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TASMANIAN RECREATIONAL ROCK LOBSTER AND ABALONE FISHERIES: 2022–23 FISHING SEASON

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Executive Summary

This report provides an assessment of the 2022–23 recreational rock lobster and abalone fishing season and continues the time series monitoring trends in these fisheries commenced in the mid-1990s.

The number of licence holders during the 2022–23 season was similar to the number of licence holders in 2021–22. During 2022–23 almost 18,114 persons held at least one recreational rock lobster licence; a ~0.6% decrease in licence numbers when compared to 2021–22, and 11,658 persons held a recreational abalone licence; a decrease of ~1% numbers when compared with 2021–22.

The assessment was undertaken using a survey involving a random sample of licence-holders who were contacted by telephone prior to the start of the 2022–23 fishing season and invited to participate in a phone-diary survey to monitor their rock lobster and abalone fishing activity between November 2022 and April 2023. A total of 434 respondents completed the survey (79% effective response rate), providing detailed catch and effort information for each fishing trip undertaken. These data were scaled up to represent the activity of all licence-holders.

Rock Lobster

The 2022–23 rock lobster season for all waters outside of the East Coast Stock Rebuilding Zone (ECSRZ) opened on 5 November 2022 and closed on 30 April 2023 in the eastern region and on 30 August 2023 in the western region. The ECRSZ opened on 3 December 2022, representing the tenth year that a split season opening has been applied in the eastern region. The split season has operated since November 2013, initially only two weeks apart, then 4–5 weeks apart since December 2018.

Rock lobster fishing activity was monitored up to the end of April, which meant complete coverage of the fishery in the eastern region but partial coverage of the western region fishery. Up until the end of April, licenced recreational fishers were estimated to have harvested 84,005 (95% CI: 68,045–91,800) rock lobster across 76,741 (95% CI: 62,011–83,881) fisher days. Potting was the dominant method, representing 75% of the effort (days fished) and contributing 63% of the harvest. Dive collection accounted for 24% of the effort and 33% of the harvest, while ring usage contributed 1% of the effort and 3% of the harvest. The state-wide average catch rate was 1.09 lobster per day, with daily harvest rates for dive collection (1.52 lobster) higher than harvested in pots (0.90 lobster).

The rock lobster fishery was concentrated off the east coast which accounted for 82% of the harvest (by number). Catch from the north and west coasts each accounted for a further 9% of the harvest. Conversion of lobster numbers to weight produced a state-wide harvest estimate of 102.6 tonnes for the survey period, with catch from the east coast accounting for 76%, the north coast 14%, and the west coast 10%.

State-wide, 11.2% of the active fishers harvested no legal sized lobsters, 50.2% harvested five or fewer lobsters and 9.5% took 16 or more lobsters during the survey period. This proportional breakdown was similar when limited to the fishery off the east coast.

Overall, the recreational catch represented about 60% of the Total Allowable Recreational Catch (TARC) of 170 tonnes and about 7.1% of the 2022–23 Total

Allowable Catch (TAC) of 1,221 tonnes, which includes the Total Allowable Commercial Catch (TACC) of 1,051 tonnes.

A key component of the East Coast Stock Rebuilding Strategy has been the implementation of an east coast catch cap and resource sharing arrangement. This is currently set at 79% commercial : 21% recreational allocation of the total catch cap in the ECSRZ. This equated to a notional catch allocation of 35 tonnes for the recreational fishery in the ECSRZ for 2022–23. However, the estimated recreational catch for this zone (71.7 tonnes) exceeded the share by 36.7 tonnes, or 104%. This exceeds "over-catches" in all preceding seasons that ranged between 19 and 46%. "Under-catches" of between 1–15% were reported in three seasons, due to biotoxin closures (2015–16 and 2017–18) and the COVID-19 pandemic (2019–20). While effort has increased slightly in the ECSRZ, the increase in catch appears to be mainly driven by an increase in catch rates. This result is not unexpected. In the absence of additional management restrictions, the combined effects of higher catch rates and participation were predicted to lead to an increase in the east coast catch of between 57 and 125% above 2018/19 levels by 2023.

Table ES1. East Coast Stock Rebuilding Zone recreational catches relative to notional catch allocations.

Season	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Notional catch allocation	42 t	42 t	42 t	41 t	40 t	35 t	35 t	35 t	35 t
Catch estimate	55.6 t	35.7 t	50.2 t	40.4 t	48.6 t	33.6 t	51.1 t	46.5 t	71.7 t
Over/under catch	+13.6 t	- 6.3 t	+ 8.2 t	- 0.6 t	+ 8.6 t	-1.4 t	+ 16.1	+ 11.5	+ 36.7
% over/under catch	+ 32%	- 15%	+ 19%	- 1%	+ 21%	- 4%	+ 46%	+ 32%	+ 104%

Abalone

The recreational abalone harvest up until the end of April 2023 was estimated at 48,440 (95% CI: 34,365–57,234) individuals, across 12,509 (95% CI: 9,320–14,542) diver days. Blacklip Abalone accounted for 88% and Greenlip Abalone 12% of the total numbers. In total, 76% of the abalone catch (by numbers) was taken from the east coast, with a further 20% from the north coast and 4% from the west coast. The eastern region daily bag limit of 10 abalone was achieved on around 12% of dives targeting the species. By contrast, the western region daily bag limit of 10 abalone was taken on about 18% of dives. The overall average daily harvest rate for abalone across both regions was 3.87 abalone per day.

By converting numbers to weights, the recreational harvest is estimated at 23.8 tonnes, equivalent to 3% of the 2023 TACC (773.5 tonnes), noting that the survey only accounts for recreational harvest up until April rather than the full year. There are currently no performance indicators or a TARC for the Tasmanian recreational abalone fishery.

Fisher's Observations

Fishers were asked a range of questions about the rock lobster and abalone fisheries, key findings include:

- Eighty five percent (85%) of respondents who fished for rock lobster in 2022-23 indicated that the overall quality of the fishery was about the same or better than in the previous season.

- In relation to satisfaction with catch rates, fishers who dive for rock lobster were more likely to be at least quite satisfied (82%) than pot fishers (79%). Pot fisher satisfaction has increased from 68% in the previous year.

- About 73% of respondents who fished for abalone in 2022–23 indicated that the overall quality of the fishery was about the same or better than in the previous season and 85% of abalone divers were at least quite satisfied with abalone catch rates.

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1 INTRODUCTION

- Rock lobster and abalone have long represented an important food source for the local Aboriginal population as well as being highly prized by recreational fishers in Tasmania.

- Southern Rock Lobster (*Jasus edwardsii*) and occasionally the Eastern Rock Lobster (*Sagmariasus verreauxi*) are taken by a variety of methods including potting, ring net fishing and dive collection.

- Two species of abalone, Blacklip Abalone (*Haliotis rubra*) and Greenlip Abalone (*H. laevigata*), are targeted by recreational divers. The former species are harvested statewide and dominate overall catch, while *H. laevigata* are generally restricted to the north coast and Bass Strait Islands. In addition to being important recreational species, rock lobster and abalone support major commercial fisheries in Tasmania, both of which are subject to catch quotas.

- Recreational licences (first introduced in the late 1970s) are required to harvest rock lobster and abalone in Tasmania.

- Recreational licences are issued annually, with the licensing year extending from November to the following October. Recreational fishers may hold up to three categories of lobster licence (pot, ring and/or dive) and/or an abalone licence. For licence and fishery limits refer to: https://fishing.tas.gov.au/recreational-fishing

- A sharp fall in licence numbers was experienced in 2015–16 and 2017–18, largely influenced by closures of parts of the east coast early in the season due to harmful algal blooms.

- The decline in licence sales in 2019–20 was partly due to the impact of the COVID-19 pandemic (Lyle et al., 2020b). However, during the 2020–21 season, licence numbers recovered to levels comparable to the mid-2010s, and abalone licence sales followed a similar trend (Lyle et al., 2021).

- Concerns around declining rock lobster stocks in Tasmania were identified in the late 2000s and in 2011–12 east coast stocks were assessed to have hit historically low levels. This is attributed to prolonged impaired recruitment and heavy fishing pressure (Hartmann et al., 2013, 2019).

- To prioritise additional management for the areas of most concern, the fishery was split into two regions in 2011 (Figure 1). In the eastern region, bag and possession limits were reduced from 5 to 3 and from 10 to 6, respectively. These were further reduced to a bag and possession limit of 2 and 4 in November 2015.

- The East Coast Stock Rebuilding Strategy (ECSRS) was implemented in 2013 with a goal to rebuild east coast stocks to greater than 20% of the unfished stock level by 2023 (DPIPWE 2013). A key element of this strategy is to limit annual total catch (recreational and commercial) off the east coast. This was initially set at 200 tonnes. In 2016, the Tasmanian Minister for Primary Industries and Water determined that the catch limit for the ECSRZ (Figure 1) be split 79% to commercial and 21% to recreational sectors, reflecting the historic proportion of commercial and recreational catches from within the rebuilding zone. In 2019–

20, catch targets were further reduced, with 113 tonnes allocated to the commercial fishery and 42 tonnes the recreational sector. This was further reduced to 35 tonnes for the recreational sector for the 2019–20, 2020–21, 2021–22, and 2022–23 seasons.

- Since 2013, a split season opening has been applied for the eastern region, with waters outside the ECSRZ opening on the same date as the western region (5 November 2022) while opening of the ECSRZ was delayed by five weeks (3 December 2022) as a measure to help constrain recreational catches within the rebuilding zone.

- Rule changes implemented in November 2019 included a reduction in the state-wide possession limit to 10 abalone and, for the eastern region, a reduction in the daily bag limit to 5 abalone and the introduction of a boat limit of 25 abalone. However, these were repealed on 9 November 2021, with a statewide bag limit of 10 and possession limit of 20 applying with no boat limit.

- For the 2022–23 rock lobster season, new size limits were implemented. Here, a 120 mm size limit for females and 110 mm for males was expanded to areas north of Cape Pillar (43° 13’ 18” S) on the east coast, to north of the Henty River on the west coast (43° 00’ S). Bag, boat and possession limits remained unchanged. New size limits south of Cape Pillar and Henty River consisted of 105 mm for females, and 110 mm for males.

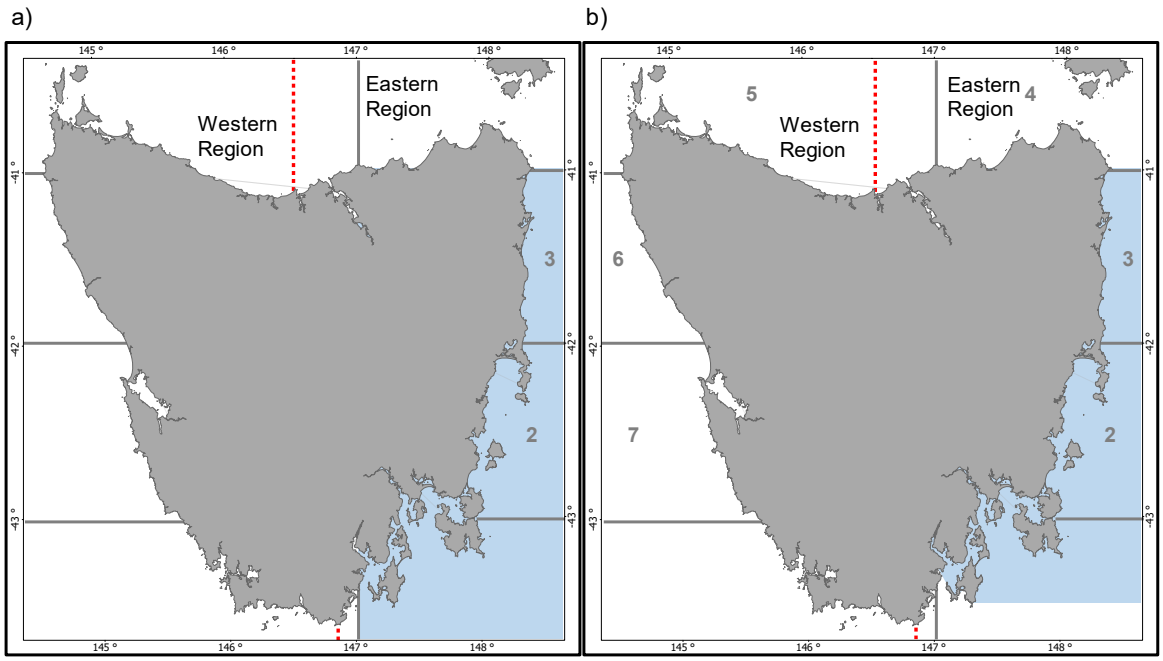

Figure 1. Map of Tasmania showing assessment areas (numbered), stock rebuilding zone (ECSRZ) (shaded) and the Eastern and Western Region boundary (red dotted line): a) ECSRZ that applied between 2013-14 and 2016-17; b) adjusted ECSRZ that applied from 2017-18.

This survey is the 18th in a series for rock lobster and the 17th for abalone undertaken since 1996. Key objectives include characterisation of the 2022–23 rock lobster and abalone fisheries in terms of participation, fishing effort and catch, with particular focus on the fishery off the east coast.

2 METHODS

The survey applied the same methodology used in previous recreational rock lobster and abalone surveys (please refer to Lyle & Morton 2004, 2006; Lyle & Tracey 2010, 2012, 2014, 2016a,b, 2017; Lyle et al. 2008, 2019a, 2020b, 2021, Graba-Landry et al. 2022) and independently reviewed by Pollock (2010). The design involves two-stages: 1) an initial telephone interview to profile licence-holders, establish eligibility for the second stage and recruit participants, and 2) a telephone-diary survey in which fishing activity is monitored in detail over the diary period. This period included the licensing year up until the closure of the eastern region rock lobster fishery (1 November and 30 April).

3 RESULTS

3.1 Rock Lobster

3.1.1 2022–23 Catch and Effort

Information reported in this, and following sections, relates to diary survey data provided by fully responding licence holders and is presented as expanded estimates representative of the activities of all recreational rock lobster licence holders between November 2022 and April 2023, inclusive.

An estimated 75.7% (SE 2.4%) of licence holders fished for rock lobster at least once during the fishing season with 67.3% (SE 2.4%) harvesting at least one lobster during the diary period. That is, out of the 18,113 licence-holders, 13,715 fished for lobster with 12,189 retaining at least one rock lobster for the period.

