1 May 2013 to 30 April 2014 and makes comparisons with the previous state-wide survey conducted from 1 March 2011 to 29 February 2012. Prior to these surveys, large scale surveys of recreational boat-based fishing consisted of the Western Australian component of the National Recreational and Indigenous Fishing Survey (Henry and Lyle 2003), and boat-ramp surveys at a bioregion level. These include 12-month surveys in the West Coast Bioregion in 1996-97 and 2005-06 (Sumner and Williamson 1999, Sumner *et al.* 2008); Gascoyne Coast Bioregion in 1998-99 (Sumner *et al.* 2002) and 2007-08 (Marriott *et al.* 2012); North Coast Bioregion in 1999-00 (Williamson *et al.* 2006); and South Coast Bioregion in 2002-03 (Smallwood and Sumner 2007). The introduction of the Recreational Fishing from Boat Licence (RFBL) provided a suitable sampling frame for a comprehensive state-wide survey (both spatially and temporally) to estimate the boat-based recreational catch for all of Western Australia.

To ensure the most appropriate survey and sampling design based on this licence sampling frame was developed, a workshop was held in 2010 to coincide with the introduction of the RFBL with invited technical survey experts, fishery managers and key recreational

stakeholders from most jurisdictions in Australia and New Zealand. The workshop concluded that an integrated system that obtained data from several survey methods, utilising the RFBL as the basis for sampling recreational fishers, would provide the most robust approach for obtaining annual estimates of recreational catch by boat-based fishers at both state-wide and bioregion levels (Wise and Fletcher 2013).

1.5 State-wide survey of boat-based recreational fishing (2013/14)

This integrated survey includes three complementary components: (i) off-site Phone Surveys using the RFBL as a sampling frame, with an initial Screening Survey to recruit respondents for a 12 month longitudinal Phone-Diary Survey, followed by post-enumeration surveys to detect differences among licence holders (Wash-Up/Attitudinal, Non Intending Fisher and Benchmark Surveys); (ii) on-site Boat Ramp Surveys (including a state-wide Biological Survey) to provide biological information; and (iii) a Remote Camera Survey using video cameras mounted at key boat ramps to monitor 24/7 launches and retrievals.

The integrated approach using the RFBL tests the applicability of licence sampling frames to estimate recreational fishing activity for generalised, high participation fisheries; provides estimates at spatial scales appropriate for management; and has several survey components to consider bias. The integrated survey was designed in the second half of 2010, with data collection commencing in December 2010 to pilot test the survey design and questionnaires, and to train interviewers. The first survey was conducted for the 12 month period between 1 March 2011 and 29 February 2012.

The main period of data collection for the current survey occurred for a 12 month period between 1 May 2013 and 30 April 2014, with follow-up post-enumeration surveys conducted in May through to July 2014. The survey period was adjusted toward commencing the Phone-Diary Survey during a period of low fishing activity. This transition will be finalised with the next survey where the phone-diary period commences in September. Validation and analyses of data generated by these surveys commenced in August 2014 with catch estimates generated by this survey presented in this report.

The integrated survey provides state-wide estimates of annual recreational catches along with catch estimates for each bioregion in Western Australia; complete coverage temporally, spatially and for all boat-based recreational fishing methods (including line, pot, net and diving); and estimates of catches from all motorised vessels used in boat-based recreational fishing.

1.6 Survey Objectives

The overall objective of this survey was to generate annual estimates of the total recreational catch and effort (both kept and released) by boat-based recreational fishers at state-wide and bioregion levels. These estimates will complement data obtained routinely from the commercial sector. Furthermore, the implementation of regular, reliable and cost-effective surveys will provide data that will allow more realistic and rigorous assessments of recreational fisheries. Additional objectives include: estimating recreational fishing effort,

reasons for releasing any catch (e.g. size or bag limits, catch and release fishing, or personal preference) and attititudes and awareness.

1.7 Report structure

This report provides state-wide and bioregional catch estimates (by numbers) of each of the main species captured by boat-based recreational fishing, for the recent state-wide survey from 1 May 2013 to 30 April 2014 with comparisons to the previous state-wide survey from 1 March 2011 to 29 February 2012.

Each of the chapters cover specific details or outputs of the surveys, including:

Chapter 2 (Survey Design and Analysis) outlines the survey design and scope for the Phone, Boat Ramp and Camera Surveys. Methods used for the expansion, weighting and analysis of survey data are discussed, along with measures of uncertainty associated with survey estimates.

Chapter 3 (Participation) presents estimates of the total number of RFBL holders that fished between 1 May 2012 to 30 April 2013 (Screening Survey) and 1 May 2013 to 30 April 2014 (Benchmark Survey). Participation estimates have been summarised by age, gender, bioregion fished and avidity.

Chapter 4 (Fishing Effort) presents estimates of the total number of separate days of boat-based fishing from the 12 month Phone-Diary Survey. Fishing effort has been summarised state-wide and for each bioregion by habitat, fishing method, season and month.

Chapter 5 (State-wide Recreational Catch) presents information on recreational catches attributable to boat-based fishing from the 12 month Phone-Diary Survey including estimates of annual catches (total, kept and released numbers), proportions released and release rates for all species.

Chapter 6 (Estimates of Catch for Key Species) summarises estimates of total recreational catches by bioregion, habitat, fishing method and season for key species caught by recreational fishers, including indicator species within the Resource Assessment Framework.

Chapter 7 (Bioregion Fisheries) provides an overview of the species composition of recreational catches in each bioregion with estimates of annual catches (total, kept and released numbers) and proportions released in each bioregion.

Chapter 8 (Small-scale estimates) provides an overview of the species composition of recreational catches for zones within each bioregion with estimates of annual catches (total, kept and released numbers) and proportions released in each zone.

Chapter 9 (Harvest Weights) provides an overview of estimated annual catches (kept by numbers), average weight and estimated harvest (by weight) for the most commonly caught demersal and nearshore species/species groupings (by number) in each bioregion.

Data collected from the integrated state-wide surveys are extensive, and while this report summarises key findings, further analyses and refinement of analysis methods are anticipated to continue over the next 3–5 years. Additional reports will compare recreational catch levels with previous surveys that may have potential management implications, and investigate in

more detail the statistical and sampling elements of this survey and whether further improvements can be made to increase robustness of the estimates.

2 Survey Design and Analysis

2.1 Survey Scope

The Department of Fisheries have conducted two state-wide surveys using the Recreational Fishing from Boat Licence (RFBL) as a sampling frame to contact boat-based recreational fishers. There have been no changes to the scope and survey design apart from a change in the survey period, 1 May 2013 to 30 April 2014 compared with 1 March 2011 to 29 February 2012.

The integrated survey includes three complementary components: (i) off-site Phone Surveys (encompassing an initial Screening Survey, 12 month Phone-Diary Survey, followed by post-enumeration Wash-Up/Attitudinal, Non Intending Fisher and Benchmark Surveys); (ii) on-site Boat Ramp Surveys (including a state-wide Biological Survey); and (iii) a Remote Camera Survey. Planning for the integrated State-Wide Recreational Fishing from a Boat Survey required consideration of inherent differences between off-site (e.g. telephone) and on-site (e.g. face-to-face) sampling to ensure consistency (where possible) in the information collected from each survey. Output specifications for the Phone, Boat and Remote Camera Surveys are listed in Table 1 to identify what was considered in-scope for each survey.

2.1.1 Who was included in the survey?

Persons in scope included recreational fishers that held a RFBL, which is required to undertake any general fishing activity from a motorised vessel anywhere in Western Australia. Recreational fishing from a motorised vessel can occur without a RFBL where fishers are covered by a species specific licence (e.g. rock lobster); however, boat-based fishers are required to have a minimum of one RFBL holder on board, and adhere to boat limits according to the number of RFBL holders on board. This survey only includes RFBL holders, and generally, the number of fishers equals the number of RFBL holders. In the Phone Surveys, RFBL holders were defined as fishers that held a RFBL in the 12 month period prior to the survey component, with the additional criterion for the Phone-Diary Survey of an intention to fish from a boat in marine water in the coming 12 months. Commercial fishers were considered in scope if they held a RFBL, but any commercial catches by these fishers were not included. Indigenous fishing was not considered in scope of this survey.

A minimum age criterion of 5 years was applied to all surveys. In the Phone Surveys, parents were a proxy for children aged 5–13 years and parent permission was required for children aged 14–17 years. No further proxies were allowed, with the exception of nominated individuals within a household where there was language difficulty or illness. No substitution of respondents occurred during the Phone Surveys.

2.1.2 What fishing activities were covered?

Activities in scope were all boat-based recreational fishing methods, including line fishing, diving, netting, potting and spear fishing, as undertaken from a motorised vessel as per recreational fishing rules. Survey participants in the Phone-Diary Survey reported the effort and catch for all fishers on the boat, which were standardised by the number of RFBL holders

on each boat. Charter boat fishing was not included in the Boat Ramp Surveys as this activity is reported through mandatory Tour Operator Returns (Charter Logbooks). However, RFBL holders in the Phone-Diary Survey that were fishing from charter boats reported their individual effort and catch, which was excluded from analysis. Unreported illegal (non-compliant) recreational fishing activity was not included in the survey. The proportion of RFBL holders that fished from the shore was assessed in the Screening and Benchmark Surveys, but shore-based fishing activity was not included in the Phone-Diary Survey.

2.1.3 What species were covered?

Species in scope included any aquatic (animal) species caught by boat-based fishing. This includes both finfish (e.g. scalefish, sharks and rays) and invertebrates (e.g. abalone, cephalopods, crabs, lobsters and prawns). The majority of catches are reported to individual species, but there are some instances where species have been reported in taxonomic groups (e.g. School Whiting includes Southern School Whiting, Western School Whiting and Yellowfin Whiting, King Snapper includes *Pristipomoides* spp., Whaler Sharks includes Bronze Whaler and Dusky Sharks). Aggregating species at higher-level reporting groups is particularly relevant for species where misidentification can occur, despite attempts to assist fishers in identifying fish. Where species or taxa groups are represented by few records, catches are reported in broad taxonomic categories (e.g. 'Other scalefish'). Species taxonomy follows the Codes for Australian Aquatic Biota (Rees *et al.* 2012, www.marine.csiro.au/caab/). Consistent with the management of many of the multi-species fisheries in Western Australia and Ecosysten Based Fisheries Management, the results were in some instances also reported at the species suite level.

2.1.4 Survey Area

The geographic scope was fishing activity in Western Australia only. Consistent with the Department of Fisheries bioregional approach to management, the spatial strata for boat-based fishing activity used the four marine bioregions off Western Australia (Figure 1). The Phone Surveys provided state-wide coverage, while the Biological and Camera Surveys provided state-wide coverage, as accessible from the boat ramps in the survey design. Based on Ecosystem Based Fisheries Management policy, each of the bioregions was divided into broad ecological depth based habitats (Department of Fisheries 2014, Fletcher and Santoro 2014). These were pelagic (surface waters across all depths), offshore demersal (greater than 250m), inshore demersal (20–250m), nearshore (to 20m deep), estuarine (saltwater and 'brackish' to river mouth), and freshwater (river, stream, dams) (Figure 2).

2.1.5 Survey Duration

The 12 month period from 1 May 2013 to 30 April 2014 applied to the Phone-Diary, Boat Ramp and Camera Surveys. The Phone Surveys included an initial Screening Survey conducted prior to the Phone-Diary Survey, and Post-Enumeration Surveys conducted during three months following the Phone-Diary Survey.

Table 1. Output Specifications for each survey component.

Specification	Item	Phone Surveys			Boat Ramp Surveys	Camera Survey
		Screening	Phone-Diary	Benchmark	Biological	
Persons in scope	Residency status	All, including Western Australian residents and interstate visitors			All	n/a
	Age	<5 years excluded			All	n/a
	Sampling frame	RFBL holders May 2012 to Apr 2013	RFBL holders May 2012 to Apr 2013 with 'intention to fish' in WA	RFBL holders May 2013 to Apr 2014	Spatio-temporal frame	
Activities	Sectors	Recreational fishing only (traditional/indigenous fishing excluded)				
	Platform	Boat- and shore-based	Boat-based fishing only	Boat- and shore-based	Boat-based fishing only	
	Boat type	All, including private, hire and charter*			Private and hire fishing (charter excluded)	All
	Methods	All methods including line fishing, diving, netting, potting and spearing				
Species	Species	All aquatic (animal) species				n/a
	Catch	Kept and released			Kept	n/a
Geographic scope	Residency status	Western Australian residents, and interstate visitors			n/a	
	Fishing activity	Bioregion, and marine vs freshwater	10x10 nautical mile grids state-wide	Bioregion, and marine vs freshwater	10x10 nautical mile grids state-wide (as per boat ramps)	
	Access points for boat fishing	n/a	All, including boat ramps (public and private), moorings and marinas	n/a	Key public boat ramps state-wide	
Temporal scope	Annual coverage	12 months prior to Screening (recall basis)	12 months after Screening (longitudinal survey)	12 months matching the Phone-Diary period (recall basis)	12 months matching the Phone-Diary period	
	Day hours	All			Daylight hours	All
	Survey dates	Feb to Apr 2013	1 May 2013 to 30 Apr 2014	May to Jul 2014	1 May 2013 to 30 Apr 2014	

* fishing from charter tour operators was excluded from analysis in the report

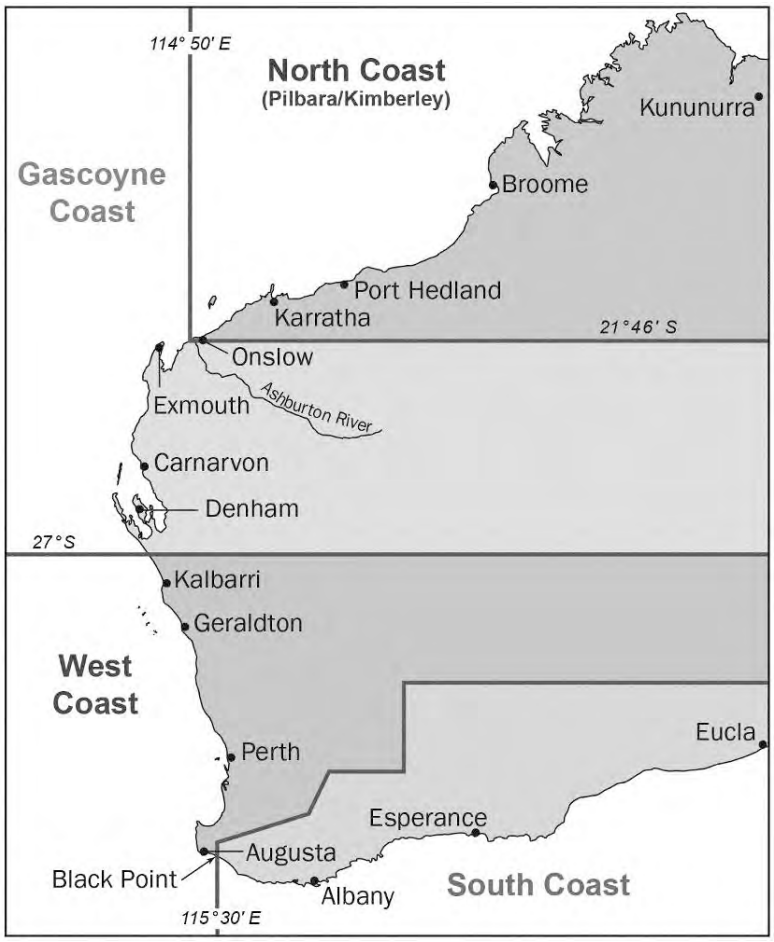


Figure 1. Map of Western Australian coastline showing major marine bioregions.

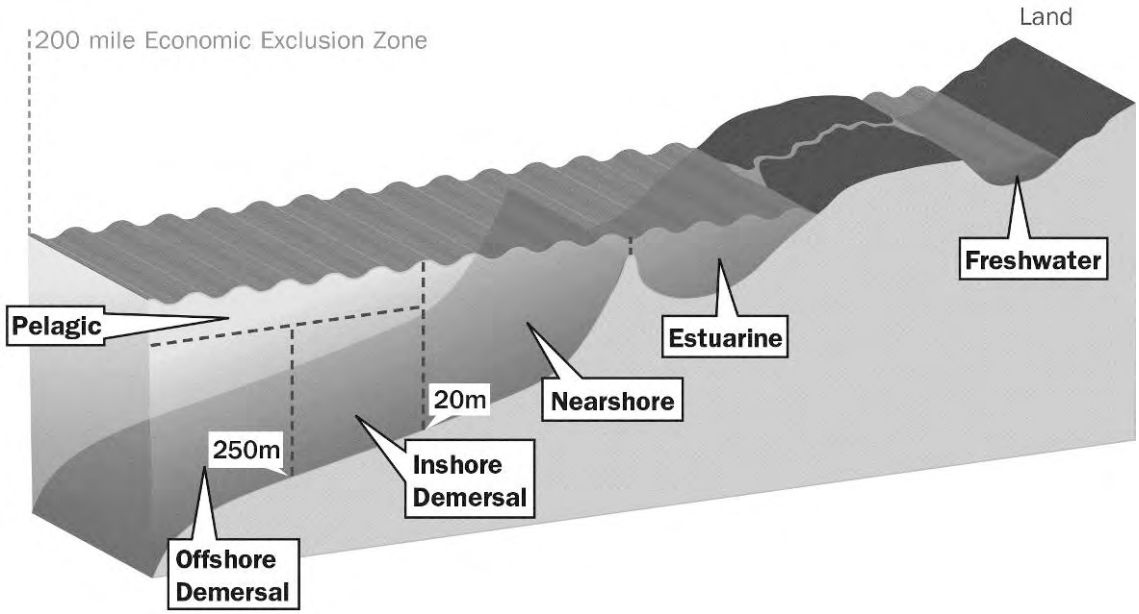


Figure 2. Major habitat groups for Western Australian fisheries (Department of Fisheries 2012).

2.1.6 Survey Data Elements

A key difference between off-site and on-site sampling is whether fishing activity is recorded on an event or trip basis. For the Phone-Diary Survey, fishing information was collected on an 'event' basis, where separate events were recorded for changes in location, habitat, target species and/or fishing method. For example, line fishing and diving during a single boat trip would be recorded as separate fishing events. Fishing activity in the Boat Ramp Surveys was recorded on a 'trip' or day basis. Where possible, data elements were standardised between surveys, in terms of question wording and responses (see Ryan *et al.* 2013). Reference tables for data elements (such as boat ramp, species and fishing method) were also standardised among survey components.

2.2 Survey Components

2.2.1 Phone Surveys

Survey Overview

The Phone Surveys were the main component of the integrated survey. This off-site survey was based on the telephone/diary methodology, which has been developed and proven to provide cost-effective data over large spatial scales (i.e. state-wide and bioregion). Detailed descriptions of the design philosophy and methodology are provided in Lyle *et al.* (2002) and Henry and Lyle (2003). Key features of this methodology include: (i) tested survey instruments (e.g. Diary Card) to minimise recall bias; and (ii) frequent telephone contact by trained interviewers to collect data at consistent standards to reduce potential bias, explain difficult concepts, counter resistance and ensure confidentiality. The combination of the Diary Card and structured interviews is designed to minimise respondent burden, increase response rates and ensure data quality.

Unlike previous surveys of this kind in Australia, interviews were conducted by Computer-Assisted Telephone Interview (CATI). This allows a cost effective and flexible means of recording questionnaire data as it is entered directly into survey databases during interviews. It also provides an effective system for ensuring data quality as work stations are networked with a supervisor. Electronic survey data is contained within secure computer networks with appropriate management systems. Interviewers were allocated fishers from a variety of Regional Development Commission Boundaries to reduce the potential for interviewer bias between strata. Where possible and practical, the same interviewer maintained repeat contacts with the same diarist. When required, interviewer notes were made available for alternative interviewers on subsequent follow-up calls.

The primary objective of the Phone Surveys were to estimate recreational fishing effort (hours and days fished) and catch (numbers by species, both harvested and released) for a full 12 month period for boat-based recreational fishing at state-wide and bioregion levels. It was anticipated that highest precision would be achieved for key species at annual and state-wide levels, however, estimates with lower precision may be available at finer scale temporal (monthly) and spatial (zone within bioregions) levels.

The Phone Surveys involved a multi-phase survey design (Figure 3), which included: an initial Screening Survey to recruit fishers to the Phone-Diary Survey; a longitudinal Phone-Diary Survey to provide detailed catch and effort information over a 12-month period; and Post-Enumeration Surveys (i.e. Wash Up/Attitudinal, Non-Intending Fisher and Benchmark Surveys). These separate Post-Enumeration Surveys were conducted concurrently at the end of the 12 month Phone-Diary Survey to determine and adjust for exceptions outside the distribution of behaviours covered by the Phone-Diary Survey, particularly new licence holders and non-respondents, and to enquire about opinions of RFBL holders for various fishing-related matters.

Screening Survey

The Screening Survey (Figure 3) aims to collect profiling information (i.e. avidity, previous and intended fishing activity) for a random sample of people that purchased a RFBL and identify RFBL holders that intended to fish from a boat in Western Australia during 2013/14 and were eligible for the Phone-Diary Survey. The Screening Survey was conducted by telephone interview during February to April 2013. The sampling frame for the Screening Survey was obtained from a database of fishers who purchased a RFBL between May 2012 and April 2013 (Figure 4).

Phone-Diary Survey

The Phone-Diary Survey (Figure 3) was conducted from 1 May 2013 to 30 April 2014. The aim of the Phone-Diary Survey was to quantify recreational fishing effort (hours and days fished) and catch (numbers by species, both harvested and released) for a full 12 month period. Other information was also obtained in terms of public ramp usage, fishing method, fishing location, target species and reasons for release. The Phone-Diary Survey was confined to recreational boat fishing in Western Australia, using all fishing methods (such as line fishing, diving, nets, traps and spearfishing). Fishing activity was classified in terms of bioregion, habitat and fishing location as defined by unique location name, latitude and longitude co-ordinates, or 10 by 10 nautical mile grid blocks (Department of Fisheries 2011).

Participants received a Diary Kit containing a Welcome Letter, species identification guides (with clear colour images of common species), Fishing Location Guide and Diary Card. The Diary Card was similar in format to that used previously in other surveys and is designed to be a 'memory jogger' rather than a traditional fishing logbook. Participants were encouraged to use the Diary Card to record key fishing data that could easily be forgotten (e.g. start and finish times, number of fish kept and released) and were contacted regularly by survey interviewers, who were responsible for collecting this information. Participants also received a brief Diary Explanation Interview with the survey interviewer after receiving the Diary Kit.

Species Identification Guides (Department of Fisheries 2015) were developed to help diary participants identify common species, and enhance consistent and accurate species identification. Interviewers were trained in species identification by Research Scientists from the Department of Fisheries, and were provided with relevant taxonomic references (Hutchins and Swainston 1999, Jones and Morgan 2002, Allen 2009, Rome and Newman 2010).

Fishing information was collected by monthly telephone interviews, even for those fishers who indicated that they were unlikely to fish in the subsequent month. More regular telephone interviews were used for the more avid fishers to minimise the potential for recall bias to influence their fishing information. It should be noted that during the Phone-Diary Survey, some participants did not actually fish, despite intending to during the Screening Survey. These fishers 'dropped-out' of the fishery, but this was in the range of expected behaviours for the survey.

Wash-Up/Attitudinal Surveys

The Wash-Up/Attitudinal Survey was conducted with each diarist during May to July 2014 to confirm completion of the survey, assess opinions and attitudes for a range of fisheries-related issues, and collect boat-profiling information. Other questions were included to assess diarists' perceptions as to whether they fished "more, less or about the same" amount of time in the 12 month diary period, compared with the prior 12 months. Different Wash-Up/Attitudinal Surveys were used for participants that fished, or did not fish, during the Phone-Diary Survey (Figure 3). This attitudinal information will be published separately.

Non Intending Fisher Survey

The Non-Intending Fisher Survey (Figure 3) was conducted during May to July 2014 to record the incidence of fishing by RFBL holders sampled in the Screening Survey that were not intending to fish in the next 12 months. These respondents were not eligible for the Phone-Diary Survey, but it was important to identify and account for 'unexpected fishing' that may have occurred during the period. This 'call-back' survey determined the impact of unexpected 'drop-ins' to the fishery.

Benchmark Survey

The Benchmark Survey (Figure 3) was conducted during May to July 2014 to identify the impact of additional 'drop-ins' to the fishery, such as RFBL holders who purchased a new licence in 2013/14 after the initial screening sample was drawn. This survey was essentially a repeat of the Screening Survey, with aims to collect profiling information (i.e. avidity, previous and intended fishing activity) for a random sample of people that purchased a RFBL during the same time period as the Phone-Diary Survey. Therefore, the sampling frame for the Benchmark Survey was obtained from a database of fishers who purchased a RFBL between May 2013 and April 2014 (Figure 5), but excluding RFBL holders that had been selected for the Screening Survey. Most importantly, the Benchmark Survey provided the necessary information for licence holders from the current RFBL population for calibration and expansion of results from the Phone-Diary Survey.

Survey Documentation

The Phone Survey methodology utilises survey instruments, including questionnaires and interviewer manuals, to facilitate the collection/recording of survey data. These were produced following extensive design and testing (Survey Development Working Group 2000). Highly structured questionnaires, with due consideration to question wording, instructions to interviewers and pre-coded answer categories were included in accordance

with a range of standardised interviewing conventions. An equivalent approach was employed for all Phone Survey components in the present study, including thorough training and monitoring of interviewers, and development of a comprehensive interviewer manual.

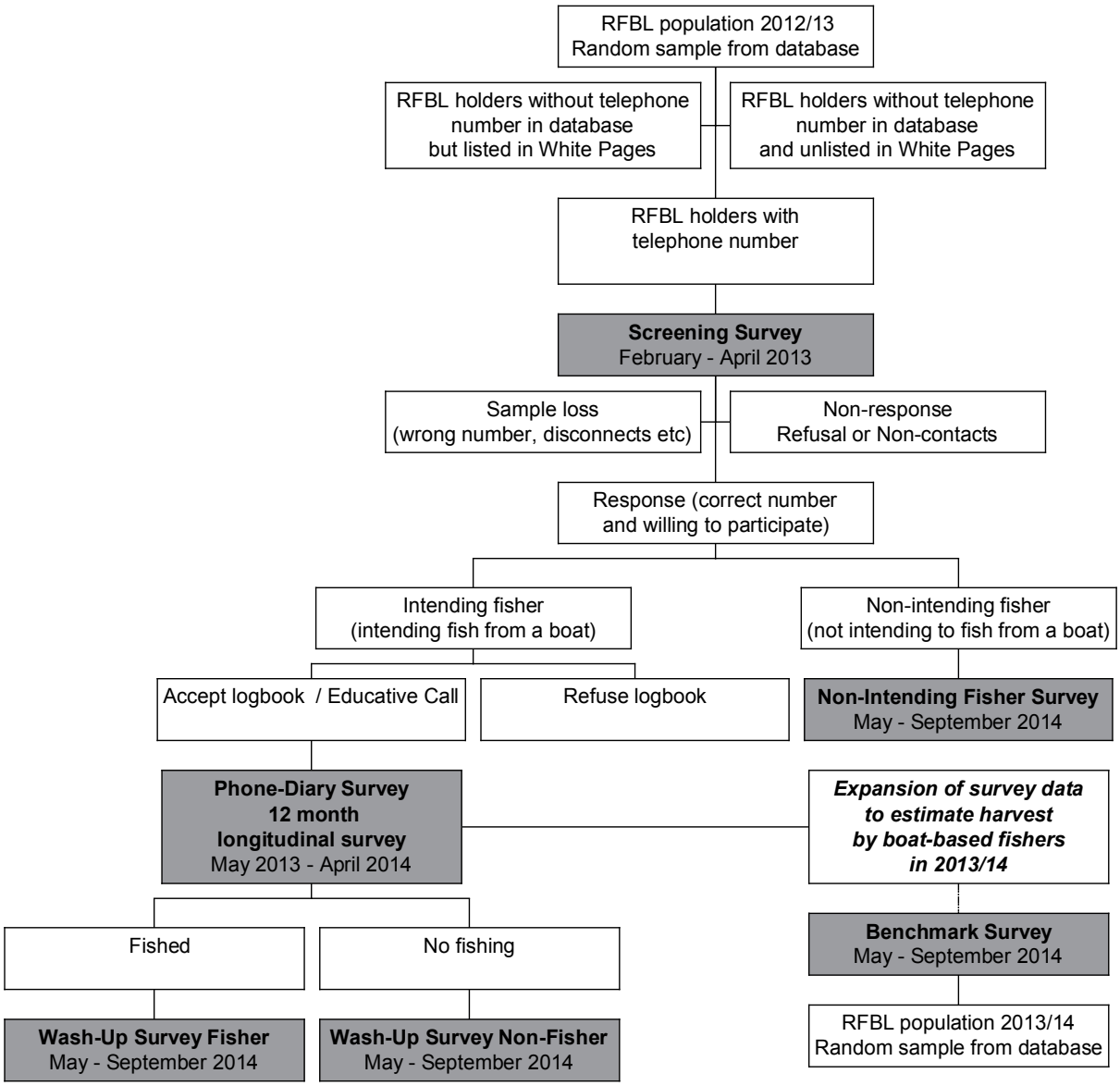


Figure 3. Survey Components for state-wide Phone Surveys of boat-based recreational fishing in Western Australia 2013/14.

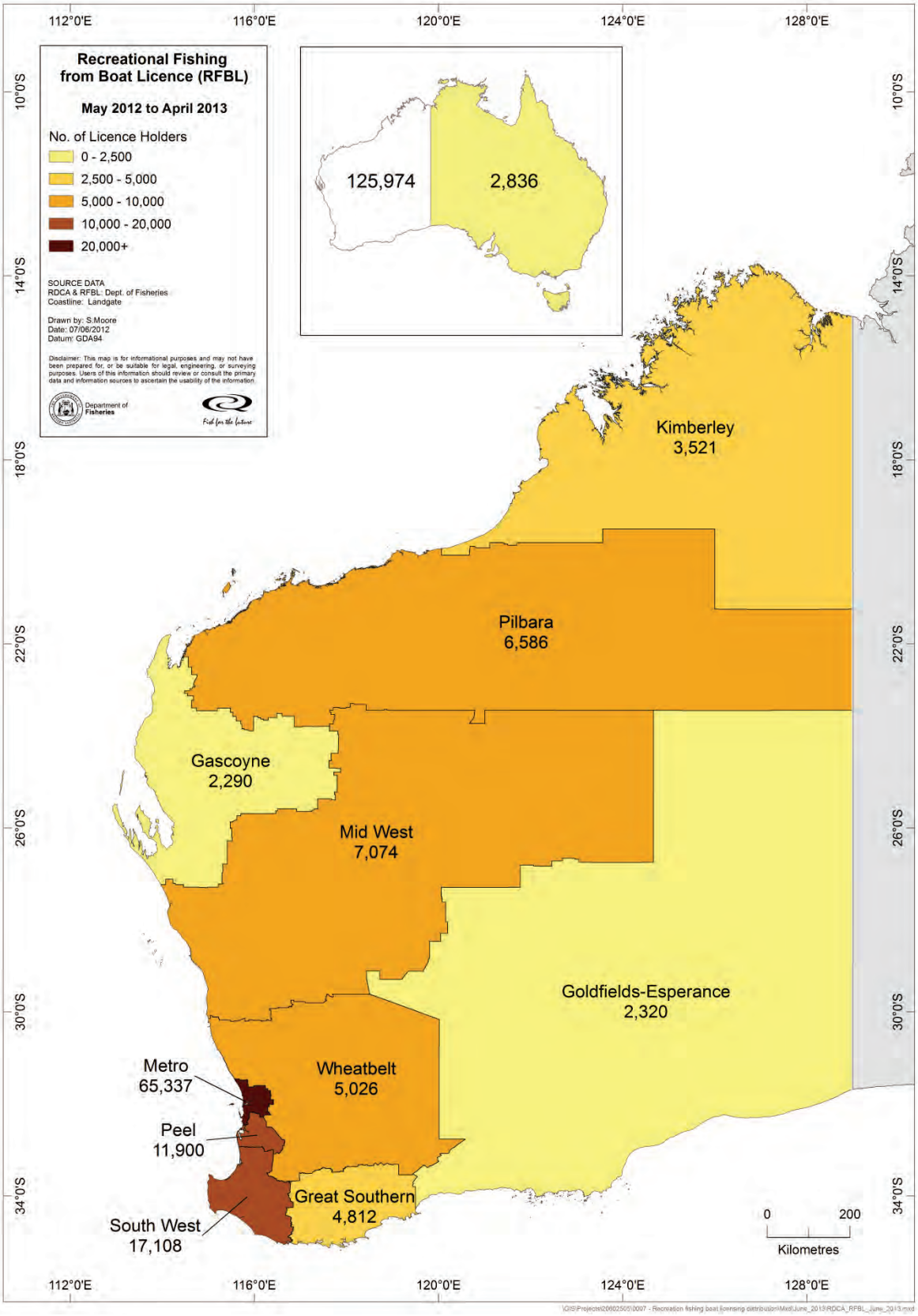


Figure 4. Number of RFBL holders within Regional Development Commission Boundaries from May 2012 to April 2013.

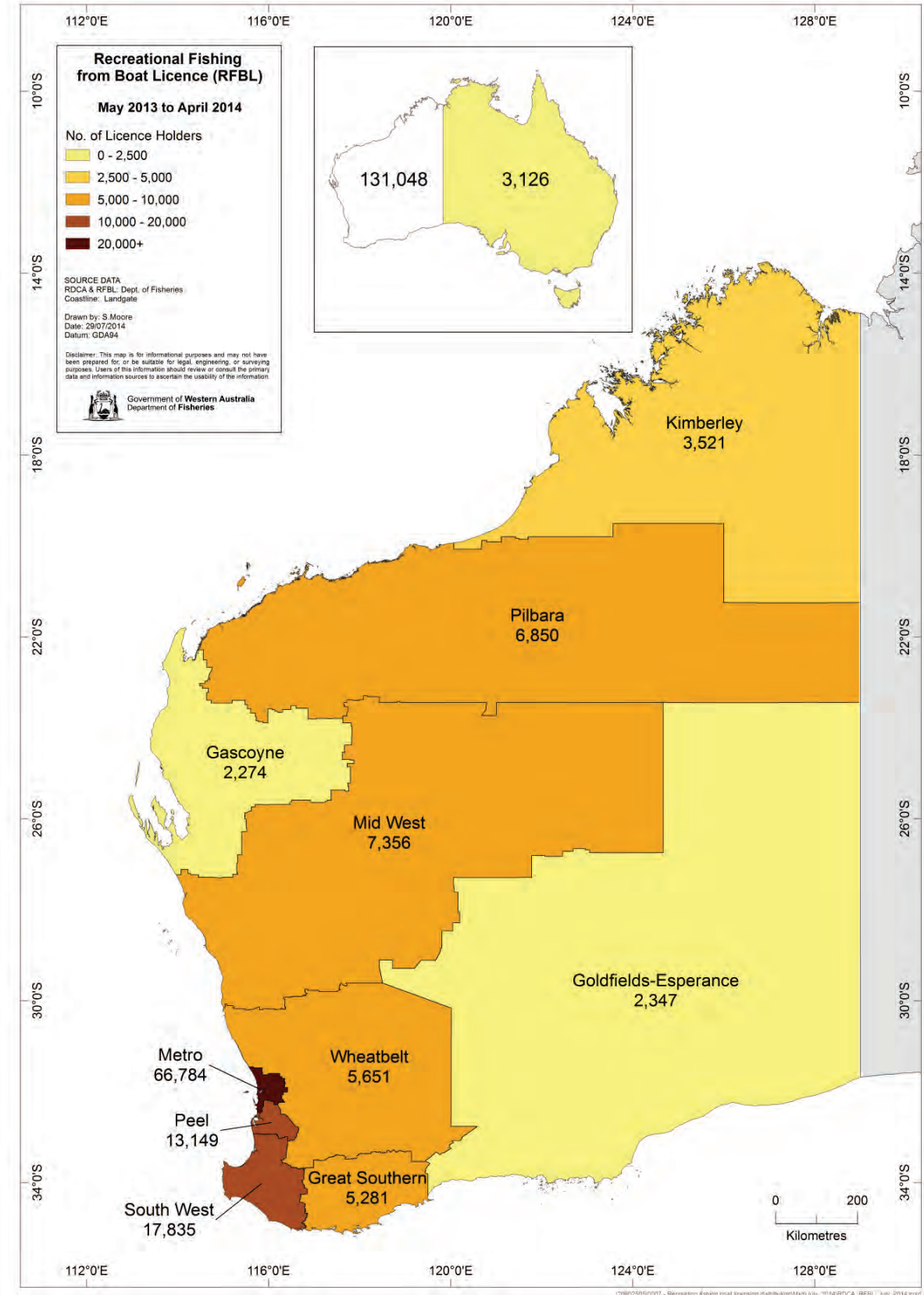


Figure 5. Number of RFBL holders within Regional Development Commission Boundaries from May 2013 to April 2014.

Response Profiles

A summary of the response profiles relating to the Screening, Phone-Diary and Benchmark Surveys is given in Table 3. The majority (67%) of sample loss in the Screening Survey was from disconnected telephone numbers (2.9% of the gross sample) and mobile never on (1.8% of gross sample). Sample loss also occurred where the respondent was not known at the number (0.1% of the gross sample), the respondent was known but no new contact details were available (0.1%), the respondent was away for the survey period (0.7%), fax/modem numbers (0.1%), language difficulties (0.5%), or respondent incapacitated or deceased (0.9%).

The initial Screening Survey conducted prior to the Phone-Diary Survey was based on a sample of 4,880 RFBL holders, of which 96.8% were fully responding (i.e. completed all required interview questions) (Table 3). The 145 non-responding RFBL holders were either non-contacts (3.1% of the net sample) or refusals (0.8% of the net sample). Similarly, 96.7% of RFBL holders fully responded from a sample of 5,398 for the Benchmark Survey at the end of the Phone-Diary Survey. The 167 non-responding RFBL holders were non-contacts (3.7% of the net sample) or refusals (2.3% of the net sample).

The majority of non-response in the Screening and Benchmark Surveys was from non-contacts, despite at least 20 effective calls to each respondent, over a range of day times and days of the week, during the survey period. Refusal rates were low for both surveys, and could be attributable to the use of experienced interviewers and the fact that relevance of the subject matter strongly correlates with response propensity (i.e. an ′interest′ in fishing).

There were 3.378 RFBL holders identified as eligible for Phone-Diary Survey (i.e. having an intention to fish from a boat in Western Australia during May 2013 to April 2014). This represented 77% of the fully responding group from the Screening Survey. Of the eligible RFBL holders, 3,304 (97.8%) agreed to participate in the Phone-Diary Survey. Subsequently, 3,036 participants completed the Phone-Diary Survey, representing 92.8% completion rate among uptake, or 90.8% among eligible (Table 3). The 268 participants that failed to complete the Phone-Diary Survey were mainly from lost contacts (through relocation or disconnected numbers) with some refusals.

The majority (58%) of sample loss in the Benchmark Survey was from disconnected telephone numbers (2.1% of the gross sample) and mobile never on (1.8% of gross sample). Sample loss also occurred where the respondent was not known at the number (0.7% of the gross sample), the respondent was known but no new contact details were available (0.6%), or the respondent was away for the survey period (0.8%), fax/modem numbers (<0.1%), language difficulties (0.1%), or respondent incapacitated or deceased (0.4%).

Response rates were relatively consistent across all sampling strata. The response rates achieved in all components of this study were very high, which provides confidence in overall data quality and minimises the impact of non-response bias.

2.2.2 Boat Ramp Surveys

In 2013/14, state-wide on-site Biological Surveys were completed at key boat ramps from June 2013 to April 2014 to obtain length and weight information that would allow estimates of catch by numbers from the Phone-Diary Survey to be converted to catch by weight. This enables direct comparison of recreational harvest estimates to commercial fishery information, which is routinely recorded as weights. During the Biological Survey, information was collected from 9,600 boat-based recreational fishers, with >10,000 fish and other aquatic organisms measured.

The target population included boat-based recreational fishers who launched and retrieved from the 32 boat ramps where staff interviewed fishers. The Biological Survey in 2013/14 was based on a targeted design informed by data collected during the Boat Ramp and Remote Camera Surveys in 2011/12 (Ryan *et al.* 2013). By targeting key boat ramps at peak times of fishing activity (i.e. season, day type and time of day) the surveys aimed to maximise the collection of biological information. The primary sampling unit was sample day and the secondary sampling unit was fishing party, which could include both RFBL holders and non-licensed fishers (unlicensed fishers are permitted to fish if at least one person on board has a RFBL, provided the total catch of the fishing party is within the bag limit for the RFBL holder, and the boat limit when two or more RFBL holders are on board).

Spatial stratification for the Biological Survey included marine bioregions, regions and zones, within which 32 boat ramps were sampled, including: 9 ramps in the North Coast (4 in the Kimberley region and 5 ramps in the Pilbara region); 4 ramps in the Gascoyne Coast (all in the Ningaloo region); 16 ramps in the West Coast (4 ramps in the North zone, 8 in the Metro zone, 4 ramps in the South zone); and 4 ramps in the South Coast (2 ramps in the Albany region and 2 ramps in the Esperance region).

The temporal stratification of the Biological Survey varied for each bioregion, depending on factors that are known to influence boating activity Table **2**). In the West Coast bioregion, the aim was to collect the same number of fish measurements as the previous 2011/12 Biological Survey and, as a result, 1-2 surveys per week were scheduled at each ramp. In all other bioregions, it was aimed to maximise the number of fish measured and surveys were completed up to 5 days per week. In all bioregions, surveys were of approximately 4 hours duration and were confined to daylight hours only.

Prior to the commencement of the surveys in each bioregion, interviewers were provided with training in interview techniques, survey instruments and species identification as well as documentation relating to interviewer guidelines, forms and questionnaires.

Summaries of the state-wide and bioregion estimates of average weight of species during the Boat Ramp Surveys in 2013–14 included the number of weight measurements recorded, average weight (measured in grams where >10 measurements were obtained) and standard error, are given in Appendix 1. Average weight was calculated from data collected using electronic scales recording measurement of whole weight. Fish that were gilled and gutted were not included in this analysis.

Table 2. Temporal stratification in each bioregion and zone.

Bioregion	Zone	Season	Key factor/s determining shift time
North Coast	Kimberley	Mid-June to September	High tide
	Pilbara		High tide
Gascoyne Coast	Ningaloo		Time of day
West Coast	North	Mid-January to April	Time of day
	Metropolitan		Day type and time of day
	Southern		Time of day
South Coast	Albany		Time of day
	Esperance		Time of day

2.2.3 Remote Camera Survey

The Remote Camera Survey monitors recreational boating activity via video cameras mounted at key boat ramps. This will assist in determing levels of boat-based activity between surveys and with the validation of estimates of effort from the Phone-Diary Survey. Information was gathered on the number of launches and retrievals by boat type at 5 minute intervals over 24-hour periods throughout the same time period as the Phone-Diary Survey. The exact locations of remote video cameras was determined by the available infrastructure at each boat ramp and the logistics of transmitting the information to the Department of Fisheries (Blight and Smallwood 2015). The boat ramps selected for the Phone-Diary comparison were: Broome (Entrance Point) and Dampier in the North Coast; Denham and Monkey Mia in the Gascoyne Coast; Mindarie, Ocean Reef, Hillarys, Leeuwin, Woodman Point and Point Peron in the West Coast; and Albany and Esperance in the South Coast.

Although video cameras are expected to operate continously, outages can occur as a result of technological failures and extreme weather (e.g. power loss and cyclones). Methods have been established to accommodate short-term data loss using an extrapolation procedure to impute the temporal distribution of activity for missing time periods (see Wise and Fletcher 2013). Extended periods of data loss can also occur; e.g. data for the camera at Bandy Creek (Esperance) were not recorded from May to October 2013 while the building where the camera is attached was undergoing renovation. The total activity reported for Bandy Creek, therefore, only represents values for available monthly data over the survey period (i.e. 6 months) rather than estimates of total activity over the full 12 month period. A summary of data loss at each ramp is included in Appendix 2.

Estimates provided in this report are the best that are currently available, but may be revised as a result of refinement of the methods used for analyses. Summaries of the total power boat launches and retrievals during 2013/14, including: the location of the boat ramp; total annual launches and retrievals; total launches and retrievals by month; and hourly launches and retrievals by month are given in Appendix 2.

2.3 Phone-Diary Survey Expansion, Weighting and Analysis

The Phone Surveys design incorporated stratified random sampling with samples divided into homogenous units to reduce sampling variance (Cochran 1977, Pollock *et al.* 1994, Lohr

2010, Särndal *et al.* 2003). These spatial strata related to Regional Development Commission Boundaries in Western Australia. The number of samples within each stratum were selected proportionally to the size of the stratum. A single residential stratum applied to interstate RFBL holders (<2% of all RFBL holders). Overseas RFBL holders (<0.02% of all RFBL holders) were excluded from the Phone Surveys.

Exclusions from the sampling frame occurred before sample selection where currency of address information was invalid or fishers were identified as having multiple licences. All sampling was conducted without replacement using PROC SURVEYSELECT in SAS (SAS 2004).

Data from Phone Surveys that use the White Pages as a sampling frame can be expanded to the total population using profiles from the Australian Bureau of Statistics, based on household structure, age and gender (Jones 2009, Lyle *et al.* 2009, Taylor *et al.* 2012, West *et al.* 2012). However, a different approach is required for surveys that use licence sampling frames, including the RFBL. Analysis of the RFBL database (2012-13 compared with 2013/14) indicates that approximately 25% RFBL holders do not renew their licence (i.e. 'drop-out'), while approximately 25% RFBL holders take up a new licence (i.e. 'drop-in'), each year. The Phone-Diary Survey did not progressively sample and recruit new entrants to the RFBL population during the survey period.

The Benchmark and Non-Intending Fisher Surveys were designed to assist in matching Phone-Diary participants (sampled from the 2012-13 RFBL) to the RFBL population that held a licence during the phone-diary period (2013/14). Calculation of weighting factors requires counter-parting Phone-Logbook participants (based on actual days fished) with Benchmark Survey participants (based on recalled days fished). This process accounts for behavioural differences that result from the dynamic nature of the RFBL population. Counter-parting was based on recall and actual effort collected during the Phone-Diary Survey to account for a likely overestimate of recalled effort in the Benchmark survey. The sample weight (or expansion factor) for a given subsample was determined by the inverse of the fraction it represented in the population, according to the following equation, where α_{hi} = weight for RFBL holder i in stratum h, N_h = total number of RFBL holders in stratum h, n_h = number of RFBL holders sampled in stratum h.

$$a_{hi} = \frac{N_h}{n_h}$$

The total catch of species in each stratum over the phone-diary period was calculated by multiplying the weighted catch for all participants in each stratum by the number of RFBL holders in each stratum for the relevant RFBL population, as determined by the Benchmark Survey. This approach accounts for: fishers that unexpectedly 'drop-out' from the Phone-Diary Survey (i.e. participants that intended to fish, but did not); fishers that unexpectedly 'drop-in' during the phone-diary period (i.e. respondents in the Screening Survey that did not intend to fish during the phone-diary period, but actually did); and additional 'drop-in' fishers (i.e. fishers who were not eligible for sample selection for the Screening Survey, but purchased a RFBL during the phone-diary period).

Raw data collected from diarists have been initially expanded by the number of RFBL holders in the residential stratum divided by the number of RFBL holders sampled in residential stratum. Final estimates will include adjustment of these weighting factors to account for avidity bias and non-intending fishing. Parameter estimates in this report are based on expanded data, scaled-up to represent the appropriate stratum population. Estimates were determined for participation (by number of RFBL holders), effort (boat days and hours fished) and catch (kept, released and total numbers by species). Estimates of average weight were obtained from Boat Ramp Surveys or Tour Operator Returns. Phone Survey data has been stored in an ACCESS database with analysis of survey estimates using the *survey* package (Lumley 2004, 2010) in the statistical computing language *R* (R Development Core Team 2008). Detailed descriptions of the *survey* and *recsurvey* packages are given in Lumley (2010) and Lyle *et al.* (2010) respectively.

Table 3. Sample size and response profile for Screening, Phone-Diary and Benchmark Surveys by stratum.

SCREENING SURVEY	Total RFBL Holders	Initial sample	Sample loss	Net sample	Non-response	Full response	Response rate
Kimberley	3,521	250	21	229	10	219	95.63%
Pilbara	6,586	250	12	238	8	230	96.64%
Gascoyne	2,290	250	26	224	13	211	94.20%
Mid West	7,074	250	20	230	4	226	98.26%
Wheat Belt	5,026	250	15	235	10	225	95.74%
Metro	65,337	2,000	144	1,856	62	1,794	96.66%
Peel	11,900	380	22	358	10	348	97.21%
South West	17,108	500	31	469	14	455	97.01%
Great Sth'n	4,812	250	18	232	6	226	97.41%
Gold fields	2,320	250	24	226	6	220	97.35%
Interstate	2,836	250	11	239	2	237	99.16%
TOTAL	**128,810**	**4,880**	**344**	**4,536**	**145**	**4,391**	**96.80%**

PHONE-DIARY SURVEY	Full response at screening	Eligible for the Diary Survey	Diary Uptake	Diary Survey Completed	Uptake rate among eligible (%)	Completion rate among uptake (%)	Completion rate among eligible (%)
Kimberley	219	173	167	153	96.53%	91.62%	88.44%
Pilbara	230	176	175	162	99.43%	92.57%	92.05%
Gascoyne	211	170	165	153	97.06%	92.73%	90.00%
Mid West	226	173	169	157	97.69%	92.90%	90.75%
Wheatbelt	225	170	166	160	97.65%	96.39%	94.12%
Metro	1,794	1,470	1,436	1,326	97.69%	92.34%	90.20%
Peel	348	270	263	241	97.41%	91.63%	89.26%
South West	455	369	366	337	99.19%	92.08%	91.33%
Great Sth'n	226	167	164	161	98.20%	98.17%	96.41%
Goldfields	220	161	156	144	96.89%	92.31%	89.44%
Interstate	237	79	77	42	97.47%	54.55%	53.16%
TOTAL	**4,391**	**3,378**	**3,304**	**3,036**	**97.81%**	**92.80%**	**90.76%**

BENCHMARK SURVEY	Total RFBL Holders	Initial sample	Sample loss	Net sample	Non-response	Full response	Response rate
Kimberley	3,521	280	21	259	21	238	91.89%
Pilbara	6,850	280	24	256	13	243	94.92%
Gascoyne	2,274	280	31	249	10	239	95.98%
Mid West	7,356	290	30	260	9	251	96.54%
Wheatbelt	5,651	280	15	265	5	260	98.11%
Metro	66,784	2,150	124	2,025	56	1,970	97.28%
Peel	13,149	424	27	397	19	378	95.21%
South West	17,835	574	40	534	18	516	96.63%
Great Sth'n	5,281	280	11	269	5	264	98.14%
Goldfields	2,347	280	13	267	8	259	97.00%
Interstate	3,126	280	21	259	3	256	98.84%
TOTAL	**134,174**	**5,398**	**357**	**5,040**	**167**	**4,874**	**96.71%**

2.4 Uncertainty

The integrated surveys provide validated catch estimates in a cost effective manner, however, they are still surveys, and as such, cannot be expected to provide the level of precision that would be available from a total census. As such, it is important to determine the level of uncertainty associated with these survey estimates. Two measures of uncertainty have been used in this report:

i. The Standard Error indicates the difference between the estimate (obtained from a sample) and the true value (of the population). The Standard Error of the estimate is calculated from the standard deviation of the sample divided by the sample size.

ii. The Relative Standard Error indicates the uncertainty expressed as a percentage of the estimate, and allows comparisons between estimates because it accounts for differences in magnitude of the estimates. The Relative Standard Error of the estimate is calculated from the standard error of the sample divided by the estimate.

iii. Confidence Intervals represent the range in which the population value is likely to occur as determined by the estimate and associated standard error. The 95% confidence intervals are equal to the estimate plus or minus 1.96 multiplied by the standard error. This indicates the chance of the population value occurring within approximately two standard errors of the estimate.

Interpretation of survey estimates requires consideration of both the magnitude of the Relative Standard Error and the number of participants that contributed to the estimate. Where required, estimates in tables have been highlighted to identify Relative Standard Error greater than 40% and sample sizes with fewer than 30 fishers (Jones 2009, Taylor *et al.* 2012, West *et al.* 2012, Ryan *et al.* 2013, Lyle *et al.* 2014). For estimates of catch, the sample size refers to the number of fishers reporting a catch of that species. These cautions indicate that estimates may not be precise or representative.

It should be noted that the precision achieved for any estimate is dependent on the sample size. Consequently, low precision occurs for species caught rarely or infrequently by the majority of recreational fishers, or when disaggregating data to small spatial and temporal scales. The ability to improve precision in these situations depends on the ability to increase the sample size. Therefore, there is a recognised trade-off between survey costs and precision which necessitates balancing the needs for desired precision with the available funding before commencing surveys. For the state-wide survey of boat-based recreational fishing, the desired outcome was to achieve precise estimates for indicator species at state-wide and bioregional levels. It was acknowledged that precise estimates for less common species, or any species at small spatial scales, might not always be achieved for the given sample size.

3 Participation

This section presents results from the Screening and Benchmark Surveys. These cross sectional, recall surveys were based on respondents that held a Recreational Fishing from Boat Licence (RFBL) between 1 May 2012 to 30 April 2013 (Screening Survey) and 1 May 2013 to 30 April 2014 (Benchmark Survey). These results are highly comparable to those from the previous state-wide survey conducted in 2011/12 (Ryan *et al.* 2013); there have been minimal changes in fisher profiles. All estimates include uncertainty and all tables provide associated standard errors, although these are not routinely cited in report text. The tables also provide an indication of whether the estimates are considered to be robust (i.e. sample size > 30 and relative standard error is < 0.40).

3.1 Regional Development Commission Boundary

From the population of 128,810 recreational fishers that held a RFBL in 2012-13, an estimated 104,823 (81%) RFBL holders fished at least once, and an estimated 23,987 (19%) RFBL holders did not fish in the 12 months prior to May 2013. The population of 134,174 recreational fishers that held a RFBL in 2013/14 included an estimated 98,038 (73%) RFBL holders that fished at least once, and an estimated 36,101 (27%) RFBL holders did not fish in the 12 months prior to May 2014.

Despite the decrease in RFBL holders that fished from 2012-13 to 2013/14, the proportions of RFBL holders that fished from each Regional Development Commission Boundary were similar for the 12 months prior to March 2011, March 2012, May 2013 and May 2014. The majority of RFBL holders resided in the Perth Metropolitan Regional Development Commission Boundary (50.9% in 2012-13 and 49.7% in 2013/14). The next highest proportion was observed by residents in the South West (13.6% in 2012-13 and 13.5% in 2013/14) and Peel (9.4% in 2012-13 and 9.2% in 2013/14) Regional Development Commission Boundary (Figure 6).

Smaller proportions of RFBL holders were observed in rural stratum: Pilbara (5.3% in 2012-13 and 5.8% in 2013/14), Mid West (5.4% in 2012-13 and 5.6% in 2013/14), Great Southern (3.5% in 2012-13 and 4.0% in 2013/14), Wheatbelt (3.6% in 2012-13 and 3.9% in 2013/14), Kimberley (2.7% in 2012-13 and 2.8% in 2013/14), Gascoyne (1.9% in both 2012-13 and 2013/14), and Goldfields-Esperance (1.7% in both 2012-13 and 2013/14); and Interstate (2.1% in both 2012-13 and 1.6% in 2013/14) (Figure 6). However, comparisons of these estimates with general population estimates are likely to reveal the proportions of RFBL holders in each rural RCB actually represent high participation rates among the general population.

3.2 Gender and Age

Males accounted for the majority of RFBL holders that fished at least once in the 12 months prior to May 2013 (85.6% of all RFBL holders in 2012-13) and the 12 months prior to May 2014 (85.0%). Females accounted for 14.4% of RFBL holders in 2012-13 and 15.0% in 2013/14.

In both surveys, highest numbers of RFBL holders that fished were the: 45 to 59 year age group (32.1% in 2012-13 and 32.4% in 2013/14) and the 30 to 44 year age group (28.8% in 2012-13 and 27.9% in 2013/14). The 15 to 29 year age group accounted for 14.2% in 2012-13 and 14.0% in 2013/14. The 60 to 74 year age group accounted for 18.6% of all RFBL holders that fished in 2012-13 and 19.2% in 2013/14. The lowest numbers of RFBL holders that fished were the: 5 to 14 year age group (4.2% in 2012-13 and 4.2% in 2013/14) and 75 year or older group (2.0% in 2012-13 and 2.3% in 2013/14).

Similar trends were observed in the numbers of female and male RFBL holders that fished at least once in Western Australia for the 12 months prior to March 2011, March 2012, May 2013 and May 2014 by age group (Figure 7).

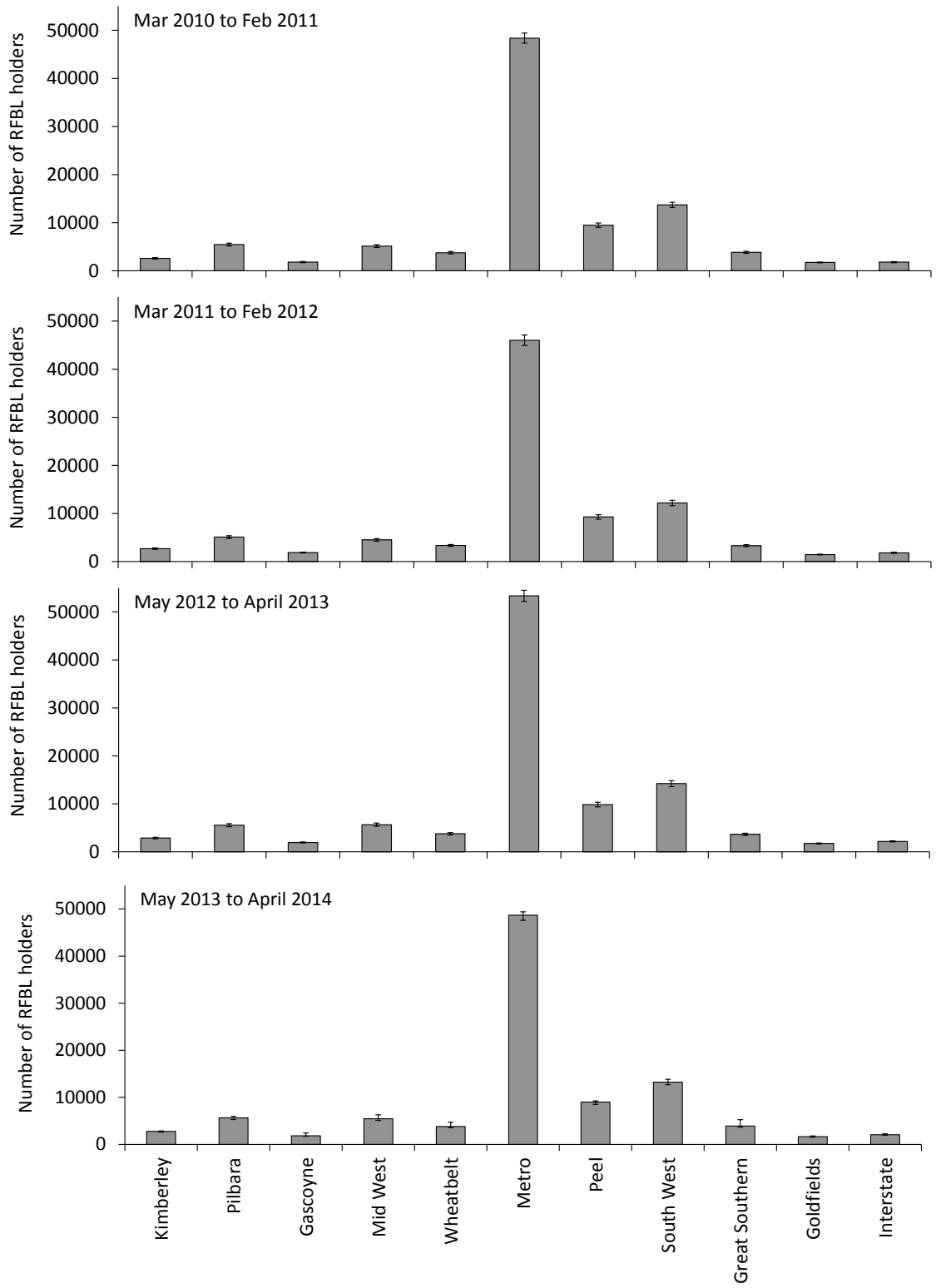


Figure 6. Estimated number of RFBL holders aged five years and older who fished recreationally in Western Australia in the 12 months prior to March 2011 (from Screening Survey 2011/12), March 2012 (from Benchmark Survey 2011/12), May 2013 (from Screening Survey 2013/14) and May 2014 (from Benchmark Survey 2013/14) by Regional Development Commission Boundary.

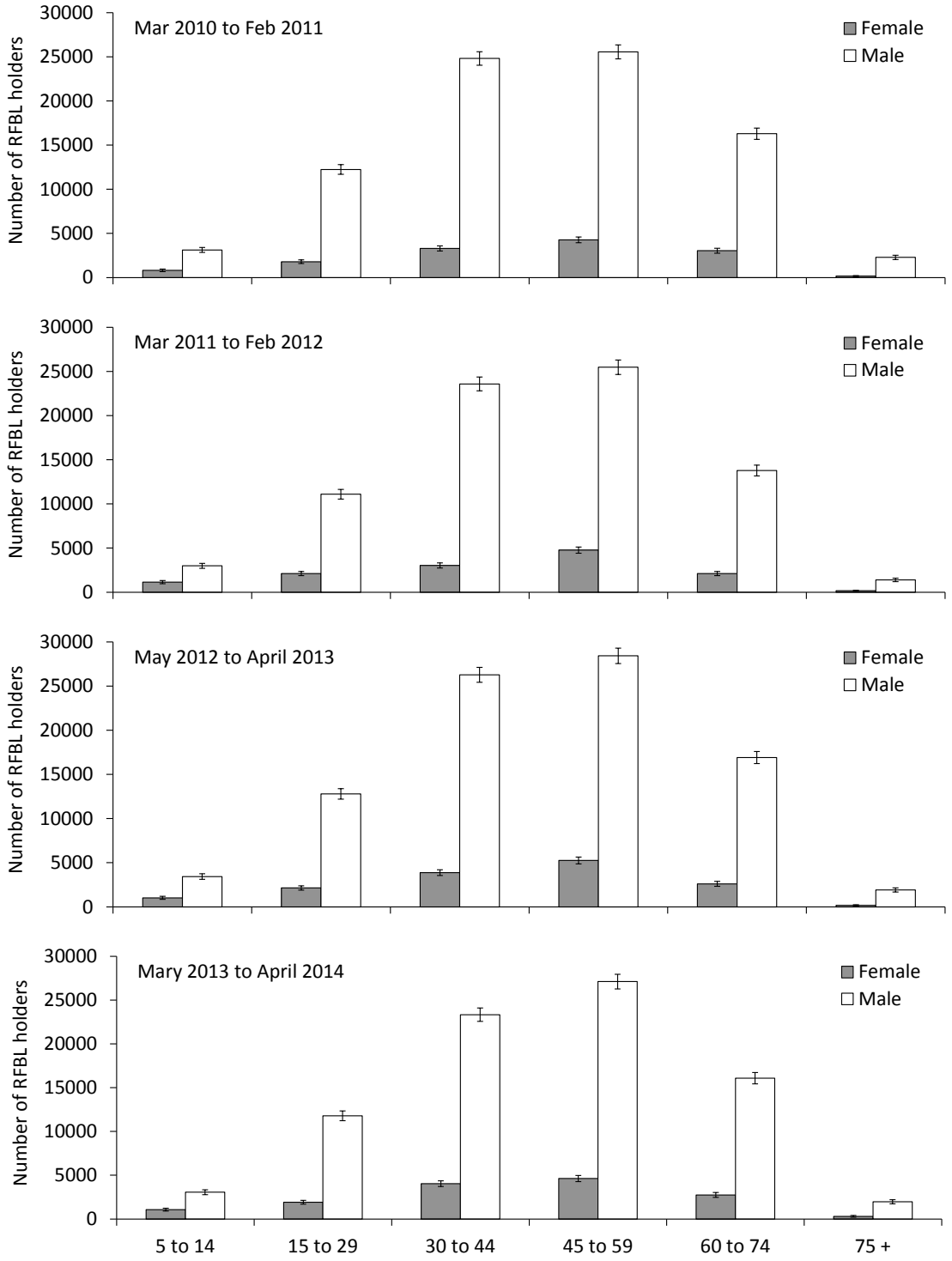


Figure 7. Estimated number of RFBL holders aged five years and older who fished recreationally in Western Australia in the 12 months prior to March 2011 (from Screening Survey 2011/12), March 2012 (from Benchmark Survey 2011/12), May 2013 (from Screening Survey 2013/14) and May 2014 (from Benchmark Survey 2013/14) by age group and gender.

3.3 Bioregions Fished

Recreational fishers that held a RFBL were most likely to fish in the marine bioregion closest to their home residence. Residents from the Kimberley and Pilbara were most likely to fish in the North Coast (Figure 8). Residents from the Gascoyne were most likely to fish in the Gascoyne Coast. Residents from the Mid West, Wheatbelt, Perth Metropolitan, Peel and South West were most likely to fish in the West Coast. Residents from the Great Southern and Goldfields-Esperance were most likely to fish in the South Coast. Interstate residents fished in all marine bioregions, but more than half of their fishing was in the North and Gascoyne Coasts. Despite the fact that most fishers tend to fish locally, many travel throughout the state. For example, residents from the Mid West, Metro and Peel fished in the South Coast bioregion, and residents from the Kimberley, Pilbara and Gascoyne fished in the West Coast bioregion.

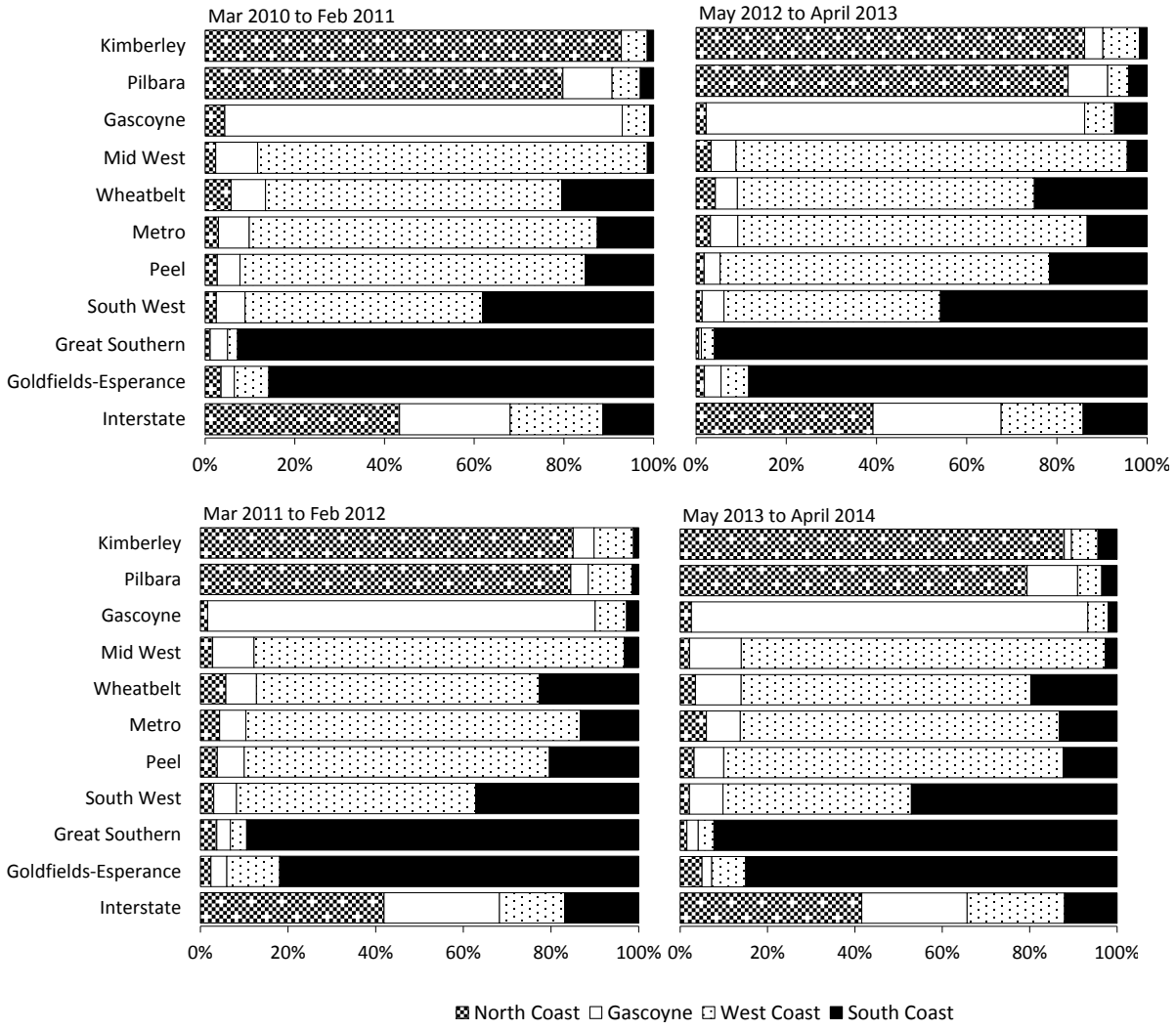


Figure 8. Percentage of RFBL holders aged five years or older that fished in each bioregion in the 12 months prior to March 2011 (above left; from Screening Survey 2011/12) and March 2012 (below left; from Benchmark Survey 2011/12), May 2013 (above right; from Screening Survey 2013/14) and May 2014 (below right; from Benchmark Survey 2013/14) by Regional Development Commission Boundary.

3.4 Avidity

The number of days fished (by recall) in the 12 months prior to each survey is a measure of the fishing avidity. On average, RFBL holders were equally likely to recall fishing 15 days or more (35 to 37%) or 5 to 14 days (36 to 38%). Lower proportions of RFBL holders (25 to 29%) recall fishing less than 5 days during each 12 month period. Similar trends were observed in the number of days fished (by recall) in the 12 months prior to March 2011, March 2012, May 2013 and May 2014 by bioregion and home residence of the RFBL holder.

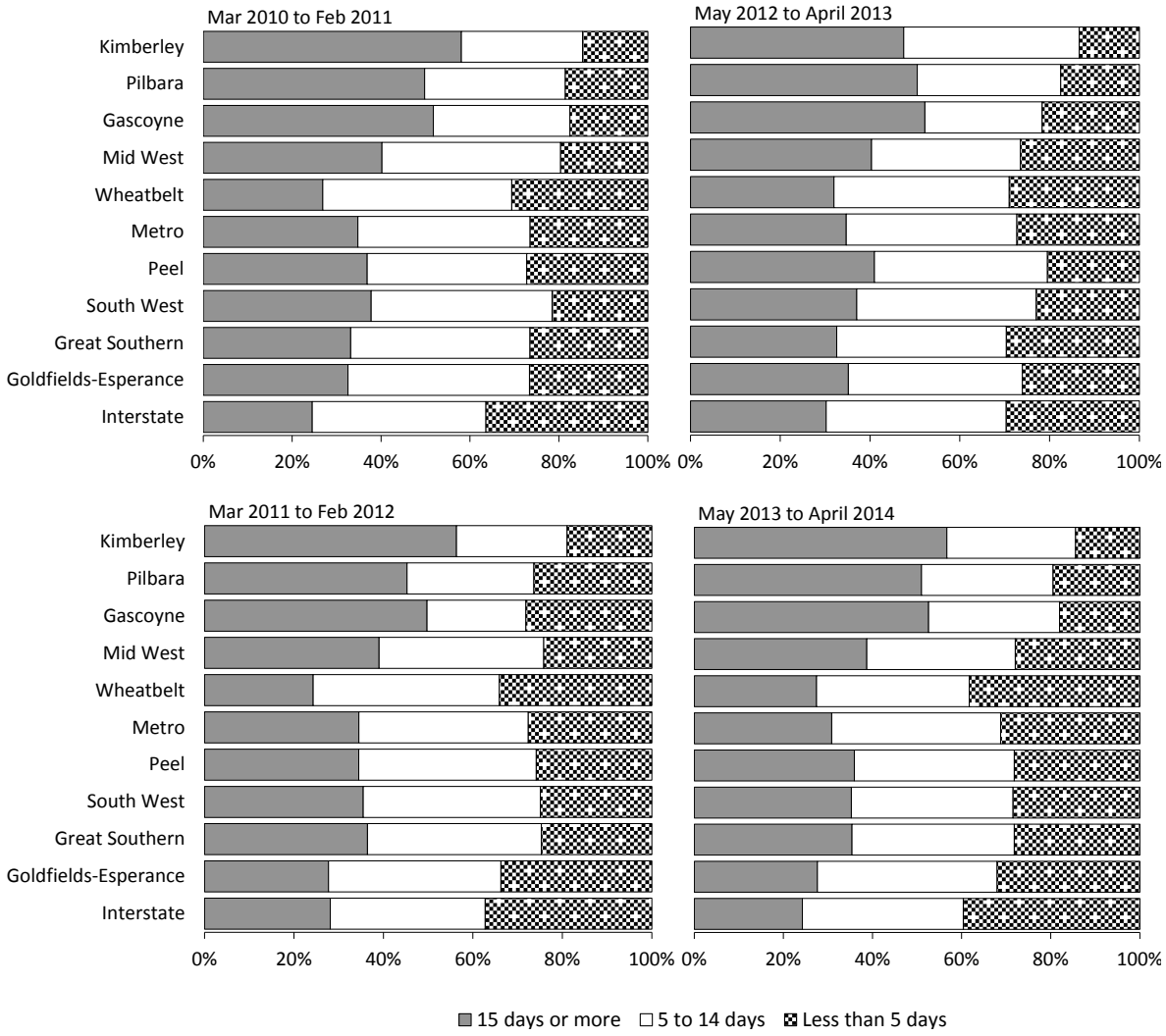
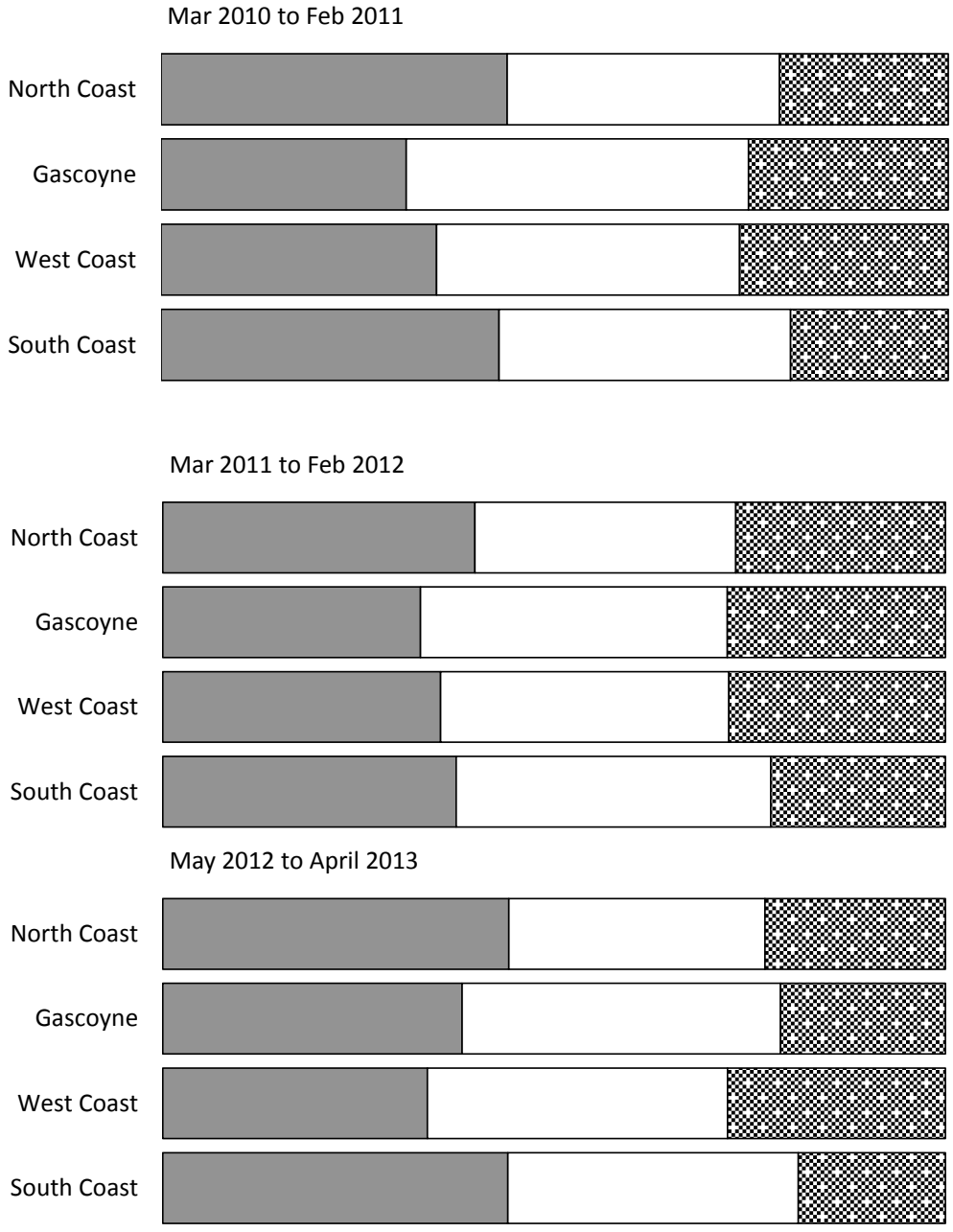


Figure 9. Percentage of recalled days fished (in avidity classes) by RFBL holders aged five years or older in the 12 months prior to March 2011 (above left; from Screening Survey 2011/12) and March 2012 (below left; from Benchmark Survey 2011/12), May 2013 (above right; from Screening Survey 2013/14) and May 2014 (below right; from Benchmark Survey 2013/14) by Regional Development Commission Boundary.

Residents from the Kimberley, Pilbara and Gascoyne were most likely (approximately 50% or higher) to fish 15 days or more (Figure 9). Residents from the Mid West, Wheatbelt, Perth

Metropolitan, Peel, South West, Great Southern and Goldfields-Esperance were most likely (approximately 34-40%) to fish 5 to 14 days. Interstate residents were most likely to fish 5 to 14 days in the 12 months prior to March 2011 and May 2013 and less than 5 days in the 12 months prior to March 2012 and May 2014.

RFBL holders that fished in the North Coast were most likely to fish 15 days or more in 2010-11 (44%), 2011/12 (40%), 2012-13 (44%) and 2013/14 (42%) (Figure 10). RFBL holders that fished in the Gascoyne Coast were most likely to fish 5 to 14 days in 2010-11 (43%), 2011/12 (39%), 2012-13 (41%) and 2013/14 (43%). RFBL holders that fished in the West Coast were most likely to fish 5 to 14 days in 2010-11 (38%), 2011/12 (37%), 2012-13 (38%) and 2013/14 (35%). RFBL holders that fished in the South Coast were most likely to fish 15 days or more in 2010-11 (43%) and 2012-13 (44%) and 5 to 14 days in 2011/12 (40%) and 2013/14 (38%).



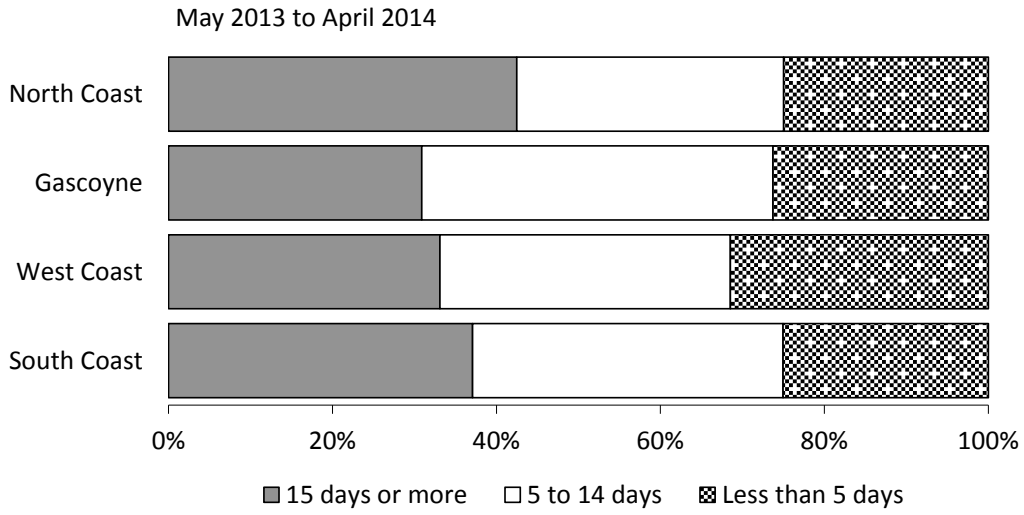


Figure 10. Percentage of days fished (in avidity classes) by RFBL holders aged five years or older in the 12 months prior to March 2011 (above left; from Screening Survey 2011/12) and March 2012 (below left; from Benchmark Survey 2011/12), May 2013 (above right; from Screening Survey 2013/14) and May 2014 (below right; from Benchmark Survey 2013/14) by bioregion fished.

4 Fishing Effort

This section presents estimates of fishing effort from the Phone-Diary Survey. The 12 month longitudinal survey was based on participants that held a RFBL between 1 May 2012 and 30 April 2013, and were likely to fish from a boat in saltwater between 1 May 2013 and 30 April 2014 (Phone-Diary Survey). Fishing effort has been summarised by habitat, fishing method and month, state-wide (Figure 11) and for each bioregion: North Coast (Figure 12), Gascoyne Coast (Figure 13), West Coast (Figure 14) and South Coast (Figure 15). Estimates from the previous Phone-Diary Survey from March 2011 to February 2012 have been included in each figure.

Estimated measures of effort include: boat days (separate days in which fishing occurred on a 'boat party' basis, regardless of the number of fishers or RFBL holders on board); the number of fishing events, which accounts for multiple events during a boat day (i.e. events where fishing method or location changed during the boat day); and hours fished (from start to end of fishing excluding break time).

There was an estimated 383,107 boat days during the period 1 May 2013 to 30 April 2014, with 401,730 separate fishing events (Table 4). Fishers can undertake more than one fishing event per day, with an average of 1.05 events per fisher day state-wide. The estimated total time spent boat-based recreational fishing in Western Australia during 2013/14 was 1,209,263 hours, with approximately two thirds of the state-wide estimated total effort (in boat days, fishing events and hours fished) reported from the West Coast bioregion. The distribution of fishing effort reported in boat days, fishing events and hours fished was broadly consistent between survey years and bioregions.

All estimates include uncertainty and all tables and figures provide associated standard errors, although these are not routinely cited in report text. The tables also provide an indication of whether the estimates are considered to be robust (i.e. sample size > 30 and relative standard error is < 0.40%).

Table 4. Annual fishing effort, expressed as boat days, fishing events and hours fished, for boat-based recreational fishers in Western Australia during 2011/12 and 2013/14 (se = standard error).

Bioregion	Boat Days	se	Fishing Events	se	Hours Fished	se
2011/12						
North Coast	47,721	3,778	51,175	4,306	187,112	14,105
Gascoyne Coast	58,123	3,672	61,616	3,895	253,930	17,245
West Coast	293,112	10,688	317,543	11,972	820,693	31,111
South Coast	40,073	3,354	41,897	3,556	136,771	12,505
State-wide Total	**439,029**	**11,160**	**472,232**	**12,521**	**1,400,150**	**41,700**
2013/14						
North Coast	45,604	3,603	47,836	3,757	188,744	15,536
Gascoyne Coast	53,832	3,603	56,334	3,849	211,967	15,671
West Coast	249,719	10,563	267,664	11,561	716,722	31,145
South Coast	28,277	2,323	29,831	2,497	91,640	7,447
State-wide Total	**383,107**	**12,385**	**401,730**	**13,197**	**1,209,263**	**40,279**

4.1 State-wide effort

At a state-wide level, the majority of boat-based recreational fishing effort (boat days) during 1 May 2013 to 30 April 2014 occurred in nearshore habitat (54%), followed by inshore demersal (26%) and estuary (16%), with lower proportions of fishing effort in offshore demersal (2%), pelagic (2%) and freshwater (<1%) habitats (Figure 11a). The majority of boat-based recreational fishing effort occurred in the West Coast (66%) (Figure 11b). The remainder of fishing effort was relatively equal among the North Coast (12%), Gascoyne Coast (14%) and South Coast (8%). The majority of boat-based fishing effort was attributed to line fishing (67%) and pots (27%), with lower proportions of fishing effort from nets (2%), diving (4%) and other (<1%) (Figure 11c). The majority of boat-based fishing effort occurred during summer (33%) and autumn (31%). Fishing effort was highest in January 2014 (13%) and lowest in September 2013 (3%) (Figure 11d). State-wide fishing effort by habitat and method was consistent between surveys. State-wide fishing effort by month was also consistent between surveys, except for February to April, which were higher in 2011/12 compared with 2013/14.

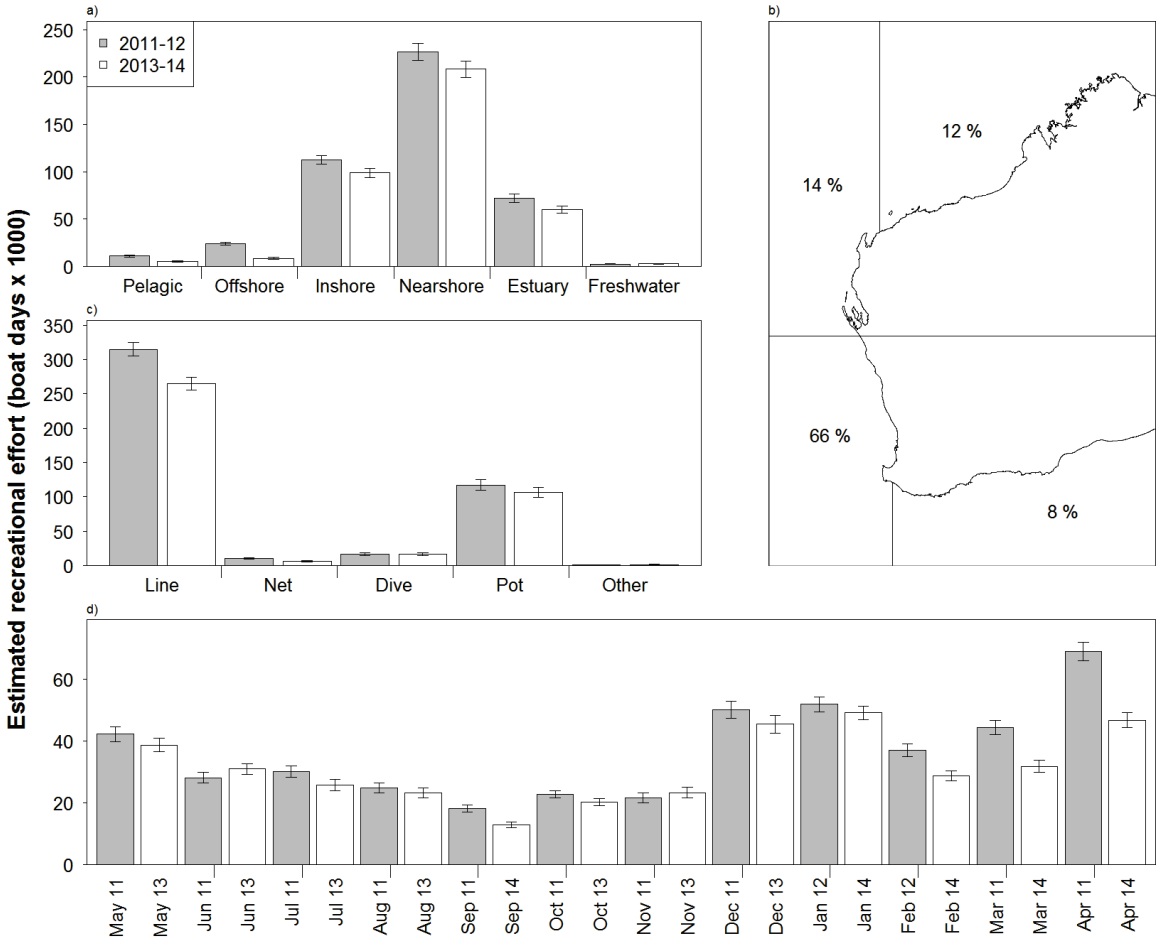


Figure 11. Boat-based recreational fishing effort (boat days x 1000) in Western Australia during 2011/12 (grey bars) and 2013/14 (white bars); a) effort by habitat; b) map of the proportion (%, 13-14 only) of the effort by fishing bioregion; c) effort by fishing method; and d) effort by month.