Overall, total fishing effort was estimated to be 78,743 fisher days[1] from November to April, yielding a total harvest of 84,005 lobster (Table 1). This represents an average harvest rate of 1.09 lobster per day. Pots were the most popular fishing method (accounting for 63% of the total harvest) followed by dive collection (34%) and rings (3%) (Table 1). More than three times as many fisher days were spent using pots compared with diving, however, the total pot catch was less than that taken by divers. This difference reflects the higher average catch rate for divers (1.52 lobster per day) compared to potters (0.90 lobster per day). Although ring usage is comparatively uncommon, recreational fishers are permitted to use up to four rings at a time - the average reported catch rate was 2.37 lobster per day.

Table 1. Rock lobster effort, harvest and harvest rates for the 2022–23 season up until 30 April. Values in parentheses represent the 95% confidence intervals. Note: since multiple methods can be used on a day, total fishing days may be less than the sum of the method totals.

Method	Harvest (no.)	Effort (days)	Mean harvest rate (no. day^{-1})
Pot	53,042 (41,537–61,398)	58,968 (44,920–66,564)	0.90
Dive	28,281 (18,905–34,751)	18,646 (13,117–21,901)	1.52
Ring	2,682 (1,326–4,173)	1128 (652–1,714)	2.37
Total	**84,005 (68,045–91,800)**	**78,743 (62,012–83,881)**	**1.09**

3.1.2 Regional Catch and Effort

Catch, effort and catch rates by fishing areas are summarised in Table 2 and Figure 2 and indicate that the fishery was primarily concentrated on the east coast (Areas 1–3). This combined region accounted for 82% of the total estimated harvest and attracted 87% of the total effort during the survey period. Area 1 was the most heavily fished zone and accounted for 44% of the state-wide harvest and 46% the total effort. The north coast (Areas 4–5) accounted for 8.7% of the harvest and 9% of effort while the west coast (Areas 6–8) contributed 9.1% of the total harvest and 5% of total effort.

Marked regional differences were evident in the proportion of the rock lobster harvest taken by different fishing methods (Figure 3). Pots accounted for the bulk of the harvest in Areas 1–3 (59–89%) and Areas 6–7 (68–69%), while dive collection was the primary capture method in Areas 4 (54%), 5 (79%), and 8 (83%). Ring fishing only recorded from Areas 6 and 7.

Mean daily harvest rates were highly variable around the state, ranging from 0.99 lobster per day in Area 3 to 2.69 in Area 7 (Table 2). Stock abundance and fishing pressure

[1] A fisher day is defined as a day in which lobster was a nominated target species and/or lobster were caught.

(including commercial activity), along with differing regional bag limits and the relative mix of fishing methods used (Figure 3), are key factors accounting for regional variability.

Table 2. Recreational rock lobster effort, harvest and harvest rates for all fishing methods pooled by fishing area for 2022–23. Values in parentheses represent the 95% confidence intervals.

Area	Harvest (no.)	Effort (fisher-days)	Harvest rate (no. per fisher-day)
1	38,988 (27,747–45,528)	35,662 (25,418–45,793)	1.09
2	16,042 (10,344–20,011)	15,380 (9,732–17,740)	1.04
3	15,925 (9,991–21,282)	16,042 (9,906–20,341)	0.99
4	5,341 (2,740–8,894)	4,680 (2,769–6,964)	1.14
5	2,032 (647–4,454)	1,892 (820–2,584)	1.07
6	3,210 (1,709–4,989)	1,351 (734–2,030)	2.37
7	3,894 (1,452–6,087)	1,448 (611–2,124)	2.69
8	574 (0–1,610)	285 (0–799)	2.01

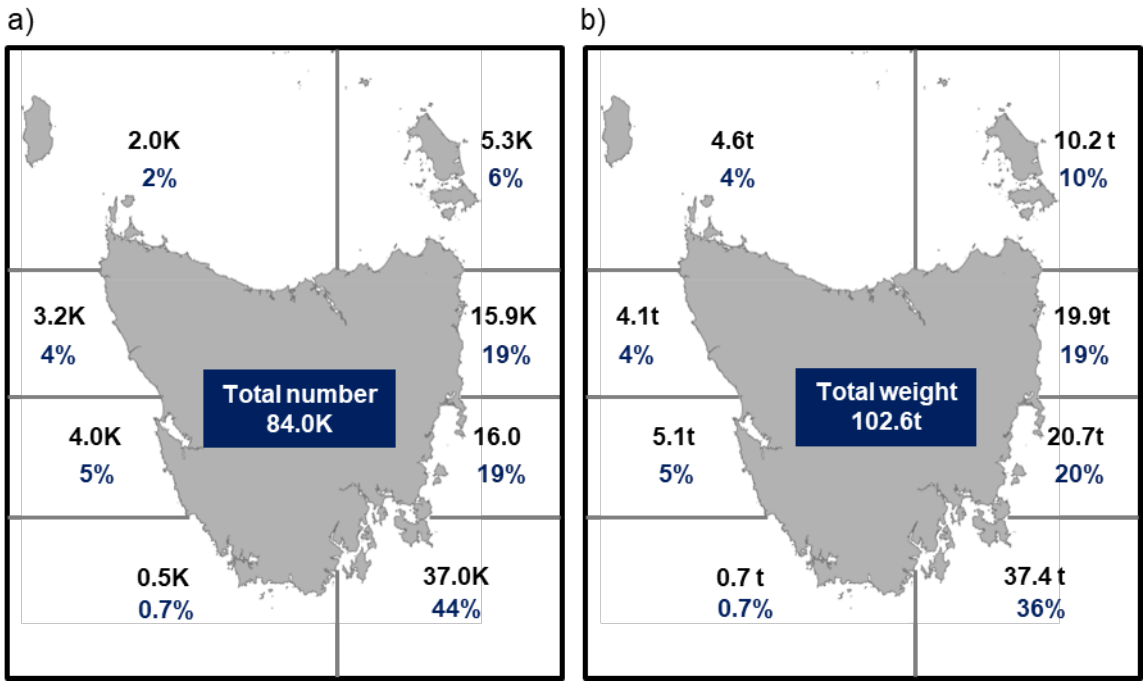

Figure 2. Recreational harvest of rock lobster by assessment area: a) Numbers harvested (in 1000s or K) and proportion (%) of total number; b) Estimated harvest weight and proportion (%) of total weight.

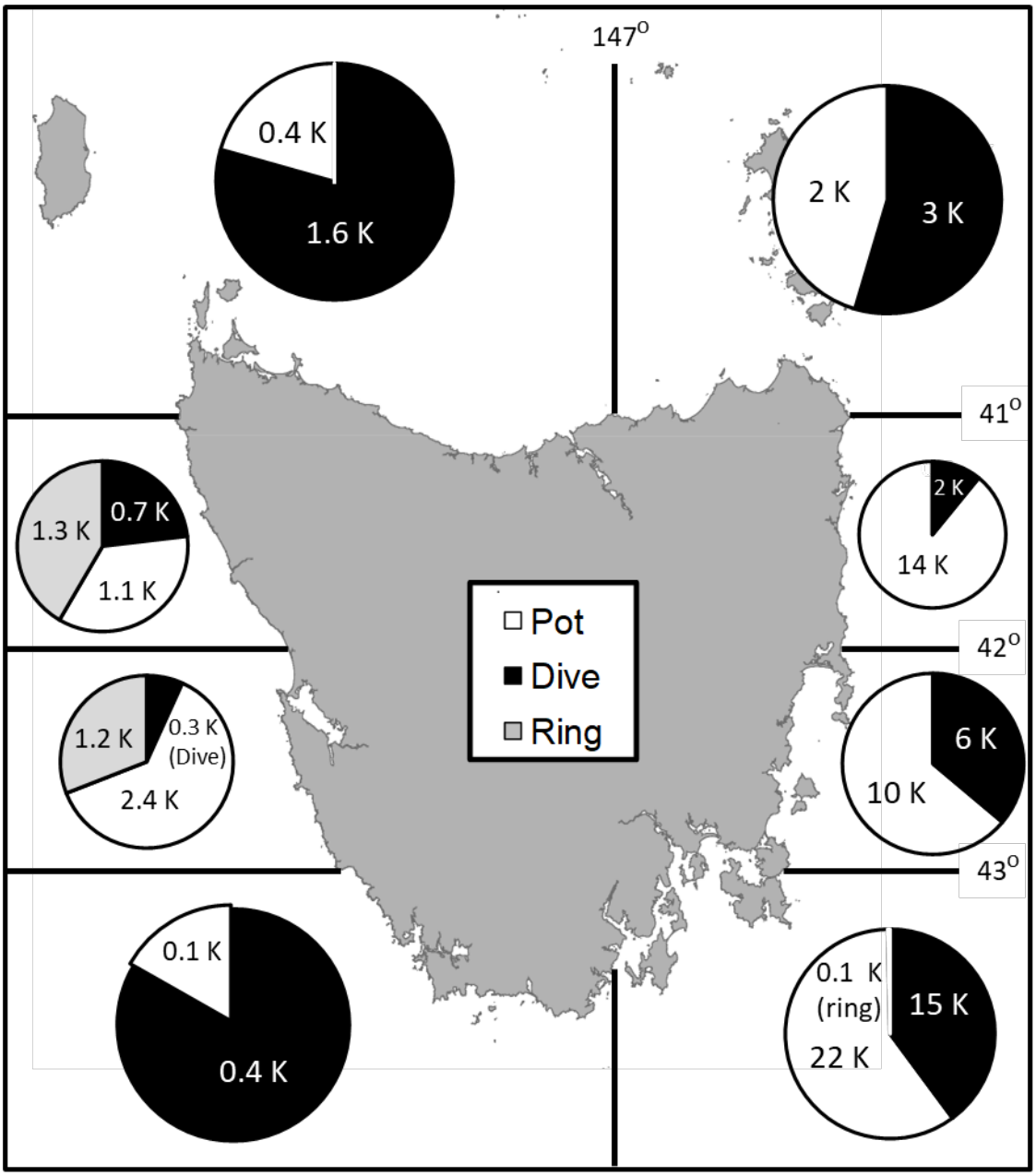

Figure 3. Proportion of regional harvest by fishing method (pie charts).

3.1.3 Southeast Coast

Catch data for Area 1 have been disaggregated into five sub-areas to better describe the spatial characteristics of the fishery in the southeast (Figure 4). Waters surrounding the Tasman Peninsula and Storm Bay (including eastern Bruny Island) accounted for 61% of the harvest by number, with the area to the south of Bruny Island contributing a further 16%. Norfolk and Frederick Henry Bays and the Derwent Estuary accounted for 11.3% and 7%, respectively, while comparatively lower catches (3%) were reported from the D'Entrecasteaux Channel.

There were also marked regional differences in the proportion of rock lobster taken by different fishing methods in Area 1 (Figure 4). Dive catches dominated in the Derwent,

and D'Entrecasteaux Channel, whereas pots accounted for most of the harvest taken from all other sub-areas.[2]

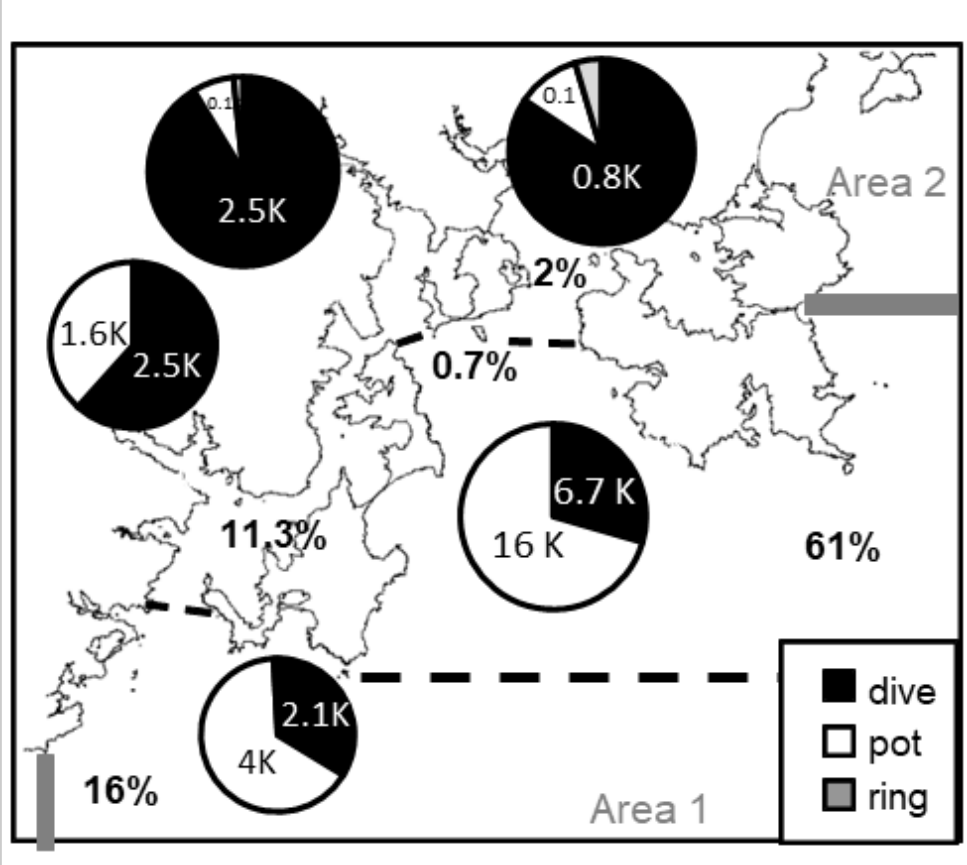

Figure 4. Regional distribution of Area 1 harvest (%) and proportion of harvest by method (pie charts).

3.1.4 Seasonal Catch and Effort

Waters outside the ECSRZ were opened during the first weekend in November. Waters within the ECSRZ opened on 3 December. The delay in opening the ECSRZ is reflected in the peak in fishing activity occurring in December (Figure 5). Catch and effort levels fell sharply thereafter.