4.2 North Coast

The majority of boat-based fishing effort (boat days) during 1 May 2013 to 30 April 2014 in the North Coast occurred in nearshore habitat (57%), followed by inshore demersal (24%) and estuary (13%), with lower proportions of fishing effort in offshore demersal (2%), pelagic (2%) and freshwater (2%) habitats (Figure 12a). The majority of boat-based fishing effort was attributed to line fishing (83%), with lower proportions of fishing effort from pots (13%), diving (3%), nets (1%) and other (<1%) (Figure 12b). The majority of boat-based fishing effort occurred during autumn (30%) and winter (42%). In 2013/14, fishing effort was highest in July 2013 (18%) and lowest in January 2014 (3%) (Figure 12c). The distribution of fishing effort in the North Coast by habitat, method and month was consistent between surveys.

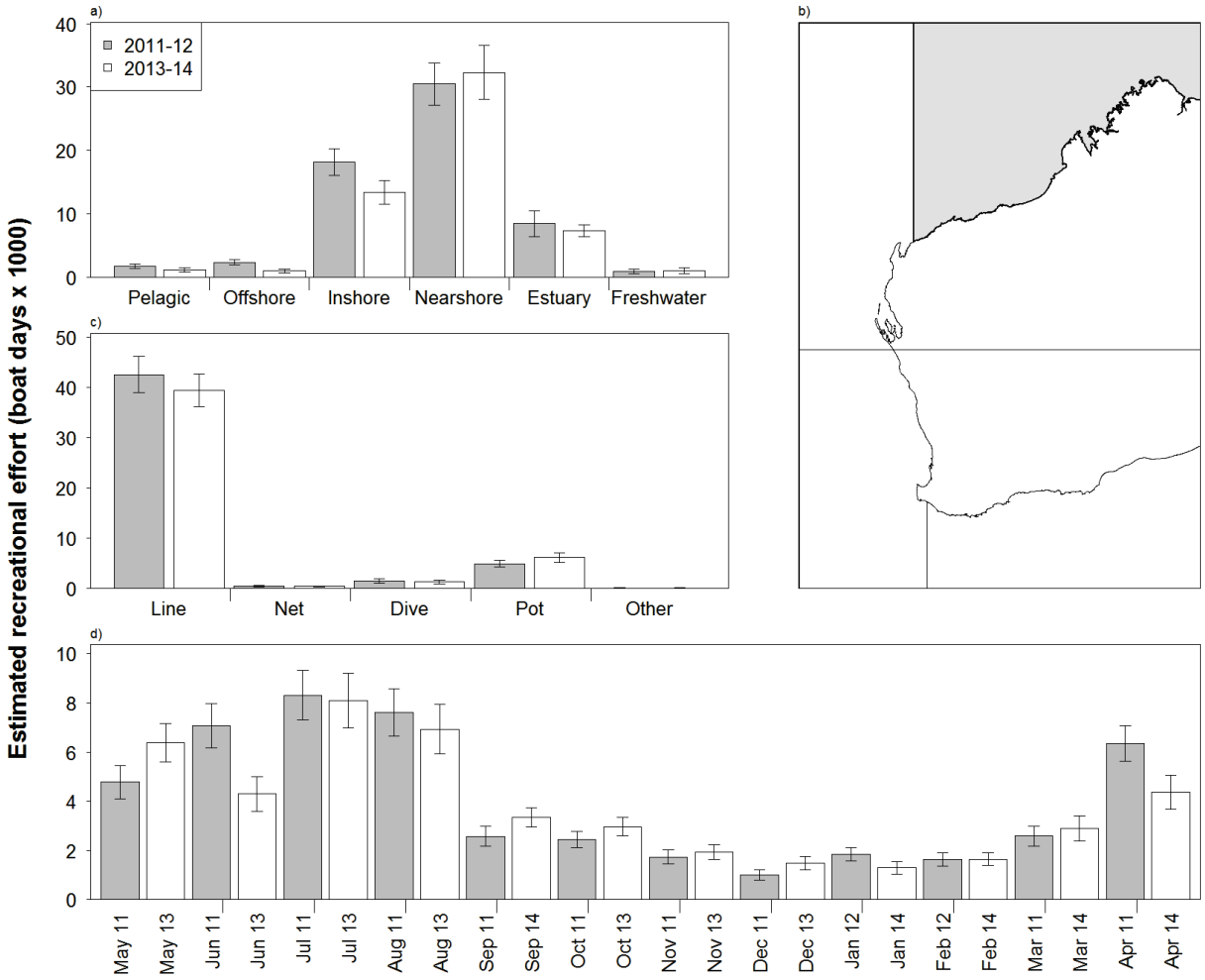


Figure 12. Boat-based recreational fishing effort (boat days x 1000) in the North Coast during 2011/12 (grey bars) and 2013/14 (white bars); a) effort by habitat; b) map of the bioregion; c) effort by fishing method; and d) effort by month.

4.3 Gascoyne Coast

The majority of boat-based fishing effort (boat days) during 1 May 2013 to 30 April 2014 in the Gascoyne Coast occurred in nearshore (52%) and inshore demersal (41%) habitat, with lower proportions of fishing effort in offshore demersal (4%), pelagic (2%), estuary (1%) and freshwater (<1%) habitats (Figure 13a). The majority of boat-based fishing effort was attributed to line fishing (95%), with lower proportions of fishing effort from pots (2%), diving (2%), nets (1%) and other (<1%) (Figure 13b). The majority of boat-based fishing effort occurred during autumn (43%) and winter (39%). In 2013/14, fishing effort was highest in April 2014 (20%) and lowest in February 2014 (<1%) (Figure 13c). The distribution of fishing effort in the Gascoyne Coast by habitat, method and month was consistent between surveys.

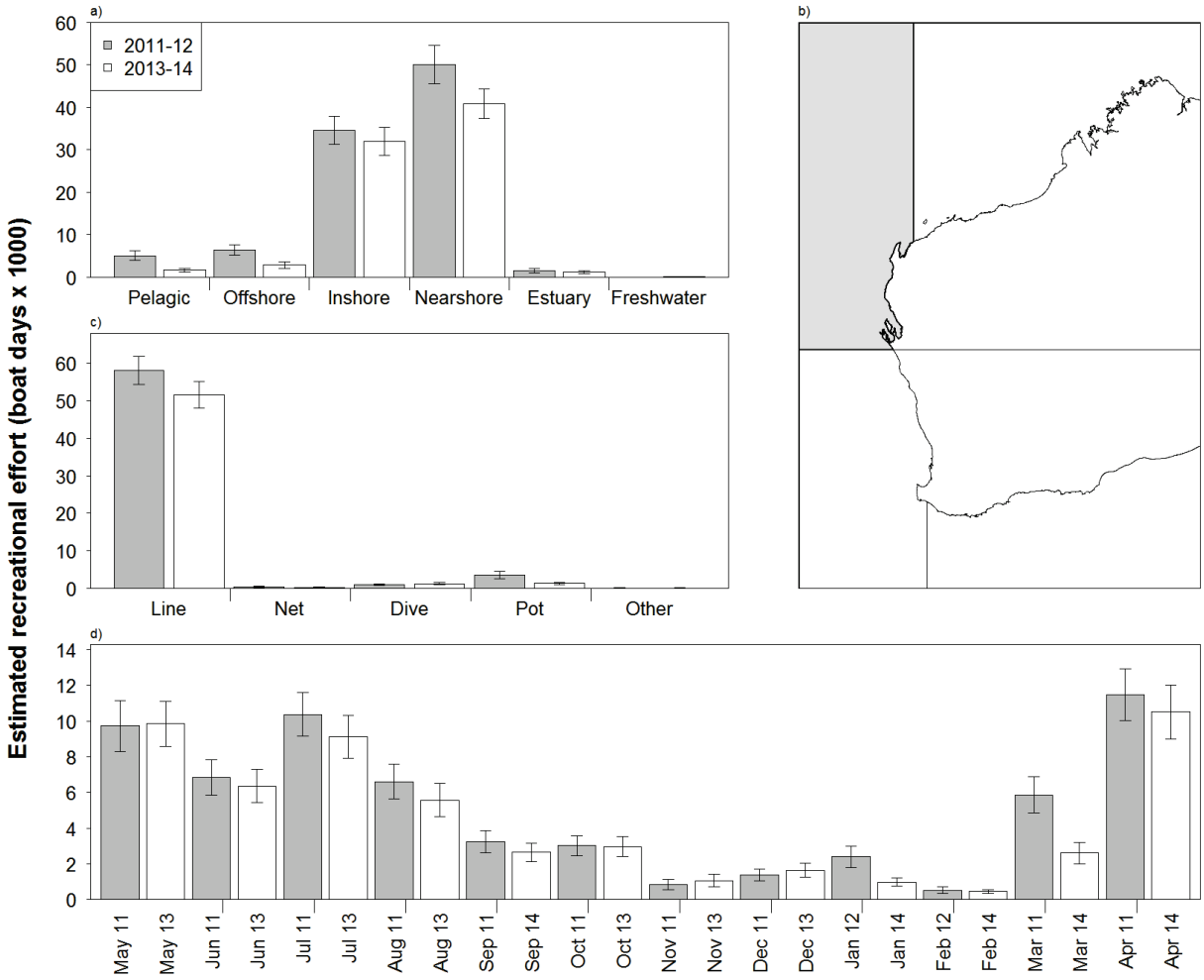


Figure 13. Boat-based recreational fishing effort (boat days x 1000) in the Gascoyne Coast during 2011/12 (grey bars) and 2013/14 (white bars); a) effort by habitat; b) map of the bioregion; c) effort by fishing method; and d) effort by month.

4.4 West Coast

The majority of boat-based fishing effort (boat days) during 1 May 2013 to 30 April 2014 in the West Coast occurred in nearshore habitat (57%), followed by inshore demersal (23%) and estuary (17%), with lower proportions of fishing effort in offshore demersal (2%), pelagic (<1%) and freshwater (<1%) habitats (Figure 14a). The majority of boat-based fishing effort was attributed to line fishing (56%) and pots (37%), with lower proportions of fishing effort from diving (5%), nets (2%) and other (<1%) (Figure 14b). The majority of boat-based fishing effort occurred during summer (42%) and autumn (29%). In 2013/14, fishing effort was highest in January 2014 (17%) and lowest in September 2013 (2%) (Figure 14c). The distribution of fishing effort in the West Coast by habitat, method and month was generally consistent between surveys, except effort by line fishing and effort in February to April, which were higher in 2011/12 compared with 2013/14.

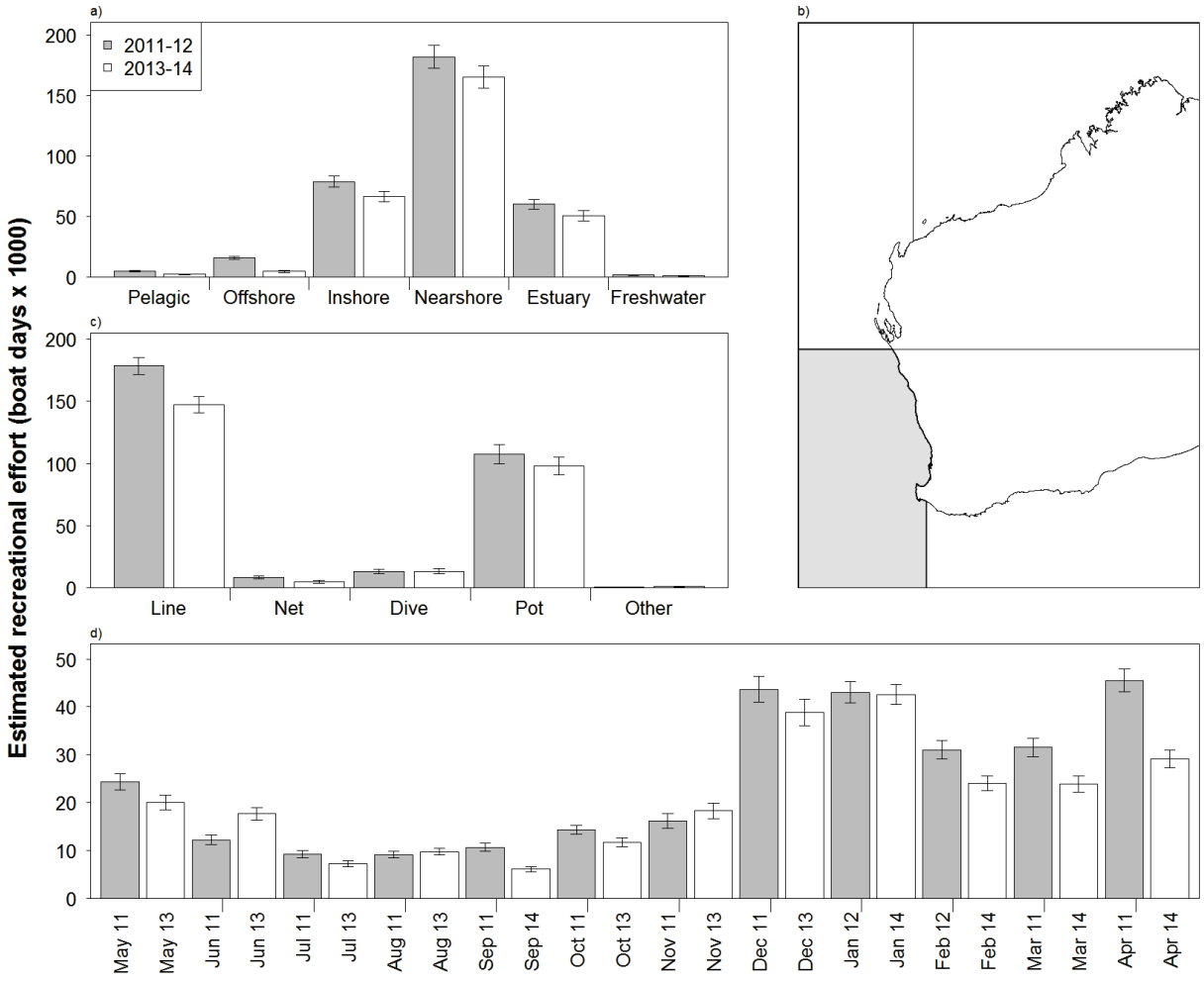


Figure 14. Boat-based recreational fishing effort (boat days x 1000) in the West Coast during 2011/12 (grey bars) and 2013/14 (white bars); a) effort by habitat; b) map of the bioregion; c) effort by fishing method; and d) effort by month.

4.5 South Coast

The majority of boat-based fishing effort (boat days) during 1 May 2013 to 30 April 2014 in the South Coast occurred in nearshore habitat (54%), followed by inshore demersal (24%) and estuary (17%), with lower proportions of fishing effort in offshore demersal (2%), pelagic (1%) and freshwater (2%) habitats (Figure 15a). The majority of boat-based fishing effort was attributed to line fishing (92%), with lower proportions of fishing effort from pots (6%), diving (1%), nets (1%) and other (<1%) (Figure 15b). The majority of boat-based fishing effort occurred during summer (37%) and autumn (27%). In 2013/14, fishing effort was highest in January 2014 (15%) and lowest in September 2013 (3% each) (Figure 15c). The distribution of fishing effort in the South Coast by habitat, method and month was generally consistent between surveys, except effort by line fishing and effort in February to April were higher in 2011/12 compared with 2013/14, and this difference in fishing effort extended across inshore demersal, nearshore and estuary habitats.

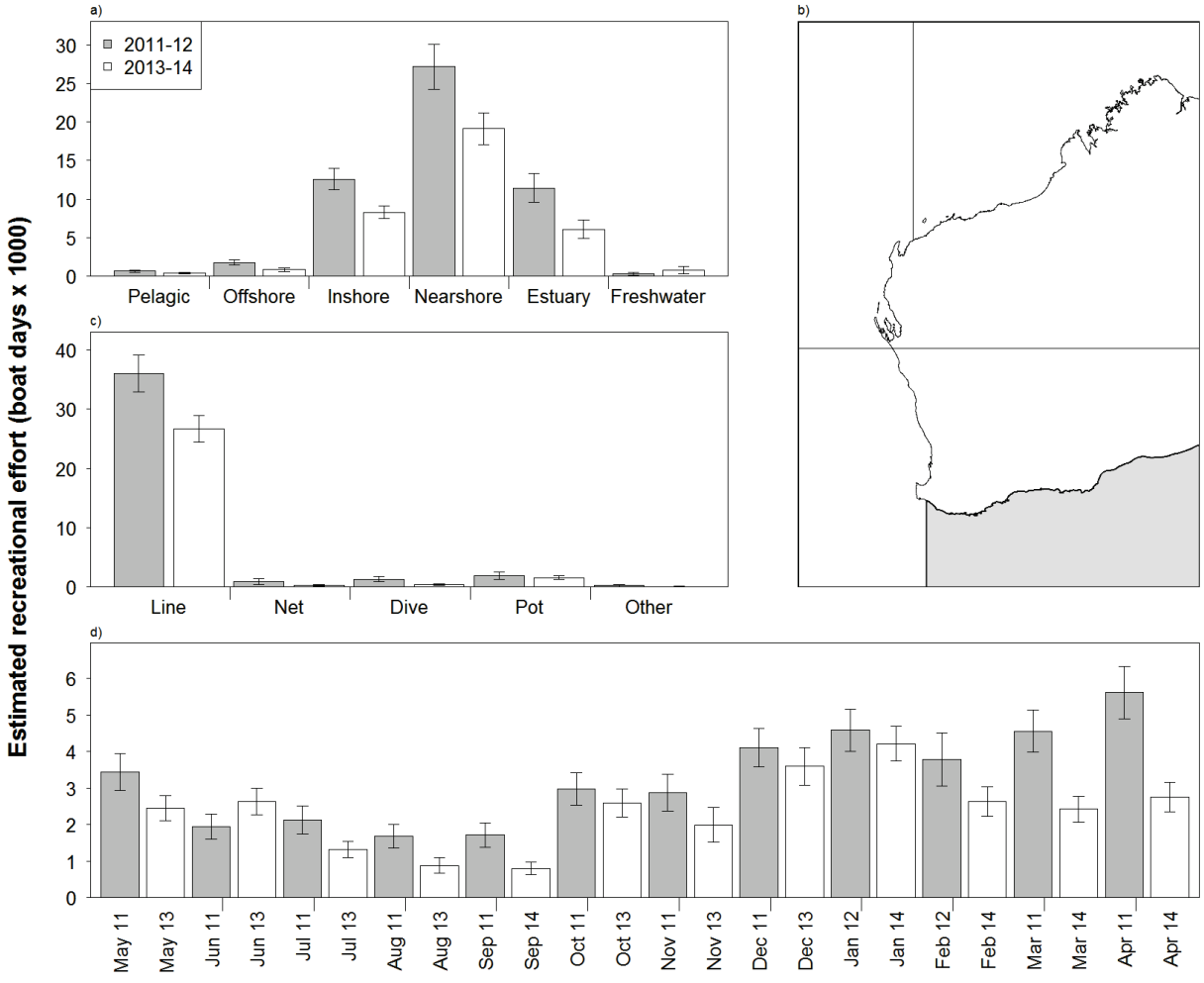


Figure 15. Boat-based recreational fishing effort (boat days x 1000) in the South Coast during 2011/12 (grey bars) and 2013/14 (white bars); a) effort by habitat; b) map of the bioregion; c) effort by fishing method; and d) effort by month.

5 State-wide Estimates of Recreational Catch

This section presents estimates of recreational catch (kept, released and total in numbers) from the Phone-Diary Survey. This 12 month longitudinal survey was based on respondents that held a Recreational Fishing from Boat Licence (RFBL) between 1 May 2012 and 30 April 2013, and were likely to fish from a boat in saltwater between 1 May 2013 and 30 April 2014 (Phone-Diary Survey). All estimates include uncertainty and all tables and figures provide associated standard errors, although these are not routinely cited in report text. The tables also provide an indication of whether the estimates are considered to be robust (i.e. sample size > 30 and relative standard error is < 0.40).

Raw data collected from diarists have been expanded to population estimates based on the total number of RFBL holders divided by the number of RFBL holders sampled for each residential stratum. Final estimates will include adjustment of these weighting factors to account for avidity bias and non-intending fishing (see section on Future Research). The estimates (and errors) in the following section may be revised on this basis. Additionally, the shore-based recreational catch has not been assessed in this report. Shore-based fishers and boat-based fishers that intended to fish only in freshwater were out of scope for the Phone-Diary Survey. The catch estimates for inland, estuarine and nearshore species provided in this report, particularly those harvested with high proportions of shore-based effort, will be underestimated. Additionally, catch estimates for Western Rock Lobster, which can be harvested by fishers with only a Rock Lobster licence, will also be underestimated.

5.1 Annual catch (total, kept and released numbers)

The estimated annual catch (total, kept and released numbers) and proportion released during 2013/14 by RFBL holders aged five years or older is given in Table 5. Boat-based recreational fishers caught a diverse range of species/taxa during the 12-month survey, including scalefish (195 species/taxa), elasmobranchs (20), crustaceans (nine) and molluscs (six). A total of 3.4 million individual species/taxa were caught. A similar proportion of the catch was either kept (approx. 1.5 million or 43.5%) or released (approx. 1.9 million or 56.5%). Approximately 70% of the recreational catch comprised finfish (2.0 million) in comparison to invertebrates (1.4 million). A similar proportion of finfish (56%) and invertebrates (57%) were released.

School Whiting (*Sillago bassensis, S. vittata* and *S. schomburgkii*) was the most commonly caught finfish species state-wide with (352,115, or 17% of the finfish catch), followed by Australian Herring (*Arripis georgianus*) (173,408 or 9%), Pink Snapper (*Chrysophrys auratus*) (148,782 or 7%), Black Bream (*Acanthopagrus butcheri*) (125,629 or 6%), King George Whiting (*Sillaginodes punctata*) (102,080 or 5%), Silver Trevally (*Pseudocaranx dentex*) (62,267 or 3%), Western King Wrasse (*Coris auricularis*) (60,159 or 3%), West Australian Dhufish (*Glaucosoma hebraicum*) (59,911 or 3%), Grass Emperor (*Lethrinus nebulosus*) (57,814 or 3%) and Spangled Emperor (*Lethrinus laticaudis*) (40,178 or 2%). High release rates were observed for many of these species, including Pink Snapper (83%), Black Bream (91%), Silver Trevally (44%), Western King Wrasse (85%), West Australian

Dhufish (68%), Grass Emperor (64%) and Spangled Emperor (69%). Release rates were lower for School Whiting (22%), Australian Herring (24%) and King George Whiting (27%).

Blue Swimmer Crab (*Portunus armatus*) was the most commonly caught invertebrate species (901,458 kept or released state-wide by number, or 66% of the invertebrate catch), followed by Western Rock Lobster (*Panulirus cygnus*) (341,277 or 25%), Squid (Order Teuthoidea) (78,857 or 6%) and Mud Crab (*Scylla olivacea* and *S serrata*) (24,768 or 2%). High release rates were observed for Blue Swimmer Crab (68%), Western Rock Lobster (41%) and Mud Crab (55%) compared with Squid (7%).

5.2 Release Rates

A summary of release rates for species released by fishers during 2013/14 by RFBL holders aged five years or older is given Table 6. Lowest release rates were observed for Hapuku (0%), Prawn (0%), Abalone (3%), Yelloweye Mullet (4%), Squid (5%), Wahoo (6%), Robust Garfish (7%), Western Blue Groper (7%), Goldband Snapper (10%), Tropical Lobster (10%), Robinson's Seabream (13%), Sand Bass (13%), Sea Mullet (14%), Australian Herring (15%), Blue Morwong (15%), Harlequin Fish (17%) and Southern Garfish (18%). Highest release rates were observed for Rainbow Runner (90%), Blue-Eye Trevalla (94%), Western Sooty Grunter (95%), Billfish (96%), Longtom (96%), Eeltail Catfishes (98%), Western Shovelnose Ray (99%), Western Striped Grunter (100%), Sawshark (100%) and Port Jackson Shark (100%). High release rates were also observed for poisonous species including Blowfish (98%), Silver Toadfish (91%) and Weeping Toadfish (100%), and protected species including Greynurse Shark (100%), Humphead Maori Wrasse (97%), Potato Rockcod (77%) and Queensland Grouper (95%).

5.3 Reasons for Release

A summary of the proportions for common reasons for release during 2013/14 is given Table 7. The most common reasons for release were: Too Small (personal preference), Undersize (below legal limit), Too Many (personal preference), Over Limit (Above legal bag limit), Catch Release (sport fishing) and Other, which includes protected females and species.

"Too Small" includes catches that are too small in terms of personal preference, not related to regulations. This reason for release occurred in proportions of 35% or more for Squid, Chinaman Rockcod, Harlequin Fish, Northern Sand Flathead, Snook, Bight Redfish, Crimson Snapper, School Whiting, Port Jackson Shark and Southern Garfish,.

"Under Size" includes catches below the legal size limit. This reason for release occurred in proportions of 50% or more for Western Rock Lobster, Blue Swimmer Crab, Mud Crab, Black Bream, Pink Snapper, Tarwhine, Western Yellowfin Bream, Breaksea Cod, Yellowspotted Rockcod, Barcheek Coral Trout, Common Coral Trout, Yellowedge Coronation Trout, Grass Emperor, Redthroat Emperor, Robinson's Seabream, Spangled Emperor, Northern Sand Flathead, Southern Bluespotted Flathead, Yellowtail Flathead, Mulloway, School Mackerel, Northern Pearl Perch, West Australian Dhufish, Striped Seapike, Bight Redfish, Goldband Snapper, Golden Snapper, Moses' Snapper, Red Emperor, Stripey Snapper, Painted Sweetlips, Tailor, Blue Threadfin, Baldchin Groper, Blackspot Tuskfish, Blue Tuskfish and King George Whiting.

“Too Many” includes catches the fisher did not want/need anymore/any, had enough, not wanted, not targeted, no preference. This reason for release occurred in proportions of 35% or more for Cuttlefish, Octopus, Bronze Whaler, Dusky Whaler, Gummy Sharks, Port Jackson Shark, Wobbegong, Western Shovelnose Ray, Barramundi, Western Butterfish, Giant Sea Catfish, Cobia, Rankin Cod, Yellowspotted Rockcod, Bluespotted Goatfish, Leatherjacket, Shark Mackerel, Spanish Mackerel, Spotted Mackerel, Northern Pearl Perch, Snook, Striped Seapike, Swallowtail, Sergeant Baker, Golden Snapper, Chinamanfish, Banded Sweep, Sea Sweep, Painted Sweetlips, Samsonfish, Giant Trevally, Golden Trevally, Silver Trevally, Southern Bluefin Tuna, Brownspotted Wrasse, Foxfish, Western King Wrasse and Morid Cod.

“Over Limit” includes catches above the legal bag limit. This reason for release did not occur in proportions greater than 20%. “Over Limit” catches occurred in proportions of 10–20% for Western Rock Lobster, Gummy Sharks, Common Coral Trout, Yellowedge Coronation Trout, Robinson’s Seabream, Blue Morwong, West Australian Dhufish, Striped Seapike, Australian Herring, Western Australian Salmon, Goldband Snapper, Crimson Snapper, Mackerel Tuna and Baldchin Groper.

“Catch Release” fishing includes sport fishing, where fish are not tagged before release. This reason for release occurred in proportions of 35% or more for Billfish, Black Bream, Yellowedge Coronation Trout, Blue Threadfin and Southern Bluefin Tuna.

“Other” reasons for release included greater than legal limit, too big, too few (not enough for a meal/dinner/all of us), tag & release, conservation (other than legally protected species), sick (fish has signs of disease), damaged, deformed (not sick or damaged), dangerous, female (berried, eggs, setose, tar spot), poor eating quality (don't taste good, not nice to eat, slimy, hard to clean, many bones, too much effort to cook, perceived or known), species unknown (not sure about species, eating quality or taste), poisonous (flesh or spines), did not have tag to keep (e.g. Pink Snapper), protected species (e.g. sawfish), or mistake (caught but got away, nothing to store fish in). This reason for release occurred in proportions of 35% or more for Western Rock Lobster, Bronze Whaler, Dusky Whaler, Gummy Sharks, Port Jackson Shark, Wobbegong, Western Shovelnose Ray, Billfish, Western Butterfish, Giant Sea Catfish, Bluespotted Goatfish, Western Striped Grunter, Leatherjacket, Queenfish, Sergeant Baker, Banded Sweep, Sea Sweep, Samsonfish, Yellowtail Kingfish, Mackerel Tuna, Brownspotted Wrasse, Southern Maori Wrasse, Western King Wrasse, Bluebarred Parrotfish, Silver Toadfish, Weeping Toadfish.

Table 5. Estimated annual catch (total, kept and released numbers) and proportion released during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Abalone	Roe's Abalone	*Haliotis roei*	***1,934***	***1,022***	*0*	*0*	***1,934***	***1,022***	*0%*
	Greenlip Abalone	*Haliotis laevigata*	***703***	***361***	*0*	*0*	***703***	***361***	*0%*
	Brownlip Abalone	*Haliotis rubra conicopora*	***1,356***	***860***	*0*	*0*	***1,356***	***860***	*0%*
Cephalopod	Cuttlefish	*Sepia spp*	1,477	230	571	130	2,048	267	*28%*
	Octopus	*Octopus spp*	2,767	947	259	79	3,026	976	*9%*
	Squid	*Order Teuthoidea*	73,197	7,162	**5,660**	**2,480**	78,857	7,904	*7%*
Lobster	Western Rock Lobster	*Panulirus cygnus*	201,486	20,269	139,791	14,805	341,277	31,941	*41%*
	Southern Rock Lobster	*Jasus edwardsii*	***8,067***	***5,353***	***2,000***	***957***	***10,067***	***5,673***	*20%*
	Painted Rock Lobster	*Panulirus versicolor*	***441***	***191***	***297***	***122***	*738*	*263*	*40%*
	Ornate Rock Lobster	*Panulirus ornatus*	*184*	*52*	***24***	***11***	*208*	*61*	*11%*
Crab	Blue Swimmer Crab	*Portunus armatus*	285,202	19,039	616,256	53,032	901,458	69,286	*68%*
	Sand Crab	*Ovalipes spp*	***22***	***20***	***721***	***453***	***743***	***454***	*97%*
	Mud Crab	*Scylla olivacea & S serrata*	11,172	1,516	13,596	2,343	24,768	3,553	*55%*
Sharks	Blacktip Reef Shark	*Carcharhinus melanopterus*	*0*	*0*	*735*	*285*	*735*	*285*	*100%*
	Bronze Whaler	*Carcharhinus brachyurus*	657	110	6,577	2,562	7,234	2,582	*91%*
	Dusky Whaler	*Carcharhinus obscurus*	211	74	1,892	396	2,104	445	*90%*
	Lemon Shark	*Negaprion acutidens*	***17***	***15***	***349***	***214***	***366***	***214***	*95%*
	Sandbar Shark	*Carcharhinus plumbeus*	***43***	***38***	*275*	*81*	*318*	*90*	*86%*
	Tiger Shark	*Galeocerdo cuvier*	***11***	***10***	*670*	*220*	*681*	*220*	*98%*
	Whitetip Reef Shark	*Triaenodon obesus*	69	24	1,124	217	1,193	224	*94%*
	Greynurse Shark PROTECTED	*Carcharias taurus*	***11***	***10***	***546***	***256***	***557***	***257***	*98%*
	Gummy Sharks	*Mustelus antarcticus & M stevensi*	834	131	856	279	1,690	322	*51%*
	Hammerhead Shark	*Family Sphyrnidae*	***50***	***24***	*454*	*115*	*504*	*117*	*90%*
	Port Jackson Shark	*Heterodontus portusjacksoni*	**17**	**15**	**4,212**	**2,103**	**4,229**	**2,104**	*100%*
	Sawshark	*Family Pristiophoridae*	*0*	*0*	***19***	***15***	***19***	***15***	*100%*
	School Shark	*Galeorhinus galeus*	***8***	***8***	*0*	*0*	***8***	***8***	*0%*
	Whiskery Shark	*Furgaleus macki*	*223*	*79*	***90***	***40***	*313*	*91*	*29%*
	Wobbegong	*Family Orectolobidae*	**78**	**34**	787	171	865	182	*91%*
	Other Whaler	*Carcharhinidae - undifferentiated*	333	105	3,779	520	4,112	546	*92%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Other Shark	*Sharks - undifferentiated*	**66**	**34**	789	246	854	248	*92%*
Rays	Sawfishes PROTECTED	*Pristidae - undifferentiated*	***7***	***5***	***368***	***184***	***375***	***184***	*98%*
	Western Shovelnose Ray	*Aptychotrema vincentiana*	**34**	**30**	942	160	976	168	*97%*
	Other Rays Skates	*Rays - undifferentiated*	**71**	**37**	3,466	572	3,538	573	*98%*
Barracouta	Barracouta	*Thyrsites atun*	***659***	***567***	*593*	*170*	***1,253***	***592***	*47%*
Barramundi	Barramundi	*Lates calcarifer*	1,676	376	17,978	6,968	19,654	7,301	*91%*
Bass Groper	Bass Groper	*Polyprion americanus*	***38***	***24***	*0*	*0*	***38***	***24***	*0%*
Billfish	Black Marlin	*Makaira indica*	***6***	***3***	*973*	*278*	*979*	*278*	*99%*
	Blue Marlin	*Makaira nigricans*	***5***	***2***	***3,882***	***3,245***	***3,887***	***3,245***	*100%*
	Sailfish	*Istiophorus platypterus*	**18**	**12**	1,934	536	1,953	536	*99%*
	Striped Marlin	*Tetrapturus audax*	*0*	*0*	***5***	***3***	***5***	***3***	*100%*
Bonito	Bonito	*Sarda spp*	1,513	349	1,119	396	2,632	555	*43%*
	Oriental Bonito	*Sarda orientalis*	*1,170*	*287*	***1,069***	***522***	*2,239*	*617*	*48%*
Bream	Black Bream	*Acanthopagrus butcheri*	11,653	2,224	113,977	26,782	125,629	27,365	*91%*
	Frypan Bream	*Argyrops spinifer*	***137***	***59***	***86***	***38***	*222*	*71*	*39%*
	Northwest Black Bream	*Acanthopagrus palmaris*	720	248	2,938	865	3,658	1,054	*80%*
	Pink Snapper	*Chrysophrys auratus*	25,200	1,610	123,582	12,918	148,782	13,569	*83%*
	Tarwhine	*Rhabdosargus sarba*	1,978	524	10,908	2,707	12,885	2,814	*85%*
	Western Yellowfin Bream	*Acanthopagrus morrisoni*	1,089	288	3,778	717	4,867	810	*78%*
	Other Bream	*Sparidae - undifferentiated*	***282***	***131***	***786***	***381***	*1,069*	*405*	*74%*
Threadfin Bream	Rosy Threadfin Bream	*Nemipterus furcosus*	***69***	***36***	***7***	***5***	***76***	***38***	*10%*
	Western Butterfish	*Pentapodus vitta*	6,209	1,642	19,800	2,847	26,009	3,454	*76%*
Butterfish	Other Butterfish	*Stromateidae - undifferentiated*	***10***	***7***	***2,003***	***864***	***2,013***	***864***	*100%*
Catfish	Eeltail Catfishes	*Plotosidae - undifferentiated*	**20**	**9**	4,397	1,224	4,416	1,224	*100%*
	Estuary Cobbler	*Cnidoglanis macrocephalus*	***73***	***33***	***42***	***20***	*115*	*39*	*37%*
	Giant Sea Catfish	*Arius thalassinus*	151	59	5,498	865	5,650	872	*97%*
	Silver Cobbler	*Neoarius midgleyi*	***371***	***221***	*1,191*	*371*	*1,563*	*531*	*76%*
Cobia	Cobia	*Rachycentron canadum*	905	136	547	129	1,452	212	*38%*
Cod	Barramundi Cod	*Cromileptes altivelis*	*79*	*27*	***575***	***381***	***655***	***392***	*88%*
	Blackspotted Rockcod	*Epinephelus malabaricus*	3,081	545	11,826	1,800	14,907	2,056	*79%*
	Blacktip Rockcod	*Epinephelus fasciatus*	***92***	***40***	***1,196***	***688***	***1,288***	***690***	*93%*
	Breaksea Cod	*Epinephelides armatus*	16,449	1,124	14,218	1,421	30,667	2,261	*46%*
	Chinaman Rockcod	*Epinephelus rivulatus*	6,197	1,565	14,988	2,066	21,185	3,269	*71%*
	Duskytail Grouper	*Epinephelus bleekeri*	***25***	***17***	*0*	*0*	***25***	***17***	*0%*
	Eightbar Grouper	*Hyporthodus octofasciatus*	*195*	*56*	***19***	***11***	*213*	*57*	*9%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Frostback Rockcod	*Epinephelus bilobatus*	***434***	***186***	***1,743***	***1,166***	***2,177***	***1,325***	*80%*
	Goldspotted Rockcod	*Epinephelus coioides*	4,096	754	9,643	1,211	13,739	1,648	*70%*
	Harlequin Fish	*Othos dentex*	1,600	174	**890**	**538**	2,490	569	*36%*
	Potato Rockcod PROTECTED	*Epinephelus tukula*	***6***	***6***	*136*	*53*	*142*	*53*	*96%*
	Queensland Grouper PROTECTED	*Epinephelus lanceolatus*	***39***	***30***	***81***	***40***	***120***	***51***	*67%*
	Rankin Cod	*Epinephelus multinotatus*	4,173	494	2,838	366	7,010	741	*40%*
	Tomato Rockcod	*Cephalopholis sonnerati*	*519*	*177*	***592***	***286***	*1,110*	*395*	*53%*
	Temperate Rockcods	*Epinephelidae - undifferentiated*	***25***	***16***	*636*	*194*	*662*	*197*	*96%*
	Yellowspotted Rockcod	*Epinephelus areolatus*	**915**	**408**	2,449	778	3,363	997	*73%*
Coral Trout	Barcheek Coral Trout	*Plectropomus maculatus*	4,111	452	4,747	616	8,858	873	*54%*
	Common Coral Trout	*Plectropomus leopardus*	1,371	261	2,053	470	3,424	649	*60%*
	Yellowedge Coronation Trout	*Variola louti*	509	138	330	101	839	171	*39%*
Emperor	Bluespotted Emperor	*Lethrinus punctulatus*	1,233	357	4,737	1,266	5,970	1,520	*79%*
	Grass Emperor	*Lethrinus laticaudis*	21,060	3,348	36,754	4,200	57,814	6,538	*64%*
	Longnose Emperor	*Lethrinus olivaceus*	*199*	*71*	***510***	***222***	*710*	*240*	*72%*
	Redspot Emperor	*Lethrinus lentjan*	***98***	***55***	***392***	***271***	***490***	***291***	*80%*
	Redthroat Emperor	*Lethrinus miniatus*	6,055	845	18,321	2,412	24,376	2,831	*75%*
	Robinsons' Seabream	*Gymnocranius grandoculis*	1,495	454	395	150	1,890	524	*21%*
	Spangled Emperor	*Lethrinus nebulosus*	12,364	1,426	27,814	5,269	40,178	6,243	*69%*
	Yellowtail Emperor	*Lethrinus atkinsoni*	*240*	*90*	***165***	***86***	*404*	*145*	*41%*
	Other Emperor	*Lethrinidae - undifferentiated*	*178*	*67*	***340***	***256***	***518***	***283***	*66%*
Flathead	Northern Sand Flathead	*Platycephalus endrachtensis*	437	114	547	198	984	251	*56%*
	Southern Bluespotted Flathead	*Platycephalus speculator*	2,585	351	18,940	3,121	21,525	3,217	*88%*
	Yellowtail Flathead	*Platycephalus westraliae*	1,555	338	10,396	2,223	11,952	2,361	*87%*
	Other Flathead	*Platycephalidae - undifferentiated*	616	147	3,597	995	4,213	1,030	*85%*
Flounder	Largetooth Flounder	*Pseudorhombus arsius*	***80***	***39***	***9***	***8***	***89***	***40***	*10%*
	Smalltooth Flounder	*Pseudorhombus jenynsii*	480	105	305	111	785	153	*39%*
	Flounder Sole Flatfish	*Bothidae & Pleuronectidae spp*	*127*	*45*	***108***	***48***	*235*	*72*	*46%*
Garfish	Three-by-two Garfish	*Hemiramphus robustus*	*3,043*	*980*	***23***	***12***	*3,066*	*980*	*1%*
	Southern Garfish	*Hyporhamphus melanochir*	2,809	745	1,005	301	3,814	866	*26%*
	Other Garfish	*Hemiramphidae - undifferentiated*	***181***	***108***	***34***	***30***	***214***	***112***	*16%*
Goatfish	Bluespotted Goatfish	*Upeneichthys vlamingii*	705	158	2,712	564	3,417	658	*79%*
Grunter	Sea Trumpeter	*Pelsartia humeralis*	**1,164**	**763**	10,688	1,949	11,852	2,094	*90%*
	Western Striped Grunter	*Pelates octolineatus*	**215**	**183**	15,384	2,827	15,599	2,834	*99%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Western Sooty Grunter	*Hephaestus jenkinsi*	***767***	***609***	***2,716***	***1,318***	***3,483***	***1,742***	*78%*
Grunter Bream	Grunter Bream	*Haemulidae - undifferentiated*	***32***	***18***	***1,568***	***943***	***1,600***	***945***	*98%*
Gurnard	Gurnard	*Neosebastidae - undifferentiated*	153	52	3,369	519	3,522	537	*96%*
Hapuku	Hapuku	*Polyprion oxygeneios*	***120***	***65***	***34***	***22***	***154***	***69***	*22%*
Javelinfish	Barred Javelin	*Pomadasys kaakan*	***79***	***44***	*350*	*138*	*430*	*145*	*82%*
	Blotched Javelin	*Pomadasys maculatus*	***12***	***6***	***76***	***36***	***88***	***37***	*86%*
Jewfish	Black Jewfish	*Protonibea diacanthus*	562	131	860	227	1,423	309	*60%*
	Mulloway	*Argyrosomus japonicus*	1,620	608	2,084	668	3,704	1,087	*56%*
Leatherjacket	Horseshoe Leatherjacket	*Meuschenia hippocrepis*	179	50	1,256	303	1,435	312	*88%*
	Sixspine Leatherjacket	*Meuschenia freycineti*	*110*	*40*	*1,344*	*407*	*1,454*	*415*	*92%*
	Leatherjacket	*Monacanthidae - undifferentiated*	835	186	6,155	1,479	6,991	1,507	*88%*
Lizardfish Grinners	Lizardfish Grinners	*Bathysauridae, Synodontidae - undifferentiated*	***178***	***152***	*1,671*	*551*	*1,849*	*572*	*90%*
Longtom	Longtom	*Belonidae - undifferentiated*	***79***	***37***	*517*	*160*	*596*	*165*	*87%*
Mackerel	Blue Mackerel	*Scomber australasicus*	*557*	*180*	*1,441*	*474*	*1,998*	*596*	*72%*
	Grey Mackerel	*Scomberomorus semifasciatus*	*222*	*63*	***169***	***81***	*392*	*111*	*43%*
	School Mackerel	*Scomberomorus queenslandicus*	2,906	798	**5,354**	**2,851**	**8,260**	**3,583**	*65%*
	Shark Mackerel	*Grammatorcynus bicarinatus*	304	68	909	214	1,213	241	*75%*
	Spanish Mackerel	*Scomberomorus commerson*	9,067	853	8,360	1,343	17,428	1,870	*48%*
	Spotted Mackerel	*Scomberomorus munroi*	499	134	415	127	914	215	*45%*
	Wahoo	*Acanthocybium solandri*	*162*	*43*	***182***	***122***	***344***	***141***	*53%*
	Other Mackerels and Tunas	*Scombridae - undifferentiated*	*356*	*108*	*653*	*193*	*1,009*	*241*	*65%*
Mahi Mahi	Mahi Mahi	*Coryphaena spp*	*637*	*193*	*402*	*134*	*1,039*	*302*	*39%*
Morwong	Blue Morwong	*Nemadactylus valenciennesi*	3,906	365	1,500	290	5,406	533	*28%*
	Dusky Morwong	*Dactylophora nigricans*	***51***	***25***	*110*	*44*	*161*	*51*	*68%*
	Other Morwong	*Cheilodactylidae - undifferentiated*	***16***	***9***	***42***	***32***	***58***	***34***	*73%*
Mullet	Bluetail Mullet	*Valamugil buchanani*	***646***	***280***	***211***	***168***	***857***	***380***	*25%*
	Diamondscale Mullet	*Liza vaigiensis*	***156***	***109***	*0*	*0*	***156***	***109***	*0%*
	Greenback Mullet	*Liza subviridis*	***207***	***152***	***20***	***14***	***227***	***166***	*9%*
	Sea Mullet	*Mugil cephalus*	*15,512*	*5,514*	***40***	***25***	*15,552*	*5,514*	*0%*
	Yelloweye Mullet	*Aldrichetta forsteri*	***2,814***	***1,299***	***706***	***412***	*3,520*	*1,381*	*20%*
	Other Mullet	*Mugilidae - undifferentiated*	*833*	*274*	***414***	***283***	*1,247*	*393*	*33%*
Pearl Perch	Northern Pearl Perch	*Glaucosoma buergeri*	641	162	388	110	1,029	216	*38%*
	West Australian Dhufish	*Glaucosoma hebraicum*	18,907	1,335	41,003	5,239	59,911	5,975	*68%*
Pike	Great Barracuda	*Sphyraena barracuda*	*120*	*44*	*396*	*112*	*517*	*131*	*77%*
	Snook	*Sphyraena novaehollandiae*	5,065	1,329	2,014	488	7,078	1,644	*28%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Striped Seapike	*Sphyraena obtusata*	**5,630**	**3,097**	**3,388**	**1,734**	9,018	3,597	*38%*
	Other Pike	*Sphyraenidae - undifferentiated*	*160*	*53*	***35***	***30***	*194*	*61*	*18%*
Queenfish	Queenfish	*Scomberoides spp*	581	166	1,553	348	2,134	388	*73%*
Redfish	Bight Redfish	*Centroberyx gerrardi*	9,891	1,009	5,011	599	14,902	1,427	*34%*
	Swallowtail	*Centroberyx lineatus*	1,749	330	1,935	310	3,684	494	*53%*
	Yelloweye Redfish	*Centroberyx australis*	***17***	***15***	*0*	*0*	***17***	***15***	*0%*
Salmon Herring	Australian Herring	*Arripis georgianus*	132,155	11,812	41,253	5,548	173,408	15,113	*24%*
	Western Australian Salmon	*Arripis truttaceus*	2,317	368	4,192	1,053	6,509	1,208	*64%*
Sand Bass	Sand Bass	*Psammoperca waigiensis*	***130***	***81***	***80***	***36***	***210***	***96***	*38%*
Sergeant Baker	Sergeant Baker	*Aulopus purpurissatus*	1,591	327	6,859	859	8,450	995	*81%*
Snappers King	Goldband Snapper	*Pristipomoides multidens*	3,499	742	672	212	4,171	826	*16%*
	Rosy Snapper	*Pristipomoides filamentosus*	*629*	*224*	*360*	*141*	*989*	*328*	*36%*
	Sharptooth Snapper	*Pristipomoides typus*	***65***	***32***	***48***	***28***	*113*	*43*	*42%*
Snappers Tropical	Brownstripe Snapper	*Lutjanus vitta*	***17***	***15***	***110***	***55***	***127***	***57***	*87%*
	Crimson Snapper	*Lutjanus erythropterus*	1,646	394	1,689	448	3,335	732	*51%*
	Darktail Snapper	*Lutjanus lemniscatus*	*216*	*78*	***63***	***29***	*279*	*97*	*23%*
	Flame Snapper	*Etelis coruscens*	***17***	***15***	*0*	*0*	***17***	***15***	*0%*
	Golden Snapper	*Lutjanus johnii*	1,384	257	3,678	848	5,062	1,028	*73%*
	Mangrove Jack	*Lutjanus argentimaculatus*	4,361	679	7,114	1,314	11,476	1,802	*62%*
	Maori Snapper	*Lutjanus rivulatus*	***40***	***32***	***7***	***5***	***47***	***33***	*16%*
	Moses' Snapper	*Lutjanus russellii*	1,114	199	3,091	605	4,205	738	*74%*
	Red Emperor	*Lutjanus sebae*	5,290	902	4,253	610	9,544	1,332	*45%*
	Ruby Snapper	*Etelis carbunculus*	***1,141***	***596***	***62***	***42***	***1,203***	***603***	*5%*
	Saddletail Snapper	*Lutjanus malabaricus*	1,294	253	1,647	452	2,941	596	*56%*
	Stripey Snapper	*Lutjanus carponotatus*	7,437	1,535	26,464	3,435	33,901	4,685	*78%*
	Fusiliers	*Caesionidae, Lutjanidae, Symphysanodontidae - undifferentiated*	*99*	*32*	***553***	***287***	***652***	***289***	*85%*
	Chinamanfish	*Symphorus nematophorus*	828	209	861	229	1,690	337	*51%*
Sweep	Banded Sweep	*Scorpis georgiana*	734	265	919	268	1,653	386	*56%*
	Sea Sweep	*Scorpis aequipinnis*	2,270	364	2,473	391	4,743	590	*52%*
Sweetlips	Painted Sweetlips	*Diagramma labiosum*	3,083	905	2,972	880	6,055	1,525	*49%*
Tailor	Tailor	*Pomatomus saltatrix*	8,370	1,410	8,666	1,870	17,036	2,602	*51%*
Threadfin	Blue Threadfin	*Eleutheronema tetradactylum*	2,006	416	1,010	278	3,015	604	*33%*
	King Threadfin	*Polydactylus macrochir*	*401*	*98*	***690***	***350***	*1,091*	*402*	*63%*
Trevalla	Blue-Eye Trevalla	*Hyperoglyphe antarctica*	***76***	***49***	***216***	***117***	***293***	***127***	*74%*
Trevally	Amberjack	*Seriola dumerili*	*269*	*89*	***227***	***96***	*495*	*152*	*46%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Samsonfish	*Seriola hippos*	2,737	366	7,966	995	10,704	1,181	*74%*
	Yellowtail Kingfish	*Seriola lalandi*	1,144	211	**1,786**	**1,013**	2,930	1,142	*61%*
	Giant Trevally	*Caranx ignobilis*	688	165	3,553	870	4,241	984	*84%*
	Golden Trevally	*Gnathanodon speciosus*	1,994	442	5,367	1,063	7,361	1,246	*73%*
	Bludger Trevally	*Carangoides gymnostethus*	***206***	***87***	***234***	***165***	***440***	***188***	*53%*
	Silver Trevally	*Pseudocaranx dentex*	34,948	3,465	27,319	3,346	62,267	5,693	*44%*
	Rainbow Runner	*Elagatis bipinnulata*	***6***	***4***	***38***	***24***	***44***	***24***	*86%*
	Common Dart	*Trachinotus botla*	***23***	***16***	***64***	***33***	***88***	***37***	*73%*
	Yellowtail Scad	*Trachurus novaezelandiae*	*915*	*278*	*1,919*	*539*	*2,835*	*610*	*68%*
	Turrum	*Carangoides fulvoguttatus*	*221*	*64*	***910***	***430***	***1,131***	***477***	*80%*
	Other Trevally	*Carangidae - undifferentiated*	1,786	433	2,081	362	3,867	587	*54%*
Tripletail	Tripletail	*Lobotes surinamensis*	***90***	***39***	***52***	***38***	***142***	***73***	*36%*
Trumpeter	Trumpeter	*Latridopsis spp*	***51***	***46***	*6,020*	*2,312*	*6,071*	*2,313*	*99%*
Tuna	Dogtooth Tuna	*Gymnosarda unicolor*	*61*	*24*	***74***	***61***	***135***	***65***	*55%*
	Mackerel Tuna	*Euthynnus affinis*	1,526	450	1,271	356	2,796	614	*45%*
	Longtail Tuna	*Thunnus orientalis*	509	107	924	219	1,433	263	*64%*
	Skipjack Tuna	*Katsuwonus pelamis*	*386*	*122*	*531*	*199*	*918*	*259*	*58%*
	Southern Bluefin Tuna	*Thunnus maccoyii*	460	82	**203**	**90**	663	126	*31%*
	Yellowfin Tuna	*Thunnus albacares*	1,151	269	770	211	1,921	383	*40%*
Tuskfish Wrasse	Baldchin Groper	*Choerodon rubescens*	11,968	1,010	14,243	4,412	26,211	4,686	*54%*
	Blackspot Tuskfish	*Choerodon schoenleinii*	3,615	666	10,216	2,038	13,830	2,346	*74%*
	Blue Tuskfish	*Choerodon cyanodus*	1,975	475	9,413	2,911	11,388	3,049	*83%*
	Bluespotted Tuskfish	*Choerodon cauteroma*	***173***	***78***	*341*	*130*	*514*	*164*	*66%*
	Brownspotted Wrasse	*Notolabrus parilus*	2,616	514	22,736	2,193	25,352	2,358	*90%*
	Foxfish	*Bodianus frenchii*	1,437	200	1,267	338	2,705	440	*47%*
	Goldspot Pigfish	*Bodianus perditio*	*162*	*59*	***148***	***75***	*310*	*106*	*48%*
	Humphead Maori Wrasse	*Cheilinus undulatus*	***16***	***13***	***434***	***365***	***450***	***365***	*96%*
	Purple Tuskfish	*Choerodon cephalotes*	***215***	***95***	***463***	***246***	***678***	***284***	*68%*
	Southern Maori Wrasse	*Ophthalmolepis lineolatus*	599	209	6,710	1,867	7,310	1,900	*92%*
	Western Blue Groper	*Achoerodus gouldii*	*346*	*101*	***383***	***196***	*729*	*221*	*52%*
	Western King Wrasse	*Coris auricularis*	9,075	2,062	51,083	4,785	60,159	5,639	*85%*
	Other Tuskfish	*Choerodon spp*	***59***	***45***	***88***	***79***	***147***	***90***	*60%*
	Other Wrasse	*Labridae - undifferentiated*	600	220	5,503	1,220	6,103	1,253	*90%*
	Bluebarred Parrotfish	*Scarus ghobban spp complex*	**3,324**	**2,797**	**5,424**	**2,443**	**8,747**	**5,196**	*62%*
	Other Parrotfish	*Scaridae - undifferentiated*	*503*	*196*	*1,371*	*342*	*1,874*	*478*	*73%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Whiting	Goldenline Whiting	*Sillago analis*	***323***	***141***	*271*	*91*	*594*	*177*	*46%*
	King George Whiting	*Sillaginodes punctata*	74,329	10,422	27,750	4,561	102,080	14,333	*27%*
	School Whiting	*Sillago bassensis, vittata & schomburgkii*	276,229	29,734	75,886	9,091	352,115	36,923	*22%*
	Western Trumpeter Whiting	*Sillago burrus*	**264**	**142**	9,823	1,788	10,087	1,833	*97%*
	Other Whiting	*Sillaginidae - undifferentiated*	***1,405***	***609***	***591***	***263***	*1,996*	*751*	*30%*
Western Blue Devil	Western Blue Devil	*Paraplesiops sinclairi*	*57*	*18*	*353*	*86*	*410*	*88*	*86%*
Small Baitfish	Small Baitfish	*NO CODE*	***290***	***173***	***125***	***83***	***415***	***191***	*30%*
	Australian Sardine	*Sardinops sagax*	***98***	***66***	***45***	***41***	***143***	***83***	*32%*
	Other Herring	*Clupeidae - undifferentiated*	***2,143***	***993***	*361*	*131*	***2,504***	***1,059***	*14%*
Finfish Other	Archerfishes	*Toxotidae - undifferentiated*	*0*	*0*	***34***	***30***	***34***	***30***	*100%*
	Bighead Gurnard Perch	*Neosebastes pandus*	147	51	1,421	310	1,568	324	*91%*
	Toadfish Blowfish Pufferfish	*Tetraodontidae - undifferentiated*	**203**	**155**	22,630	3,631	22,833	3,641	*99%*
	Silver Toadfish	*Lagocephalus sceleratus*	**95**	**60**	6,531	1,840	6,626	1,842	*99%*
	Weeping Toadfish	*Torquigener pleurogramma*	**522**	**479**	9,435	2,940	9,957	2,979	*95%*
	Boarfish	*Pentacerotidae - undifferentiated*	***23***	***12***	*0*	*0*	***23***	***12***	*0%*
	Boxfish	*Ostraciidae - undifferentiated*	***17***	***15***	*0*	*0*	***17***	***15***	*0%*
	Morid Cod	*Moridae - undifferentiated*	341	97	1,068	263	1,409	282	*76%*
	Conger Eel	*Conger spp*	*0*	*0*	***85***	***63***	***85***	***63***	*100%*
	Eel	*Anguilliformes & Synbranchiformes*	***34***	***30***	*270*	*84*	*304*	*89*	*89%*
	Moonfish Batfish	*Lampridae - undifferentiated*	***31***	***19***	***242***	***134***	***273***	***135***	*89%*
	Salmon	*Salmonidae - undifferentiated*	*290*	*78*	*248*	*91*	*538*	*126*	*46%*
	Silver Drummer	*Kyphosus spp Complex*	***45***	***32***	***36***	***15***	***82***	***36***	*44%*
	Oxeye Herring	*Megalopidae - undifferentiated*	*0*	*0*	***30***	***22***	***30***	***22***	*100%*

Table 6. Summary of release rates for selected species during 2013/14 by RFBL holders aged five years or older.

0 to 19%	20-39%	40-59%	60-79%	80-89%	90-100%
Abalone	Southern Rock Lobster	Yellowfin Tuna	Common Coral Trout	Redspot Emperor	Dusky Whaler
Bass Groper	Yelloweye Mullet	Painted Rock Lobster	Black Jewfish	Frostback Rockcod	Hammerhead Shark
Duskytail Grouper	Robinson's Seabream	Rankin Cod	Yellowtail Kingfish	Northwest Black Bream	Sea Trumpeter
Diamondscale Mullet	School Whiting	Yellowtail Emperor	Mangrove Jack	Turrum	Lizardfish Grinners
Yelloweye Redfish	Hapuku	Western Rock Lobster	Bluebarred Parrotfish	Sergeant Baker	Black Bream
Flame Snapper	Darktail Snapper	Sharptooth Snapper	King Threadfin	Barred Javelin	Bronze Whaler
Sea Mullet	Australian Herring	Bonito	Grass Emperor	Blue Tuskfish	Wobbegong
Three-by-two Garfish	Bluetail Mullet	Grey Mackerel	Western Australian Salmon	Pink Snapper	Barramundi
Ruby Snapper	Southern Garfish	Silver Trevally	Northern Bluefin Tuna	Giant Trevally	Southern Maori Wrasse
Squid	King George Whiting	Silver Drummer	School Mackerel	Tarwhine	Sixspine Leatherjacket
Octopus	Blue Morwong	Red Emperor	Bluespotted Tuskfish	Western King Wrasse	Blacktip Rockcod
Greenback Mullet	Cuttlefish	Spotted Mackerel	Queensland Grouper	Rainbow Runner	Whitetip Reef Shark
Eightbar Grouper	Snook	Mackerel Tuna	Yellowtail Scad	Western Blue Devil	Weeping Toadfish
Rosy Threadfin Bream	Whiskery Shark	Goldenline Whiting	Dusky Morwong	Blotched Javelin	Lemon Shark
Largetooth Flounder	Southern Bluefin Tuna	Amberjack	Purple Tuskfish	Sandbar Shark	Gurnard
Ornate Rock Lobster	Australian Sardine	Breaksea Cod	Blue Swimmer Crab	Brownstripe Snapper	Potato Rockcod
Maori Snapper	Blue Threadfin	Foxfish	West Australian Dhufish	Longtom	Humphead Maori Wrasse
Goldband Snapper	Bight Redfish	Barracouta	Spangled Emperor	Yellowtail Flathead	Western Shovelnose Ray
	Harlequin Fish	Oriental Bonito	Goldspotted Rockcod	Horseshoe Leatherjacket	Giant Sea Catfish
	Rosy Snapper	Goldspot Pigfish	Chinaman Rockcod	Barramundi Cod	Western Trumpeter Whiting
	Tripletail	Spanish Mackerel	Longnose Emperor	Southern Bluespotted Flathead	Greynurse Shark
	Estuary Cobbler	Painted Sweetlips	Blue Mackerel	Leatherjacket	Grunter Bream
	Striped Seapike	Crimson Snapper	Golden Snapper	Brownspotted Wrasse	Sawfishes
	Cobia	Gummy Sharks	Queenfish		Tiger Shark
	Northern Pearl Perch	Tailor	Yellowspotted Rockcod		Silver Toadfish
	Sand Bass	Chinamanfish	Golden Trevally		Western Striped Grunter
	Frypan Bream	Sea Sweep	Common Dart		Sailfish

Mahi Mahi	Western Blue Groper	Moses' Snapper	Black Marlin
Smalltooth Flounder	Swallowtail	Blackspot Tuskfish	Port Jackson Shark
Yellowedge Coronation Trout	Wahoo	Blue-Eye Trevalla	Blue Marlin
	Bludger Trevally	Samsonfish	Blacktip reef shark
	Tomato Rockcod	Shark Mackerel	Sawshark
	Barcheek Coral Trout	Redthroat Emperor	Striped Marlin
	Baldchin Groper	Western Butterfish	Eeltail Catfishes
	Dogtooth Tuna	Silver Cobbler	
	Mud Crab	Great Barracuda	
	Banded Sweep	Western Yellowfin Bream	
	Northern Sand Flathead	Western Sooty Grunter	
	Saddletail Snapper	Stripey Snapper	
	Mulloway	Blackspotted Rockcod	
	Skipjack Tuna	Bluespotted Emperor	
		Bluespotted Goatfish	

Table 7. Proportion released during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species.

Reporting Group	Common Name	Scientific Name	Too Small	Under Size	Too Many	Over Limit	Catch Release	Other
Cephalopod	Cuttlefish	*Sepia spp*	21%	**12%**	31%	0%	**16%**	**20%**
	Octopus	*Octopus spp*	**24%**	**8%**	**37%**	0%	0%	**31%**
	Squid	*Order Teuthoidea*	**64%**	12%	**20%**	0%	0%	**4%**
Lobster	Western Rock Lobster	*Panulirus cygnus*	**2%**	53%	**2%**	10%	0%	32%
	Southern Rock Lobster	*Jasus edwardsii*	***8%***	***58%***	*0%*	***4%***	*0%*	***30%***
	Painted Rock Lobster	*Panulirus versicolor*	***9%***	***79%***	*0%*	***11%***	*0%*	*0%*
	Ornate Rock Lobster	*Panulirus ornatus*	***40%***	*0%*	*0%*	*0%*	*0%*	***60%***
Crab	Blue Swimmer Crab	*Portunus armatus*	3%	80%	0%	3%	**0%**	14%
	Sand Crab	*Ovalipes spp*	***37%***	*0%*	***63%***	*0%*	*0%*	*0%*
	Mud Crab	*Scylla olivacea & S serrata*	13%	68%	**6%**	**2%**	0%	11%
Sharks	Blacktip Reef Shark	*Carcharhinus melanopterus*	*0%*	*0%*	***17%***	*0%*	***21%***	***62%***
	Bronze Whaler	*Carcharhinus brachyurus*	**0%**	**40%**	18%	0%	**5%**	37%
	Dusky Whaler	*Carcharhinus obscurus*	0%	0%	51%	0%	**5%**	44%
	Lemon Shark	*Negaprion acutidens*	*0%*	***2%***	***3%***	*0%*	***16%***	***79%***
	Sandbar Shark	*Carcharhinus plumbeus*	*0%*	***10%***	***67%***	*0%*	*0%*	***23%***
	Tiger Shark	*Galeocerdo cuvier*	*0%*	***2%***	*16%*	*0%*	***13%***	***69%***
	Whitetip Reef Shark	*Triaenodon obesus*	**12%**	**3%**	36%	0%	5%	44%
	Greynurse Shark PROTECTED	*Carcharias taurus*	*0%*	***19%***	***37%***	*0%*	*0%*	***44%***
	Gummy Sharks	*Mustelus antarcticus & M stevensi*	**7%**	**8%**	48%	0%	0%	**38%**
	Hammerhead Shark	*Family Sphyrnidae*	***4%***	*0%*	*45%*	*0%*	*0%*	*51%*
	Port Jackson Shark	*Heterodontus portusjacksoni*	**0%**	**53%**	**15%**	0%	**2%**	29%
	Sawshark	*Family Pristiophoridae*	*0%*	*0%*	*0%*	*0%*	*0%*	***100%***
	Whiskery Shark	*Furgaleus macki*	*0%*	*0%*	***44%***	*0%*	*0%*	***56%***
	Wobbegong	*Family Orectolobidae*	**2%**	**2%**	37%	0%	0%	59%
	Other Whaler	*Carcharhinidae - undifferentiated*	7%	0%	46%	**4%**	4%	39%
	Other Shark	*Sharks - undifferentiated*	**7%**	0%	**38%**	0%	**2%**	**53%**
Rays	Sawfishes PROTECTED	*Pristidae - undifferentiated*	*0%*	*0%*	*0%*	*0%*	***33%***	***67%***
	Western Shovelnose Ray	*Aptychotrema vincentiana*	**1%**	0%	45%	0%	**1%**	53%
	Other Rays Skates	*Rays - undifferentiated*	**0%**	0%	36%	0%	**2%**	62%
Barracouta	Barracouta	*Thyrsites atun*	***5%***	***7%***	***61%***	*0%*	***9%***	*18%*

Reporting Group	Common Name	Scientific Name	Too Small	Under Size	Too Many	Over Limit	Catch Release	Other
Barramundi	Barramundi	*Lates calcarifer*	6%	14%	**59%**	**1%**	14%	6%
Billfish	Black Marlin	*Makaira indica*	***1%***	***1%***	***8%***	***2%***	*52%*	***36%***
	Blue Marlin	*Makaira nigricans*	***0%***	***0%***	***0%***	*0%*	***90%***	***10%***
	Sailfish	*Istiophorus platypterus*	0%	**1%**	**7%**	0%	81%	11%
	Striped Marlin	*Tetrapturus audax*	*0%*	*0%*	*0%*	*0%*	***100%***	*0%*
Bonito	Bonito	*Sarda spp*	0%	**3%**	**14%**	**17%**	**40%**	**26%**
	Oriental Bonito	*Sarda orientalis*	***59%***	*0%*	*20%*	***1%***	***21%***	*0%*
Bream	Black Bream	*Acanthopagrus butcheri*	9%	37%	4%	**0%**	**47%**	4%
	Frypan Bream	*Argyrops spinifer*	***26%***	***26%***	***8%***	*0%*	*0%*	***39%***
	Northwest Black Bream	*Acanthopagrus palmaris*	**2%**	**41%**	**31%**	**1%**	**18%**	**7%**
	Pink Snapper	*Chrysophrys auratus*	5%	78%	4%	4%	1%	8%
	Tarwhine	*Rhabdosargus sarba*	5%	59%	13%	0%	**7%**	**16%**
	Western Yellowfin Bream	*Acanthopagrus morrisoni*	20%	58%	**10%**	0%	9%	**3%**
	Other Bream	*Sparidae - undifferentiated*	***1%***	***81%***	***16%***	*0%*	*0%*	***1%***
Threadfin Bream	Rosy Threadfin Bream	*Nemipterus furcosus*	*0%*	***100%***	*0%*	*0%*	*0%*	*0%*
	Western Butterfish	*Pentapodus vitta*	5%	7%	38%	**1%**	**8%**	41%
Butterfish	Other Butterfish	*Stromateidae - undifferentiated*	***33%***	***1%***	***19%***	*0%*	*0%*	***47%***
Catfish	Eeltail Catfishes	*Plotosidae - undifferentiated*	**4%**	**4%**	**49%**	**2%**	7%	33%
	Estuary Cobbler	*Cnidoglanis macrocephalus*	***20%***	*0%*	***27%***	*0%*	*0%*	***53%***
	Giant Sea Catfish	*Arius thalassinus*	**3%**	10%	40%	0%	**13%**	35%
	Silver Cobbler	*Neoarius midgleyi*	***9%***	***24%***	*41%*	*0%*	***5%***	***22%***
Cobia	Cobia	*Rachycentron canadum*	**19%**	**34%**	16%	0%	**1%**	**30%**
Cod	Barramundi Cod	*Cromileptes altivelis*	***39%***	***49%***	***7%***	*0%*	***3%***	***2%***
	Blackspotted Rockcod	*Epinephelus malabaricus*	7%	35%	32%	**0%**	**10%**	16%
	Blacktip Rockcod	*Epinephelus fasciatus*	***14%***	***65%***	***2%***	***4%***	*0%*	***14%***
	Breaksea Cod	*Epinephelides armatus*	11%	59%	14%	7%	**3%**	**6%**
	Chinaman Rockcod	*Epinephelus rivulatus*	17%	37%	20%	**1%**	9%	16%
	Eightbar Grouper	*Hyporthodus octofasciatus*	*0%*	***100%***	*0%*	*0%*	*0%*	*0%*
	Frostback Rockcod	*Epinephelus bilobatus*	***11%***	***71%***	***16%***	*0%*	***1%***	*0%*
	Goldspotted Rockcod	*Epinephelus coioides*	11%	38%	25%	**3%**	7%	16%
	Harlequin Fish	*Othos dentex*	**69%**	**6%**	14%	0%	**1%**	**10%**
	Potato Rockcod PROTECTED	*Epinephelus tukula*	*0%*	***38%***	***18%***	*0%*	*0%*	***44%***
	Queensland Grouper PROTECTED	*Epinephelus lanceolatus*	*0%*	*0%*	***9%***	*0%*	***15%***	***76%***
	Rankin Cod	*Epinephelus multinotatus*	22%	41%	18%	**1%**	5%	**12%**
	Tomato Rockcod	*Cephalopholis sonnerati*	***11%***	***66%***	***6%***	*0%*	*0%*	***17%***

Reporting Group	Common Name	Scientific Name	Too Small	Under Size	Too Many	Over Limit	Catch Release	Other
	Temperate Rockcods	*Epinephelidae - undifferentiated*	*0%*	***14%***	***34%***	*0%*	*0%*	***53%***
	Yellowspotted Rockcod	*Epinephelus areolatus*	**14%**	68%	**16%**	0%	**0%**	**2%**
Coral Trout	Barcheek Coral Trout	*Plectropomus maculatus*	8%	62%	12%	**2%**	**5%**	**11%**
	Common Coral Trout	*Plectropomus leopardus*	**6%**	67%	**4%**	**19%**	**0%**	**3%**
	Yellowedge Coronation Trout	*Variola louti*	**17%**	**55%**	**15%**	0%	**13%**	0%
Emperor	Bluespotted Emperor	*Lethrinus punctulatus*	**32%**	47%	**10%**	**6%**	**2%**	**3%**
	Grass Emperor	*Lethrinus laticaudis*	13%	75%	7%	**1%**	**2%**	**1%**
	Longnose Emperor	*Lethrinus olivaceus*	*0%*	***66%***	***34%***	*0%*	*0%*	*0%*
	Redspot Emperor	*Lethrinus lentjan*	***48%***	***41%***	***11%***	*0%*	*0%*	*0%*
	Redthroat Emperor	*Lethrinus miniatus*	8%	52%	26%	7%	**3%**	**4%**
	Robinsons' Seabream	*Gymnocranius grandoculis*	**4%**	**20%**	**29%**	**16%**	0%	**31%**
	Spangled Emperor	*Lethrinus nebulosus*	**13%**	65%	10%	**5%**	4%	3%
	Yellowtail Emperor	*Lethrinus atkinsoni*	*0%*	***37%***	***63%***	*0%*	*0%*	*0%*
	Other Emperor	*Lethrinidae - undifferentiated*	*0%*	***90%***	*0%*	*0%*	*0%*	***10%***
Flathead	Northern Sand Flathead	*Platycephalus endrachtensis*	**47%**	**25%**	**15%**	0%	0%	**12%**
	Southern Bluespotted Flathead	*Platycephalus speculator*	30%	50%	10%	**1%**	**3%**	7%
	Yellowtail Flathead	*Platycephalus westraliae*	30%	48%	**3%**	0%	**17%**	**2%**
	Other Flathead	*Platycephalidae - undifferentiated*	**33%**	56%	6%	0%	**1%**	**5%**
Flounder	Largetooth Flounder	*Pseudorhombus arsius*	*0%*	*0%*	*0%*	*0%*	*0%*	***100%***
	Smalltooth Flounder	*Pseudorhombus jenynsii*	**27%**	**6%**	**11%**	0%	**39%**	**17%**
	Flounder Sole Flatfish	*Bothidae & Pleuronectidae spp*	*0%*	***86%***	*0%*	*0%*	***14%***	*0%*
Garfish	Three-by-two Garfish	*Hemiramphus robustus*	*0%*	*0%*	***61%***	*0%*	*0%*	***39%***
	Southern Garfish	*Hyporhamphus melanochir*	**19%**	**30%**	**20%**	0%	0%	**31%**
	Other Garfish	*Hemiramphidae - undifferentiated*	*0%*	*0%*	*0%*	*0%*	*0%*	***100%***
Goatfish	Bluespotted Goatfish	*Upeneichthys vlamingii*	17%	**8%**	24%	0%	**1%**	50%
Grunter	Sea Trumpeter	*Pelsartia humeralis*	**1%**	**1%**	25%	0%	0%	73%
	Western Striped Grunter	*Pelates octolineatus*	**1%**	**2%**	**3%**	0%	**16%**	79%
	Western Sooty Grunter	*Hephaestus jenkinsi*	***2%***	***4%***	***8%***	*0%*	*0%*	***85%***
Grunter Bream	Grunter Bream	*Haemulidae - undifferentiated*	***65%***	***12%***	***15%***	*0%*	***5%***	***2%***
Gurnard	Gurnard	*Neosebastidae - undifferentiated*	**2%**	**2%**	27%	0%	**1%**	68%
Hapuku	Hapuku	*Polyprion oxygeneios*	*0%*	*0%*	*0%*	*0%*	*0%*	***100%***
Javelinfish	Barred Javelin	*Pomadasys kaakan*	***7%***	***75%***	***15%***	*0%*	*0%*	***3%***
	Blotched Javelin	*Pomadasys maculatus*	***26%***	*0%*	***15%***	*0%*	*0%*	***59%***
Jewfish	Black Jewfish	*Protonibea diacanthus*	**7%**	20%	**56%**	**3%**	**7%**	**7%**
	Mulloway	*Argyrosomus japonicus*	**4%**	**75%**	**17%**	0%	**4%**	0%

Reporting Group	Common Name	Scientific Name	Too Small	Under Size	Too Many	Over Limit	Catch Release	Other
Leatherjacket	Horseshoe Leatherjacket	*Meuschenia hippocrepis*	**28%**	**10%**	35%	0%	**8%**	18%
	Sixspine Leatherjacket	*Meuschenia freycineti*	*9%*	*20%*	*22%*	*0%*	*0%*	***50%***
	Leatherjacket	*Monacanthidae - undifferentiated*	12%	**25%**	14%	0%	**12%**	37%
Lizardfish Grinners	Lizardfish Grinners	*Bathysauridae, Synodontidae - undifferentiated*	***3%***	***1%***	*44%*	*0%*	***4%***	***49%***
Longtom	Longtom	*Belonidae - undifferentiated*	*0%*	***29%***	***35%***	*0%*	***23%***	***14%***
Mackerel	Blue Mackerel	*Scomber australasicus*	***16%***	***5%***	*78%*	*0%*	*0%*	***1%***
	Grey Mackerel	*Scomberomorus semifasciatus*	*0%*	***22%***	***33%***	*0%*	***45%***	*0%*
	School Mackerel	*Scomberomorus queenslandicus*	**4%**	**60%**	24%	**6%**	**4%**	3%
	Shark Mackerel	*Grammatorcynus bicarinatus*	**8%**	**29%**	43%	0%	**7%**	**12%**
	Spanish Mackerel	*Scomberomorus commerson*	8%	29%	38%	**2%**	14%	9%
	Spotted Mackerel	*Scomberomorus munroi*	0%	**45%**	**9%**	**8%**	**9%**	**28%**
	Wahoo	*Acanthocybium solandri*	*0%*	*0%*	***27%***	*0%*	***73%***	*0%*
	Other Mackerels and Tunas	*Scombridae - undifferentiated*	***4%***	***16%***	***25%***	*0%*	***22%***	***33%***
Mahi Mahi	Mahi Mahi	*Coryphaena spp*	***11%***	***37%***	***21%***	***14%***	***13%***	***4%***
Morwong	Blue Morwong	*Nemadactylus valenciennesi*	**9%**	42%	24%	**12%**	**0%**	**13%**
	Dusky Morwong	*Dactylophora nigricans*	*0%*	*0%*	***26%***	*0%*	*0%*	***74%***
	Other Morwong	*Cheilodactylidae - undifferentiated*	*0%*	*0%*	***17%***	*0%*	*0%*	***83%***
Mullet	Bluetail Mullet	*Valamugil buchanani*	*0%*	*0%*	***100%***	*0%*	*0%*	*0%*
	Greenback Mullet	*Liza subviridis*	*0%*	***100%***	*0%*	*0%*	*0%*	*0%*
	Sea Mullet	*Mugil cephalus*	*0%*	*0%*	***57%***	*0%*	***43%***	*0%*
	Yelloweye Mullet	*Aldrichetta forsteri*	***7%***	***65%***	***8%***	*0%*	***12%***	***7%***
	Other Mullet	*Mugilidae - undifferentiated*	***13%***	***17%***	***71%***	*0%*	*0%*	*0%*
Pearl Perch	Northern Pearl Perch	*Glaucosoma buergeri*	**22%**	57%	**10%**	0%	**2%**	**10%**
	West Australian Dhufish	*Glaucosoma hebraicum*	5%	71%	5%	16%	**0%**	2%
Pike	Great Barracuda	*Sphyraena barracuda*	*0%*	***29%***	*33%*	*0%*	***2%***	***37%***
	Snook	*Sphyraena novaehollandiae*	**19%**	**14%**	36%	0%	**3%**	28%
	Striped Seapike	*Sphyraena obtusata*	**7%**	**64%**	**15%**	**10%**	0%	**5%**
	Other Pike	*Sphyraenidae - undifferentiated*	*0%*	*0%*	***100%***	*0%*	*0%*	*0%*
Queenfish	Queenfish	*Scomberoides spp*	**4%**	17%	9%	0%	**25%**	45%
Redfish	Bight Redfish	*Centroberyx gerrardi*	37%	48%	8%	**2%**	2%	**2%**
	Swallowtail	*Centroberyx lineatus*	22%	16%	42%	**2%**	**1%**	17%
Salmon Herring	Australian Herring	*Arripis georgianus*	28%	23%	23%	**14%**	7%	6%
	Western Australian Salmon	*Arripis truttaceus*	**6%**	28%	**24%**	**6%**	**25%**	**11%**
Sand Bass	Sand Bass	*Psammoperca waigiensis*	*0%*	*0%*	***100%***	*0%*	*0%*	*0%*

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Sergeant Baker	Sergeant Baker	*Aulopus purpurissatus*	**2%**	2%	24%	0%	**9%**	63%
Snappers King	Goldband Snapper	*Pristipomoides multidens*	**7%**	50%	**8%**	**10%**	**21%**	**5%**
	Rosy Snapper	*Pristipomoides filamentosus*	***20%***	***42%***	***16%***	***15%***	***8%***	*0%*
	Sharptooth Snapper	*Pristipomoides typus*	*0%*	***100%***	*0%*	*0%*	*0%*	*0%*
Snappers Tropical	Brownstripe Snapper	*Lutjanus vitta*	*0%*	***18%***	***51%***	*0%*	*0%*	***31%***
	Crimson Snapper	*Lutjanus erythropterus*	15%	45%	**8%**	**20%**	**8%**	**3%**
	Darktail Snapper	*Lutjanus lemniscatus*	***45%***	***55%***	*0%*	*0%*	*0%*	*0%*
	Golden Snapper	*Lutjanus johnii*	**13%**	38%	44%	0%	**5%**	**0%**
	Mangrove Jack	*Lutjanus argentimaculatus*	10%	42%	**18%**	**5%**	22%	**4%**
	Maori Snapper	*Lutjanus rivulatus*	*0%*	*0%*	*0%*	*0%*	***100%***	*0%*
	Moses' Snapper	*Lutjanus russellii*	11%	66%	14%	0%	**8%**	**1%**
	Red Emperor	*Lutjanus sebae*	17%	65%	12%	**3%**	**2%**	**0%**
	Ruby Snapper	*Etelis carbunculus*	*0%*	***100%***	*0%*	*0%*	*0%*	*0%*
	Saddletail Snapper	*Lutjanus malabaricus*	**1%**	48%	**32%**	**9%**	**4%**	**7%**
	Stripey Snapper	*Lutjanus carponotatus*	15%	53%	23%	**2%**	1%	6%
	Fusiliers	*Caesionidae, Lutjanidae, Symphysanodontidae - undifferentiated*	***3%***	*18%*	***62%***	*0%*	***4%***	***13%***
	Chinamanfish	*Symphorus nematophorus*	19%	**18%**	**36%**	0%	**2%**	**26%**
Sweep	Banded Sweep	*Scorpis georgiana*	0%	**34%**	38%	0%	0%	**28%**
	Sea Sweep	*Scorpis aequipinnis*	**9%**	7%	34%	0%	**10%**	40%
Sweetlips	Painted Sweetlips	*Diagramma labiosum*	**7%**	**64%**	**10%**	0%	**1%**	**17%**
Tailor	Tailor	*Pomatomus saltatrix*	**16%**	48%	7%	**4%**	**25%**	**0%**
Threadfin	Blue Threadfin	*Eleutheronema tetradactylum*	**6%**	**36%**	**8%**	**4%**	**39%**	**7%**
	King Threadfin	*Polydactylus macrochir*	***8%***	***5%***	***9%***	***2%***	***74%***	***2%***
Trevalla	Blue-Eye Trevalla	*Hyperoglyphe antarctica*	*0%*	***48%***	*0%*	*0%*	***52%***	*0%*
Trevally	Amberjack	*Seriola dumerili*	***7%***	***4%***	***68%***	***3%***	***6%***	***11%***
	Samsonfish	*Seriola hippos*	2%	13%	35%	**0%**	13%	37%
	Yellowtail Kingfish	*Seriola lalandi*	**0%**	18%	**33%**	**2%**	**0%**	**47%**
	Giant Trevally	*Caranx ignobilis*	6%	14%	**38%**	**0%**	20%	**21%**
	Golden Trevally	*Gnathanodon speciosus*	**6%**	**32%**	30%	0%	18%	**13%**
	Bludger Trevally	*Carangoides gymnostethus*	***7%***	*0%*	***15%***	*0%*	*0%*	***77%***
	Silver Trevally	*Pseudocaranx dentex*	8%	32%	42%	**6%**	7%	5%
	Rainbow Runner	*Elagatis bipinnulata*	***75%***	*0%*	*0%*	*0%*	*0%*	***25%***
	Common Dart	*Trachinotus botla*	***30%***	*0%*	***18%***	*0%*	*0%*	***53%***
	Yellowtail Scad	*Trachurus novaezelandiae*	***18%***	***28%***	***12%***	***5%***	***4%***	***35%***

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	Turrum	*Carangoides fulvoguttatus*	***11%***	***57%***	***8%***	***5%***	*0%*	***19%***
	Other Trevally	*Carangidae - undifferentiated*	**17%**	32%	36%	0%	**5%**	**9%**
Tripletail	Tripletail	*Lobotes surinamensis*	*0%*	***86%***	***14%***	*0%*	*0%*	*0%*
Trumpeter	Trumpeter	*Latridopsis spp*	*0%*	***0%***	***2%***	*0%*	***3%***	***95%***
Tuna	Dogtooth Tuna	*Gymnosarda unicolor*	***6%***	*0%*	*0%*	*0%*	***94%***	*0%*
	Mackerel Tuna	*Euthynnus affinis*	0%	**6%**	20%	**19%**	**32%**	**22%**
	Longtail Tuna	*Thunnus orientalis*	**1%**	**38%**	29%	**1%**	28%	**2%**
	Skipjack Tuna	*Katsuwonus pelamis*	*0%*	***3%***	***35%***	*0%*	***2%***	***60%***
	Southern Bluefin Tuna	*Thunnus maccoyii*	0%	0%	**51%**	0%	**49%**	0%
	Yellowfin Tuna	*Thunnus albacares*	**1%**	**22%**	54%	**6%**	**6%**	**11%**
Tuskfish Wrasse	Baldchin Groper	*Choerodon rubescens*	4%	83%	**2%**	8%	**2%**	**0%**
	Blackspot Tuskfish	*Choerodon schoenleinii*	**21%**	71%	3%	**2%**	**0%**	**3%**
	Blue Tuskfish	*Choerodon cyanodus*	**8%**	87%	2%	**1%**	1%	0%
	Bluespotted Tuskfish	*Choerodon cauteroma*	***61%***	***13%***	***27%***	*0%*	*0%*	*0%*
	Brownspotted Wrasse	*Notolabrus parilus*	7%	9%	20%	0%	**9%**	55%
	Foxfish	*Bodianus frenchii*	**11%**	31%	36%	**6%**	**3%**	**12%**
	Goldspot Pigfish	*Bodianus perditio*	***21%***	*0%*	***33%***	*0%*	*0%*	***46%***
	Humphead Maori Wrasse	*Cheilinus undulatus*	*0%*	***94%***	***2%***	*0%*	***5%***	*0%*
	Purple Tuskfish	*Choerodon cephalotes*	***2%***	***91%***	***6%***	*0%*	*0%*	*0%*
	Southern Maori Wrasse	*Ophthalmolepis lineolatus*	**4%**	**30%**	16%	0%	**9%**	41%
	Western Blue Groper	*Achoerodus gouldii*	***41%***	***51%***	*7%*	*0%*	*0%*	***2%***
	Western King Wrasse	*Coris auricularis*	8%	5%	31%	0%	6%	51%
	Other Tuskfish	*Choerodon spp*	*0%*	***100%***	*0%*	*0%*	*0%*	*0%*
	Other Wrasse	*Labridae - undifferentiated*	**3%**	**11%**	23%	0%	**16%**	47%
	Bluebarred Parrotfish	*Scarus ghobban spp complex*	**3%**	**32%**	**20%**	**6%**	**7%**	**32%**
	Other Parrotfish	*Scaridae - undifferentiated*	***11%***	***29%***	***15%***	*0%*	*0%*	*44%*
Whiting	Goldenline Whiting	*Sillago analis*	***59%***	***20%***	***21%***	*0%*	*0%*	*0%*
	King George Whiting	*Sillaginodes punctata*	16%	77%	2%	**2%**	**3%**	**0%**
	School Whiting	*Sillago bassensis, vittata & schomburgkii*	56%	28%	9%	**1%**	**4%**	**1%**
	Western Trumpeter Whiting	*Sillago burrus*	**1%**	**5%**	**17%**	0%	**9%**	69%
	Other Whiting	*Sillaginidae - undifferentiated*	***4%***	***30%***	***63%***	*0%*	*0%*	***3%***
Western Blue Devil	Western Blue Devil	*Paraplesiops sinclairi*	***3%***	***14%***	***28%***	*0%*	***1%***	*55%*
Small Baitfish	Small Baitfish	*NO CODE*	***70%***	*0%*	***30%***	*0%*	*0%*	*0%*
	Australian Sardine	*Sardinops sagax*	*0%*	*0%*	***100%***	*0%*	*0%*	*0%*
	Other Herring	*Clupeidae - undifferentiated*	***31%***	***16%***	***29%***	*0%*	***24%***	*0%*

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Finfish Other	Archerfishes	*Toxotidae - undifferentiated*	*0%*	*0%*	*0%*	*0%*	***100%***	*0%*
	Bighead Gurnard Perch	*Neosebastes pandus*	**8%**	**1%**	38%	**1%**	**7%**	45%
	Toadfish Blowfish Pufferfish	*Tetraodontidae - undifferentiated*	**7%**	**0%**	4%	0%	6%	83%
	Silver Toadfish	*Lagocephalus sceleratus*	**4%**	0%	**4%**	0%	**1%**	91%
	Weeping Toadfish	*Torquigener pleurogramma*	0%	0%	**3%**	0%	**0%**	96%
	Morid Cod	*Moridae - undifferentiated*	**1%**	34%	**35%**	0%	0%	30%
	Conger Eel	*Conger spp*	*0%*	*0%*	***20%***	*0%*	*0%*	***80%***
	Eel	*Anguilliformes & Synbranchiformes*	*0%*	*0%*	***64%***	*0%*	*0%*	***36%***
	Moonfish Batfish	*Lampridae - undifferentiated*	*0%*	*0%*	***50%***	*0%*	*0%*	***50%***
	Salmon	*Salmonidae - undifferentiated*	***30%***	***33%***	***9%***	*0%*	***23%***	***6%***
	Silver Drummer	*Kyphosus spp Complex*	*0%*	*0%*	*0%*	*0%*	*0%*	***100%***
	Oxeye Herring	*Megalopidae - undifferentiated*	*0%*	*0%*	*0%*	*0%*	***100%***	*0%*
Cephalopod	Cuttlefish	*Sepia spp*	21%	**12%**	31%	0%	**16%**	**20%**
	Octopus	*Octopus spp*	**24%**	**8%**	**37%**	0%	0%	**31%**
	Squid	*Order Teuthoidea*	**64%**	12%	**20%**	0%	0%	**4%**
Lobster	Western Rock Lobster	*Panulirus cygnus*	**2%**	53%	**2%**	10%	0%	32%
	Southern Rock Lobster	*Jasus edwardsii*	***8%***	***58%***	*0%*	***4%***	*0%*	***30%***
	Painted Rock Lobster	*Panulirus versicolor*	***9%***	***79%***	*0%*	***11%***	*0%*	*0%*
	Ornate Rock Lobster	*Panulirus ornatus*	***40%***	*0%*	*0%*	*0%*	*0%*	***60%***
Crab	Blue Swimmer Crab	*Portunus armatus*	3%	80%	0%	3%	**0%**	14%
	Sand Crab	*Ovalipes spp*	***37%***	*0%*	***63%***	*0%*	*0%*	*0%*
	Mud Crab	*Scylla olivacea & S serrata*	13%	68%	**6%**	**2%**	0%	11%
Sharks	Blacktip Reef Shark	*Carcharhinus melanopterus*	*0%*	*0%*	***17%***	*0%*	***21%***	***62%***
	Bronze Whaler	*Carcharhinus brachyurus*	**0%**	**40%**	18%	0%	**5%**	37%
	Dusky Whaler	*Carcharhinus obscurus*	0%	0%	51%	0%	**5%**	44%
	Lemon Shark	*Negaprion acutidens*	*0%*	***2%***	***3%***	*0%*	***16%***	***79%***
	Sandbar Shark	*Carcharhinus plumbeus*	*0%*	***10%***	***67%***	*0%*	*0%*	***23%***
	Tiger Shark	*Galeocerdo cuvier*	*0%*	***2%***	*16%*	*0%*	***13%***	***69%***
	Whitetip Reef Shark	*Triaenodon obesus*	**12%**	**3%**	36%	0%	5%	44%
	Greynurse Shark PROTECTED	*Carcharias taurus*	*0%*	***19%***	***37%***	*0%*	*0%*	***44%***
	Gummy Sharks	*Mustelus antarcticus & M stevensi*	**7%**	**8%**	48%	0%	0%	**38%**
	Hammerhead Shark	*Family Sphyrnidae*	***4%***	*0%*	*45%*	*0%*	*0%*	*51%*
	Port Jackson Shark	*Heterodontus portusjacksoni*	**0%**	**53%**	**15%**	0%	**2%**	29%
	Sawshark	*Family Pristiophoridae*	*0%*	*0%*	*0%*	*0%*	*0%*	***100%***
	Whiskery Shark	*Furgaleus macki*	*0%*	*0%*	***44%***	*0%*	*0%*	***56%***

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	Wobbegong	*Family Orectolobidae*	**2%**	**2%**	37%	0%	0%	59%
	Other Whaler	*Carcharhinidae - undifferentiated*	7%	0%	46%	**4%**	4%	39%
	Other Shark	*Sharks - undifferentiated*	**7%**	0%	**38%**	0%	**2%**	**53%**
Rays	Sawfishes PROTECTED	*Pristidae - undifferentiated*	*0%*	*0%*	*0%*	*0%*	***33%***	***67%***
	Western Shovelnose Ray	*Aptychotrema vincentiana*	**1%**	0%	45%	0%	**1%**	53%
	Other Rays Skates	*Rays - undifferentiated*	**0%**	0%	36%	0%	**2%**	62%
Barracouta	Barracouta	*Thyrsites atun*	***5%***	***7%***	***61%***	*0%*	***9%***	*18%*
Barramundi	Barramundi	*Lates calcarifer*	6%	14%	**59%**	**1%**	14%	6%
Billfish	Black Marlin	*Makaira indica*	***1%***	***1%***	***8%***	***2%***	*52%*	***36%***
	Blue Marlin	*Makaira nigricans*	***0%***	***0%***	***0%***	*0%*	***90%***	***10%***
	Sailfish	*Istiophorus platypterus*	0%	**1%**	**7%**	0%	81%	11%
	Striped Marlin	*Tetrapturus audax*	*0%*	*0%*	*0%*	*0%*	***100%***	*0%*
Bonito	Bonito	*Sarda spp*	0%	**3%**	**14%**	**17%**	**40%**	**26%**
	Oriental Bonito	*Sarda orientalis*	***59%***	*0%*	*20%*	***1%***	***21%***	*0%*
Bream	Black Bream	*Acanthopagrus butcheri*	9%	37%	4%	**0%**	**47%**	4%
	Frypan Bream	*Argyrops spinifer*	***26%***	***26%***	***8%***	*0%*	*0%*	***39%***
	Northwest Black Bream	*Acanthopagrus palmaris*	**2%**	**41%**	**31%**	**1%**	**18%**	**7%**
	Pink Snapper	*Chrysophrys auratus*	5%	78%	4%	4%	1%	8%
	Tarwhine	*Rhabdosargus sarba*	5%	59%	13%	0%	**7%**	**16%**
	Western Yellowfin Bream	*Acanthopagrus morrisoni*	20%	58%	**10%**	0%	9%	**3%**
	Other Bream	*Sparidae - undifferentiated*	***1%***	***81%***	***16%***	*0%*	*0%*	***1%***
Threadfin Bream	Rosy Threadfin Bream	*Nemipterus furcosus*	*0%*	***100%***	*0%*	*0%*	*0%*	*0%*
	Western Butterfish	*Pentapodus vitta*	5%	7%	38%	**1%**	**8%**	41%
Butterfish	Other Butterfish	*Stromateidae - undifferentiated*	***33%***	***1%***	***19%***	*0%*	*0%*	***47%***
Catfish	Eeltail Catfishes	*Plotosidae - undifferentiated*	**4%**	**4%**	**49%**	**2%**	7%	33%
	Estuary Cobbler	*Cnidoglanis macrocephalus*	***20%***	*0%*	***27%***	*0%*	*0%*	***53%***
	Giant Sea Catfish	*Arius thalassinus*	**3%**	10%	40%	0%	**13%**	35%
	Silver Cobbler	*Neoarius midgleyi*	***9%***	***24%***	*41%*	*0%*	***5%***	***22%***
Cobia	Cobia	*Rachycentron canadum*	**19%**	**34%**	16%	0%	**1%**	**30%**
Cod	Barramundi Cod	*Cromileptes altivelis*	***39%***	***49%***	***7%***	*0%*	***3%***	***2%***
	Blackspotted Rockcod	*Epinephelus malabaricus*	7%	35%	32%	**0%**	**10%**	16%
	Blacktip Rockcod	*Epinephelus fasciatus*	***14%***	***65%***	***2%***	***4%***	*0%*	***14%***
	Breaksea Cod	*Epinephelides armatus*	11%	59%	14%	7%	**3%**	**6%**
	Chinaman Rockcod	*Epinephelus rivulatus*	17%	37%	20%	**1%**	9%	16%
	Eightbar Grouper	*Hyporthodus octofasciatus*	*0%*	***100%***	*0%*	*0%*	*0%*	*0%*

Reporting Group	Common Name	Scientific Name	Too Small	Under Size	Too Many	Over Limit	Catch Release	Other
	Frostback Rockcod	*Epinephelus bilobatus*	***11%***	***71%***	***16%***	*0%*	***1%***	*0%*
	Goldspotted Rockcod	*Epinephelus coioides*	11%	38%	25%	**3%**	7%	16%
	Harlequin Fish	*Othos dentex*	**69%**	**6%**	14%	0%	**1%**	**10%**
	Potato Rockcod PROTECTED	*Epinephelus tukula*	*0%*	***38%***	***18%***	*0%*	*0%*	***44%***
	Queensland Grouper PROTECTED	*Epinephelus lanceolatus*	*0%*	*0%*	***9%***	*0%*	***15%***	***76%***
	Rankin Cod	*Epinephelus multinotatus*	22%	41%	18%	**1%**	5%	**12%**
	Tomato Rockcod	*Cephalopholis sonnerati*	***11%***	***66%***	***6%***	*0%*	*0%*	***17%***
	Temperate Rockcods	*Epinephelidae - undifferentiated*	*0%*	***14%***	***34%***	*0%*	*0%*	***53%***
	Yellowspotted Rockcod	*Epinephelus areolatus*	**14%**	68%	**16%**	0%	**0%**	**2%**
Coral Trout	Barcheek Coral Trout	*Plectropomus maculatus*	8%	62%	12%	**2%**	**5%**	**11%**
	Common Coral Trout	*Plectropomus leopardus*	**6%**	67%	**4%**	**19%**	**0%**	**3%**
	Yellowedge Coronation Trout	*Variola louti*	**17%**	**55%**	**15%**	0%	**13%**	0%
Emperor	Bluespotted Emperor	*Lethrinus punctulatus*	**32%**	47%	**10%**	**6%**	**2%**	**3%**
	Grass Emperor	*Lethrinus laticaudis*	13%	75%	7%	**1%**	**2%**	**1%**
	Longnose Emperor	*Lethrinus olivaceus*	*0%*	***66%***	***34%***	*0%*	*0%*	*0%*
	Redspot Emperor	*Lethrinus lentjan*	***48%***	***41%***	***11%***	*0%*	*0%*	*0%*
	Redthroat Emperor	*Lethrinus miniatus*	8%	52%	26%	7%	**3%**	**4%**
	Robinsons' Seabream	*Gymnocranius grandoculis*	**4%**	**20%**	**29%**	**16%**	0%	**31%**
	Spangled Emperor	*Lethrinus nebulosus*	**13%**	65%	10%	**5%**	4%	3%
	Yellowtail Emperor	*Lethrinus atkinsoni*	*0%*	***37%***	***63%***	*0%*	*0%*	*0%*
	Other Emperor	*Lethrinidae - undifferentiated*	*0%*	***90%***	*0%*	*0%*	*0%*	***10%***
Flathead	Northern Sand Flathead	*Platycephalus endrachtensis*	**47%**	**25%**	**15%**	0%	0%	**12%**
	Southern Bluespotted Flathead	*Platycephalus speculator*	30%	50%	10%	**1%**	**3%**	7%
	Yellowtail Flathead	*Platycephalus westraliae*	30%	48%	**3%**	0%	**17%**	**2%**
	Other Flathead	*Platycephalidae - undifferentiated*	**33%**	56%	6%	0%	**1%**	**5%**
Flounder	Largetooth Flounder	*Pseudorhombus arsius*	*0%*	*0%*	*0%*	*0%*	*0%*	***100%***
	Smalltooth Flounder	*Pseudorhombus jenynsii*	**27%**	**6%**	**11%**	0%	**39%**	**17%**
	Flounder Sole Flatfish	*Bothidae & Pleuronectidae spp*	*0%*	***86%***	*0%*	*0%*	***14%***	*0%*
Garfish	Three-by-two Garfish	*Hemiramphus robustus*	*0%*	*0%*	***61%***	*0%*	*0%*	***39%***
	Southern Garfish	*Hyporhamphus melanochir*	**19%**	**30%**	**20%**	0%	0%	**31%**
	Other Garfish	*Hemiramphidae - undifferentiated*	*0%*	*0%*	*0%*	*0%*	*0%*	***100%***
Goatfish	Bluespotted Goatfish	*Upeneichthys vlamingii*	17%	**8%**	24%	0%	**1%**	50%
Grunter	Sea Trumpeter	*Pelsartia humeralis*	**1%**	**1%**	25%	0%	0%	73%
	Western Striped Grunter	*Pelates octolineatus*	**1%**	**2%**	**3%**	0%	**16%**	79%
	Western Sooty Grunter	*Hephaestus jenkinsi*	***2%***	***4%***	***8%***	*0%*	*0%*	***85%***

Reporting Group	Common Name	Scientific Name	Too Small	Under Size	Too Many	Over Limit	Catch Release	Other
Grunter Bream	Grunter Bream	*Haemulidae - undifferentiated*	***65%***	***12%***	***15%***	*0%*	***5%***	***2%***
Gurnard	Gurnard	*Neosebastidae - undifferentiated*	**2%**	**2%**	27%	0%	**1%**	68%
Hapuku	Hapuku	*Polyprion oxygeneios*	*0%*	*0%*	*0%*	*0%*	*0%*	***100%***
Javelinfish	Barred Javelin	*Pomadasys kaakan*	***7%***	***75%***	***15%***	*0%*	*0%*	***3%***
	Blotched Javelin	*Pomadasys maculatus*	***26%***	*0%*	***15%***	*0%*	*0%*	***59%***
Jewfish	Black Jewfish	*Protonibea diacanthus*	**7%**	20%	**56%**	**3%**	**7%**	**7%**
	Mulloway	*Argyrosomus japonicus*	**4%**	**75%**	**17%**	0%	**4%**	0%
Leatherjacket	Horseshoe Leatherjacket	*Meuschenia hippocrepis*	**28%**	**10%**	35%	0%	**8%**	18%
	Sixspine Leatherjacket	*Meuschenia freycineti*	*9%*	*20%*	*22%*	*0%*	*0%*	***50%***
	Leatherjacket	*Monacanthidae - undifferentiated*	12%	**25%**	14%	0%	**12%**	37%
Lizardfish Grinners	Lizardfish Grinners	*Bathysauridae, Synodontidae - undifferentiated*	***3%***	***1%***	*44%*	*0%*	***4%***	***49%***
Longtom	Longtom	*Belonidae - undifferentiated*	*0%*	***29%***	***35%***	*0%*	***23%***	***14%***
Mackerel	Blue Mackerel	*Scomber australasicus*	***16%***	***5%***	*78%*	*0%*	*0%*	***1%***
	Grey Mackerel	*Scomberomorus semifasciatus*	*0%*	***22%***	***33%***	*0%*	***45%***	*0%*
	School Mackerel	*Scomberomorus queenslandicus*	**4%**	**60%**	24%	**6%**	**4%**	3%
	Shark Mackerel	*Grammatorcynus bicarinatus*	**8%**	**29%**	43%	0%	**7%**	**12%**
	Spanish Mackerel	*Scomberomorus commerson*	8%	29%	38%	**2%**	14%	9%
	Spotted Mackerel	*Scomberomorus munroi*	0%	**45%**	**9%**	**8%**	**9%**	**28%**
	Wahoo	*Acanthocybium solandri*	*0%*	*0%*	***27%***	*0%*	***73%***	*0%*
	Other Mackerels and Tunas	*Scombridae - undifferentiated*	***4%***	***16%***	***25%***	*0%*	***22%***	***33%***
Mahi Mahi	Mahi Mahi	*Coryphaena spp*	***11%***	***37%***	***21%***	***14%***	***13%***	***4%***
Morwong	Blue Morwong	*Nemadactylus valenciennesi*	**9%**	42%	24%	**12%**	**0%**	**13%**
	Dusky Morwong	*Dactylophora nigricans*	*0%*	*0%*	***26%***	*0%*	*0%*	***74%***
	Other Morwong	*Cheilodactylidae - undifferentiated*	*0%*	*0%*	***17%***	*0%*	*0%*	***83%***
Mullet	Bluetail Mullet	*Valamugil buchanani*	*0%*	*0%*	***100%***	*0%*	*0%*	*0%*
	Greenback Mullet	*Liza subviridis*	*0%*	***100%***	*0%*	*0%*	*0%*	*0%*
	Sea Mullet	*Mugil cephalus*	*0%*	*0%*	***57%***	*0%*	***43%***	*0%*
	Yelloweye Mullet	*Aldrichetta forsteri*	***7%***	***65%***	***8%***	*0%*	***12%***	***7%***
	Other Mullet	*Mugilidae - undifferentiated*	***13%***	***17%***	***71%***	*0%*	*0%*	*0%*
Pearl Perch	Northern Pearl Perch	*Glaucosoma buergeri*	**22%**	57%	**10%**	0%	**2%**	**10%**
	West Australian Dhufish	*Glaucosoma hebraicum*	5%	71%	5%	16%	**0%**	2%
Pike	Great Barracuda	*Sphyraena barracuda*	*0%*	***29%***	*33%*	*0%*	***2%***	***37%***
	Snook	*Sphyraena novaehollandiae*	**19%**	**14%**	36%	0%	**3%**	28%
	Striped Seapike	*Sphyraena obtusata*	**7%**	**64%**	**15%**	**10%**	0%	**5%**
	Other Pike	*Sphyraenidae - undifferentiated*	*0%*	*0%*	***100%***	*0%*	*0%*	*0%*

Reporting Group	Common Name	Scientific Name	Too Small	Under Size	Too Many	Over Limit	Catch Release	Other
Queenfish	Queenfish	*Scomberoides spp*	**4%**	17%	9%	0%	**25%**	45%
Redfish	Bight Redfish	*Centroberyx gerrardi*	37%	48%	8%	**2%**	2%	**2%**
	Swallowtail	*Centroberyx lineatus*	22%	16%	42%	**2%**	**1%**	17%
Salmon Herring	Australian Herring	*Arripis georgianus*	28%	23%	23%	**14%**	7%	6%
	Western Australian Salmon	*Arripis truttaceus*	**6%**	28%	**24%**	**6%**	**25%**	**11%**
Sand Bass	Sand Bass	*Psammoperca waigiensis*	*0%*	*0%*	***100%***	*0%*	*0%*	*0%*
Sergeant Baker	Sergeant Baker	*Aulopus purpurissatus*	**2%**	2%	24%	0%	**9%**	63%
Snappers King	Goldband Snapper	*Pristipomoides multidens*	**7%**	50%	**8%**	**10%**	**21%**	**5%**
	Rosy Snapper	*Pristipomoides filamentosus*	***20%***	***42%***	***16%***	***15%***	***8%***	*0%*
	Sharptooth Snapper	*Pristipomoides typus*	*0%*	***100%***	*0%*	*0%*	*0%*	*0%*
Snappers Tropical	Brownstripe Snapper	*Lutjanus vitta*	*0%*	***18%***	***51%***	*0%*	*0%*	***31%***
	Crimson Snapper	*Lutjanus erythropterus*	15%	45%	**8%**	**20%**	**8%**	**3%**
	Darktail Snapper	*Lutjanus lemniscatus*	***45%***	***55%***	*0%*	*0%*	*0%*	*0%*
	Golden Snapper	*Lutjanus johnii*	**13%**	38%	44%	0%	**5%**	**0%**
	Mangrove Jack	*Lutjanus argentimaculatus*	10%	42%	**18%**	**5%**	22%	**4%**
	Maori Snapper	*Lutjanus rivulatus*	*0%*	*0%*	*0%*	*0%*	***100%***	*0%*
	Moses' Snapper	*Lutjanus russellii*	11%	66%	14%	0%	**8%**	**1%**
	Red Emperor	*Lutjanus sebae*	17%	65%	12%	**3%**	**2%**	**0%**
	Ruby Snapper	*Etelis carbunculus*	*0%*	***100%***	*0%*	*0%*	*0%*	*0%*
	Saddletail Snapper	*Lutjanus malabaricus*	**1%**	48%	**32%**	**9%**	**4%**	**7%**
	Stripey Snapper	*Lutjanus carponotatus*	15%	53%	23%	**2%**	1%	6%
	Fusiliers	*Caesionidae, Lutjanidae, Symphysanodontidae - undifferentiated*	***3%***	*18%*	***62%***	*0%*	***4%***	***13%***
	Chinamanfish	*Symphorus nematophorus*	19%	**18%**	**36%**	0%	**2%**	**26%**
Sweep	Banded Sweep	*Scorpis georgiana*	0%	**34%**	38%	0%	0%	**28%**
	Sea Sweep	*Scorpis aequipinnis*	**9%**	7%	34%	0%	**10%**	40%
Sweetlips	Painted Sweetlips	*Diagramma labiosum*	**7%**	**64%**	**10%**	0%	**1%**	**17%**
Tailor	Tailor	*Pomatomus saltatrix*	**16%**	48%	7%	**4%**	**25%**	**0%**
Threadfin	Blue Threadfin	*Eleutheronema tetradactylum*	**6%**	**36%**	**8%**	**4%**	**39%**	**7%**
	King Threadfin	*Polydactylus macrochir*	***8%***	***5%***	***9%***	***2%***	***74%***	***2%***
Trevalla	Blue-Eye Trevalla	*Hyperoglyphe antarctica*	*0%*	***48%***	*0%*	*0%*	***52%***	*0%*
Trevally	Amberjack	*Seriola dumerili*	***7%***	***4%***	***68%***	***3%***	***6%***	***11%***
	Samsonfish	*Seriola hippos*	2%	13%	35%	**0%**	13%	37%
	Yellowtail Kingfish	*Seriola lalandi*	**0%**	18%	**33%**	**2%**	**0%**	**47%**
	Giant Trevally	*Caranx ignobilis*	6%	14%	**38%**	**0%**	20%	**21%**

Reporting Group	Common Name	Scientific Name	Too Small	Under Size	Too Many	Over Limit	Catch Release	Other
	Golden Trevally	*Gnathanodon speciosus*	**6%**	**32%**	30%	0%	18%	**13%**
	Bludger Trevally	*Carangoides gymnostethus*	***7%***	*0%*	***15%***	*0%*	*0%*	***77%***
	Silver Trevally	*Pseudocaranx dentex*	8%	32%	42%	**6%**	7%	5%
	Rainbow Runner	*Elagatis bipinnulata*	***75%***	*0%*	*0%*	*0%*	*0%*	***25%***
	Common Dart	*Trachinotus botla*	***30%***	*0%*	***18%***	*0%*	*0%*	***53%***
	Yellowtail Scad	*Trachurus novaezelandiae*	***18%***	***28%***	***12%***	***5%***	***4%***	***35%***
	Turrum	*Carangoides fulvoguttatus*	***11%***	***57%***	***8%***	***5%***	*0%*	***19%***
	Other Trevally	*Carangidae - undifferentiated*	**17%**	32%	36%	0%	**5%**	**9%**
Tripletail	Tripletail	*Lobotes surinamensis*	*0%*	***86%***	***14%***	*0%*	*0%*	*0%*
Trumpeter	Trumpeter	*Latridopsis spp*	*0%*	***0%***	***2%***	*0%*	***3%***	***95%***
Tuna	Dogtooth Tuna	*Gymnosarda unicolor*	***6%***	*0%*	*0%*	*0%*	***94%***	*0%*
	Mackerel Tuna	*Euthynnus affinis*	0%	**6%**	20%	**19%**	**32%**	**22%**
	Longtail Tuna	*Thunnus orientalis*	**1%**	**38%**	29%	**1%**	28%	**2%**
	Skipjack Tuna	*Katsuwonus pelamis*	*0%*	***3%***	***35%***	*0%*	***2%***	***60%***
	Southern Bluefin Tuna	*Thunnus maccoyii*	0%	0%	**51%**	0%	**49%**	0%
	Yellowfin Tuna	*Thunnus albacares*	**1%**	**22%**	54%	**6%**	**6%**	**11%**
Tuskfish Wrasse	Baldchin Groper	*Choerodon rubescens*	4%	83%	**2%**	8%	**2%**	**0%**
	Blackspot Tuskfish	*Choerodon schoenleinii*	**21%**	71%	3%	**2%**	**0%**	**3%**
	Blue Tuskfish	*Choerodon cyanodus*	**8%**	87%	2%	**1%**	1%	0%
	Bluespotted Tuskfish	*Choerodon cauteroma*	***61%***	***13%***	***27%***	*0%*	*0%*	*0%*
	Brownspotted Wrasse	*Notolabrus parilus*	7%	9%	20%	0%	**9%**	55%
	Foxfish	*Bodianus frenchii*	**11%**	31%	36%	**6%**	**3%**	**12%**
	Goldspot Pigfish	*Bodianus perditio*	***21%***	*0%*	***33%***	*0%*	*0%*	***46%***
	Humphead Maori Wrasse	*Cheilinus undulatus*	*0%*	***94%***	***2%***	*0%*	***5%***	*0%*
	Purple Tuskfish	*Choerodon cephalotes*	***2%***	***91%***	***6%***	*0%*	*0%*	*0%*
	Southern Maori Wrasse	*Ophthalmolepis lineolatus*	**4%**	**30%**	16%	0%	**9%**	41%
	Western Blue Groper	*Achoerodus gouldii*	***41%***	***51%***	*7%*	*0%*	*0%*	***2%***
	Western King Wrasse	*Coris auricularis*	8%	5%	31%	0%	6%	51%
	Other Tuskfish	*Choerodon spp*	*0%*	***100%***	*0%*	*0%*	*0%*	*0%*
	Other Wrasse	*Labridae - undifferentiated*	**3%**	**11%**	23%	0%	**16%**	47%
	Bluebarred Parrotfish	*Scarus ghobban spp complex*	**3%**	**32%**	**20%**	**6%**	**7%**	**32%**
	Other Parrotfish	*Scaridae - undifferentiated*	***11%***	***29%***	***15%***	*0%*	*0%*	*44%*
Whiting	Goldenline Whiting	*Sillago analis*	***59%***	***20%***	***21%***	*0%*	*0%*	*0%*
	King George Whiting	*Sillaginodes punctata*	16%	77%	2%	**2%**	**3%**	**0%**
	School Whiting	*Sillago bassensis, vittata & schomburgkii*	56%	28%	9%	**1%**	**4%**	**1%**

Reporting Group	Common Name	Scientific Name	Too Small	Under Size	Too Many	Over Limit	Catch Release	Other
	Western Trumpeter Whiting	*Sillago burrus*	**1%**	**5%**	**17%**	0%	**9%**	69%
	Other Whiting	*Sillaginidae - undifferentiated*	***4%***	***30%***	***63%***	*0%*	*0%*	***3%***
Western Blue Devil	Western Blue Devil	*Paraplesiops sinclairi*	***3%***	***14%***	***28%***	*0%*	***1%***	*55%*
Small Baitfish	Small Baitfish	*NO CODE*	***70%***	*0%*	***30%***	*0%*	*0%*	*0%*
	Australian Sardine	*Sardinops sagax*	*0%*	*0%*	***100%***	*0%*	*0%*	*0%*
	Other Herring	*Clupeidae - undifferentiated*	***31%***	***16%***	***29%***	*0%*	***24%***	*0%*
Finfish Other	Archerfishes	*Toxotidae - undifferentiated*	*0%*	*0%*	*0%*	*0%*	***100%***	*0%*
	Bighead Gurnard Perch	*Neosebastes pandus*	**8%**	**1%**	38%	**1%**	**7%**	45%
	Toadfish Blowfish Pufferfish	*Tetraodontidae - undifferentiated*	**7%**	**0%**	4%	0%	6%	83%
	Silver Toadfish	*Lagocephalus sceleratus*	**4%**	0%	**4%**	0%	**1%**	91%
	Weeping Toadfish	*Torquigener pleurogramma*	0%	0%	**3%**	0%	**0%**	96%
	Morid Cod	*Moridae - undifferentiated*	**1%**	34%	**35%**	0%	0%	30%
	Conger Eel	*Conger spp*	*0%*	*0%*	***20%***	*0%*	*0%*	***80%***
	Eel	*Anguilliformes & Synbranchiformes*	*0%*	*0%*	***64%***	*0%*	*0%*	***36%***
	Moonfish Batfish	*Lampridae - undifferentiated*	*0%*	*0%*	***50%***	*0%*	*0%*	***50%***
	Salmon	*Salmonidae - undifferentiated*	***30%***	***33%***	***9%***	*0%*	***23%***	***6%***
	Silver Drummer	*Kyphosus spp Complex*	*0%*	*0%*	*0%*	*0%*	*0%*	***100%***
	Oxeye Herring	*Megalopidae - undifferentiated*	*0%*	*0%*	*0%*	*0%*	***100%***	*0%*

6 Estimates of Catch for Key Species

This section presents estimates of recreational catch (kept, released and total in numbers) from the Phone-Diary Survey for the 12 month period from 1 May 2013 to 30 April 2014. Estimates from the previous survey (1 March 2011 to 29 February 2012) have been included in each figure. Survey data have been expanded to population estimates based on the total number of RFBL holders divided by the number of RFBL holders sampled for each residential stratum. Future research will include an assessment of the impact of avidity bias and non-intending fishing on weighting (see Chapter 9), and the estimates (and errors) in the following section may be revised on this basis. Shore-based recreational catch has not been assessed in this report. Shore-based fishers and boat-based fishers that intended to fish only in freshwater were out of scope for the Phone-Diary Survey. The catch estimates for inland, estuarine and nearshore species provided in this report, particularly those harvested with high proportions of shore-based effort, will be underestimated.

Summaries are provided by bioregion, habitat, fishing method and season for priority species identified on the basis of abundance in the reported catch and importance for management. Key Species have been allocated to habitat types according to the Resource Assessment Framework (RAF) (Department of Fisheries 2011). However, the following RAF indicator species were caught in low numbers and are not included in this section: Blue-eye Trevalla (*Hyperoglyphe antarctica*); Perth Herring (*Nematalosa vlaminghi*); Pilchard (*Sardinops sagax*); Sandbar Shark (*Carcharhinus plumbeus*); Western Blue Groper (*Achoerodus gouldii*); Whiskery Shark (*Furgaleus macki*); and Whitebait (*Hyperlophus vittatus*).

Estimates of recreational catch for key species are presented by habitat type. This includes:

- 1 species/taxa for inland; Silver Cobbler (*Neoarius midgleyi*).
- 5 species/taxa for estuarine; Barramundi (*Lates calcarifer*), Black Bream (*Acanthopagrus butcheri*), Estuary Cobbler (*Cnidoglanis macrocephalus*), Yellowtail Flathead (*Platycephalus westraliae*), and Southern Bluespotted Flathead (*Platycephalus speculator*).
- 17 species/taxa for nearshore; Australian Herring (*Arripis georgianus*), Western Australian Salmon (*Arripis truttaceus*), Garfish (*Hyporhamphus melanochir* and *Hemiramphus robustus*), Sea Mullet (*Mugil cephalus*), Tailor (*Pomatomus saltatrix*), Blue Threadfin (*Eleutheronema tetradactylum*), King Threadfin (*Polydactylus macrochir*), King George Whiting (*Sillaginodes punctata*), School Whiting (*Sillago bassensis, vittata* and *schomburgkii*), Western Trumpeter Whiting (*Sillago burrus*), Mangrove Jack (*Lutjanus argentimaculatus*), Silver Trevally (*Pseudocaranx dentex*), Western Butterfish (*Pentapodus vitta*), Western Yellowfin Bream (*Acanthopagrus morrisoni*), Western King Wrasse (*Coris auricularis*), Brownspotted Wrasse (*Notolabrus parilus*) and Yellowtail Scad (*Trachurus novaezelandiae*).
- 17 species/taxa for inshore demersal; Baldchin Groper (*Choerodon rubescens*), Bight Redfish (*Centroberyx gerrardi*), Blue Morwong (*Nemadactylus valenciennesi*), Bluespotted Emperor (*Lethrinus punctulatus*), Brownstripe Snapper (*Lutjanus vitta*), Goldband Snapper (*Pristipomoides multidens*), Pink Snapper (*Chrysophrys auratus*),

Rankin Cod (*Epinephelus multinotatus*), Red Emperor (*Lutjanus sebae*), Spangled Emperor (*Lethrinus nebulosus*), West Australian Dhufish (*Glaucosoma hebraicum*), Barcheek Coral Trout (*Plectropomus maculatus*), Common Coral Trout (*Plectropomus leopardus*), Breaksea Cod (*Epinephelides armatus*), Grass Emperor (*Lethrinus laticaudis*), Redthroat Emperor (*Lethrinus miniatus*) and Stripey Snapper (*Lutjanus carponotatus*).

- 3 species/taxa for offshore demersal; Eightbar Grouper (*Epinephelus octofasciatus*), Hapuku (*Polyprion oxygeneios*) and Ruby Snapper (*Etelis carbunculus*)
- 6 species/taxa for pelagic; Spanish Mackerel (*Scomberomorus commerson*), Samsonfish (*Seriola hippos*), Grey Mackerel (*Scomberomorus semifasciatus*), Blue Mackerel (*Scomber australasicus*), Billfish and Southern Bluefin Tuna (*Thunnus maccoyii*).
- 4 species/taxa for sharks; Whaler Sharks (Family Carcharhinidae), Gummy Sharks (*Mustelus antarcticus* and *M. stevensi*), Port Jackson Shark (*Heterodontus portusjacksoni*) and Wobbegong (Family Orectolobidae).
- 3 species/taxa for crustaceans; Western Rock Lobster (*Panulirus cygnus*), Mud Crab (*Scylla olivacea* and *S. serrata*) and Blue Swimmer Crab (*Portunus armatus*).
- 1 species/taxa for molluscs; Abalone (*Haliotis* spp.).
- 3 species/taxa for cephalopods; Cuttlefish (Order Sepiidae), Squid (Order Teuthoidea) and Octopus (Order Octopodidae).

6.1 Inland

Estimates of recreational catches for inland species will be underestimated as shore-based fishers and boat-based fishers that fished only in freshwater were out of scope.

6.1.1 Silver Cobbler (*Neoarius midgleyi*)

Silver Cobbler is an indicator species in the Northern Inland bioregion. All recreational catches of Silver Cobbler by RFBL holders aged five years or older occurred in the North Coast bioregion (Figure 16b and c). The majority of the boat-based recreational catches of Silver Cobbler were released (76%) (Figure 16a) with most releases attributed to "Too Many" (41%) and under-size (24%) (Table 7). Silver Cobbler were harvested in freshwater habitat (Figure 16d) throughout the year, with higher catches observed in spring (70%) and autumn (24%) (Figure 16f). All catches were taken by line-fishing (Figure 16e). The estimated kept and released recreational catches of Silver Cobbler were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 16a, Table 5).

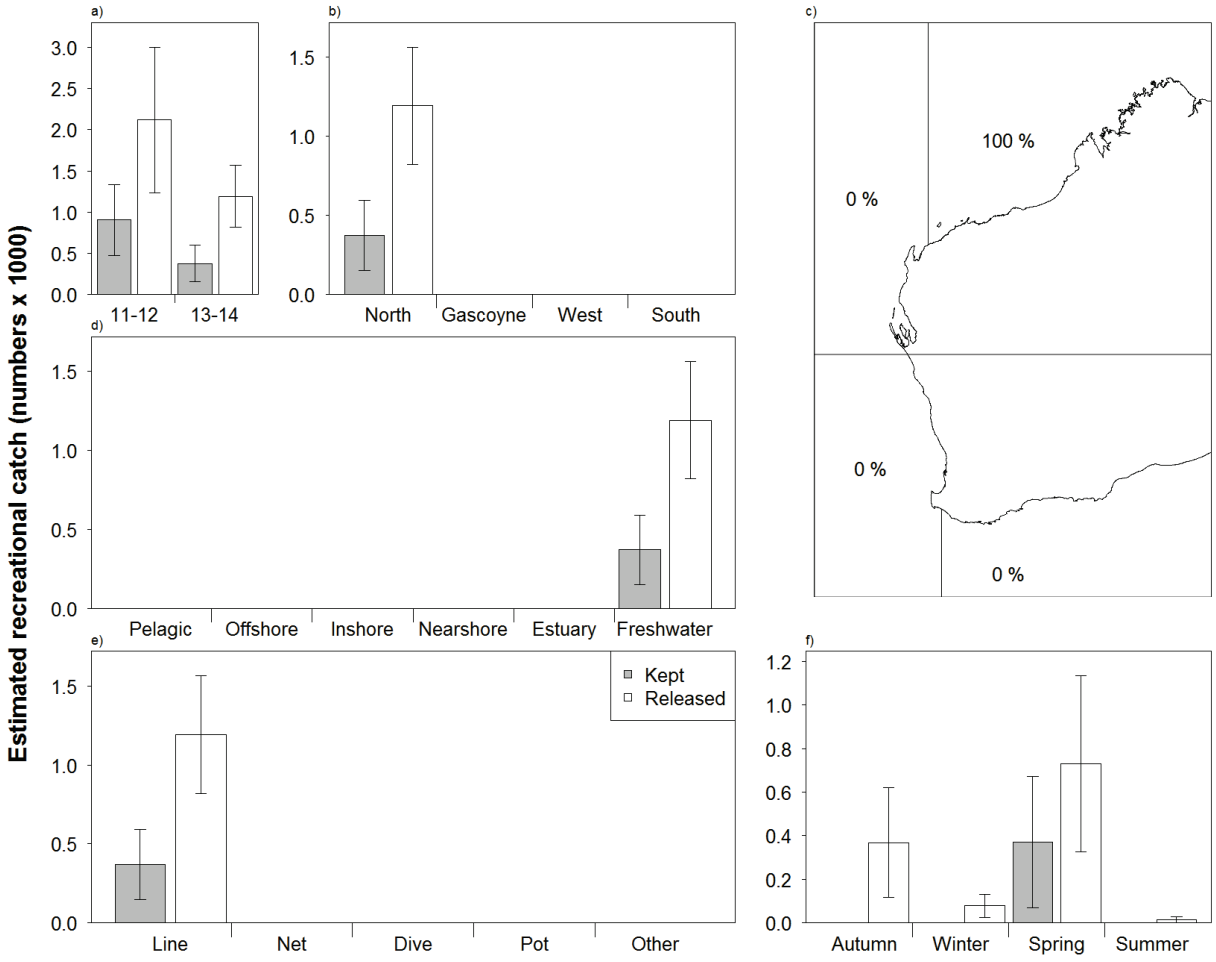

Figure 16. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Silver Cobbler in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.2 Estuarine

Estimates of recreational catches for estuarine species will be underestimated as shore-based fishers were out of scope of the survey.

6.2.1 Barramundi (*Lates calcarifer*)

Barramundi is an indicator species in the North Coast bioregion. All recreational catches of Barramundi by RFBL holders aged five years or older occurred in the North Coast bioregion (Figure 17b and c). The majority of the boat-based recreational catches of Barramundi were released (91%) (Figure 17a) with most releases attributed to "Too Many" (59%) (Table 7). The majority of catches were taken in estuary habitat (79%), but also nearshore (13%) and freshwater (8%) habitats (Figure 17d). Barramundi were harvested throughout the year, with higher catches observed in autumn (47%), winter (21%) and spring (25%) (Figure 17f). All catches were taken by line-fishing (Figure 17e). The estimated kept recreational catches of Barramundi were similar in 2013/14 compared to 2011/12 (Figure 17a, Table 5).

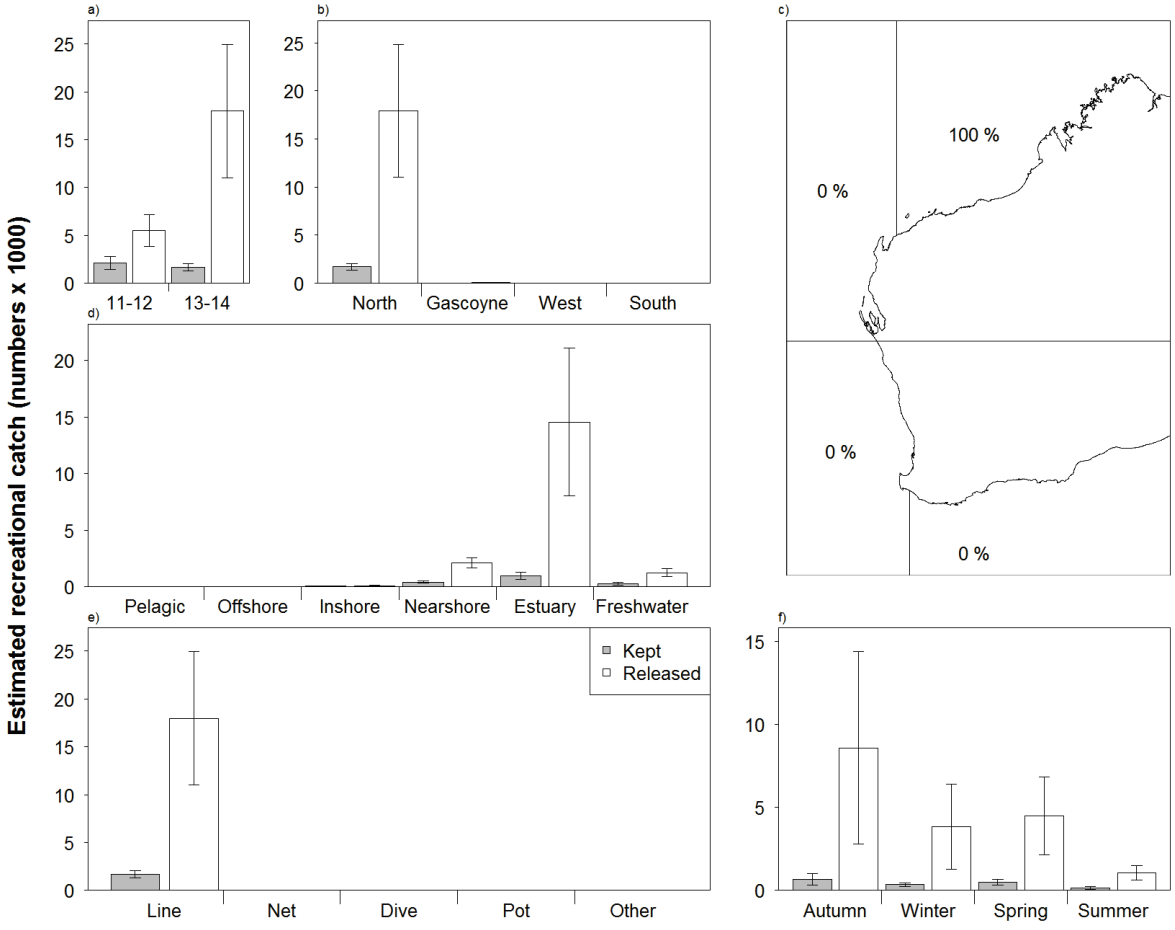

Figure 17. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Barramundi in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.2.2 Black Bream (*Acanthopagrus butcheri*)

Black Bream is an indicator species in the West Coast and South Coast bioregions. The majority of the kept recreational catches of Black Bream by RFBL holders aged five years or older occurred in the South Coast (62%), followed by the West Coast (38%) (Figure 18b and c). The majority of the boat-based recreational catches of Black Bream were released (91%) (Figure 18a) with most releases attributed to catch and release fishing (47%) (Table 7). Catches were taken predominantly from estuary habitat (77%), but also nearshore (15%) and freshwater (6%) habitats (Figure 18d). Black Bream were harvested throughout the year, with higher catches observed in summer (36%) and autumn (32%) compared with winter (18%) and spring (14%) (Figure 18f). The majority of kept catches were taken by line-fishing (99%) (Figure 18e). The estimated kept recreational catches of Black Bream were significantly lower in 2013/14 compared with 2011/12, although estimated released recreational catches were similar in both years (Figure 18a, Table 5).

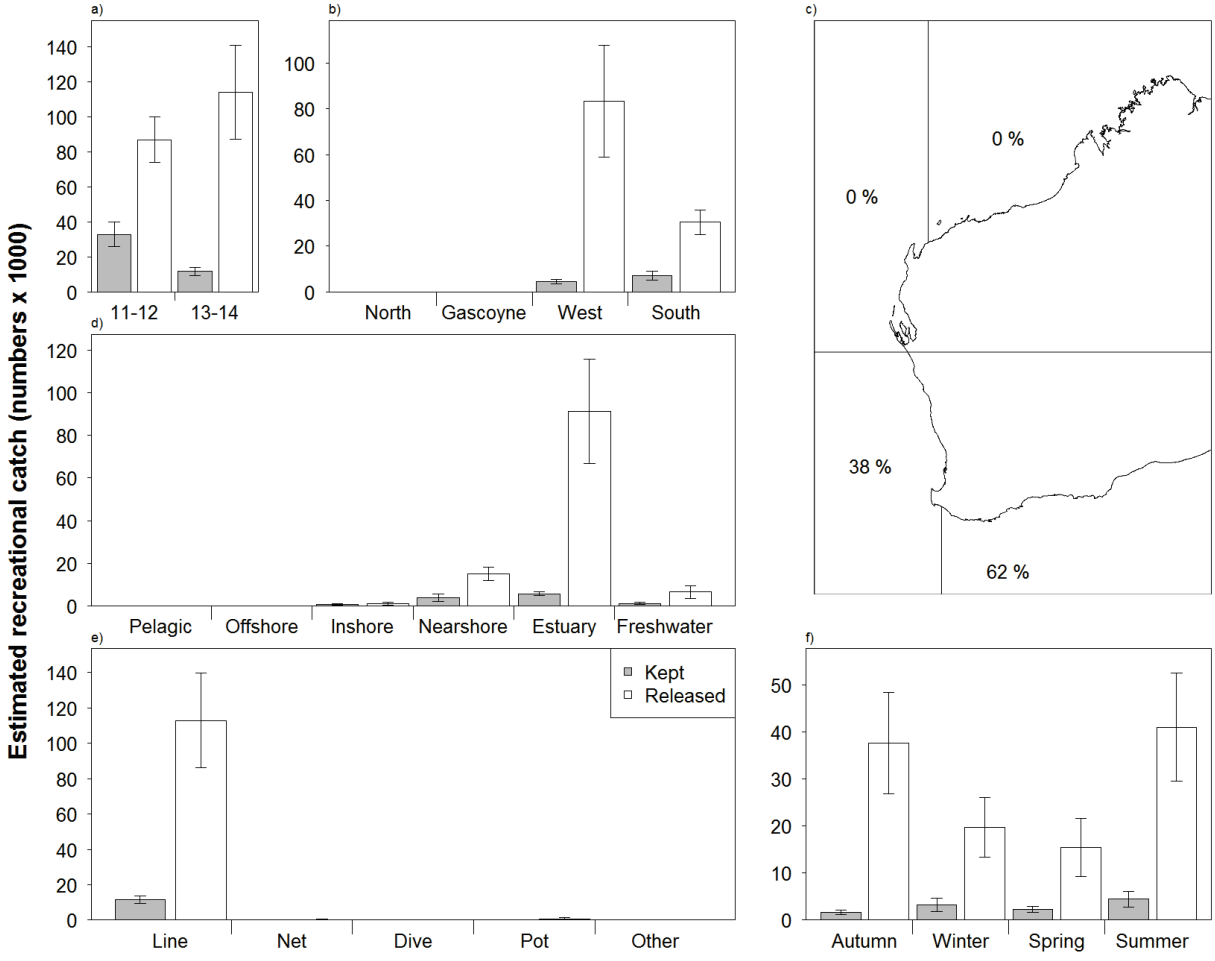

Figure 18. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Black Bream in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.2.3 Estuary Cobbler (*Cnidoglanis macrocephalus*)

Estuary Cobbler is an indicator species in the West Coast and South Coast bioregions. The majority of the kept recreational catches of Estuary Cobbler by RFBL holders aged five years or older occurred in the West Coast (80%), followed by the South Coast (14%) (Figure 19b and c). Just over half of the boat-based recreational catches of Estuary Cobbler were released (37%) (Figure 19a) with most releases attributed to "Other" (53%) (Table 7). Catches were taken predominantly from nearshore (60%) and estuary (40%) habitats (Figure 19d). Estuary Cobbler were harvested from spring to autumn, with highest catches in autumn (81%) compared with spring (4%) and summer (15%) (Figure 19f). The majority of catches were taken by line-fishing (85%), with some fishing from nets (15%) (Figure 19e). The estimated kept and released recreational catches of Estuary Cobbler were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 19a, Table 5).

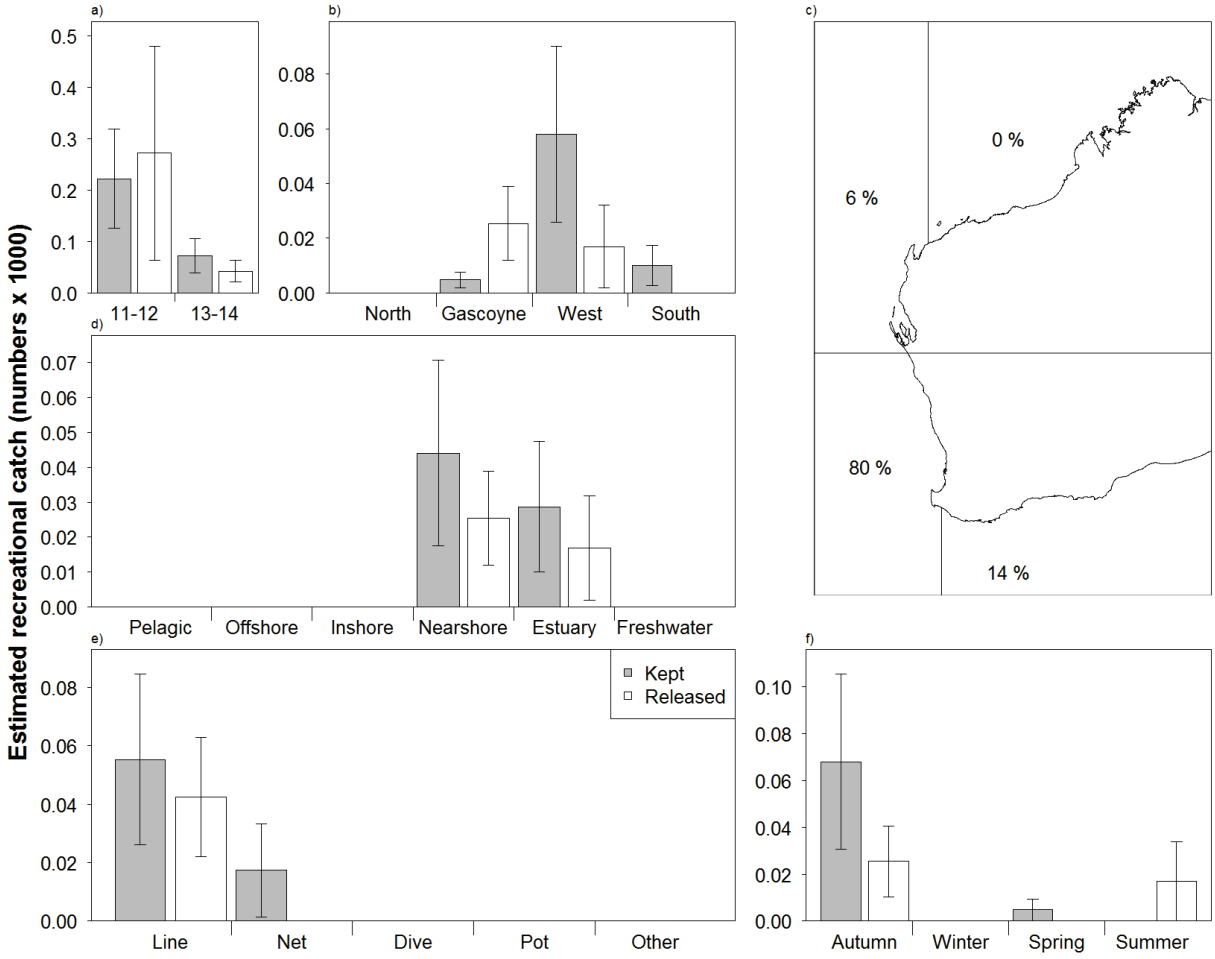

Figure 19. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Estuary Cobbler in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.2.4 Yellowtail Flathead (*Platycephalus westraliae*)

The majority of the recreational catches of Yellowtail Flathead by RFBL holders aged five years or older occurred in the West Coast (80%), with some catches in the Gascoyne Coast (11%) and South Coast (9%) (Figure 20b and c). The majority of the boat-based recreational catches of Yellowtail Flathead were released (87%) (Figure 20a) with most releases attributed to under-size catches (48%) (Table 7). Catches were taken predominantly from nearshore habitat (42%), but also inshore demersal (38%) and estuary (20%) habitats (Figure 20d). Yellowtail Flathead were harvested throughout the year, with higher catches observed in summer (38%) and autumn (40%) compared with winter (14%) and spring (8%) (Figure 20f). All catches were taken by line-fishing (Figure 20e). The estimated kept and released recreational catches of Yellowtail Flathead were similar in 2013/14 compared to 2011/12 (Figure 20a, Table 5).

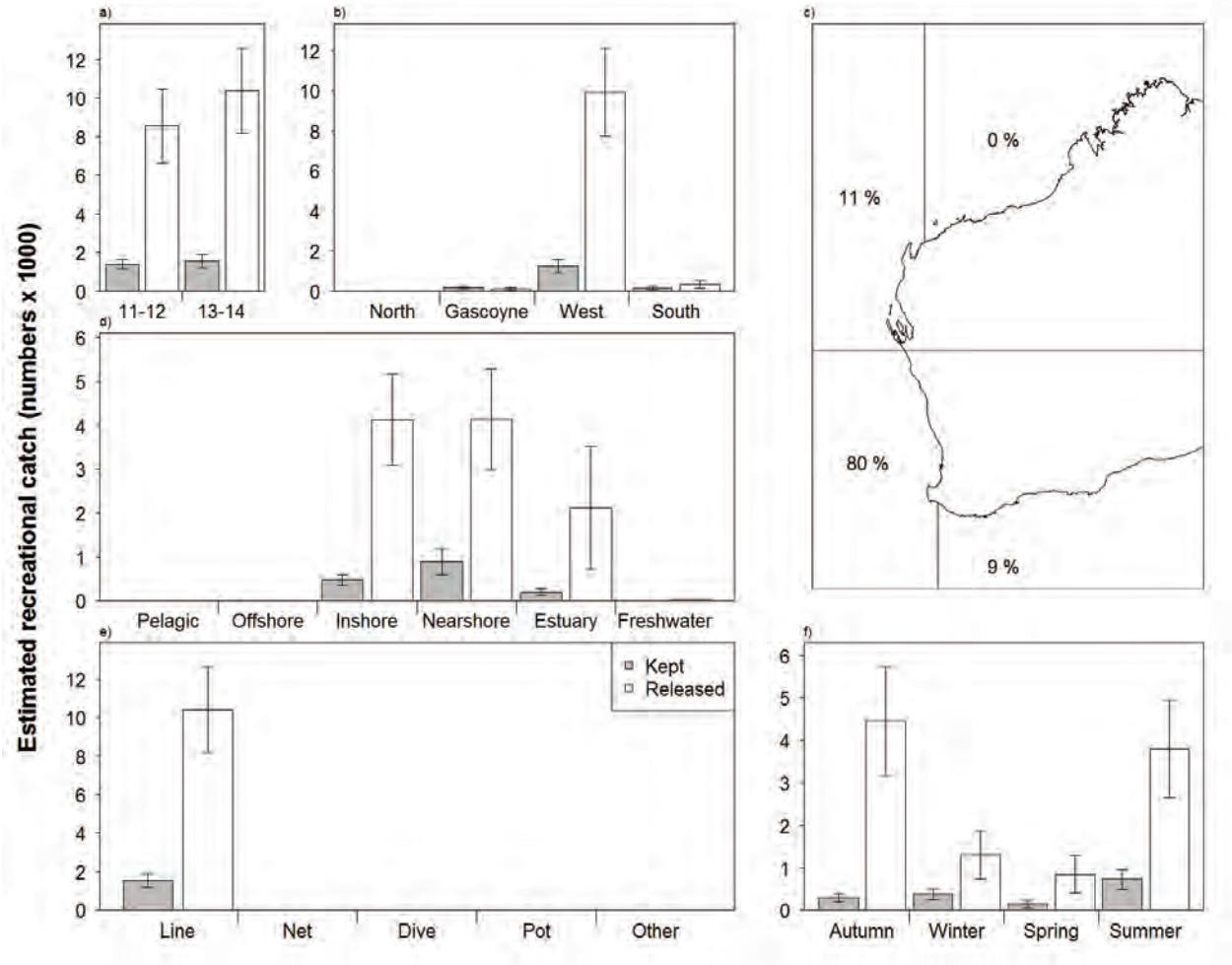

Figure 20. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Yellowtail Flathead in Western Australia during 2013/14 a) kept and released; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.2.5 Southern Bluespotted Flathead (*Platycephalus speculator*)

The majority of the recreational catches of Southern Bluespotted Flathead by RFBL holders aged five years or older occurred in the West Coast (54%), followed by the South Coast (46%) (Figure 21b and c). The majority of the boat-based recreational catches of Southern Bluespotted Flathead were released (88%) (Figure 21a) with most releases attributed to under-size catches (50%) (Table 7). Catches were taken predominantly from nearshore habitat (55%), but also inshore demersal (41%) and estuary (4%) habitats (Figure 21d). Southern Bluespotted Flathead were harvested throughout the year, with higher catches observed in summer (39%) compared with autumn (22%), winter (16%) and spring (23%) (Figure 21f). All catches were taken by line-fishing (Figure 21e). The estimated kept and released recreational catches of Southern Bluespotted Flathead were similar in 2013/14 compared to 2011/12 (Figure 21a, Table 5).

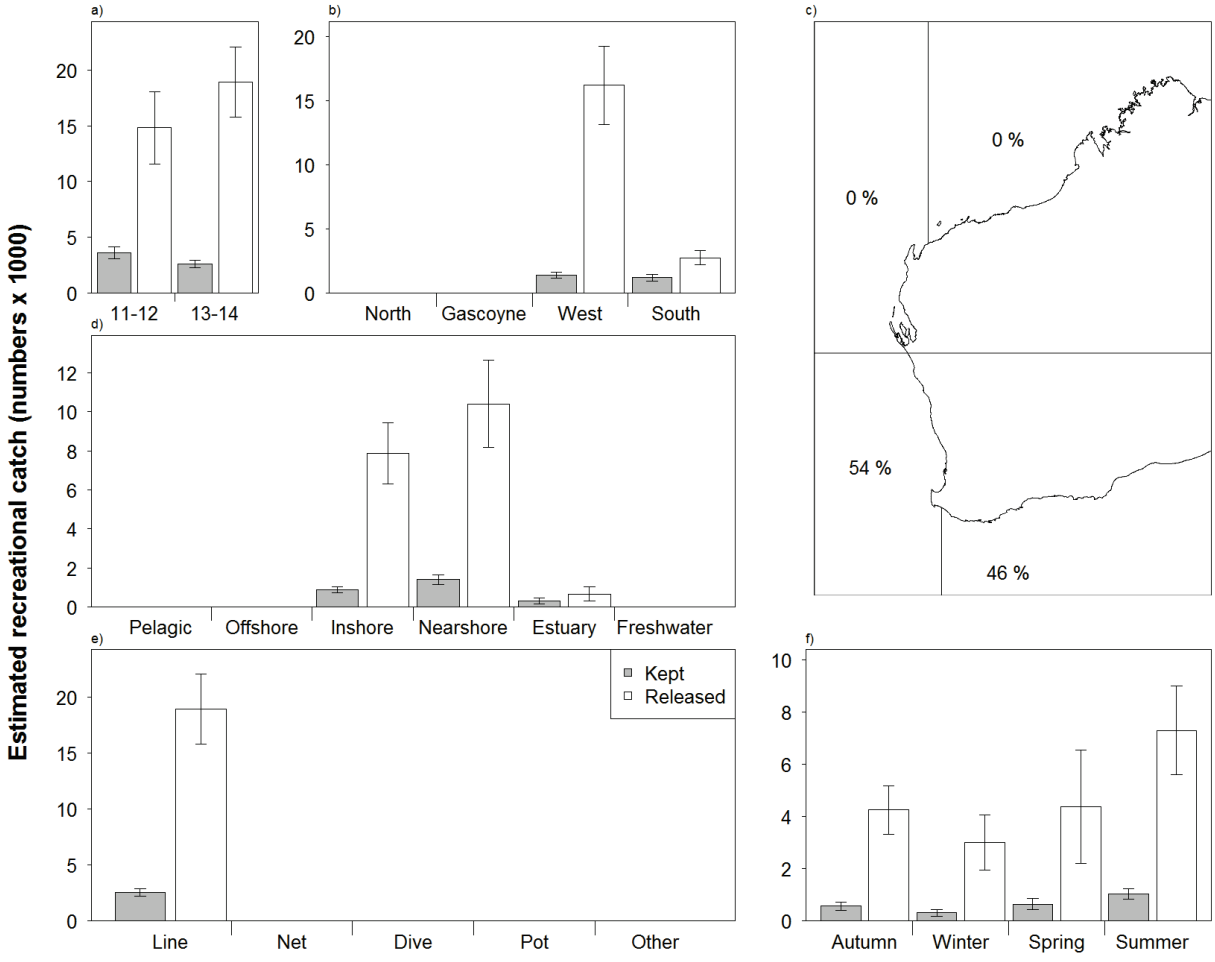

Figure 21. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Southern Bluespotted Flathead in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3 Nearshore

Estimates of recreational catch for nearshore species will be underestimated as shore-based fishers (using lines, nets, diving and pots) were out of scope of the survey.

6.3.1 Australian Herring (*Arripis georgianus*)

Australian Herring is an indicator species in the West Coast and South Coast bioregions. The majority of the kept recreational catches of Australian Herring by RFBL holders aged five years or older occurred in the West Coast (78%), followed by the South Coast (22%) (Figure 22b and c). The majority of the boat-based recreational catches of Australian Herring were kept (76%) (Figure 22a). Catches were taken predominantly from nearshore habitat (86%), but also inshore demersal (8%) and estuary (6%) habitats (Figure 22d). Australian Herring were harvested throughout the year, with higher catches observed in summer (27%) and autumn (46%) compared with winter (16%) and spring (11%) (Figure 22f). All catches were taken by line-fishing (Figure 22e). The estimated kept recreational catches of Australian Herring were significantly lower in 2013/14 compared with 2011/12, although estimated released recreational catches were similar in both years (Figure 22a, Table 5).

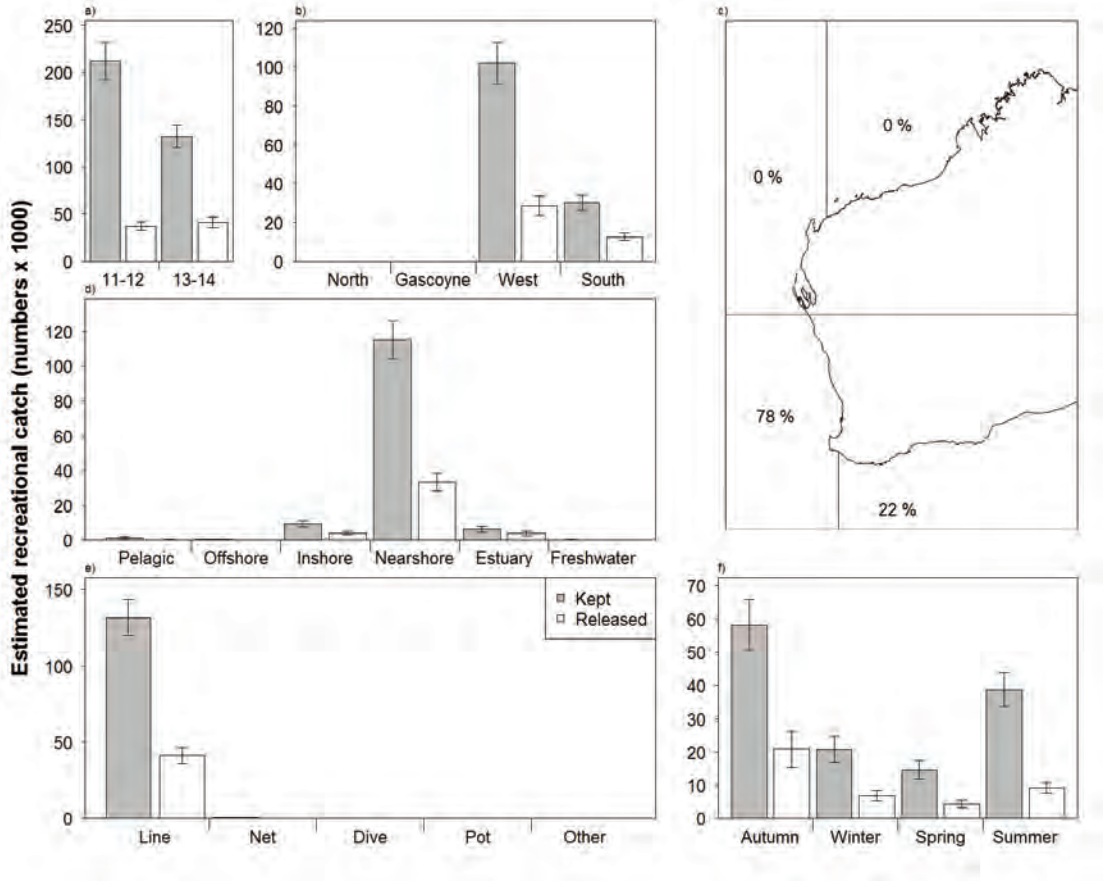

Figure 22. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Australian Herring in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.2 Western Australian Salmon (*Arripis truttaceus*)

Western Australian Salmon is an indicator species in the South Coast. The majority of the kept recreational catches of Western Australian Salmon by RFBL holders aged five years or older occurred in the South Coast (68%), followed by the West Coast (32%) (Figure 23b and c). The majority of the boat-based recreational catches of Western Australian Salmon were released in 2013/14 (64%) (Figure 23a) with the releases attributed to under-size catches (28%), catch and release fishing (25%) and "Too Many" (24%) (Table 7). Catches were taken predominantly from nearshore habitat (60%), but also inshore demersal (30%), estuary (7%) and pelagic (3%) habitats (Figure 23d). Western Australian Salmon were harvested throughout the year, with higher catches observed in autumn (81%) compared with winter (2%), spring (8%) and summer (9%) (Figure 23f). All catches were taken by line-fishing (Figure 23e). The estimated kept recreational catches of Western Australian Salmon were similar in 2013/14 compared to 2011/12 (Figure 23a, Table 5).

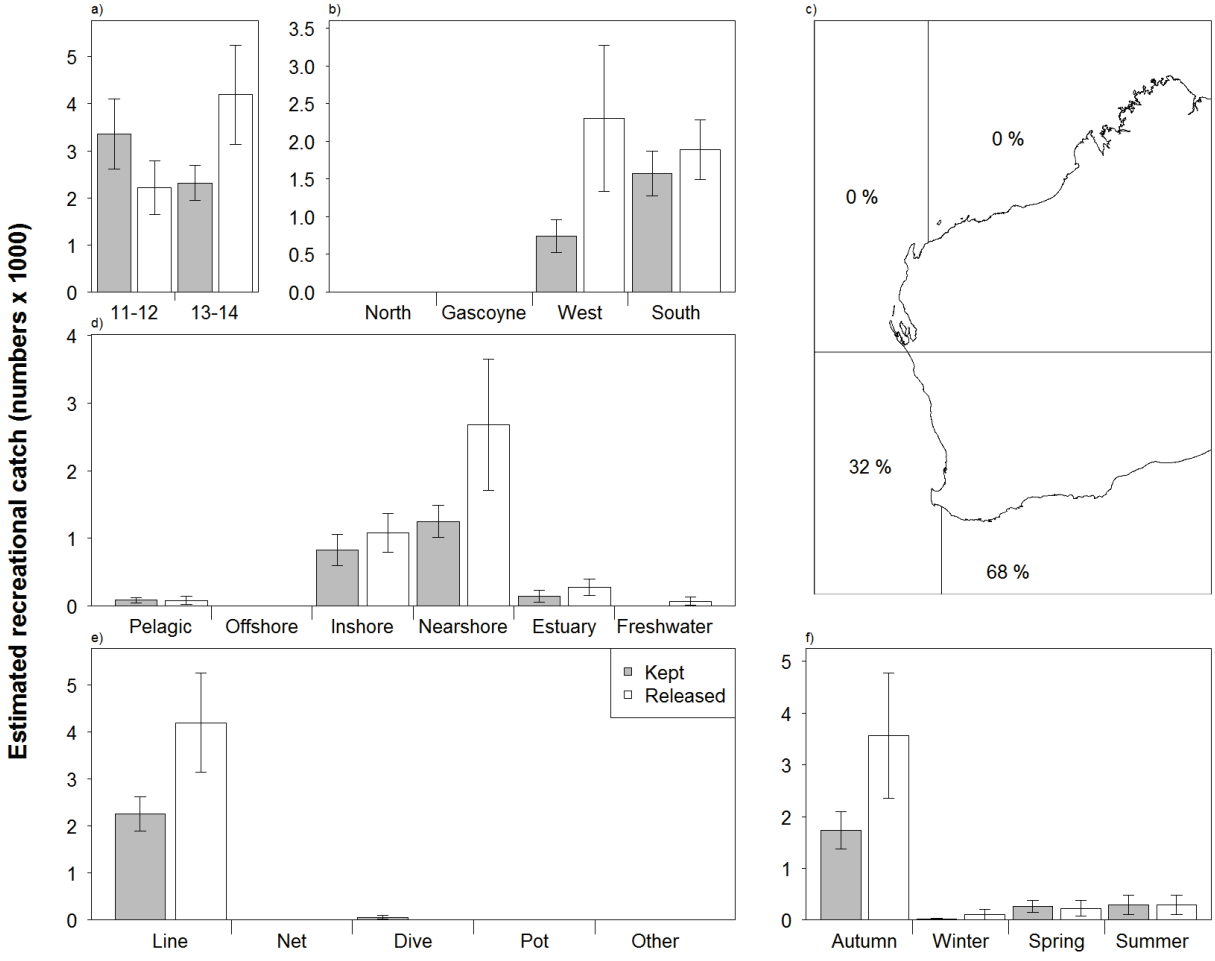

Figure 23. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Western Australian Salmon in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.3 Garfish (*Hyporhamphus melanochir* and *Hemiramphus robustus*)

Garfish species include Southern Garfish (*Hyporhamphus melanochir*) and three-by-two Garfish (*Hemiramphus robustus*). Garfish is an indicator species in the West Coast bioregion. The majority of kept recreational catches of Garfish by RFBL holders aged five years or older occurred in the North Coast (37%) and West Coast (31%), followed by the South Coast (20%) and Gascoyne Coast (12%) (Figure 24b and c). The majority of the boat-based recreational catches of Garfish were kept (85%) (Figure 24a). Catches were taken predominantly from nearshore habitat (74%), but also inshore demersal (12%), estuary (6%) and pelagic (8%) habitats (Figure 24d). Garfish were harvested throughout the year, with higher catches observed in autumn (28%) and winter (50%) compared with spring (7%) and summer (15%) (Figure 24f). The majority of catches were taken by line-fishing (91%), with some fishing from nets (9%) (Figure 24e). The estimated kept and released recreational catches of Garfish were significantly lower in 2013/14 compared with 2011/12 (Figure 24a, Table 5).

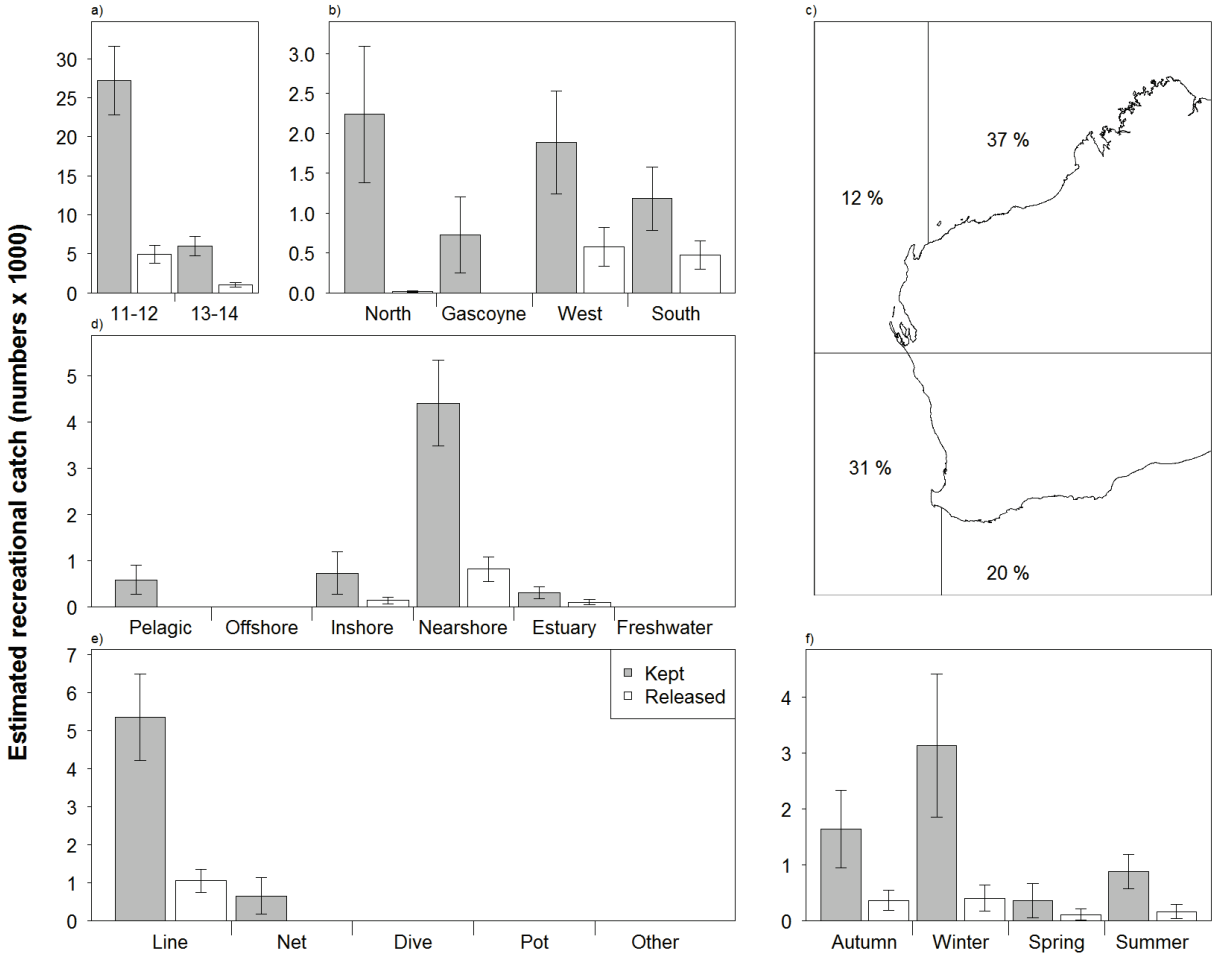

Figure 24. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Garfish in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.4 Sea Mullet (*Mugil cephalus*)

Sea Mullet is an indicator species in the Gascoyne, West and South Coast bioregions. The majority of the kept recreational catches of Sea Mullet by RFBL holders aged five years or older occurred in the West Coast (81%), with some catches in the Gascoyne Coast (16%) and South Coast (3%) (Figure 25b and c). The majority of the boat-based recreational catches of Sea Mullet were kept (>99%) (Figure 25a). Catches were taken predominantly from estuary habitat (51%), but also nearshore (34%) and inshore demersal (15%) habitats (Figure 25d). Sea Mullet were harvested throughout the year, with higher catches observed in autumn (44%) compared with winter (10%), spring (32%) and summer (14%) (Figure 25f). Catches were taken by nets (88%), with some fishing from lines (9%) and pots (3%) (Figure 25e). The estimated kept and released recreational catches of Sea Mullet were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 25a, Table 5).

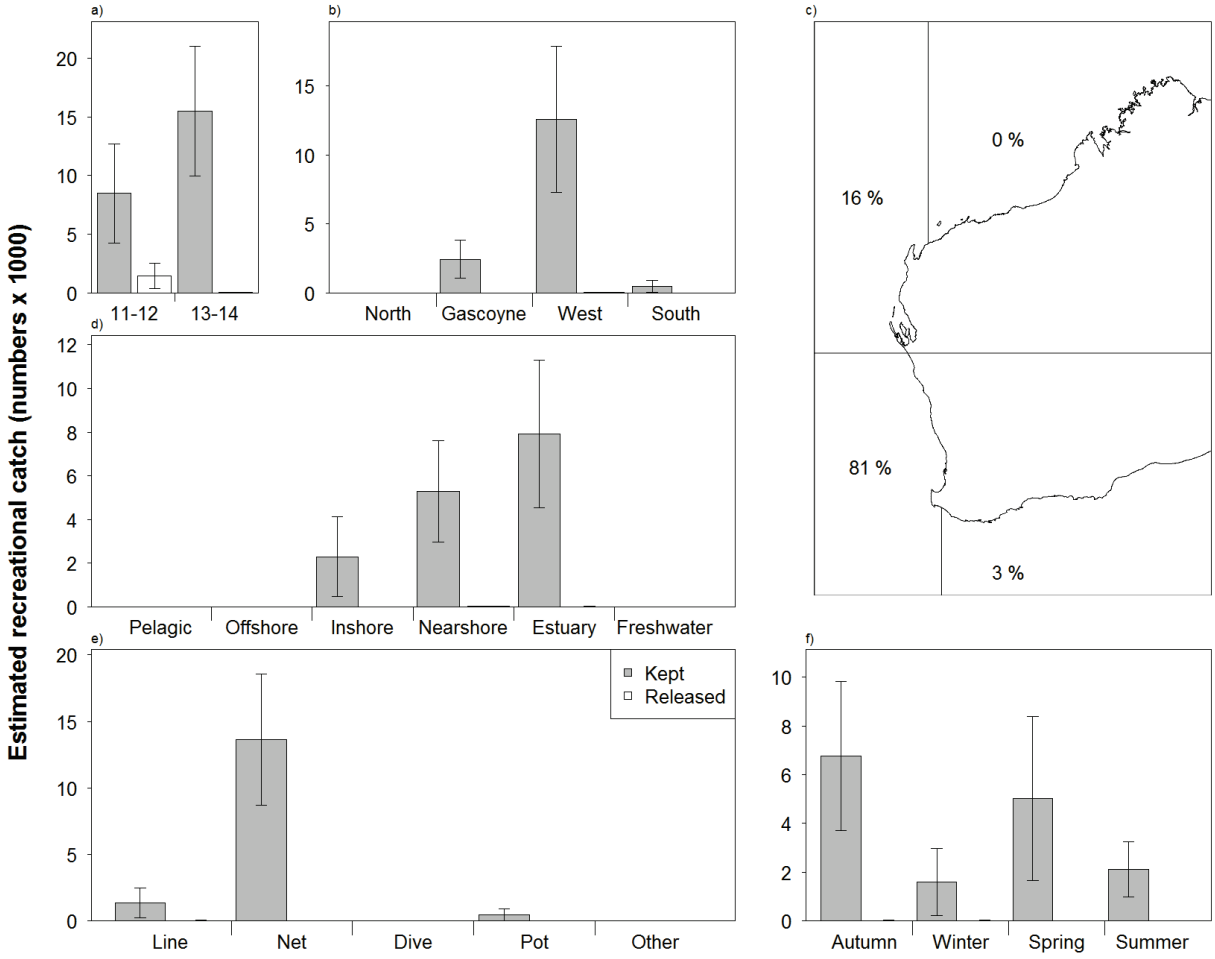

Figure 25. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Sea Mullet in Western Australia during 2013/14 a) kept and released; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.5 Tailor (*Pomatomus saltatrix*)

Tailor is an indicator species in the Gascoyne Coast and West Coast bioregions. The majority of the kept recreational catches of Tailor by RFBL holders aged five years or older occurred in the West Coast (88%), with some catches in the Gascoyne Coast (10%) and South Coast (2%) (Figure 26b and c). Equal proportions of the boat-based recreational catch of Tailor were kept (49%) and released (51%) (Figure 26a). Catches were taken predominantly from estuary habitat (50%), but also nearshore (38%) and inshore demersal (10%) habitats (Figure 26d). Tailor were harvested throughout the year, with higher catches observed in summer (35%) and autumn (34%) compared with winter (10%) and spring (21%) (Figure 26f). Catches were taken by line fishing (96%), with some fishing from nets (4%) (Figure 26e). The estimated kept and released recreational catches of Tailor were similar in 2013/14 compared to 2011/12 (Figure 26a, Table 5).

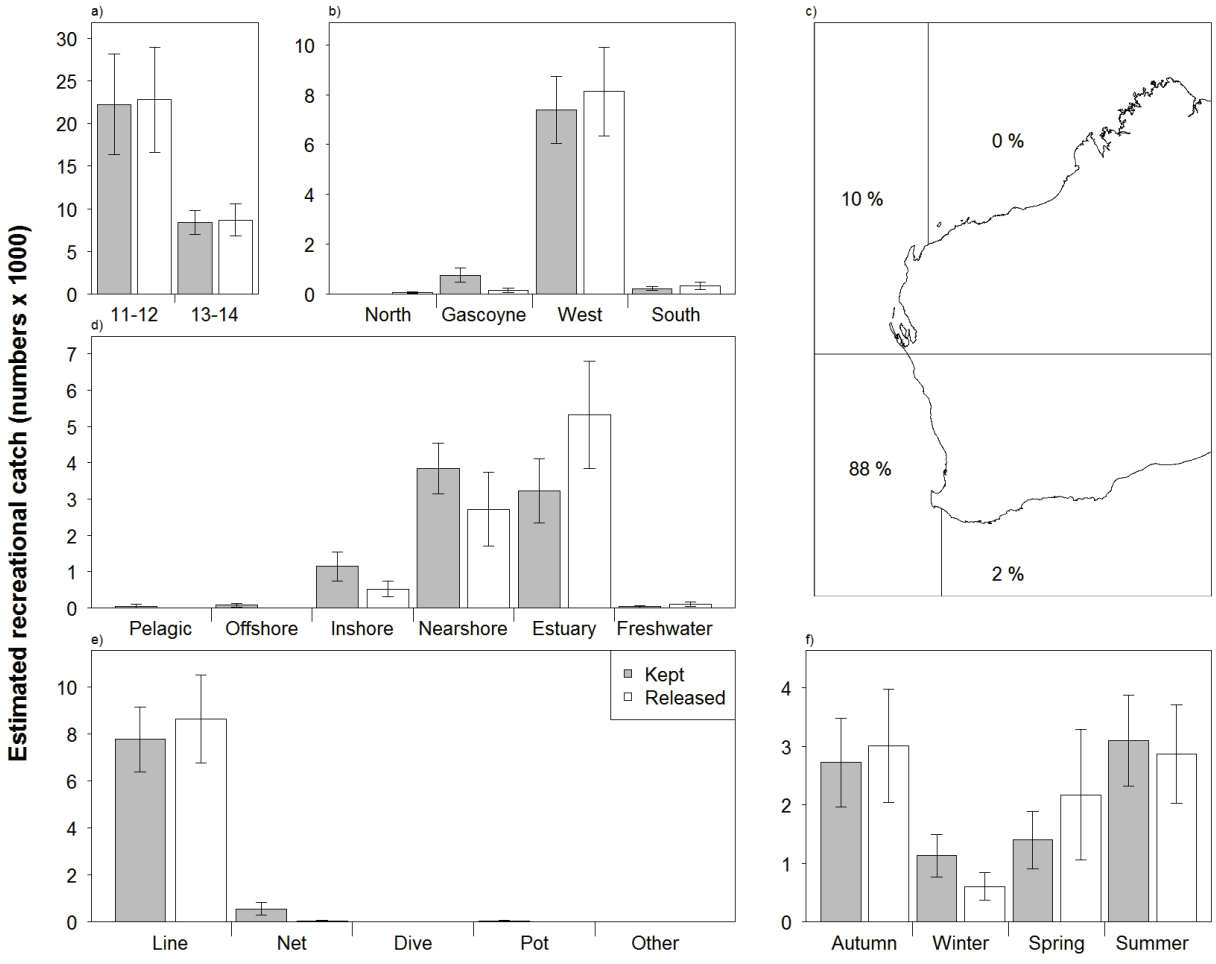

Figure 26. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Tailor in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.6 Blue Threadfin (*Eleutheronema tetradactylum*)

Blue Threadfin is an indicator species in the North Coast bioregion. The majority of the kept recreational catches of Blue Threadfin by RFBL holders aged five years or older occurred in the North Coast (94%), with some catches in the Gascoyne Coast (6%) (Figure 27b and c). The majority of the boat-based recreational catches of Blue Threadfin were kept (66%) (Figure 27a). Catches were taken predominantly from nearshore habitat (66%), but also estuary (28%) and inshore demersal (6%) habitats (Figure 27d). Blue Threadfin were harvested throughout the year, with higher catches observed in winter (46%) compared with spring (21%), summer (5%) and autumn (28%) (Figure 27f). All catches were taken by line fishing (Figure 27e). The estimated kept and released recreational catches of Blue Threadfin were similar in 2013/14 compared to 2011/12 (Figure 27a, Table 5).