Seasonal variation in catch and effort was largely driven by pot fishing activity, with almost 70% of potting catch and effort occurring between December and January (Figure 5). Following a sharp decline in fishing activity in February there was a slight increase associated with the Easter holiday period in April, a pattern that is typical for this fishery. Dive activity followed a similar pattern to pot fishing in the December–January period, and total fishing across both methods in the December–January period accounted for 67% of the total harvest (Figure 5).

[2] Note: The Recreational Rock Lobster and Abalone Survey uses a different area for the D'Entrecasteaux channel than the legislated area. For this survey, the D'Entrecasteaux Channel is considered from Southern Esperance Bay directly across to North Satellite Island and from Dennes point and a line to Pearson's Point (includes Dover, and the inside of Bruny Island).

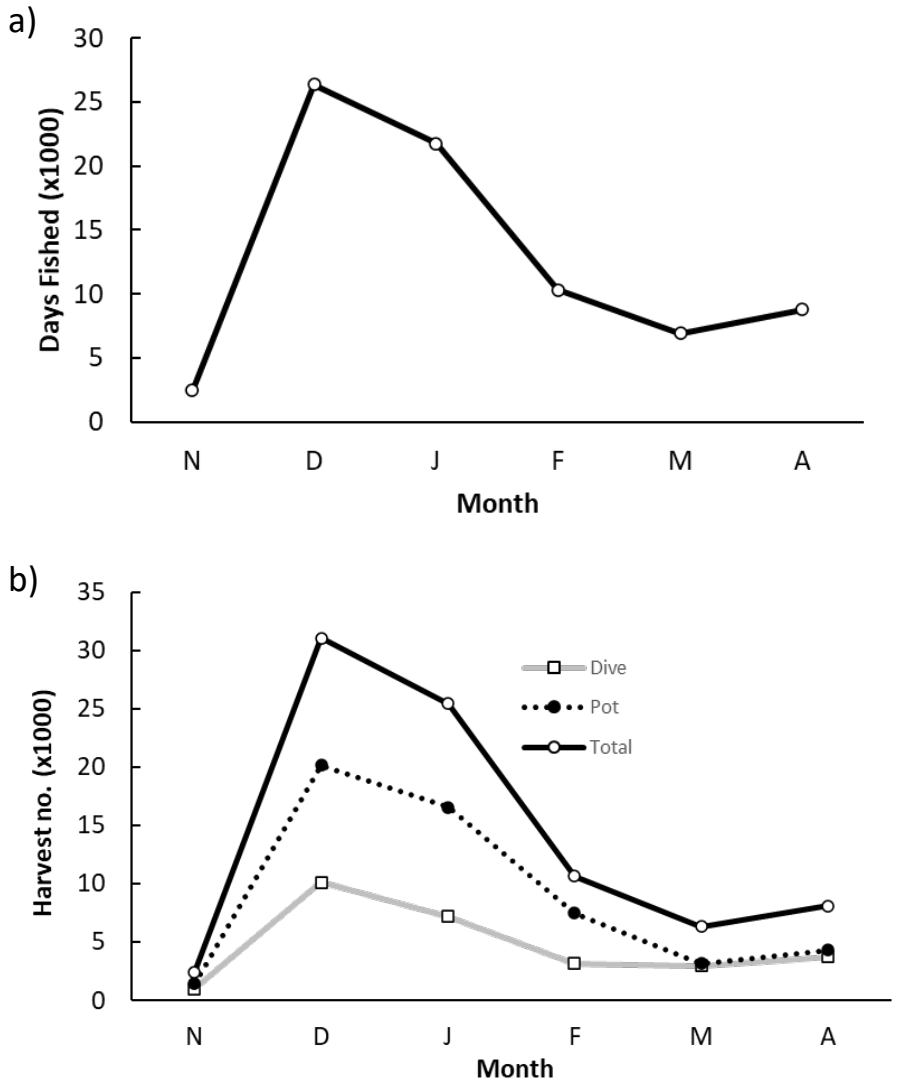

Figure 5. Recreational rock lobster harvest (numbers) and effort (days fished) by month and method for the 2022–23 fishing season.

3.1.5 Daily Harvest

Daily catch distributions differed markedly by fishing method and between management regions (Figure 6). For example, potting days resulting in no retained catch were 41% and 27% of total pot fishing days in the eastern (Areas 1–4) and western (Areas 5–8) regions, respectively. The eastern region daily bag limit of two lobster was achieved on 29% of pot-days fished whereas in the western region 46% of pot-days resulted in catches of at least two lobsters, with 4% resulting in the western region bag limit of five being taken. By contrast, divers had higher success rates, with 82% of all dives in both regions resulting in the harvest of at least one lobster. The daily bag limit of two lobster was achieved in 66% of the eastern region dives whereas in the western region divers took at least two lobsters in 42% of dives and the daily bag limit of five lobster in 9% of dives.

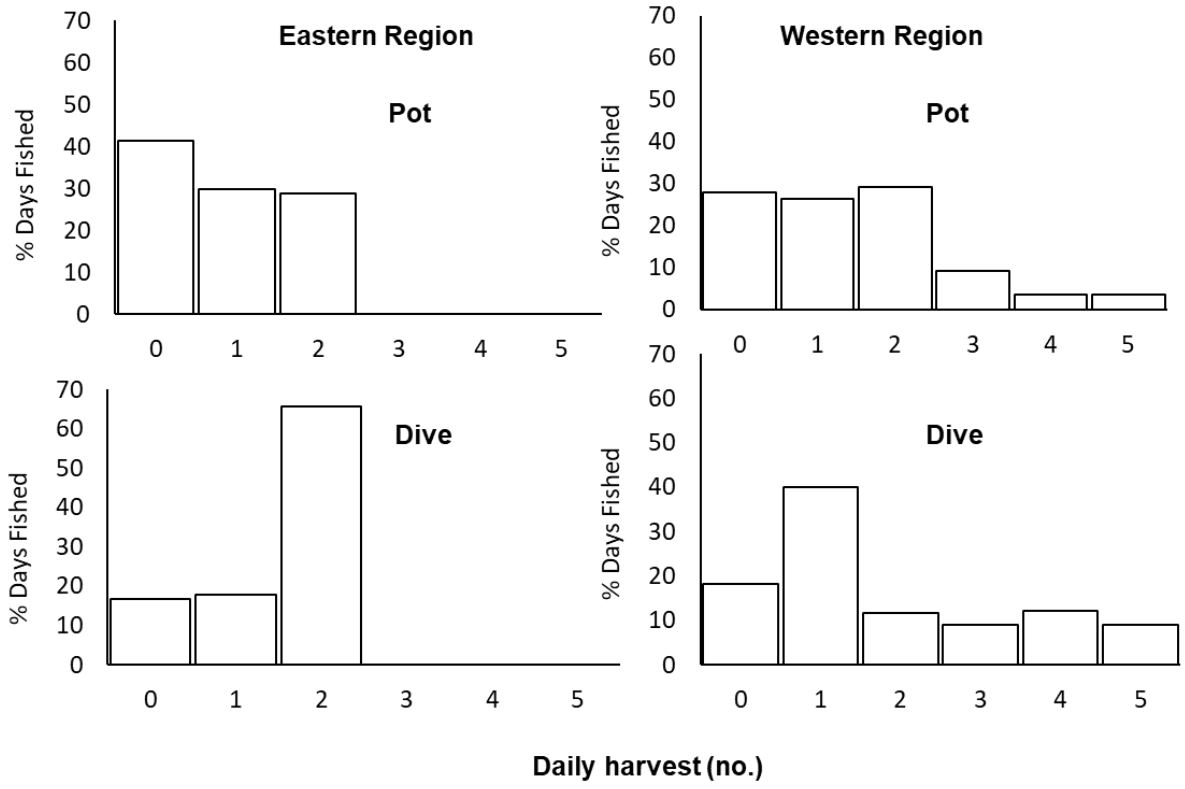

Figure 6. Distribution of daily rock lobster harvest by fishing method and management region.

3.1.6 Individual Seasonal Harvest

Individual season limits for recreational fishers have been flagged as a potential management option to constrain the overall recreational harvest and share catches more equitably between fishers. It was, therefore, worthwhile to report on the numbers of rock lobster retained by individual fishers up to the end of April (Figure 7). State-wide, 11.2% of the active fishers harvested no legal sized lobsters, 50.4% harvested 5 or fewer lobsters and 9.5% took 16 or more lobsters during the survey period. The proportional breakdown was similar when limited to the east coast fishery.

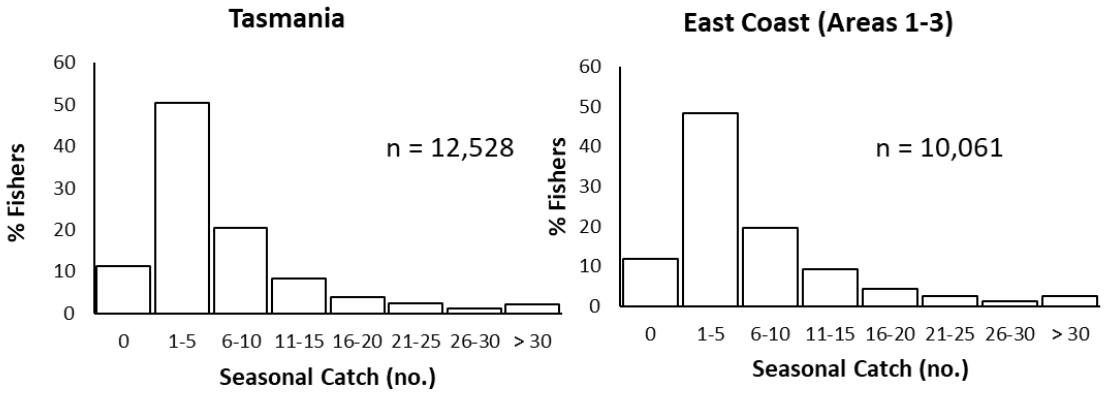

Figure 7. Seasonal harvest of rock lobster for fishers who were active within the east coast (Areas 1–3) and for the whole fishery. n is estimated number of active licence-holders.

3.1.7 Released Catch

A total of 64,911 rock lobster were estimated to have been released from pots, equivalent to 1.22 for every retained lobster (53,042). About 90% of pot releases were due the capture of undersized rock lobster, 4% were due to over catch limit, and 2% were discarded dead or damaged or 'in berry'. Although divers release some rock lobster, much of this 'sorting' occurs underwater and therefore a similar analysis of reasons for release by divers was not attempted.

3.1.8 Size Composition

Diarists reported lengths for 707 pot-caught, 351 dive-caught and 15 ring-caught rock lobsters. Pot-caught lobsters ranged between 105–280 mm carapace length, when converted to weight this equated to an average of 1112 g per lobster. Dive caught lobsters had a similar size range,107–225 mm, but were heavier on average (1,330 g). Male to female sex ratios were 1.0:0.51 for pot-caught lobster and 1.0:0.42 for dive-caught lobster. Length frequency distributions by region are presented in Figure 8. Apart from the east coast (Areas 1–3) data were limited and may therefore not be more broadly representative.

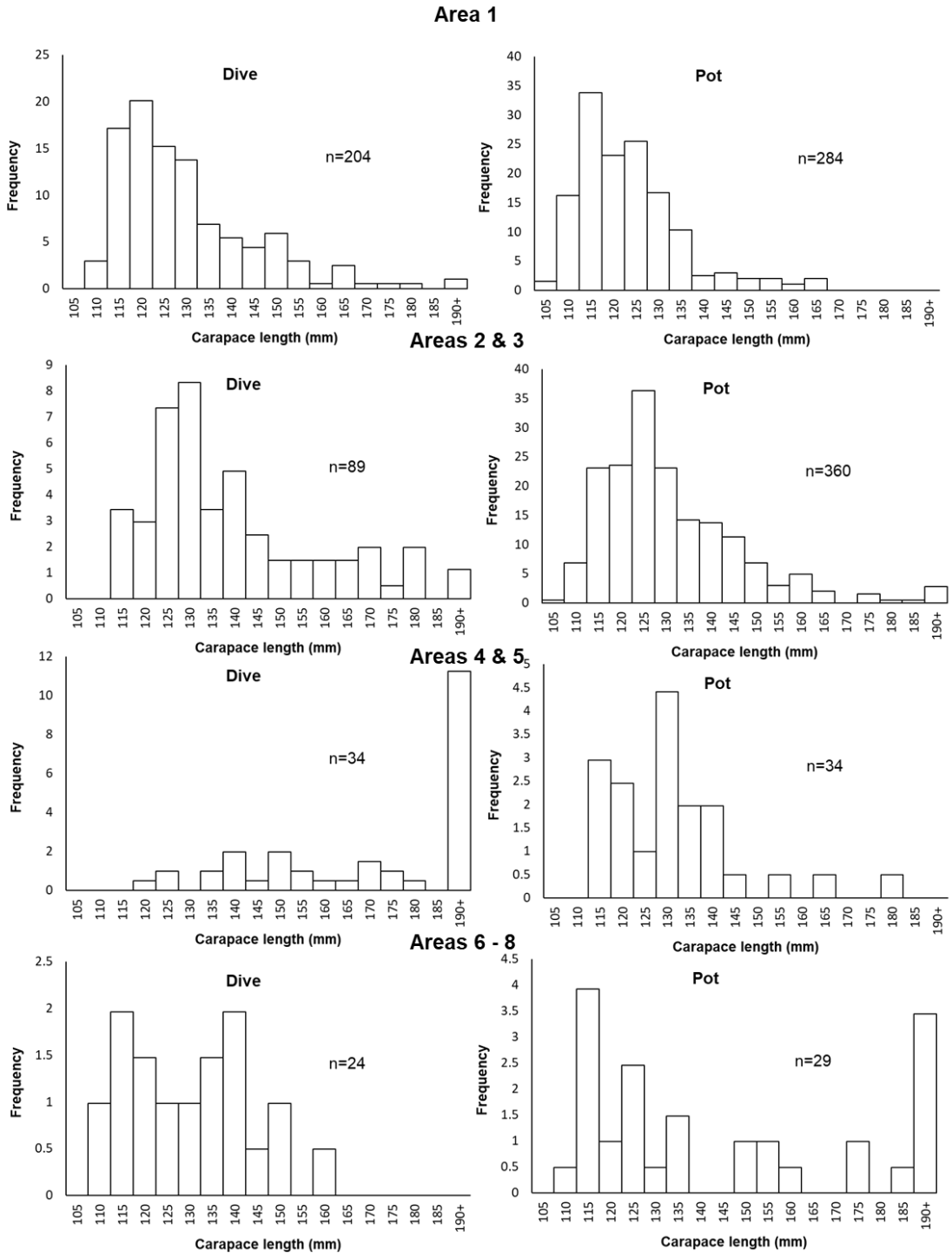

Figure 8. Length frequency distributions by 5 mm size class for recreationally caught rock lobster taken by pot and dive fishing methods by assessment area(s). n is sample size.

3.1.9 Harvest Weights

The weight of the 2022–23 recreational harvest was estimated by multiplying average lobster weights by the number of lobsters harvested by method and area. Average weights by area and method used to determine harvest weights are presented in Table 3.

The state-wide harvest was estimated to be 102.61 tonnes[3], equivalent to 60% of the TARC (170 tonnes). Regional harvest estimates ranged from 36.5 tonnes (Area 1) to less than one tonne (Area 8) (Figure 2b, Table 3). As a proportion of the state-wide recreational harvest by total weight, the east coast (Areas 1–3) accounted for 74%, north coast (Areas 4 & 5) 14.4%, and west coast (Areas 6–8) 9.6%.

Table 3. Average rock lobster weight (g) by method and estimated harvest (kg) by area.

	Av. weight (g)			%
Area	Pot/Ring	Dive	Harvest (kg)	total
1	934	1129	37,412	36.5
2	1230	1388	20,652	20.1
3	1230	1388	19,868	19.4
4	1169	2525	10,200	9.9
5	1169	2525	4,562	4.4
6	1328	1134	4,121	4.0
7	1328	1134	5,123	5.0
8	1328	1134	669	0.7
Total			**102,609**	

3.2 Abalone

3.2.1 2022-23 Catch and Effort

Information reported in this, and following sections relates to diary survey data provided by fully responding licence holders and is presented as expanded estimates representative of the activities of recreational abalone licence holders between November 2022 and April 2023, inclusive.

During the survey period an estimated 43.5% (SE 3.2%) of abalone licence holders (i.e., 5,071 out of the 11,658 licence-holders) fished for abalone with 40.4% (SE 3.1%) (4,713 persons) harvesting at least one abalone.

The total harvest was estimated to be 48,439 abalone (95% CI: 34,364–57,234), caught across 12,509 fisher days[4]. This represents an average harvest rate of 3.9 abalone per day. Blacklip Abalone and Greenlip Abalone accounted for 88% (42,867 individuals) and 12% of the state-wide total catch (5,572 individuals) (Table 4).

[3] Any illegal harvest taken by recreational fishers, whether due to fishing whilst unlicensed or catches in excess of legal limits, is not included in the harvest estimates.
[4] A fishing day was defined as one in which Abalone was a nominated target species and/or Abalone were caught.

Table 4. Abalone harvest, effort and harvest rates by fishing area for 2022–23. Values in parentheses represent the 95% confidence intervals, * average weight based on commercial catch sampling data; ** weighted in accordance with the proportion of Blacklip and Greenlip Abalone in the catch and average species weight.

	Harvest (no.)					
Area	**Blacklip Abalone**	**Greenlip Abalone**	**Effort (fisher days)**	**Harvest rate (no. per fisher day)**	**Av. weight (g)***	**Harvest (kg)**
1	26,185 (16,385–34,877)	947 (133–2,226)	6,319 (4,252–8,044)	4.3	514**	13,954
2	4,290 (1,793–6,588)	-	1,992 (1,102–2,859)	2.2	517	2,218
3	5,185 (1,538–8,560)	-	1,051 (396–1,665)	4.9	528	2,738
4	2,869 (647–5,844)	3,263 (1,094–6,021)	1,914 (960–3,133)	3.2	386**	2,368
5	2,366 (389–2,971)	1,315 (0–1,545)	684 (194–851)	5.4	417**	1,536
6	1,277 (0–3,024)	48 (0- 142)	276 (86–550)	4.8	493**	654
7	238 (0–732)	-	47 (0–147)	5.0	501	119
8	456 (0–1,399)	-	225 (0–695)	2.0	531	242
Total	**42,867** (29,394–52,422)	**5,572** (2,345–7,881)	**12,509** (9,320–14,542)	**3.9**		**23,829**

3.2.2 Regional Catch and Effort

Regional catch, effort and harvest rates for abalone are presented in Table 4. The recreational fishery was concentrated off eastern Tasmania, and in particular the southeast coast (Area 1, 56% total harvest: Figure 9a). Blacklip Abalone were taken from all areas whereas Greenlip Abalone were reported only from Areas 1, 4, 5 and 6. Regional harvest rates varied between 2.0 and 5.4 abalone per day, the highest catch rates were in the west (Area 5) of the state.

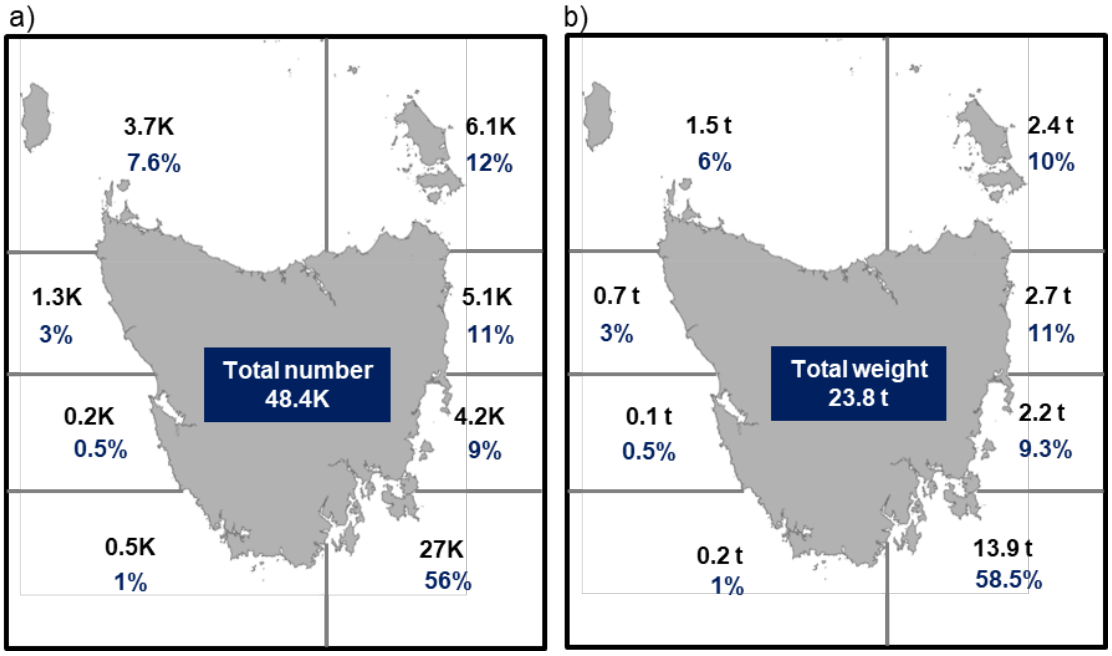

Figure 9. Recreational harvest of abalone by assessment area: a) Numbers harvested (in 1000s or K) and proportion (%) of total number; b) Estimated harvest weight and proportion (%) of total weight.

3.2.3 Seasonal Catch and Effort

The abalone fishery exhibited a strong seasonal pattern, with catch and effort peaking in December (Figure 10). The traditional peak in catch and effort during November was not evident in 2022 (also absent in 2020 and 2021), highlighting the links between the rock lobster and abalone fisheries (most abalone licence-holders also hold rock lobster dive licences). There was also the traditional increase in fishing in April during the Easter break.

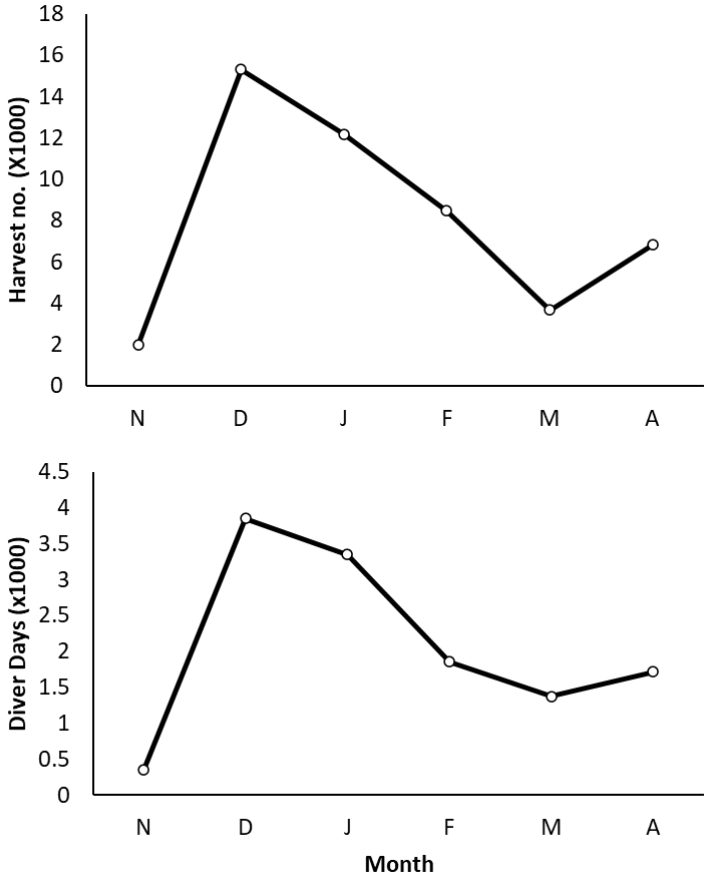

Figure 10. Recreational abalone harvest (numbers) and effort (days fished) by month during the 2022–23 fishing season.

3.2.4 Daily Harvest

The daily bag limit of 10 abalone was achieved in the eastern region in about 12% of all targeted dives and around 18% of dives in the western region (Figure 11). However, the sampling strategy was weighted towards respondents likely to fish off the east coast of Tasmania and thus expansion of data for the western region was limited due to sample size and thus the variance around the estimate is less precise and needs to be treated with caution.

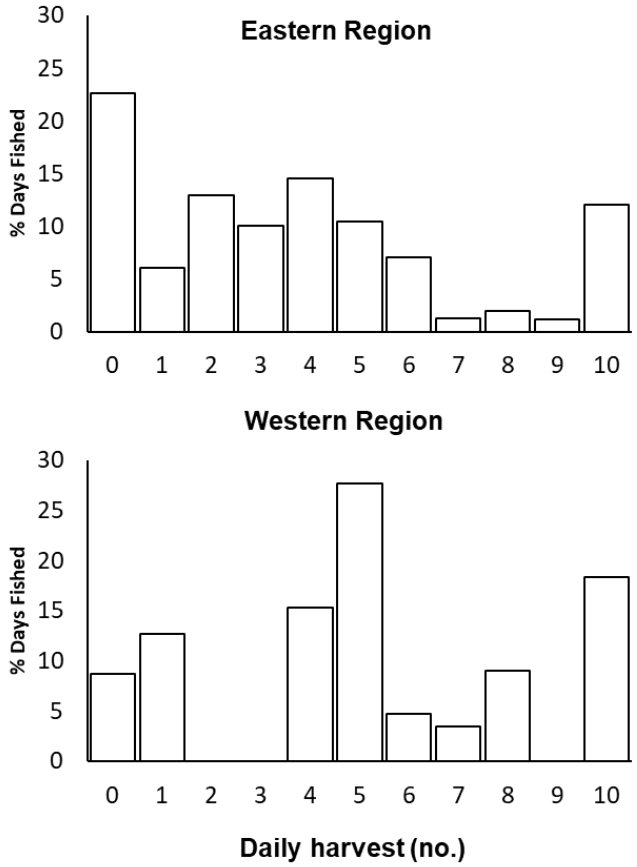

Figure 11. Distribution of daily abalone harvest by management zone for 2022–23 licence holders.

3.2.5 Individual Seasonal Harvest of Abalone

State-wide, 7% of the active fishers harvested no legal sized abalone, 42% harvested 5 or fewer abalone and 18% took 16 or more abalone during the survey period (Figure 12).

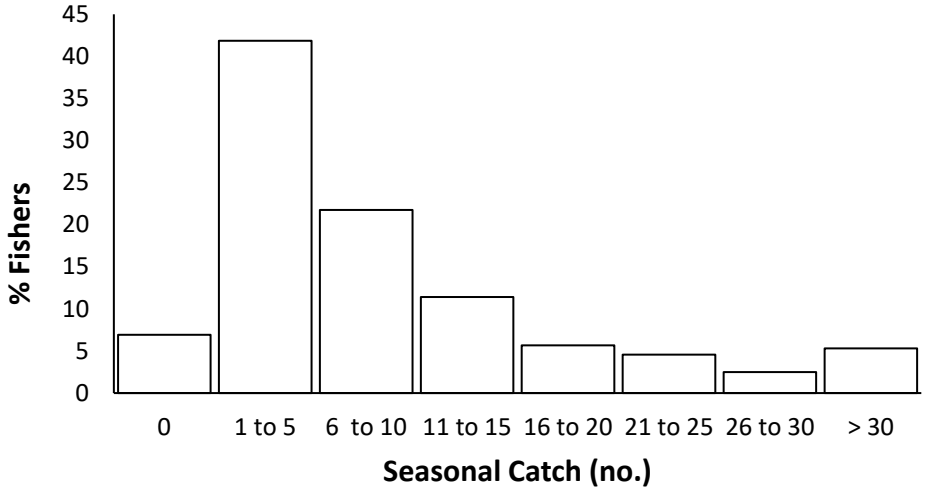

Figure 12. Seasonal harvest of abalone for fishers who were active within the whole fishery (*n* = 4,728).