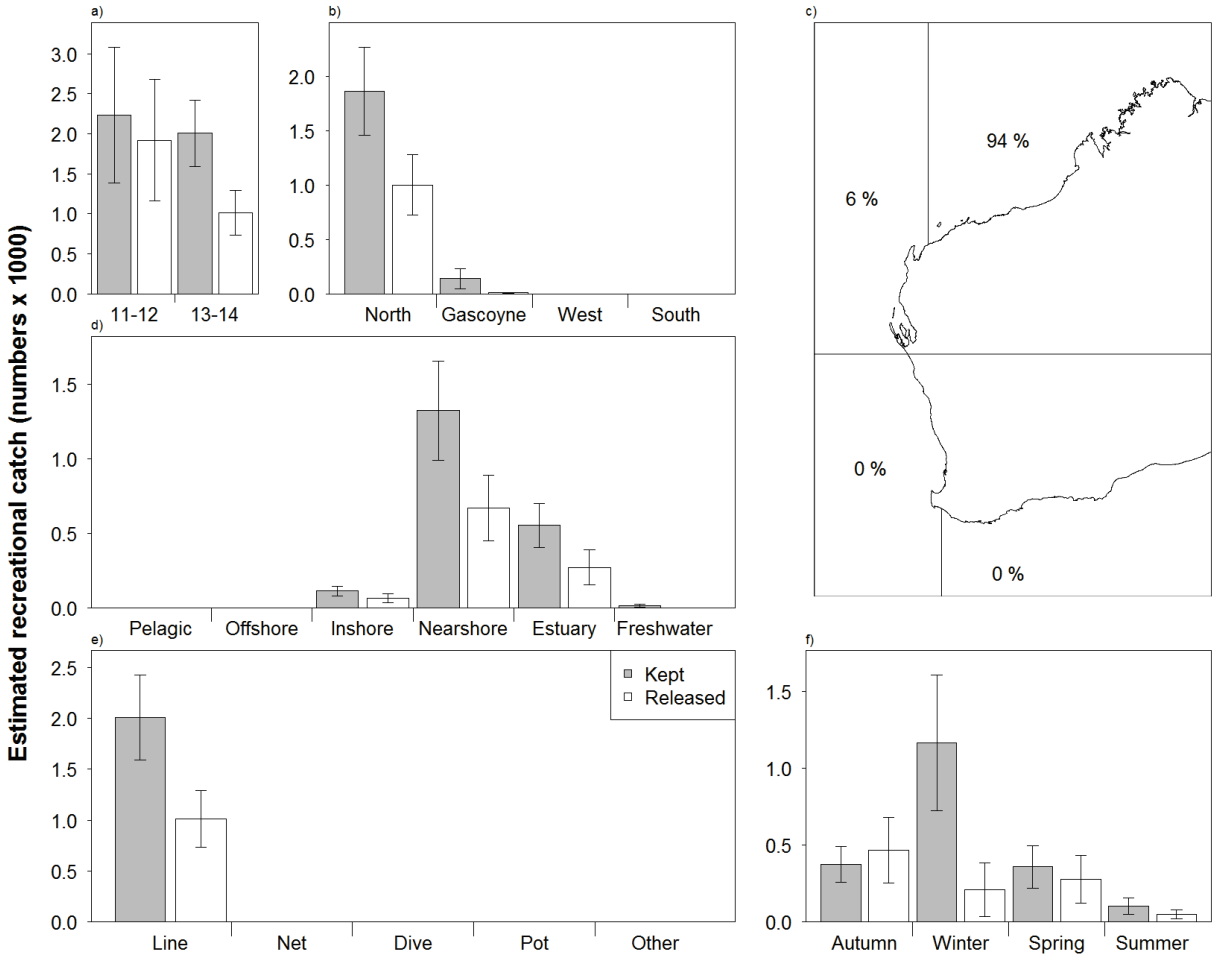

Figure 27. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Blue Threadfin in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.7 King Threadfin (*Polydactylus macrochir*)

King Threadfin is an indicator species in the North Coast bioregion. The majority of the kept recreational catches of King Threadfin by RFBL holders aged five years or older occurred in the North Coast (98%), with some catches in the Gascoyne Coast (2%) (Figure 28b and c). The majority of the boat-based recreational catches of King Threadfin were released (63%) (Figure 28a) with most releases attributed to catch and release fishing (74%) (Table 7). Catches were taken from estuary (69%) and nearshore (26%) and inshore demersal (5%) habitats (Figure 28d). King Threadfin were harvested throughout the year, with higher catches in summer (36%), autumn (32%) and winter (24%) compared with spring (8%) (Figure 28f). All catches were taken by line fishing (Figure 28e). The estimated kept and released recreational catches of King Threadfin were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 28a, Table 5).

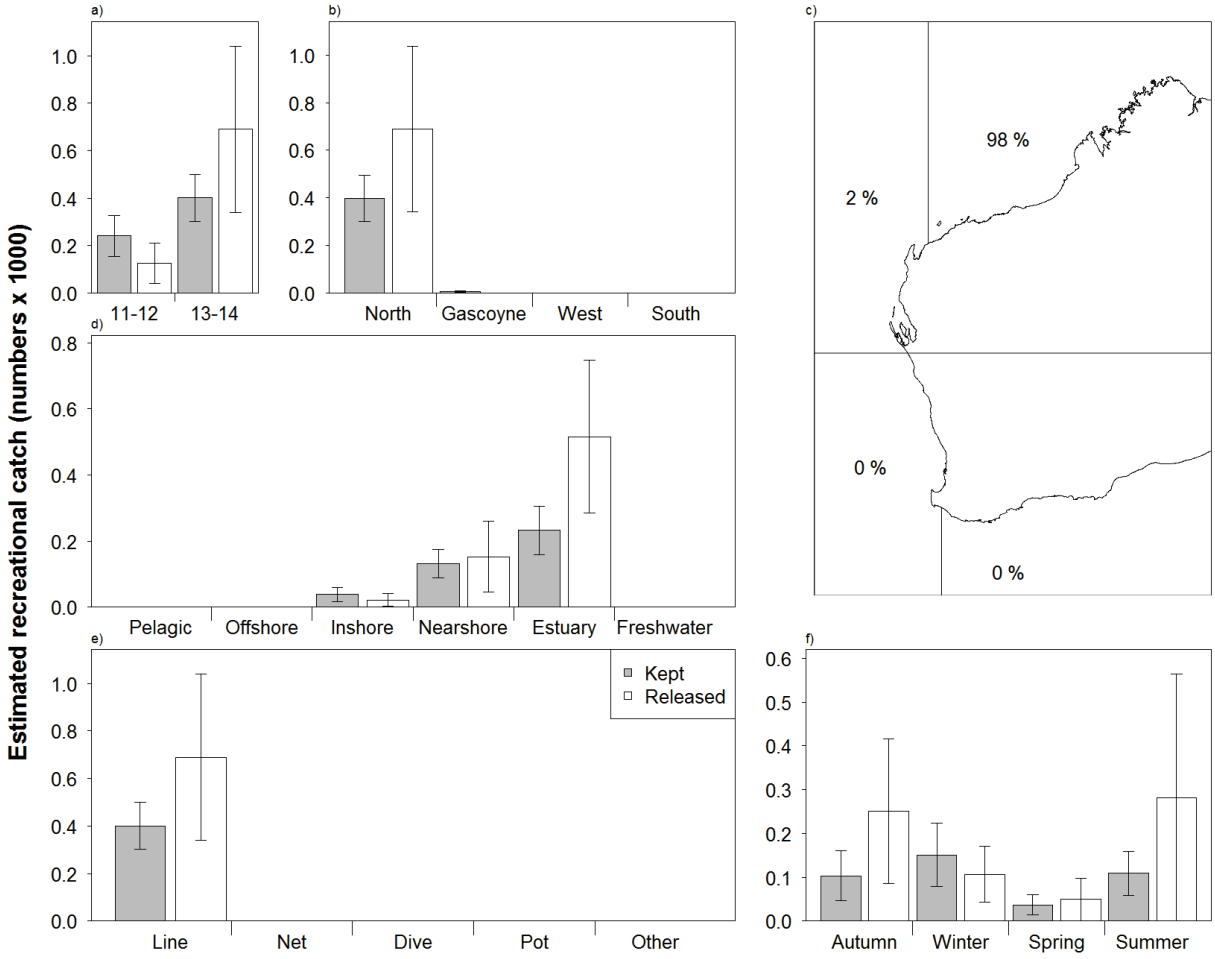

Figure 28. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of King Threadfin in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.8 King George Whiting (*Sillaginodes punctata*)

Whiting species, including King George Whiting, are indicator species in the Gascoyne Coast, South Coast and West Coast bioregions. The majority of the kept recreational catches of King George Whiting by RFBL holders aged five years or older occurred in the South Coast (62%), with some catches in the West Coast (38%) (Figure 29b and c). The majority of the boat-based recreational catches of King George Whiting were kept (73%) (Figure 29a). Catches were taken predominantly from nearshore habitat (66%), but also inshore demersal (15%) and estuary (18%) habitats (Figure 29d). King George Whiting were harvested throughout the year, with equal catches in autumn (23%), winter (21%), spring (28%) and summer (28%) (Figure 29f). All catches were taken by line fishing (Figure 29e). The estimated released recreational catches of King George Whiting were significantly lower in 2013/14 compared with 2011/12, although estimated kept recreational catches were similar in both years (Figure 29a, Table 5).

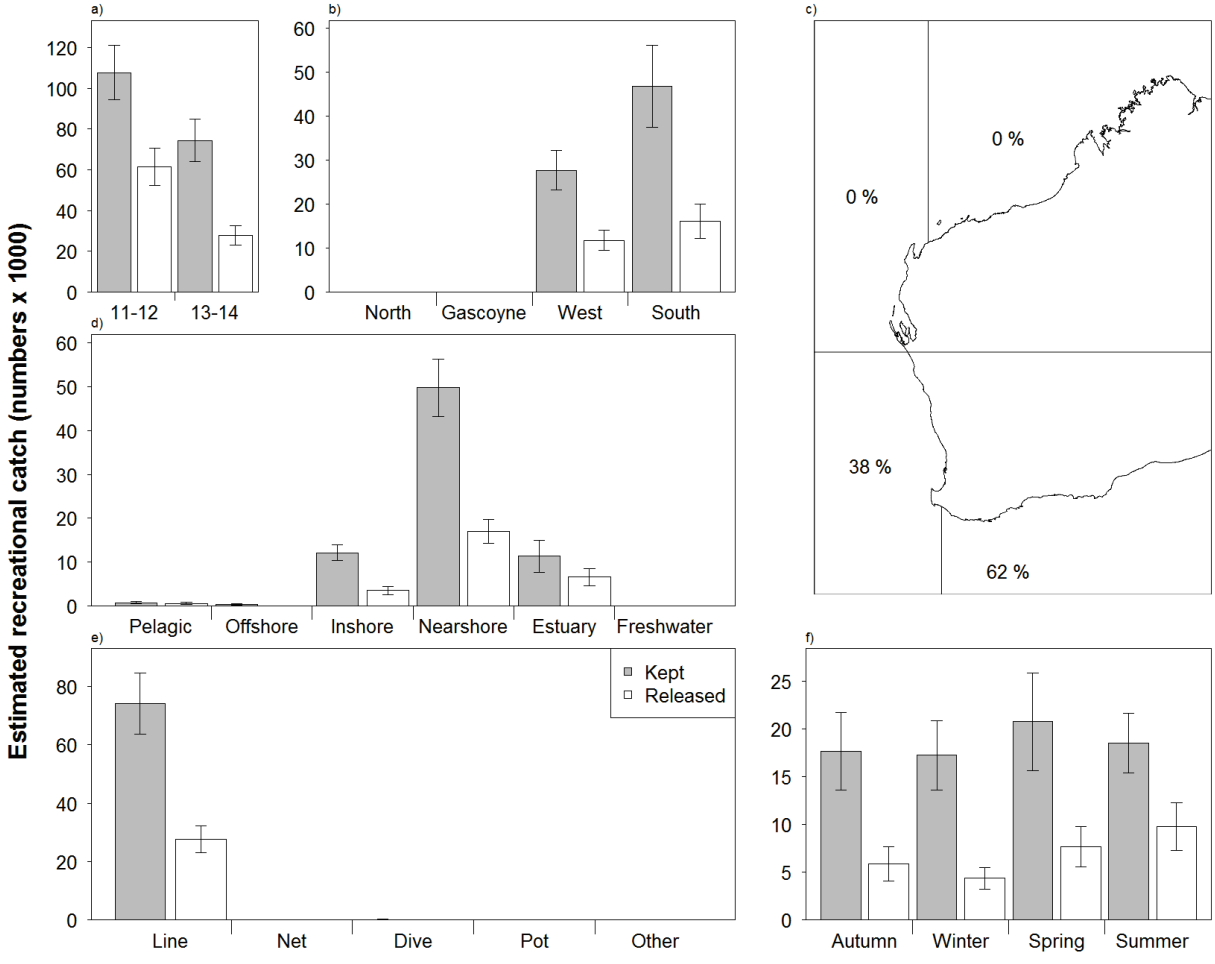

Figure 29. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of King George Whiting in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.9 School Whiting (*Sillago bassensis, vittata* and *schomburgkii*)

Whiting species, including School and Yellowfin Whiting, are indicator species in the Gascoyne Coast, South Coast and West Coast bioregions. School Whiting includes Southern School Whiting (*Sillago bassensis*), Western School Whiting (*S. vittata*) and Yellowfin Whiting (*S. schomburgkii*). The majority of the kept recreational catches of School Whiting by RFBL holders aged five years or older occurred in the West Coast (92%), with some catches in the South Coast (8%) (Figure 30b and c). The majority of the boat-based recreational catches of School Whiting were kept (78%) (Figure 30a). Catches were taken predominantly from nearshore habitat (68%), but also inshore demersal (24%) and estuary (5%) habitats (Figure 30d). School Whiting were harvested throughout the year, with higher catches in summer (31%) and autumn (29%) compared with winter (20%) and spring (20%) (Figure 30f). All catches were taken by line fishing (Figure 30e). The estimated kept and released recreational catches of School Whiting were similar in 2013/14 compared to 2011/12 (Figure 30a, Table 5).

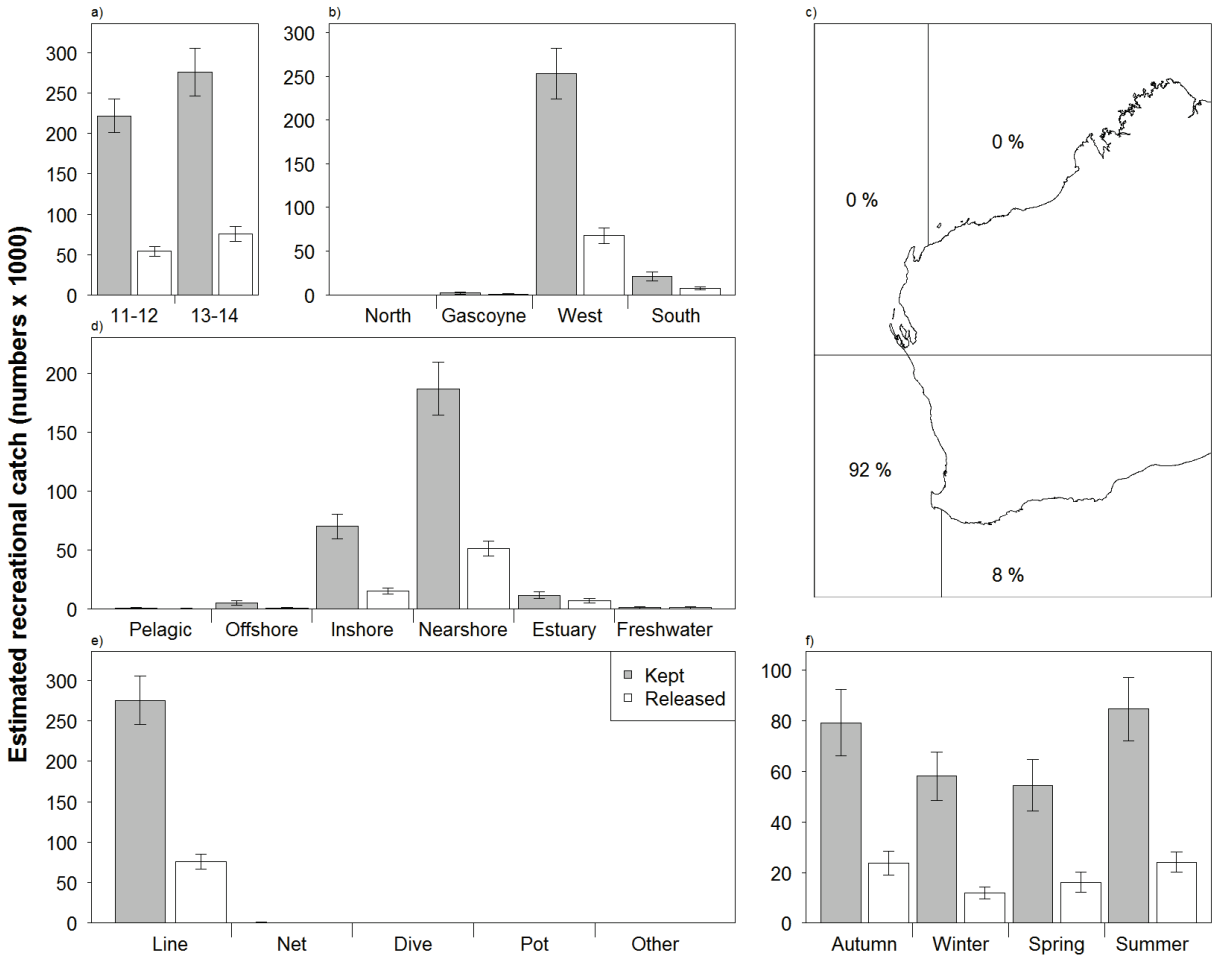

Figure 30. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of School Whiting in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.10 Western Trumpeter Whiting (*Sillago burrus*)

The majority of the recreational catches of Western Trumpeter Whiting by RFBL holders aged five years or older occurred in the Gascoyne Coast (45%) and West Coast (38%), with some catches in the North Coast (17%) (Figure 31b and c). The majority of the boat-based recreational catches of Western Trumpeter Whiting were released (97%) (Figure 31a) with most releases attributed to "Other" (69%) (Table 7). Catches were taken predominantly from nearshore habitat (95%), but also inshore demersal (4%) and estuary (1%) habitats (Figure 31d). Western Trumpeter Whiting were harvested throughout the year, with higher catches observed in spring (34%), summer (30%) and autumn (27%) compared with winter (9%) (Figure 31f). All catches were taken by line fishing (Figure 31e). The estimated kept and released recreational catches of Western Trumpeter Whiting were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 31a, Table 5).

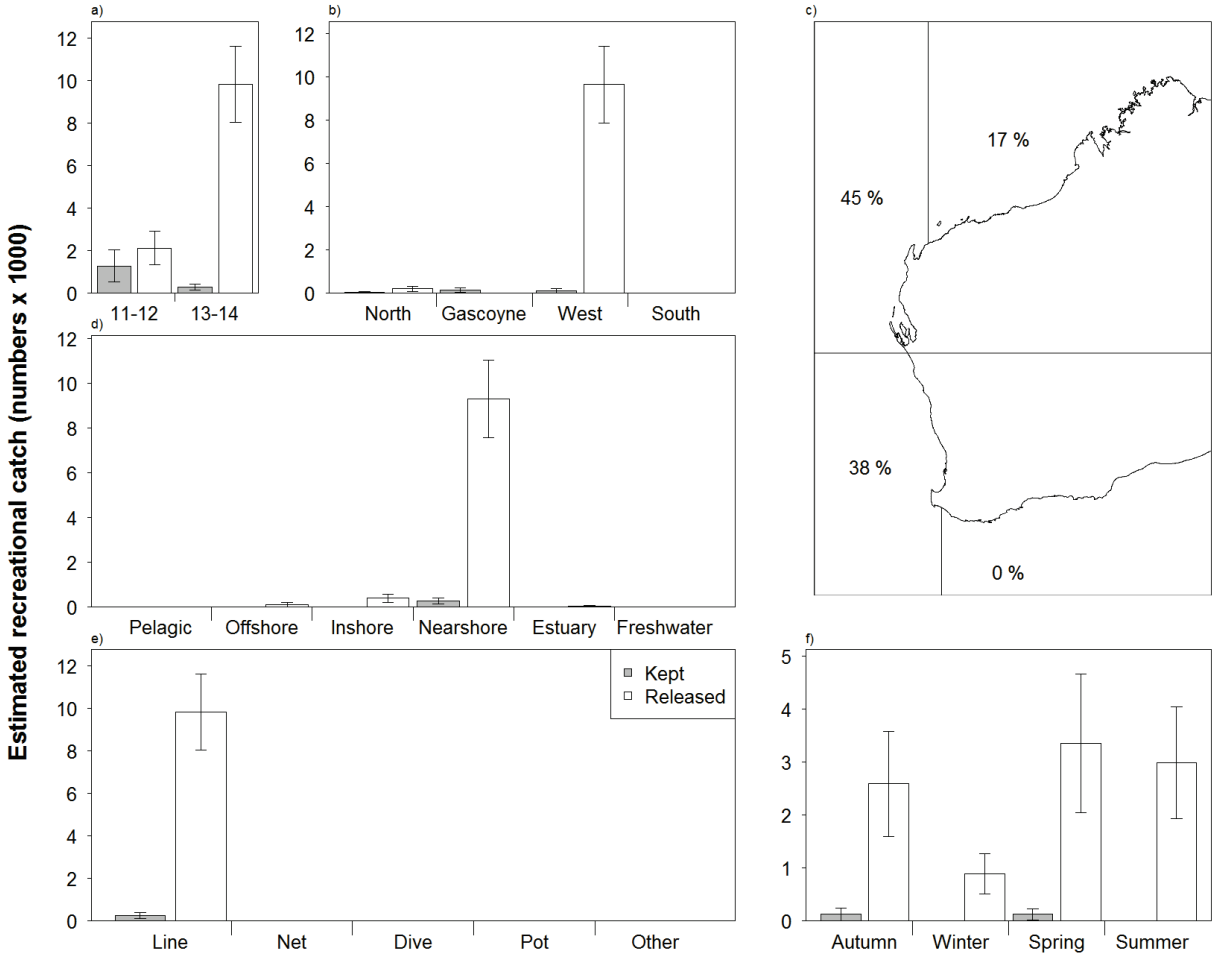

Figure 31. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Western Trumpeter Whiting in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.11 Mangrove Jack (*Lutjanus argentimaculatus*)

Mangrove Jack is an indicator species in the North Coast bioregion. The majority of the kept recreational catches of Mangrove Jack by RFBL holders aged five years or older occurred in the North Coast (78%), with some catches in the Gascoyne Coast (22%) (Figure 32b and c). The majority of the boat-based recreational catches of Mangrove Jack were released (62%) (Figure 32a) with most releases attributed to under-size catches (42%) (Table 7). Catches were taken predominantly from nearshore habitat (56%), but also inshore demersal (21%) and estuary (23%) habitats (Figure 32d). Mangrove Jack were harvested throughout the year, with higher catches observed in summer (22%), autumn (25%) and winter (38%) compared with spring (15%) (Figure 32f). The majority of catches were taken by line fishing (>99%) (Figure 32e). The estimated kept and released recreational catches of Mangrove Jack were similar in 2013/14 compared to 2011/12 (Figure 32a, Table 5).

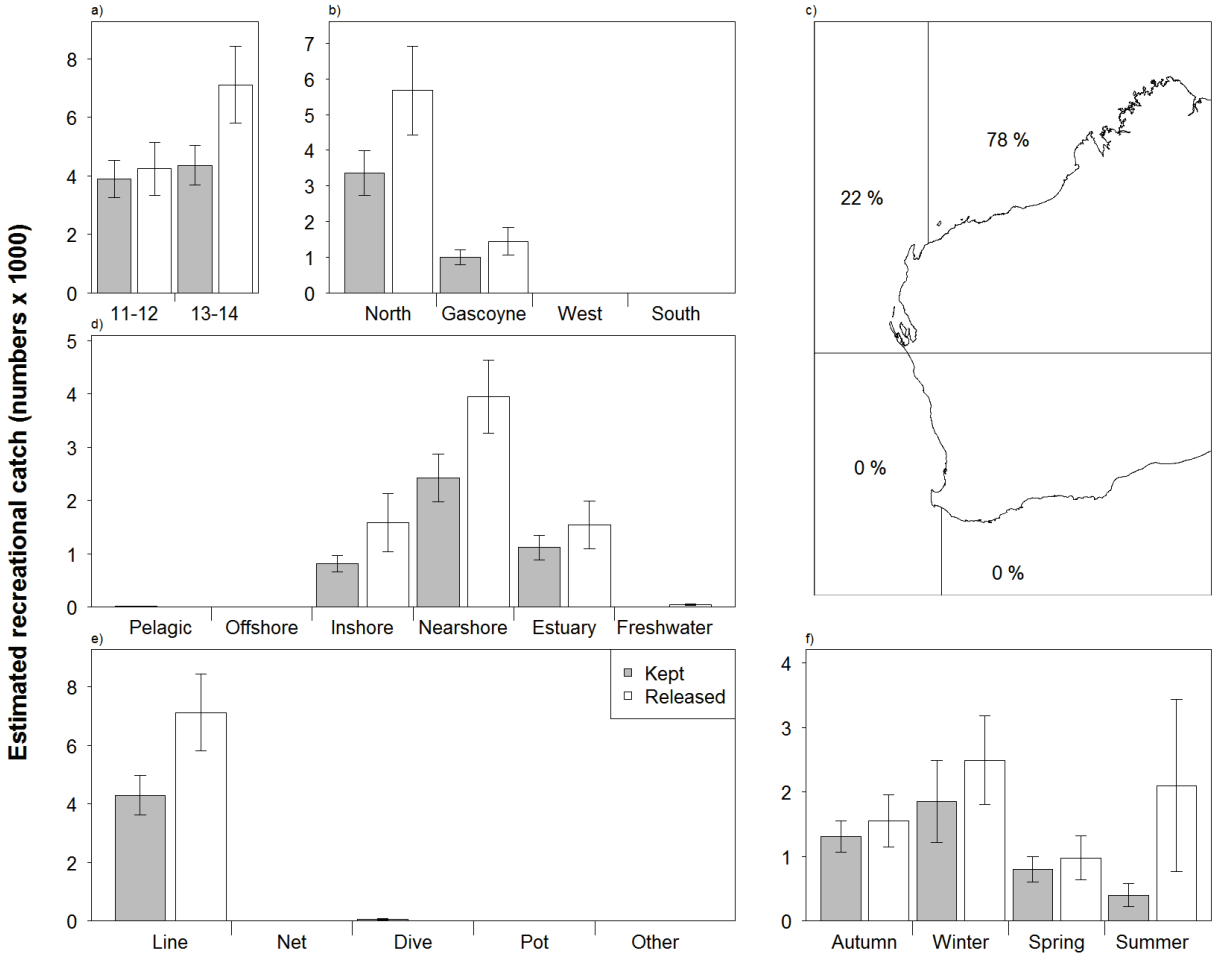

Figure 32. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Mangrove Jack in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.12 Silver Trevally (*Pseudocaranx dentex* and *P. wrighti*)

The majority of the recreational catches of Silver Trevally by RFBL holders aged five years or older occurred in the West Coast (84%), with some catches in the South Coast (16%) (Figure 33b and c). Similar proportions of the boat-based recreational catch of Silver Trevally were kept (56%) and released (44%) (Figure 33a). Catches were taken predominantly from nearshore habitat (65%), but also inshore demersal (30%) and estuary (2%) habitats (Figure 33d). Silver Trevally were harvested throughout the year, with higher catches observed in autumn (28%) and winter (42%) compared with spring (11%) and summer (19%) (Figure 33f). Catches were taken by line fishing (99%), with some fishing from diving (1%) (Figure 33e). The estimated kept and released recreational catches of Silver Trevally were significantly lower in 2013/14 compared with 2011/12 (Figure 33a, Table 5).

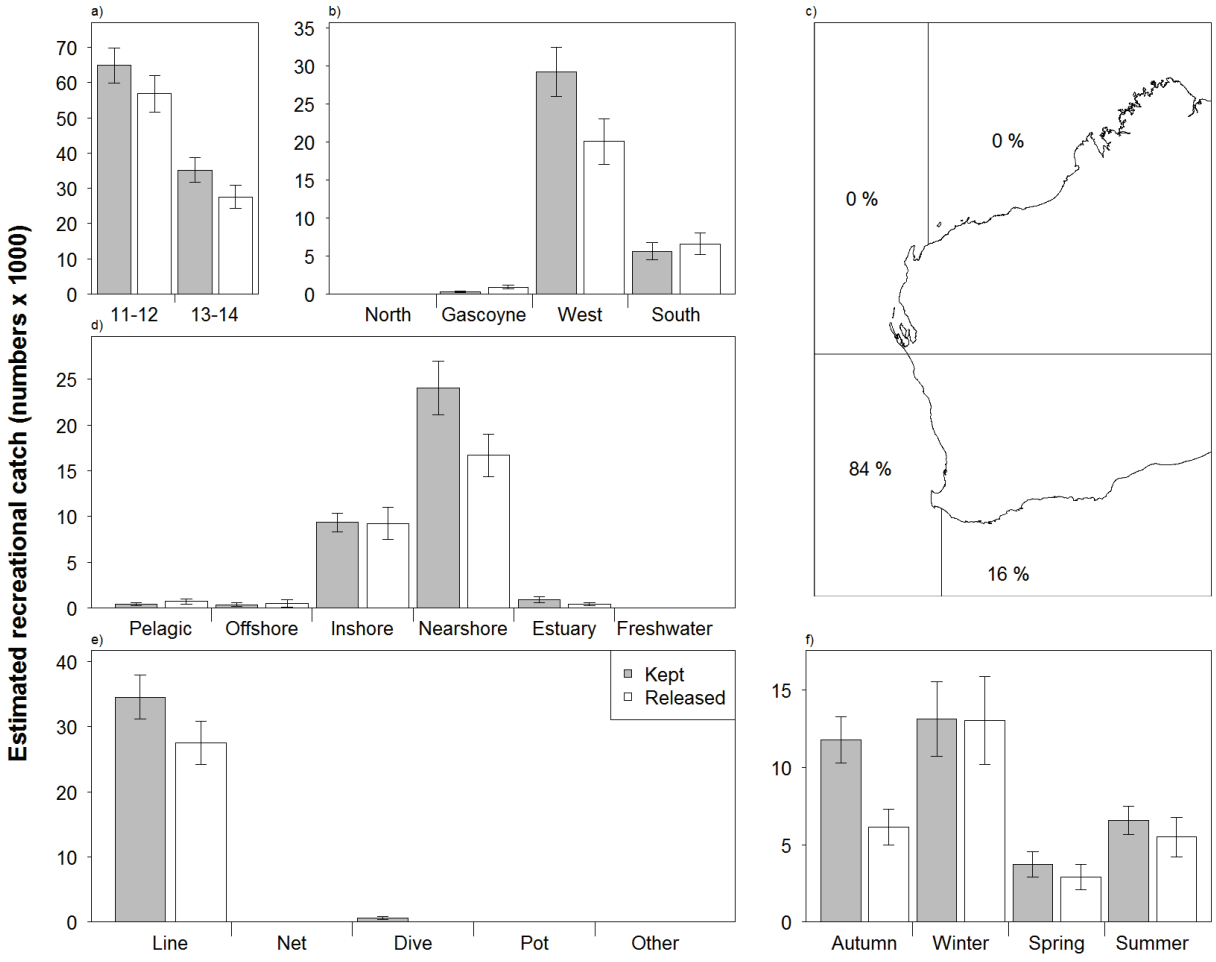

Figure 33. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Silver Trevally in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.13 Western Butterfish (*Pentapodus vitta*)

The majority of the recreational catches of Western Butterfish by RFBL holders aged five years or older occurred in the West Coast (66%), with some catches in the Gascoyne Coast (34%) (Figure 34b and c). The majority of the boat-based recreational catches of Western Butterfish were released (76%) (Figure 34a) with most releases attributed to "Other" (41%) and "too Many" (38%) (Table 7). Catches were taken predominantly from nearshore habitat (76%), but also inshore demersal (18%) (Figure 34d). Western Butterfish were harvested throughout the year, with higher catches in spring (25%), summer (27%) and autumn (29%) compared with winter (19%) (Figure 34f). The majority of catches were taken by line fishing (>99%) (Figure 34e). The estimated kept and released recreational catches of Western Butterfish were similar in 2013/14 compared to 2011/12 (Figure 34a, Table 5).

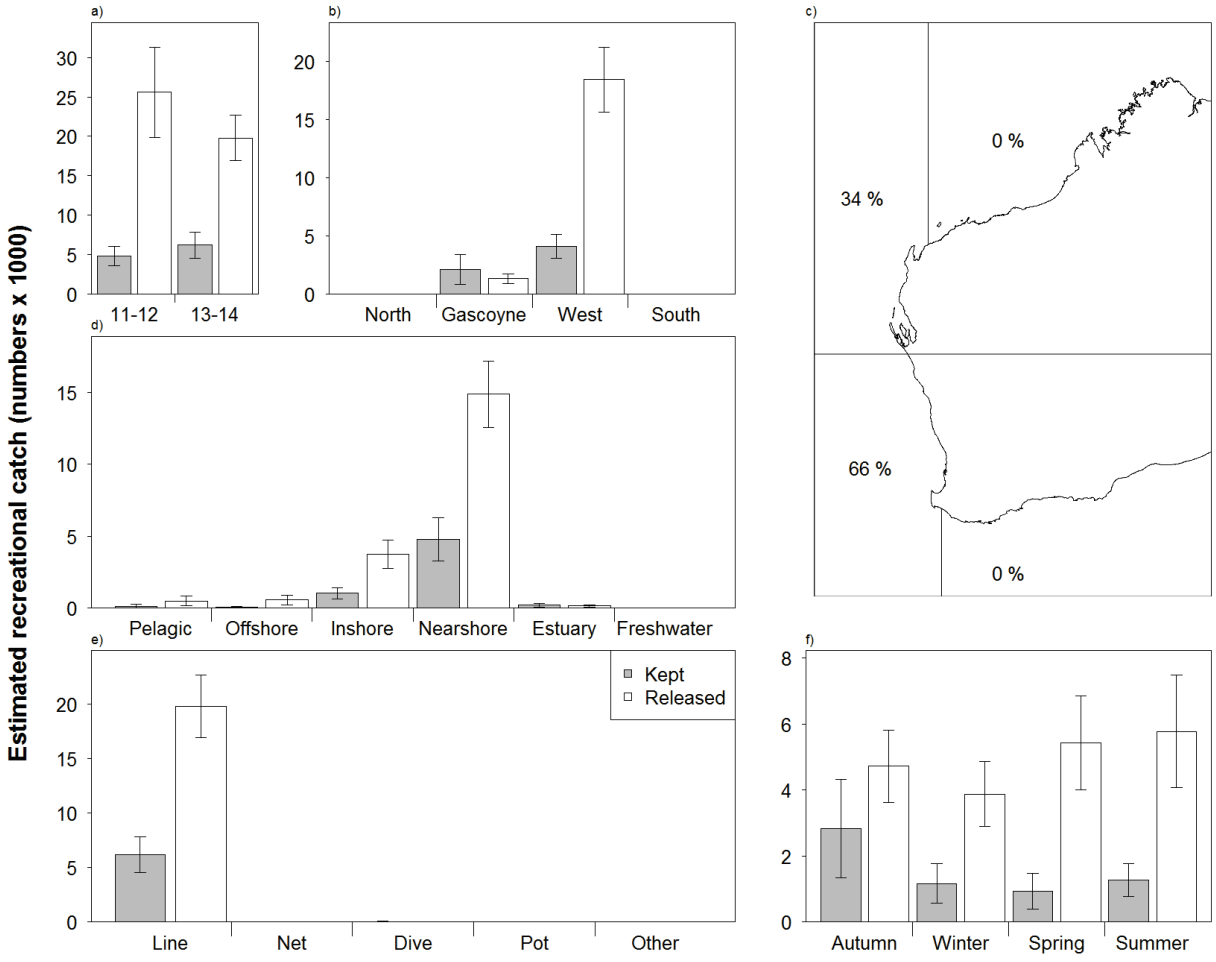

Figure 34. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Western Butterfish in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.14 Western Yellowfin Bream (*Acanthopagrus morrisoni*)

The majority of the recreational catches of Western Yellowfin Bream by RFBL holders aged five years or older occurred in the Gascoyne Coast (39%), with some catches in the North Coast (27%) and West Coast (34%) (Figure 35b and c). The majority of the boat-based recreational catches of Western Yellowfin Bream were released (78%) (Figure 35a) with most releases attributed to under-size catches (58%) (Table 7). Catches were taken predominantly from nearshore habitat (75%), but also estuary (21%) and inshore demersal (3%) habitats (Figure 35d). Western Yellowfin Bream were harvested throughout the year, with higher catches observed in autumn (29%) and winter (45%) compared with spring (9%) and summer (17%) (Figure 35f). The majority of catches were taken by line fishing (>99%) (Figure 35e). The estimated kept and released recreational catches of Western Yellowfin Bream were similar in 2013/14 compared to 2011/12 (Figure 35a, Table 5).

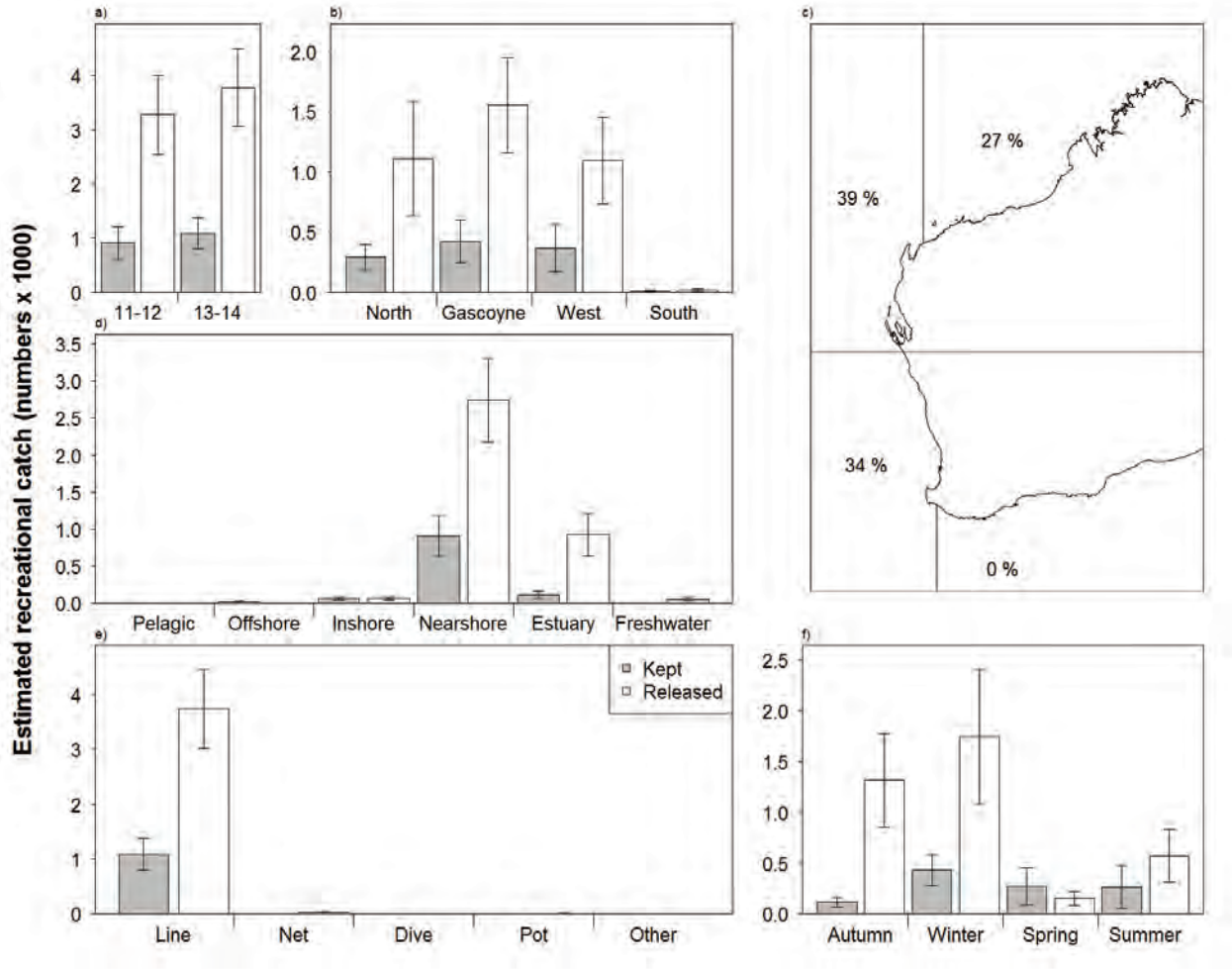

Figure 35. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Western Yellowfin Bream in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.15 Western King Wrasse (*Coris auricularis*)

The majority of the recreational catches of Western King Wrasse by RFBL holders aged five years or older occurred in the West Coast (94%), with some catches in the South Coast (6%) (Figure 36b and c). The majority of the boat-based recreational catches of Western King Wrasse were released (85%) (Figure 36a) with most releases attributed to "Other" (51%) (Table 7). Catches were taken predominantly from nearshore habitat (62%), but also inshore demersal habitat (34%) (Figure 36d). Western King Wrasse were harvested throughout the year, with higher catches observed in summer (43%) compared with autumn (26%), winter (17%) and spring (14%) (Figure 36f). All catches were taken by line fishing (Figure 36e). The estimated kept and released recreational catches of Western King Wrasse were similar in 2013/14 compared to 2011/12 (Figure 36a, Table 5).

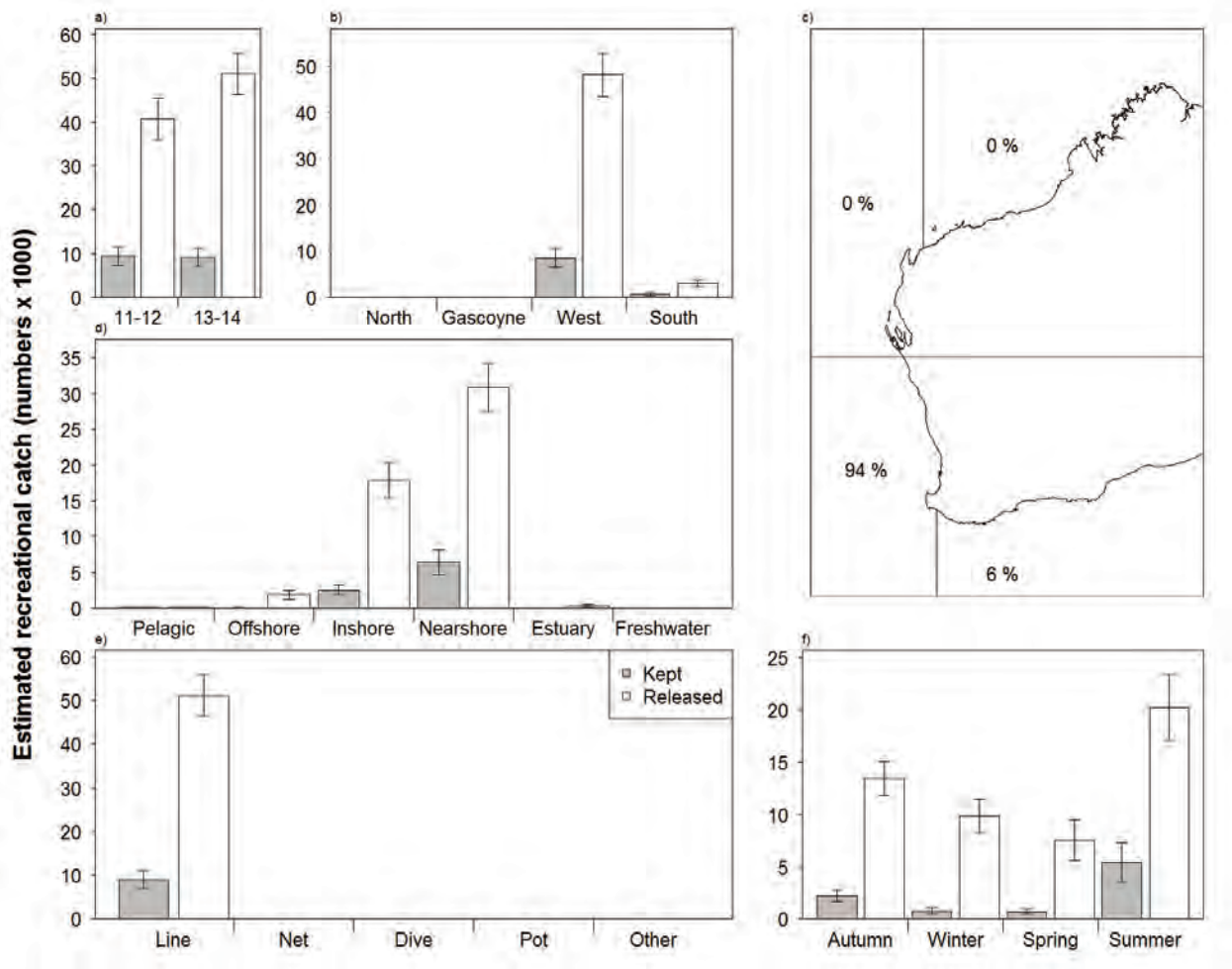

Figure 36. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Western King Wrasse in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.3.16 Brownspotted Wrasse (*Notolabrus parilus*)

The majority of the recreational catches of Brownspotted Wrasse by RFBL holders aged five years or older occurred in the West Coast (78%), with some catches in the South Coast (18%) and Gascoyne Coast (4%) (Figure 37b and c). The majority of the boat-based recreational catches of Brownspotted Wrasse were released (90%) (Figure 37a) with most releases attributed to "Other" (55%) (Table 7). Catches were taken predominantly from nearshore habitat (73%), but also inshore demersal habitat (25%) (Figure 37d). Brownspotted Wrasse were harvested throughout the year, with higher catches observed in summer (33%) and autumn (27%) compared with winter (18%) and spring (22%) (Figure 37f). The estimated kept and released recreational catches of Brownspotted Wrasse were similar in 2013/14 compared to 2011/12 (Figure 37a, Table 5).

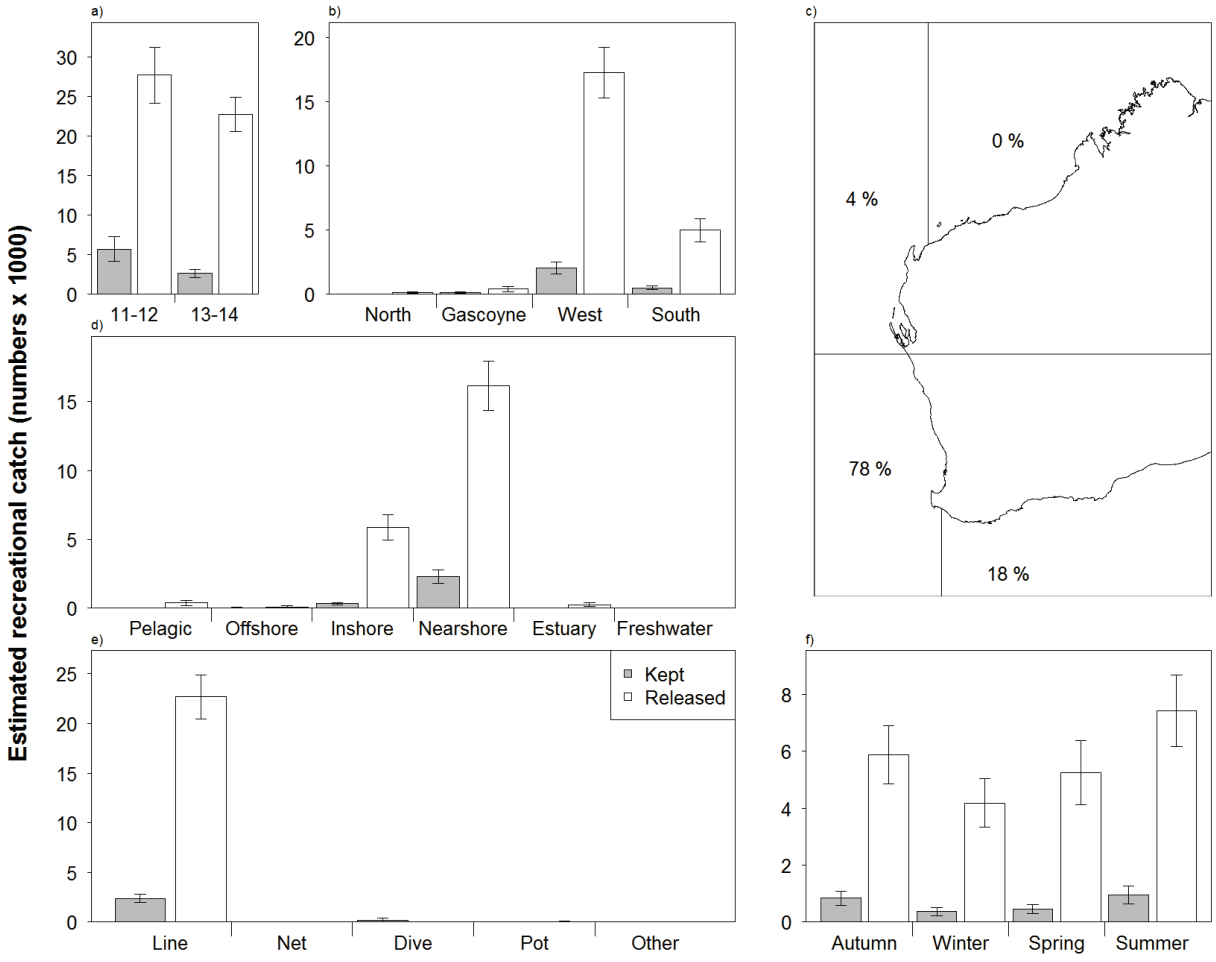

Figure 37. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Brownspotted Wrasse in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4 Inshore Demersal

6.4.1 Baldchin Groper (*Choerodon rubescens*)

Baldchin Groper is an indicator species in the West Coast bioregion. The majority of the kept recreational catches of Baldchin Groper by RFBL holders aged five years or older occurred in the West Coast (76%), with some catches in the Gascoyne Coast (24%) (Figure 38b and c). Equal proportions of the boat-based recreational catch of Baldchin Groper were kept (46%) and released (54%) (Figure 38a). Catches were taken predominantly from inshore demersal habitat (50%), but also nearshore habitat (46%) (Figure 38d). Baldchin Groper were harvested throughout the year, with higher catches observed in autumn (35%) compared with winter (23%), spring (26%) and summer (16%) (Figure 38f). Catches were taken by line fishing (97%), with some fishing from diving (3%) (Figure 38e). The estimated kept and released recreational catches of Baldchin Groper were similar in 2013/14 compared to 2011/12 (Figure 38a, Table 5).

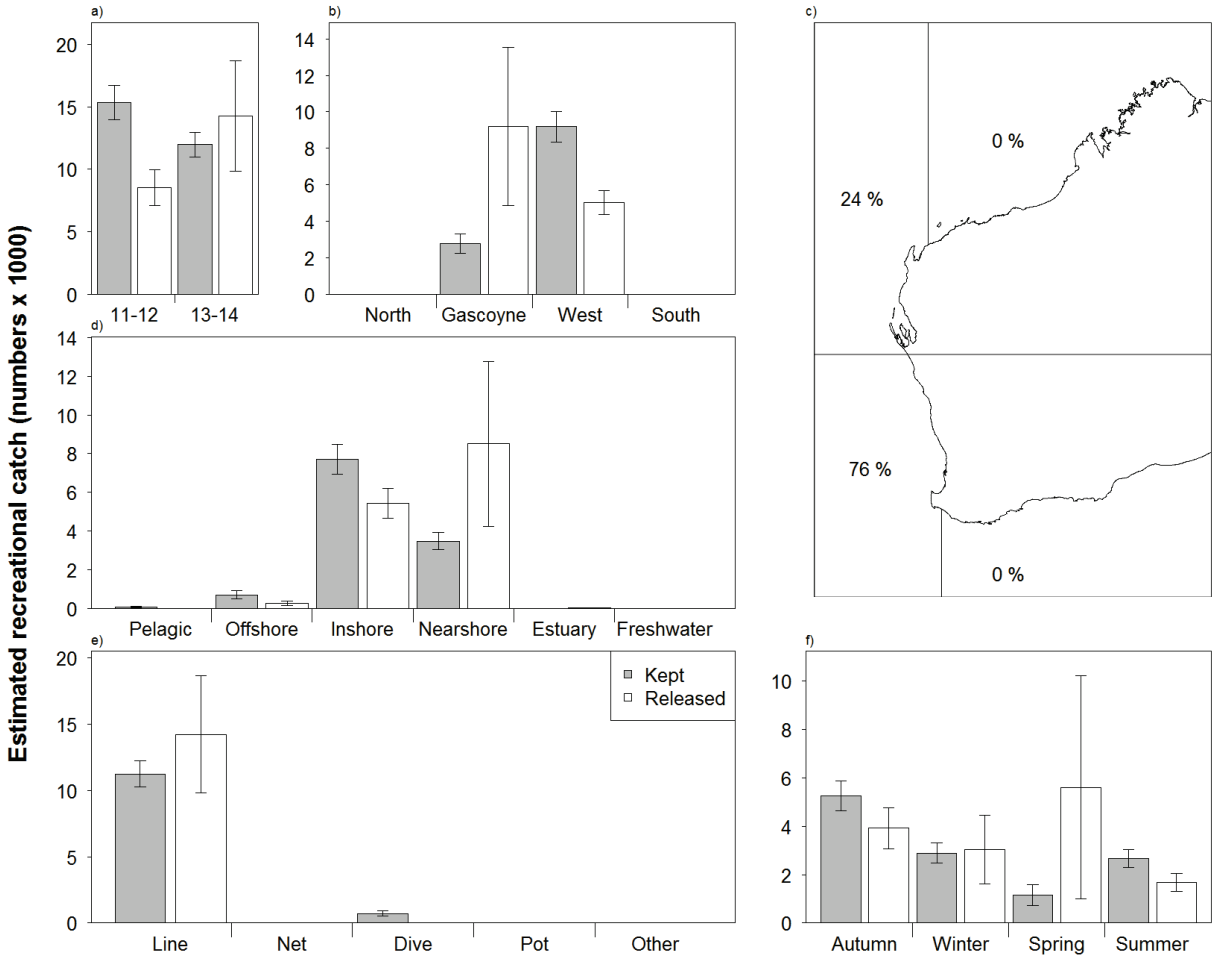

Figure 38. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Baldchin Groper in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.2 Bight Redfish (*Centroberyx gerrardi*)

Bight Redfish is an indicator species in the West and South Coast bioregions. The majority of the kept recreational catches of Bight Redfish by RFBL holders aged five years or older occurred in the South Coast (90%), with some catches in the West Coast (10%) (Figure 39b and c). The majority of the boat-based recreational catches of Bight Redfish were kept (66%) (Figure 39a). Catches were taken predominantly from inshore demersal habitat (83%), but also nearshore (5%) and offshore demersal (12%) habitats (Figure 39d). Bight Redfish were harvested throughout the year, with higher catches observed in summer (45%) and autumn (26%) compared with winter (19%) and spring (10%) (Figure 39f). All catches were taken by line fishing (Figure 39e). The estimated kept and released recreational catches of Bight Redfish were similar in 2013/14 compared to 2011/12 (Figure 39a, Table 5).

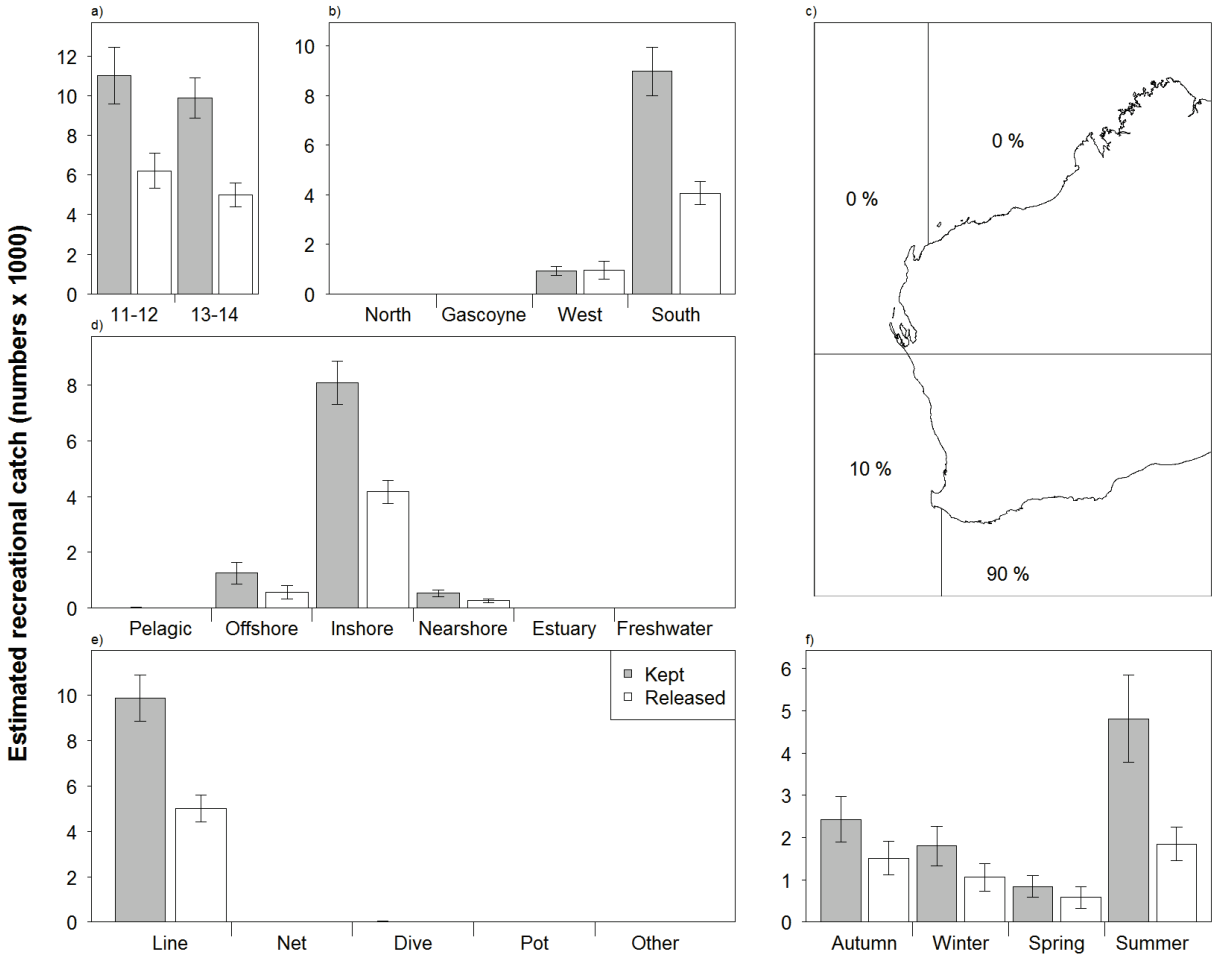

Figure 39. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Bight Redfish in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.3 Blue Morwong (*Nemadactylus valenciennesi*)

Blue Morwong is an indicator species in the South Coast. The majority of the kept recreational catches of Blue Morwong by RFBL holders aged five years or older occurred in the South Coast (74%), with some catches in the West Coast (26%) (Figure 40b and c). The majority of the boat-based recreational catches of Blue Morwong were kept (72%) (Figure 40a). Catches were taken predominantly from inshore demersal habitat (79%), but also nearshore habitat (16%) (Figure 40d). Blue Morwong were harvested throughout the year, with higher catches observed in summer (43%) compared with autumn (24%), winter (22%) and spring (11%) (Figure 40f). Catches were taken by line fishing (93%), with some fishing from diving (7%) (Figure 40e). The estimated kept and released recreational catches of Blue Morwong were similar in 2013/14 compared to 2011/12 (Figure 40a, Table 5).

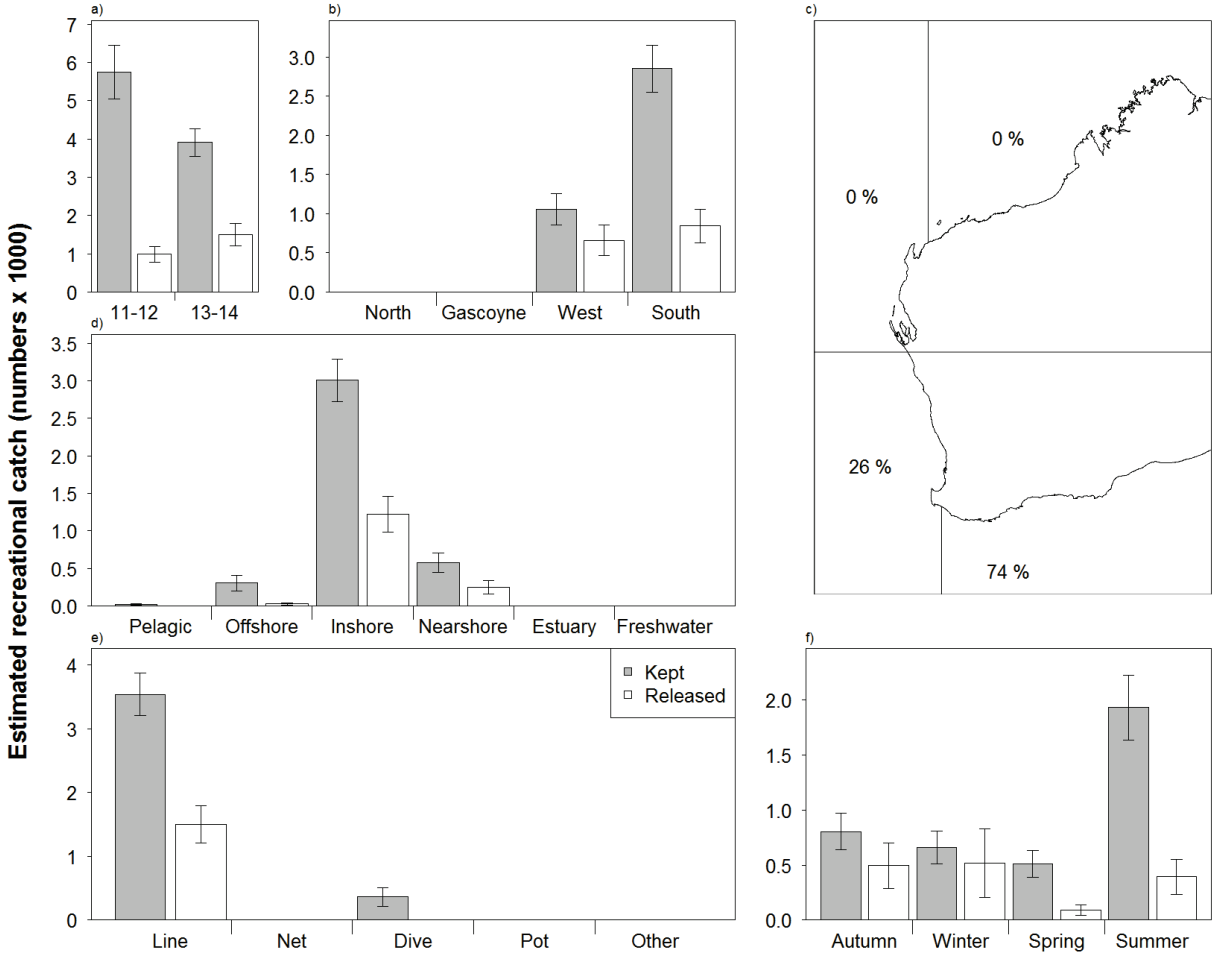

Figure 40. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Blue Morwong in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.4 Bluespotted Emperor (*Lethrinus punctulatus*)

Bluespotted Emperor is an indicator species in the North Coast bioregion. The majority of the kept recreational catches of Bluespotted Emperor by RFBL holders aged five years or older occurred in the Gascoyne Coast (72%), with some catches in the North Coast (28%) (Figure 41b and c). The majority of the boat-based recreational catches of Bluespotted Emperor were released (79%) (Figure 41a) with most releases attributed to under-size catches (47%) and "Too Small" (32%) (Table 7). Catches were taken from nearshore (77%) and inshore demersal (19%) habitats (Figure 41d). Bluespotted Emperor were harvested throughout the year, with higher catches observed in autumn (43%) and winter (45%) compared with spring (9%) and summer (3%) (Figure 41f). All catches were taken by line fishing (Figure 41e). The estimated kept and released recreational catches of Bluespotted Emperor were similar in 2013/14 compared to 2011/12 (Figure 41a, Table 5).

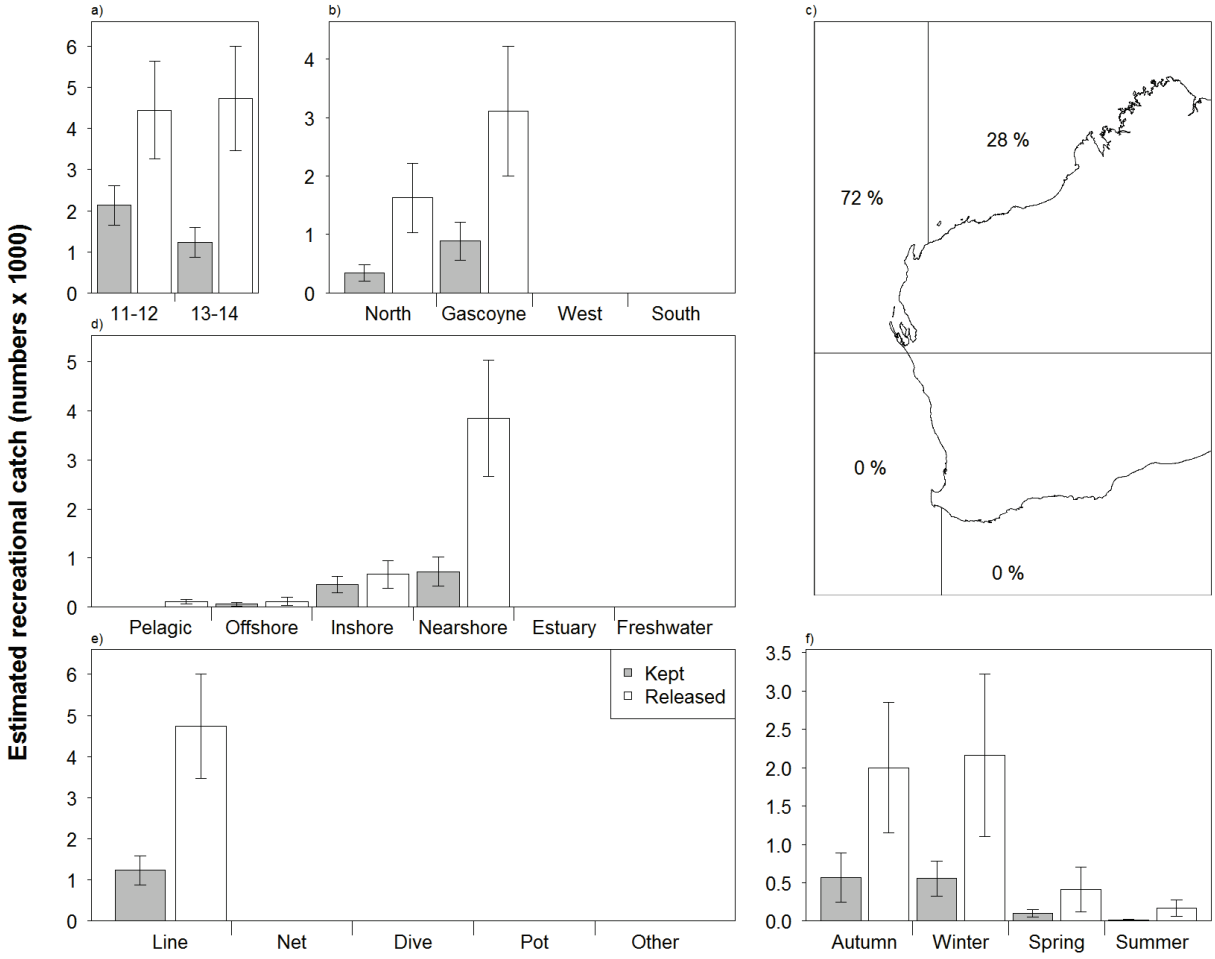

Figure 41. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Bluespotted Emperor in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.5 Brownstripe Snapper (*Lutjanus vitta*)

Brownstripe Snapper is an indicator species in the North Coast bioregion. All the kept recreational catches of Brownstripe Snapper by RFBL holders aged five years or older occurred in the West Coast, although higher estimates of released recreational catches occurred in the North Coast (Figure 42b and c). The majority of the boat-based recreational catches of Brownstripe Snapper were released (87%) (Figure 42a) with most releases attributed to "Too Small" (51%) (Table 7). Catches were taken predominantly from inshore demersal habitat (68%), but also nearshore habitat (32%) (Figure 42d). Brownstripe Snapper were harvested in winter (87%) and summer (13%) (Figure 42f). All catches were taken by line fishing (Figure 42e). The estimated kept and released recreational catches of Brownstripe Snapper were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 42a, Table 5).

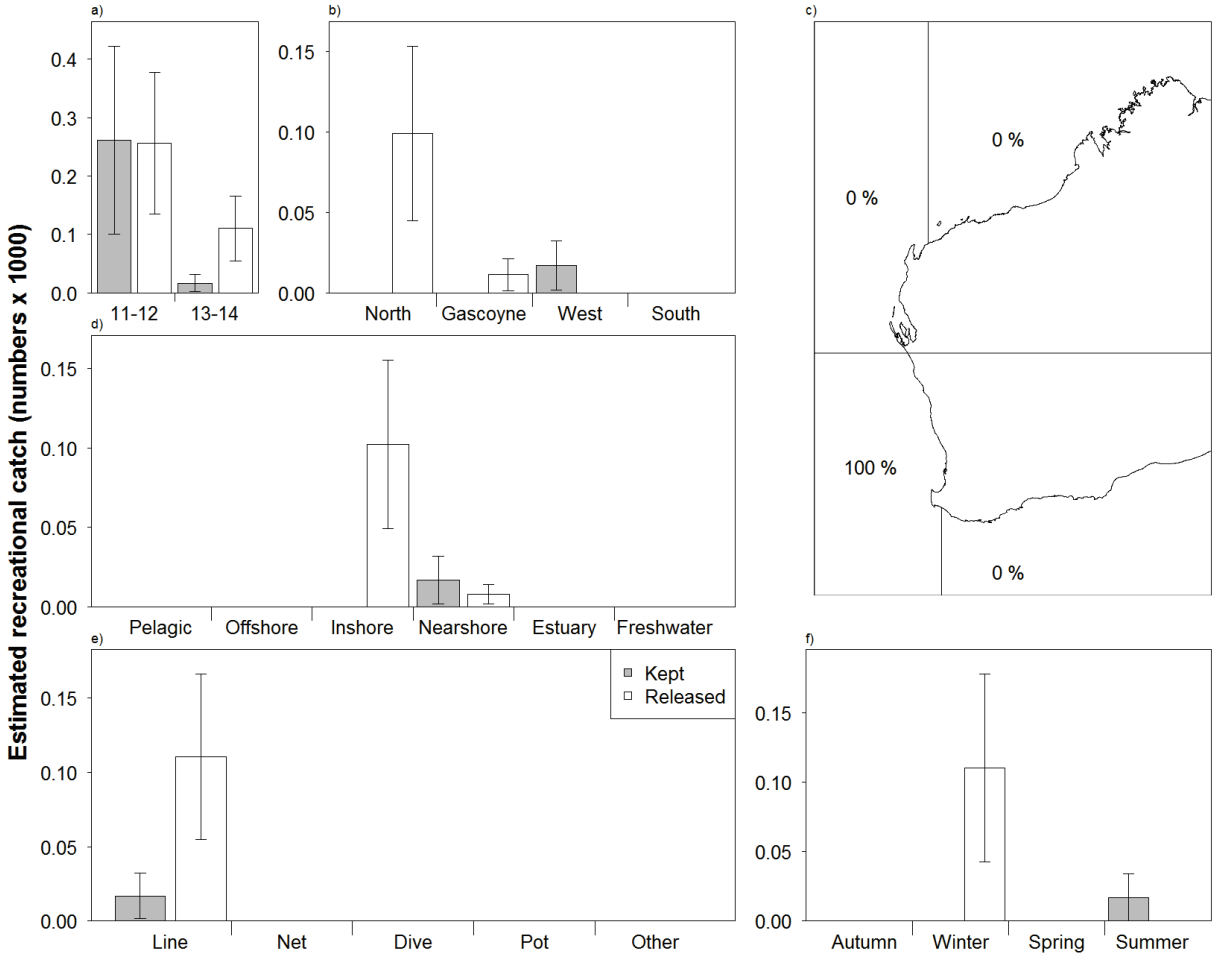

Figure 42. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Brownstripe Snapper in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.6 Goldband Snapper (*Pristipomoides multidens*)

Goldband Snapper is an indicator species in the North Coast and Gascoyne Coast bioregions. The majority of the kept recreational catches of Goldband Snapper by RFBL holders aged five years or older occurred in the Gascoyne Coast (98%), with some catches in the North Coast (2%) (Figure 43b and c). The majority of the boat-based recreational catches of Goldband Snapper were kept (84%) (Figure 43a). Catches were taken predominantly from inshore demersal habitat (79%), but also nearshore (9%) and offshore demersal (11%) habitats (Figure 43d). Goldband Snapper were harvested throughout the year, with higher catches observed in autumn (53%) and winter (34%) compared with spring (11%) and summer (2%) (Figure 43f). All catches were taken by line fishing (Figure 43e). The estimated kept and released recreational catches of Goldband Snapper were similar in 2013/14 compared to 2011/12 (Figure 43a, Table 5).

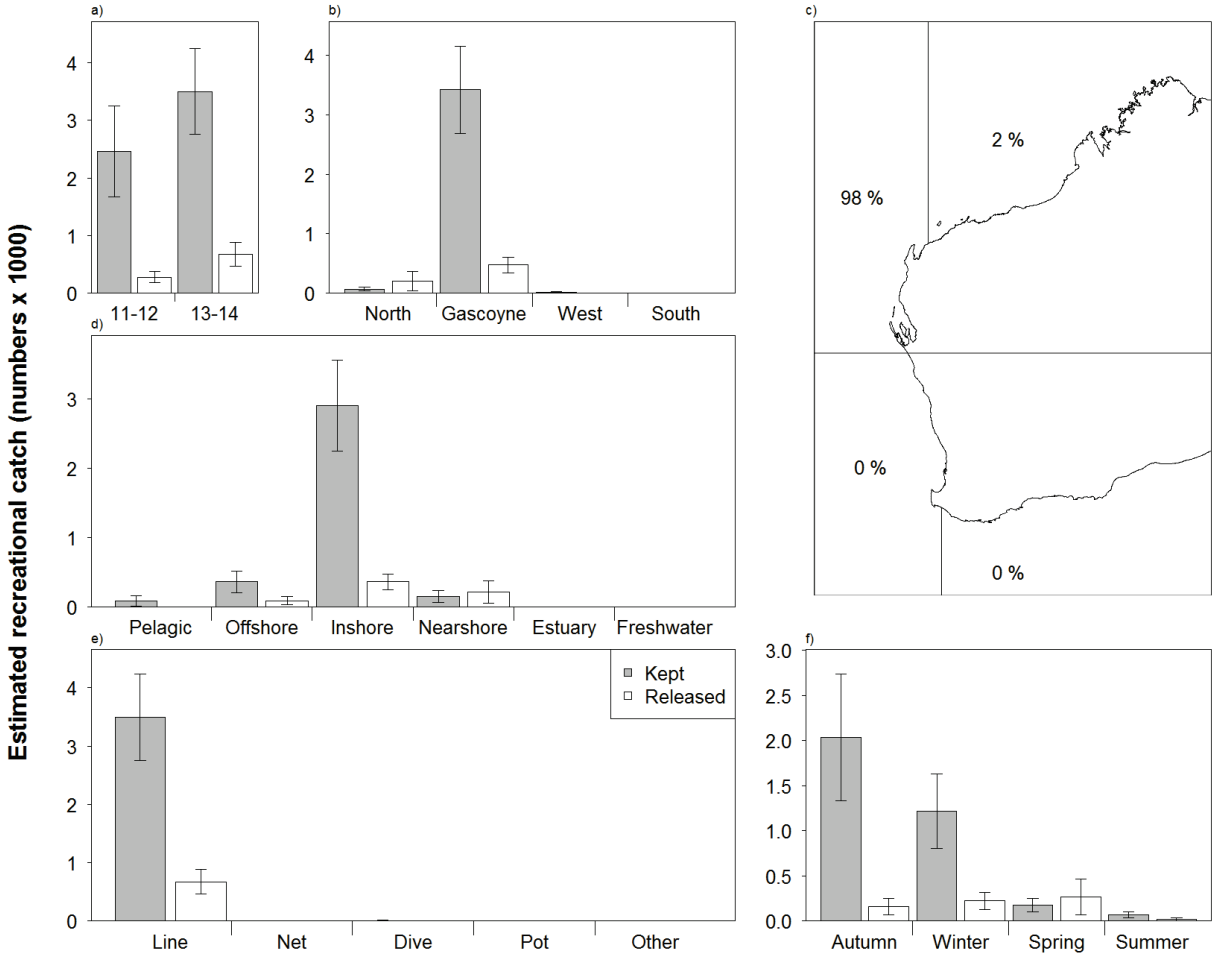

Figure 43. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Goldband Snapper in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.7 Pink Snapper (*Chrysophrys auratus*)

Pink Snapper, previously known as *Pagrus auratus*, but now classified as *Chrysophrys auratus*, is harvested state-wide. Pink Snapper is an inshore demersal indicator species in the Gascoyne Coast, West Coast and South Coast bioregions. It is also a nearshore indicator species in the Gascoyne Coast. The majority of the kept recreational catches of Pink Snapper by RFBL holders aged five years or older occurred in the West Coast (50%), with catches in the Gascoyne Coast (38%) and South Coast (10%) (Figure 44b and c). The majority of the boat-based recreational catches of Pink Snapper were released (83%) (Figure 44a) with most releases attributed to under-size catches (78%) (Table 7). Catches were taken predominantly from nearshore habitat (60%), but also inshore demersal (30%), offshore demersal (6%) and estuary (4%) habitats (Figure 44d). Pink Snapper were harvested throughout the year, with higher catches observed in autumn (32%) and winter (31%) compared with spring (24%) and summer (13%) (Figure 44f). All catches were taken by line fishing (Figure 44e). The estimated kept and released recreational catches of Pink Snapper were similar in 2013/14 compared to 2011/12 (Figure 44a, Table 5).

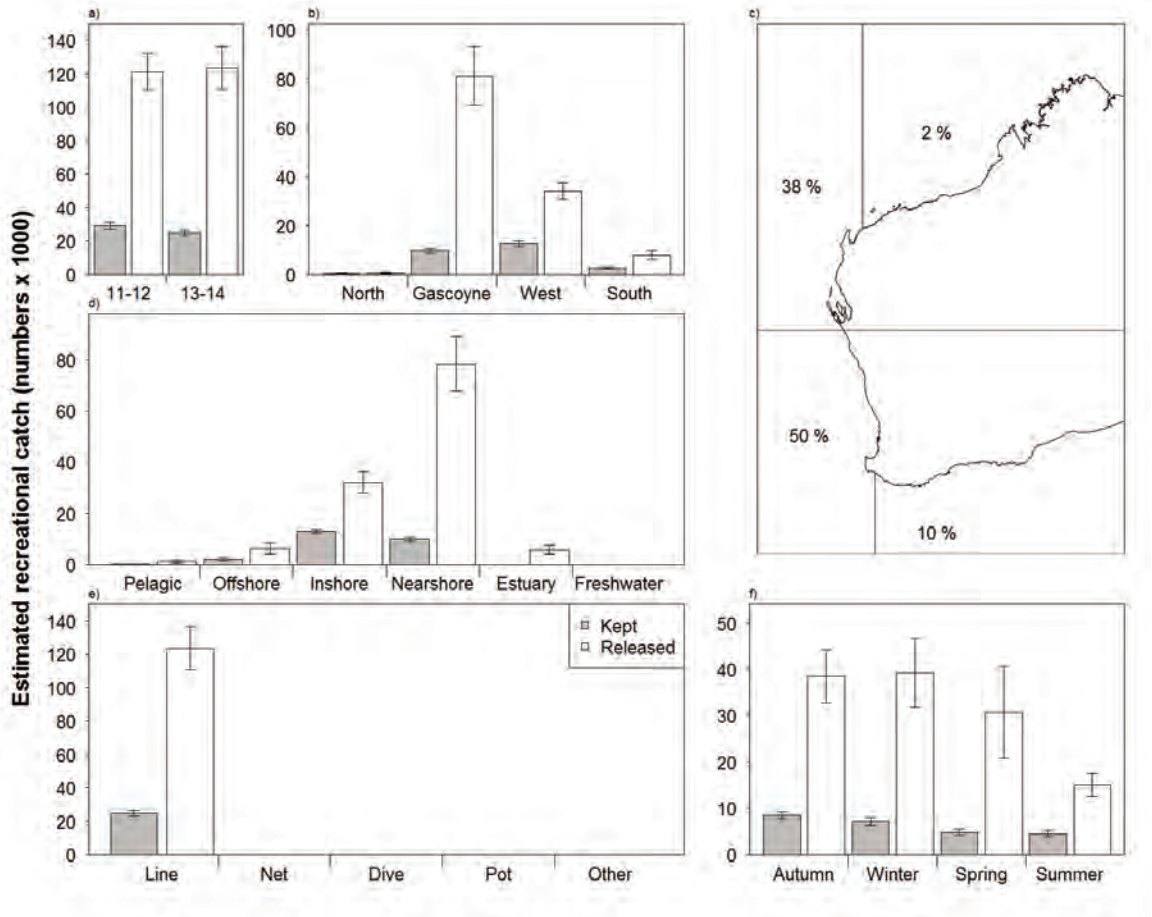

Figure 44. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Pink Snapper in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.8 Rankin Cod (*Epinephelus multinotatus*)

Rankin Cod is an indicator species in the North Coast bioregion. The majority of the kept recreational catches of Rankin Cod by RFBL holders aged five years or older occurred in the Gascoyne Coast (56%) and North Coast (42%), with some catches in the West Coast (2%) (Figure 45b and c). Similar proportions of the boat-based recreational catch of Rankin Cod were kept (59%) and released (41%) (Figure 45a). Catches were taken predominantly from inshore demersal habitat (64%), but also nearshore (28%) and offshore demersal (7%) habitats (Figure 45d). Rankin Cod were harvested throughout the year, with higher catches observed in autumn (35%) and winter (37%) compared with spring (17%) and summer (11%) (Figure 45f). The majority of catches were taken by line fishing (>99%) (Figure 45e). The estimated kept and released recreational catches of Rankin Cod were significantly lower in 2013/14 compared with 2011/12 (Figure 45a, Table 5).

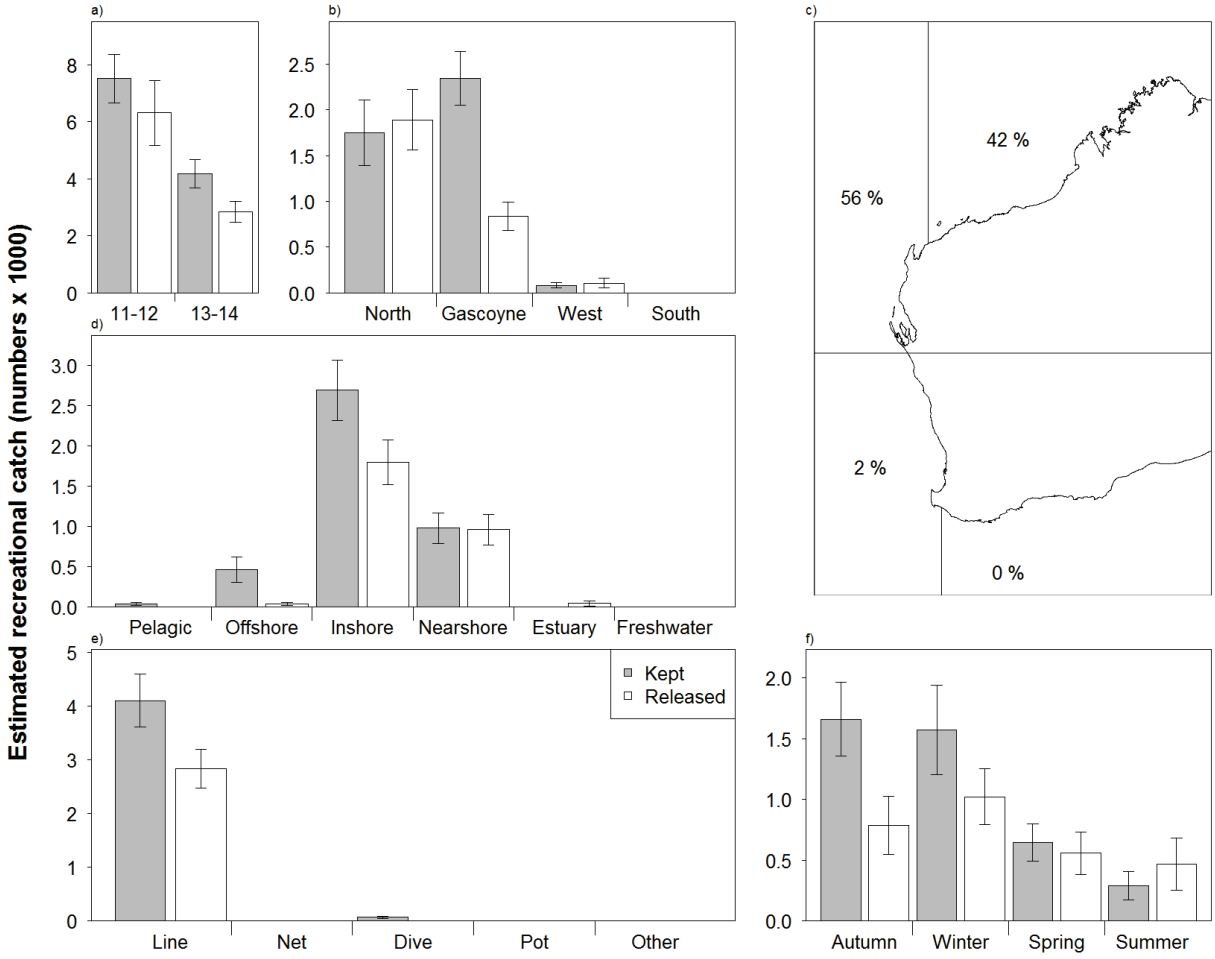

Figure 45. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Rankin Cod in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.9 Red Emperor (*Lutjanus sebae*)

Red Emperor is an indicator species in the Gascoyne Coast and North Coast bioregions. The majority of the kept recreational catches of Red Emperor by RFBL holders aged five years or older occurred in the Gascoyne Coast (60%) and North Coast (39%), with some catches in the West Coast (1%) (Figure 46b and c). Similar proportions of the boat-based recreational catch of Red Emperor were kept (55%) and released (45%) (Figure 46a). Catches were taken predominantly from inshore demersal habitat (72%), but also nearshore (22%) and offshore demersal (6%) habitats (Figure 46d). Red Emperor were harvested throughout the year, with higher catches observed in autumn (48%) and winter (34%) compared with spring (12%) and summer (6%) (Figure 46f). All catches were taken by line fishing (Figure 46e). The estimated kept and released recreational catches of Red Emperor were similar in 2013/14 compared to 2011/12 (Figure 46a, Table 5).