3.2.6 Harvest Weights

Size composition information was not available for recreationally caught abalone. However, based on commercial catch sampling, the average legal-sized abalone for the major fishing regions was estimated as 514 g off the south coast (Area 1), 386 g off the north coast (Area 4) and 508 g off the west coast (Areas 6, 7 and 8) (Table 4). Using these values, the total statewide recreational harvest between November and April was estimated to be about 23.8 tonnes. Regionally, harvest estimates ranged from 14.0 tonnes in Area 1 to less than one tonne in Areas 6, 7 and 8 respectively (Table 4, Figure 9b). The catch for the combined east coast (Areas 1–3) was 18.9 tonnes, the north coast (Areas 4 and5) 3.9 tonnes, and the west coast (Areas 6–8) 1.0 tonnes.

3.3 Wash-up survey

3.3.1 General

Of the 434 respondents who completed the diary survey, 311 (71.6%) also completed the wash-up survey.

3.3.2 Constraints to Fishing

Diarists who did not report any lobster or abalone fishing activity were asked why they did not fish during the season. A lack of time due to work and/or family commitments was the most cited reason, followed by opportunities limited by poor weather (Figure 13). A lack of time was also the most cited reason for not renewing licences, with the weather being of secondary importance. (Figure 14).

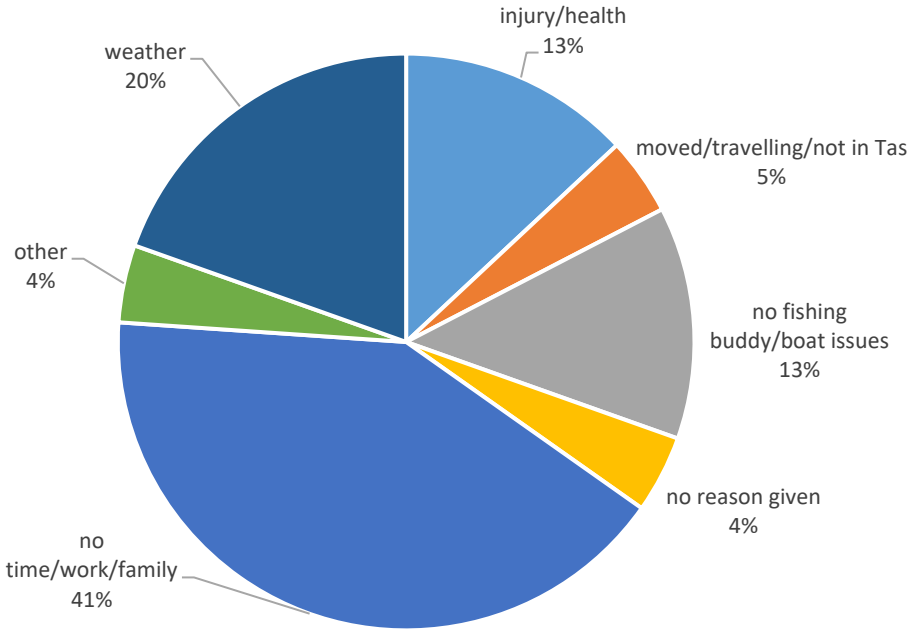

Figure 13. Main reason for not fishing for rock lobster or abalone during 2022-23 season (*n* = 46).

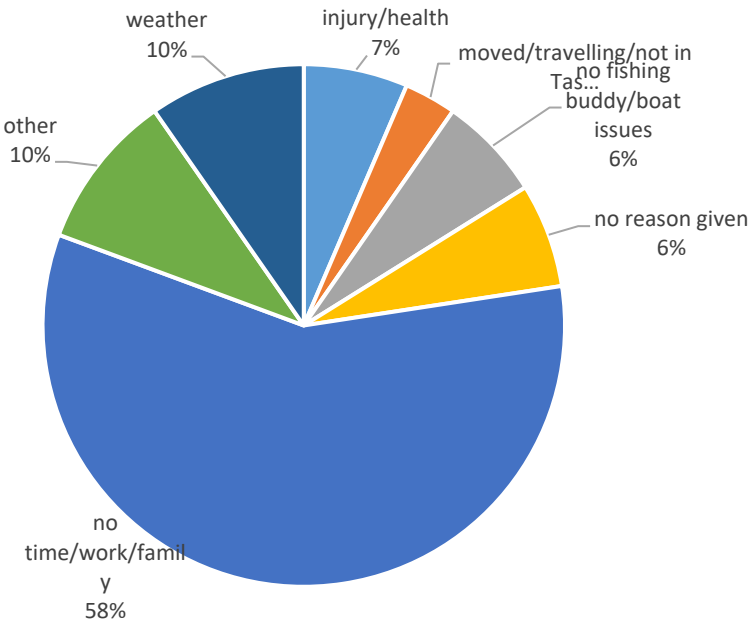

Figure 14. Main reason for not renewing rock lobster or abalone licences during 2022-23 season (*n* = 31).

3.3.3 Fishing Quality

3.3.3.1 Rock Lobster

About 85% of respondents who fished for rock lobster during the 2022-23 season indicated that the overall quality of the fishery was about the same or better than in the previous season (Figure 15). This is an increase of almost 10% compared with responses to the same question asked at the end of the 2021–22 season (Lyle et al., 2021). Eight percent of respondents indicated that the current season was worse than the previous one – approximately half the responses to the same question in 2021–22.

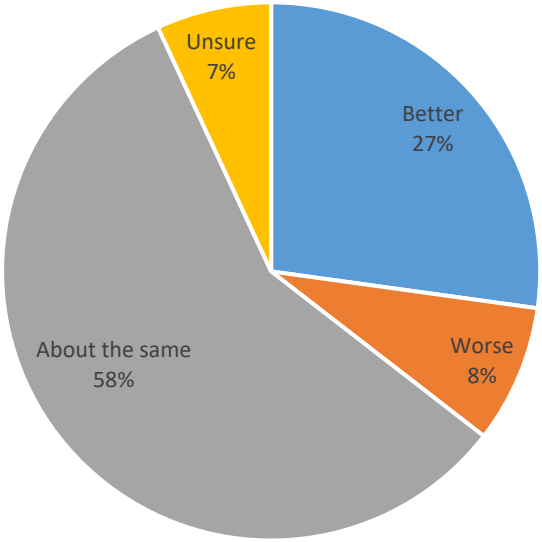

Figure 15. Perceptions about the quality of the rock lobster fishery in 2022-23 relative to respondent's experience in 2021-22 (*n* = 217).

Diarists who fished for lobster during 2022–23 were asked whether the proportion of trips in which they caught at least one legal sized lobster was higher, lower, or about the same as during the previous season (Figure 16). About 78% of respondents indicated that the proportion of successful trips was about the same or better than in the previous year while 16% reported lower success rates in 2022–23.

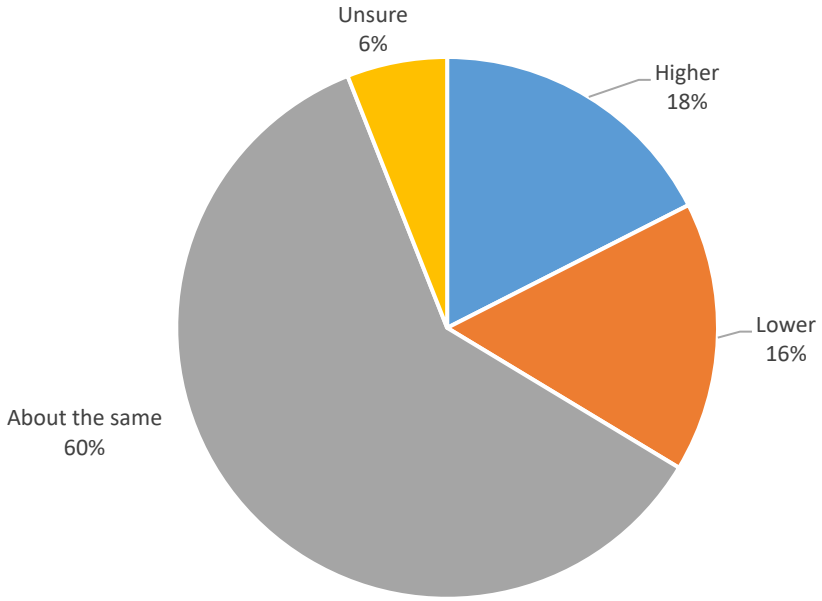

Figure 16. Proportion of respondents who indicated greater rock lobster fishing success (in terms of trips where at least at least one legal sized lobster was caught) in 2022-23 compared with 2021-22 (*n* = 217).

Respondents who had reported fishing for rock lobster were asked whether they were satisfied with their catch rates (number of lobsters kept per day fished) during the 2022–23 season. Overall, 79% indicated that they were at least quite satisfied (Figure 17). Based on main fishing method however, divers (Figure 18) were more likely to be satisfied (82%) than pot fishers (79%) (Figure 19). Notably, the difference in satisfaction rates between divers and pot fishers is markedly reduced from previous years.

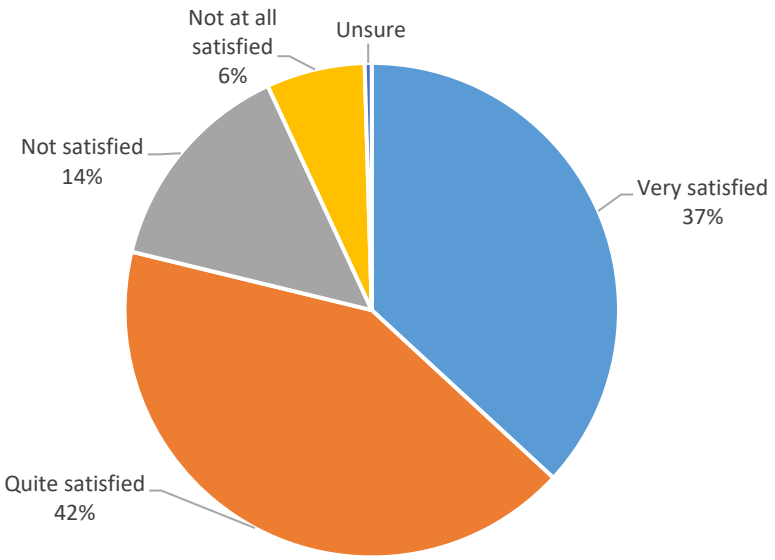

Figure 17. Fisher satisfaction with rock lobster catch rates achieved during the 2022–23 season (*n* = 217, <1% unsure).

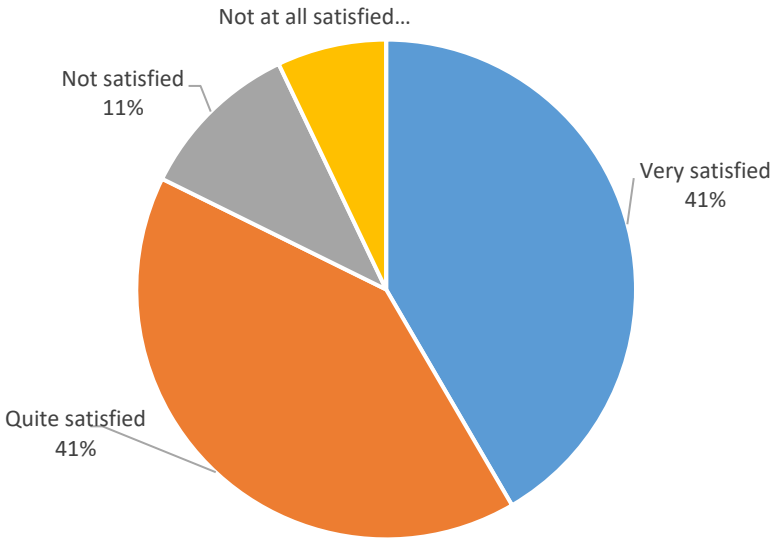

Figure 18. Diver satisfaction with rock lobster catch rates achieved during the 2022–23 season (*n* = 113).

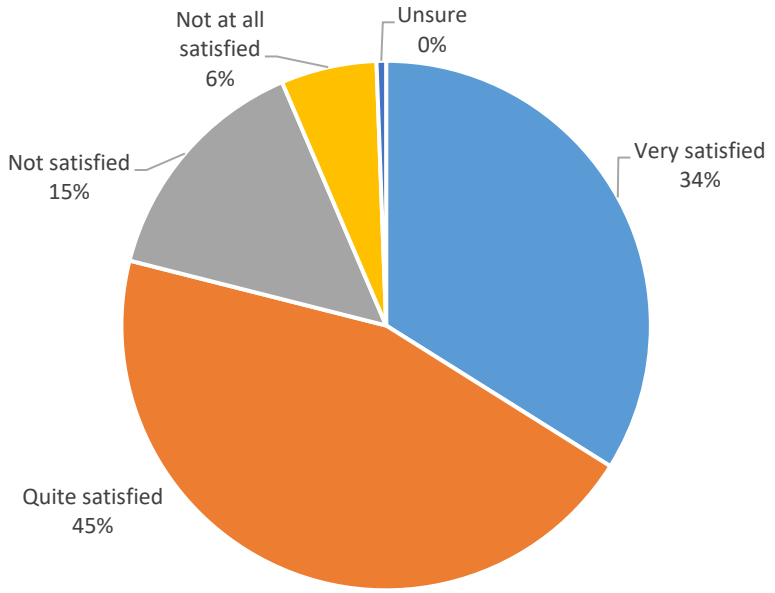

Figure 19. Pot fisher satisfaction with rock lobster catch rates achieved during the 2022-23 season (*n* = 171, unsure<1%).

3.3.3.2 Abalone

Abalone fishers provided their perceptions of the quality of the fishery in 2022–23 compared with the previous season.

About 73% of respondents indicated that it was about the same or better while 18% indicated that the 2022–23 season was worse than the previous one.

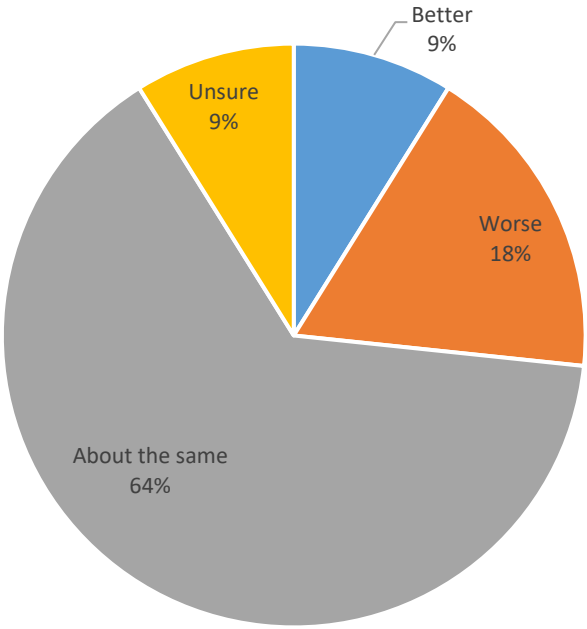

Figure 20. Perceptions of the quality of the abalone fishery in 2022–23 season compared with the 2021–22 season (*n* = 90).