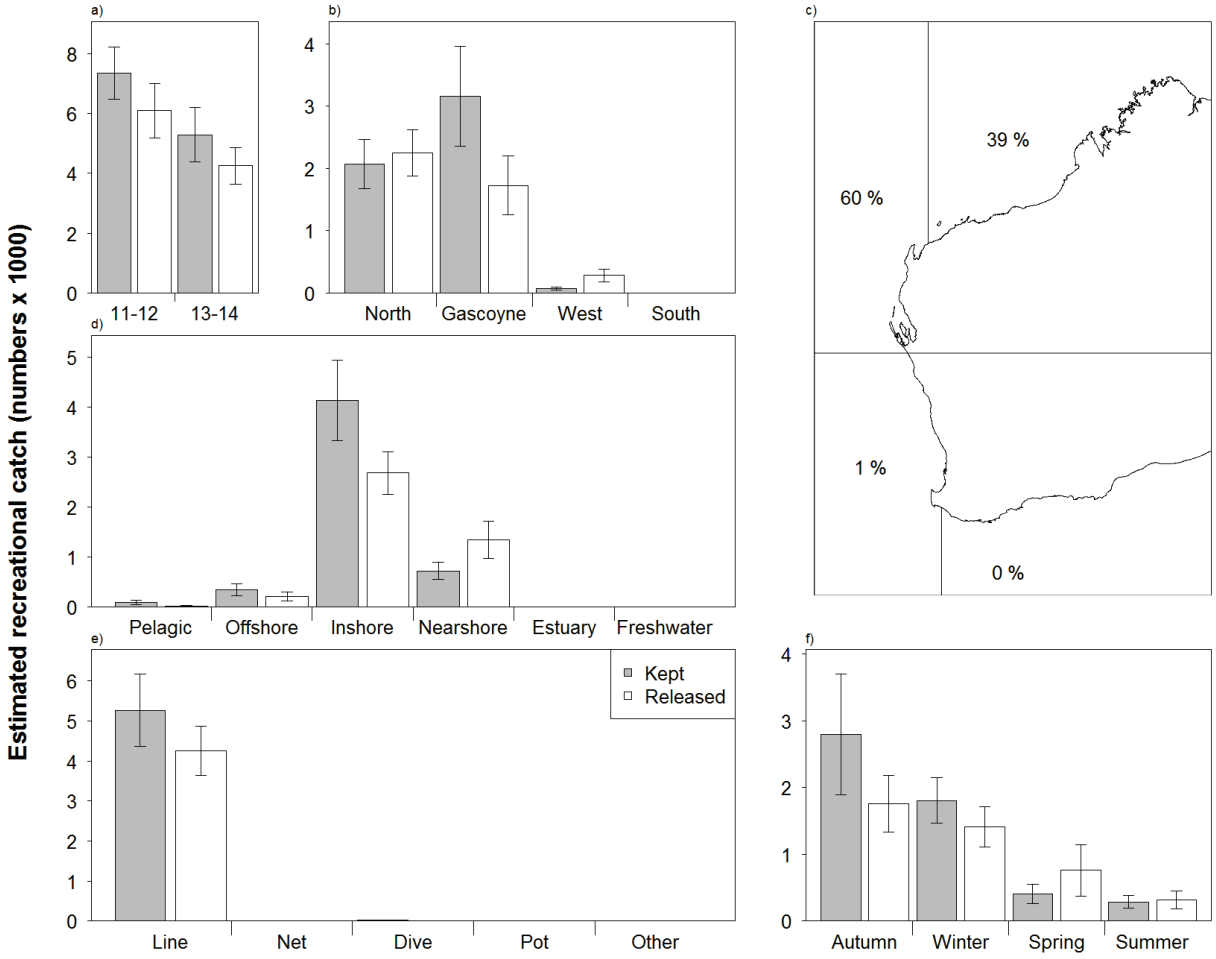

Figure 46. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Red Emperor in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.10 Spangled Emperor (*Lethrinus nebulosus*)

Spangled Emperor is an indicator species in the Gascoyne Coast bioregion. The majority of the kept recreational catches of Spangled Emperor by RFBL holders aged five years or older occurred in the Gascoyne Coast (70%) and North Coast (26%), with some catches in the West Coast (4%) (Figure 47b and c). The majority of the boat-based recreational catches of Spangled Emperor were released (69%) (Figure 47a) with most releases attributed to under-size catches (65%) (Table 7). Catches were taken predominantly from inshore demersal habitat (49%), but also nearshore habitat (46%) (Figure 47d). Spangled Emperor were harvested throughout the year, with higher catches observed in autumn (33%) and winter (49%) compared with spring (11%) and summer (7%) (Figure 47f). All catches were taken by line fishing (Figure 47e). The estimated kept recreational catches of Spangled Emperor were significantly lower in 2013/14 compared with 2011/12, although estimated released recreational catches were similar in both years (Figure 47a, Table 5).

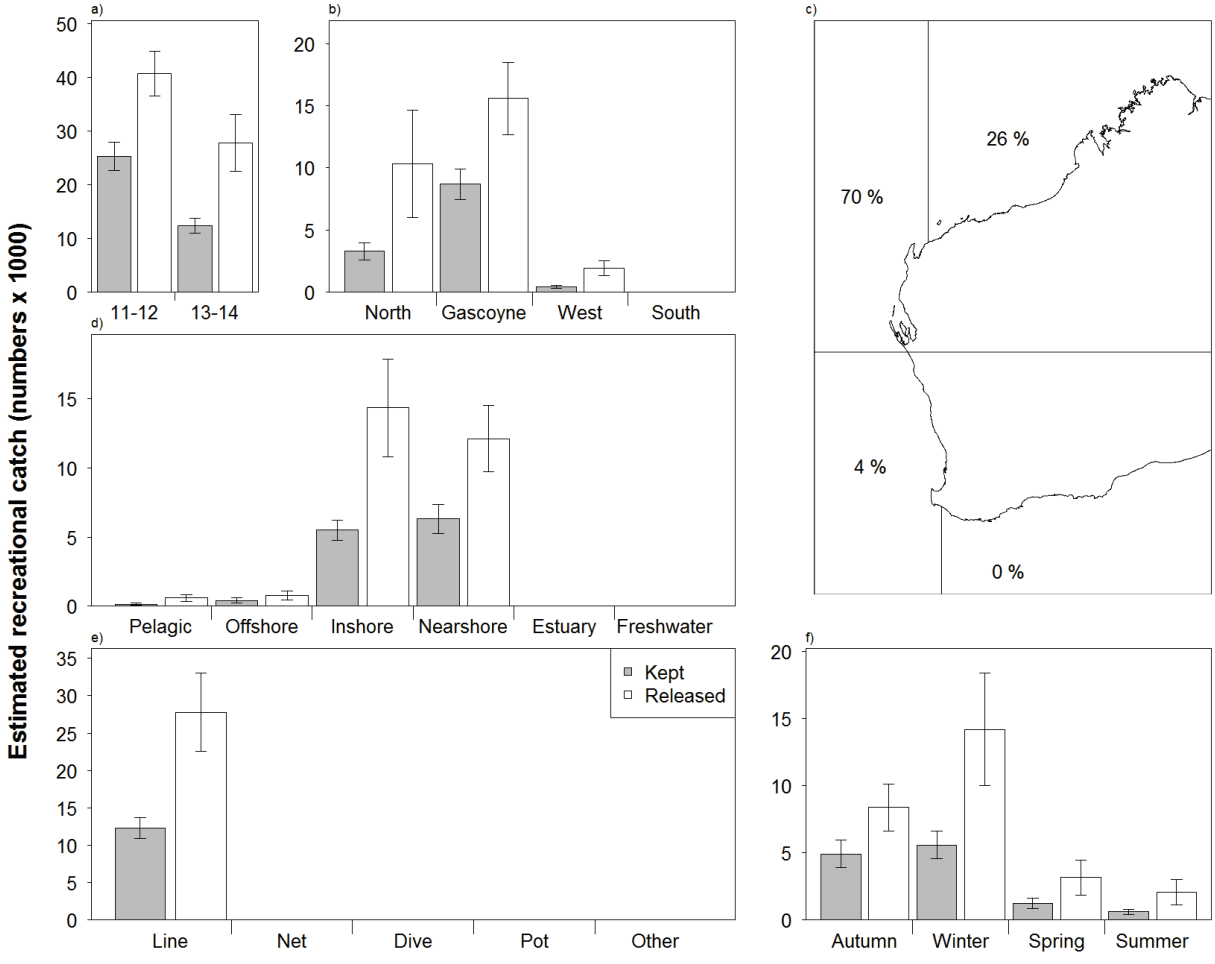

Figure 47. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Spangled Emperor in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.11 West Australian Dhufish (*Glaucosoma hebraicum*)

West Australian Dhufish is an indicator species in the West Coast bioregion. The majority of the kept recreational catches of West Australian Dhufish by RFBL holders aged five years or older occurred in the West Coast (96%), with some catches in the South Coast (4%) (Figure 48b and c). The majority of the boat-based recreational catches of West Australian Dhufish were released (68%) with most releases attributed to under-size catches (71%) (Table 7). Catches were taken predominantly from inshore demersal habitat (68%), but also nearshore habitat (26%) (Figure 48d). West Australian Dhufish were harvested throughout the year, with higher catches observed in summer (29%) and autumn (30%) compared with winter (21%) and spring (20%) (Figure 48f). Catches were taken by line fishing (99%), with some fishing from diving (1%) (Figure 48e). The estimated kept and released recreational catches of West Australian Dhufish were similar in 2013/14 compared to 2011/12 (Figure 48a, Table 5).

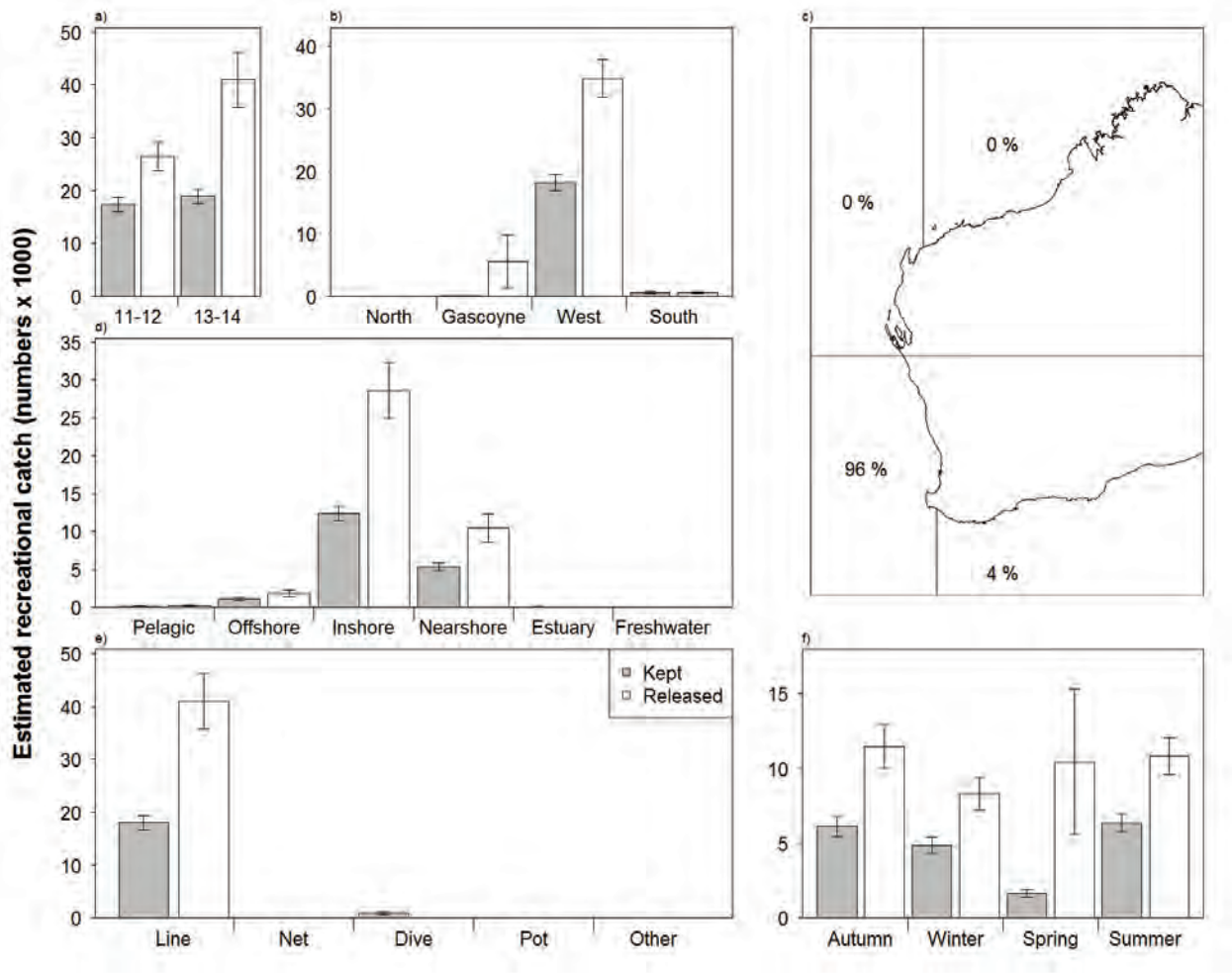

Figure 48. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of West Australian Dhufish in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.12 Barcheek Coral Trout (*Plectropomus maculatus*)

Barcheek Coral Trout is an indicator in the North Coast bioregion. The majority of the kept recreational catches of Barcheek Coral Trout by RFBL holders aged five years or older occurred in the North Coast (68%), with some catches in the Gascoyne Coast (30%) and West Coast (2%) (Figure 49b and c). Similar proportions of the boat-based recreational catch of Barcheek Coral Trout were kept (46%) and released (54%) (Figure 49a). Catches were taken predominantly from inshore demersal (42%) and nearshore (50%) habitats (Figure 49d). Barcheek Coral Trout were harvested throughout the year, with higher catches observed in autumn (33%) and winter (39%) compared with spring (20%) and summer (8%) (Figure 49f). Catches were taken by line fishing (88%), with some fishing from diving (12%) (Figure 49e). The estimated kept recreational catches of Barcheek Coral Trout were significantly lower in 2013/14 compared with 2011/12, although estimated released recreational catches were similar in both years (Figure 49a, Table 5).

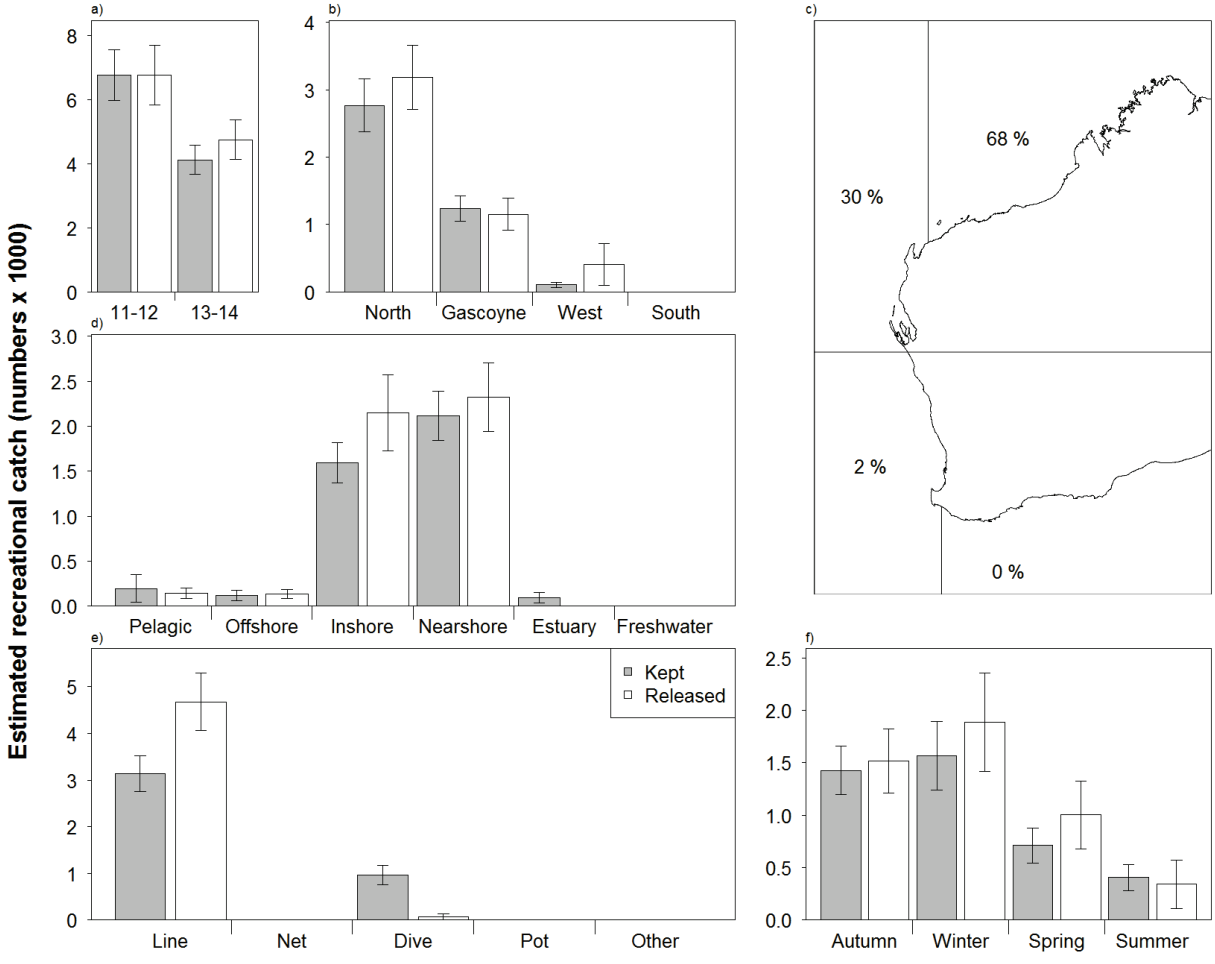

Figure 49. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Barcheek Coral Trout in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.13 Common Coral Trout (*Plectropomus leopardus*)

All the recreational catches of Common Coral Trout by RFBL holders aged five years or older occurred in the West Coast (Figure 50b and c). The majority of the boat-based recreational catches of Common Coral Trout were kept (60%) (Figure 50a). Catches were taken predominantly from inshore demersal habitat (64%), but also nearshore (30%) and offshore demersal (6%) habitats (Figure 50d). Common Coral Trout were harvested throughout the year, with higher catches observed in autumn (50%) compared with winter (29%), spring (6%) and summer (15%) (Figure 50f). Catches were taken by line fishing (94%), with some fishing from diving (6%) (Figure 50e). The estimated kept and released recreational catches of Common Coral Trout were similar in 2013/14 compared to 2011/12 (Figure 50a, Table 5).

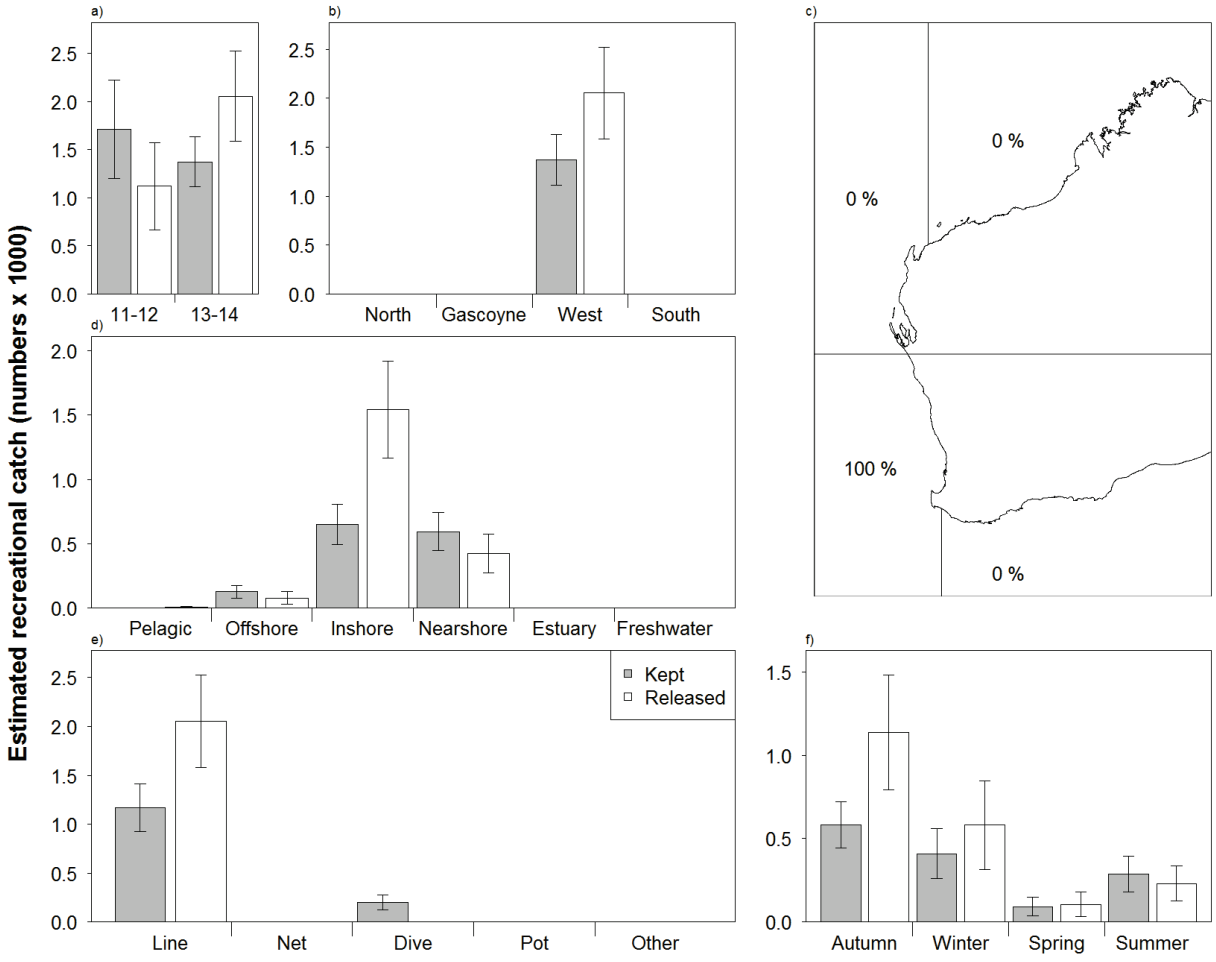

Figure 50. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Common Coral Trout in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.14 Breaksea Cod (*Epinephelides armatus*)

The majority of the recreational catches of Breaksea Cod by RFBL holders aged five years or older occurred in the West Coast (66%), with some catches in the South Coast (34%) (Figure 51b and c). The majority of the boat-based recreational catches of Breaksea Cod were kept (54%) (Figure 51a). Catches were taken predominantly from inshore demersal habitat (63%), but also nearshore (31%) and offshore demersal (6%) habitats (Figure 51d). Breaksea Cod were harvested throughout the year, with higher catches observed in summer (37%) compared with autumn (24%), winter (30%) and spring (9%) (Figure 51f). Catches were taken predominantly by line fishing (99%) (Figure 51e). The estimated kept and released recreational catches of Breaksea Cod were similar in 2013/14 compared to 2011/12 (Figure 51a, Table 5).

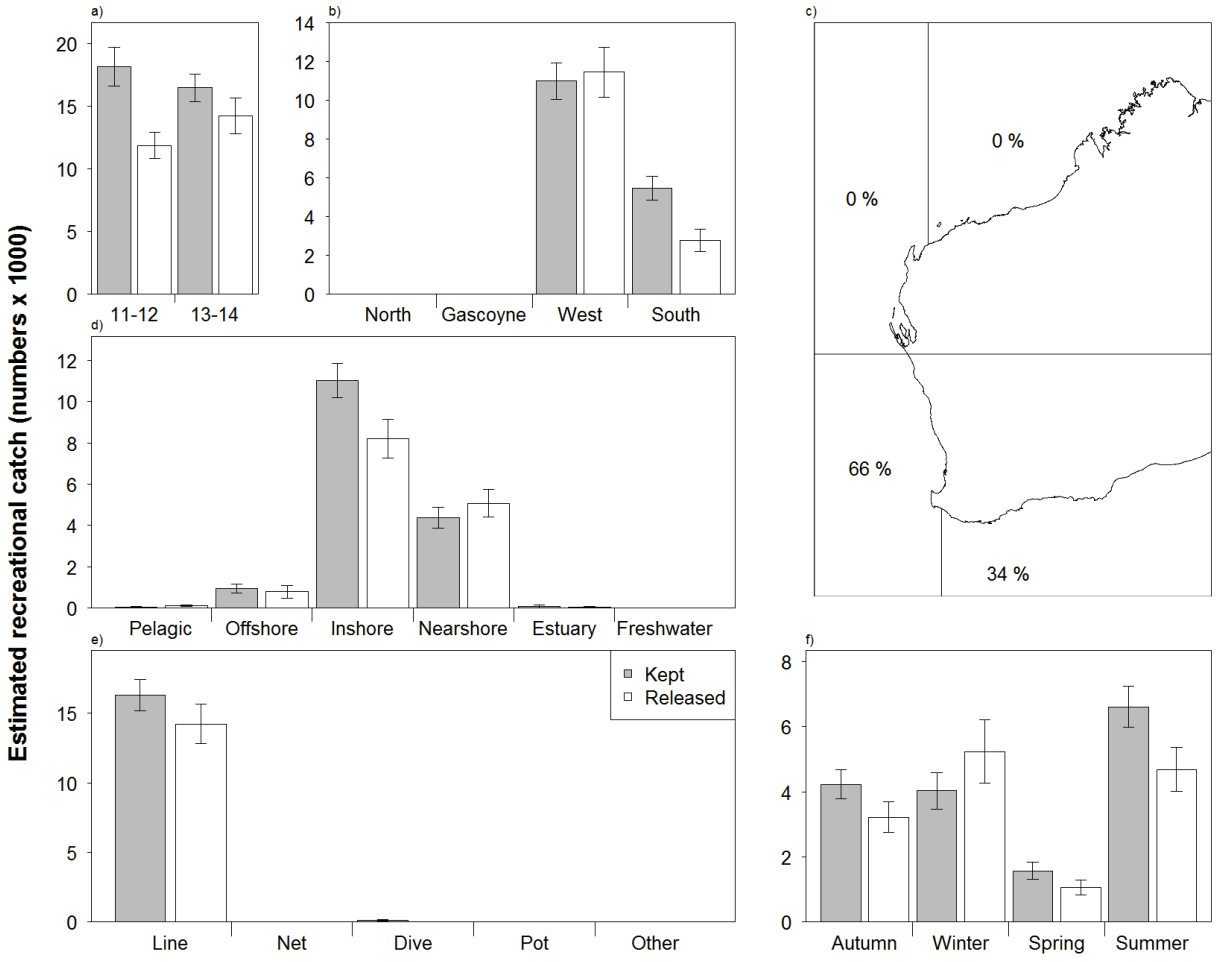

Figure 51. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Breaksea Cod in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.15 Grass Emperor (*Lethrinus laticaudis*)

The majority of the recreational catches of Grass Emperor by RFBL holders aged five years or older occurred in the Gascoyne Coast (66%) and North Coast (34%) (Figure 52b and c). The majority of the boat-based recreational catches of Grass Emperor were released (64%) (Figure 52a) with most releases attributed to under-size catches (75%) (Table 7). Catches were taken predominantly from nearshore habitat (67%), but also inshore demersal (28%) and offshore demersal (5%) habitats (Figure 52d). Grass Emperor were harvested throughout the year, with higher catches observed in autumn (41%) and winter (44%) compared with spring (10%) and summer (5%) (Figure 52f). All catches were taken by line fishing (Figure 52e). The estimated kept and released recreational catches of Grass Emperor were similar in 2013/14 compared to 2011/12 (Figure 52a, Table 5).

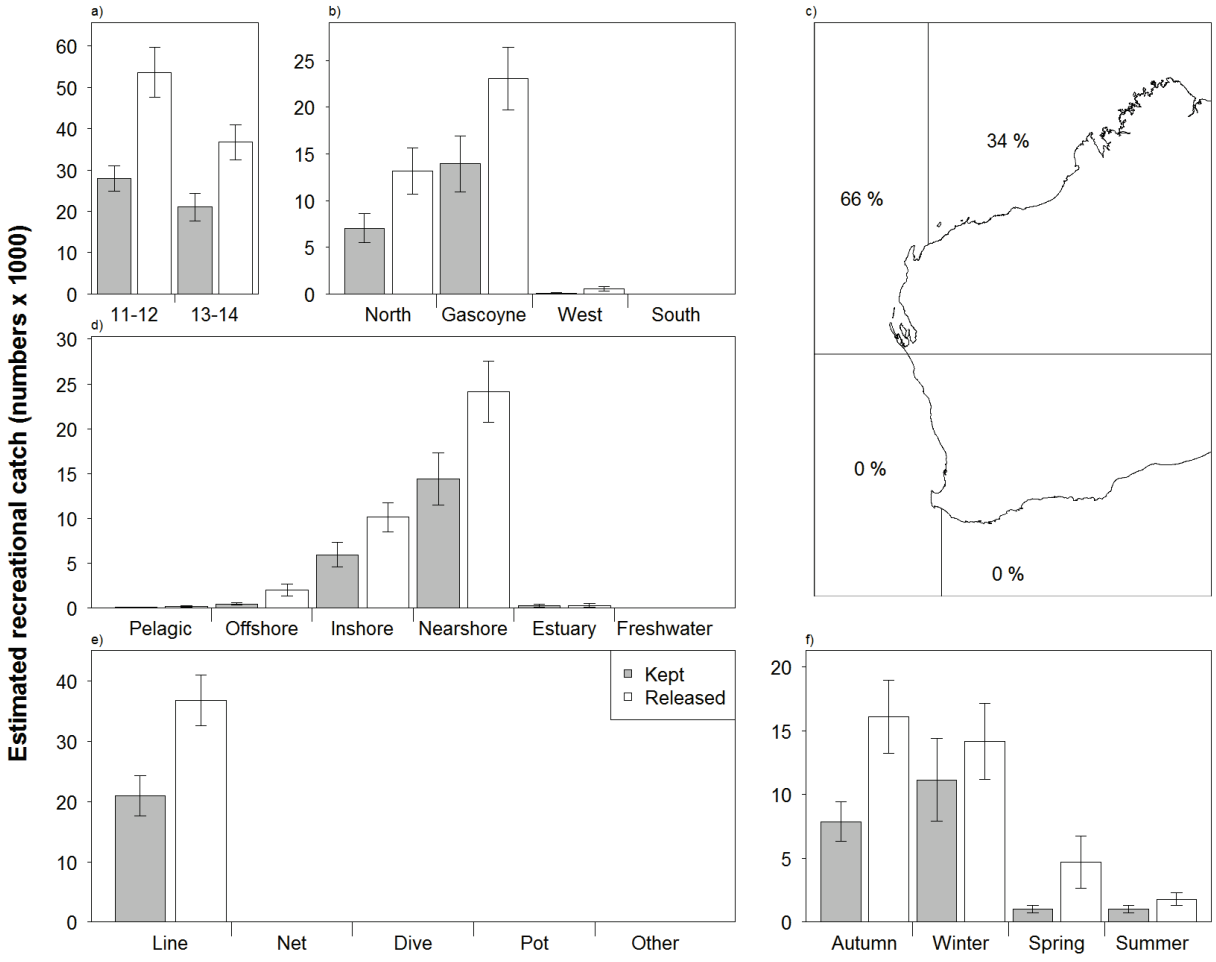

Figure 52. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Grass Emperor in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.16 Redthroat Emperor (*Lethrinus miniatus*)

Redthroat Emperor is an indicator in the West Coast bioregion. The majority of the kept recreational catches of Redthroat Emperor by RFBL holders aged five years or older occurred in the Gascoyne Coast (62%), with some catches in the West Coast (32%) and North Coast (6%) (Figure 53b and c). The majority of the boat-based recreational catches of Redthroat Emperor were released (75%) Figure 53a) with most releases attributed to under-size catches (52%) (Table 7). Catches were taken predominantly from inshore demersal habitat (67%), but also nearshore (26%) and inshore demersal (7%) habitats (Figure 53d). Redthroat Emperor were harvested throughout the year, with higher catches observed in autumn (51%) and winter (30%) compared with spring (11%) and summer (8%) (Figure 53f). All catches were taken by line fishing (Figure 53e). The estimated kept and released recreational catches of Redthroat Emperor were similar in 2013/14 compared to 2011/12 (Figure 53a, Table 5).

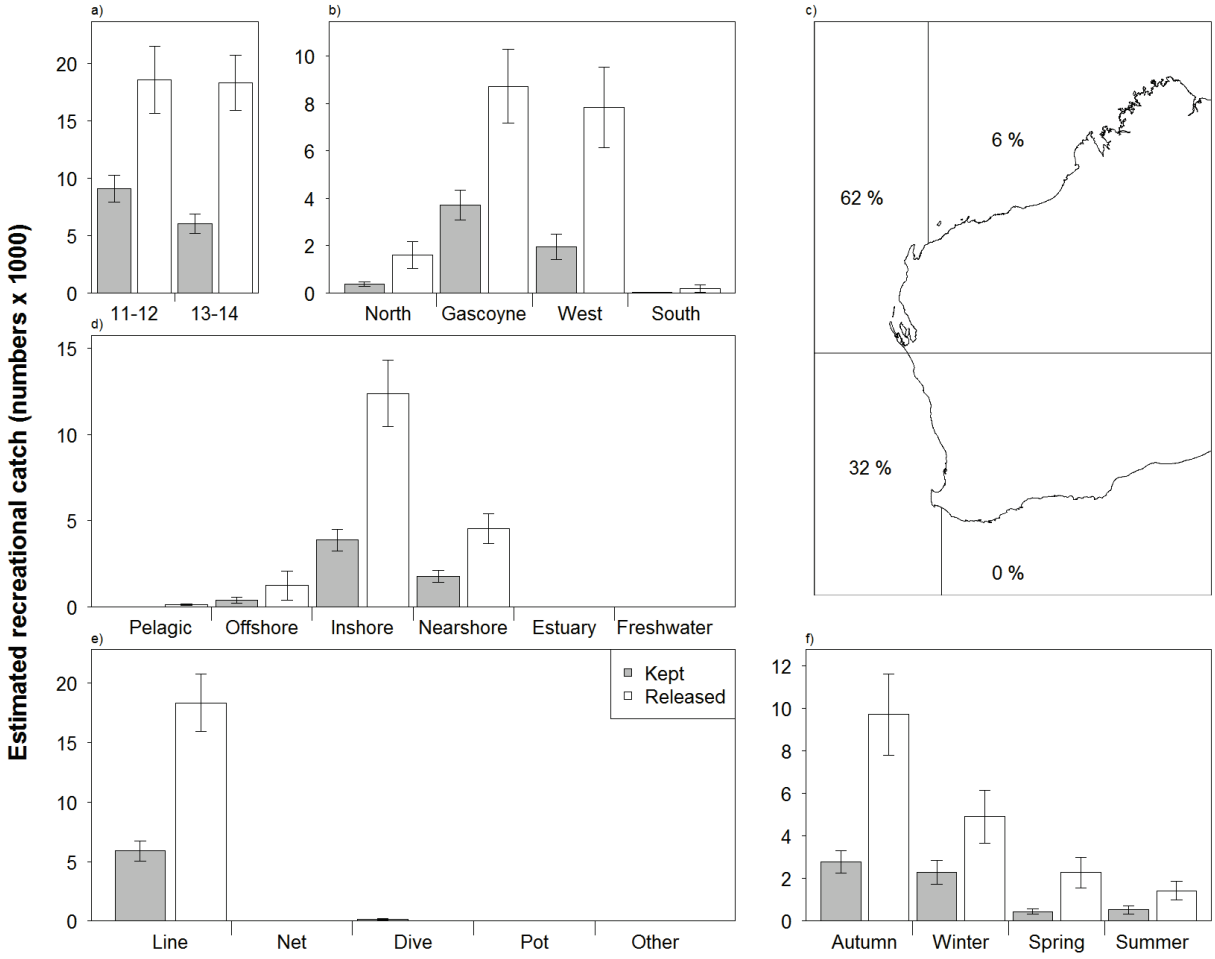

Figure 53. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Redthroat Emperor in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.4.17 Stripey Snapper (*Lutjanus carponotatus*)

The majority of the recreational catches of Stripey Snapper by RFBL holders aged five years or older occurred in the North Coast (78%), with some catches in the Gascoyne Coast (22%) (Figure 54b and c). The majority of the boat-based recreational catches of Stripey Snapper were released (78%) (Figure 54a) with most releases attributed to under-size catches (53%) (Table 7). Catches were taken predominantly from nearshore habitat (59%), but also inshore demersal habitat (38%) (Figure 54d). Stripey Snapper were harvested throughout the year, with higher catches observed in winter (52%) compared with spring (10%), summer (8%) and autumn (30%) (Figure 54f). All catches were taken by line fishing (Figure 54e). The estimated kept and released recreational catches of Stripey Snapper were similar in 2013/14 compared to 2011/12 (Figure 54a, Table 5).

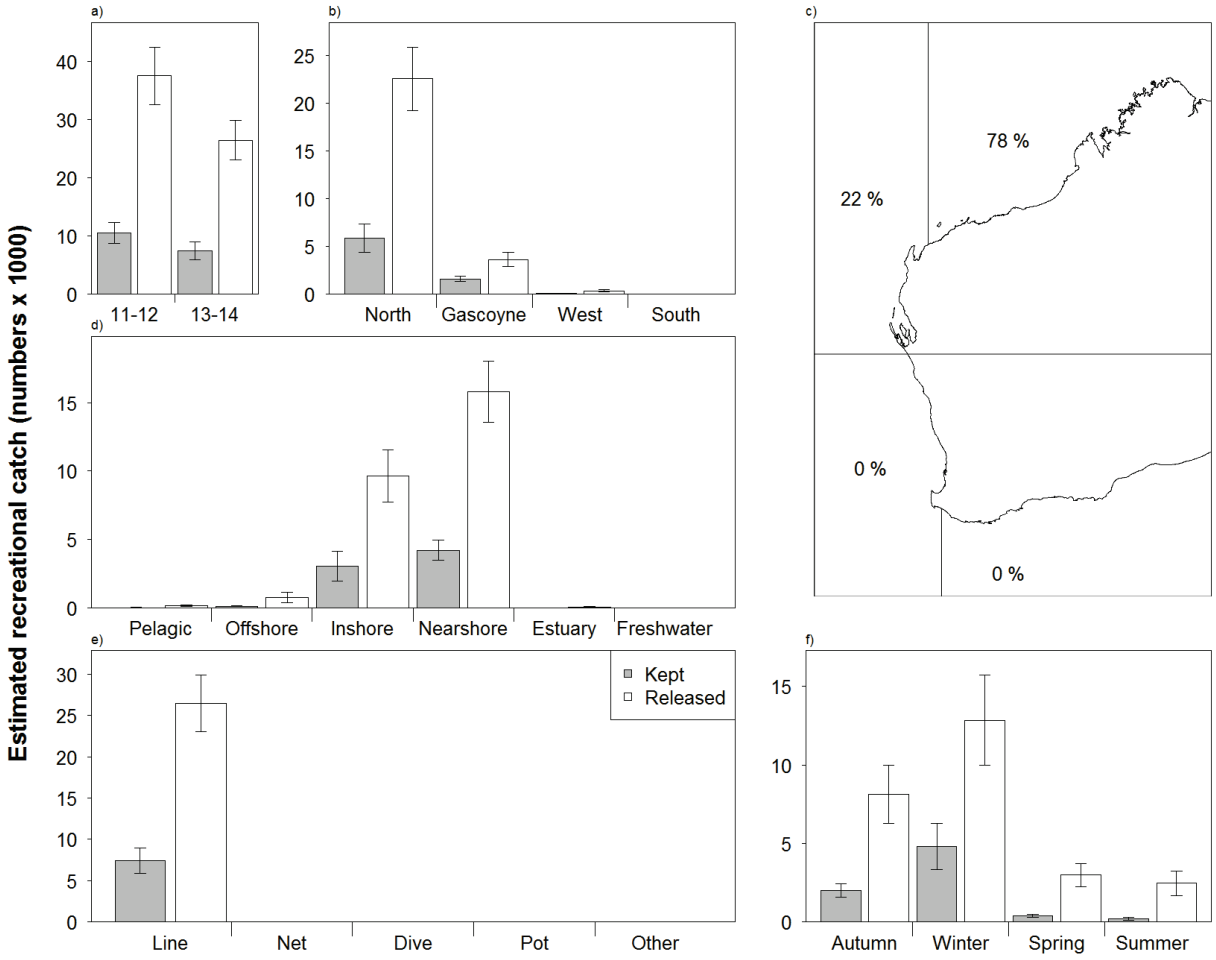

Figure 54. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Stripey Snapper in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.5 Offshore Demersal

6.5.1 Eightbar Grouper (*Epinephelus octofasciatus*)

Eightbar Grouper is an indicator species in the North Coast, Gascoyne Coast, West Coast bioregions. The majority of the kept recreational catches of Eightbar Grouper by RFBL holders aged five years or older occurred in the Gascoyne Coast (59%), with some catches in the West Coast (21%) and South Coast (20%) (Figure 55b and c). The majority of the boat-based recreational catches of Eightbar Grouper were kept (91%) (Figure 55a).). Catches were taken predominantly from inshore demersal habitat (65%), but also offshore demersal (19%) and pelagic (16%) habitats (Figure 55d). Eightbar Grouper were harvested throughout the year, with higher catches observed in autumn (39%) and spring (36%) compared with winter (11%) and summer (14%) (Figure 55f). All catches were taken by line fishing (Figure 55e). The estimated kept and released recreational catches of Eightbar Grouper were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 55a, Table 5).

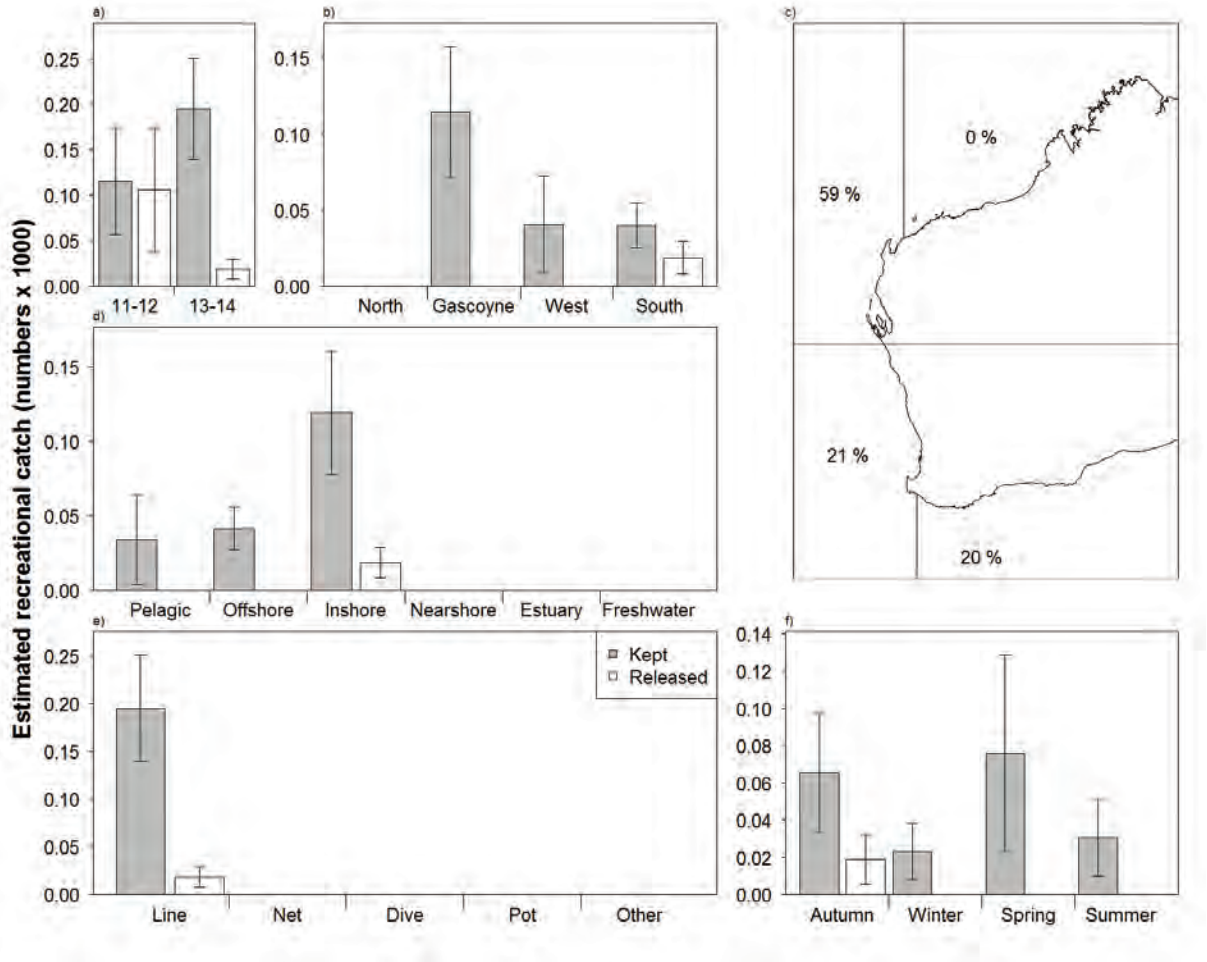

Figure 55. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Eightbar Grouper in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.5.2 Hapuku (*Polyprion oxygeneios*)

Hapuku is an indicator species in the West Coast and South Coast bioregions. All kept recreational catches of Hapuku by RFBL holders aged five years or older occurred in the South Coast (Figure 56b and c). The majority of the boat-based recreational catches of Hapuku were kept (78%) (Figure 56a). Catches were taken predominantly from inshore demersal habitat (71%), but also offshore demersal (23%) and pelagic (7%) habitats (Figure 56d). Hapuku were harvested in spring (15%), summer (58%) and autumn (27%) (Figure 56f). All catches were taken by line fishing (Figure 56e). The estimated kept and released recreational catches of Hapuku were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 56a, Table 5).

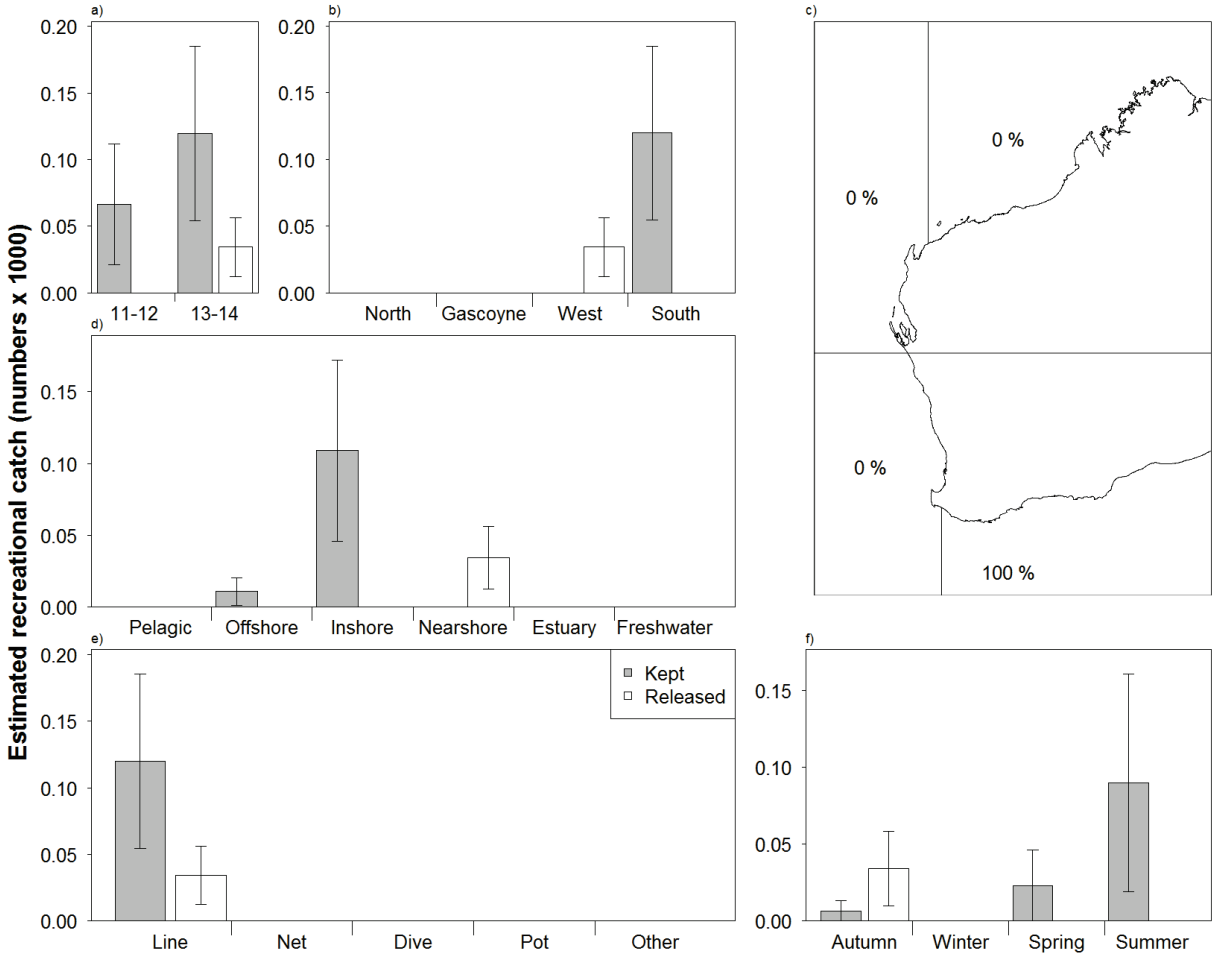

Figure 56. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Hapuku in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.5.3 Ruby Snapper (*Etelis carbunculus*)

Ruby Snapper is an indicator species in the North Coast and Gascoyne Coast. The majority of the kept recreational catches of Ruby Snapper by RFBL holders aged five years or older occurred in the Gascoyne Coast (88%), with some catches in the North Coast (12%) (Figure 57b and c). The majority of the boat-based recreational catches of Ruby Snapper were kept (95%) (Figure 57a). Catches were taken predominantly from offshore demersal habitat (75%), but also inshore demersal habitat (24%) (Figure 57d). Ruby Snapper were harvested throughout the year, with higher catches observed in autumn (78%) compared with winter (15%), spring (2%) and summer (5%) (Figure 57f). All catches were taken by line fishing (Figure 57e). The estimated kept and released recreational catches of Ruby Snapper were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 57a, Table 5).

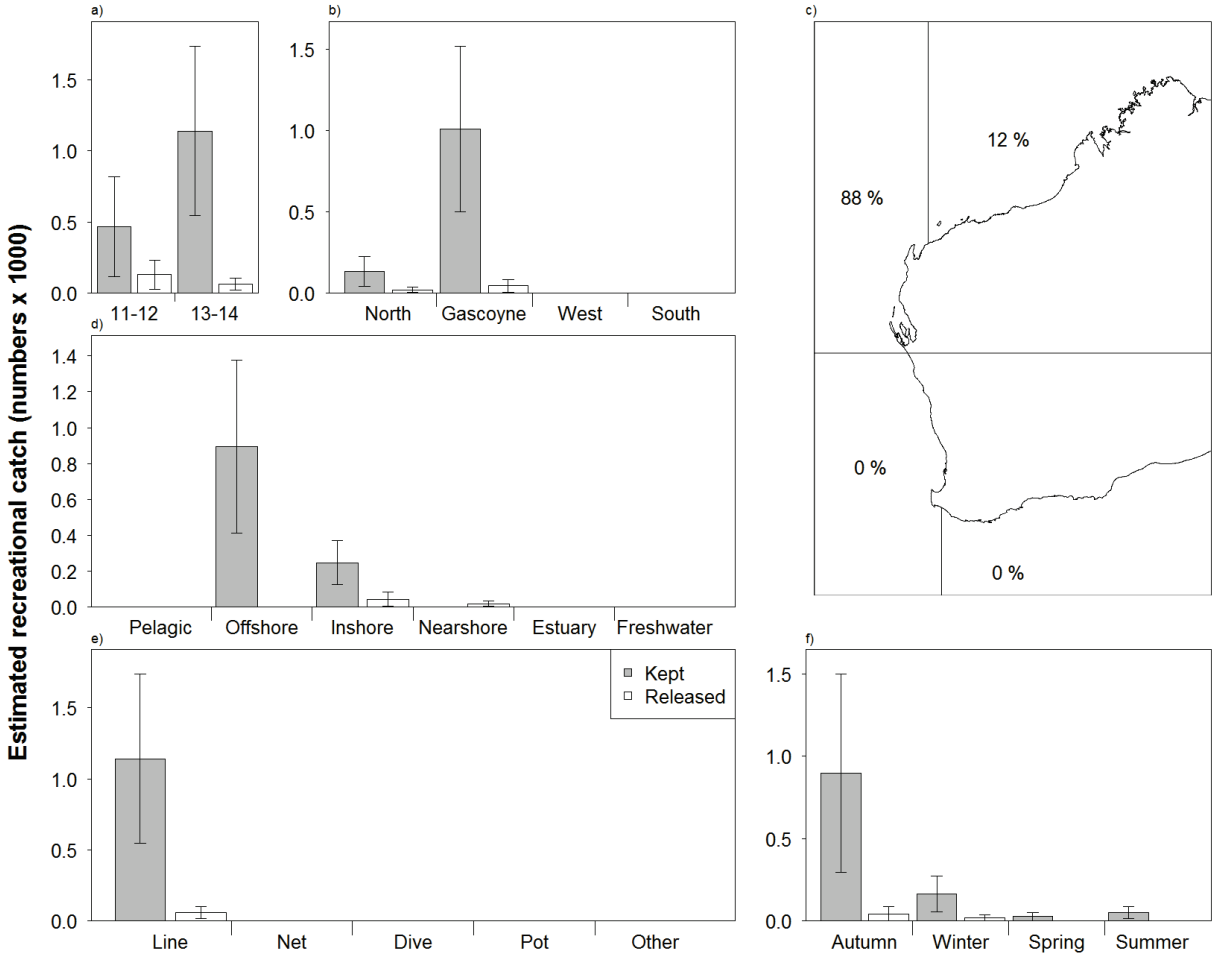

Figure 57. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Ruby Snapper in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.6 Pelagic

6.6.1 Spanish Mackerel (*Scomberomorus commerson*)

Spanish Mackerel is an indicator species in the North Coast and Gascoyne Coast bioregions. The majority of the kept recreational catches of Spanish Mackerel by RFBL holders aged five years or older occurred in the Gascoyne Coast (46%), with catches also in the North Coast (28%) and West Coast (26%) (Figure 58b and c). Similar proportions of the boat-based recreational catch of Spanish Mackerel were kept (52%) and released (48%) (Figure 58a). Catches were taken from inshore demersal (53%) and nearshore (39%) habitats, but also pelagic habitat (6%) (Figure 58d). Spanish Mackerel were harvested throughout the year, with higher catches observed in autumn (45%) compared with spring (16%), summer (11%) and winter (28%) (Figure 58f). Catches were taken by line fishing (97%), with some fishing from diving (3%) (Figure 58e). The estimated kept and released recreational catches of Spanish Mackerel were similar in 2013/14 compared to 2011/12 (Figure 58a, Table 5).

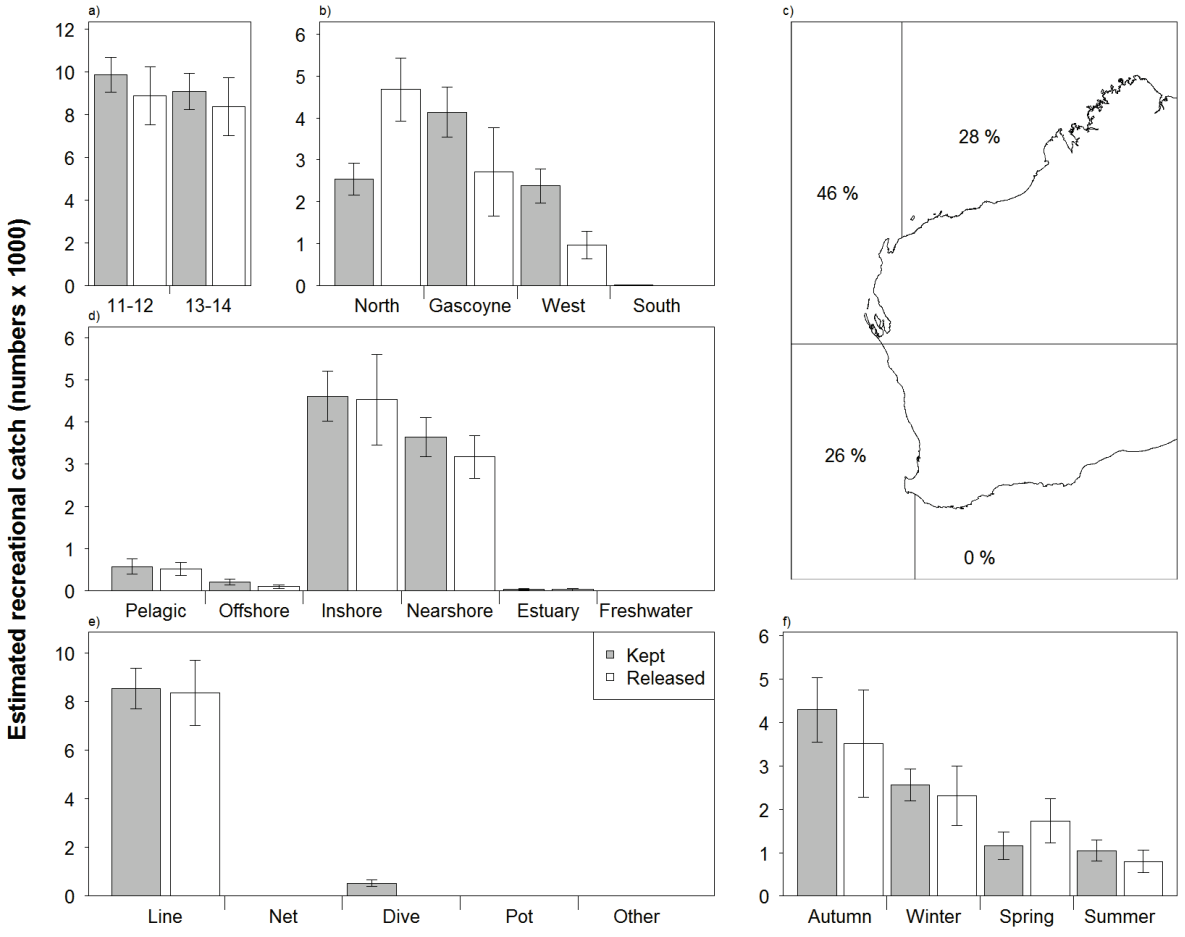

Figure 58. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Spanish Mackerel in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.6.2 Samsonfish (*Seriola hippos*)

Samsonfish is an indicator species in the West Coast bioregion. The majority of the kept recreational catches of Samsonfish by RFBL holders aged five years or older occurred in the West Coast (72%), with some catches in the South Coast (28%) (Figure 59b and c). The majority of the boat-based recreational catches of Samsonfish were released (74%) (Figure 59a) with most releases attributed to "Other" (37%) and "Too Many" (35%) (Table 7). Catches were taken from inshore demersal (64%) and nearshore (28%) habitats, but also pelagic habitat (8%) (Figure 59d). Samsonfish were harvested throughout the year, with higher catches observed in autumn (29%) and winter (33%) compared with spring (16%) and summer (Figure 59f). Catches were taken by line fishing (98%), with some fishing from diving (2%) (Figure 59e). The estimated kept and released recreational catches of Samsonfish were similar in 2013/14 compared to 2011/12 (Figure 59a, Table 5).

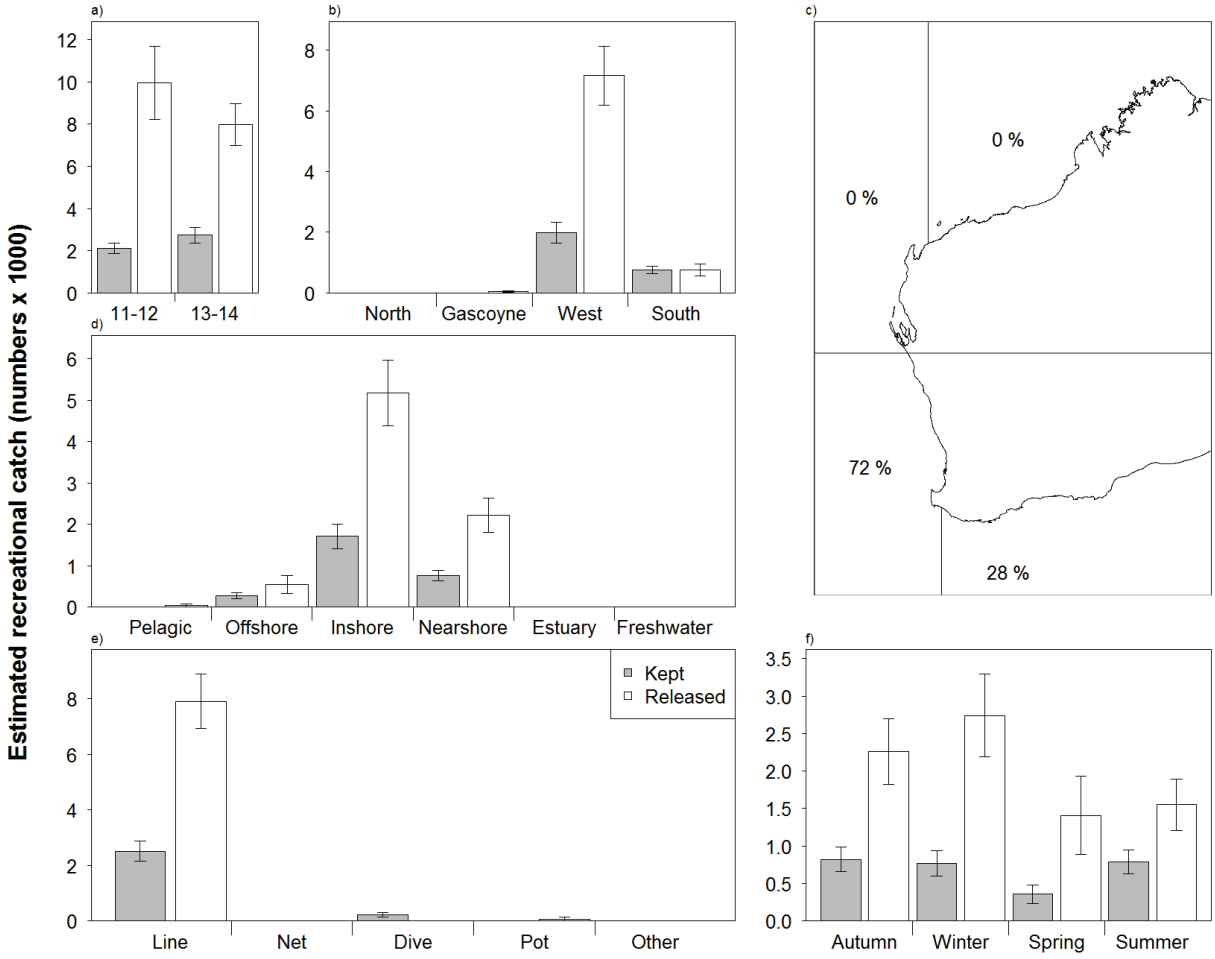

Figure 59. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Samsonfish in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.6.3 Grey Mackerel (*Scomberomorus semifasciatus*)

Grey Mackerel is an indicator species in the North Coast and Gascoyne Coast bioregions. Kept recreational catches of Grey Mackerel by RFBL holders aged five years or older occurred in the Gascoyne Coast (68%) and North Coast (32%) (Figure 60b and c). The majority of the boat-based recreational catches of Grey Mackerel were kept (57%) (Figure 60a). Catches were taken from inshore demersal (35%) and nearshore (65%) habitats (Figure 60d). Grey Mackerel were harvested throughout the year, with higher catches observed in autumn (46%) and winter (43%) compared with spring (2%) and summer (9%) (Figure 60f). Catches were taken by line fishing (92%), with some fishing from diving (8%) (Figure 60e). The estimated kept and released recreational catches of Grey Mackerel were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 60a, Table 5).

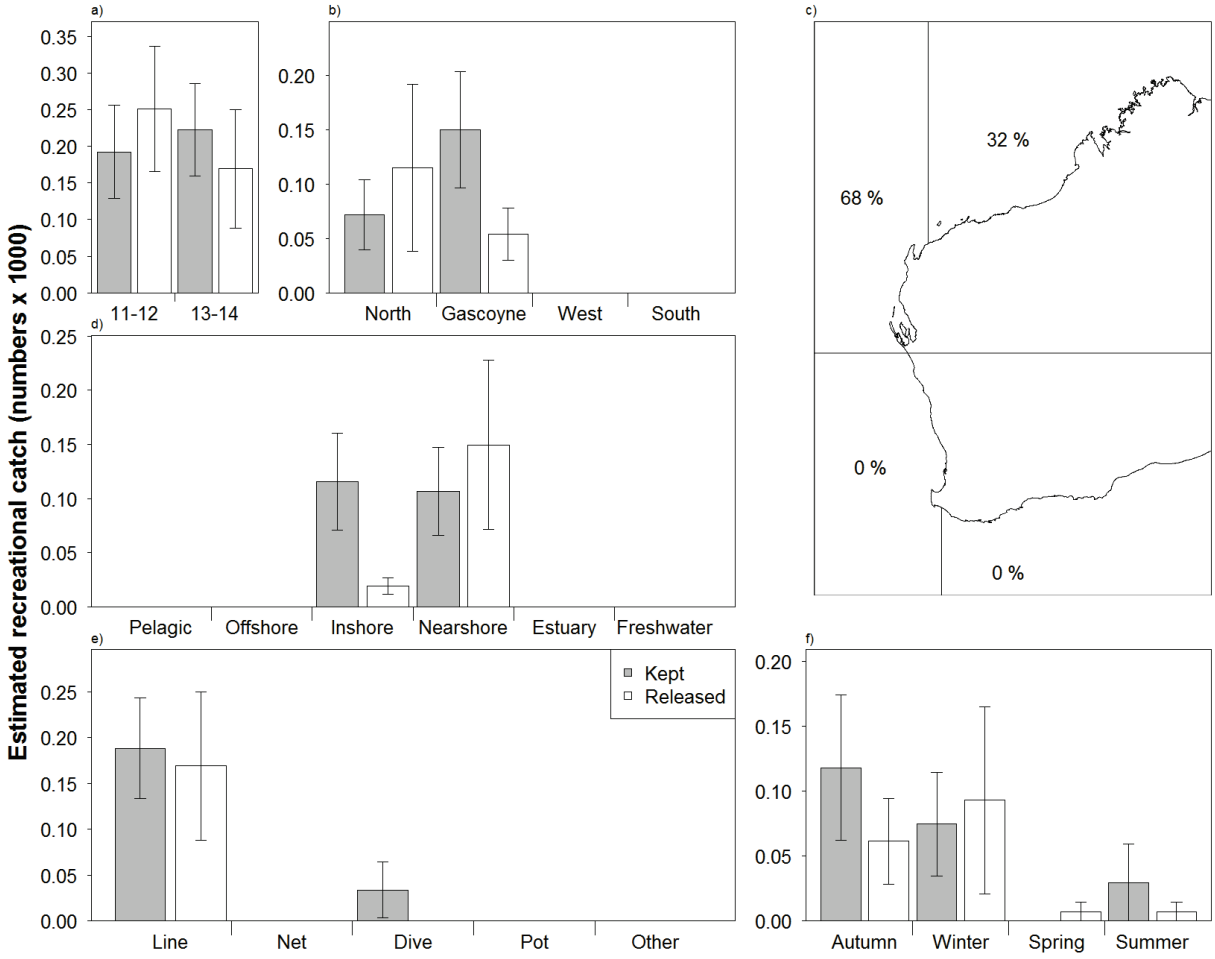

Figure 60. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Grey Mackerel in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.6.4 Blue Mackerel (*Scomber australasicus*)

Kept recreational catches of Blue Mackerel by RFBL holders aged five years or older occurred in the West Coast (58%) and South Coast (42%) (Figure 61b and c). The majority of the boat-based recreational catches of Blue Mackerel were released (72%) (Figure 61a) with most releases attributed to "Too Many" (78%) (Table 7). Catches were taken predominantly from nearshore habitat (74%), but also offshore demersal (12%) and inshore demersal (10%) habitats (Figure 61d). Blue Mackerel were harvested throughout the year, with higher catches observed in summer (37%) and autumn (50%) compared with winter (10%) and spring (3%) (Figure 61f). All catches were taken by line fishing (Figure 61e). The estimated kept and released recreational catches of Blue Mackerel were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 61a, Table 5).

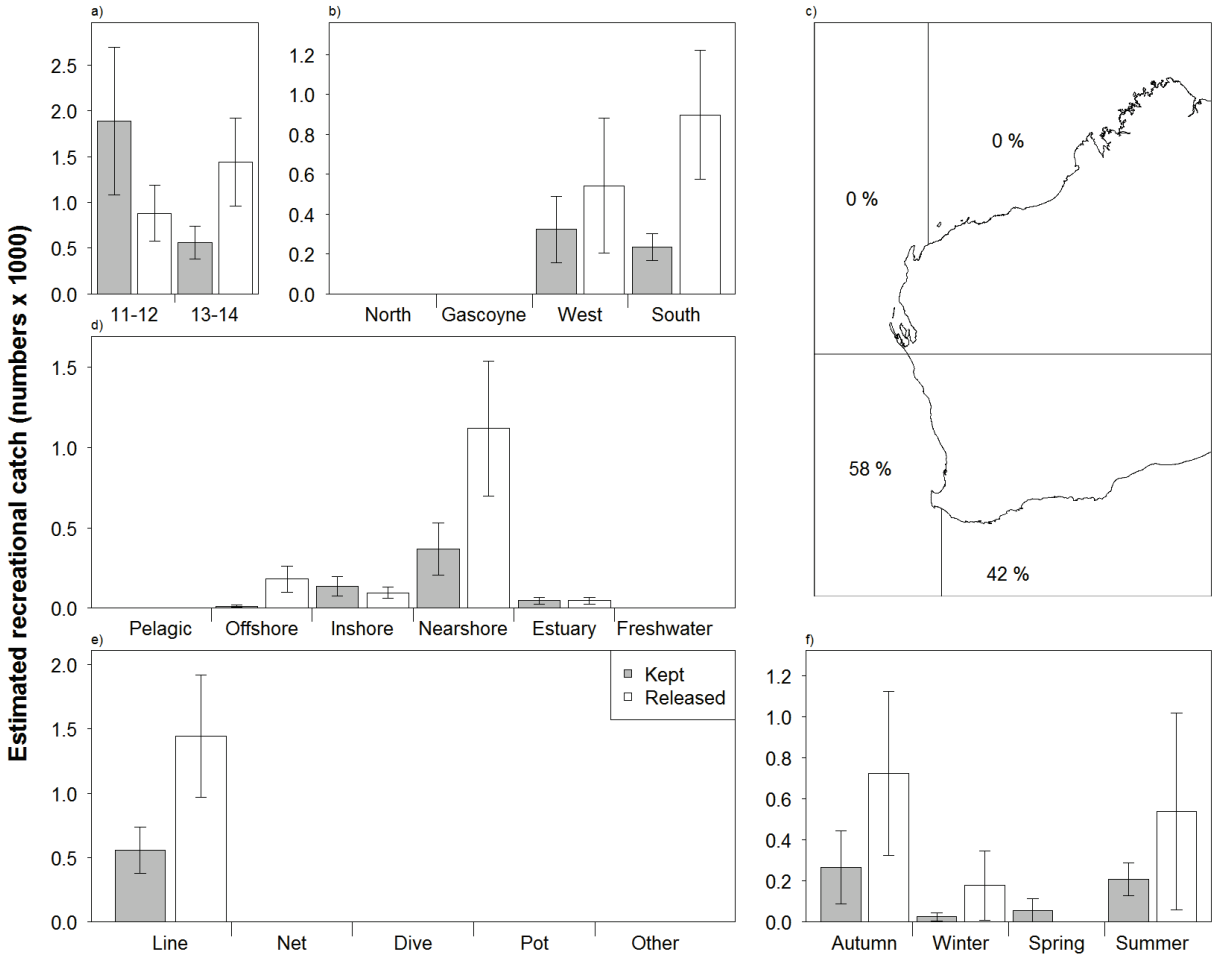

Figure 61. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Blue Mackerel in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.6.5 Yellowtail Scad (*Trachurus novaezelandiae*)

Yellowtail Scad is an indicator species in the South Coast bioregion. The majority of the kept recreational catches of Yellowtail Scad by RFBL holders aged five years or older occurred in the South Coast (56%), with some catches in the West Coast (44%) (Figure 62b and c). The majority of the boat-based recreational catches of Yellowtail Scad were released (68%) (Figure 62a) with most releases attributed to "Other" (35%) and under-size (28%) (Table 7). Catches were taken predominantly from nearshore habitat (74%), but also inshore demersal habitat (17%) (Figure 62d). Yellowtail Scad were harvested throughout the year, with higher catches observed in summer (36%) and autumn (37%) compared with winter (11%) and spring (16%) (Figure 62f). All catches were taken by line fishing (Figure 62e). The estimated kept and released recreational catches of Yellowtail Scad were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 62a, Table 5).

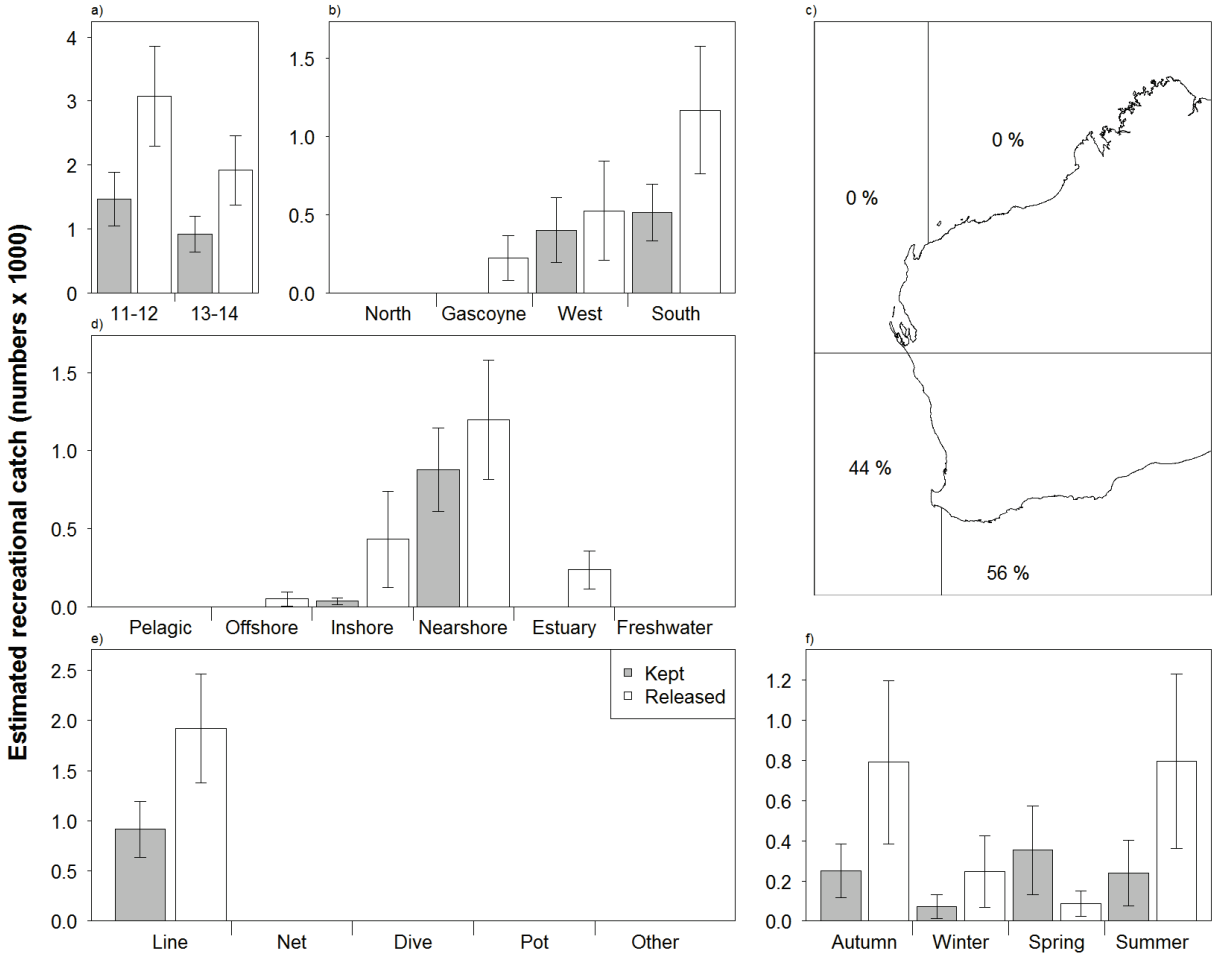

Figure 62. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Yellowtail Scad in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.6.6 Billfish

Billfish include Black Marlin (*Makaira indica*), Blue Marlin (*M. nigricans*), Striped Marlin (*Tetrapturus audax*) and Sailfish (*Istiophorus platypterus*). The majority of the kept recreational catches of Billfish by RFBL holders aged five years or older occurred in the Gascoyne Coast (84%) (Figure 63b and c). The majority of the boat-based recreational catches of Billfish were released (>99%) (Figure 63a) with most releases attributed to catch and release fishing (Table 7). Catches were taken predominantly from inshore demersal habitat (79%), but also offshore demersal habitat (7%) (Figure 63d). Billfish were harvested throughout the year, with higher catches observed in summer (57%) compared with autumn (12%), winter (23%) and spring (8%) (Figure 63f). All catches were taken by line fishing (Figure 63e). The estimated kept and released recreational catches of Billfish were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 63a, Table 5).

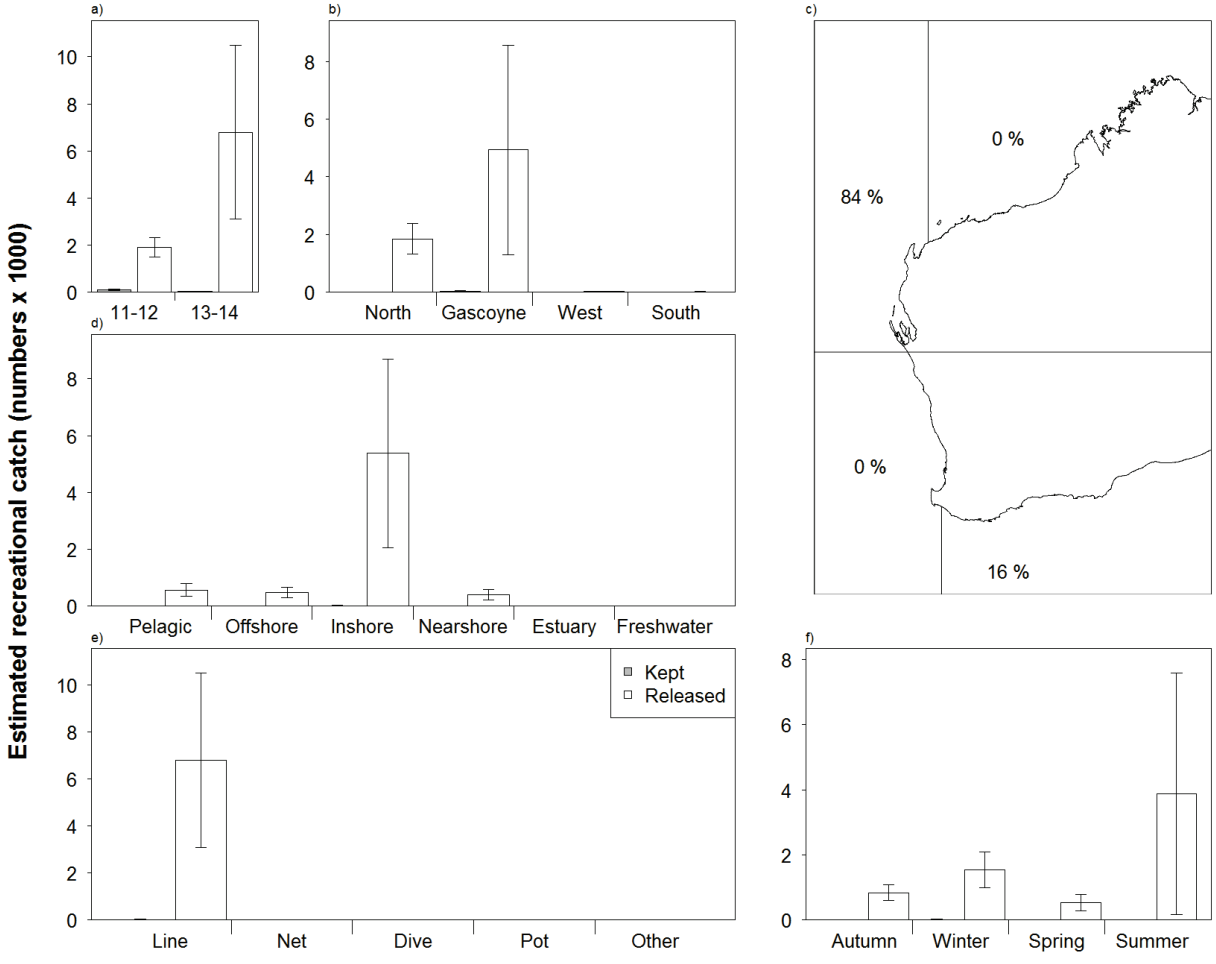

Figure 63. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Billfish in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.6.7 Southern Bluefin Tuna (*Thunnus maccoyii*)

The majority of the recreational catches of Southern Bluefin Tuna by RFBL holders aged five years or older occurred in the West Coast (40%) and South Coast (32%), with some catches in the North Coast (10%) and Gascoyne Coast (18%) (Figure 64b and c). The majority of the boat-based recreational catches of Southern Bluefin Tuna were kept (69%) (Figure 64a) with most releases attributed to "Too Many" (51%) and catch and release fishing (49%) (Table 7). Catches were taken predominantly from inshore demersal habitat (81%) (Figure 64d). Southern Bluefin Tuna were harvested throughout the year, with higher catches observed in autumn (55%) compared with winter (15%), spring (2%) and summer (28%) (Figure 64f). All catches were taken by line fishing (Figure 64e). The estimated kept and released recreational catches of Southern Bluefin Tuna were similar in 2013/14 compared to 2011/12 (Figure 64a, Table 5).

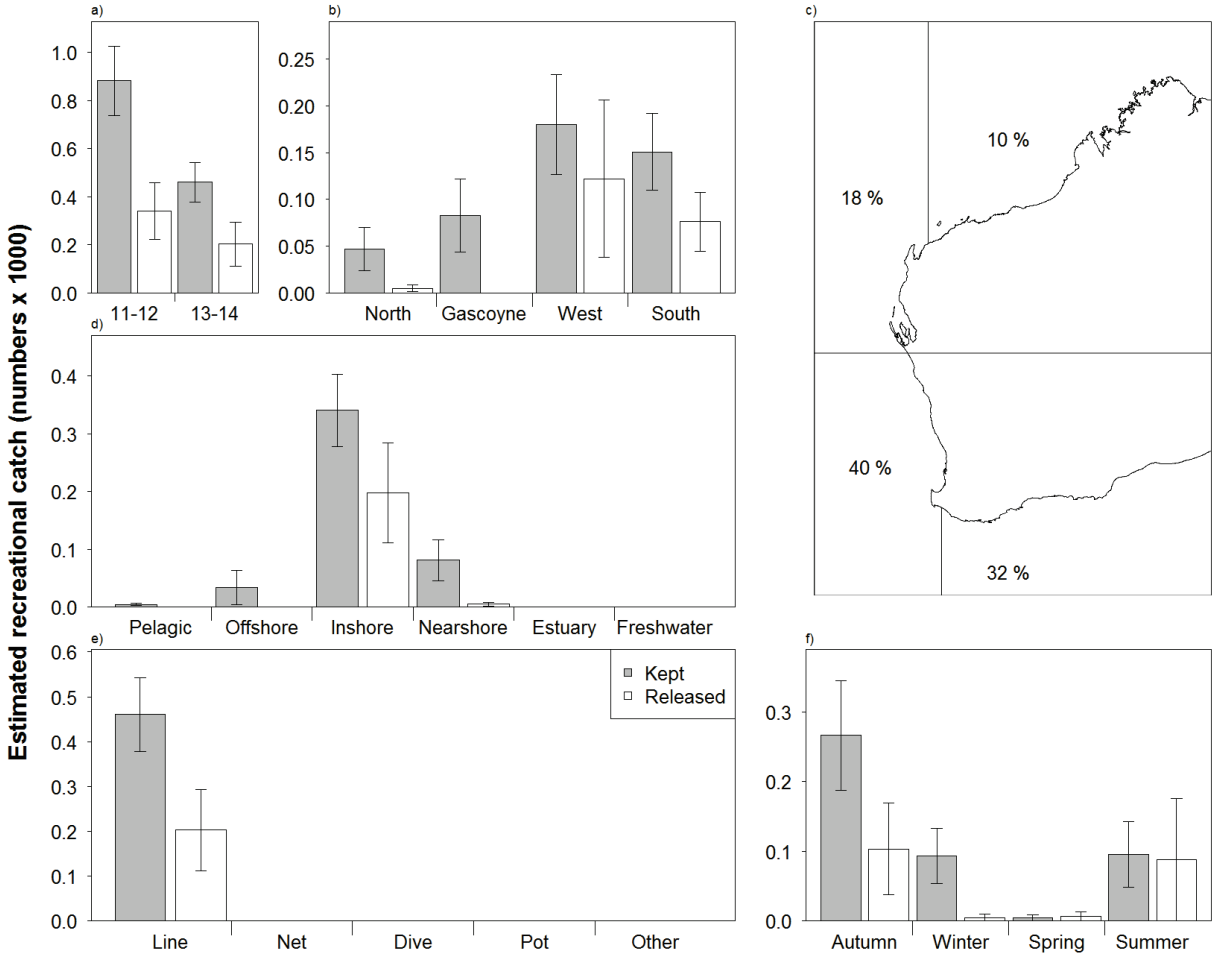

Figure 64. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Southern Bluefin Tuna in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.7 Sharks

6.7.1 Whaler Sharks (Family Carcharhinidae)

Whaler Sharks are a state-wide indicator species. Whaler Sharks (Family Carcharhinidae) have been aggregated, including the Bronze Whaler (*Carcharhinus brachyurus*) and Dusky Whaler (*Carcharhinus obscurus*). The majority of the kept recreational catches of Whaler Sharks by RFBL holders aged five years or older occurred in the West Coast (58%), with some catches in the Gascoyne Coast (24%), North Coast (12%) and South Coast (6%) (Figure 65b and c). The majority of the boat-based recreational catches of Whaler Sharks were released (92%) (Figure 65a) with most releases attributed to "Other" and "Too Many" (Table 7). Catches were taken from inshore demersal (64%) and nearshore (28%) habitats, but also pelagic (3%). offshore demersal (2%) and estuary (3%) habitats (Figure 65d). Whaler Sharks were harvested throughout the year, with higher catches observed in autumn (29%) compared with winter (27%), spring (6%) and summer (38%) (Figure 65f). All catches were taken by line fishing (Figure 65e). The estimated kept and released recreational catches of Whaler Sharks were similar in 2013/14 compared to 2011/12 (Figure 65a, Table 5).