Abalone fishers were also asked whether they were satisfied with their 2022–23 catch rates (average number of abalone kept per day fished). Overall, 85% indicated that they were at least quite satisfied (Figure 21).

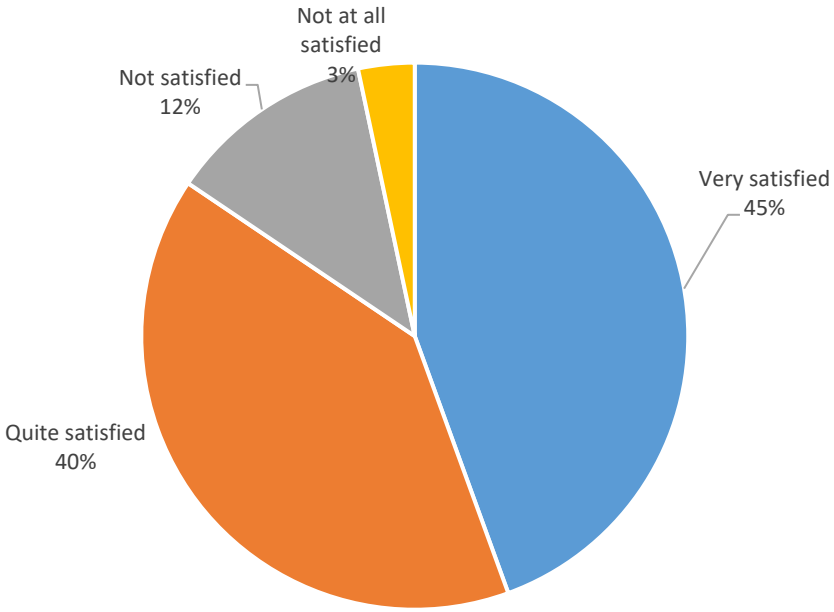

Figure 21. Fisher satisfaction with abalone catch rates during 2022–23 season (*n* = 90).

Abalone fishers were also asked to rate the importance of various ways in which they use their abalone catch. Sharing abalone catch with family and friends was rated as either very or quite important by 92% of respondents, followed closely by eating it fresh with family and friends (89%) and sharing with fishing buddies (75%) (Figure 22).

The main ways in which respondents use their abalone catch is eating fresh with their immediate family and friends (42%) and sharing with immediate family and friends (27%) (Fig 23).

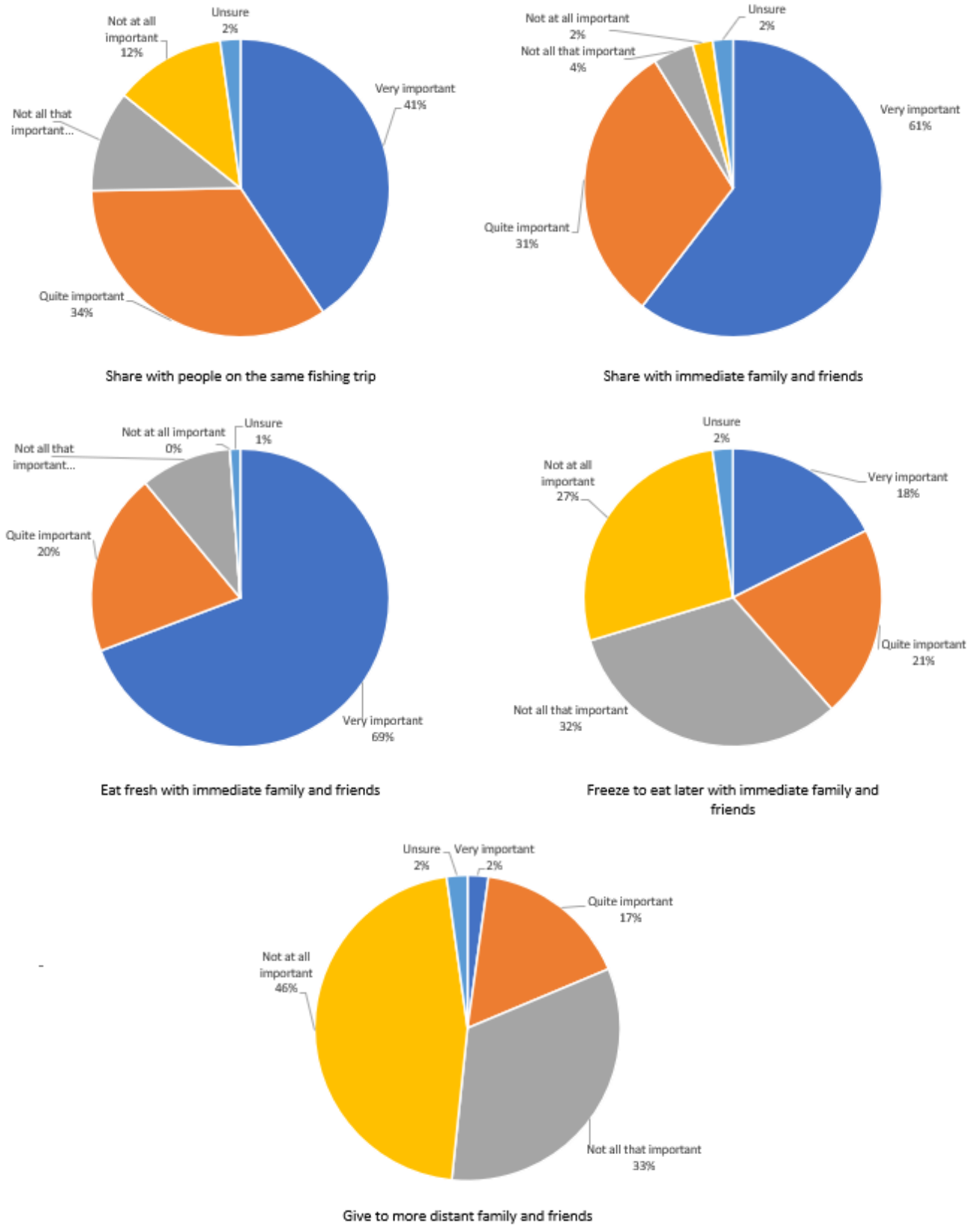

Figure 22. Fisher preferences for how to use abalone catch (*n* = 91).

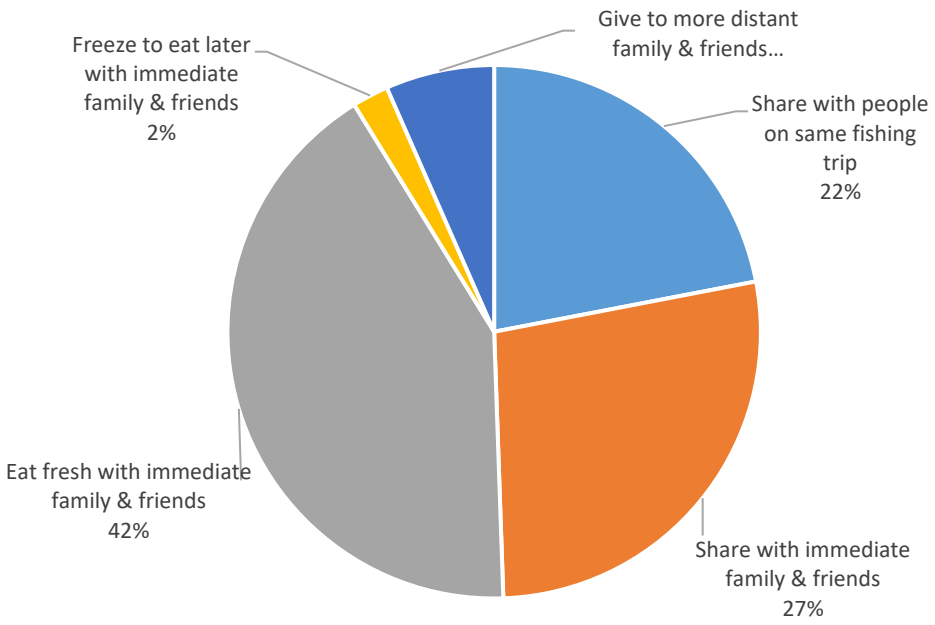

Figure 23. Fisher preferences for main method of using abalone catch (*n* = 91).

3.3.4 Policing, enforcement and compliance

Of 233 active fishers who responded to questions about policing, 52 (22.3%) indicated that they had been checked by Marine Police whilst fishing for lobster during the survey period, 35 of whom were checked on multiple occasions. Most (60%) inspections occurred on-water while most off-water checks (29%) occurred at boat ramps. Some respondents were subject to both on-water and off-water checks).

Respondents were asked their perceptions on how common several different illegal activities were in the recreational Rock Lobster and abalone fisheries. The only illegal activity where the majority of respondents (excluding those that were unsure) thought was commonly occurring was 'pulling other people's pots and taking their catch' with 46% of people stating that this was very or quite common, 10% were unsure and the remainder thought that it was not very or not at all common (Figure 24). The least common illegal activity that respondents thought was occurring was the taking of undersize lobster with 72% thinking this was not very or not at all common, 12% unsure and the remaining 16% thinking this was at least quite common. This was followed by retaining more than the daily boat limit with 66% thinking this was not very or not at all common, 14% unsure and the remaining 20% thinking this was at least quite common (Figure 24).

The response for taking more than the bag limit of lobster was similar, with 64% thinking this was not very or not at all common, 13% unsure and the remaining 23% thinking this was at least quite common (Figure 24). The questions relating to the abalone fishery had a high proportion of respondents (44 – 46%) that were unsure how common the issues in question were, this is because the survey is focused on lobster fishers and there are a high number of respondents that don't fish for abalone. Of those that provided a response approximately half (26%) felt that it was at least quite common for people to catch abalone for others in their party, with 28% thinking that it was at least not very likely (Figure 24). The majority that provided responses thought that it was at least not very likely that abalone fishers were taking undersize (40%) or over the bag limit (44%), with 16% and 12% respectively thinking these offences were at least quite common (Figure 24).

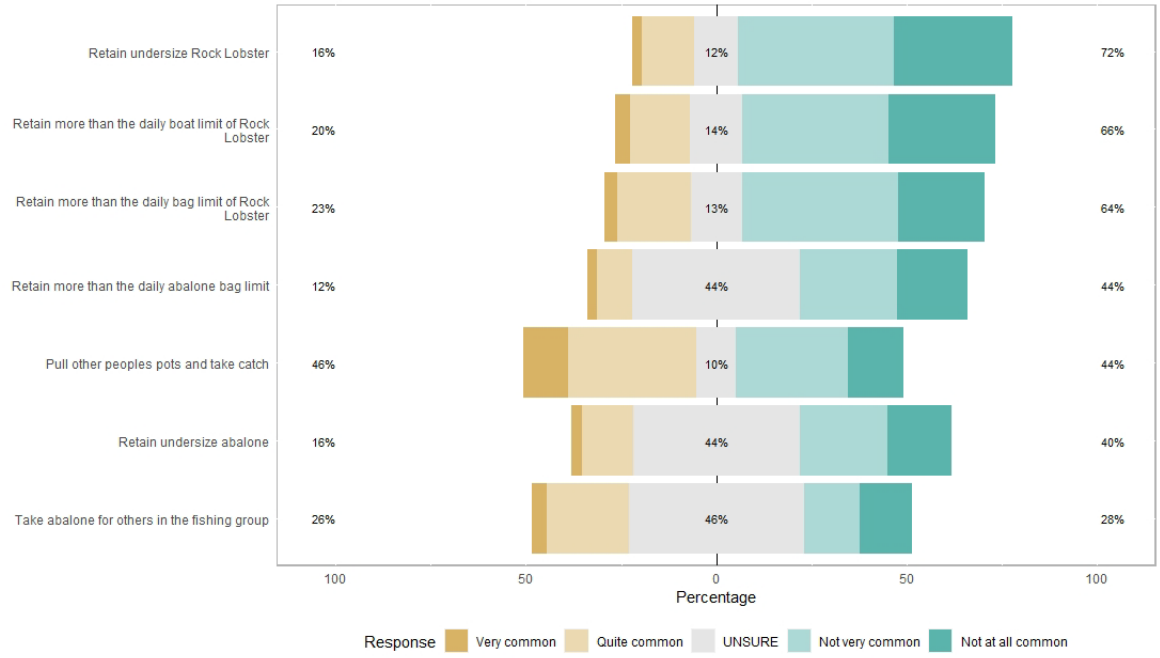

Figure 24. The response profile for a series of questions asked relating to perception on non-compliance in the recreational Rock Lobster and Abalone fisheries.

3.3.5 Management options

3.3.5.1 Abalone management options

Respondents were provided with a range of possible management options to recover abalone stocks and asked to rate their support for each option on a scale from 1 (no support) to 10 (strong support). The strongest support was for closing an area until it had replenished with 71% of respondents providing a response of five or greater (Figure 25). Using the same means of assessment, this was followed in descending order by, altering the commercial catch in the area (67%) introducing a boat limit (62%), reducing the bag limit (45%), increasing the size limit (42%) and closing the region (41%) (Figure 25).

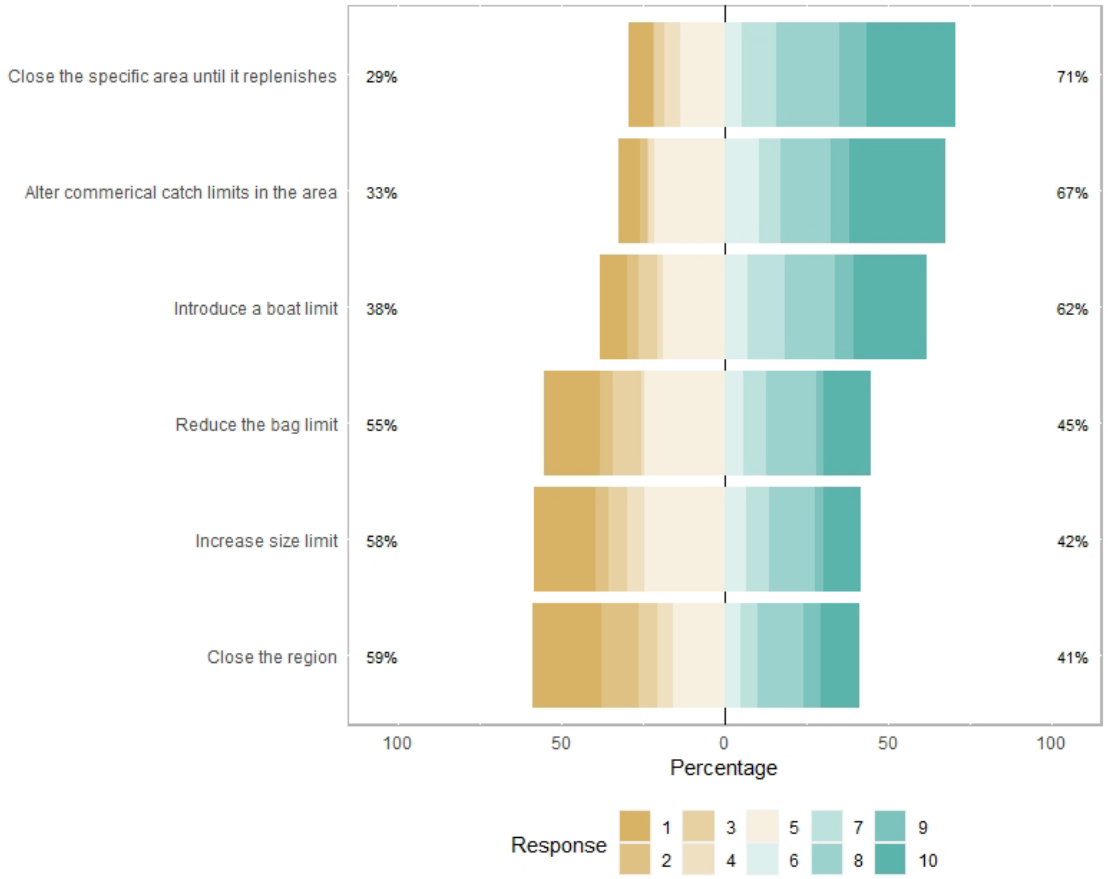

Figure 25. Support for potential management actions to recover the abalone fishery.

3.3.5.2 **Rock lobster catch monitoring app**

Since March 2021, NRE Tas have been trialling a voluntary rock lobster monitoring app to assist with managing the rock lobster fishery. The app collects real time catch data to improve the understanding of recreational catches. To date, participation has been voluntary; however in the 2023-24 rock lobster season, participation will be mandatory.

Of the 311 fishers who completed the washup survey, 132 (42%) indicated that they had heard of the app. Of these respondents, 13% had used the app. Over 82% of app users found it to be ‘easy’ or ‘very easy’ to use.

Around 55% of respondents were aware that it will be mandatory for recreational rock lobster fishers to report their catches from November 2023.

Respondents who had heard of the app, but not used it were asked for the main reason why they had not used the app (Table 5).

Table 5. Main reasons respondents did not use the app (*n* = 115).

Main reason not used app	Number	%
Not mandatory	27	23.5
Haven't downloaded app	19	16.5
Don’t use technology/don’t own smartphone	13	11.3
Couldn’t be bothered or forgot	9	7.8
Haven't fished (for lobster)	9	7.8
Participating in IMAS phone survey	8	7.0
Didn't fish much (for lobster)	6	5.2
Mobile phone reception issues	6	5.2
Using phone whilst fishing is problematic	3	2.6
No reason given	7	6.1
Other	8	7.0

Approximately 65% of respondent indicated support for the mandatory smartphone app, 27% did not support it while 9% were unsure. The main reasons for a lack of support are provided in (Table 6).

Table 6. Main reasons respondents did not use the app (*n* = 83).

Main reason for lack of support	Number	%
Issues with technology	16	19.3
Not owning a smartphone	14	16.9
Inconvenient/too hard/not necessary	10	12.0
Lack of reception	10	12.0
Using phone whilst fishing is problematic	8	9.6
Dishonest/inaccurate reporting	6	7.2
Privacy of fishing sites	2	2.4
No reason given	4	4.8
Other	13	15.7

When asked to put aside one’s personal feelings about app reporting and consider whether it would be a reliable way to estimate recreational rock lobster total harvest, 68% responded positively. The same proportion of respondents also thought that app reporting would be acceptable to most rock lobster fishers (Figures 26 and 27).

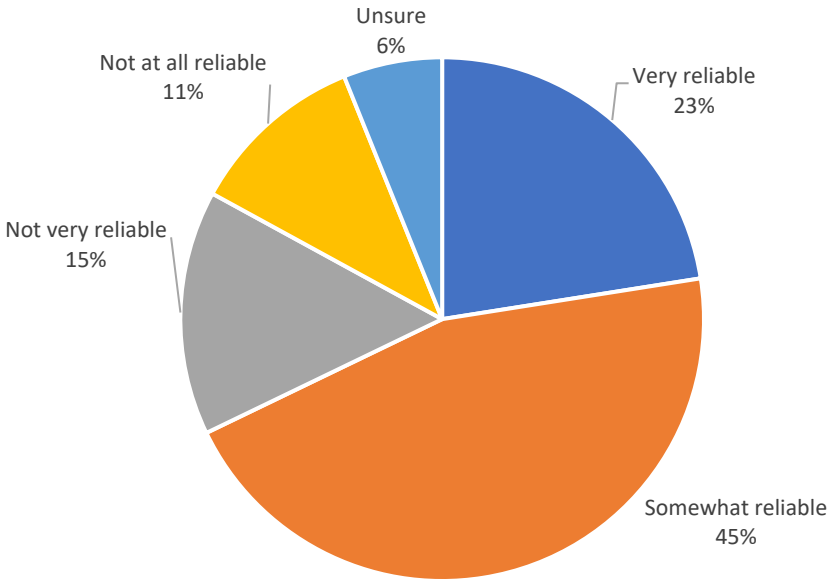

Figure 26. Respondent opinion on whether app reporting is a reliable way to estimate the size of the recreational catch for rock lobster (*n* = 311).

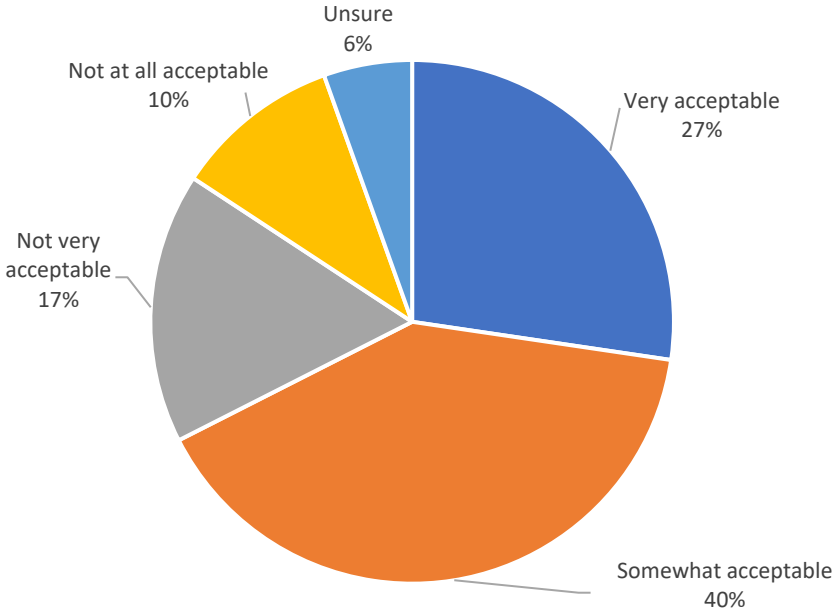

Figure 27. Respondent opinion on whether app reporting is acceptable to most rock lobster fishers (*n* = 311).

Respondents were asked whether they thought that there would be any major issues with mandatory smartphone app reporting in Tasmania. Approximately 70% thought there would be major issues while 25% and 8% responded ‘no’ and ‘unsure’ respectively (Table 7).

Table 7. Perceived major issues with mandatory smartphone reporting (*n* = 208).

Issue	Number	%
Lack of phone reception	52	25.0
Not being able to use the technology	51	24.5
Dishonest/inaccurate reporting	33	15.9
Not owning a smartphone	26	12.5
Fisher resistance to app	16	7.7
Policing & compliance	8	3.8
Not having phone whilst fishing	5	2.4
Privacy (of fishing locations)	3	1.4
Using phone whilst fishing is problematic	3	1.4
No reason given	4	1.9
Other	7	3.4

3.3.5.3 Abalone catch monitoring app

Respondents were asked if they would use a catch app to record fishing details and catch for abalone. Of the 311 diarists asked, around 50% said yes, 13% said no and 37% were unsure.

3.3.6 Fishing with others

When asked about their usual fishing group size, 68% indicated that they usually fish with between two and four other people. Four percent of respondents indicated that they always fish alone, 24% fish with one other person and 4% fish with five or six other people. Note: one respondent always fishes with large family group greater than 20 people.

4 DISCUSSION

4.1 Catch and Effort

4.1.1 General Trends

The recreational fishery has been monitored using fisher surveys since the mid-1990s. During this time rock lobster stock abundances have varied markedly prompting several management changes, mainly centred on the east coast. State-wide recreational catch, effort and catch rates have declined since the early 2000s, from a peak catch of almost 150 tonnes in 2002–03 (Figure 29). The initial decline occurred alongside a steady increase in licence numbers (refer Lyle et al., 2021) and corresponded with a general decline in overall stock abundance (Hartmann et al., 2019) and subsequent changes to management settings introduced as a component of the ECSRS. Overall, the state-wide harvest has not exceeded the TARC allocation of 170 tonnes in any year for which there is survey data. Estimated catches since 2015–16 have been equivalent to half or less of the TARC, though this season has been the highest at 60%.

Abalone catches have also declined since the early 2000s (Figure 30) though licence numbers continued to grow up until 2008–09 (Lyle et al., 2021). The 2022-23 harvest estimate increased by 16% from last season's estimate (41,552 in 2020–21 in numbers; Table 8). Lower catches in the 2019–20 and 2020–21 seasons were linked to a marked fall in the average catch rate to less than four per day (Lyle et al., 2021), itself associated with halving of the Eastern region bag limit (from 10 to 5 abalone per day) in 2019. However, the average catch rate in 2021–22 has increased to 4.7, approximating the old bag limit of five. However, this year the catch rate declined to 3.9 and divers reached the bag limit of 10 in about 12% of all targeted dives in the eastern region, slightly lower than 14% in 2021–22.

Social (e.g., motivations, availability of time, access), biological (e.g., stock size, catch rates) and environmental (weather) factors all play a role in influencing fisher behaviour in particular, participation in a fishery. The proportion of licence-holders who utilised their licences (i.e., fished) has varied between 87% (2000–01) to only 68% (2015–16) for lobster, and 64% (2000–01) to only 31% (2017–18, 2021–22) for abalone (Table 8). In the seasons especially impacted by biotoxin closures (2015–16 and 2017–18) and the COVID-19 lockdowns (2019–20, 2020–21) about 30% of rock lobster licence-holders did not fish for lobster, though this proportion has decreased in the current season (24%), similar to the 2021–22 season of 22%. In the 2022-23 season, lack of time (due work and/or family commitments), and the weather were the most cited reasons for not fishing for lobster (and not renewing licences) during 2022–23.

There has been a general decline in the average number of days fished per season by active fishers for lobster from approximately nine days down to approximately five to six days since the 2000/01 season. A similar trend was evident for abalone down from four to between two to three days. This has contributed to a decline in the average seasonal harvest per fisher (Table 8). Daily harvest rates for lobster have declined since the early 2000s (Lyle et al., 2021). This decline is particularly influenced by pot catch rates which fell from 1.0 in 2002–03 to below 0.7 lobster per day in 2015–16 and 2019–20 (Table 8). However, there was a small increase in pot catch rates in 2020–21 at 0.82 lobster per day, and since increased during the 2022–23 season to 0.90 lobster per day – the highest catch rate for pot fishing since 2006–07 (Table 8).