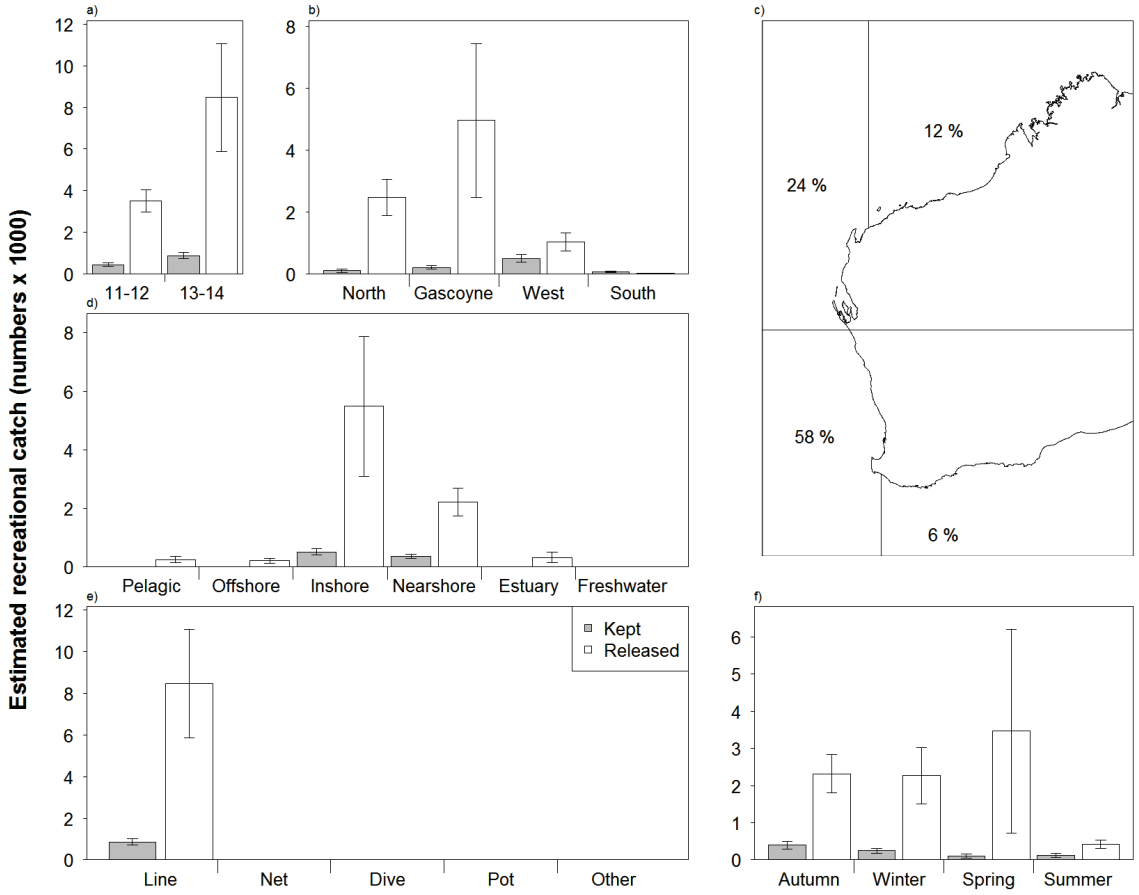

Figure 65. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Whaler Sharks in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.7.2 Gummy Sharks (*Mustelus antarcticus* and *M. stevensi*)

Gummy Sharks includes Gummy Shark (*Mustelus antarcticus*), which occurs in southern waters to Geraldton, and Western Spotted Gummy Shark (*M. stevensi*), which occurs from Shark Bay to the Kimberley. *M. antarticus* is found from nearshore to about 80m, although sometimes on the continental slop to 350m while *M. stevensi* is found at depths of 120 to 400m, possibly to 735m (Last and Stevens 2009). The majority of the kept recreational catches of Gummy Sharks by RFBL holders aged five years or older occurred in the West Coast (76%), with some catches in the North Coast (5%), Gascoyne Coast (6%) and South Coast (13%) (Figure 66b and c). Similar proportions of the boat-based recreational catch of Gummy Sharks were kept (49%) and released (51%) (Figure 66a). Catches were taken predominantly from nearshore habitat (59%), but also inshore demersal habitat (36%) (Figure 66d). Gummy Sharks were harvested throughout the year, with higher catches observed in winter (39%) compared with summer (15%), autumn (25%) and spring (21%) (Figure 66f). All catches were taken by line fishing (99%) (Figure 66e). The estimated kept and released recreational catches of Gummy Sharks were similar in 2013/14 compared to 2011/12 (Figure 66a, Table 5).

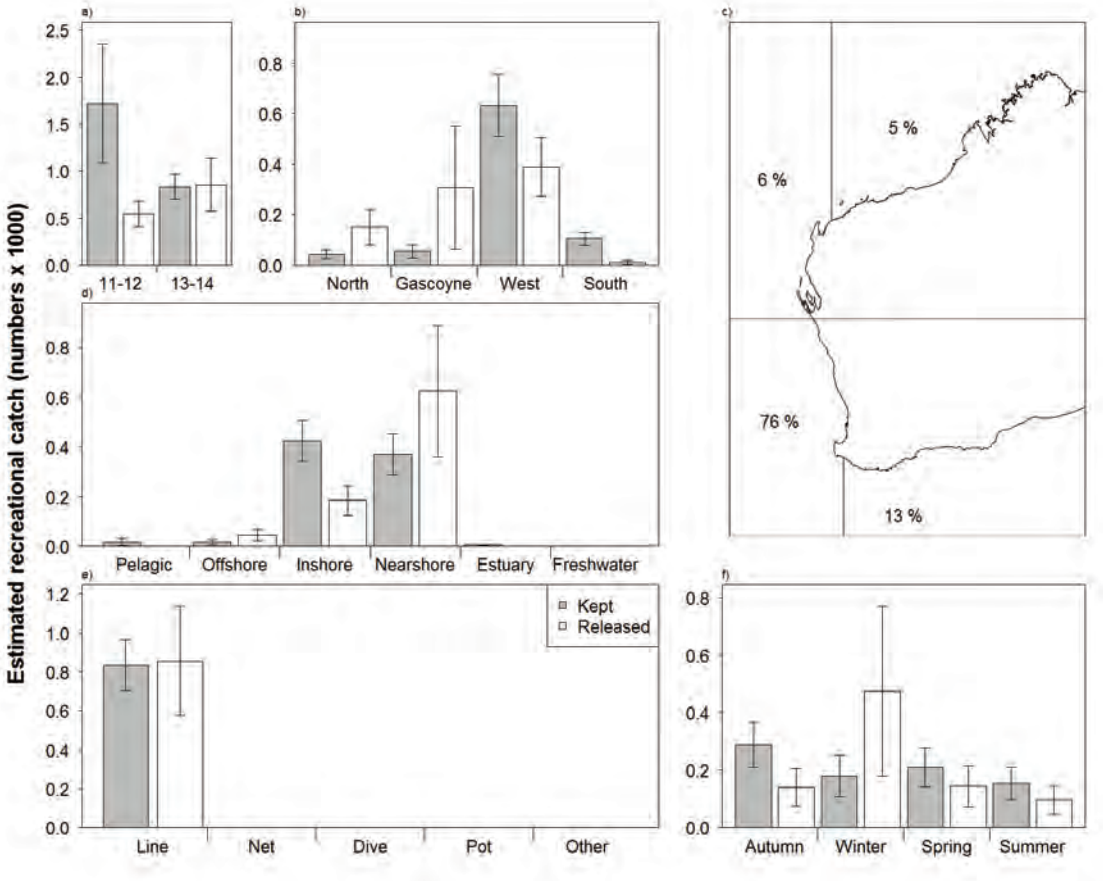

Figure 66. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Gummy Sharks in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.7.3 Port Jackson Shark (*Heterodontus portusjacksoni*)

All kept recreational catches of Port Jackson Shark by RFBL holders aged five years or older occurred in the West Coast (Figure 67b and c). All the boat-based recreational catches of Port Jackson Shark were released (Figure 67a) with most releases attributed to under-size catches (53%) (Table 7). Catches were taken from nearshore (39%) and inshore demersal (61%) habitats (Figure 67d). Port Jackson Shark were harvested throughout the year, with higher catches observed in autumn (67%) compared with winter (16%), spring (8%) and summer (9%) (Figure 67f). Catches were taken by line fishing (98%), with some fishing from pots (2%) (Figure 67e). The estimated kept and released recreational catches of Port Jackson Shark were similar in 2013/14 compared to 2011/12 (Figure 67a, Table 5).

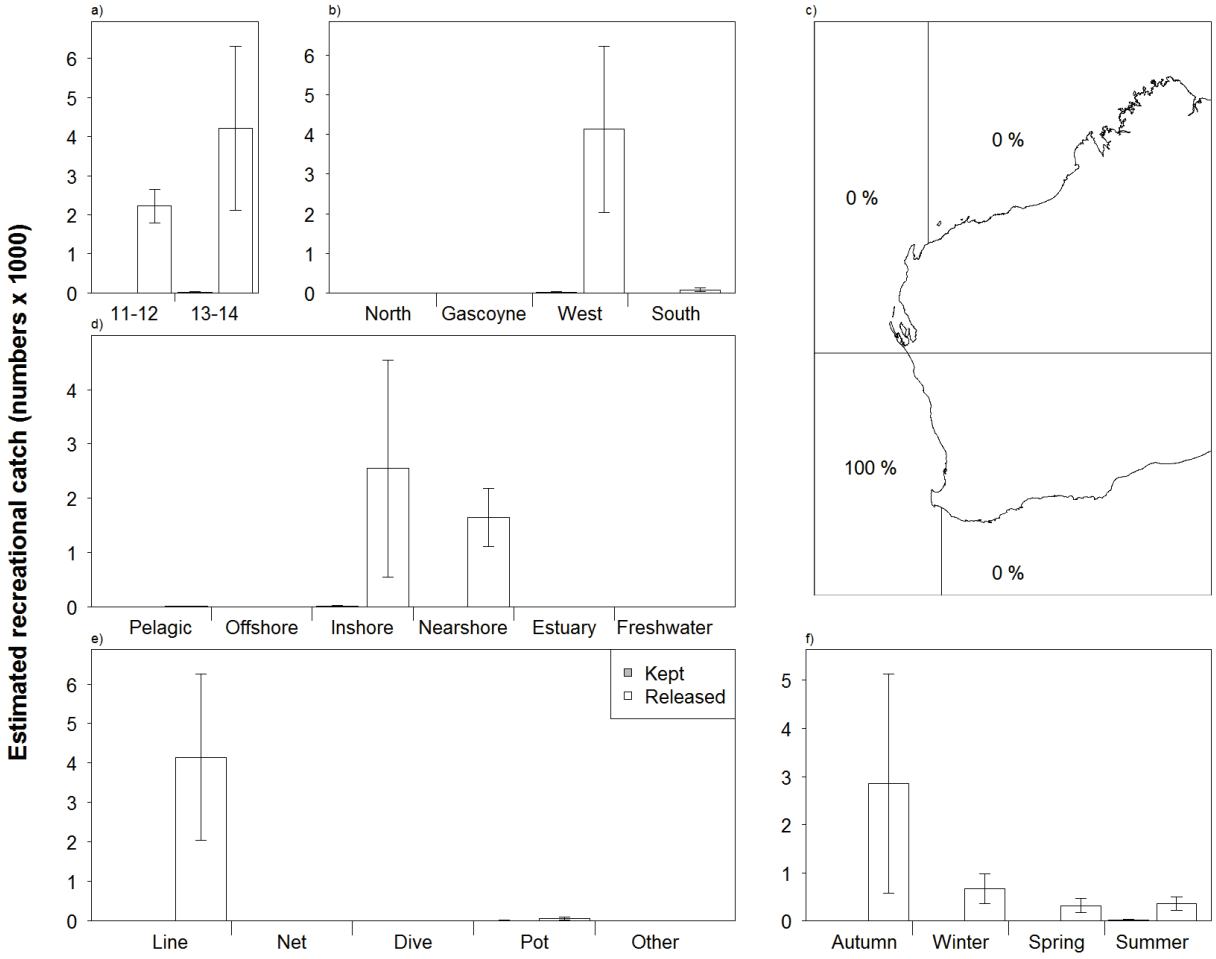

Figure 67. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Port Jackson Shark in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.7.4 Wobbegong (Family Orectolobidae)

The majority of the recreational catches of Wobbegong by RFBL holders aged five years or older occurred in the West Coast (70%), with some catches in the Gascoyne Coast (30%) (Figure 68b and c). The majority of the boat-based recreational catches of Wobbegong were released (91%) (Figure 68a) with most releases attributed to "Other" (59%) (Table 7). Catches were taken predominantly from nearshore habitat (52%), but also inshore demersal habitat (42%) (Figure 68d). Wobbegong were harvested throughout the year, with higher catches observed in winter (43%) compared with spring (4%), summer (18%) and autumn (35%) (Figure 68f). Catches were taken by line fishing (82%), with some fishing from pots (18%) (Figure 68e). The estimated kept and released recreational catches of Wobbegong were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 68a, Table 5).

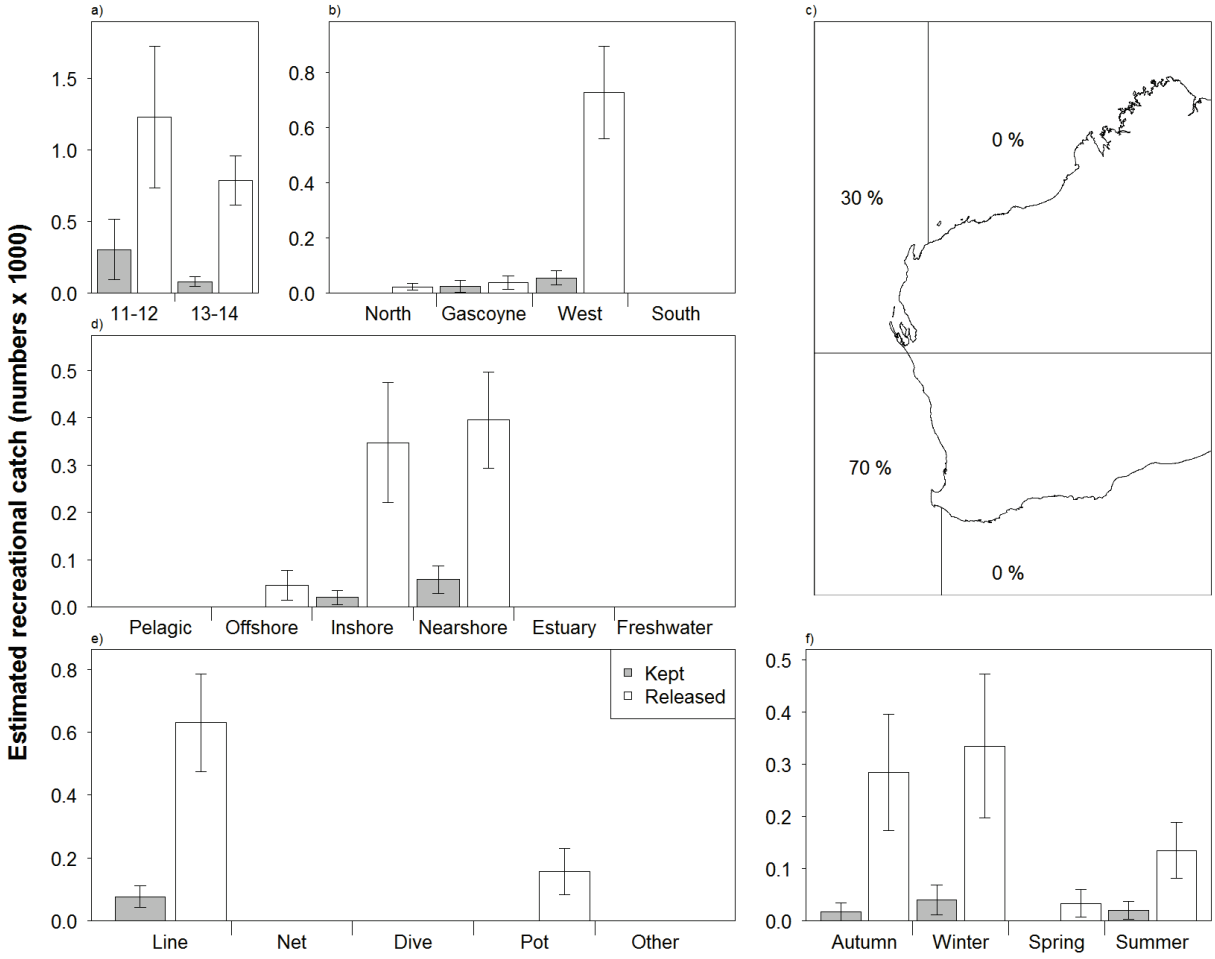

Figure 68. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Wobbegong in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.8 Crustaceans

6.8.1 Western Rock Lobster (*Panulirus cygnus*)

The estimated recreational catch from this survey does not account for catches from fishers that only have the Rock Lobster licence. Approximately 40% of Rock Lobster licence holders do not have a RFBL, therefore these results underestimate the total recreational catch of Western Rock Lobster. All recreational catches of Western Rock Lobster by RFBL holders aged five years or older occurred in the West Coast (Figure 69b and c). The majority of the boat-based recreational catches of Western Rock Lobster were kept (60%) (Figure 69a). Catches were taken predominantly from nearshore habitat (81%), but also inshore demersal habitat (17%) (Figure 69d). Western Rock Lobster were harvested throughout the year, with higher catches observed in summer (57%) compared with autumn (20%), winter (5%) and spring (18%) (Figure 69f). Catches were taken by pots (78%), with some fishing from diving (20%) and other (2%) (Figure 69e). The estimated kept and released recreational catches of Western Rock Lobster were similar in 2013/14 compared to 2011/12 (Figure 69a, Table 5).

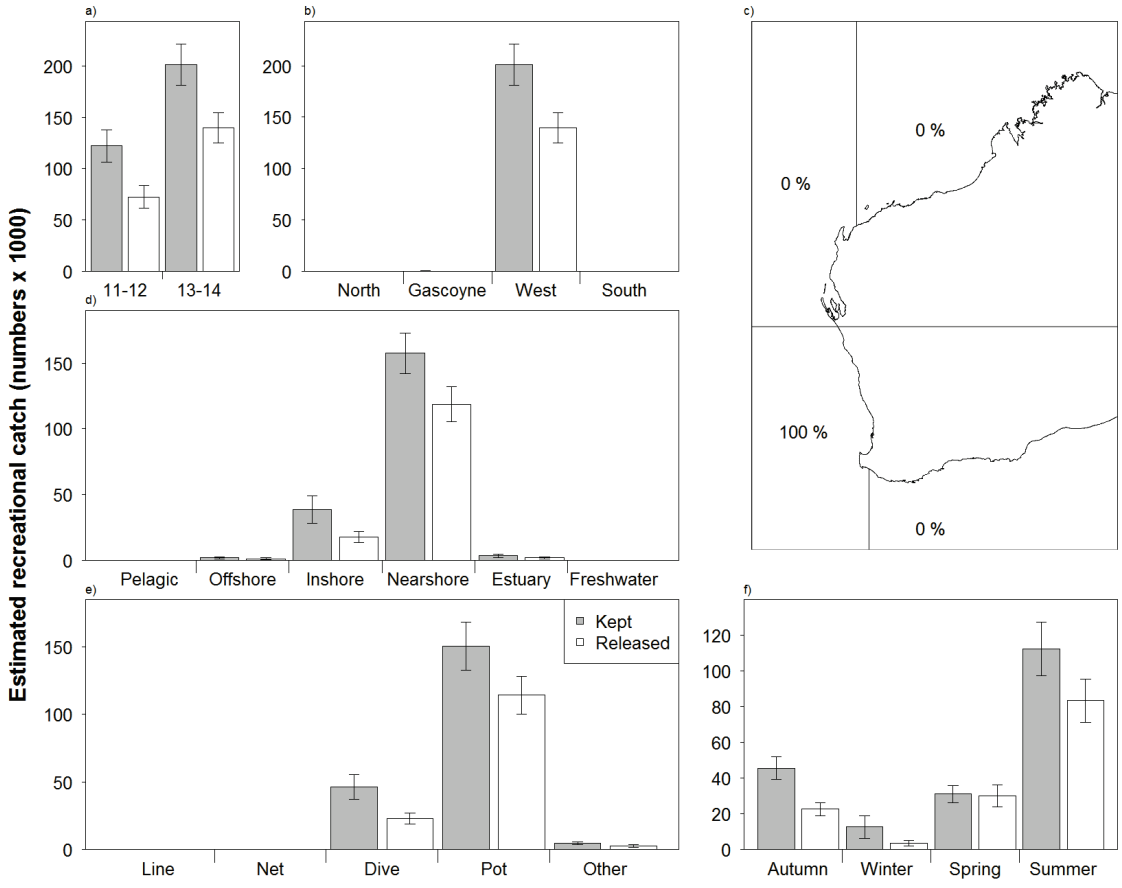

Figure 69. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Western Rock Lobster in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.8.2 Mud Crab (*Scylla olivacea* and *S. serrata*).

Mud Crabs include Brown Mud Crab (*Scylla olivacea*) and Green Mud Crab (*S. serrata*). The majority of the kept recreational catches of Mud Crab by RFBL holders aged five years or older occurred in the North Coast (81%), with some catches in the Gascoyne Coast (5%) and West Coast (14%) (Figure 70b and c). Similar proportions of the boat-based recreational catch of Mud Crab were kept (45%) and released (55%) (Figure 70a). Catches were taken predominantly from nearshore habitat (52%), but also estuary (42%) and inshore demersal (6%) habitats (Figure 70d). Mud Crab were harvested throughout the year, with higher catches observed in winter (46%) compared with spring (20%), summer (12%) and autumn (22%) (Figure 70f). The majority of catches were taken by pots (90%) (Figure 70e). The estimated kept and released recreational catches of Mud Crab were similar in 2013/14 compared to 2011/12 (Figure 70a, Table 5).

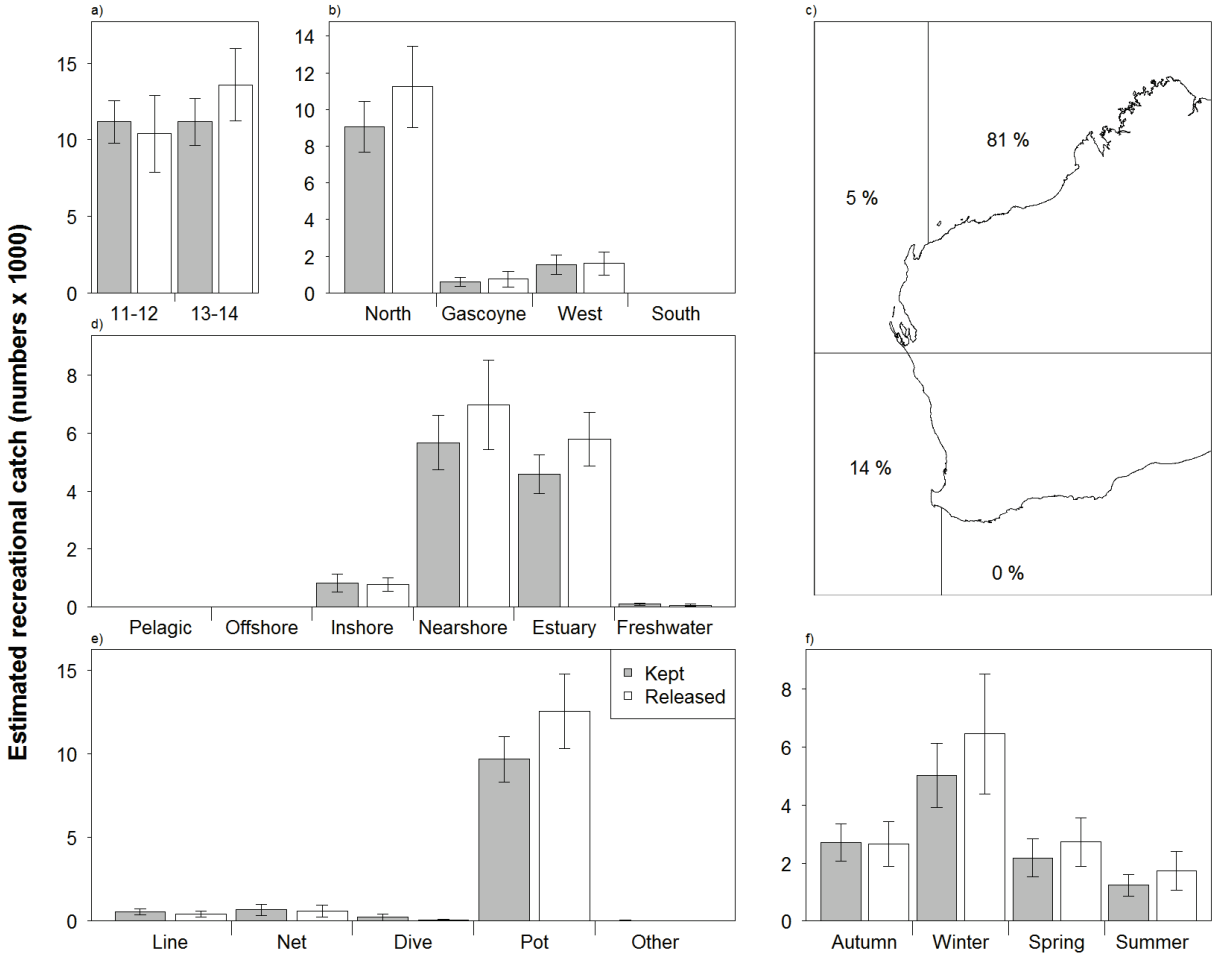

Figure 70. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Mud Crab in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.8.3 Blue Swimmer Crab (*Portunus armatus*)

Blue Swimmer Crab, previously known as *Portunus pelagicus*, but now classified as *Portunus armatus*, is harvested state-wide. The majority of the kept recreational catches of Blue Swimmer Crab by RFBL holders aged five years or older occurred in the West Coast (88%), with some catches in the North Coast (6%), Gascoyne Coast (3%) and South Coast (3%) (Figure 71b and c). A lower proportion of Blue Swimmer Crab were kept (32%) than released (68%) (Figure 71a) with most releases attributed to under-size catches (80%) (Table 7). Catches were taken predominantly from estuary habitat (72%), but also nearshore habitat (27%) (Figure 71d). Blue Swimmer Crab were harvested throughout the year, with higher catches observed in summer (66%) compared with autumn (23%), winter (4%) and spring (7%) (Figure 71f). The majority of catches were taken by pots (including drop nets) (99%) (Figure 71e). The estimated kept recreational catches of Blue Swimmer Crab were significantly lower in 2013/14 compared with 2011/12, although estimated released recreational catches were similar in both years (Figure 71a, Table 5).

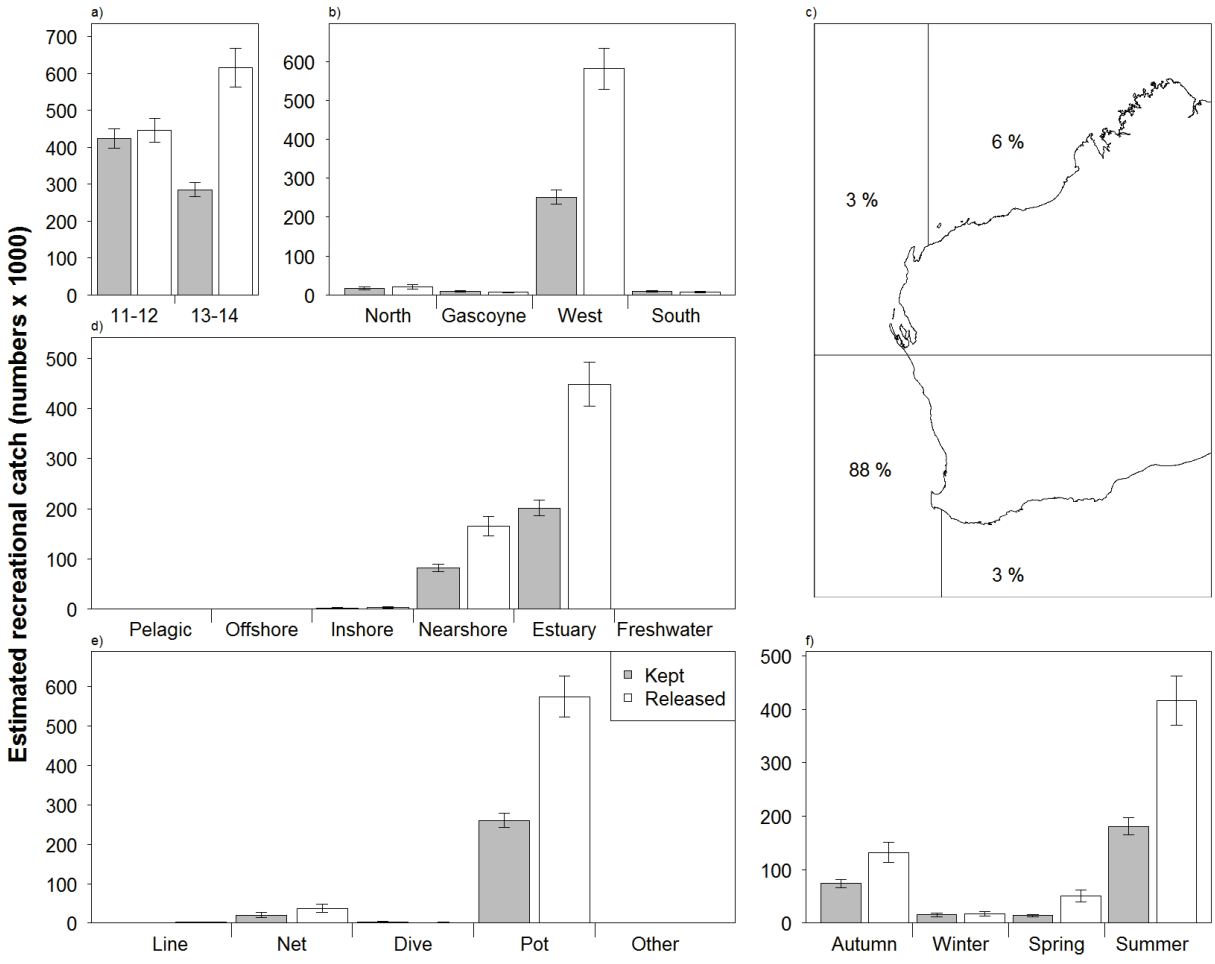

Figure 71. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Blue Swimmer Crab in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.9 Molluscs

6.9.1 Abalone (*Haliotis* spp.)

Abalone includes Roe's Abalone (*Haliotis roei*), Greenlip Abalone (*H. laevigata*) and Brownlip Abalone (*H. rubra conicopora*). The majority of the kept recreational catches of Abalone by RFBL holders aged five years or older occurred in the West Coast (86%), with some catches in the South Coast (14%) (Figure 72b and c). All boat-based recreational catches of Abalone were kept (Figure 72a). All catches were taken from nearshore habitat (Figure 72d). Abalone were harvested from spring to autumn, with higher catches observed in summer (62%) compared with spring (13%) and autumn (25%) (Figure 72f). Catches were taken by diving (70%), with some fishing from other methods (30%) (Figure 72e). The estimated kept and released recreational catches of Abalone were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 72a, Table 5). These estimates do not include catches from shore-based recreational fishers.

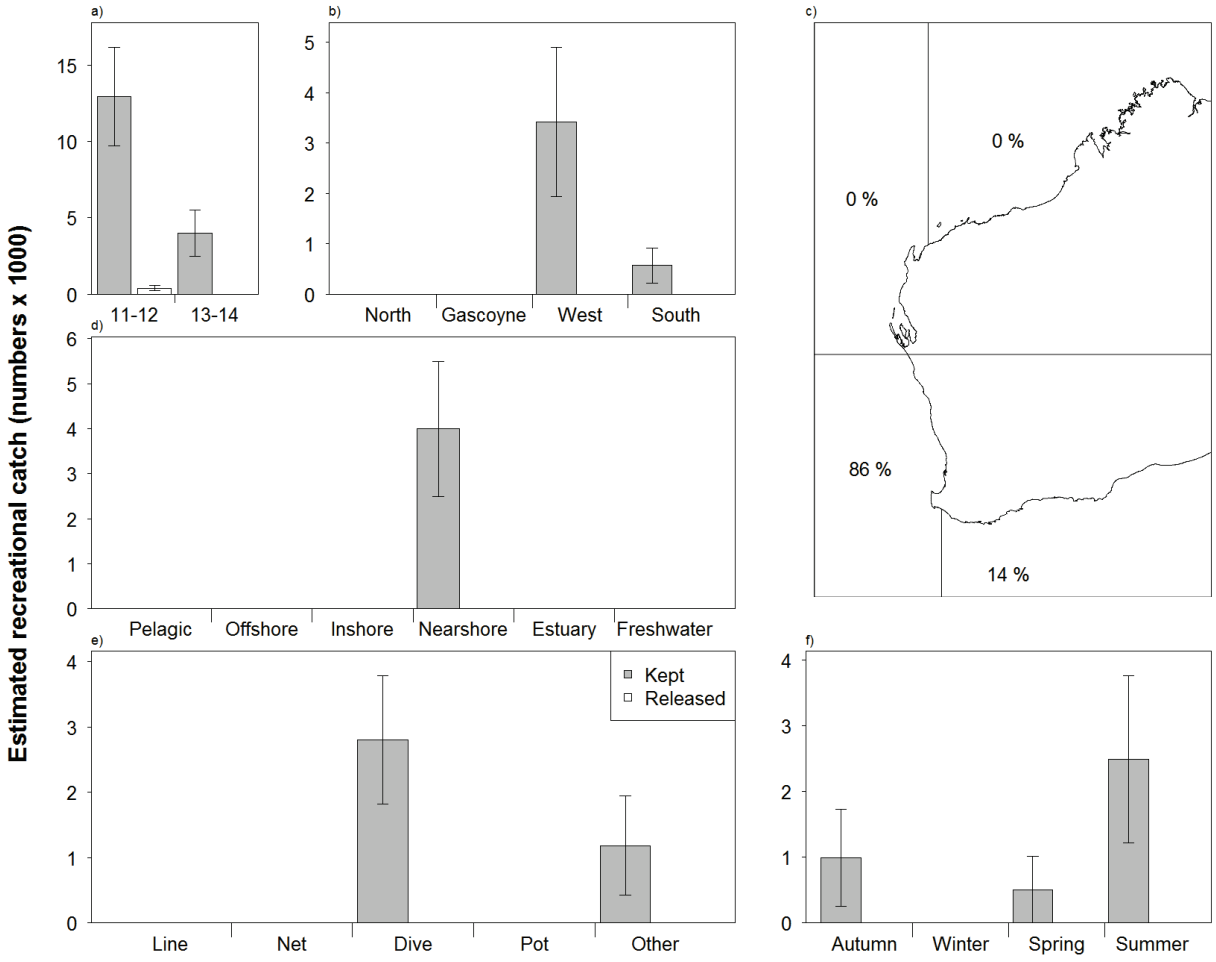

Figure 72. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Abalone in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.10 Cephalopods

6.10.1 Cuttlefish (Order Sepiidae)

The majority of the recreational catches of Cuttlefish by RFBL holders aged five years or older occurred in the West Coast (82%), with some catches in the South Coast (18%) (Figure 73b and c). The majority of the boat-based recreational catches of Cuttlefish were kept (72%) (Figure 73a). Catches were taken predominantly from nearshore habitat (60%), but also inshore demersal habitat (34%) (Figure 73d). Cuttlefish were harvested throughout the year, with higher catches observed in autumn (37%) and winter (47%) compared with spring (3%) and summer (13%) (Figure 73f). Catches were taken by line fishing (93%), with some fishing from diving (7%) (Figure 73e). The estimated kept and released recreational catches of Cuttlefish were significantly lower in 2013/14 compared with 2011/12 (Figure 73a, Table 5).

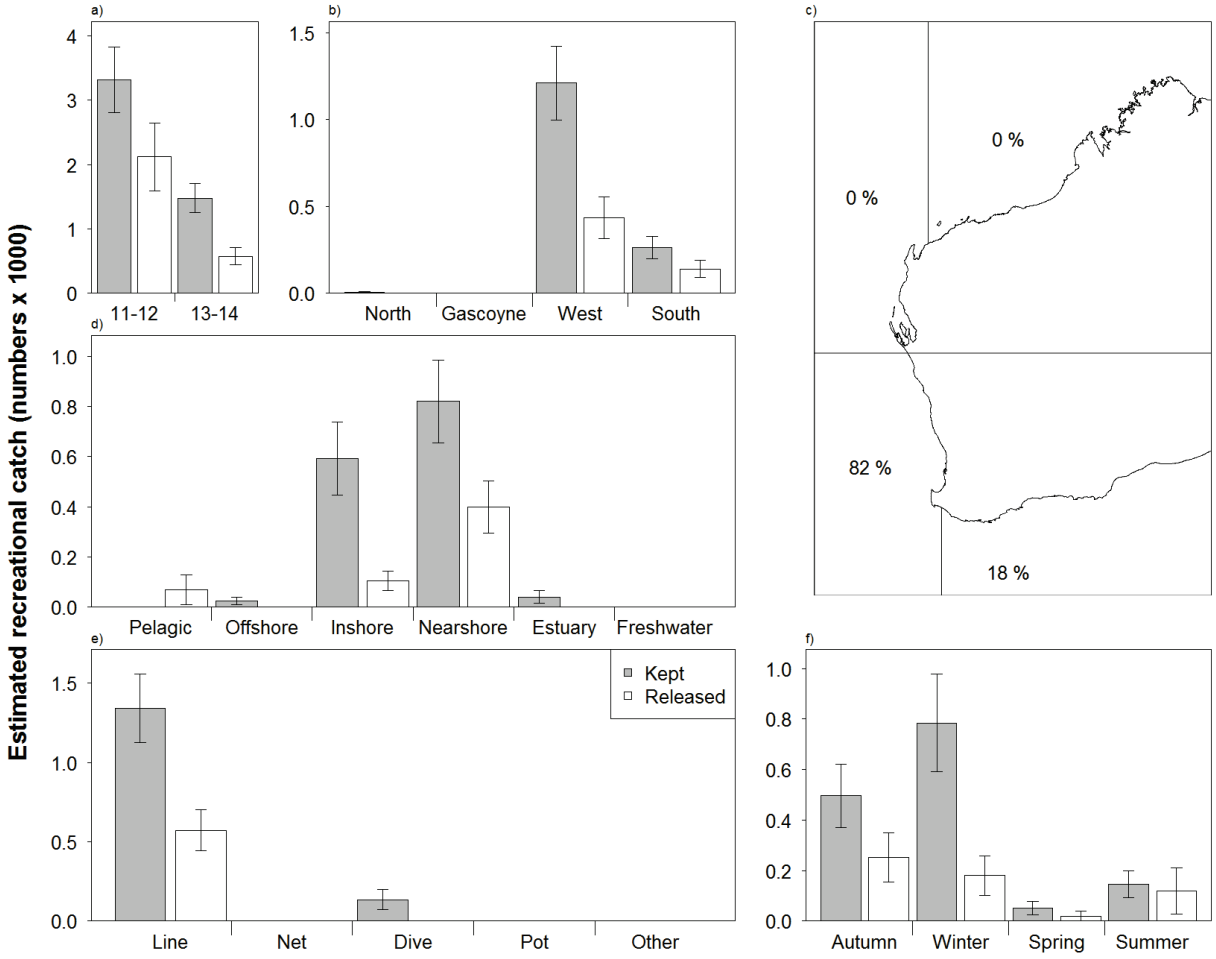

Figure 73. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Cuttlefish in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.10.2 Squid (Order Teuthoidea)

The majority of the recreational catches of Squid by RFBL holders aged five years or older occurred in the West Coast (72%), with some catches in the North Coast (6%), Gascoyne Coast (8%) and South Coast (14%) (Figure 74b and c). The majority of the boat-based recreational catches of Squid were kept (93%) (Figure 74a). Catches were taken predominantly from nearshore habitat (78%), but also inshore demersal (19%) (Figure 74d). Squid were harvested throughout the year, with higher catches observed in autumn (44%) and winter (37%) compared with spring (9%) and summer (10%) (Figure 74f). Catches were taken by line fishing (99%), with some fishing from pots (<1%) (Figure 74e). The estimated kept recreational catches of Squid were significantly lower in 2013/14 compared with 2011/12, although estimated released recreational catches were similar in both years (Figure 74a, Table 5).

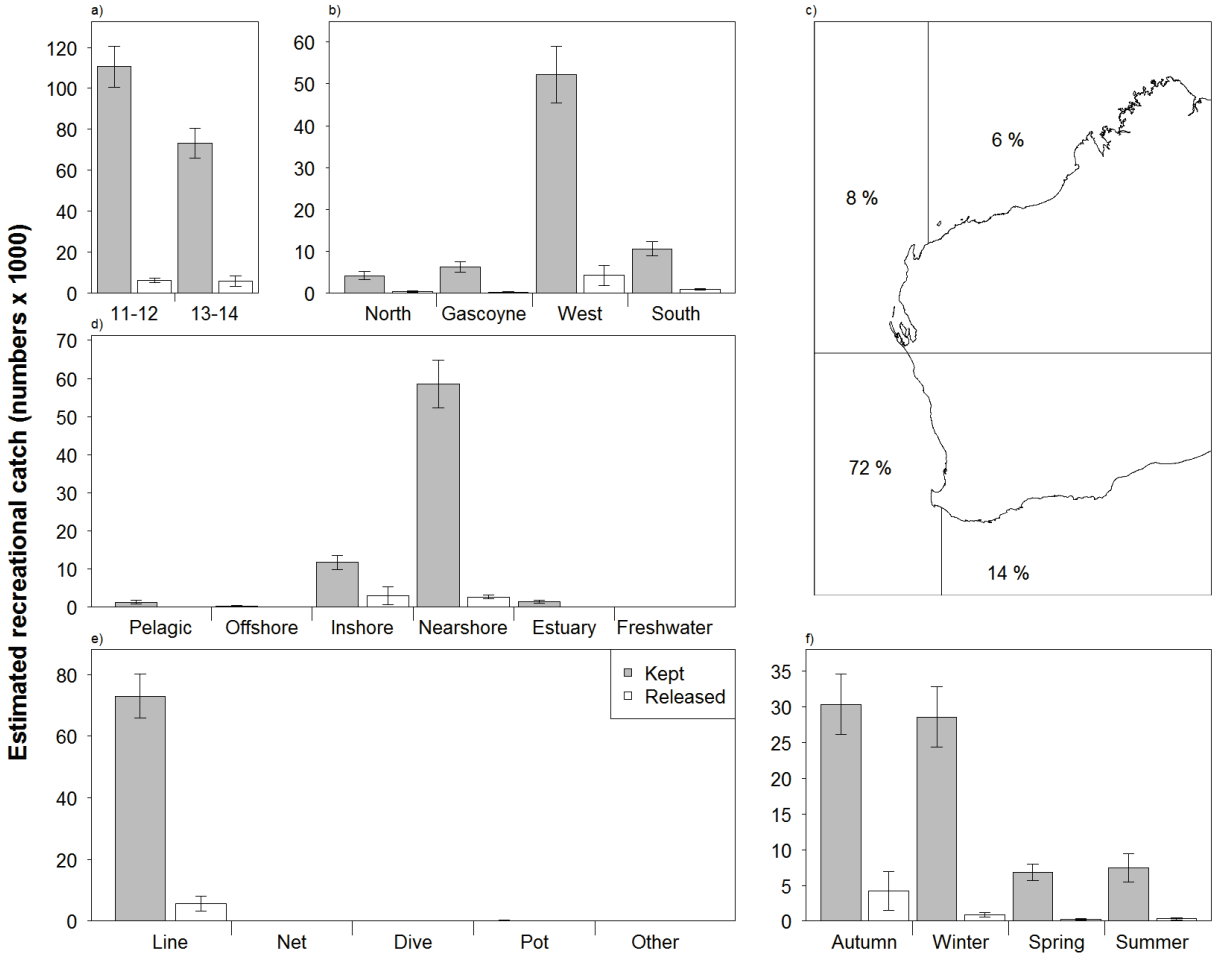

Figure 74. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Squid in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

6.10.3 Octopus (Order Octopodidae)

The majority of the recreational catches of Octopus by RFBL holders aged five years or older occurred in the West Coast (97%), with some catches in the North Coast (2%) and South Coast (1%) (Figure 75b and c). The majority of the boat-based recreational catches of Octopus were kept (91%) (Figure 75a). Catches were taken predominantly from nearshore habitat (88%), but also inshore demersal habitat (11%) (Figure 75d). Octopus were harvested throughout the year, with higher catches observed in summer (72%) compared with autumn (13%), winter (9%) and spring (6%) (Figure 75f). Catches were taken by pots (54%), with some catches taken from diving (30%), line (14%) and other (2%) (Figure 75e). The estimated kept and released recreational catches of Octopus were similar in 2013/14 compared to 2011/12, although the uncertainty for this species is high (Figure 75a, Table 5, Table 5).

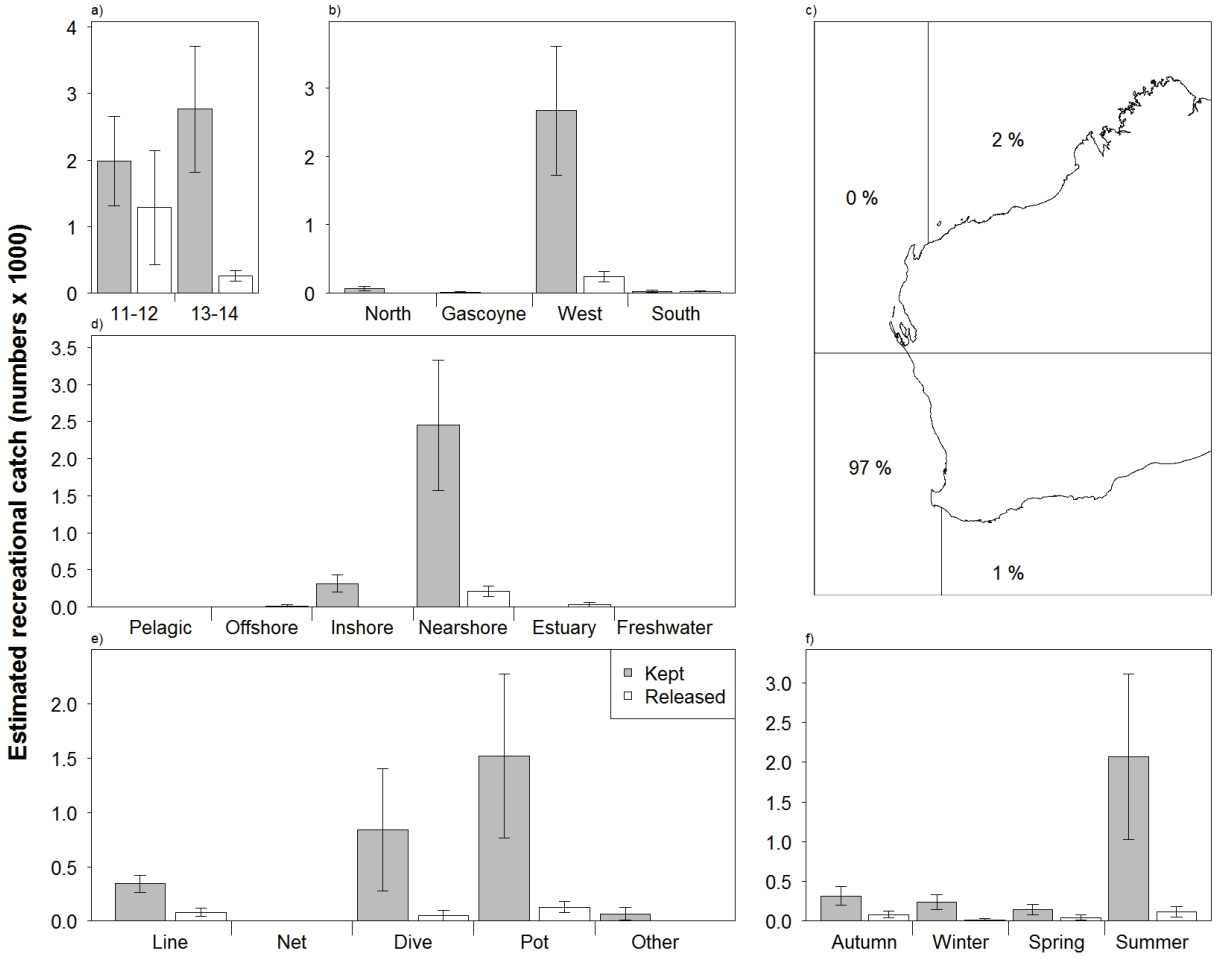

Figure 75. Boat-based kept (grey bars) and released (white bars) recreational catch (numbers x 1000) of Octopus in Western Australia during 2013/14: a) comparison with 2011/12; b) catch by bioregion; c) map of the proportion (%) of kept catch by bioregion; d) catch by habitat; e) catch by method; and f) catch by season.

7 Estimates of Catch by Bioregion

This section provides an overview of the species composition of the recreational catch in each bioregion. The estimated annual catch (total, kept and released numbers) and proportion released during 2013/14 by RFBL holders aged five years or older are presented for each bioregion: North Coast (Table 8), Gascoyne Coast (Table 9), West Coast (Table 10) and South Coast (Table 11).

7.1 North Coast

A total of 8 invertebrate species/taxa were taken in the North Coast. The most common were: Blue Swimmer Crab (54%), Mud Crab (30%) and Squid (14%). These 3 species/taxa accounted for 98% of the total catch (by numbers).

A total of 47 demersal finfish species were taken in the North Coast. The most common were: Grass Emperor (17%), Stripey Snapper (14%), Mangrove Jack (8%), Spangled Emperor (8%), Barcheek Coral Trout (7%), Red Emperor (5%), Blackspot Tuskfish (5%), Rankin Cod (4%), Golden Snapper (3%) and Crimson Snapper (3%). These 10 species/taxa accounted for 76% of the total demersal catch (by numbers).

A total of 43 nearshore and estuarine finfish species were taken in the North Coast. The most common were: Garfish (14%), Blue Threadfin (12%), Trevally (11%), Barramundi (10%), Mullet (10%), Golden Trevally (6%), Northwest Black Bream (4%), Small Baitfish (4%), Black Jewfish (4%) and Whiting (3%). These 10 species/taxa accounted for 79% of the total nearshore and estuarine catch (by numbers).

7.2 Gascoyne Coast

A total of 6 invertebrate species were taken in the Gascoyne Coast. The most common were: Blue Swimmer Crab (55%) and Squid (39%). These 2 species accounted for 94% of the total catch (by numbers).

A total of 51 demersal finfish species were taken in the Gascoyne Coast. The most common were: Grass Emperor (21%), Snapper (14%), Spangled Emperor (13%), Redthroat Emperor (6%), Goldband Snapper (5%), Red Emperor (5%), Baldchin Groper (4%), Rankin Cod (3%), Goldspotted Rockcod (3%) and Stripey Snapper (2%). These 10 species accounted for 66% of the total catch (by numbers). These 10 species/taxa accounted for 77% of the total demersal catch (by numbers).

A total of 52 nearshore and estuarine finfish species were taken in the Gascoyne Coast. The most common were: Chinaman Rockcod (29%), Sea Mullet (13%), School Whiting (12%), Western Butterfish (11%), Mulloway (7%), Golden Trevally (4%), Tailor (4%), Garfish (4%), Western Yellowfin Bream (2%) and Silver Trevally (2%). These 10 species/taxa accounted for 88% of the total nearshore and estuarine catch (by numbers).

7.3 West Coast

A total of 10 invertebrate species were taken in the West Coast. The most common were: Blue Swimmer Crab (48%), Western Rock Lobster (38%) and Squid (10%). These 3 species accounted for 96% of the total catch (by numbers).

A total of 49 demersal finfish species were taken in the West Coast. The top demersal species/taxa (as defined by the West Coast Demersal Scalefish Fishery) were: West Australian Dhufish (27%), Snapper (19%), Breaksea Cod (16%), Baldchin Groper (13%), Emperor (4%), Sea Sweep (2%), Sergeant Baker (2%), Foxfish (2%), Blue Morwong (2%) and Bight Redfish (1%). These species/taxa accounted for 88% of the total demersal catch (by numbers).

A total of 58 nearshore and estuarine finfish species were taken in the West Coast. The most common were: School Whiting (53%), Australian Herring (21%), Silver Trevally (6%), King George Whiting (6%), Sea Mullet (3%), Western King Wrasse (2%), Tailor (2%), Striped Barracuda (1%), Black Bream (1%) and Western Butterfish (1%). These 10 species/taxa accounted for 95% of the total nearshore and estuarine catch (by numbers).

7.4 South Coast

A total of 7 invertebrate species were taken in the South Coast. The most common were: Squid (52%) and Blue Swimmer Crab (43%). These 2 species accounted for 96% of the total catch (by numbers).

A total of 24 demersal finfish species were taken in the South Coast. The most common were: Bight Redfish (36%), Breaksea Cod (22%), Blue Morwong (11%), Snapper (10%), Swallowtail (6%), Sea Sweep (4%), Harlequin Fish (4%), West Australian Dhufish (2%), Sergeant Baker (2%) and Foxfish (1%). These 10 species/taxa accounted for 98% of the total demersal catch (by numbers).

A total of 46 nearshore and estuarine finfish species were taken in the South Coast. The most common were: King George Whiting (38%), Australian Herring (24%), School Whiting (17%), Black Bream (6%), Silver Trevally (5%), Snook (2%), Western Australian Salmon (1%), Southern Bluespotted Flathead (1%), Garfish (1%) and Oriental Bonito (1%). These 10 species/taxa accounted for 95% of the total nearshore and estuarine catch (by numbers).

Table 8. Estimated annual catch (total, kept and released numbers) and proportion released in the North Coast bioregion during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Cephalopod	Cuttlefish	*Sepia spp*	***4***	***3***	*0*	*0*	***4***	***3***	*0%*
	Octopus	*Octopus spp*	***65***	***28***	*0*	*0*	***65***	***28***	*0%*
	Squid	*Order Teuthoidea*	*4,125*	*981*	***379***	***192***	*4,504*	*1,079*	*8%*
Lobster	Western Rock Lobster	*Panulirus cygnus*	***52***	***32***	*0*	*0*	***52***	***32***	*0%*
	Painted Rock Lobster	*Panulirus versicolor*	***291***	***146***	***263***	***117***	*554*	*212*	*47%*
	Ornate Rock Lobster	*Panulirus ornatus*	***104***	***44***	***24***	***11***	***128***	***54***	*19%*
Crab	Blue Swimmer Crab	*Portunus armatus*	16,405	3,575	20,243	5,653	36,648	9,074	*55%*
	Sand Crab	*Ovalipes spp*	*0*	*0*	***669***	***447***	***669***	***447***	*100%*
	Mud Crab	*Scylla olivacea & S serrata*	9,056	1,380	11,244	2,202	20,300	3,279	*55%*
Sharks	Blacktip Reef Shark	*Carcharhinus melanopterus*	*0*	*0*	*187*	*59*	*187*	*59*	*100%*
	Bronze Whaler	*Carcharhinus brachyurus*	**59**	**26**	1,548	494	1,607	495	*96%*
	Dusky Whaler	*Carcharhinus obscurus*	***45***	***40***	*920*	*295*	*965*	*330*	*95%*
	Lemon Shark	*Negaprion acutidens*	*0*	*0*	***92***	***48***	***92***	***48***	*100%*
	Sandbar Shark	*Carcharhinus plumbeus*	*0*	*0*	***112***	***52***	***112***	***52***	*100%*
	Tiger Shark	*Galeocerdo cuvier*	*0*	*0*	***87***	***37***	***87***	***37***	*100%*
	Whitetip Reef Shark	*Triaenodon obesus*	***37***	***19***	*650*	*168*	*687*	*174*	*95%*
	Greynurse Shark PROTECTED	*Carcharias taurus*	*0*	*0*	***386***	***223***	***386***	***223***	*100%*
	Gummy Sharks	*Mustelus antarcticus & M stevensi*	***41***	***18***	***150***	***68***	*191*	*73*	*79%*
	Hammerhead Shark	*Family Sphyrnidae*	*0*	*0*	*31*	*11*	*31*	*11*	*100%*
	Sawshark	*Family Pristiophoridae*	*0*	*0*	***19***	***15***	***19***	***15***	*100%*
	Wobbegong	*Family Orectolobidae*	*0*	*0*	***21***	***12***	***21***	***12***	*100%*
	Other Whaler	*Carcharhinidae - undifferentiated*	**113**	**68**	1,803	369	1,916	375	*94%*
	Other Shark	*Sharks - undifferentiated*	***49***	***32***	***326***	***174***	***375***	***177***	*87%*
Rays	Sawfishes PROTECTED	*Pristidae - undifferentiated*	***7***	***5***	***368***	***183***	***375***	***183***	*98%*
	Western Shovelnose Ray	*Aptychotrema vincentiana*	*0*	*0*	***67***	***31***	***67***	***31***	*100%*
	Other Rays Skates	*Rays - undifferentiated*	*0*	*0*	***17***	***10***	***17***	***10***	*100%*
Barracouta	Barracouta	*Thyrsites atun*	***14***	***11***	*389*	*149*	*403*	*150*	*97%*
Barramundi	Barramundi	*Lates calcarifer*	1,676	373	17,929	6,901	19,605	7,231	*91%*
Billfish	Black Marlin	*Makaira indica*	*0*	*0*	*196*	*51*	*196*	*51*	*100%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Blue Marlin	*Makaira nigricans*	*0*	*0*	***116***	***82***	***116***	***82***	*100%*
	Sailfish	*Istiophorus platypterus*	*0*	*0*	*1,529*	*497*	*1,529*	*497*	*100%*
Bonito	Oriental Bonito	*Sarda orientalis*	***7***	***5***	*0*	*0*	***7***	***5***	*0%*
Bream	Frypan Bream	*Argyrops spinifer*	***33***	***26***	***7***	***6***	***40***	***26***	*18%*
	Northwest Black Bream	*Acanthopagrus palmaris*	677	241	2,308	666	2,985	867	*77%*
	Pink Snapper	*Chrysophrys auratus*	***258***	***149***	***445***	***239***	***703***	***293***	*63%*
	Tarwhine	*Rhabdosargus sarba*	***287***	***149***	***681***	***314***	***968***	***412***	*70%*
	Western Yellowfin Bream	*Acanthopagrus morrisoni*	*291*	*107*	***1,111***	***475***	*1,403*	*508*	*79%*
	Other Bream	*Sparidae - undifferentiated*	***43***	***39***	***58***	***28***	***101***	***48***	*57%*
Threadfin Bream	Rosy Threadfin Bream	*Nemipterus furcosus*	***69***	***36***	***7***	***5***	***76***	***37***	*10%*
Butterfish	Other Butterfish	*Stromateidae - undifferentiated*	*0*	*0*	***35***	***30***	***35***	***30***	*100%*
Catfish	Eeltail Catfishes	*Plotosidae - undifferentiated*	**12**	**6**	4,276	1,215	4,288	1,215	*100%*
	Giant Sea Catfish	*Arius thalassinus*	151	59	5,454	859	5,605	866	*97%*
	Silver Cobbler	*Neoarius midgleyi*	***371***	***220***	*1,191*	*369*	*1,563*	*527*	*76%*
Cobia	Cobia	*Rachycentron canadum*	*324*	*89*	*228*	*84*	*551*	*135*	*41%*
Cod	Barramundi Cod	*Cromileptes altivelis*	*79*	*27*	***575***	***378***	***655***	***390***	*88%*
	Blackspotted Rockcod	*Epinephelus malabaricus*	956	341	6,223	1,448	7,179	1,557	*87%*
	Blacktip Rockcod	*Epinephelus fasciatus*	*0*	*0*	***740***	***662***	***740***	***662***	*100%*
	Chinaman Rockcod	*Epinephelus rivulatus*	357	78	1,842	449	2,199	462	*84%*
	Duskytail Grouper	*Epinephelus bleekeri*	***8***	***8***	*0*	*0*	***8***	***8***	*0%*
	Frostback Rockcod	*Epinephelus bilobatus*	***214***	***155***	***1,561***	***1,154***	***1,775***	***1,307***	*88%*
	Goldspotted Rockcod	*Epinephelus coioides*	1,182	297	5,542	852	6,724	1,069	*82%*
	Potato Rockcod PROTECTED	*Epinephelus tukula*	*0*	*0*	***102***	***43***	***102***	***43***	*100%*
	Queensland Grouper PROTECTED	*Epinephelus lanceolatus*	*0*	*0*	***69***	***39***	***69***	***39***	*100%*
	Rankin Cod	*Epinephelus multinotatus*	1,749	355	1,892	325	3,641	590	*52%*
	Tomato Rockcod	*Cephalopholis sonnerati*	***40***	***23***	*123*	*45*	*163*	*50*	*75%*
	Temperate Rockcods	*Epinephelidae - undifferentiated*	***22***	***16***	***186***	***139***	***208***	***142***	*89%*
	Yellowspotted Rockcod	*Epinephelus areolatus*	***310***	***129***	***1,457***	***636***	***1,767***	***728***	*82%*
Coral Trout	Barcheek Coral Trout	*Plectropomus maculatus*	2,769	393	3,186	476	5,955	717	*54%*
	Yellowedge Coronation Trout	*Variola louti*	*0*	*0*	***159***	***72***	***159***	***72***	*100%*
Emperor	Bluespotted Emperor	*Lethrinus punctulatus*	***346***	***142***	*1,624*	*596*	*1,970*	*695*	*82%*
	Grass Emperor	*Lethrinus laticaudis*	7,043	1,529	13,156	2,459	20,199	3,622	*65%*
	Longnose Emperor	*Lethrinus olivaceus*	***139***	***63***	***443***	***212***	*582*	*226*	*76%*
	Redspot Emperor	*Lethrinus lentjan*	***19***	***15***	***381***	***268***	***399***	***283***	*95%*
	Redthroat Emperor	*Lethrinus miniatus*	*382*	*96*	*1,596*	*576*	*1,979*	*641*	*81%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Robinsons' Seabream	*Gymnocranius grandoculis*	***31***	***19***	***83***	***51***	***114***	***55***	*73%*
	Spangled Emperor	*Lethrinus nebulosus*	3,266	694	**10,317**	**4,292**	13,583	4,887	*76%*
	Yellowtail Emperor	*Lethrinus atkinsoni*	***7***	***5***	*0*	*0*	***7***	***5***	*0%*
	Other Emperor	*Lethrinidae - undifferentiated*	***56***	***44***	***35***	***30***	***91***	***54***	*38%*
Flounder	Largetooth Flounder	*Pseudorhombus arsius*	***35***	***30***	*0*	*0*	***35***	***30***	*0%*
Garfish	Three-by-two Garfish	*Hemiramphus robustus*	***2,058***	***843***	***14***	***11***	***2,072***	***843***	*1%*
	Other Garfish	*Hemiramphidae - undifferentiated*	***181***	***107***	*0*	*0*	***181***	***107***	*0%*
Goatfish	Bluespotted Goatfish	*Upeneichthys vlamingii*	***42***	***33***	*0*	*0*	***42***	***33***	*0%*
Grunter	Western Striped Grunter	*Pelates octolineatus*	*0*	*0*	***30***	***22***	***30***	***22***	*100%*
	Western Sooty Grunter	*Hephaestus jenkinsi*	***89***	***44***	*405*	*134*	*494*	*148*	*82%*
Grunter Bream	Grunter Bream	*Haemulidae - undifferentiated*	***22***	***16***	***439***	***229***	***461***	***238***	*95%*
Gurnard	Gurnard	*Neosebastidae - undifferentiated*	*0*	*0*	***17***	***15***	***17***	***15***	*100%*
Javelinfish	Barred Javelin	*Pomadasys kaakan*	***33***	***18***	***339***	***137***	*372*	*138*	*91%*
	Blotched Javelin	*Pomadasys maculatus*	***7***	***5***	***44***	***32***	***52***	***33***	*86%*
Jewfish	Black Jewfish	*Protonibea diacanthus*	562	130	860	225	1,423	307	*60%*
Leatherjacket	Leatherjacket	*Monacanthidae - undifferentiated*	*0*	*0*	*163*	*62*	*163*	*62*	*100%*
Lizardfish Grinners	Lizardfish Grinners	*Bathysauridae, Synodontidae - undifferentiated*	*0*	*0*	***683***	***274***	***683***	***274***	*100%*
Longtom	Longtom	*Belonidae - undifferentiated*	***11***	***10***	*165*	*54*	*176*	*57*	*94%*
Mackerel	Grey Mackerel	*Scomberomorus semifasciatus*	***72***	***32***	***115***	***77***	***187***	***86***	*61%*
	School Mackerel	*Scomberomorus queenslandicus*	**1,532**	**723**	**4,593**	**2,832**	**6,124**	**3,539**	*75%*
	Shark Mackerel	*Grammatorcynus bicarinatus*	***42***	***25***	***263***	***113***	*305*	*115*	*86%*
	Spanish Mackerel	*Scomberomorus commerson*	2,543	384	4,679	743	7,221	995	*65%*
	Spotted Mackerel	*Scomberomorus munroi*	***79***	***37***	*360*	*122*	*439*	*150*	*82%*
	Wahoo	*Acanthocybium solandri*	*0*	*0*	***15***	***13***	***15***	***13***	*100%*
	Other Mackerels and Tunas	*Scombridae - undifferentiated*	***43***	***25***	***63***	***34***	*106*	*42*	*59%*
Morwong	Dusky Morwong	*Dactylophora nigricans*	***14***	***11***	*0*	*0*	***14***	***11***	*0%*
	Other Morwong	*Cheilodactylidae - undifferentiated*	*0*	*0*	***7***	***6***	***7***	***6***	*100%*
Mullet	Bluetail Mullet	*Valamugil buchanani*	***622***	***277***	***211***	***166***	***833***	***376***	*25%*
	Diamondscale Mullet	*Liza vaigiensis*	***10***	***7***	*0*	*0*	***10***	***7***	*0%*
	Greenback Mullet	*Liza subviridis*	***207***	***151***	***20***	***14***	***227***	***165***	*9%*
	Other Mullet	*Mugilidae - undifferentiated*	*799*	*270*	***293***	***261***	*1,092*	*376*	*27%*
Pearl Perch	Northern Pearl Perch	*Glaucosoma buergeri*	***157***	***78***	*249*	*98*	*406*	*146*	*61%*
Pike	Great Barracuda	*Sphyraena barracuda*	***66***	***35***	*281*	*104*	*347*	*121*	*81%*
	Snook	*Sphyraena novaehollandiae*	***34***	***30***	*0*	*0*	***34***	***30***	*0%*
	Striped Seapike	*Sphyraena obtusata*	***504***	***313***	***618***	***278***	***1,122***	***469***	*55%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Queenfish	Queenfish	*Scomberoides spp*	453	162	1,258	323	1,712	364	74%
Sand Bass	Sand Bass	*Psammoperca waigiensis*	0	0	17	15	17	15	100%
Sergeant Baker	Sergeant Baker	*Aulopus purpurissatus*	0	0	62	38	62	38	100%
Snappers King	Goldband Snapper	*Pristipomoides multidens*	66	30	201	166	267	169	75%
	Rosy Snapper	*Pristipomoides filamentosus*	4	3	50	27	54	28	93%
	Sharptooth Snapper	*Pristipomoides typus*	0	0	48	28	48	28	100%
Snappers Tropical	Brownstripe Snapper	*Lutjanus vitta*	0	0	99	54	99	54	100%
	Crimson Snapper	*Lutjanus erythropterus*	1,322	368	1,571	440	2,893	706	54%
	Darktail Snapper	*Lutjanus lemniscatus*	160	74	46	25	206	93	22%
	Flame Snapper	*Etelis coruscens*	17	15	0	0	17	15	0%
	Golden Snapper	*Lutjanus johnii*	1,340	254	3,667	842	5,007	1,020	73%
	Mangrove Jack	*Lutjanus argentimaculatus*	3,360	630	5,673	1,241	9,032	1,686	63%
	Maori Snapper	*Lutjanus rivulatus*	0	0	7	5	7	5	100%
	Moses' Snapper	*Lutjanus russellii*	831	165	2,743	574	3,573	693	77%
	Red Emperor	*Lutjanus sebae*	2,066	393	2,247	370	4,313	715	52%
	Ruby Snapper	*Etelis carbunculus*	132	93	19	15	151	94	12%
	Saddletail Snapper	*Lutjanus malabaricus*	1,044	221	1,345	424	2,389	549	56%
	Stripey Snapper	*Lutjanus carponotatus*	5,828	1,496	22,542	3,328	28,369	4,558	79%
	Fusiliers	*Caesionidae, Lutjanidae, Symphysanodontidae - undifferentiated*	41	20	430	283	471	284	91%
	Chinamanfish	*Symphorus nematophorus*	419	105	393	95	812	157	48%
Sweep	Banded Sweep	*Scorpis georgiana*	9	8	0	0	9	8	0%
Sweetlips	Painted Sweetlips	*Diagramma labiosum*	1,299	763	495	231	1,794	811	28%
Tailor	Tailor	*Pomatomus saltatrix*	0	0	49	36	49	36	100%
Threadfin	Blue Threadfin	*Eleutheronema tetradactylum*	1,866	403	1,000	276	2,866	593	35%
	King Threadfin	*Polydactylus macrochir*	396	97	690	346	1,086	398	64%
Trevalla	Blue-Eye Trevalla	*Hyperoglyphe antarctica*	0	0	132	79	132	79	100%
Trevally	Amberjack	*Seriola dumerili*	47	34	106	77	153	111	69%
	Giant Trevally	*Caranx ignobilis*	504	148	2,533	767	3,037	889	83%
	Golden Trevally	*Gnathanodon speciosus*	1,001	367	2,741	578	3,742	759	73%
	Rainbow Runner	*Elagatis bipinnulata*	0	0	38	23	38	23	100%
	Turrum	*Carangoides fulvoguttatus*	109	49	799	425	908	468	88%
	Other Trevally	*Carangidae - undifferentiated*	1,705	427	1,813	333	3,518	562	52%
Tripletail	Tripletail	*Lobotes surinamensis*	90	39	52	38	142	72	36%
Trumpeter	Trumpeter	*Latridopsis spp*	0	0	553	483	553	483	100%
Tuna	Dogtooth Tuna	*Gymnosarda unicolor*	47	23	69	60	116	65	60%

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Mackerel Tuna	*Euthynnus affinis*	***664***	***370***	***398***	***207***	***1,062***	***436***	*37%*
	Longtail Tuna	*Thunnus orientalis*	*217*	*65*	*575*	*172*	*792*	*207*	*73%*
	Skipjack Tuna	*Katsuwonus pelamis*	***32***	***21***	*0*	*0*	***32***	***21***	*0%*
	Southern Bluefin Tuna	*Thunnus maccoyii*	***47***	***23***	***5***	***4***	***52***	***24***	*10%*
	Yellowfin Tuna	*Thunnus albacares*	***34***	***17***	***70***	***46***	***104***	***49***	*68%*
Tuskfish Wrasse	Blackspot Tuskfish	*Choerodon schoenleinii*	2,021	457	6,389	1,472	8,410	1,649	*76%*
	Blue Tuskfish	*Choerodon cyanodus*	1,292	289	8,008	2,836	9,301	2,887	*86%*
	Bluespotted Tuskfish	*Choerodon cauteroma*	***119***	***66***	*329*	*128*	*448*	*154*	*73%*
	Brownspotted Wrasse	*Notolabrus parilus*	*0*	*0*	***107***	***68***	***107***	***68***	*100%*
	Humphead Maori Wrasse	*Cheilinus undulatus*	*0*	*0*	***7***	***6***	***7***	***6***	*100%*
	Purple Tuskfish	*Choerodon cephalotes*	***85***	***62***	***323***	***231***	***408***	***253***	*79%*
	Other Tuskfish	*Choerodon spp*	***56***	***44***	*0*	*0*	***56***	***44***	*0%*
	Other Wrasse	*Labridae - undifferentiated*	***55***	***34***	***414***	***183***	*469*	*187*	*88%*
	Bluebarred Parrotfish	*Scarus ghobban spp complex*	***2***	***1***	***259***	***161***	***261***	***161***	*99%*
	Other Parrotfish	*Scaridae - undifferentiated*	*0*	*0*	***116***	***92***	***116***	***92***	*100%*
Whiting	Goldenline Whiting	*Sillago analis*	***313***	***140***	*262*	*90*	*575*	*175*	*45%*
	Western Trumpeter Whiting	*Sillago burrus*	***44***	***24***	***185***	***115***	***229***	***118***	*81%*
	Other Whiting	*Sillaginidae - undifferentiated*	***222***	***162***	***170***	***124***	***392***	***286***	*43%*
Small Baitfish	Small Baitfish	*NO CODE*	***170***	***152***	*0*	*0*	***170***	***152***	*0%*
	Other Herring	*Clupeidae - undifferentiated*	***418***	***296***	***55***	***33***	***472***	***298***	*12%*
Finfish Other	Archerfishes	*Toxotidae - undifferentiated*	*0*	*0*	***34***	***30***	***34***	***30***	*100%*
	Bighead Gurnard Perch	*Neosebastes pandus*	*0*	*0*	***15***	***11***	***15***	***11***	*100%*
	Toadfish Blowfish Pufferfish	*Tetraodontidae - undifferentiated*	*0*	*0*	***82***	***38***	***82***	***38***	*100%*
	Silver Toadfish	*Lagocephalus sceleratus*	*0*	*0*	*87*	*30*	*87*	*30*	*100%*
	Morid Cod	*Moridae - undifferentiated*	***36***	***23***	*100*	*34*	*136*	*46*	*74%*
	Conger Eel	*Conger spp*	*0*	*0*	***17***	***15***	***17***	***15***	*100%*
	Moonfish Batfish	*Lampridae - undifferentiated*	***14***	***11***	***242***	***133***	***256***	***134***	*94%*
	Salmon	*Salmonidae - undifferentiated*	*256*	*70*	*248*	*90*	*504*	*121*	*49%*
	Oxeye Herring	*Megalopidae - undifferentiated*	*0*	*0*	***30***	***22***	***30***	***22***	*100%*

Table 9. Estimated annual catch (total, kept and released numbers) and proportion released in the Gascoyne Coast bioregion during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Cephalopod	Octopus	*Octopus spp*	***11***	***10***	*0*	*0*	***11***	***10***	*0%*
	Squid	*Order Teuthoidea*	6,530	1,246	**231**	**113**	6,761	1,267	*3%*
Lobster	Western Rock Lobster	*Panulirus cygnus*	***193***	***81***	*38*	*15*	*231*	*86*	*16%*
	Painted Rock Lobster	*Panulirus versicolor*	***150***	***122***	***34***	***30***	***184***	***152***	*18%*
	Ornate Rock Lobster	*Panulirus ornatus*	*80*	*26*	*0*	*0*	*80*	*26*	*0%*
Crab	Blue Swimmer Crab	*Portunus armatus*	8,716	2,316	6,425	1,800	15,141	4,070	*42%*
	Mud Crab	*Scylla olivacea & S serrata*	***590***	***243***	***747***	***421***	***1,338***	***658***	*56%*
Sharks	Blacktip Reef Shark	*Carcharhinus melanopterus*	*0*	*0*	***458***	***269***	***458***	***269***	*100%*
	Bronze Whaler	*Carcharhinus brachyurus*	99	38	**4,271**	**2,477**	**4,370**	**2,477**	*98%*
	Dusky Whaler	*Carcharhinus obscurus*	***106***	***49***	*683*	*215*	*789*	*247*	*87%*
	Lemon Shark	*Negaprion acutidens*	*0*	*0*	***258***	***208***	***258***	***208***	*100%*
	Sandbar Shark	*Carcharhinus plumbeus*	***43***	***38***	***143***	***60***	*186*	*71*	*77%*
	Tiger Shark	*Galeocerdo cuvier*	*0*	*0*	***446***	***211***	***446***	***211***	*100%*
	Whitetip Reef Shark	*Triaenodon obesus*	***20***	***11***	*475*	*135*	*495*	*137*	*96%*
	Greynurse Shark PROTECTED	*Carcharias taurus*	*0*	*0*	***14***	***12***	***14***	***12***	*100%*
	Gummy Sharks	*Mustelus antarcticus & M stevensi*	***54***	***27***	***307***	***243***	***361***	***245***	*85%*
	Hammerhead Shark	*Family Sphyrnidae*	*0*	*0*	*61*	*21*	*61*	*21*	*100%*
	Wobbegong	*Family Orectolobidae*	***23***	***21***	***37***	***24***	***60***	***32***	*62%*
	Other Whaler	*Carcharhinidae - undifferentiated*	***60***	***26***	*865*	*189*	*925*	*192*	*93%*
	Other Shark	*Sharks - undifferentiated*	*0*	*0*	*86*	*32*	*86*	*32*	*100%*
Rays	Western Shovelnose Ray	*Aptychotrema vincentiana*	*0*	*0*	***104***	***53***	***104***	***53***	*100%*
Barracouta	Barracouta	*Thyrsites atun*	*0*	*0*	***167***	***74***	***167***	***74***	*100%*
Barramundi	Barramundi	*Lates calcarifer*	*0*	*0*	***49***	***24***	***49***	***24***	*100%*
Bass Groper	Bass Groper	*Polyprion americanus*	***17***	***15***	*0*	*0*	***17***	***15***	*0%*
Billfish	Black Marlin	*Makaira indica*	***6***	***3***	*777*	*271*	*782*	*271*	*99%*
	Blue Marlin	*Makaira nigricans*	*0*	*0*	***3,748***	***3,228***	***3,748***	***3,228***	*100%*
	Sailfish	*Istiophorus platypterus*	***18***	***12***	***405***	***190***	***423***	***190***	*96%*
	Striped Marlin	*Tetrapturus audax*	*0*	*0*	***5***	***3***	***5***	***3***	*100%*
Bonito	Bonito	*Sarda spp*	***52***	***33***	***150***	***100***	***202***	***105***	*74%*
	Oriental Bonito	*Sarda orientalis*	***17***	***15***	***7***	***5***	***24***	***16***	*30%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Bream	Frypan Bream	*Argyrops spinifer*	***104***	***53***	***79***	***38***	*182*	*65*	*43%*
	Northwest Black Bream	*Acanthopagrus palmaris*	***43***	***31***	***405***	***314***	***448***	***345***	*90%*
	Pink Snapper	*Chrysophrys auratus*	9,719	1,048	81,205	12,051	90,924	12,519	*89%*
	Tarwhine	*Rhabdosargus sarba*	***114***	***64***	***399***	***175***	***512***	***231***	*78%*
	Western Yellowfin Bream	*Acanthopagrus morrisoni*	***421***	***177***	*1,555*	*392*	*1,977*	*449*	*79%*
	Other Bream	*Sparidae - undifferentiated*	***121***	***106***	***58***	***40***	***179***	***113***	*32%*
Threadfin Bream	Western Butterfish	*Pentapodus vitta*	***2,117***	***1,265***	*1,320*	*417*	***3,437***	***1,438***	*38%*
Butterfish	Other Butterfish	*Stromateidae - undifferentiated*	*0*	*0*	***288***	***258***	***288***	***258***	*100%*
Catfish	Eeltail Catfishes	*Plotosidae - undifferentiated*	***7***	***7***	***121***	***106***	***128***	***106***	*94%*
	Estuary Cobbler	*Cnidoglanis macrocephalus*	***5***	***3***	***25***	***14***	***30***	***14***	*84%*
	Giant Sea Catfish	*Arius thalassinus*	*0*	*0*	***44***	***18***	***44***	***18***	*100%*
Cobia	Cobia	*Rachycentron canadum*	526	98	262	93	788	157	*33%*
Cod	Blackspotted Rockcod	*Epinephelus malabaricus*	1,316	277	2,780	664	4,096	792	*68%*
	Blacktip Rockcod	*Epinephelus fasciatus*	*16*	*5*	***121***	***76***	***137***	***76***	*89%*
	Chinaman Rockcod	*Epinephelus rivulatus*	5,465	1,542	9,466	1,720	14,931	3,037	*63%*
	Duskytail Grouper	*Epinephelus bleekeri*	***17***	***15***	*0*	*0*	***17***	***15***	*0%*
	Eightbar Grouper	*Hyporthodus octofasciatus*	*115*	*43*	*0*	*0*	*115*	*43*	*0%*
	Frostback Rockcod	*Epinephelus bilobatus*	***220***	***101***	***182***	***141***	***402***	***192***	*45%*
	Goldspotted Rockcod	*Epinephelus coioides*	2,200	585	1,792	437	3,992	887	*45%*
	Potato Rockcod PROTECTED	*Epinephelus tukula*	***6***	***6***	***34***	***30***	***40***	***31***	*85%*
	Queensland Grouper PROTECTED	*Epinephelus lanceolatus*	*0*	*0*	***11***	***10***	***11***	***10***	*100%*
	Rankin Cod	*Epinephelus multinotatus*	2,342	293	838	151	3,180	381	*26%*
	Tomato Rockcod	*Cephalopholis sonnerati*	*479*	*175*	***463***	***281***	***942***	***390***	*49%*
	Temperate Rockcods	*Epinephelidae - undifferentiated*	*0*	*0*	***63***	***35***	***63***	***35***	*100%*
	Yellowspotted Rockcod	*Epinephelus areolatus*	***604***	***385***	***935***	***436***	***1,540***	***672***	*61%*
Coral Trout	Barcheek Coral Trout	*Plectropomus maculatus*	1,239	186	1,153	234	2,392	356	*48%*
	Yellowedge Coronation Trout	*Variola louti*	*407*	*103*	***99***	***45***	*505*	*112*	*19%*
Emperor	Bluespotted Emperor	*Lethrinus punctulatus*	*887*	*326*	*3,113*	*1,109*	*4,001*	*1,343*	*78%*
	Grass Emperor	*Lethrinus laticaudis*	13,918	2,966	23,060	3,366	36,978	5,402	*62%*
	Longnose Emperor	*Lethrinus olivaceus*	***60***	***33***	***68***	***61***	***128***	***78***	*53%*
	Redspot Emperor	*Lethrinus lentjan*	***79***	***53***	***11***	***10***	***91***	***55***	*12%*
	Redthroat Emperor	*Lethrinus miniatus*	3,710	642	8,720	1,554	12,430	1,959	*70%*
	Robinsons' Seabream	*Gymnocranius grandoculis*	1,436	452	**226**	**125**	1,662	515	*14%*
	Spangled Emperor	*Lethrinus nebulosus*	8,693	1,233	15,581	2,918	24,274	3,746	*64%*
	Yellowtail Emperor	*Lethrinus atkinsoni*	***219***	***89***	***165***	***85***	*383*	*144*	*43%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Other Emperor	*Lethrinidae - undifferentiated*	**69**	**38**	**305**	**253**	**374**	**275**	82%
Flathead	Northern Sand Flathead	*Platycephalus endrachtensis*	185	71	203	75	388	113	52%
	Yellowtail Flathead	*Platycephalus westraliae*	167	56	**120**	**73**	287	92	42%
	Other Flathead	*Platycephalidae - undifferentiated*	**139**	**76**	**121**	**92**	**259**	**159**	47%
Garfish	Three-by-two Garfish	*Hemiramphus robustus*	**727**	**472**	0	0	**727**	**472**	0%
Goatfish	Bluespotted Goatfish	*Upeneichthys vlamingii*	**9**	**8**	0	0	**9**	**8**	0%
Grunter	Sea Trumpeter	*Pelsartia humeralis*	0	0	**88**	**44**	**88**	**44**	100%
	Western Striped Grunter	*Pelates octolineatus*	**11**	**10**	**616**	**461**	**627**	**463**	98%
Grunter Bream	Grunter Bream	*Haemulidae - undifferentiated*	0	0	**10**	**5**	**10**	**5**	100%
Gurnard	Gurnard	*Neosebastidae - undifferentiated*	0	0	**17**	**15**	**17**	**15**	100%
Javelinfish	Barred Javelin	*Pomadasys kaakan*	**46**	**40**	**11**	**10**	**57**	**42**	20%
	Blotched Javelin	*Pomadasys maculatus*	**5**	**3**	0	0	**5**	**3**	0%
Jewfish	Mulloway	*Argyrosomus japonicus*	**1,292**	**595**	1,621	648	2,913	1,058	56%
Leatherjacket	Horseshoe Leatherjacket	*Meuschenia hippocrepis*	**8**	**8**	**79**	**51**	**88**	**51**	90%
	Leatherjacket	*Monacanthidae - undifferentiated*	**56**	**32**	**1,076**	**526**	**1,132**	**533**	95%
Lizardfish Grinners	Lizardfish Grinners	*Bathysauridae, Synodontidae - undifferentiated*	**178**	**152**	**389**	**259**	**567**	**300**	69%
Longtom	Longtom	*Belonidae - undifferentiated*	**17**	**15**	**352**	**150**	**369**	**151**	95%
Mackerel	Grey Mackerel	*Scomberomorus semifasciatus*	150	53	**54**	**24**	205	70	27%
	School Mackerel	*Scomberomorus queenslandicus*	1,280	326	651	150	1,932	428	34%
	Shark Mackerel	*Grammatorcynus bicarinatus*	209	58	384	118	593	137	65%
	Spanish Mackerel	*Scomberomorus commerson*	4,138	600	2,715	1,052	6,853	1,421	40%
	Spotted Mackerel	*Scomberomorus munroi*	**247**	**101**	**55**	**32**	**302**	**130**	18%
	Wahoo	*Acanthocybium solandri*	162	42	**133**	**117**	**296**	**137**	45%
	Other Mackerels and Tunas	*Scombridae - undifferentiated*	**197**	**80**	**213**	**87**	409	151	52%
Mahi Mahi	Mahi Mahi	*Coryphaena spp*	239	74	**142**	**62**	381	113	37%
Morwong	Dusky Morwong	*Dactylophora nigricans*	**23**	**20**	**8**	**8**	**31**	**22**	27%
Mullet	Bluetail Mullet	*Valamugil buchanani*	**24**	**14**	0	0	**24**	**14**	0%
	Diamondscale Mullet	*Liza vaigiensis*	**30**	**22**	0	0	**30**	**22**	0%
	Sea Mullet	*Mugil cephalus*	**2,444**	**1,386**	0	0	**2,444**	**1,386**	0%
Pearl Perch	Northern Pearl Perch	*Glaucosoma buergeri*	484	141	139	49	623	157	22%
	West Australian Dhufish	*Glaucosoma hebraicum*	**81**	**47**	**5,570**	**4,253**	**5,651**	**4,297**	99%
Pike	Great Barracuda	*Sphyraena barracuda*	**54**	**26**	98	37	152	46	64%
	Snook	*Sphyraena novaehollandiae*	**46**	**32**	**45**	**20**	**91**	**38**	49%
	Striped Seapike	*Sphyraena obtusata*	**77**	**43**	**60**	**46**	**137**	**82**	44%
Queenfish	Queenfish	*Scomberoides spp*	**11**	**6**	**268**	**117**	**279**	**117**	96%

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Redfish	Swallowtail	*Centroberyx lineatus*	***10***	***7***	*0*	*0*	***10***	***7***	*0%*
Sand Bass	Sand Bass	*Psammoperca waigiensis*	***5***	***3***	***33***	***19***	***38***	***19***	*88%*
Sergeant Baker	Sergeant Baker	*Aulopus purpurissatus*	*0*	*0*	***120***	***60***	***120***	***60***	*100%*
Snappers King	Goldband Snapper	*Pristipomoides multidens*	3,423	736	471	130	3,894	802	*12%*
	Rosy Snapper	*Pristipomoides filamentosus*	*616*	*223*	***287***	***136***	*903*	*325*	*32%*
	Sharptooth Snapper	*Pristipomoides typus*	***65***	***31***	*0*	*0*	***65***	***31***	*0%*
Snappers Tropical	Brownstripe Snapper	*Lutjanus vitta*	*0*	*0*	***11***	***10***	***11***	***10***	*100%*
	Crimson Snapper	*Lutjanus erythropterus*	***325***	***131***	***101***	***52***	*425*	*147*	*24%*
	Darktail Snapper	*Lutjanus lemniscatus*	***56***	***23***	*0*	*0*	***56***	***23***	*0%*
	Golden Snapper	*Lutjanus johnii*	***37***	***16***	*0*	*0*	***37***	***16***	*0%*
	Mangrove Jack	*Lutjanus argentimaculatus*	1,002	211	1,441	387	2,443	551	*59%*
	Maori Snapper	*Lutjanus rivulatus*	***5***	***3***	*0*	*0*	***5***	***3***	*0%*
	Moses' Snapper	*Lutjanus russellii*	***244***	***106***	***132***	***93***	***376***	***185***	*35%*
	Red Emperor	*Lutjanus sebae*	3,159	805	1,727	469	4,886	1,107	*35%*
	Ruby Snapper	*Etelis carbunculus*	***1,009***	***506***	***43***	***39***	***1,053***	***514***	*4%*
	Saddletail Snapper	*Lutjanus malabaricus*	***243***	***119***	***301***	***140***	*544*	*214*	*55%*
	Stripey Snapper	*Lutjanus carponotatus*	1,578	262	3,598	755	5,176	911	*70%*
	Fusiliers	*Caesionidae, Lutjanidae, Symphysanodontidae - undifferentiated*	***37***	***23***	*0*	*0*	***37***	***23***	*0%*
	Chinamanfish	*Symphorus nematophorus*	***340***	***174***	***337***	***194***	***677***	***281***	*50%*
Sweetlips	Painted Sweetlips	*Diagramma labiosum*	1,334	455	2,201	833	3,535	1,263	*62%*
Tailor	Tailor	*Pomatomus saltatrix*	*754*	*287*	***153***	***93***	*907*	*356*	*17%*
Threadfin	Blue Threadfin	*Eleutheronema tetradactylum*	***140***	***92***	***10***	***5***	***149***	***92***	*6%*
	King Threadfin	*Polydactylus macrochir*	***5***	***3***	*0*	*0*	***5***	***3***	*0%*
Trevalla	Blue-Eye Trevalla	*Hyperoglyphe antarctica*	*0*	*0*	***85***	***67***	***85***	***67***	*100%*
Trevally	Amberjack	*Seriola dumerili*	***5***	***3***	***41***	***18***	***45***	***19***	*90%*
	Samsonfish	*Seriola hippos*	*0*	*0*	***40***	***21***	***40***	***21***	*100%*
	Yellowtail Kingfish	*Seriola lalandi*	*0*	*0*	***5***	***4***	***5***	***4***	*100%*
	Giant Trevally	*Caranx ignobilis*	***167***	***68***	*1,012*	*388*	*1,178*	*397*	*86%*
	Golden Trevally	*Gnathanodon speciosus*	789	165	2,592	884	3,382	962	*77%*
	Bludger Trevally	*Carangoides gymnostethus*	***126***	***63***	***234***	***165***	***360***	***178***	*65%*
	Silver Trevally	*Pseudocaranx dentex*	*156*	*59*	*682*	*196*	*838*	*205*	*81%*
	Rainbow Runner	*Elagatis bipinnulata*	***6***	***4***	*0*	*0*	***6***	***4***	*0%*
	Common Dart	*Trachinotus botla*	***6***	***4***	***19***	***8***	*25*	*9*	*75%*
	Yellowtail Scad	*Trachurus novaezelandiae*	*0*	*0*	***224***	***142***	***224***	***142***	*100%*
	Turrum	*Carangoides fulvoguttatus*	*101*	*39*	***77***	***46***	***178***	***78***	*43%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Other Trevally	*Carangidae - undifferentiated*	**13**	**6**	**17**	**8**	29	10	57%
Tuna	Dogtooth Tuna	*Gymnosarda unicolor*	8	3	**5**	**3**	12	4	39%
	Mackerel Tuna	*Euthynnus affinis*	**431**	**199**	552	192	983	294	56%
	Longtail Tuna	*Thunnus orientalis*	280	83	349	133	630	159	55%
	Skipjack Tuna	*Katsuwonus pelamis*	**22**	**11**	**144**	**73**	**166**	**77**	87%
	Southern Bluefin Tuna	*Thunnus maccoyii*	**83**	**39**	0	0	**83**	**39**	0%
	Yellowfin Tuna	*Thunnus albacares*	685	237	**320**	**133**	1,005	283	32%
Tuskfish Wrasse	Baldchin Groper	*Choerodon rubescens*	2,778	527	**9,209**	**4,340**	11,987	4,437	77%
	Blackspot Tuskfish	*Choerodon schoenleinii*	1,452	479	3,770	1,393	5,221	1,650	72%
	Blue Tuskfish	*Choerodon cyanodus*	**634**	**373**	**1,270**	**549**	**1,904**	**907**	67%
	Bluespotted Tuskfish	*Choerodon cauteroma*	**54**	**43**	**12**	**11**	**66**	**53**	18%
	Brownspotted Wrasse	*Notolabrus parilus*	**122**	**56**	**369**	**192**	**492**	**205**	75%
	Foxfish	*Bodianus frenchii*	**43**	**20**	0	0	**43**	**20**	0%
	Goldspot Pigfish	*Bodianus perditio*	**118**	**50**	**133**	**73**	251	100	53%
	Humphead Maori Wrasse	*Cheilinus undulatus*	**16**	**13**	0	0	**16**	**13**	0%
	Purple Tuskfish	*Choerodon cephalotes*	**66**	**42**	**40**	**29**	**106**	**71**	38%
	Southern Maori Wrasse	*Ophthalmolepis lineolatus*	0	0	**42**	**38**	**42**	**38**	100%
	Western Blue Groper	*Achoerodus gouldii*	**46**	**32**	**180**	**152**	**225**	**155**	80%
	Other Tuskfish	*Choerodon spp*	**2**	**1**	**88**	**78**	**90**	**78**	97%
	Other Wrasse	*Labridae - undifferentiated*	**31**	**17**	**1,665**	**938**	**1,696**	**938**	98%
	Bluebarred Parrotfish	*Scarus ghobban spp complex*	**95**	**52**	**167**	**82**	**262**	**117**	64%
	Other Parrotfish	*Scaridae - undifferentiated*	**17**	**15**	0	0	**17**	**15**	0%
Whiting	Goldenline Whiting	*Sillago analis*	**10**	**5**	**10**	**5**	**19**	**11**	50%
	King George Whiting	*Sillaginodes punctata*	**261**	**236**	0	0	**261**	**236**	0%
	School Whiting	*Sillago bassensis, vittata & schomburgkii*	**2,156**	**1,064**	**759**	**469**	**2,915**	**1,524**	26%
	Western Trumpeter Whiting	*Sillago burrus*	**119**	**106**	0	0	**119**	**106**	0%
Small Baitfish	Small Baitfish	*NO CODE*	**86**	**76**	0	0	**86**	**76**	0%
	Other Herring	*Clupeidae - undifferentiated*	**114**	**65**	0	0	**114**	**65**	0%
Finfish Other	Bighead Gurnard Perch	*Neosebastes pandus*	**10**	**5**	0	0	**10**	**5**	0%
	Toadfish Blowfish Pufferfish	*Tetraodontidae - undifferentiated*	0	0	1,807	444	1,807	444	100%
	Silver Toadfish	*Lagocephalus sceleratus*	0	0	**3,864**	**1,744**	**3,864**	**1,744**	100%
	Weeping Toadfish	*Torquigener pleurogramma*	0	0	**270**	**222**	**270**	**222**	100%
	Morid Cod	*Moridae - undifferentiated*	194	68	**139**	**79**	333	106	42%
	Eel	*Anguilliformes & Synbranchiformes*	0	0	**23**	**15**	**23**	**15**	100%
	Salmon	*Salmonidae - undifferentiated*	**34**	**30**	0	0	**34**	**30**	0%

Table 10. Estimated annual catch (total, kept and released numbers) and proportion released in the West Coast bioregion during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Abalone	Roe's Abalone	*Haliotis roei*	***1,717***	***999***	*0*	*0*	***1,717***	***999***	*0%*
	Greenlip Abalone	*Haliotis laevigata*	***350***	***303***	*0*	*0*	***350***	***303***	*0%*
	Brownlip Abalone	*Haliotis rubra conicopora*	***1,356***	***857***	*0*	*0*	***1,356***	***857***	*0%*
Cephalopod	Cuttlefish	*Sepia spp*	1,211	213	434	119	1,644	248	*26%*
	Octopus	*Octopus spp*	2,670	944	241	77	2,911	973	*8%*
	Squid	*Order Teuthoidea*	52,295	6,755	**4,177**	**2,454**	56,473	7,484	*7%*
Lobster	Western Rock Lobster	*Panulirus cygnus*	201,220	20,201	139,744	14,761	340,964	31,840	*41%*
	Southern Rock Lobster	*Jasus edwardsii*	***8,062***	***5,337***	***2,000***	***953***	***10,062***	***5,656***	*20%*
Crab	Blue Swimmer Crab	*Portunus armatus*	251,343	18,387	581,999	52,498	833,342	68,270	*70%*
	Sand Crab	*Ovalipes spp*	***22***	***20***	***52***	***45***	***74***	***49***	*70%*
	Mud Crab	*Scylla olivacea & S serrata*	*1,526*	*531*	*1,605*	*623*	*3,130*	*1,109*	*51%*
Sharks	Blacktip Reef Shark	*Carcharhinus melanopterus*	*0*	*0*	***90***	***40***	***90***	***40***	*100%*
	Bronze Whaler	*Carcharhinus brachyurus*	439	95	739	228	1,178	273	*63%*
	Dusky Whaler	*Carcharhinus obscurus*	***60***	***36***	***289***	***142***	***350***	***153***	*83%*
	Lemon Shark	*Negaprion acutidens*	***17***	***15***	*0*	*0*	***17***	***15***	*0%*
	Sandbar Shark	*Carcharhinus plumbeus*	*0*	*0*	***17***	***15***	***17***	***15***	*100%*
	Tiger Shark	*Galeocerdo cuvier*	***11***	***10***	*137*	*46*	*148*	*48*	*92%*
	Whitetip Reef Shark	*Triaenodon obesus*	***12***	***10***	*0*	*0*	***12***	***10***	*0%*
	Greynurse Shark PROTECTED	*Carcharias taurus*	*0*	*0*	***147***	***122***	***147***	***122***	*100%*
	Gummy Sharks	*Mustelus antarcticus & M stevensi*	634	123	389	117	1,023	192	*38%*
	Hammerhead Shark	*Family Sphyrnidae*	***40***	***23***	*359*	*112*	*399*	*114*	*90%*
	Port Jackson Shark	*Heterodontus portusjacksoni*	**17**	**15**	**4,136**	**2,097**	**4,153**	**2,097**	*100%*
	Whiskery Shark	*Furgaleus macki*	*203*	*78*	***90***	***40***	*293*	*90*	*31%*
	Wobbegong	*Family Orectolobidae*	***55***	***26***	*729*	*168*	*783*	*178*	*93%*
	Other Whaler	*Carcharhinidae - undifferentiated*	***153***	***75***	*973*	*301*	*1,126*	*335*	*86%*
	Other Shark	*Sharks - undifferentiated*	***17***	***11***	*190*	*63*	*207*	*63*	*92%*
Rays	Western Shovelnose Ray	*Aptychotrema vincentiana*	0	0	704	143	704	143	*100%*
	Other Rays Skates	*Rays - undifferentiated*	**51**	**34**	3,395	569	3,446	570	*99%*
Barracouta	Barracouta	*Thyrsites atun*	***645***	***564***	*0*	*0*	***645***	***564***	*0%*
Bass Groper	Bass Groper	*Polyprion americanus*	***20***	***18***	*0*	*0*	***20***	***18***	*0%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Billfish	Blue Marlin	*Makaira nigricans*	*0*	*0*	***11***	***10***	***11***	***10***	*100%*
Bonito	Bonito	*Sarda spp*	***512***	***255***	***86***	***62***	***599***	***262***	*14%*
	Oriental Bonito	*Sarda orientalis*	***207***	***154***	***167***	***137***	***375***	***206***	*45%*
Bream	Black Bream	*Acanthopagrus butcheri*	4,493	998	83,451	24,474	87,944	24,763	*95%*
	Northwest Black Bream	*Acanthopagrus palmaris*	*0*	*0*	***225***	***196***	***225***	***196***	*100%*
	Pink Snapper	*Chrysophrys auratus*	12,666	1,112	33,981	3,342	46,647	3,904	*73%*
	Tarwhine	*Rhabdosargus sarba*	1,056	319	7,870	2,532	8,926	2,586	*88%*
	Western Yellowfin Bream	*Acanthopagrus morrisoni*	***367***	***198***	*1,094*	*356*	*1,460*	*430*	*75%*
	Other Bream	*Sparidae - undifferentiated*	***119***	***66***	***671***	***376***	***789***	***384***	*85%*
Threadfin Bream	Western Butterfish	*Pentapodus vitta*	4,092	1,041	18,480	2,786	22,572	3,102	*82%*
Butterfish	Other Butterfish	*Stromateidae - undifferentiated*	*0*	*0*	***1,680***	***822***	***1,680***	***822***	*100%*
Catfish	Estuary Cobbler	*Cnidoglanis macrocephalus*	***58***	***32***	***17***	***15***	***75***	***36***	*23%*
Cobia	Cobia	*Rachycentron canadum*	***56***	***28***	***57***	***26***	*113*	*39*	*51%*
Cod	Blackspotted Rockcod	*Epinephelus malabaricus*	809	318	2,823	804	3,632	1,053	*78%*
	Blacktip Rockcod	*Epinephelus fasciatus*	***52***	***34***	***271***	***165***	***323***	***168***	*84%*
	Breaksea Cod	*Epinephelides armatus*	10,992	936	11,457	1,299	22,449	1,956	*51%*
	Chinaman Rockcod	*Epinephelus rivulatus*	376	107	3,680	1,030	4,055	1,043	*91%*
	Eightbar Grouper	*Hyporthodus octofasciatus*	***40***	***32***	*0*	*0*	***40***	***32***	*0%*
	Goldspotted Rockcod	*Epinephelus coioides*	**714**	**364**	2,309	719	3,024	853	*76%*
	Harlequin Fish	*Othos dentex*	694	125	**793**	**536**	1,487	552	*53%*
	Queensland Grouper PROTECTED	*Epinephelus lanceolatus*	***35***	***30***	*0*	*0*	***35***	***30***	*0%*
	Rankin Cod	*Epinephelus multinotatus*	*82*	*28*	***108***	***53***	*190*	*60*	*57%*
	Tomato Rockcod	*Cephalopholis sonnerati*	*0*	*0*	***6***	***5***	***6***	***5***	*100%*
	Temperate Rockcods	*Epinephelidae - undifferentiated*	*0*	*0*	***88***	***67***	***88***	***67***	*100%*
	Yellowspotted Rockcod	*Epinephelus areolatus*	*0*	*0*	***57***	***51***	***57***	***51***	*100%*
Coral Trout	Barcheek Coral Trout	*Plectropomus maculatus*	*104*	*39*	***408***	***306***	***511***	***312***	*80%*
	Common Coral Trout	*Plectropomus leopardus*	1,371	260	2,053	469	3,424	647	*60%*
	Yellowedge Coronation Trout	*Variola louti*	***102***	***91***	***73***	***54***	***175***	***106***	*42%*
Emperor	Grass Emperor	*Lethrinus laticaudis*	*99*	*33*	***539***	***252***	***638***	***259***	*84%*
	Redthroat Emperor	*Lethrinus miniatus*	1,945	532	7,822	1,702	9,766	1,888	*80%*
	Robinsons' Seabream	*Gymnocranius grandoculis*	***28***	***18***	***86***	***62***	***114***	***65***	*75%*
	Spangled Emperor	*Lethrinus nebulosus*	405	100	1,916	611	2,321	656	*83%*
Flathead	Northern Sand Flathead	*Platycephalus endrachtensis*	*252*	*89*	***344***	***182***	*596*	*224*	*58%*
	Southern Bluespotted Flathead	*Platycephalus speculator*	1,401	226	16,197	3,059	17,598	3,120	*92%*
	Yellowtail Flathead	*Platycephalus westraliae*	1,250	323	9,941	2,207	11,191	2,343	*89%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Other Flathead	*Platycephalidae - undifferentiated*	391	120	3,425	987	3,816	1,012	*90%*
Flounder	Largetooth Flounder	*Pseudorhombus arsius*	***46***	***24***	***9***	***8***	***54***	***25***	*16%*
	Smalltooth Flounder	*Pseudorhombus jenynsii*	*275*	*71*	*253*	*86*	*528*	*112*	*48%*
	Flounder Sole Flatfish	*Bothidae & Pleuronectidae spp*	***80***	***39***	***57***	***34***	*137*	*51*	*42%*
Garfish	Three-by-two Garfish	*Hemiramphus robustus*	***257***	***124***	*0*	*0*	***257***	***124***	*0%*
	Southern Garfish	*Hyporhamphus melanochir*	*1,628*	*630*	***542***	***241***	*2,171*	*685*	*25%*
	Other Garfish	*Hemiramphidae - undifferentiated*	*0*	*0*	***34***	***30***	***34***	***30***	*100%*
Goatfish	Bluespotted Goatfish	*Upeneichthys vlamingii*	*351*	*105*	*505*	*143*	*857*	*196*	*59%*
Grunter	Sea Trumpeter	*Pelsartia humeralis*	**1,144**	**761**	8,997	1,868	10,141	2,016	*89%*
	Western Striped Grunter	*Pelates octolineatus*	**203**	**182**	13,508	2,749	13,711	2,755	*99%*
	Western Sooty Grunter	*Hephaestus jenkinsi*	***678***	***606***	***2,311***	***1,307***	***2,989***	***1,731***	*77%*
Grunter Bream	Grunter Bream	*Haemulidae - undifferentiated*	***10***	***9***	***1,119***	***912***	***1,129***	***912***	*99%*
Gurnard	Gurnard	*Neosebastidae - undifferentiated*	**126**	**51**	3,203	513	3,329	530	*96%*
Hapuku	Hapuku	*Polyprion oxygeneios*	*0*	*0*	***34***	***22***	***34***	***22***	*100%*
Jewfish	Mulloway	*Argyrosomus japonicus*	*328*	*113*	*463*	*150*	*791*	*235*	*59%*
Leatherjacket	Horseshoe Leatherjacket	*Meuschenia hippocrepis*	***54***	***25***	*443*	*140*	*497*	*143*	*89%*
	Sixspine Leatherjacket	*Meuschenia freycineti*	***35***	***30***	*170*	*67*	*204*	*73*	*83%*
	Leatherjacket	*Monacanthidae - undifferentiated*	291	81	718	165	1,009	189	*71%*
Lizardfish Grinners	Lizardfish Grinners	*Bathysauridae, Synodontidae - undifferentiated*	*0*	*0*	***600***	***398***	***600***	***398***	*100%*
Longtom	Longtom	*Belonidae - undifferentiated*	***51***	***33***	*0*	*0*	***51***	***33***	*0%*
Mackerel	Blue Mackerel	*Scomber australasicus*	***323***	***166***	***543***	***340***	***866***	***484***	*63%*
	School Mackerel	*Scomberomorus queenslandicus*	***54***	***28***	***50***	***38***	***104***	***57***	*48%*
	Shark Mackerel	*Grammatorcynus bicarinatus*	***43***	***22***	***253***	***137***	***296***	***139***	*85%*
	Spanish Mackerel	*Scomberomorus commerson*	2,378	400	967	322	3,345	589	*29%*
	Spotted Mackerel	*Scomberomorus munroi*	***173***	***80***	*0*	*0*	***173***	***80***	*0%*
	Wahoo	*Acanthocybium solandri*	*0*	*0*	***34***	***30***	***34***	***30***	*100%*
	Other Mackerels and Tunas	*Scombridae - undifferentiated*	***102***	***68***	***362***	***168***	*464*	*182*	*78%*
Mahi Mahi	Mahi Mahi	*Coryphaena spp*	*391*	*155*	***215***	***102***	*606*	*232*	*35%*
Morwong	Blue Morwong	*Nemadactylus valenciennesi*	1,054	202	658	196	1,712	326	*38%*
	Dusky Morwong	*Dactylophora nigricans*	***12***	***10***	***101***	***43***	*113*	*44*	*90%*
	Other Morwong	*Cheilodactylidae - undifferentiated*	*0*	*0*	***35***	***32***	***35***	***32***	*100%*
Mullet	Diamondscale Mullet	*Liza vaigiensis*	***116***	***106***	*0*	*0*	***116***	***106***	*0%*
	Sea Mullet	*Mugil cephalus*	***12,590***	***5,295***	***40***	***25***	***12,630***	***5,295***	*0%*
	Yelloweye Mullet	*Aldrichetta forsteri*	***2,609***	***1,289***	***680***	***410***	***3,290***	***1,370***	*21%*
	Other Mullet	*Mugilidae - undifferentiated*	*0*	*0*	***121***	***106***	***121***	***106***	*100%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Pearl Perch	West Australian Dhufish	*Glaucosoma hebraicum*	18,215	1,322	34,893	3,032	53,108	4,118	*66%*
Pike	Great Barracuda	*Sphyraena barracuda*	*0*	*0*	***17***	***15***	***17***	***15***	*100%*
	Snook	*Sphyraena novaehollandiae*	2,636	991	1,174	331	3,810	1,086	*31%*
	Striped Seapike	*Sphyraena obtusata*	**4,727**	**3,052**	**845**	**360**	**5,572**	**3,099**	*15%*
	Other Pike	*Sphyraenidae - undifferentiated*	***92***	***43***	***35***	***30***	***126***	***53***	*27%*
Queenfish	Queenfish	*Scomberoides spp*	***23***	***14***	***17***	***15***	***40***	***21***	*42%*
Redfish	Bight Redfish	*Centroberyx gerrardi*	926	168	953	361	1,879	470	*51%*
	Swallowtail	*Centroberyx lineatus*	*193*	*65*	***102***	***50***	*295*	*82*	*35%*
	Yelloweye Redfish	*Centroberyx australis*	***17***	***15***	*0*	*0*	***17***	***15***	*0%*
Salmon Herring	Australian Herring	*Arripis georgianus*	102,053	10,710	28,550	5,155	130,603	13,742	*22%*
	Western Australian Salmon	*Arripis truttaceus*	*741*	*216*	***2,307***	***971***	*3,048*	*1,050*	*76%*
Sand Bass	Sand Bass	*Psammoperca waigiensis*	***125***	***81***	***29***	***26***	***155***	***93***	*19%*
Sergeant Baker	Sergeant Baker	*Aulopus purpurissatus*	1,119	308	4,420	798	5,539	933	*80%*
Snappers King	Goldband Snapper	*Pristipomoides multidens*	***10***	***9***	*0*	*0*	***10***	***9***	*0%*
	Rosy Snapper	*Pristipomoides filamentosus*	***10***	***5***	***23***	***20***	***32***	***21***	*70%*
Snappers Tropical	Brownstripe Snapper	*Lutjanus vitta*	***17***	***15***	*0*	*0*	***17***	***15***	*0%*
	Crimson Snapper	*Lutjanus erythropterus*	*0*	*0*	***17***	***15***	***17***	***15***	*100%*
	Darktail Snapper	*Lutjanus lemniscatus*	*0*	*0*	***17***	***15***	***17***	***15***	*100%*
	Golden Snapper	*Lutjanus johnii*	***7***	***5***	***11***	***8***	***18***	***13***	*60%*
	Maori Snapper	*Lutjanus rivulatus*	***35***	***32***	*0*	*0*	***35***	***32***	*0%*
	Moses' Snapper	*Lutjanus russellii*	***39***	***24***	***216***	***155***	***255***	***156***	*85%*
	Red Emperor	*Lutjanus sebae*	*65*	*23*	*280*	*105*	*345*	*120*	*81%*
	Saddletail Snapper	*Lutjanus malabaricus*	***7***	***5***	*0*	*0*	***7***	***5***	*0%*
	Stripey Snapper	*Lutjanus carponotatus*	***31***	***20***	***324***	***136***	***355***	***147***	*91%*
	Fusiliers	*Caesionidae, Lutjanidae, Symphysanodontidae - undifferentiated*	***12***	***10***	*113*	*43*	*124*	*46*	*91%*
	Chinamanfish	*Symphorus nematophorus*	***69***	***44***	***132***	***71***	***201***	***94***	*66%*
Sweep	Banded Sweep	*Scorpis georgiana*	***568***	***260***	*836*	*265*	*1,404*	*381*	*60%*
	Sea Sweep	*Scorpis aequipinnis*	1,223	309	1,682	329	2,905	486	*58%*
Sweetlips	Painted Sweetlips	*Diagramma labiosum*	*440*	*154*	***276***	***150***	*716*	*242*	*39%*
Tailor	Tailor	*Pomatomus saltatrix*	7,400	1,348	8,128	1,785	15,528	2,485	*52%*
Trevalla	Blue-Eye Trevalla	*Hyperoglyphe antarctica*	***76***	***49***	*0*	*0*	***76***	***49***	*0%*
Trevally	Amberjack	*Seriola dumerili*	*206*	*81*	***80***	***53***	*285*	*97*	*28%*
	Samsonfish	*Seriola hippos*	1,989	344	7,170	970	9,159	1,147	*78%*
	Yellowtail Kingfish	*Seriola lalandi*	880	201	**1,467**	**1,005**	**2,347**	**1,132**	*62%*
	Giant Trevally	*Caranx ignobilis*	***17***	***16***	***9***	***8***	***26***	***24***	*33%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Golden Trevally	*Gnathanodon speciosus*	*0*	*0*	***34***	***30***	***34***	***30***	*100%*
	Silver Trevally	*Pseudocaranx dentex*	29,251	3,244	20,056	2,987	49,307	5,103	*41%*
	Common Dart	*Trachinotus botla*	***17***	***15***	***45***	***32***	***62***	***35***	*73%*
	Yellowtail Scad	*Trachurus novaezelandiae*	***401***	***209***	***525***	***317***	***927***	***379***	*57%*
	Turrum	*Carangoides fulvoguttatus*	***11***	***10***	***34***	***30***	***45***	***32***	*75%*
	Other Trevally	*Carangidae - undifferentiated*	***68***	***43***	***207***	***131***	***276***	***149***	*75%*
Trumpeter	Trumpeter	*Latridopsis spp*	*0*	*0*	***2,844***	***1,581***	***2,844***	***1,581***	*100%*
Tuna	Mackerel Tuna	*Euthynnus affinis*	*393*	*154*	***298***	***213***	***691***	***309***	*43%*
	Longtail Tuna	*Thunnus orientalis*	***11***	***10***	*0*	*0*	***11***	***10***	*0%*
	Skipjack Tuna	*Katsuwonus pelamis*	*208*	*76*	***305***	***174***	*513*	*192*	*59%*
	Southern Bluefin Tuna	*Thunnus maccoyii*	*180*	*53*	***122***	***84***	*302*	*99*	*40%*
	Yellowfin Tuna	*Thunnus albacares*	*398*	*118*	*370*	*140*	*768*	*226*	*48%*
Tuskfish Wrasse	Baldchin Groper	*Choerodon rubescens*	9,190	828	5,034	652	14,224	1,356	*35%*
	Blackspot Tuskfish	*Choerodon schoenleinii*	*142*	*45*	***57***	***37***	*199*	*73*	*29%*
	Blue Tuskfish	*Choerodon cyanodus*	***49***	***29***	***134***	***88***	***183***	***93***	*73%*
	Brownspotted Wrasse	*Notolabrus parilus*	2,024	449	17,275	1,977	19,299	2,103	*90%*
	Foxfish	*Bodianus frenchii*	1,063	188	1,065	324	2,128	422	*50%*
	Goldspot Pigfish	*Bodianus perditio*	***43***	***31***	***15***	***13***	***57***	***34***	*26%*
	Humphead Maori Wrasse	*Cheilinus undulatus*	*0*	*0*	***407***	***364***	***407***	***364***	*100%*
	Purple Tuskfish	*Choerodon cephalotes*	***64***	***57***	***99***	***77***	***163***	***103***	*61%*
	Southern Maori Wrasse	*Ophthalmolepis lineolatus*	547	206	5,836	1,848	6,383	1,881	*91%*
	Western Blue Groper	*Achoerodus gouldii*	***196***	***89***	***25***	***17***	***222***	***91***	*11%*
	Western King Wrasse	*Coris auricularis*	8,476	2,033	48,153	4,723	56,629	5,561	*85%*
	Other Tuskfish	*Choerodon spp*	*0*	*0*	*0*	*0*	*0*	*0*	*#DIV/0!*
	Other Wrasse	*Labridae - undifferentiated*	***341***	***154***	*3,065*	*745*	*3,406*	*782*	*90%*
	Bluebarred Parrotfish	*Scarus ghobban spp complex*	**3,227**	**2,789**	**4,905**	**2,429**	**8,133**	**5,177**	*60%*
	Other Parrotfish	*Scaridae - undifferentiated*	***436***	***191***	*1,080*	*319*	*1,516*	*459*	*71%*
Whiting	King George Whiting	*Sillaginodes punctata*	27,599	4,501	11,675	2,278	39,274	6,094	*30%*
	School Whiting	*Sillago bassensis, vittata & schomburgkii*	253,064	29,180	67,790	8,911	320,854	36,314	*21%*
	Western Trumpeter Whiting	*Sillago burrus*	**102**	**91**	9,638	1,778	9,739	1,820	*99%*
	Other Whiting	*Sillaginidae - undifferentiated*	***1,183***	***586***	***401***	***231***	***1,584***	***692***	*25%*
Western Blue Devil	Western Blue Devil	*Paraplesiops sinclairi*	***15***	***11***	*168*	*65*	*183*	*66*	*92%*
Small Baitfish	Small Baitfish	*NO CODE*	***34***	***30***	***87***	***79***	***121***	***84***	*72%*
	Australian Sardine	*Sardinops sagax*	***98***	***66***	***45***	***40***	***143***	***83***	*32%*
	Other Herring	*Clupeidae - undifferentiated*	***1,309***	***908***	***279***	***125***	***1,589***	***978***	*18%*
Finfish Other	Bighead Gurnard Perch	*Neosebastes pandus*	**110**	**48**	1,363	308	1,474	321	*93%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Toadfish Blowfish Pufferfish	*Tetraodontidae - undifferentiated*	**203**	**155**	19,762	3,569	19,966	3,579	*99%*
	Silver Toadfish	*Lagocephalus sceleratus*	**95**	**60**	2,533	554	2,628	560	*96%*
	Weeping Toadfish	*Torquigener pleurogramma*	**522**	**478**	9,124	2,924	9,646	2,962	*95%*
	Boarfish	*Pentacerotidae - undifferentiated*	***11***	***10***	*0*	*0*	***11***	***10***	*0%*
	Boxfish	*Ostraciidae - undifferentiated*	***17***	***15***	*0*	*0*	***17***	***15***	*0%*
	Morid Cod	*Moridae - undifferentiated*	***93***	***63***	*643*	*240*	*736*	*248*	*87%*
	Conger Eel	*Conger spp*	*0*	*0*	***68***	***61***	***68***	***61***	*100%*
	Eel	*Anguilliformes & Synbranchiformes*	*0*	*0*	*227*	*81*	*227*	*81*	*100%*
	Moonfish Batfish	*Lampridae - undifferentiated*	***17***	***15***	*0*	*0*	***17***	***15***	*0%*
	Silver Drummer	*Kyphosus spp Complex*	***45***	***32***	*0*	*0*	***45***	***32***	*0%*

Table 11. Estimated annual catch (total, kept and released numbers) and proportion released in the South Coast bioregion during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Abalone	Roe's Abalone	*Haliotis roei*	***217***	***197***	*0*	*0*	***217***	***197***	*0%*
	Greenlip Abalone	*Haliotis laevigata*	***353***	***193***	*0*	*0*	***353***	***193***	*0%*
Cephalopod	Cuttlefish	*Sepia spp*	*263*	*64*	*138*	*49*	*400*	*82*	*34%*
	Octopus	*Octopus spp*	***22***	***15***	***17***	***15***	***39***	***21***	*44%*
	Squid	*Order Teuthoidea*	10,247	1,526	872	215	11,120	1,652	*8%*
Lobster	Western Rock Lobster	*Panulirus cygnus*	***21***	***11***	***9***	***5***	***30***	***16***	*30%*
	Southern Rock Lobster	*Jasus edwardsii*	***5***	***2***	*0*	*0*	***5***	***2***	*0%*
Crab	Blue Swimmer Crab	*Portunus armatus*	8,738	1,769	7,589	2,062	16,327	3,157	*46%*
Sharks	Bronze Whaler	*Carcharhinus brachyurus*	***61***	***29***	***18***	***9***	***79***	***36***	*23%*
	Sandbar Shark	*Carcharhinus plumbeus*	*0*	*0*	***3***	***2***	***3***	***2***	*100%*
	Greynurse Shark PROTECTED	*Carcharias taurus*	***11***	***10***	*0*	*0*	***11***	***10***	*0%*
	Gummy Sharks	*Mustelus antarcticus & M stevensi*	*104*	*26*	***10***	***7***	*114*	*27*	*9%*
	Hammerhead Shark	*Family Sphyrnidae*	***10***	***7***	***3***	***2***	***13***	***8***	*23%*
	Port Jackson Shark	*Heterodontus portusjacksoni*	*0*	*0*	***77***	***44***	***77***	***44***	*100%*
	School Shark	*Galeorhinus galeus*	***8***	***8***	*0*	*0*	***8***	***8***	*0%*
	Whiskery Shark	*Furgaleus macki*	***20***	***15***	*0*	*0*	***20***	***15***	*0%*
	Other Whaler	*Carcharhinidae - undifferentiated*	***7***	***5***	***138***	***66***	***145***	***66***	*95%*
	Other Shark	*Sharks - undifferentiated*	*0*	*0*	***187***	***158***	***187***	***158***	*100%*
Rays	Western Shovelnose Ray	*Aptychotrema vincentiana*	***34***	***30***	***67***	***35***	***101***	***63***	*66%*
	Other Rays Skates	*Rays - undifferentiated*	***20***	***15***	*54*	*19*	*74*	*24*	*73%*
Barracouta	Barracouta	*Thyrsites atun*	*0*	*0*	***37***	***30***	***37***	***30***	*100%*
Billfish	Blue Marlin	*Makaira nigricans*	***5***	***2***	***8***	***4***	***12***	***6***	*62%*
Bonito	Bonito	*Sarda spp*	948	231	**883**	**374**	1,831	472	*48%*
	Oriental Bonito	*Sarda orientalis*	*938*	*238*	***895***	***498***	*1,833*	*574*	*49%*
Bream	Black Bream	*Acanthopagrus butcheri*	7,160	1,950	30,525	5,370	37,685	6,500	*81%*
	Pink Snapper	*Chrysophrys auratus*	2,558	347	7,950	1,727	10,508	1,872	*76%*
	Tarwhine	*Rhabdosargus sarba*	***521***	***381***	***1,958***	***827***	*2,479*	*948*	*79%*
	Western Yellowfin Bream	*Acanthopagrus morrisoni*	***10***	***7***	***17***	***15***	***27***	***17***	*63%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Butterfish	Other Butterfish	*Stromateidae - undifferentiated*	***10***	***7***	*0*	*0*	***10***	***7***	*0%*
Catfish	Estuary Cobbler	*Cnidoglanis macrocephalus*	***10***	***7***	*0*	*0*	***10***	***7***	*0%*
Cod	Blacktip Rockcod	*Epinephelus fasciatus*	***25***	***20***	*64*	*24*	*89*	*31*	*72%*
	Breaksea Cod	*Epinephelides armatus*	5,457	608	2,761	564	8,218	1,108	*34%*
	Eightbar Grouper	*Hyporthodus octofasciatus*	*40*	*15*	***19***	***11***	*59*	*18*	*32%*
	Harlequin Fish	*Othos dentex*	906	119	98	30	1,003	128	*10%*
	Queensland Grouper PROTECTED	*Epinephelus lanceolatus*	***5***	***2***	*0*	*0*	***5***	***2***	*0%*
	Temperate Rockcods	*Epinephelidae - undifferentiated*	***3***	***2***	*300*	*112*	*303*	*112*	*99%*
Emperor	Redthroat Emperor	*Lethrinus miniatus*	***18***	***9***	***183***	***169***	***201***	***169***	*91%*
	Yellowtail Emperor	*Lethrinus atkinsoni*	***13***	***10***	*0*	*0*	***13***	***10***	*0%*
	Other Emperor	*Lethrinidae - undifferentiated*	***53***	***31***	*0*	*0*	***53***	***31***	*0%*
Flathead	Southern Bluespotted Flathead	*Platycephalus speculator*	1,184	266	2,743	563	3,927	735	*70%*
	Yellowtail Flathead	*Platycephalus westraliae*	***139***	***76***	***336***	***191***	***474***	***205***	*71%*
	Other Flathead	*Platycephalidae - undifferentiated*	***87***	***36***	***51***	***23***	*138*	*47*	*37%*
Flounder	Smalltooth Flounder	*Pseudorhombus jenynsii*	*205*	*77*	***52***	***45***	*257*	*90*	*20%*
	Flounder Sole Flatfish	*Bothidae & Pleuronectidae spp*	***47***	***22***	***51***	***34***	***98***	***51***	*52%*
Garfish	Three-by-two Garfish	*Hemiramphus robustus*	*0*	*0*	***9***	***5***	***9***	***5***	*100%*
	Southern Garfish	*Hyporhamphus melanochir*	*1,180*	*392*	*463*	*177*	*1,643*	*524*	*28%*
Goatfish	Bluespotted Goatfish	*Upeneichthys vlamingii*	*303*	*111*	*2,206*	*539*	*2,510*	*619*	*88%*
Grunter	Sea Trumpeter	*Pelsartia humeralis*	***20***	***15***	*1,603*	*533*	*1,623*	*534*	*99%*
	Western Striped Grunter	*Pelates octolineatus*	*0*	*0*	*1,230*	*324*	*1,230*	*324*	*100%*
Gurnard	Gurnard	*Neosebastidae - undifferentiated*	***27***	***12***	*132*	*50*	*159*	*54*	*83%*
Hapuku	Hapuku	*Polyprion oxygeneios*	***120***	***65***	*0*	*0*	***120***	***65***	*0%*
Javelinfish	Blotched Javelin	*Pomadasys maculatus*	*0*	*0*	***31***	***16***	***31***	***16***	*100%*
Leatherjacket	Horseshoe Leatherjacket	*Meuschenia hippocrepis*	*117*	*43*	*734*	*261*	*850*	*269*	*86%*
	Sixspine Leatherjacket	*Meuschenia freycineti*	*75*	*25*	*1,175*	*396*	*1,250*	*404*	*94%*
	Leatherjacket	*Monacanthidae - undifferentiated*	488	163	4,198	1,353	4,686	1,378	*90%*
Mackerel	Blue Mackerel	*Scomber australasicus*	*234*	*66*	*898*	*319*	*1,132*	*334*	*79%*
	School Mackerel	*Scomberomorus queenslandicus*	***40***	***29***	***60***	***44***	***100***	***53***	*60%*
	Shark Mackerel	*Grammatorcynus bicarinatus*	***10***	***7***	***10***	***7***	***20***	***10***	*50%*
	Spanish Mackerel	*Scomberomorus commerson*	***9***	***5***	*0*	*0*	***9***	***5***	*0%*
	Other Mackerels and Tunas	*Scombridae - undifferentiated*	***15***	***8***	***16***	***6***	*30*	*11*	*52%*
Mahi Mahi	Mahi Mahi	*Coryphaena spp*	***7***	***4***	***45***	***24***	***52***	***27***	*87%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Morwong	Blue Morwong	*Nemadactylus valenciennesi*	2,852	301	842	208	3,693	415	*23%*
	Dusky Morwong	*Dactylophora nigricans*	***3***	***2***	*0*	*0*	***3***	***2***	*0%*
	Other Morwong	*Cheilodactylidae - undifferentiated*	***16***	***8***	*0*	*0*	***16***	***8***	*0%*
Mullet	Sea Mullet	*Mugil cephalus*	***478***	***433***	*0*	*0*	***478***	***433***	*0%*
	Yelloweye Mullet	*Aldrichetta forsteri*	***205***	***113***	***26***	***17***	***231***	***115***	*11%*
	Other Mullet	*Mugilidae - undifferentiated*	***34***	***30***	*0*	*0*	***34***	***30***	*0%*
Pearl Perch	West Australian Dhufish	*Glaucosoma hebraicum*	611	139	541	127	1,152	247	*47%*
Pike	Snook	*Sphyraena novaehollandiae*	*2,349*	*849*	***795***	***345***	*3,144*	*1,187*	*25%*
	Striped Seapike	*Sphyraena obtusata*	***322***	***259***	***1,865***	***1,667***	***2,187***	***1,717***	*85%*
	Other Pike	*Sphyraenidae - undifferentiated*	***68***	***30***	*0*	*0*	***68***	***30***	*0%*
Queenfish	Queenfish	*Scomberoides spp*	*94*	*28*	***10***	***7***	*104*	*31*	*10%*
Redfish	Bight Redfish	*Centroberyx gerrardi*	8,965	977	4,058	461	13,023	1,315	*31%*
	Swallowtail	*Centroberyx lineatus*	1,546	320	1,833	303	3,379	481	*54%*
Salmon Herring	Australian Herring	*Arripis georgianus*	30,102	3,977	12,703	1,870	42,805	5,174	*30%*
	Western Australian Salmon	*Arripis truttaceus*	1,576	294	1,886	393	3,461	584	*54%*
Sergeant Baker	Sergeant Baker	*Aulopus purpurissatus*	471	95	2,258	300	2,730	326	*83%*
Snappers Tropical	Fusiliers	*Caesionidae, Lutjanidae, Symphysanodontidae - undifferentiated*	***9***	***5***	***10***	***7***	***19***	***9***	*52%*
Sweep	Banded Sweep	*Scorpis georgiana*	*157*	*46*	*83*	*32*	*240*	*56*	*35%*
	Sea Sweep	*Scorpis aequipinnis*	1,047	190	791	209	1,839	329	*43%*
Sweetlips	Painted Sweetlips	*Diagramma labiosum*	***9***	***5***	*0*	*0*	***9***	***5***	*0%*
Tailor	Tailor	*Pomatomus saltatrix*	*217*	*72*	***335***	***147***	*552*	*167*	*61%*
Trevally	Amberjack	*Seriola dumerili*	***12***	***10***	*0*	*0*	***12***	***10***	*0%*
	Samsonfish	*Seriola hippos*	748	122	757	193	1,505	252	*50%*
	Yellowtail Kingfish	*Seriola lalandi*	*264*	*63*	*315*	*93*	*578*	*121*	*54%*
	Golden Trevally	*Gnathanodon speciosus*	***203***	***182***	*0*	*0*	***203***	***182***	*0%*
	Bludger Trevally	*Carangoides gymnostethus*	***80***	***59***	*0*	*0*	***80***	***59***	*0%*
	Silver Trevally	*Pseudocaranx dentex*	5,542	1,120	6,581	1,460	12,122	2,415	*54%*
	Yellowtail Scad	*Trachurus novaezelandiae*	*514*	*181*	*1,170*	*406*	*1,684*	*449*	*69%*
	Other Trevally	*Carangidae - undifferentiated*	*0*	*0*	***44***	***31***	***44***	***31***	*100%*
Trumpeter	Trumpeter	*Latridopsis spp*	***51***	***45***	***2,624***	***1,606***	***2,675***	***1,608***	*98%*
Tuna	Dogtooth Tuna	*Gymnosarda unicolor*	***7***	***5***	*0*	*0*	***7***	***5***	*0%*
	Mackerel Tuna	*Euthynnus affinis*	***37***	***18***	***23***	***20***	***60***	***34***	*38%*
	Skipjack Tuna	*Katsuwonus pelamis*	***124***	***92***	***82***	***61***	***206***	***153***	*40%*

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
	Southern Bluefin Tuna	*Thunnus maccoyii*	*150*	*41*	***76***	***31***	*227*	*61*	*34%*
	Yellowfin Tuna	*Thunnus albacares*	***34***	***14***	***10***	***7***	*44*	*16*	*23%*
Tuskfish Wrasse	Brownspotted Wrasse	*Notolabrus parilus*	470	145	4,985	895	5,455	948	*91%*
	Foxfish	*Bodianus frenchii*	*331*	*63*	***203***	***93***	*534*	*116*	*38%*
	Goldspot Pigfish	*Bodianus perditio*	***2***	***1***	*0*	*0*	***2***	***1***	*0%*
	Humphead Maori Wrasse	*Cheilinus undulatus*	*0*	*0*	***20***	***15***	***20***	***15***	*100%*
	Southern Maori Wrasse	*Ophthalmolepis lineolatus*	***53***	***32***	*832*	*218*	*884*	*226*	*94%*
	Western Blue Groper	*Achoerodus gouldii*	*104*	*34*	***178***	***122***	***282***	***127***	*63%*
	Western King Wrasse	*Coris auricularis*	**599**	**308**	2,931	636	3,530	804	*83%*
	Other Wrasse	*Labridae - undifferentiated*	***173***	***151***	*359*	*109*	*532*	*186*	*67%*
	Bluebarred Parrotfish	*Scarus ghobban spp complex*	*0*	*0*	***92***	***49***	***92***	***49***	*100%*
	Other Parrotfish	*Scaridae - undifferentiated*	***50***	***37***	***176***	***81***	*226*	*89*	*78%*
Whiting	King George Whiting	*Sillaginodes punctata*	46,469	9,275	16,075	3,902	62,544	12,806	*26%*
	School Whiting	*Sillago bassensis, vittata & schomburgkii*	21,009	5,032	7,336	1,553	28,345	5,711	*26%*
	Other Whiting	*Sillaginidae - undifferentiated*	*0*	*0*	***20***	***15***	***20***	***15***	*100%*
Western Blue Devil	Western Blue Devil	*Paraplesiops sinclairi*	*43*	*14*	*185*	*54*	*228*	*57*	*81%*
Small Baitfish	Small Baitfish	*NO CODE*	*0*	*0*	***38***	***25***	***38***	***25***	*100%*
	Other Herring	*Clupeidae - undifferentiated*	***301***	***243***	***27***	***14***	***328***	***244***	*8%*
Finfish Other	Bighead Gurnard Perch	*Neosebastes pandus*	***27***	***16***	***43***	***22***	*70*	*27*	*62%*
	Toadfish Blowfish Pufferfish	*Tetraodontidae - undifferentiated*	*0*	*0*	*979*	*386*	*979*	*386*	*100%*
	Silver Toadfish	*Lagocephalus sceleratus*	*0*	*0*	***47***	***30***	***47***	***30***	*100%*
	Weeping Toadfish	*Torquigener pleurogramma*	*0*	*0*	***40***	***21***	***40***	***21***	*100%*
	Boarfish	*Pentacerotidae - undifferentiated*	***12***	***6***	*0*	*0*	***12***	***6***	*0%*
	Morid Cod	*Moridae - undifferentiated*	***19***	***9***	*185*	*62*	*204*	*63*	*91%*
	Eel	*Anguilliformes & Synbranchiformes*	***34***	***30***	***20***	***15***	***54***	***34***	*37%*
	Silver Drummer	*Kyphosus spp Complex*	*0*	*0*	***36***	***15***	***36***	***15***	*100%*

8 Estimates of Catch by Zones within Bioregions

This section provides an overview of the species composition of the recreational catch for zones within each bioregion (Figure 76). The estimated annual catch (total, kept and released numbers) and proportion released during 2013/14 by RFBL holders aged five years or older are presented for the: Kimberley (Table 12) and Pilbara (Table 13) zones in the North Coast bioregion; Ningaloo (Table 14) and Carnarvon/Shark Bay (Table 15) zones in the Gascoyne Coast bioregion; Kalbarri (Table 16), Mid West (Table 17), Metro (Table 18) and Southern (Table 19) zones in the West Coast bioregion; and the Albany (Table 20) and Esperance (Table 21) zones in the South Coast bioregion.

Additional small-scale estimates for key Blue Swimmer Crab fisheries and recreational fishing within Marine Parks will be reported separately. The sample size and relative standard error for many species was not adequate to provide representative and robust estimates. Estimates are only provided for species where the sample size and relative standard error was acceptable.

8.1 Kimberley

The total number of species/taxa taken in the Kimberley zone was 129 in 2011/12 and 134 in 13/14. Estimates for species where the sample size and relative standard error was acceptable are given in Table 12. The most common finfish species were: Stripey Snapper, Barramundi, Grass Emperor, Golden Snapper, Mangrove Jack and Spangled Emperor. These six species accounted for 45% of the total catch (by numbers). The most common invertebrate species was Mud Crab, which accounted for 10% of the total catch (by numbers).

8.2 Pilbara

The total number of species/taxa taken in the Pilbara zone was 153 in 2011/12 and 151 in 13/14. Estimates for species where the sample size and relative standard error was acceptable are given in Table 13. The most common finfish species were: Stripey Snapper, Grass Emperor, Spangled Emperor, Barcheek Coral Trout, Blue Tuskfish, Spanish Mackerel, Blackspotted Rockcod, Blackspot Tuskfish and Red Emperor. These nine species accounted for 41% of the total catch (by numbers). The most common invertebrate species were Blue Swimmer Crab and Mud Crab, which accounted for 18% of the total catch (by numbers).

8.3 Ningaloo

The total number of species/taxa taken in the Ningaloo zone was 158 in 2011/12 and 136 in 13/14. Estimates for species where the sample size and relative standard error was acceptable are given in

Table 14. The most common finfish species were: Spangled Emperor, Chinaman Rockcod, Grass Emperor, Redthroat Emperor, Stripey Snapper and Spanish Mackerel. These six species accounted for 41% of the total catch (by numbers). The most common invertebrate species were Blue Swimmer Crab and Squid, which accounted for 16% of the total catch (by numbers).

8.4 Carnarvon/Shark Bay

The total number of species/taxa taken in the Carnarvon/Shark Bay zone was 151 in 2011/12 and 156 in 13/14. Estimates for species where the sample size and relative standard error was acceptable are given in Table 15. The most common finfish species were: Pink Snapper, Grass Emperor, Spangled Emperor, Redthroat Emperor and Baldchin Groper. These five species accounted for 62% of the total catch (by numbers). The most common invertebrate species was Blue Swimmer Crab, which accounted for 4% of the total catch (by numbers).

8.5 Kalbarri

The total number of species/taxa taken in the Kalbarri zone was 83 in 2011/12 and 66 in 13/14. Estimates for species where the sample size and relative standard error was acceptable are given in

Table 16. The most common finfish species were: Black Bream, Spanish Mackerel, Pink Snapper, Tailor and Mulloway. These five species accounted for 23% of the total catch (by numbers). The most common invertebrate species was Western Rock Lobster, which accounted for 42% of the total catch (by numbers).

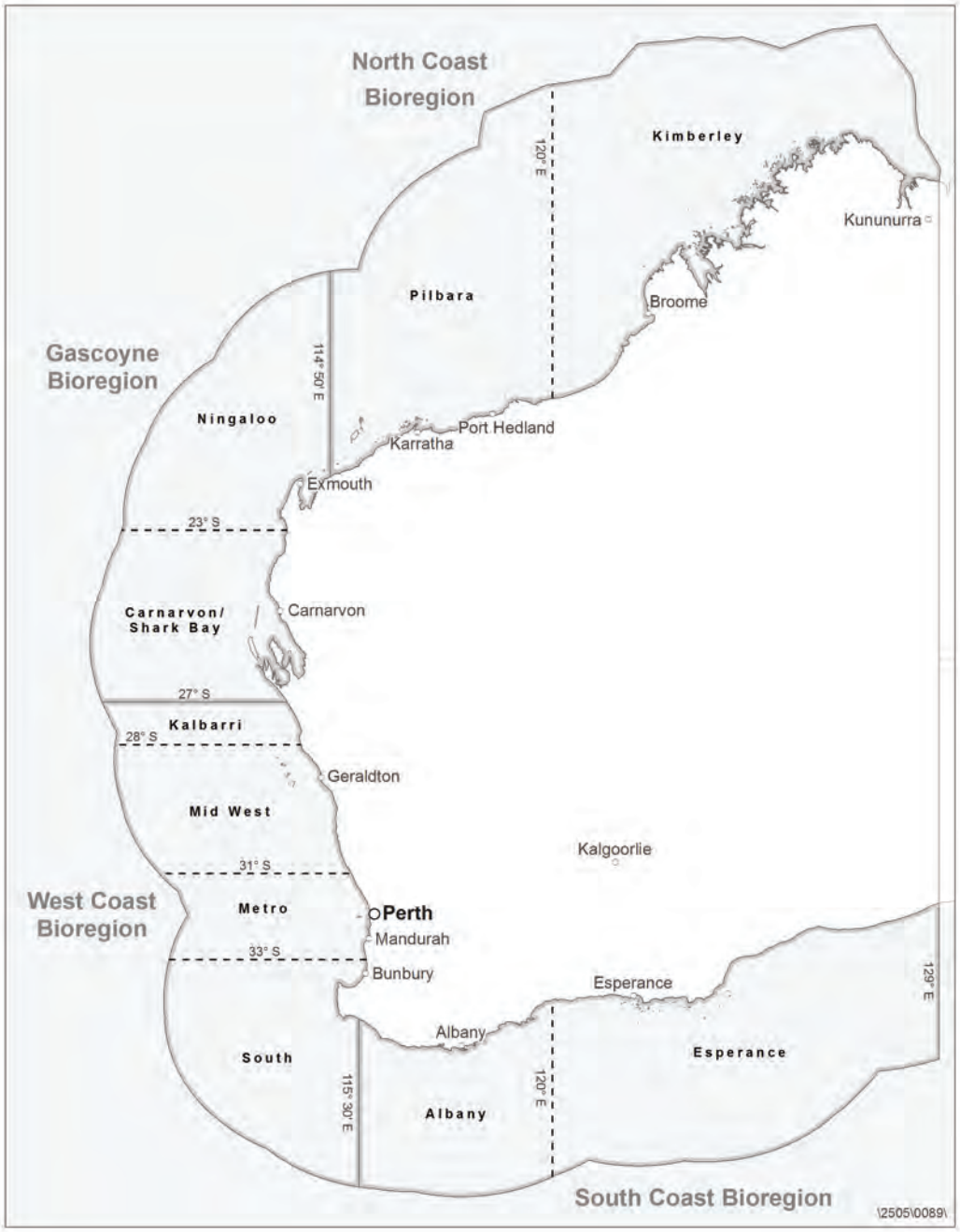

Figure 76. Map of zones within bioregions.

8.6 Mid West

The total number of species/taxa taken in the Mid West zone was 146 in 2011/12 and 128 in 13/14. Estimates for species where the sample size and relative standard error was acceptable are given in Table 17. The most common finfish species were: West Australian Dhufish, Australian Herring, Pink Snapper, School Whiting, Baldchin Groper and Western King Wrasse. These five species accounted for 35% of the total catch (by numbers). The most common invertebrate species was Western Rock Lobster, which accounted for 40% of the total catch (by numbers).

8.7 Metropolitan

The total number of species/taxa taken in the Metropolitan zone was 171 in 2011/12 and 169 in 13/14. Estimates for species where the sample size and relative standard error was acceptable are given in

Table 18. The most common finfish species were: School Whiting, Australian Herring, Western King Wrasse, Black Bream, Silver Trevally, Pink Snapper, King George Whiting, West Australian Dhufish, Western Butterfish, Tailor, Brownspotted Wrasse, Breaksea Cod and Southern Bluespotted Flathead. These 13 species accounted for 34% of the total catch (by numbers). The most common invertebrate species were Blue Swimmer Crab, Western Rock Lobster and Squid, which accounted for 50% of the total catch (by numbers).

8.8 Southern

The total number of species/taxa taken in the Southern zone was 134 in 2011/12 and 120 in 13/14. Estimates for species where the sample size and relative standard error was acceptable are given in

Table 19. The most common finfish species were: School Whiting, Australian Herring, Black Bream, King George Whiting, Silver Trevally, Pink Snapper and West Australian Dhufish. These seven species accounted for 38% of the total catch (by numbers). The most common invertebrate species were Blue Swimmer Crab, Western Rock Lobster and Squid, which accounted for 38% of the total catch (by numbers).

8.9 Albany

The total number of species/taxa taken in the Albany zone was 92 in 2011/12 and 83 in 13/14. Estimates for species where the sample size and relative standard error was acceptable are given in Table 20. The most common finfish species were: King George Whiting, Black Bream, Australian Herring, School Whiting, Silver Trevally and Pink Snapper. These six species accounted for 64% of the total catch (by numbers). The most common invertebrate species were Blue Swimmer Crab and Squid, which accounted for 8% of the total catch (by numbers).

8.10 Esperance

The total number of species/taxa taken in the Esperance zone was 146 in 2011/12 and 128 in 13/14. Estimates for species where the sample size and relative standard error was acceptable are given in Table 21. The most common finfish species were: Australian Herring, Bight Redfish, School Whiting, Black Bream, Silver Trevally, Breaksea Cod, Snook, Brownspotted Wrasse and Swallowtail. These nine species accounted for 65% of the total catch (by numbers). The most common invertebrate species were Blue Swimmer Crab and Squid, which accounted for 10% of the total catch (by numbers).

Table 12. Estimated annual catch (total, kept and released numbers) and proportion released in the Kimberley zone of the North Coast bioregion 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species. These tables only include species where more than 30 diarists reported a catch of that species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Crab	Mud Crab	*Scylla olivacea & S serrata*	5,349	1,058	8,831	2,090	14,180	2,957	*62%*
Barramundi	Barramundi	*Lates calcarifer*	1,582	368	**16,512**	**6,815**	18,094	7,141	*91%*
Catfish	Eeltail Catfishes	*Plotosidae - undifferentiated*	**12**	**6**	1,882	350	1,894	352	*99%*
	Giant Sea Catfish	*Arius thalassinus*	**86**	**36**	2,867	586	2,953	593	*97%*
Cod	Blackspotted Rockcod	*Epinephelus malabaricus*	**595**	**327**	**2,962**	**1,276**	3,557	1,369	*83%*
	Goldspotted Rockcod	*Epinephelus coioides*	336	92	1,299	234	1,636	271	*79%*
Emperor	Grass Emperor	*Lethrinus laticaudis*	4,484	1,360	5,656	1,462	10,140	2,678	*56%*
Mackerel	Spanish Mackerel	*Scomberomorus commerson*	1,015	293	1,134	288	2,149	509	*53%*
Snappers Tropical	Golden Snapper	*Lutjanus johnii*	1,232	249	3,280	808	4,512	982	*73%*
	Mangrove Jack	*Lutjanus argentimaculatus*	1,396	270	3,114	1,048	4,510	1,240	*69%*
	Stripey Snapper	*Lutjanus carponotatus*	4,000	1,436	12,171	2,706	16,171	3,990	*75%*
Trevally	Golden Trevally	*Gnathanodon speciosus*	**657**	**336**	1,617	437	2,274	581	*71%*
	Other Trevally	*Carangidae - undifferentiated*	675	189	737	229	1,412	313	*52%*
Tuskfish Wrasse	Blackspot Tuskfish	*Choerodon schoenleinii*	**714**	**296**	1,794	473	2,508	708	*72%*

Table 13. Estimated annual catch (total, kept and released numbers) and proportion released in the Pilbara zone of the North Coast bioregion during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species. These tables only include species where more than 30 diarists reported a catch of that species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Crab	Blue Swimmer Crab	*Portunus armatus*	15,454	3,517	19,220	5,596	34,673	8,962	55%
	Mud Crab	*Scylla olivacea & S serrata*	3,707	810	2,413	638	6,120	1,271	39%
Cod	Blackspotted Rockcod	*Epinephelus malabaricus*	361	93	3,261	662	3,622	719	90%
	Chinaman Rockcod	*Epinephelus rivulatus*	244	65	1,700	442	1,944	448	87%
	Goldspotted Rockcod	*Epinephelus coioides*	845	281	4,243	803	5,088	1,016	83%
	Rankin Cod	*Epinephelus multinotatus*	1,479	329	1,527	308	3,006	559	51%
Coral Trout	Barcheek Coral Trout	*Plectropomus maculatus*	2,453	383	2,768	451	5,221	685	53%
Emperor	Grass Emperor	*Lethrinus laticaudis*	2,559	682	7,500	1,960	10,059	2,411	75%
	Spangled Emperor	*Lethrinus nebulosus*	3,012	683	9,306	4,250	12,318	4,838	76%
Mackerel	Spanish Mackerel	*Scomberomorus commerson*	1,527	246	3,545	665	5,072	826	70%
Snappers Tropical	Mangrove Jack	*Lutjanus argentimaculatus*	1,964	555	2,559	567	4,522	1,045	57%
	Red Emperor	*Lutjanus sebae*	1,955	385	2,092	359	4,047	697	52%
	Stripey Snapper	*Lutjanus carponotatus*	1,828	398	10,370	1,899	12,198	2,151	85%
Trevally	Other Trevally	*Carangidae - undifferentiated*	1,030	380	1,076	240	2,106	463	51%
Tuskfish Wrasse	Blackspot Tuskfish	*Choerodon schoenleinii*	1,307	338	4,595	1,385	5,902	1,479	78%
	Blue Tuskfish	*Choerodon cyanodus*	655	189	7,055	2,791	7,710	2,820	92%

Table 14. Estimated annual catch (total, kept and released numbers) and proportion released in the Ningaloo zone of the Gascoyne Coast bioregion during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species. These tables only include species where more than 30 diarists reported a catch of that species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Cephalopod	Squid	*Order Teuthoidea*	5,807	1,168	**231**	**113**	**6,038**	**1,191**	4%
Cod	Chinaman Rockcod	*Epinephelus rivulatus*	5,145	1,524	**7,883**	**1,613**	**13,028**	**2,936**	61%
	Rankin Cod	*Epinephelus multinotatus*	1,068	202	**516**	**132**	**1,584**	**282**	33%
Coral Trout	Barcheek Coral Trout	*Plectropomus maculatus*	589	86	**863**	**209**	**1,453**	**258**	59%
Emperor	Grass Emperor	*Lethrinus laticaudis*	2,004	446	**5,405**	**1,296**	**7,409**	**1,553**	73%
	Redthroat Emperor	*Lethrinus miniatus*	2,787	597	**5,725**	**1,301**	**8,512**	**1,685**	67%
	Spangled Emperor	*Lethrinus nebulosus*	6,136	975	**10,064**	**1,997**	**16,200**	**2,654**	62%
Mackerel	Spanish Mackerel	*Scomberomorus commerson*	2,048	355	**2,179**	**1,040**	**4,227**	**1,305**	52%
Snappers King	Goldband Snapper	*Pristipomoides multidens*	3,287	723	**454**	**129**	**3,741**	**789**	12%
Snappers Tropical	Red Emperor	*Lutjanus sebae*	2,538	784	**1,190**	**342**	**3,728**	**1,038**	32%
Trevally	Golden Trevally	*Gnathanodon speciosus*	694	161	**2,188**	**846**	**2,882**	**925**	76%

Table 15. Estimated annual catch (total, kept and released numbers) and proportion released in the Carnarvon/Shark Bay zone of the Gascoyne Coast bioregion during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species. These tables only include species where more than 30 diarists reported a catch of that species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Bream	Pink Snapper	*Chrysophrys auratus*	9,405	1,035	**79,855**	**11,938**	**89,259**	**12,406**	89%
Cod	Blackspotted Rockcod	*Epinephelus malabaricus*	1,004	259	**1,867**	**467**	**2,871**	**617**	65%
	Goldspotted Rockcod	*Epinephelus coioides*	1,100	264	**1,111**	**265**	**2,210**	**438**	50%
	Rankin Cod	*Epinephelus multinotatus*	1,274	211	**322**	**71**	**1,596**	**253**	20%
Coral Trout	Barcheek Coral Trout	*Plectropomus maculatus*	650	164	**289**	**102**	**939**	**242**	31%
Emperor	Grass Emperor	*Lethrinus laticaudis*	11,914	2,917	**17,654**	**3,086**	**29,569**	**5,142**	60%
	Redthroat Emperor	*Lethrinus miniatus*	923	229	**2,995**	**837**	**3,918**	**984**	76%
	Spangled Emperor	*Lethrinus nebulosus*	2,556	713	**5,518**	**1,954**	**8,074**	**2,410**	68%
Mackerel	Spanish Mackerel	*Scomberomorus commerson*	2,090	479	**535**	**120**	**2,625**	**544**	20%
Snappers Tropical	Stripey Snapper	*Lutjanus carponotatus*	702	159	**2,200**	**573**	**2,902**	**647**	76%
Tuskfish Wrasse	Baldchin Groper	*Choerodon rubescens*	2,335	491	**8,496**	**4,296**	**10,831**	**4,371**	78%

Table 16. Estimated annual catch (total, kept and released numbers) and proportion released in the Kalbarri zone of the West Coast bioregion during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species. There were less than 30 diarists for all species in this zone; however key species are displayed.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Bream	Pink Snapper	*Chrysophrys auratus*	***221***	***98***	***40***	***26***	***261***	***108***	*15%*
Pearl Perch	West Australian Dhufish	*Glaucosoma hebraicum*	***136***	***64***	***59***	***32***	***194***	***83***	*30%*
Snappers Tropical	Red Emperor	*Lutjanus sebae*	***17***	***15***	*0*	*0*	***17***	***15***	*0%*
Tuskfish Wrasse	Baldchin Groper	*Choerodon rubescens*	***157***	***69***	***271***	***171***	***428***	***234***	*63%*

Table 17. Estimated annual catch (total, kept and released numbers) and proportion released in the Mid West zone of the West Coast bioregion during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species. These tables only include species where more than 30 diarists reported a catch of that species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Lobster	Western Rock Lobster	*Panulirus cygnus*	**49,379**	**8,974**	37,768	8,539	87,147	15,532	43%
Bream	Pink Snapper	*Chrysophrys auratus*	**3,046**	**394**	8,110	1,962	11,156	2,169	73%
Cod	Breaksea Cod	*Epinephelides armatus*	**2,070**	**367**	2,577	561	4,646	773	55%
Coral Trout	Common Coral Trout	*Plectropomus leopardus*	**1,281**	**256**	1,964	464	3,245	641	61%
Emperor	Redthroat Emperor	*Lethrinus miniatus*	**1,572**	**514**	6,476	1,512	8,048	1,691	80%
Mackerel	Spanish Mackerel	*Scomberomorus commerson*	**975**	**208**	126	73	1,101	231	11%
Pearl Perch	West Australian Dhufish	*Glaucosoma hebraicum*	**6,414**	**689**	11,700	1,614	18,114	2,179	65%
Trevally	Samsonfish	*Seriola hippos*	**253**	**78**	1,291	332	1,544	366	84%
	Silver Trevally	*Pseudocaranx dentex*	**1,658**	**391**	669	171	2,327	483	29%
Tuskfish Wrasse	Baldchin Groper	*Choerodon rubescens*	**5,808**	**676**	3,600	579	9,408	1,166	38%
	Western King Wrasse	*Coris auricularis*	**2,712**	**1,631**	4,762	1,696	7,474	2,580	64%

Table 18. Estimated annual catch (total, kept and released numbers) and proportion released in the Metropolitan zone of the West Coast bioregion during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species. These tables only include species where more than 30 diarists reported a catch of that species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Cephalopod	Cuttlefish	*Sepia spp*	**1,014**	**206**	224	77	1,237	223	18%
	Squid	*Order Teuthoidea*	**39,403**	**4,834**	3,625	2,425	43,028	5,719	8%
Lobster	Western Rock Lobster	*Panulirus cygnus*	**120,102**	**14,719**	89,364	11,376	209,465	24,093	43%
Crab	Blue Swimmer Crab	*Portunus armatus*	**218,150**	**17,411**	476,497	47,572	694,648	62,468	69%
Sharks	Bronze Whaler	*Carcharhinus brachyurus*	**291**	**75**	560	215	851	254	66%
	Port Jackson Shark	*Heterodontus portusjacksoni*	**0**	**0**	3,799	2,072	3,799	2,072	100%
Rays	Other Rays Skates	*Rays - undifferentiated*	**34**	**30**	1,839	319	1,873	320	98%
Bream	Black Bream	*Acanthopagrus butcheri*	**2,190**	**537**	50,193	17,793	52,383	17,926	96%
	Pink Snapper	*Chrysophrys auratus*	**7,409**	**932**	17,624	2,021	25,033	2,496	70%
	Tarwhine	*Rhabdosargus sarba*	**721**	**276**	2,878	762	3,599	885	80%
Threadfin Bream	Western Butterfish	*Pentapodus vitta*	**3,226**	**812**	16,887	2,722	20,114	2,964	84%
Cod	Breaksea Cod	*Epinephelides armatus*	**7,471**	**760**	7,662	1,078	15,133	1,606	51%
Flathead	Southern Bluespotted Flathead	*Platycephalus speculator*	**733**	**157**	11,843	2,742	12,575	2,788	94%
	Yellowtail Flathead	*Platycephalus westraliae*	**993**	**305**	8,869	2,158	9,862	2,292	90%
	Other Flathead	*Platycephalidae - undifferentiated*	**279**	**99**	2,022	619	2,300	653	88%
Grunter	Sea Trumpeter	*Pelsartia humeralis*	**364**	**304**	6,517	1,656	6,881	1,683	95%
	Western Striped Grunter	*Pelates octolineatus*	**203**	**181**	7,242	1,734	7,445	1,744	97%
Morwong	Blue Morwong	*Nemadactylus valenciennesi*	**501**	**153**	142	50	643	163	22%
Pearl Perch	West Australian Dhufish	*Glaucosoma hebraicum*	**8,584**	**944**	18,500	2,150	27,084	2,900	68%
Salmon Herring	Australian Herring	*Arripis georgianus*	**74,400**	**9,872**	22,575	5,003	96,975	12,851	23%
Sergeant Baker	Sergeant Baker	*Aulopus purpurissatus*	**770**	**279**	2,572	487	3,342	664	77%
Sweep	Sea Sweep	*Scorpis aequipinnis*	**993**	**294**	1,373	309	2,366	459	58%
Tailor	Tailor	*Pomatomus saltatrix*	**6,071**	**1,251**	5,945	1,296	12,016	2,029	49%
Trevally	Samsonfish	*Seriola hippos*	**1,289**	**293**	4,926	823	6,215	957	79%
	Silver Trevally	*Pseudocaranx dentex*	**20,937**	**2,973**	15,734	2,791	36,671	4,740	43%
Tuskfish Wrasse	Baldchin Groper	*Choerodon rubescens*	**3,059**	**370**	1,094	215	4,153	497	26%
	Brownspotted Wrasse	*Notolabrus parilus*	**1,359**	**389**	13,334	1,763	14,693	1,851	91%
	Foxfish	*Bodianus frenchii*	**694**	**157**	880	306	1,574	390	56%
	Western King Wrasse	*Coris auricularis*	**4,644**	**1,026**	39,789	4,236	44,433	4,632	90%

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Whiting	King George Whiting	*Sillaginodes punctata*	**16,063**	**2,109**	5,023	1,273	21,086	2,741	24%
	School Whiting	*Sillago bassensis, vittata & schomburgkii*	**198,072**	**26,537**	49,253	6,929	247,326	32,334	20%
	Western Trumpeter Whiting	*Sillago burrus*	**102**	**90**	6,944	1,555	7,046	1,602	99%
Finfish Other	Toadfish Blowfish Pufferfish	*Tetraodontidae - undifferentiated*	**34**	**30**	16,332	3,343	16,366	3,343	100%
	Silver Toadfish	*Lagocephalus sceleratus*	**51**	**45**	1,511	456	1,562	459	97%

Table 19. Estimated annual catch (total, kept and released numbers) and proportion released in the Southern zone of the West Coast bioregion during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species. These tables only include species where more than 30 diarists reported a catch of that species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Cephalopod	Squid	*Order Teuthoidea*	12,569	4,442	553	233	13,122	4,478	4%
Lobster	Western Rock Lobster	*Panulirus cygnus*	30,061	9,717	11,781	3,162	41,842	12,388	28%
Crab	Blue Swimmer Crab	*Portunus armatus*	31,810	5,076	103,265	20,475	135,075	25,022	76%
Rays	Other Rays Skates	*Rays - undifferentiated*	17	16	1,499	468	1,516	468	99%
Bream	Pink Snapper	*Chrysophrys auratus*	1,990	336	8,208	1,638	10,197	1,793	80%
Cod	Breaksea Cod	*Epinephelides armatus*	1,420	227	970	272	2,390	429	41%
Flathead	Southern Bluespotted Flathead	*Platycephalus speculator*	654	160	3,900	1,229	4,554	1,277	86%
Pearl Perch	West Australian Dhufish	*Glaucosoma hebraicum*	3,081	389	4,634	617	7,716	938	60%
Salmon Herring	Australian Herring	*Arripis georgianus*	23,021	3,571	5,580	1,063	28,600	4,231	20%
Trevally	Samsonfish	*Seriola hippos*	447	103	953	269	1,400	309	68%
	Silver Trevally	*Pseudocaranx dentex*	6,643	1,165	3,653	1,004	10,297	1,732	35%
Tuskfish Wrasse	Western King Wrasse	*Coris auricularis*	1,106	503	3,284	681	4,390	869	75%
Whiting	King George Whiting	*Sillaginodes punctata*	11,121	3,948	6,534	1,875	17,655	5,406	37%
	School Whiting	*Sillago bassensis, vittata & schomburgkii*	38,657	8,240	16,590	5,372	55,246	12,914	30%

Table 20. Estimated annual catch (total, kept and released numbers) and proportion released in the Albany zone of the South Coast bioregion during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species. These tables only include species where more than 30 diarists reported a catch of that species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Cephalopod	Squid	*Order Teuthoidea*	8,107	1,485	711	212	8,818	1,607	8%
Crab	Blue Swimmer Crab	*Portunus armatus*	7,197	1,706	4,879	1,326	12,077	2,560	40%
Bream	Black Bream	*Acanthopagrus butcheri*	5,086	1,448	27,461	5,141	32,547	5,857	84%
	Pink Snapper	*Chrysophrys auratus*	2,300	338	7,847	1,719	10,147	1,862	77%
Cod	Breaksea Cod	*Epinephelides armatus*	4,052	580	2,374	558	6,426	1,082	37%
Flathead	Southern Bluespotted Flathead	*Platycephalus speculator*	1,134	265	2,667	560	3,801	731	70%
Morwong	Blue Morwong	*Nemadactylus valenciennesi*	2,080	285	342	123	2,422	353	14%
Pearl Perch	West Australian Dhufish	*Glaucosoma hebraicum*	560	134	523	126	1,083	242	48%
Redfish	Bight Redfish	*Centroberyx gerrardi*	4,753	722	1,027	212	5,779	877	18%
	Swallowtail	*Centroberyx lineatus*	1,285	315	1,125	277	2,410	456	47%
Salmon Herring	Australian Herring	*Arripis georgianus*	21,510	3,686	8,435	1,647	29,945	4,778	28%
	Western Australian Salmon	*Arripis truttaceus*	1,567	294	1,523	343	3,090	551	49%
Sergeant Baker	Sergeant Baker	*Aulopus purpurissatus*	422	94	1,801	290	2,223	316	81%
Trevally	Samsonfish	*Seriola hippos*	559	115	404	174	963	227	42%
	Silver Trevally	*Pseudocaranx dentex*	4,957	1,104	5,462	1,435	10,419	2,378	52%
Tuskfish Wrasse	Brownspotted Wrasse	*Notolabrus parilus*	205	77	3,576	829	3,781	843	95%
Whiting	King George Whiting	*Sillaginodes punctata*	45,120	9,243	15,940	3,892	61,060	12,768	26%
	School Whiting	*Sillago bassensis, vittata & schomburgkii*	17,401	4,970	5,724	1,516	23,125	5,612	25%

Table 21. Estimated annual catch (total, kept and released numbers) and proportion released in the Esperance zone of the South Coast bioregion during 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species. These tables only include species where more than 30 diarists reported a catch of that species.

Reporting Group	Common Name	Scientific Name	Kept	se	Rel	se	Total	se	% Rel
Cephalopod	Squid	*Order Teuthoidea*	2,140	320	162	36	2,302	347	*7%*
Cod	Breaksea Cod	*Epinephelides armatus*	1,405	168	387	64	1,792	211	*22%*
	Harlequin Fish	*Othos dentex*	306	41	26	10	332	44	*8%*
Morwong	Blue Morwong	*Nemadactylus valenciennesi*	772	89	500	160	1,272	207	*39%*
Redfish	Bight Redfish	*Centroberyx gerrardi*	4,213	633	3,031	387	7,244	934	*42%*
	Swallowtail	*Centroberyx lineatus*	261	45	708	114	970	144	*73%*
Salmon Herring	Australian Herring	*Arripis georgianus*	8,592	1,221	4,268	860	12,860	1,751	*33%*
Trevally	Silver Trevally	*Pseudocaranx dentex*	584	126	1,119	225	1,703	327	*66%*

9 Harvest Weights

This section provides an overview of the estimated harvest (by weight) for species assemblages (or suites) within each bioregion and habitat, which are aligned with resources managed by the Department of Fisheries. A comparison of the estimated harvest by RFBL holders aged five years or older during 2011/12 and 2013/14 is provided for the: top 10 nearshore and estuarine scalefish species (or species groupings) in each bioregion (Table 22); dominant 15 scalefish species for the West Coast Demersal Scalefish Resource (Table 23); top 10 demersal scalefish species in the North, Gascoyne and South Coast Bioregions (Table 24); top 10 pelagic scalefish species in the North Coast (Table 25); and crab resources in each Bioregion (Table 26).

Extrapolation of recreational catches from numbers to weight requires estimates of average weights for recreational species. These have been obtained from concurrent Boat Ramp Surveys, long-term averages from previous Boat Ramp Surveys or from Tour Operator Returns (charter logbooks). These average weights are influenced by sample design, management, and biological/environmental factors, therefore sources of information and assumptions used to extrapolate the catch can bias the estimated weight for some species. A table of the estimated average weights for key species taken by RFBL holders aged five years or older during 2013/14 is given in Appendix 1. It is likely that additional data from future surveys will further refine and adjust estimates of weights.

These estimates of boat-based recreational harvest do not include catches from recreational charter fishing. The estimated recreational catch for nearshore and estuarine species provided in this report, particularly those harvested with high proportions of shore-based effort, will be underestimated. An overview of the information required for stock status reporting of major recreational fisheries based on estimates of recreational catch and 95% confidence intervals during 2013/14 by RFBL holders aged five years or older is provided in Table 27.

9.1 Nearshore and Estuarine Resources

The top 10 nearshore and estuarine species (or species groupings) in 2013-14 represented: 79% of the total catch (by numbers kept) in the North Coast, 87% in the Gascoyne Coast, 95% in the West Coast, and 95% in the South Coast Bioregions (Table 27).

Comparisons of estimated recreational catches of the top 10 nearshore and estuarine species in each bioregion between 2011/12 and 2013/14 (Table 22) indicated estimated catches:

- in the North Coast were steady at 16 t (95% confidence intervals from 11─22) and 15 t (95% confidence intervals from 11─19)
- in the Gascoyne Coast were steady at 14 t (95% confidence intervals from 8─20) and 14 t (95% confidence intervals from 8─20)
- in the West Coast decreased from 111 t (95% confidence intervals from 99─123) to 78 t (95% confidence intervals from 69─87)
- in the South Coast decreased from 37 t (95% confidence intervals from 31─44) to 23 t (95% confidence intervals from 19─27)

Estimated recreational catches were steady between 2011/12 and 2013/14 for:

- Barramundi, Black Jewfish, Blue Threadfin and Trevally in the North Coast
- Chinaman Rockcod, Golden Trevally and Mulloway in the Gascoyne Coast
- King George Whiting, School Whiting and Tailor in the West Coast
- Australian Herring, King George Whiting, Silver Trevally and Western Australian Salmon in the South Coast

Estimated recreational catches decreased between 2011/12 and 2013/14 for:

- Australian Herring in the West Coast decreased from 26 t (95% confidence intervals from 21─31) to 12 t (95% confidence intervals from 10─15)
- Silver Trevally in the West Coast decreased from 26 t (95% confidence intervals from 21─30) to 16 t (95% confidence intervals from 12─19)
- Black Bream in the South Coast decreased from 7 t (95% confidence intervals from 3─11) to 2 t (95% confidence intervals from 1─3)
- Silver Trevally in the South Coast decreased from 5 t (95% confidence intervals from 4─6) to 2 t (95% confidence intervals from 1─3)

Table 22. Estimated annual catch (kept numbers), average weight and estimated harvest weight for the top 10 nearshore and estuarine scalefish species during 2011/12 and 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species.

Species	2011/12				2013/14			
	Estimated catch kept (numbers)	Average weight (kg)	Estimated harvest (tonnes)	se	Estimated catch kept (numbers)	Average weight (kg)	Estimated harvest (tonnes)	se
North Coast								
Barramundi	2,077	4.061[C]	8.435	2.680	1,676	4.061[S]	6.806	1.519
Black Jewfish	*324*	3.000[C]	0.972	0.279	562	3.000[C]	1.687	0.391
Blue Threadfin	2,233	1.375[B]	3.070	1.167	1,866	1.375[B]	2.566	0.556
Garfish	***1,245***	0.104[S]	0.129	0.058	*2,239*	0.095[S]	0.213	0.081
Golden Trevally	1,606	1.281[B]	2.057	0.391	1,001	1.281[B]	1.282	0.470
Mullet	*1,821*	0.042[C]	0.076	0.023	*1,638*	0.042[C]	0.069	0.021
Northwest Black Bream	*590*	N/A			677	N/A		
Small Baitfish	***161***	N/A			***587***	N/A		
Trevally	1,059	1.281 [C]	1.356	0.324	1,813	1.281[C]	2.323	0.554
Whiting	***1,525***	0.184[C]	0.281	0.126	***535***	0.184[C]	0.099	0.040
TOTAL	12,640		16.377	2.983	12,595		15.044	1.818
Gascoyne Coast								
Chinaman Rockcod	5,465	0.493[S]	2.694	0.760	5,465	0.430[S]	2.350	0.664
Garfish	***727***	0.104[S]	0.076	0.049	***727***	0.095[S]	0.069	0.045
Golden Trevally	*789*	4.979[C]	3.929	0.822	789	4.979[C]	3.931	0.821
Mulloway	***1,292***	4.629[C]	5.980	2.754	***1,292***	4.629[C]	5.979	2.758
School Whiting	***2,156***	0.097[S]	0.209	0.103	***2,156***	0.097[S]	0.209	0.103
Sea Mullet	***999***	0.042[C]	0.042	0.019	***2,444***	0.042[C]	0.103	0.058
Silver Trevally	*156*	0.518[S]	0.081	0.031	*282*	0.495[S]	0.140	0.043
Tailor	*754*	0.652[S]	0.492	0.187	*754*	0.666[S]	0.502	0.192
Western Butterfish	***2,117***	0.191[S]	0.404	0.241	***2,117***	0.191[S]	0.404	0.242
Western Yellowfin Bream	421	0.563[S]	0.237	0.100	***421***	0.563[S]	0.237	0.100
TOTAL	16,321		14.144	2.993	16,448		13.924	2.975
West Coast								
Australian Herring	183,940	0.140[B]	25.752	2.636	102,053	0.122[B]	12.450	1.308
Black Bream	9,996	0.312[S]	3.119	0.869	4,493	0.254[S]	1.141	0.254
King George Whiting	48,678	0.312[B]	15.188	2.294	27,599	0.475[B]	13.110	2.142
School Whiting	238,411	0.097[S]	23.126	2.046	253,064	0.095[B]	24.041	2.776
Sea Mullet	***7,372***	0.042[C]	0.310	0.175	***12,590***	0.042[C]	0.529	0.223
Silver Trevally	54,573	0.468[B]	25.540	2.235	29,251	0.539[B]	15.766	1.751
Striped Barracuda	***158***	0.417[S]	0.066	0.034	**4,727**	0.417[S]	1.971	1.275
Tailor	21,092	0.652[S]	13.752	3.826	7,400	0.694[B]	5.135	0.936
Western Butterfish	3,084	0.191[B]	0.589	0.159	4,092	0.191[B]	0.782	0.199
Western King Wrasse	9,142	0.350[S]	3.200	0.733	8,476	0.328[B]	2.780	0.668
TOTAL	576,446		110.640	6.114	453,744		77.705	4.491
South Coast								
Australian Herring	25,443	0.129[B]	3.282	0.666	30,102	0.118[B]	3.552	0.471
Black Bream	22,839	0.312[B]	7.126	1.936	7,160	0.254[B]	1.819	0.496
Garfish	***2,866***	0.104[S]	0.298	0.138	*1,180*	0.095[S]	0.112	0.037
King George Whiting	59,011	0.196[B]	11.566	2.197	46,469	0.187[B]	8.690	1.749
Oriental Bonito	***151***	N/A	0	0	*938*	N/A		
School Whiting	16,731	0.097[S]	1.623	0.321	21,009	0.089[B]	1.870	0.452
Silver Trevally	9,797	0.518[S]	5.075	0.625	5,622	0.389[B]	2.187	0.437
Snook	*708*	0.862[S]	0.610	0.191	*2,349*	0.383[B]	0.900	0.329
Sthn Bluespotted Flathead	1,995	0.548[S]	1.093	0.250	1,184	0.502[B]	0.595	0.134
WA Salmon	2,174	3.135[B]	6.815	1.583	1,576	2.137[B]	3.368	0.634
TOTAL	141,715		37.489	3.484	117,851		23.091	2.110

Average weights where: [B] is the bioregion estimate from Appendix 1*, [S] is the state-wide estimate from Appendix 1*, [C] unpublished Charter data, [N] NRFS estimate,, * Average weights for 2011/12 are from Appendix 1 (Ryan *et al.* 2013)

Table 23. Estimated annual catch (kept numbers), average weight and estimated harvest weight for the dominant 15 species in the West Coast Demersal Scalefish Fishery during 2011/12 and 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species.

Species	2011/12				2013/14			
West Coast Demersal	**Estimated catch kept (numbers)**	**Average weight (kg)**	**Estimated harvest (tonnes)**	**se**	**Estimated catch kept (numbers)**	**Average weight (kg)**	**Estimated harvest (tonnes)**	**se**
Baldchin Groper	12,271	2.337[B]	28.677	2.847	9,190	2.224[B]	20.439	1.844
Bass Groper	12	N/A	0	0	*20*	N/A	0	0
Bight Redfish	1,288	1.171[S]	1.508	0.252	1,136	1.102[S]	1.252	0.273
Blue Morwong	1,348	2.717[S]	3.663	0.560	1,054	2.733[S]	2.882	0.552
Blue-Eye Trevalla	18	N/A	0	0	*76*	N/A	0	0
Breaksea Cod	9,949	1.031[S]	10.257	0.788	10,992	0.919[S]	10.102	0.861
Eightbar Grouper	48	5.270[C]	0.253	0.184	***40***	5.270[C]	0.212	0.167
Emperor	3,119	1.180[C]	3.680	0.786	*2,449*	1.180[C]	2.890	0.784
Foxfish	973	0.811[S]	0.789	0.135	1,063	0.772[S]	0.821	0.146
Hapuku	0	N/A	0	0	*0*	N/A	0	0
Pink Snapper	14,354	2.315[B]	33.230	2.595	12,666	2.394[B]	30.322	2.666
Ruby Snapper	0	N/A	0	0	0	N/A	0	0
Sea Sweep	805	1.252[S]	1.008	0.255	1,223	1.244[S]	1.521	0.385
Sergeant Baker	1,627	0.940[S]	1.529	0.319	1,119	0.596[S]	0.667	0.184
WA Dhufish	16,495	4.485[B]	73.980	5.835	18,215	4.456[B]	81.166	5.899
TOTAL	62,307		158.575	7.122	59,243		152.045	6.872

Average weights where: [B] is the bioregion estimate from Appendix 1*, [S] is the state-wide estimate from Appendix 1*, [C] unpublished data, n/a is not available, * Average weights for 2011/12 are from Appendix 1 (Ryan *et al.* 2013)

9.2 Demersal Resources

The Integrated Fisheries Management Plan for the West Coast Demersal Scalefish utilised estimates of recreational catch by weight from surveys conducted in 2005/06 (Department of Fisheries 2010). The estimated harvest weights for the West Coast Demersal Scalefish Fishery (Table 23) includes: the top commercial and recreational species, demersal species where boat-based catches predominate, and species groupings for comparisons with the commercial catches. The 'Emperor' grouping includes 5 species: Bluespotted Emperor (*Lethrinus punctulatus*), Grass Emperor (*L. laticaudis*), Redthroat Emperor (*L. miniatus*), Spangled Emperor (*L. nebulosus*) and Yellowtail Emperor (*L. atkinsoni*). The 'Bight Redfish' grouping includes Bight Redfish (*Centroberyx gerrardi*), Swallowtail (*C. lineatus*) and Yelloweye Redfish (*C. australis*).

The top 10 demersal species (or groupings, 15 in the West Coast) in 2013/14 represented: 76% of the total catch (by numbers kept) in the North Coast, 77% in the Gascoyne Coast, 89% in the West Coast, and 98% in the South Coast (Table 27).

Comparisons of estimated recreational catches of the top demersal species (or groupings) in each bioregion between 2011/12 and 2013/14 (Table 23 and Table 24) indicated estimated catches:

- in the North Coast decreased from 77 t (95% confidence intervals from 67─85) to 56 t (95% confidence intervals from 48─64)
- the Gascoyne Coast decreased from 136 t (95% confidence intervals from 121─152) to 98 t (95% confidence intervals from 86─110)
- in the West Coast were steady at 159 t (95% confidence intervals from 145─173) and 152 t (95% confidence intervals from 139─166)
- in the South Coast decreased from 52 t (95% confidence intervals from 44─60) to 34 t (95% confidence intervals from 31─38)

Estimated recreational catches were steady between 2011/12 and 2013/14 for:

- Barcheek Coral Trout, Blackspot Tuskfish, Grass Emperor, Rankin Cod and Red Emperor in the North Coast
- Baldchin Groper, Goldband Snapper, Grass Emperor, Rankin Cod, Red Emperor and Pink Snapper in the Gascoyne Coast
- Baldchin Groper, Breaksea Cod, Pink Snapper and West Australian Dhufish in the West Coast
- Bight Redfish, Breaksea Cod, Blue Morwong and Pink Snapper in the South Coast

Estimated recreational catches decreased between 2011/12 and 2013/14 for:

- Spangled Emperor in the North Coast from 15 t (95% confidence intervals from 11─19) to 6 t (95% confidence intervals from 4─9) (Table 24)
- Spangled Emperor in the Gascoyne Coast from 35 t (95% confidence intervals from 26─45) to 17 t (95% confidence intervals from 12─21) and
- Redthroat Emperor in the Gascoyne Coast from 8 t (95% confidence intervals from 6─11) to 3 t (95% confidence intervals from 2─4)

The estimated recreational catches were steady between 2011/12 and 2013/14 for the indicator species in the West Coast Bioregion: Baldchin Groper from 29 t (95% confidence intervals from 23─34) to 20 t (95% confidence intervals from 17─24); Pink Snapper from 33 t (95% confidence intervals from 28─38) to 30 t (95% confidence intervals from 25─36); and West Australian Dhufish from 74 t (95% confidence intervals from 63─85) to 81 t (95% confidence intervals from 70─93) (Table 23).

Table 24. Estimated annual catch (kept numbers), average weight and estimated harvest weight for the top 10 demersal scalefish species during 2011/12 and 2013/14 by RFBL holders aged five years or older (excluding West Coast bioregion, refer to Table 23).

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species.

Species	2011/12				2013/14			
	Estimated catch kept (numbers)	Average weight (kg)	Estimated harvest (tonnes)	se	Estimated catch kept (numbers)	Average weight (kg)	Estimated harvest (tonnes)	se
North Coast								
Barcheek Coral Trout	4,702	2.382[S]	11.200	1.567	2,769	2.729[S]	7.556	1.075
Blackspot Tuskfish	2,310	2.684[S]	6.200	1.275	2,021	2.792[S]	5.643	1.277
Crimson Snapper	1,052	2.039[C]	2.145	0.587	*1,322*	2.039[C]	2.695	0.752
Golden Snapper	*1,116*	1.505[C]	1.680	0.406	1,340	1.505[C]	2.017	0.384
Grass Emperor	12,018	1.340[B]	16.104	2.968	7,043	1.714[N]	12.072	2.625
Mangrove Jack	3,297	0.822[B]	2.710	0.468	3,360	0.775[S]	2.604	0.489
Rankin Cod	2,393	2.994[S]	7.165	1.078	1,749	3.719[S]	6.505	1.324
Red Emperor	2,698	3.441[S]	9.284	1.359	2,066	3.574[S]	7.385	1.409
Spangled Emperor	7,107	2.084[S]	14.811	1.930	3,266	1.929[S]	6.301	1.342
Stripey Snapper	8,497	0.602[S]	5.115	1.044	5,828	0.588[S]	3.427	0.881
TOTAL	45,190		76.414	4.631	30,764		56.204	4.117
Gascoyne Coast								
Baldchin Groper	3,093	2.368[B]	7.324	1.385	2,778	2.237[S]	6.214	1.181
Goldband Snapper	*2,238*	4.297[C]	9.617	2.840	3,423	4.297[C]	14.709	3.168
Goldspotted Rockcod	1,562	2.009[B]	3.138	0.687	2,200	2.009[B]	4.420	1.177
Grass Emperor	15,538	0.961[A]	14.932	2.035	13,918	0.708[B]	9.854	2.103
Pink Snapper	10,867	2.459[A]	26.722	3.524	9,719	2.172[B]	21.109	2.282
Rankin Cod	4,837	2.994[B]	14.482	2.162	2,342	3.719[S]	8.710	1.092
Red Emperor	4,525	3.441[B]	15.571	2.622	3,159	3.574[S]	11.292	2.882
Redthroat Emperor	7,527	1.088[A]	8.189	1.231	3,710	0.834[B]	3.094	0.536
Spangled Emperor	16,884	2.093[A]	35.338	4.751	8,693	1.930[B]	16.777	2.383
Stripey Snapper	1,459	0.602[S]	0.878	0.186	1,578	1.208[C]	1.906	0.317
TOTAL	68,530		136.191	7.918	51,520		98.084	6.165
South Coast								
Bight Redfish	10,088	1.171[S]	11.813	1.660	8,965	1.102[S]	9.880	1.085
Blue Morwong	4,407	2.717[S]	11.974	1.791	2,852	2.733[S]	7.793	0.828
Breaksea Cod	8,214	1.031[S]	8.469	1.358	5,457	0.919[S]	5.015	0.561
Foxfish	**554**	0.811[S]	0.449	0.219	*331*	0.772[S]	0.256	0.049
Harlequin Fish	1,236	1.401[S]	1.732	0.361	906	1.137[S]	1.030	0.137
Pink Snapper	3,296	2.846[B]	9.380	2.268	2,558	2.057[B]	5.262	0.716
Sea Sweep	2,398	1.252[S]	3.002	0.845	1,047	1.244[S]	1.303	0.237
Sergeant Baker	671	0.940[S]	0.631	0.163	471	0.940[C]	0.443	0.090
Swallowtail	2,654	0.378[S]	1.003	0.196	1,546	0.340[S]	0.526	0.109
WA Dhufish	849	4.536[S]	3.851	1.520	611	4.446[S]	2.717	0.621
TOTAL	34,367		52.304	4.027	24,745		34.224	1.781

Average weights where: [B] is the bioregion estimate from Appendix 1*, [S] is the state-wide estimate from Appendix 1*, [C] unpublished data, * Average weights for 2011/12 are from Appendix 1 (Ryan *et al.* 2013)

9.3 Pelagic Resources

The top 10 pelagic scalefish species in 2013/14 represented: 96% of the total catch (by numbers kept) in the North Coast (Table 27). Comparisons of estimated recreational catches of the top 10 pelagic species (or groupings) between 2011/12 and 2013/14 (Table 22) indicated estimated catches in the North Coast were steady at 40 t (95% confidence intervals from 31─49) to 30 t (95% confidence intervals from 22─37) (Table 26). The estimated kept recreational catch of Spanish Mackerel decreased from 31 t in 2011/12 (95% confidence intervals from 23─40) to 21 t in 2013/14 (95% confidence intervals from 15─27); however, the confidence intervals were overlapping indicating this was not a significant difference (Table 26).

Table 25. Estimated annual catch (kept numbers), average weight and estimated harvest weight for the top 10 North Coast pelagic scalefish species during 2011/12 and 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species.

Species	2011/12				2013/14			
North Coast Pelagic	Estimated catch kept (numbers)	Average weight (kg)	Estimated harvest (tonnes)	se	Estimated catch kept (numbers)	Average weight (kg)	Estimated harvest (tonnes)	se
Amberjack	0	N/A	0	0	***47***	N/A	0	0
Cobia	*434*	7.582[S]	3.291	1.054	*324*	7.582[S]	2.453	0.679
Great Barracuda	***48***	N/A	0	0	***66***	N/A	0	0
Grey Mackerel	***93***	5.075[C]	0.472	0.259	***72***	5.075[C]	0.366	0.164
Mackerel Tuna	*220*	2.781[S]	0.612	0.228	***664***	2.781[S]	1.846	1.033
Northern Bluefin Tuna	*208*	2.781[C]	0.578	0.203	*217*	2.781[C]	0.604	0.182
School Mackerel	1,231	1.942[S]	2.391	0.651	**1,532**	1.942[S]	2.975	1.407
Southern Bluefin Tuna	0	N/A	0	0	***47***	N/A	0	0
Spanish Mackerel	3,794	8.208[S]	31.141	4.350	2,543	8.208[S]	20.869	3.163
Spotted Mackerel	*350*	5.075[C]	1.776	0.594	***79***	5.075[C]	0.402	0.188
TOTAL	6,378		40.261	4.579	5,590		29.514	3.689

Average weights where: [B] is the bioregion estimate from Appendix 1*, [S] is the state-wide estimate from Appendix 1*, [C] unpublished data, * Average weights for 2011/12 are from Appendix 1 (Ryan *et al*. 2013)

9.4 Crab Resources

Comparisons of estimated recreational catches of crab resources in each bioregion between 2011/12 and 2013/14 (Table 26) indicated estimated catches:

- of Blue Swimmer Crab and the two Mud Crab species in the North Coast were steady at 11 t (95% confidence intervals from 8─13) and 11 t (95% confidence intervals from 8─13)
- of Blue Swimmer Crab in the Gascoyne Coast were steady at 4 t (95% confidence intervals from 1─8) and 2 t (95% confidence intervals from 1─3)
- of Blue Swimmer Crab in the West Coast decreased from 86 t (95% confidence intervals from 76─97) to 58 t (95% confidence intervals from 50─66)
- of Blue Swimmer Crab in the South Coast were steady at 3 t (95% confidence intervals from 2─4) and 2 t (95% confidence intervals from 1─3)

Table 26. Estimated annual catch (kept numbers), average weight and estimated harvest weight for the crab resources during 2011/12 and 2013/14 by RFBL holders aged five years or older.

se is standard error; values in bold indicate relative standard error >40% (i.e. se >40% of estimate); values in italics indicate <30 diarists recorded catches of the species.

Species	2011/12				2013/14			
	Estimated catch kept (numbers)	Average weight (kg)	Estimated harvest (tonnes)	se	Estimated catch kept (numbers)	Average weight (kg)	Estimated harvest (tonnes)	se
North Coast								
Giant Mud Crab	4,667	0.866[B]	4.042	0.777	4,308	0.866[B]	3.731	0.670
Orange Mud Crab	5,312	0.606[B]	3.219	0.503	4,748	0.606[B]	2.877	0.549
Blue Swimmer Crab	14,945	0.229[S]	3.422	0.895	16,405	0.254[S]	4.167	0.911
TOTAL	24,924		10.683	1.287	25,460		10.775	1.257
Gascoyne Coast								
Blue Swimmer Crab	19,344	0.229[S]	4.430	1.608	8,716	0.254[S]	2.214	0.595
West Coast								
Blue Swimmer Crab	377,672	0.229[S]	86.487	5.313	251,343	0.231[S]	58.060	4.252
South Coast								
Blue Swimmer Crab	12,030	0.229[S]	2.755	0.616	8,738	0.254[S]	2.219	0.451

Average weights where: [B] is the bioregion estimate from Appendix 1*, [S] is the state-wide estimate from Appendix 1*, [C] unpublished data, * Average weights for 2011/12 are from Appendix 1 (Ryan *et al.* 2013)

9.5 Summary

The estimates of recreational catches presented in this chapter will be used, alongside biological, charter and commercial data to assess the status of resources managed by the Department of Fisheries. Estimates of recreational catches (Table 27) are important where the recreational sector takes a significant portion of the total catch, and therefore estimates of recreational catches of these species are included in stock assessments and required for resource allocation.

Recent assessments have indicated resources are adequate or recovering for the West Coast Demersal Scalefish (Fairclough *et al.* 2014), Tailor (Smith *et al.* 2013) and Whiting (Brown *et al.* 2013). However, while the overall catch of spangled emperor in the Gascoyne Coast is considered to be sustainable, fishing mortality in northern areas is considered to be high (Marriott *et al.* 2012) and is currently under review. Stock assessment for Australian Herring in the West Coast completed in late 2012 indicated low stock abundance resulting from environmental factors and fishing pressure (Smith *et al.* 2014). Since the 2013/14 survey, the daily bag limit of Australian Herring for recreational fishers was reduced from 30 to 12 (effective 1 March 2015) to assist stock recovery. Stock assessments of Blue Swimmer Crab in the West Coast are conducted for separate, spatial fisheries and the spawning stock in Cockburn Sound in 2013/14 was assessed as being inadequate due to environmental conditions.

Table 27. Information required for stock status reporting of major recreational fisheries based on estimates of recreational catch and 95% confidence intervals during 2013/14 by RFBL holders aged five years or older (excluding charter boat catches).

Fishery	Number of species/ groupings	Proportion of total catch by number	Estimated harvest (tonnes)	95% confidence intervals (tonnes)
North Coast Bioregion				
North Coast Nearshore and Estuarine	10	79%	15	11–19
Northern Demersal Scalefish	10	76%	56	48–64
North Coast Pelagic (Mackerel)	10	96%	30	22–37
North Coast Crab	3	N/A	11	8–13
Gascoyne Coast Bioregion				
Gascoyne Coast Nearshore and Estuarine	10	87%	14	8–20
Gascoyne Coast Demersal	10	77%	98	86–110
Gascyone Coast Blue Swimmer Crab	1	N/A	2	1–3
West Coast Bioregion				
West Coast Nearshore and Estuarine	10	95%	78	69–87
West Coast Demersal Scalefish	15	89%	152	139–166
West Coast Blue Swimmer Crab	1	N/A	58	50–66
South Coast Bioregion				
South Coast Nearshore and Estuarine	10	95%	23	19–27
South Coast Demersal Scalefish	10	98%	34	31–38
South Coast Blue Swimmer Crab	1	N/A	2	1–3

10 Summary and Future Research

10.1 Overview

The results from the 2011/12 and 2013/14 state-wide surveys provide estimates of participation, effort and catch for boat-based recreational fishing. Although recreational fishing in Western Australia is conducted from boats and from the shore across a range of saltwater, estuarine and freshwater habitats, boat-based fishers were estimated to account for 43% of fishing effort and 46% of the recreational harvest in 2000/01, with both boat-based and shore-based fishing occurring almost entirely in saltwater (Henry and Lyle 2003).

Approximately 135,000 boat-based fishers purchased a RFBL in 2013/14 and approximately half of these fishers reside in the Perth metropolitan area. The spatial coverage of the resident population influences the distribution of boat-based fishing effort. The majority of boat-based recreational fishing effort during 1 May 2013 to 30 April 2014 occurred in the West Coast (67%) with the remainder spread among the North Coast (11%), Gascoyne Coast (13%) and South Coast (9%). Distinct seasonal patterns of boat-based fishing effort occur in the north and south of the State. Autumn and winter are the most active seasons in the North Coast and Gascoyne Coast, while summer and autumn are the most active seasons in the West Coast and South Coast.

Although habitat was defined differently in the National Recreational and Indigenous Fishing Survey (2000/01) compared with the current survey, at a state-wide level, the majority of boat-based recreational fishing effort occurs in coastal waters. The majority of boat-based recreational fishing effort occurred in nearshore (51%) and inshore demersal (25%) habitats in 2013/14, compared with coastal habitat (from the shoreline to 5km) (66%) in 2000/01. However, shore-based fishing is not included in these estimates, which would be high for these habitats. The proportion of boat-based recreational fishing effort in estuarine habitat was 16% in 2013/14 and 19% in 2000/01, and the proportion of effort in offshore demersal and pelagic habitats were 5% and 2% respectively in 2013/14, compared with 11% in 2000/01, where offshore demersal was defined as marine waters >5km from the coast (Henry and Lyle 2003). Inland fishing effort reported in the 2013/14 survey was an under-estimate because the survey was based on RFBL holders and not all inland fishers possess this licence.

Recreational fishers use a variety of methods (e.g. line, pot, net and dive). In 2000/01, line fishing accounted for 77% of fishing effort and pot/trap methods accounted for 16% of fishing effort (Henry and Lyle 2003). The majority of boat-based fishing effort during 2013/14 was from line fishing (68%), followed by pots (26%), diving (4%) and nets (2%), but there were differences among bioregions.

Trends in participation by home residence, age, gender, avidity and bioregion fished were consistent across the four cross-sectional surveys by recall for the 12 months prior to March 2011, March 2012, May 2013 and May 2014. State-wide total fishing effort was consistent between the two longitudinal Phone-Diary Surveys in 2011/12 and 2013/14, as were trends by habitat, method and month, with the exception of February to April, which were higher in 2011/12 compared with 2013/14. Fishing effort within each bioregion was also consistent between 2011/12 and 2013/14, except for effort by line fishing and effort in February to April

in the West Coast and South Coast bioregions, which were higher in 2011/12 compared with 2013/14. Total fishing effort among habitats in the West Coast bioregion was similar in 2011/12 compared to 2013/14, although reduced fishing effort occurred across inshore demersal, nearshore and estuary habitats in the South Coast bioregion in 2011/12 compared with 2013/14.

The state-wide total catch was generally consistent between the two longitudinal Phone-Diary Surveys in 2011/12 and 2013/14, although there were some exceptions. For example, the estimated recreational catch of Blue Swimmer Crab kept by boat-based fishers in Western Australia decreased from 424,474 (se=26,787, by number) in 2011/12 to 285,202 (se=19,034) in 2013/14. However, the release rates between these surveys increased from 51% to 68%, and the estimated recreational catch (kept and released) remained relatively consistent at 870,816 (se=56,031) in 2011/12 and 901,458 (se=69,270) in 2013/14.

It should be noted that changes in the magnitude of estimates over time only provide an indication of the number kept and/or released by recreational fishers between surveys. They do not necessarily provide an indication of the drivers of any change. There are numerous actions that can influence the effort and catch of recreational species, including changes in the nature of the fishery (both fish and fisher dimensions), the spatial and temporal scales of the resource and fishing activity, and how these might respond to management actions. For example, access to the resource can vary over time through fish availability, legal size and bag limits, fisher mobility or fishing technology. Comparison of estimates of recreational catch over time has similar constraints to those required for evaluating changes in total catch from commercial fisheries where differences can result from changes in both fish abundance and catchability. Catchability can vary with changes in fish behaviour and movement patterns, which vary by species, age and environmental factors, or changes in fishing practices, such as changes in targeted effort, time spent fishing and distance travelled to fishing location. Therefore, comparison of estimates of recreational catch over time also requires consideration of release rates and the potential for change in fisher behaviour (e.g. species or targeting substitution).

Most importantly, evaluating time series of estimates of recreational catch requires consideration of the uncertainty associated with estimates. For the state-wide survey of boat-based recreational fishing, the desired outcome was to achieve estimates for indicator species at state-wide and bioregional levels with a precision suitable for stock assessments and developing management policies. It should not be expected that similar precision will be achieved for less common species, or any species at small spatial scales, although the design and sample sizes have allowed this to occur for some species. For example, the sample sizes and relative standard error achieved for indicator demersal species in the Mid West, Metropolitan and Southern zones have provided representative and robust estimates for spatial assessment of the West Coast Demersal Scalefish Fishery.

10.2 Validation of Estimates from On-Site Surveys

Estimates of recreational catch from the 2011/12 and 2013/14 integrated surveys are being compared with previous recreational fishing surveys to determine if there have been changes in the catch composition and whether current management arrangements are operating

appropriately. The results of these analyses will be published separately. Additional components of the integrated surveys, the Boat Ramp and Remote Camera Surveys, will provide biological data to assist in converting catch by numbers to weight and validation of estimates of fishing effort from the Phone-Diary Survey (fishers only) against launch and retrieval counts from the Remote Cameras (fishers and non-fishers). Additional information on the proportion of boat launches by fishing and non-fishing parties will allow the camera data to provide a direct comparison with estimates of fishing effort from the Phone-Diary Survey and potentially an ongoing measure of fishing activity between survey years.

10.3 Improving Accuracy and Precision of Estimates

Recreational fishers are numerous, diverse and diffuse. They use numerous access points and platforms for fishing, including boats launched from harbours, marinas, beaches and private docks. Their divergent nature ranges from avid fishers to infrequent participants and different survey methods will encounter avid and infrequent fishers in different relative proportions. This means that there is no single survey method that can be used to accurately and precisely estimate catch and effort from all recreational fishers. Consequently, all surveys of recreational fishing have customised designs, which reflect the specific objectives of the survey, the spatial and temporal scope to be covered, the nature of the recreational fishery, and the constraints on resources that are available to conduct the survey.

A research partnership between the Department of Fisheries, Recfishwest and Edith Cowan University has provided a number of post graduate scholarships for students to work on aspects of spatial and temporal modelling and the integration of the data obtained from recreational fishing surveys. As part of the analysis, appropriate statistical and modelling methods are being explored to integrate data collected at different spatial and temporal scales from current surveys (see Aidoo *et al.* 2014). This research will assist in determining whether data from the integrated surveys can provide information at the resolution required for management of recreational fisheries at small spatial and temporal scales.

The RFBL was implemented in 2010 and uptake of this licence has increased each year. A critical objective of the integrated survey is to develop an understanding of the types of biases that may be occurring due to potential changes in annual patterns of RFBL usage by considering possible biases and behavioural adjustments of fishers. It is likely that some components of the integrated survey will need to be modified in subsequent surveys to address problems, and in some cases it may be necessary to apply emerging techniques in survey design to further improve accuracy and precision of estimates. Further research will investigate whether improvements can be made to increase the robustness of estimates. This could include adjustment of weighting factors to account for avidity bias and non-intending fishing; estimates (and errors) may be revised on this basis.

As the pattern of fishing changes, the survey design needs to be flexible enough to accommodate these changes. A critical element of the research project is having the expertise across several related disciplines (experimental design, data mining, spatial and temporal statistics, survey sampling methodology) to allow further development and implementation of changes to the survey if warranted. A research partnership with Edith Cowan University will have a focus on developing human capital in the fields directly relevant to the state-wide

survey. The Department of Fisheries will continue to proactively work with its research partners to ascertain whether additional information could be collected to better understand the behaviour of recreational fishers and to improve the accuracy and precision for estimates of the recreational catch and effort to provide better information for the sustainable management of fishery resources.

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13 Appendices

Appendix 1: State-wide and bioregion estimates of average weight of key species from Boat Ramp Surveys in 2013/14.

Av wt is the average weight (measured in grams); n is the number of weight measurements recorded; se is standard error; values in bold indicate < 10 recorded weights of the species.

Reporting Group	Common Name	Scientific Name	State-wide			North Coast			Gascoyne Coast			West Coast			South Coast		
			n	AvWt	se	n	AvWt	se	n	AvWt	se	n	AvWt	se	n	AvWt	se
Abalone	Roe's Abalone	*Haliotis roei*	41	79	4										41	79	4
Crab	Blue Swimmer Crab	*Portunus armatus*	346	254	5							275	231	4	71	340	18
	Giant Mud Crab	*Scylla serrata*	12	866	69	10	850	81	**2**	**944**	**125**						
	Orange Mud Crab	*Seylla olivacea*	60	606	16	60	606	16									
Lobster	Western Rock Lobster	*Panulirus cygnus*	290	576	25				**1**	**1286**		289	573	25			
Herring	Sandy Sprat	*Hyperlophus vittatus*	25	45	2							25	45	2			
Threadsail	Sergeant Baker	*Aulopus purpurissatus*	19	596	60							**6**	**689**	**108**	13	553	71
Garfish	Southern Garfish	*Hyporhamphus melanochir*	50	95	5							21	112	5	29	84	7
Redfish	Bight Redfish	*Centroberyx gerrardi*	35	1102	88							11	1219	175	24	1048	101
	Swallowtail	*Centroberyx lineatus*	37	340	12							**4**	**400**	**56**	33	333	11
Flathead	S'thrn Bluespotted Flathead	*Platycephalus speculator*	86	588	37							42	678	52	44	502	49
Coral Trout	Barcheek Coral Trout	*Plectropomus maculatus*	45	2729	235	**6**	**1846**	**302**	39	2864	261						
	Yellowedge Coronation Trout	*Variola louti*	22	1920	245				22	1920	245						
Rockcod	Blackspotted Rockcod	*Epinephelus malabaricus*	38	1835	201	33	1578	183	**5**	**3532**	**500**						
	Breaksea Cod	*Epinephelides armatus*	299	919	33							211	934	44	88	885	45
	Chinaman Rockcod	*Epinephelus rivulatus*	413	430	7				407	427	7	**6**	**625**	**145**			
	Eightbar Grouper	*Epinephelus octofasciatus*	14	8123	2028				11	9733	2362	**1**	**1225**		**2**	**2715**	106
	Frostback Rockcod	*Epinephelus bilobatus*	13	1593	168				13	1593	168						
	Goldspotted Rockcod	*Epinephelus coioides*	39	2770	498	14	2826	673	20	1880	425	**5**	**6170**	**2680**			
	Greasy Rockcod	*Epinephelus tauvina*	15	1416	121				15	1416	121						
	Harlequin Fish	*Othos dentex*	32	1137	99							13	1165	116	19	1118	150
	Rankin Cod	*Epinephelus multinotatus*	66	3719	310	**2**	**1149**	**210**	64	3799	314						
	Tomato Rockcod	*Cephalopholis sonnerati*	28	1212	125				28	1212	125						
	Yellowspotted Rockcod	*Epinephelus areolatus*	56	710	40	**1**	**1106**		55	703	40						
Pearl Perch	Northern Pearl Perch	*Glaucosoma buergeri*	32	1648	99				32	1648	99						
	Western Australian Dhufish	*Glaucosoma hebraicum*	304	4446	158							302	4456	159	**2**	**2855**	225
Grunter	Eastern Striped Grunter	*Pelates sexlineatus*	20	111	8										20	111	8
	Western Striped Grunter	*Pelates octolineatus*	38	117	6							30	118	5	**8**	**115**	19
Whiting	King George Whiting	*Sillaginodes punctata*	1101	233	5							175	475	22	926	187	3
	Southern School Whiting	*Sillago bassensis*	1106	94	1							943	95	1	163	89	3

Reporting Group	Common Name	Scientific Name	State-wide			North Coast			Gascoyne Coast			West Coast			South Coast		
			n	AvWt	se	n	AvWt	se	n	AvWt	se	n	AvWt	se	n	AvWt	se
	Western School Whiting	*Sillago vittata*	91	98	4							91	98	4			
	Yellowfin Whiting	*Sillago schomburgkii*	13	121	13				**3**	**190**	**4**	**10**	**100**	**9**			
Tailor	Tailor	*Pomatomus saltatrix*	52	666	51							48	694	54	**4**	**327**	29
Black Kingfish	Cobia	*Rachycentron canadus*	35	7582	410				29	7610	461	**6**	**7443**	**950**			
Trevally	Bludger Trevally	*Carangoides gymnostethus*	18	1802	69				18	1802	69						
	Golden Trevally	*Gnathanodon speciosus*	54	2337	269	25	1281	201	29	3247	402						
	Samsonfish	*Seriola hippos*	40	5792	802							34	5619	892	**6**	**6775**	1875
	Silver Trevally	*Pseudocaranx dentex*	378	495	14							267	539	15	111	389	31
	Turrum	*Carangoides fulvoguttatus*	53	1824	220				53	1824	220						
	Yellowtail Kingfish	*Seriola lalandi*	12	2848	774							10	3007	902	**2**	**2053**	1484
	Yellowtail Scad	*Trachurus novaezelandiae*	39	65	4							14	77	8	25	58	3
Aust. Salmon	Australian Herring	*Arripis georgianus*	1130	120	1							607	122	1	523	118	2
	Western Australian Salmon	*Arripis truttaceus*	53	2652	271							12	4410	426	41	2137	282
Tropical	Chinamanfish	*Symphorus nematophorus*	22	5285	590	13	5030	699	**9**	**5653**	**1071**						
Snapper	Darktail Snapper	*Lutjanus lemniscatus*	17	726	88				16	734	93	**1**	**597**				
	Goldband Snapper	*Pristipomoides multidens*	192	1953	71				192	1953	71						
	Mangrove Jack	*Lutjanus argentimaculatus*	41	775	52	36	706	36	**5**	**1279**	**263**						
	Moses' Snapper	*Lutjanus russelli*	34	801	78				34	801	78						
	Red Emperor	*Lutjanus sebae*	124	3574	196	**3**	**2634**	**563**	121	3597	200						
	Rosy Snapper	*Pristipomoides filamentosus*	13	1372	156				13	1372	156						
	Ruby Snapper	*Etelis carbunculus*	72	6212	455				72	6212	455						
	Saddletail Snapper	*Lutjanus malabaricus*	22	1635	323	**1**	**688**		21	1680	336						
	Sharptooth Snapper	*Pristipomoides typus*	91	1448	64				91	1448	64						
	Stripey Snapper	*Lutjanus carponotatus*	105	588	16	46	604	18	59	575	25						
Threadfin Bream	Western Butterfish	*Pentapodus vitta*	63	232	73				3	130	11	60	237	76			
Grunter Bream	Painted Sweetlips	*Diagramma labiosum*	40	2139	193				37	1967	174	**3**	**4260**	**751**			
Emperor	Grass Emperor	*Lethrinus laticaudis*	219	1367	42	143	1714	39	75	708	25	**1**	**1210**				
	Redspot Emperor	*Lethrinus lentjan*	11	640	211				11	640	211						
	Redthroat Emperor	*Lethrinus miniatus*	145	822	32				97	834	39	48	797	60			
	Robinson's Seabream	*Gymnocranius grandoculis*	83	1705	127				83	1705	127						
	Spangled Emperor	*Lethrinus nebulosus*	220	1929	57	**4**	**1564**	**269**	213	1930	57	**3**	**2324**	**1107**			
	Spotcheek Emperor	*Lethrinus rubrioperculatus*	27	515	21				27	515	21						
	Yellowtail Emperor	*Lethrinus atkinsoni*	64	518	23				64	518	23						
Bream	Black Bream	*Acanthopagrus butcheri*	14	254	11										14	254	11
	Frypan Bream	*Argyrops spinifer*	27	708	32				27	708	32						

Reporting Group	Common Name	Scientific Name	State-wide			North Coast			Gascoyne Coast			West Coast			South Coast		
			n	AvWt	se	n	AvWt	se	n	AvWt	se	n	AvWt	se	n	AvWt	se
	Pink Snapper	*Chrysophrys auratus*	160	2342	117				16	2172	142	130	2394	119	14	2057	753
	Tarwhine	*Rhabdosargus sarba*	11	439	47							**5**	**428**	**67**	**6**	**448**	72
Goatfish	Bluespotted Goatfish	*Upenichthys vlamingii*	11	158	21							**2**	**114**	**114**	**9**	**167**	15
Drummer	Sea Sweep	*Scorpis aequipinnis*	30	1244	80							21	1148	98	**9**	**1468**	111
Morwong	Blue Morwong	*Nemadactylus valenciennesi*	69	2733	190							16	3164	422	53	2603	211
Pike	Snook	*Sphyraena novaehollandiae*	22	449	54							**8**	**565**	**90**	14	383	62
Threadfinsalmon	Blue Threadfin	*Eleuthronema tetradactylum*	17	1316	318	16	1375	333	**1**	**382**							
Tuskfish	Blackspot Tuskfish	*Choerodon schoenleinii*	27	2792	305	**2**	**2811**	**1507**	25	2790	319						
Wrasse	Baldchin Groper	*Choerodon rubescens*	244	2237	59				10	2525	441	234	2224	59			
	Brownspotted Wrasse	*Pseudolabrus parilus*	92	401	16							79	421	17	13	280	32
	Foxfish	*Bodianus frenchii*	37	772	45							29	796	46	**8**	**688**	128
	Southern Maori Wrasse	*Opthalmolepis lineolatus*	11	245	23							11	245	23			
	Western King Wrasse	*Coris auricularis*	109	320	14							85	328	16	24	292	27
Mackerel	Longtail Tuna	*Thunnus tonggol*	47	5145	290	**1**	**5905**		45	5123	302	**1**	**5381**				
	Mackerel Tuna	*Euthynnus affinis*	33	2781	222	**1**	**3118**		27	3015	243	**5**	**1451**	**47**			
	Oriental Bonito	*Sarda orientalis*	71	1778	70				2	4302	978	**4**	**1736**	**52**	65	1703	48
	School Mackerel	*Scomberomorus queenslandicus*	45	1942	220	**6**	**2344**	**985**	39	1880	210						
	Skipjack Tuna	*Katsuwonis pelamis*	49	3325	156				39	2909	119	**10**	**4945**	**201**			
	Spanish Mackerel	*Scomberomorus commerson*	155	8208	252	**5**	**8251**	**520**	134	8263	285	16	7740	504			
	Yellowfin Tuna	*Thunnus albacares*	20	7116	744				13	7397	638	**7**	**6595**	**1852**			

Appendix 2: Summary of power boat launches and retrievals at 13 public boat ramps from Remote Camera Surveys in 2013/14.

The following pages provide summaries of the total power boat launches and retrievals during 2013/14, including: the location of the boat ramp; total annual launches and retrievals; total launches and retrievals by month; and hourly launches and retrievals by month. Error bars are 1 standard error where data imputation required for missing data.

Results are presented for the 13 public boat ramps monitored in the Remote Camera Survey:

- Broome (Lat 18.008, Long 122.208)
- Dampier (Lat 20.656, Long 116.707)
- Monkey Mia (Lat 25.793, Long 113.720)
- Denham (Lat 25.928, Long 113.533)
- Mindarie (Lat 31.692, Long 115.702)
- Ocean Reef (Lat 31.762, Long 115.728)
- Hillarys (Lat 31.822, Long 115.739)
- Leeuwin (Lat 32.030, Long 115.762)
- Woodmans Point Public Ramp (Lat 32.139, Long 115.762)
- Woodmans Point Private Ramp (Lat 32.139, Long 115.762)
- Point Peron (Lat 32.271, Long 115.698)
- Emu Point (Lat 34.995, Long 117.945)
- Bandy Creek (Lat 33.831, Long 121.932)

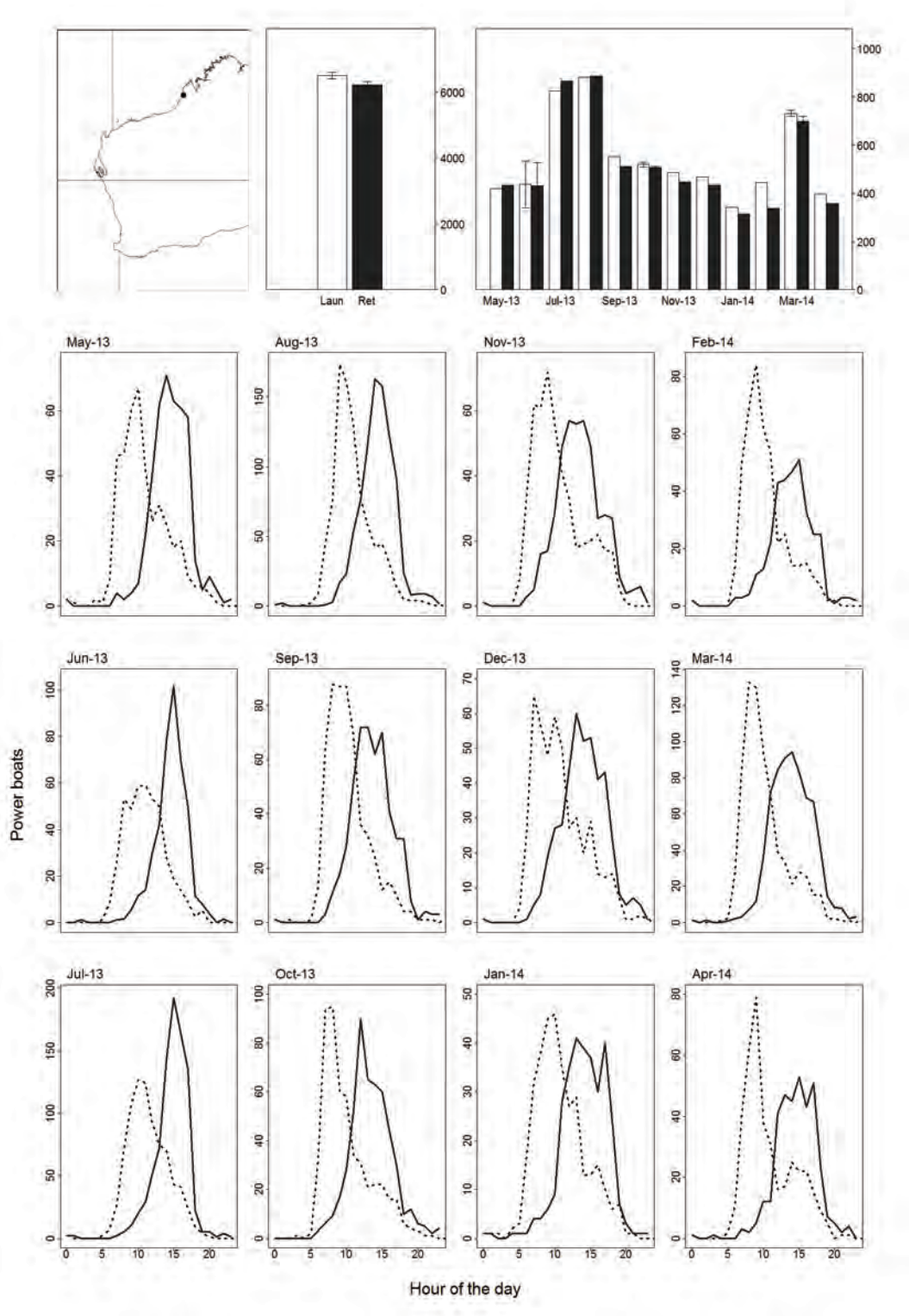

Figure 77. Total power boat launches (white bar) and retrievals (black bar) from Broome (Lat 18.008, Long 122.208) during 2013/14 (top centre); total launches (white bars) and retrievals (black bars) by month (top right); and hourly launches (dotted line) and retrievals (solid line) by month. Error bars are 1 standard error where data imputation required for missing data.

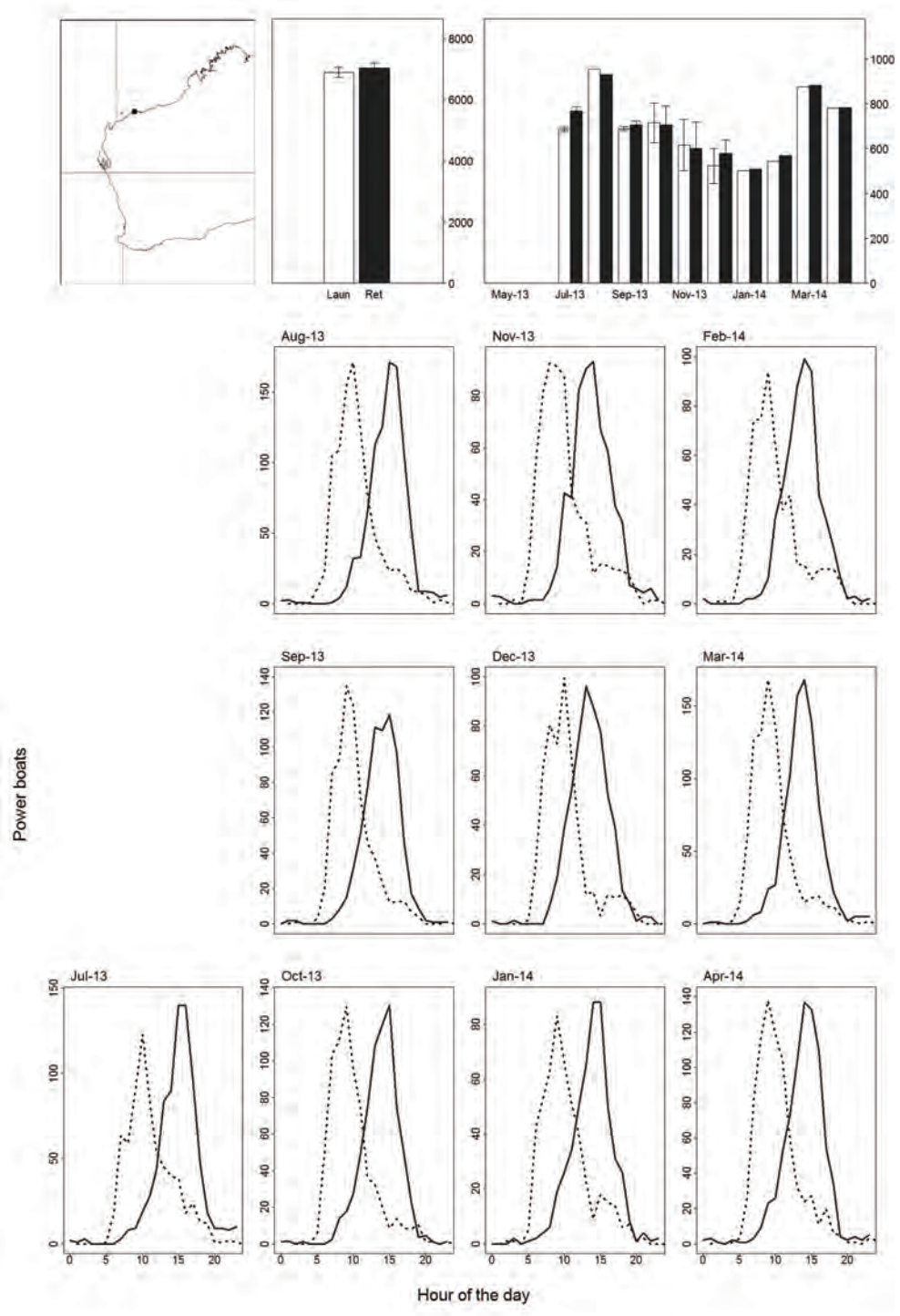

Figure 78: Total power boat launches (white bar) and retrievals (black bar) from Dampier (Lat 20.656, Long 116.707) during 2013/14 (top centre); total launches (white bars) and retrievals (black bars) by month (top right); and hourly launches (dotted line) and retrievals (solid line) by month. Error bars are 1 standard error where data imputation required for missing data.

Data for May to June 2013 were unavailable.

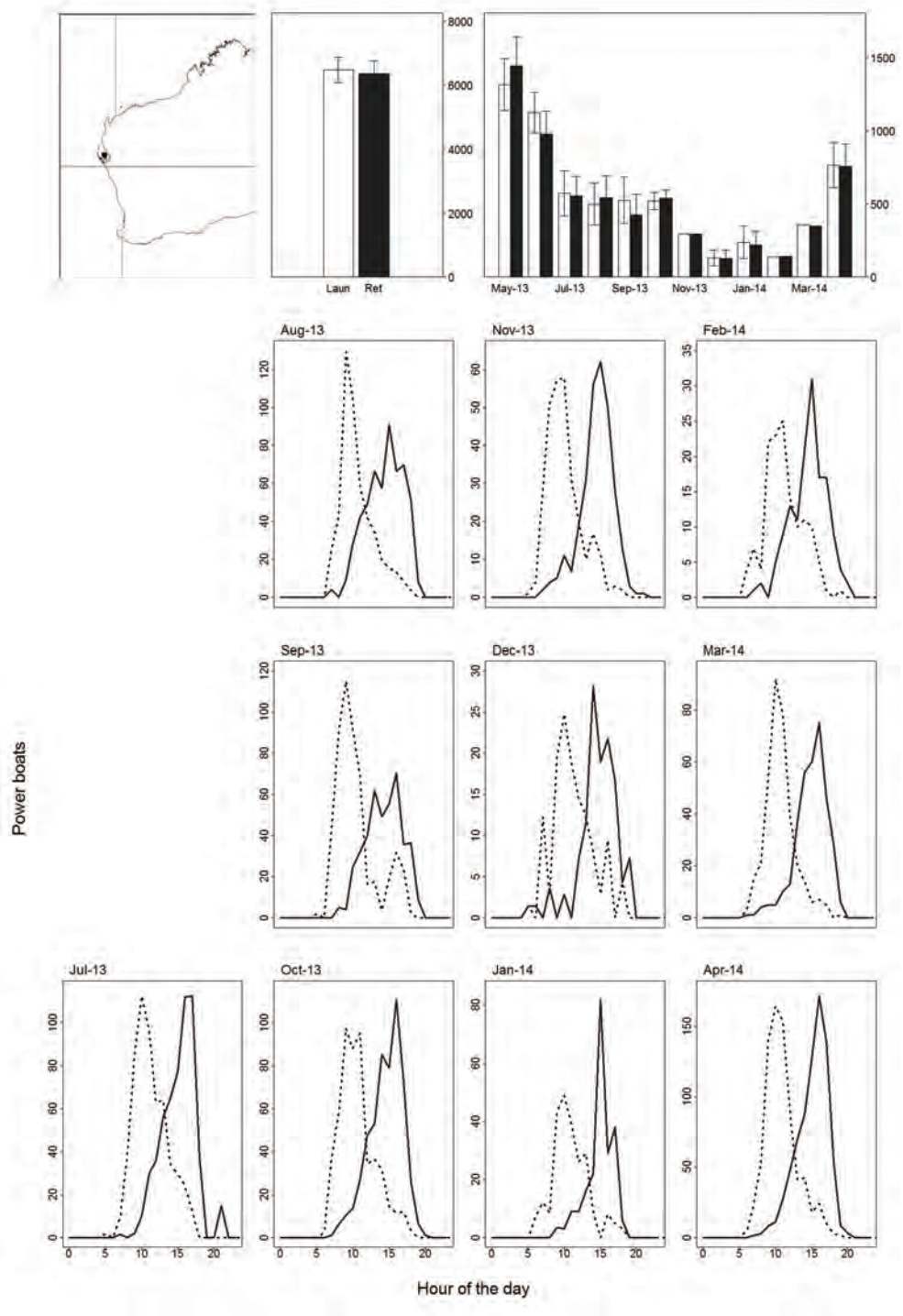

Figure 79. Total power boat launches (white bar) and retrievals (black bar) from Monkey Mia (Lat 25.793, Long 113.720) during 2013/14 (top centre); total launches (white bars) and retrievals (black bars) by month (top right); and hourly launches (dotted line) and retrievals (solid line) by month. Error bars are 1 standard error where data imputation required for missing data.

Data for May to June 2013 were unavailable.

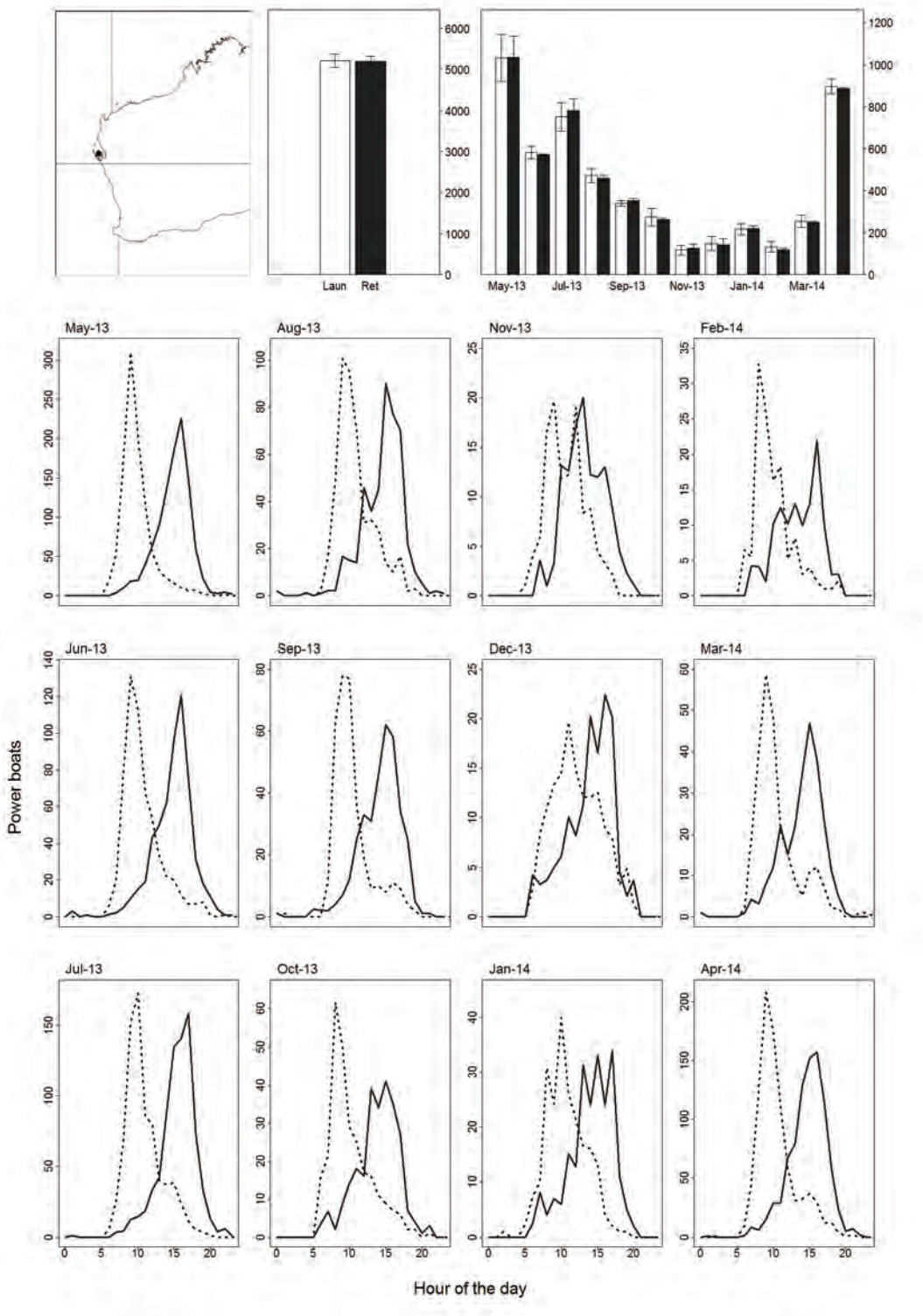

Figure 80. Total power boat launches (white bar) and retrievals (black bar) from Denham (Lat 25.928, Long 113.533) during 2013/14 (top centre); total launches (white bars) and retrievals (black bars) by month (top right); and hourly launches (dotted line) and retrievals (solid line) by month. Error bars are 1 standard error where data imputation required for missing data.

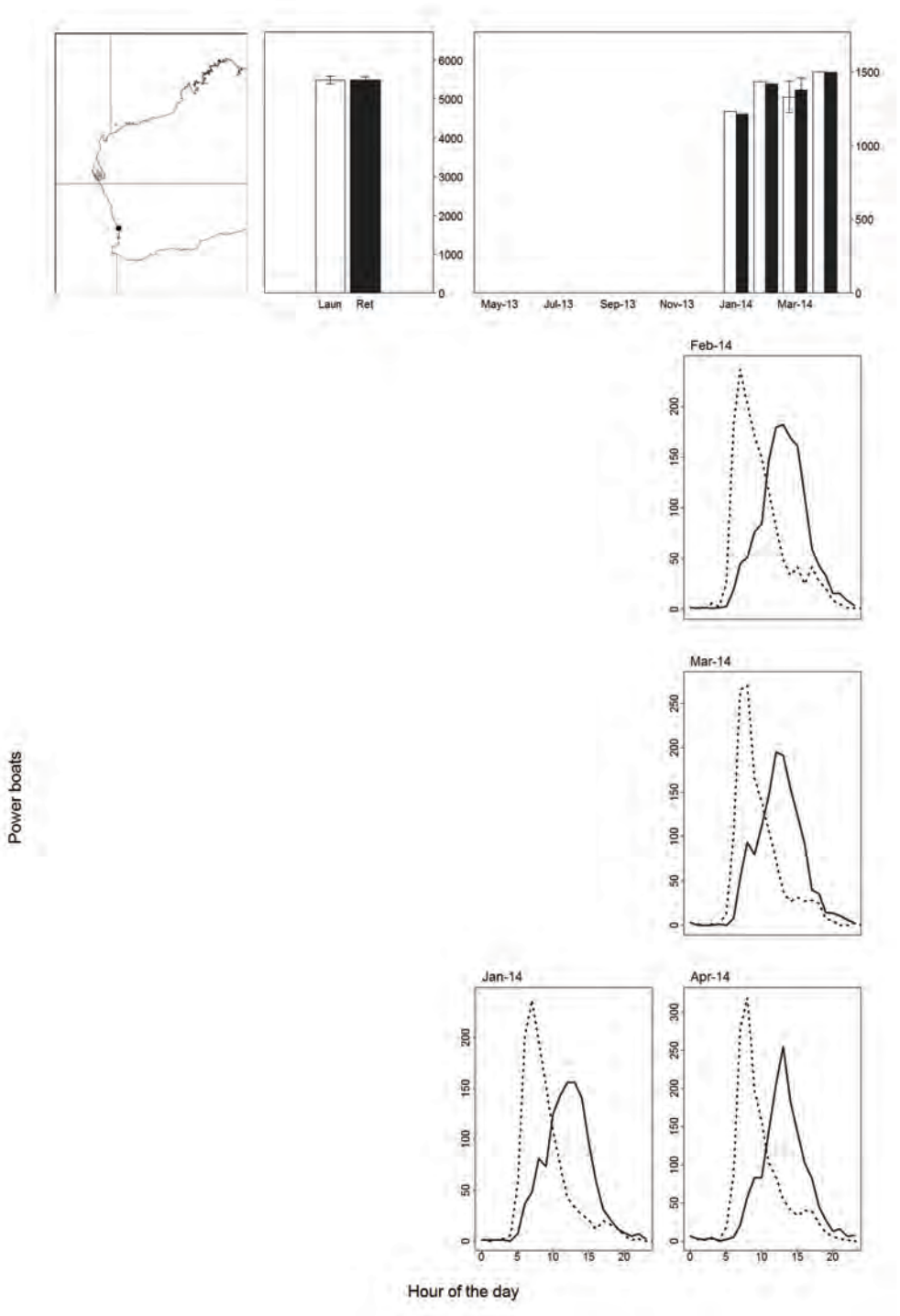

Figure 81. Total power boat launches (white bar) and retrievals (black bar) from Mindarie (Lat 31.692, Long 115.702) during 2013/14 (top centre); total launches (white bars) and retrievals (black bars) by month (top right); and hourly launches (dotted line) and retrievals (solid line) by month. Error bars are 1 standard error where data imputation required for missing data.

Data for May to December 2013 were unavailable.

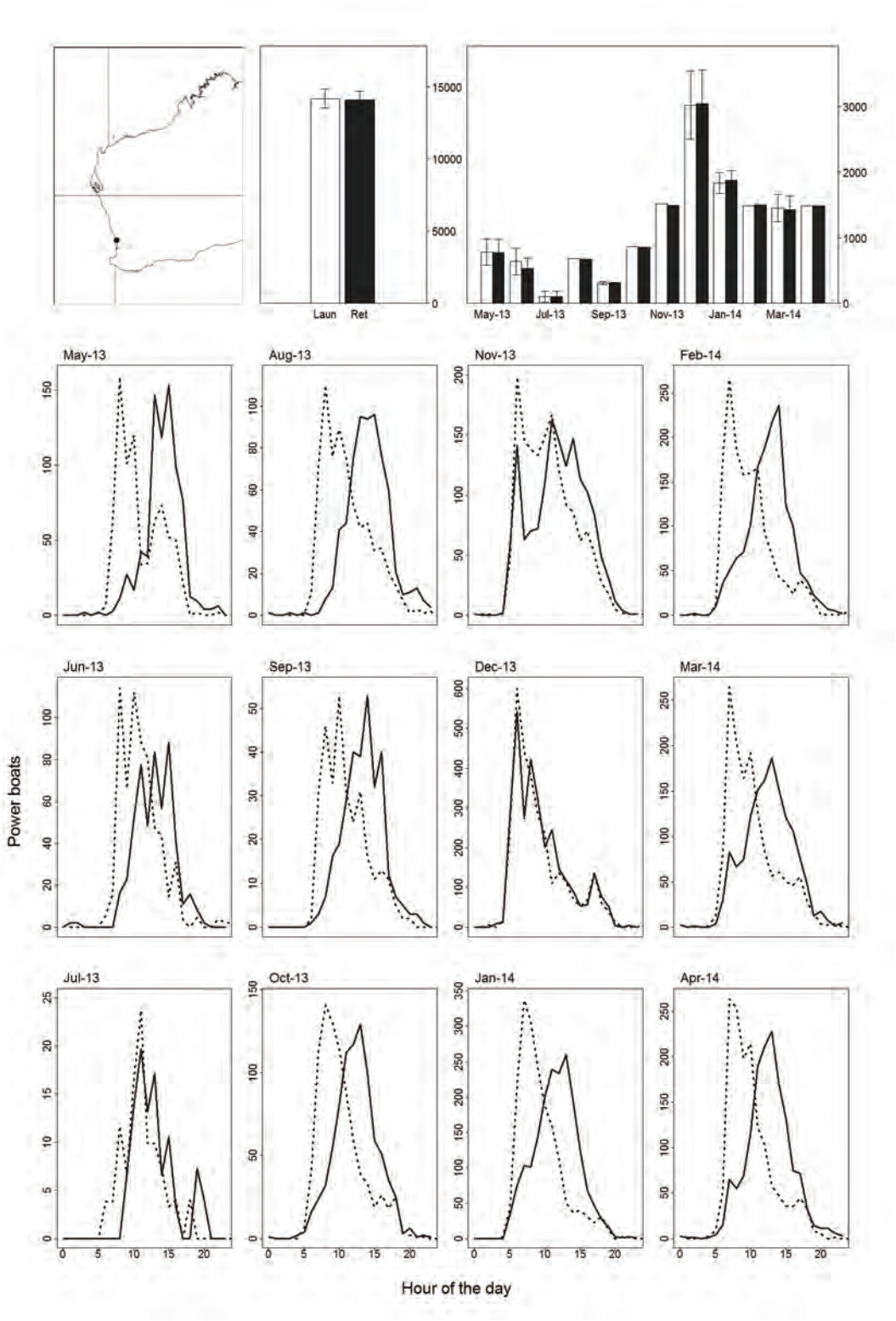

Figure 82. Total power boat launches (white bar) and retrievals (black bar) from Ocean Reef (Lat 31.762, Long 115.728) during 2013/14 (top centre); total launches (white bars) and retrievals (black bars) by month (top right); and hourly launches (dotted line) and retrievals (solid line) by month. Error bars are 1 standard error where data imputation required for missing data.

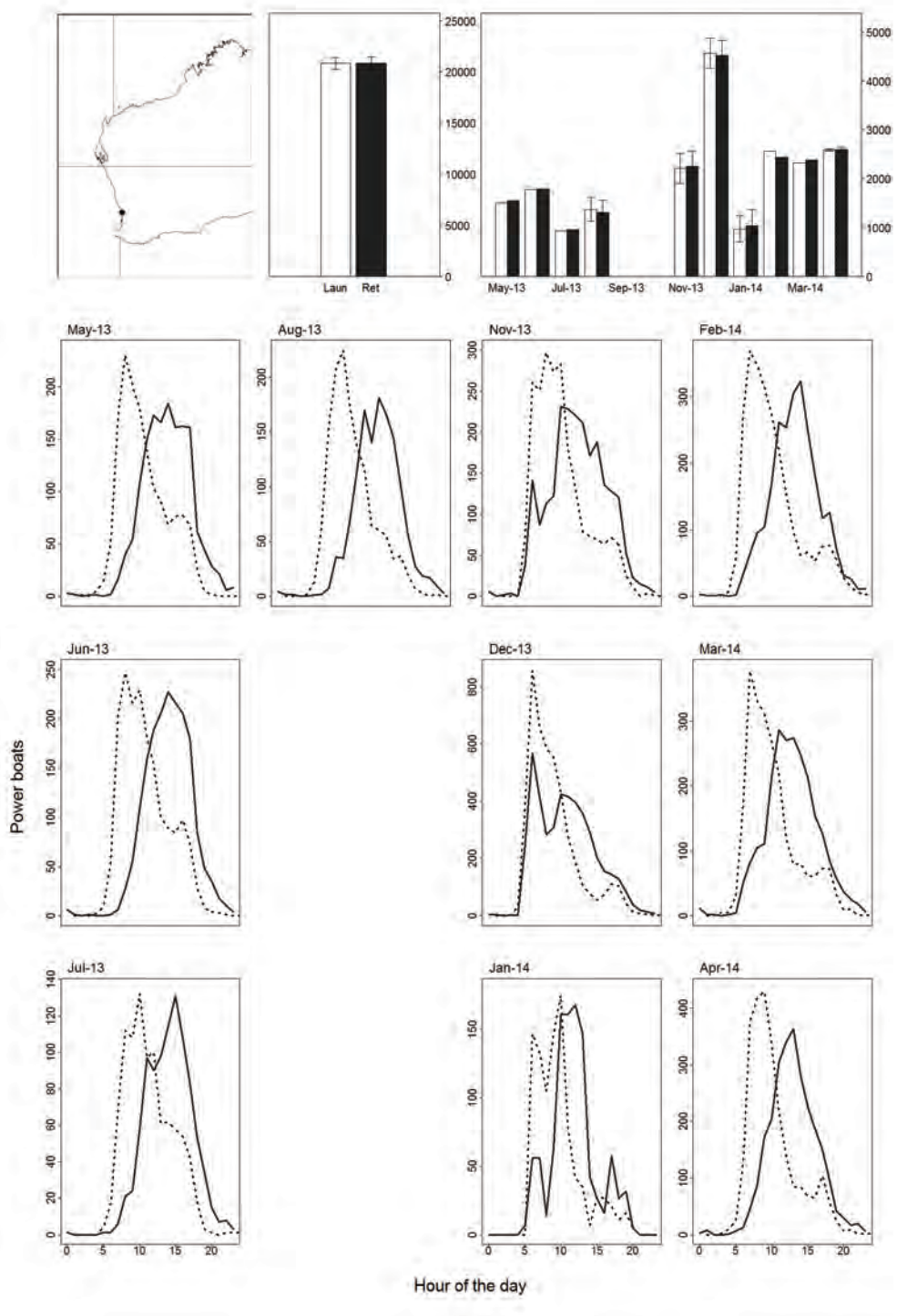

Figure 83. Total power boat launches (white bar) and retrievals (black bar) from Hillarys (Lat 31.822, Long 115.739) during 2013/14 (top centre); total launches (white bars) and retrievals (black bars) by month (top right); and hourly launches (dotted line) and retrievals (solid line) by month. Error bars are 1 standard error where data imputation required for missing data.

Data for September to October 2013 were unavailable.

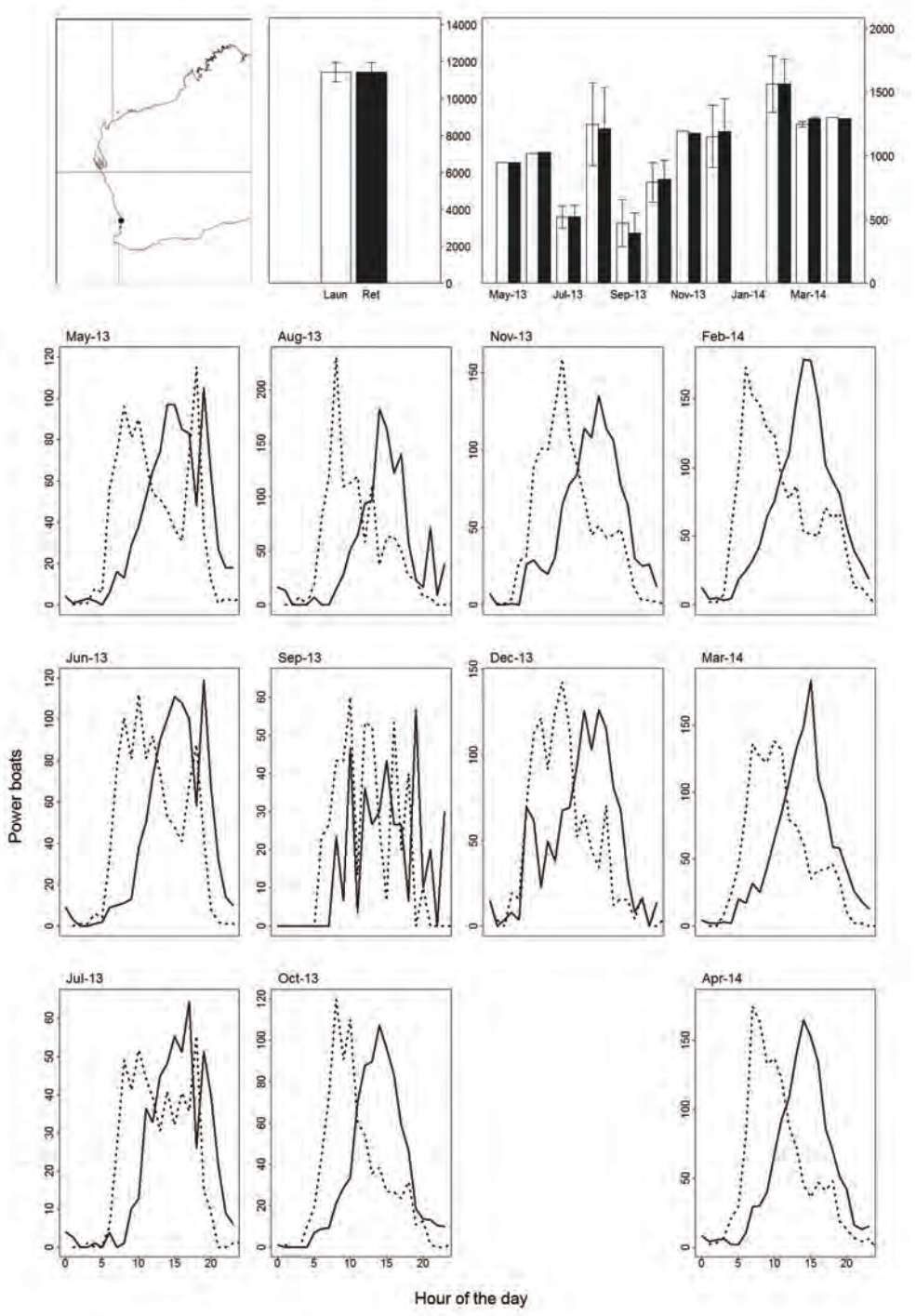

Figure 84. Total power boat launches (white bar) and retrievals (black bar) from Leeuwin (Lat 32.030, Long 115.762) during 2013/14 (top centre); total launches (white bars) and retrievals (black bars) by month (top right); and hourly launches (dotted line) and retrievals (solid line) by month. Error bars are 1 standard error where data imputation required for missing data.

Data for January 2014 were unavailable.

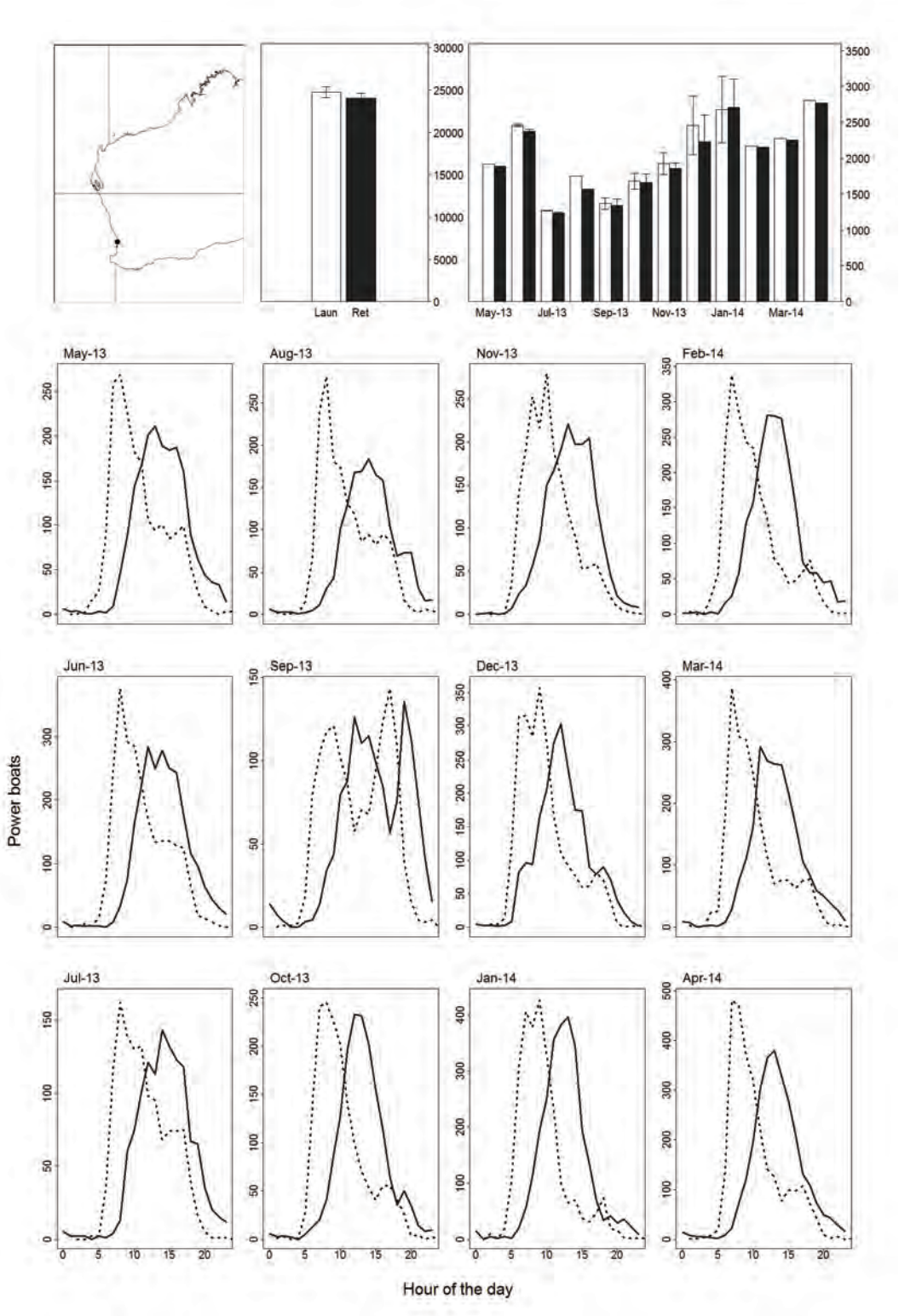

Figure 85. Total power boat launches (white bar) and retrievals (black bar) from Woodmans Point Public Ramp (Lat 32.139, Long 115.762) during 2013/14 (top centre); total launches (white bars) and retrievals (black bars) by month (top right); and hourly launches (dotted line) and retrievals (solid line) by month. Error bars are 1 standard error where data imputation required for missing data.

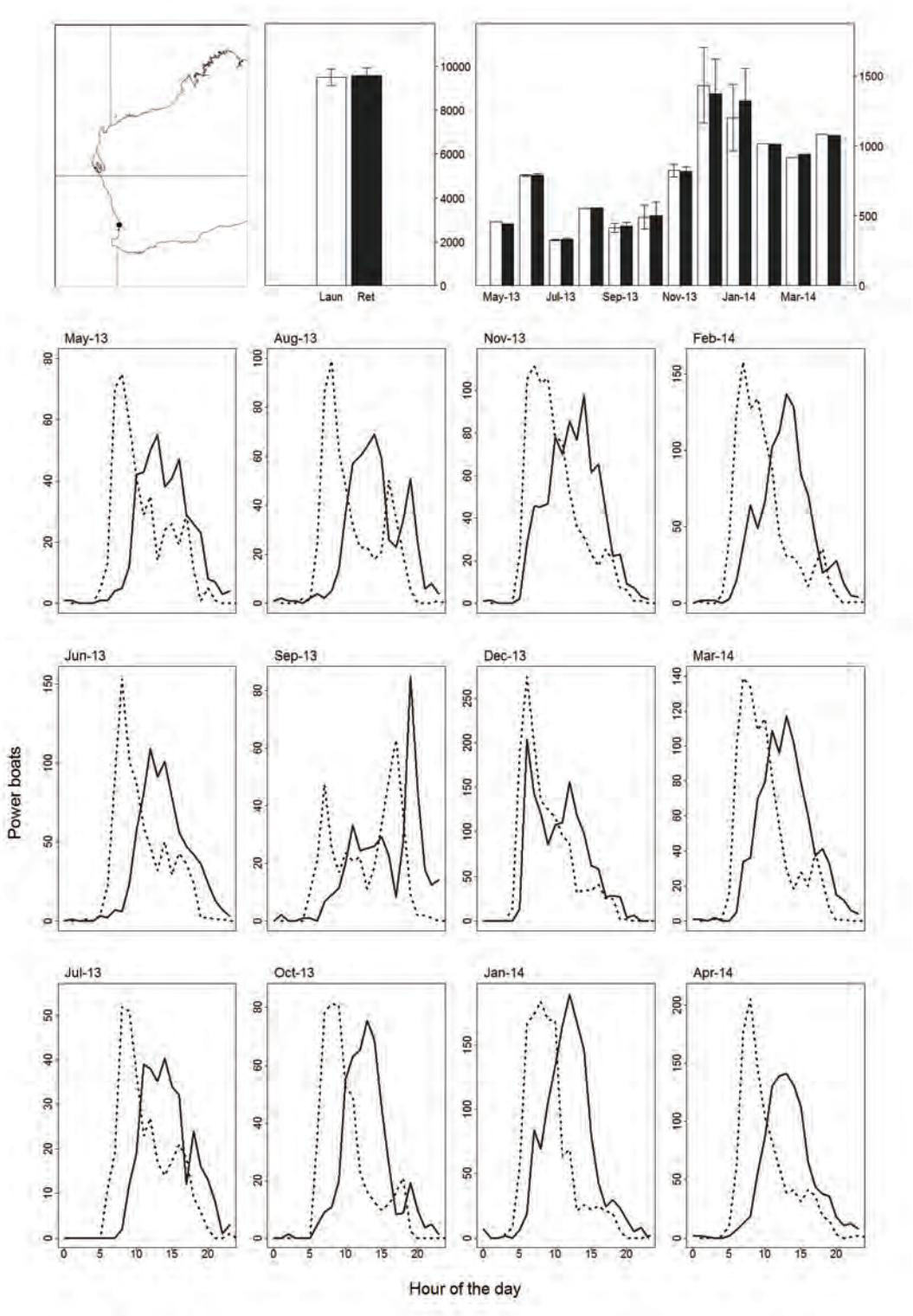

Figure 86. Total power boat launches (white bar) and retrievals (black bar) from Woodmans Point Private Ramp (Lat 32.139, Long 115.762) during 2013/14 (top centre); total launches (white bars) and retrievals (black bars) by month (top right); and hourly launches (dotted line) and retrievals (solid line) by month. Error bars are 1 standard error where data imputation required for missing data.

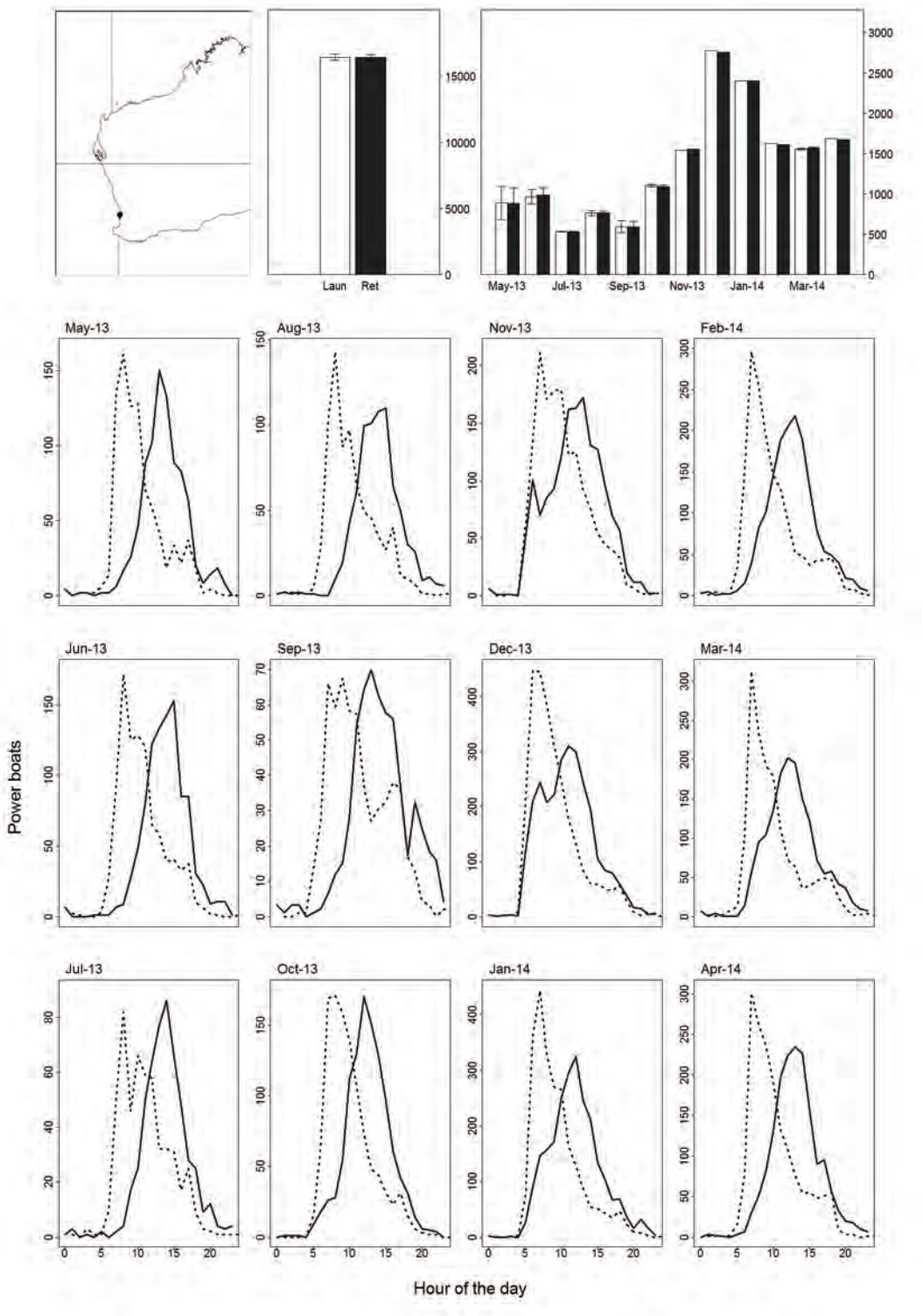

Figure 87. Total power boat launches (white bar) and retrievals (black bar) from Point Peron (Lat 32.271, Long 115.698) during 2013/14 (top centre); total launches (white bars) and retrievals (black bars) by month (top right); and hourly launches (dotted line) and retrievals (solid line) by month. Error bars are 1 standard error where data imputation required for missing data.

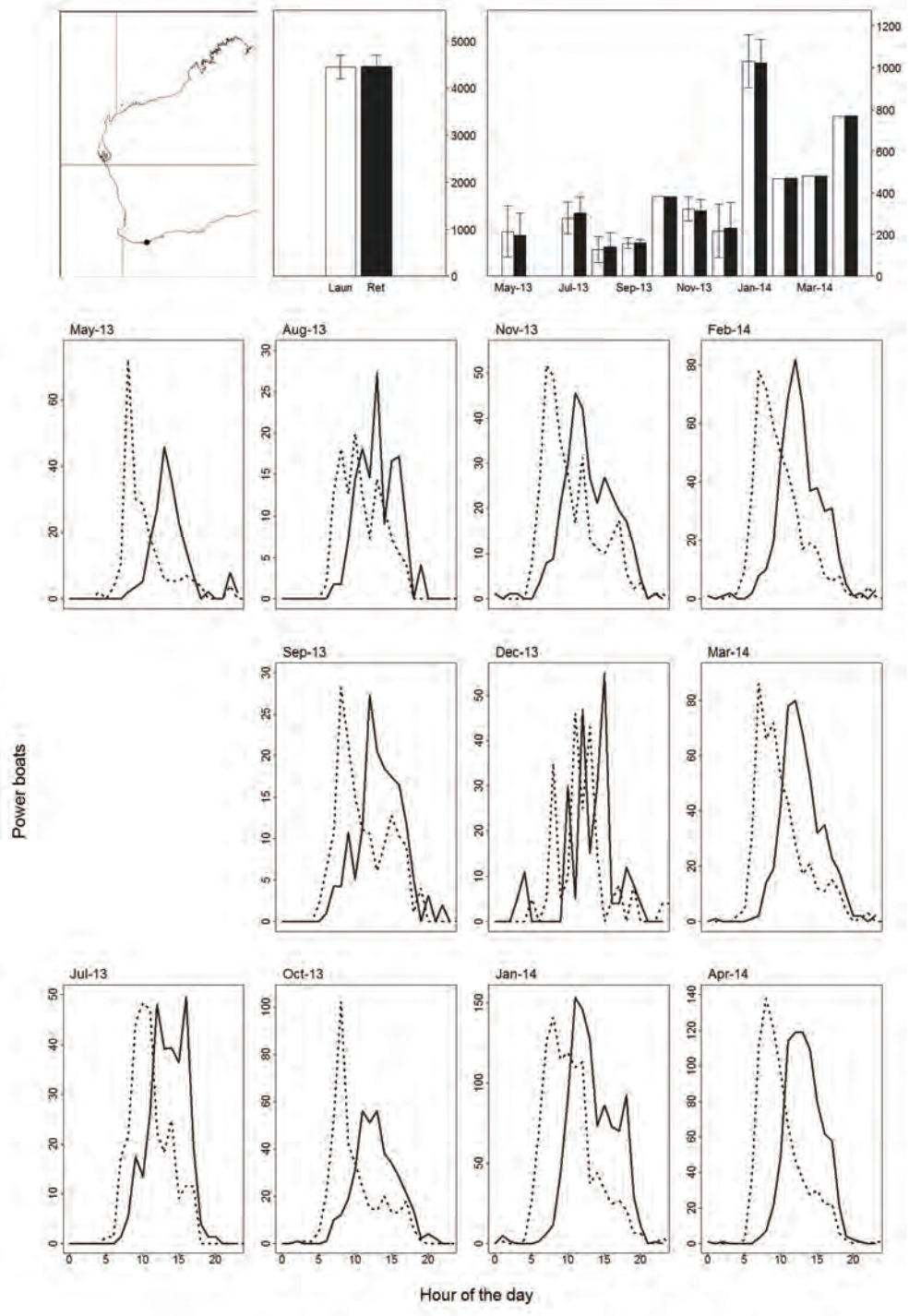

Figure 88. Total power boat launches (white bar) and retrievals (black bar) from Emu Point (Lat 34.995, Long 117.945) during 2013/14 (top centre); total launches (white bars) and retrievals (black bars) by month (top right); and hourly launches (dotted line) and retrievals (solid line) by month. Error bars are 1 standard error where data imputation required for missing data.

Data for June 2013 were unavailable.

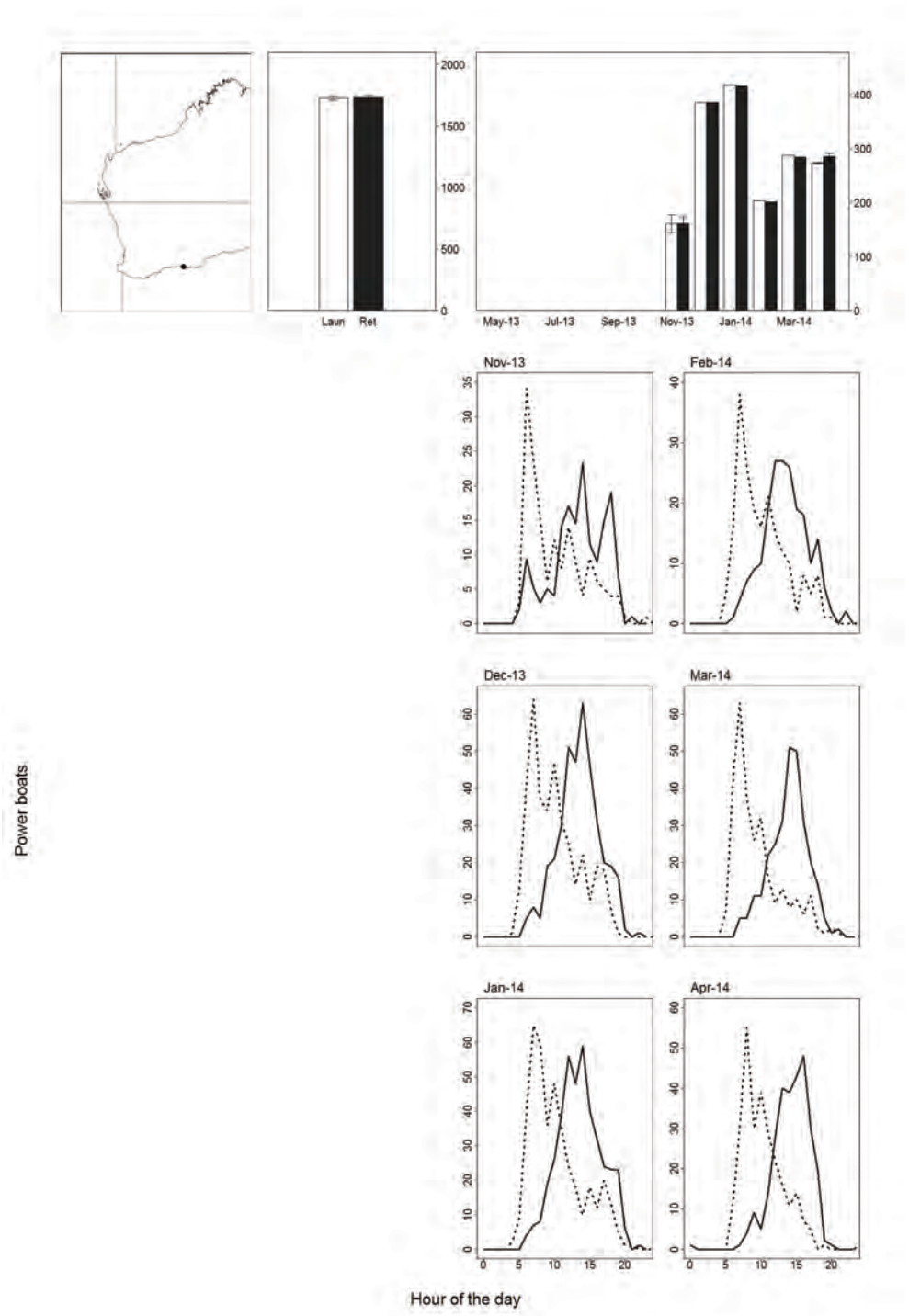

Figure 89. Total power boat launches (white bar) and retrievals (black bar) from Bandy Creek (Lat 33.831, Long 121.932) during 2013/14 (top centre); total launches (white bars) and retrievals (black bars) by month (top right); and hourly launches (dotted line) and retrievals (solid line) by month. Error bars are 1 standard error where data imputation required for missing data.

Data for May to October 2013 were unavailable.