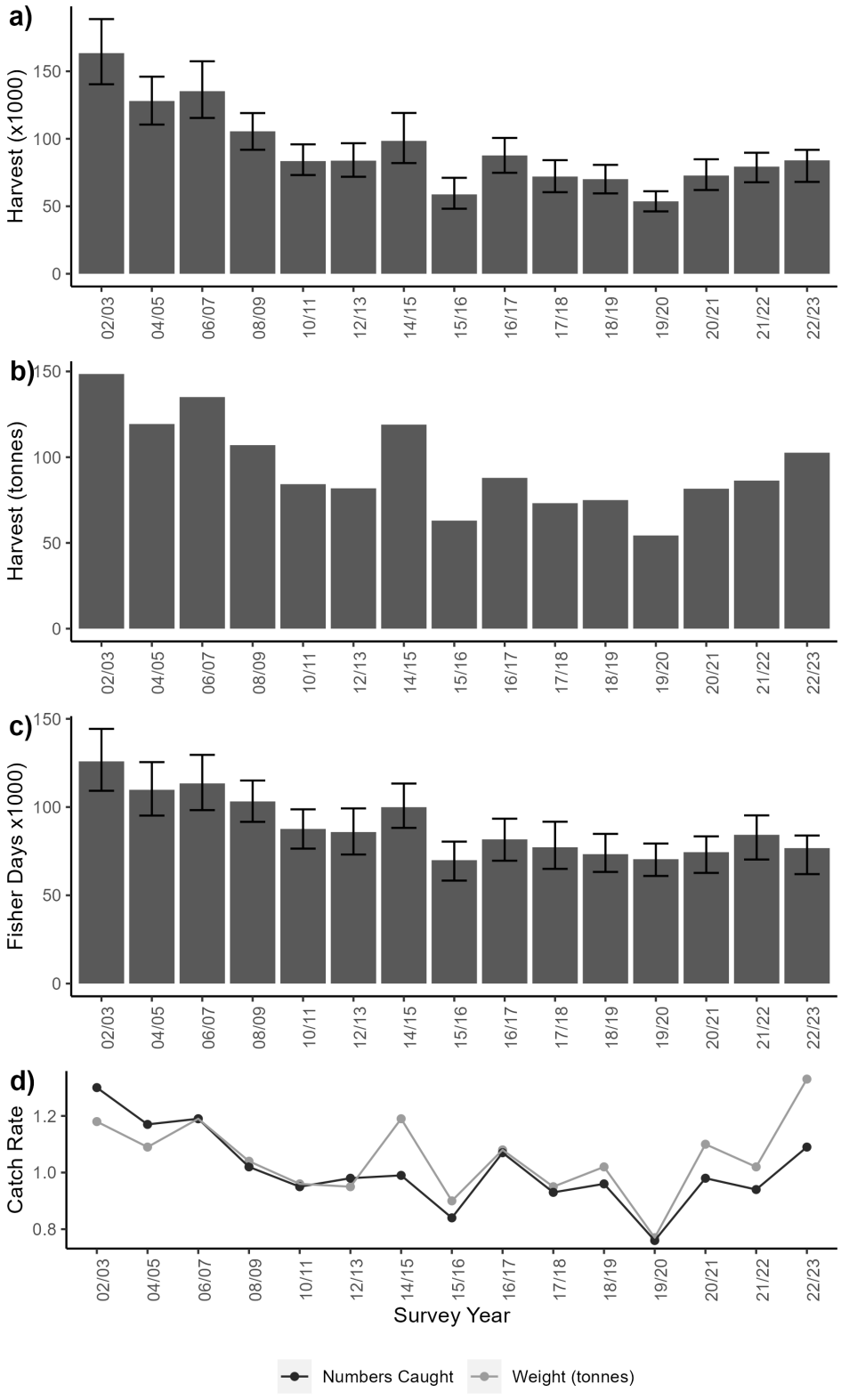

Figure 28. Tasmanian recreational rock lobster fishery: a) estimated state-wide harvest (numbers); b) estimated state-wide harvest (tonnes); c) effort (fisher days) by fishing season; d) and average catch rate (number per fisher-day). Error bars indicate 95% confidence intervals.

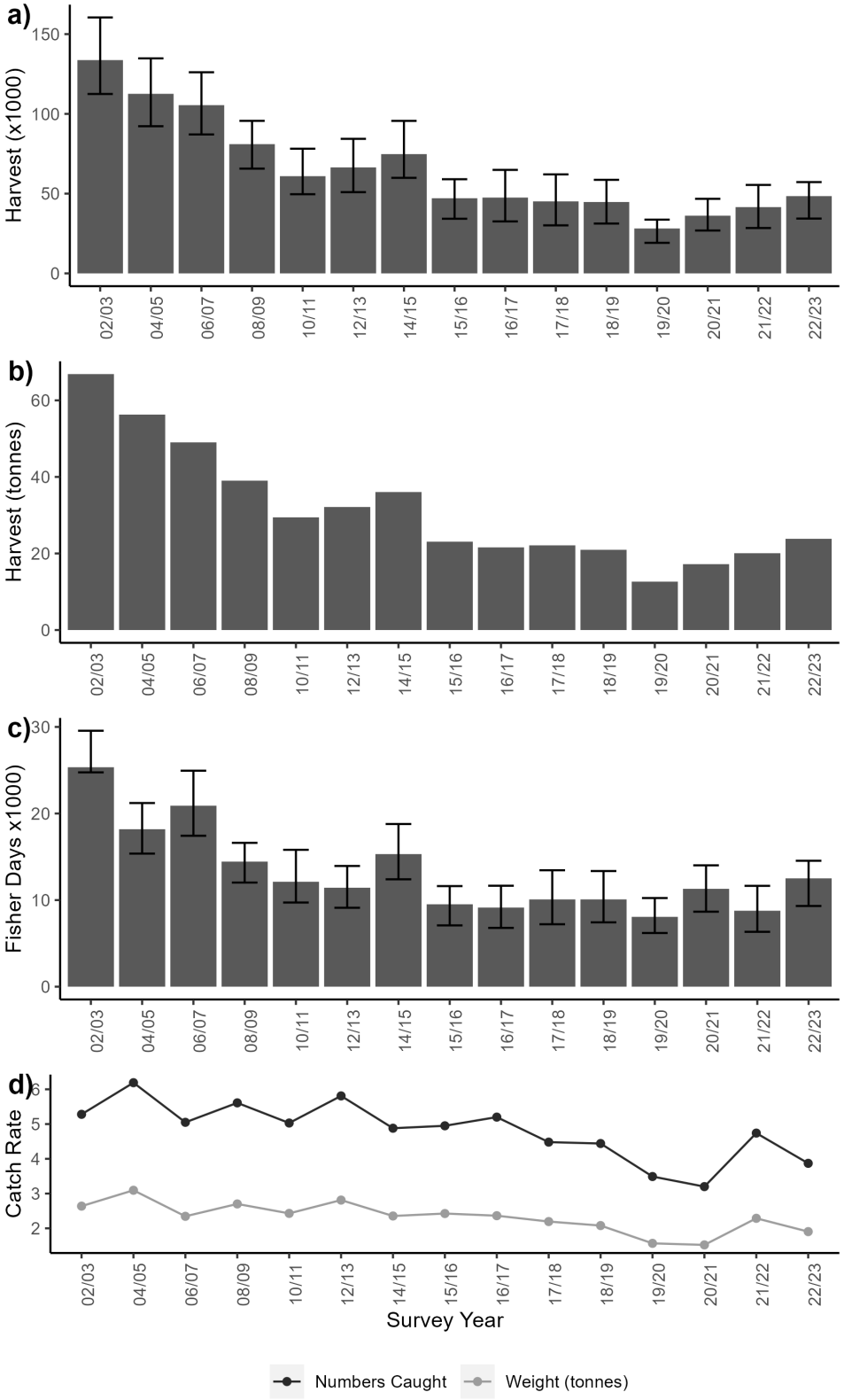

Figure 29. Recreational abalone fishery: a) estimated state-wide harvest (numbers); b) estimated state-wide harvest (tonnes); c) effort (fisher days) by fishing season; d) and average catch rate (number per fisher-day). Error bars indicate 95% confidence intervals.

Table 8. Number of rock lobster and abalone licence holders, estimated number and proportion who fished, total and average harvest and effort per fisher by year and average daily harvest rates. * part year (Nov–Apr); nd not determined

	Licence year															
	2000-01	2002-03	2004-05	2006-07	2008-09	2010-11	2012-13	2014-15	2015-16*	2016-17*	2017-18*	2018-19*	2019-20*	2020-21*	2021-22*	2022-23*
Rock lobster																
No. licence holders	13,265	15,580	16,710	20,008	21,351	19,519	18,185	19,306	16,810	18,009	17,162	18,080	17,182	18,520	18,226	18,114
% fished	86.5	88.4	81.9	78.4	75.2	71.7	76.0	75.4	68.4	76.0	69.9	73.2	70.4	71.1	77.6	75.7
No. active fishers	11,408	14,308	13,679	15,687	16,050	13,997	13,814	14,552	11,500	13,686	12,004	13,239	12,090	13,168	14,143	13,712
Harvest (no.)	128,219	163,454	127,987	135,592	105,538	83,472	83,772	98,442	58,805	87,650	72,009	70,100	53,655	72,751	79,365	84,005
Harvest (kg)	116,509	148,526	119,354	135,067	107,027	84,261	81,849	118,996	63,022	87,941	73,187	74,982	54,345	81,606	86,338	102,608
Av. no. per active fisher	11.2	11.4	9.4	8.6	6.6	6.0	6.1	6.8	5.1	6.4	6.0	5.3	4.4	5.5	5.6	6.1
Fisher days	100,866	125,898	109,788	124,305	103,985	87,617	85,849	101,699	69,920	81,690	77,209	73,327	70,473	74,453	82,945	76,741
Av. days per active fisher	8.8	8.8	8.0	7.9	6.5	6.3	6.2	7.0	6.1	6.0	6.4	5.5	5.8	5.7	5.9	5.6
Av. daily harvest (no.)	1.27	1.30	1.17	1.09	1.01	0.95	0.98	0.97	0.84	1.07	0.93	0.96	0.76	0.98	0.96	1.09
Av. daily pot-harvest (no.)	0.87	1.00	0.90	0.94	0.75	0.68	0.78	0.71	0.65	0.87	0.74	0.74	0.62	0.82	0.77	0.90
Av. daily dive-harvest (no.)	2.61	2.30	2.31	2.15	2.27	2.36	1.83	1.92	1.61	1.90	1.59	1.67	1.27	1.49	1.77	1.52
Abalone																
No. licence holders		9,272	10,133	12,514	12,976	11,972	11,157	12,084	10,509	11,035	10,797	11,127	10,600	11,742	11,781	11,658
% fished		63.5	55.8	52.3	38.8	36.3	42.0	42.4	37.9	33.5	30.7	35.9	31.5	37.7	31.1	43.5
No. active fishers		5,853	5,653	6,542	5,033	4,349	4,682	5,126	3,896	3,695	3,313	3,990	3,341	4,420	3,664	5,071
Harvest (no.)		133,711	112,571	105,515	81,021	60,943	66,438	74,769	47,113	47,522	45,142	44,740	28,150	36,168	41,552	48,439
Harvest (kg)		66,857	56,283	49,022	39,024	29,438	32,138	36,047	23,081	21,590	22,124	20,963	12,642	17,212	20.601	23,829
Av. no. per active fisher		22.8	19.9	16.1	16.1	14.0	14.2	14.6	12.1	12.9	13.6	11.2	8.4	8.2	11.3	9.6
Fisher days		25,342	18,185	23,201	14,445	12,117	11,428	15,110	9,548	9,136	10,079	10,081	8,064	11,302	8,772	12,509
Av. days per active fisher		4.3	3.2	3.5	2.9	2.8	2.4	2.9	2.5	2.5	3.0	2.5	2.4	2.6	2.4	2.5
Av. daily harvest (no.)		5.28	6.19	4.55	5.61	5.03	5.81	4.95	4.93	5.20	4.48	4.44	3.49	3.20	4.74	3.87

4.1.2 Fishing Methods

Pots have consistently been the main fishing method for rock lobster and have accounted for 55–67% of the total harvest numbers in each of the years surveyed (Figure 31). Dive methods have typically accounted for about a third (28.7–44%) of the harvest in all seasons. Lobster rings account for a relatively small proportion of overall catch (1.5–6.1%).

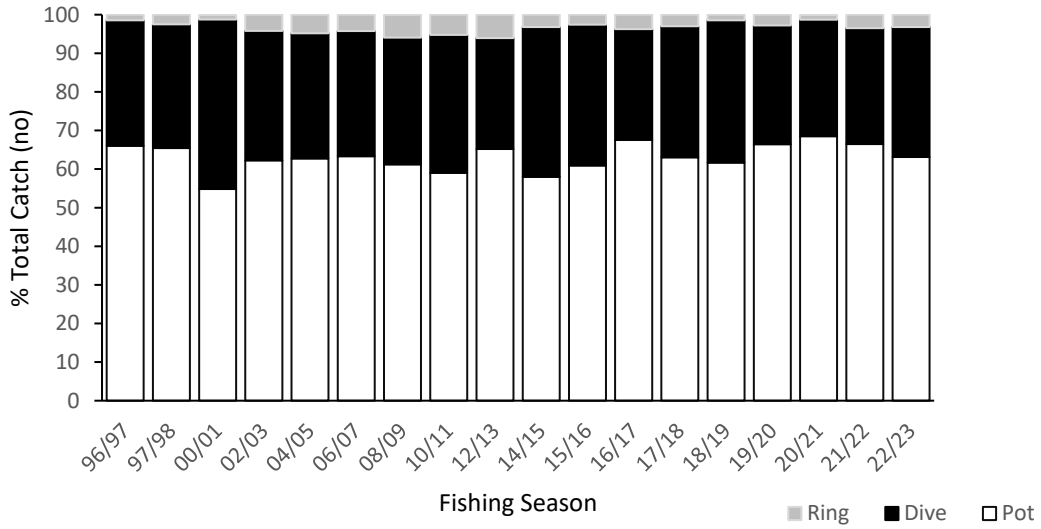

Figure 30. Proportion of the rock lobster harvest by method and fishing season.

4.1.3 Catch Rates

Catch per unit effort is an important metric for assessing fishery performance; as an indicator of stock biomass, economic performance in commercial fisheries and, an indicator of recreational satisfaction against which fishery performance could be assessed (Lyle et al., 2014, 2016a,b, 2017, 2019a, 2020b). Pot catch rates (i.e., kg of lobster per potlift) vary with lobster availability and catchability (behaviour). Therefore, the trend in pot catch rates over the past decade has been consistent with changes in rock lobster population biomass (Hartmann et al., 2019, Lyle et al., 2021).

The average daily harvest rate during 2022–23 for pots (0.90 lobster) was slightly higher than for 2020–21 (0.86 lobsters) which was, with the exception of 2016–17, higher than catch rates reported since 2006–07, despite higher daily bag limits prior to the 2015–16 season (Lyle et al., 2021). This suggests that pot harvest rates have remained largely insensitive to these bag limit changes, confirmed by two decades of survey data indicating that daily catches of two or more lobster per pot day are relatively rare (Table 8).

The 2022-23 average daily harvest number for divers was 1.53 lobsters per day—slightly lower than the 2021–22 season of 1.77 lobsters per day which was the highest since 2016–17 (Table 8). Divers actively search for lobsters and are able to maintain harvest rates by increasing search times such that a relatively high proportion of trips achieve the bag limits. Dive harvest rates for lobster have tended to fluctuate without obvious trend, apart from the reduction in catch rate to below 2 lobsters per day since 2012–13 corresponding with the reduction in the eastern region bag limit.

Apart from 2020-21 and 2021-22, abalone catch rates have fluctuated without obvious trend through time, reflecting the fact that many divers regularly attain the bag limit (Table 8). The 2022–23 average daily harvest rate (3.9 abalone) decreased by ~20% from the 2021–22 season (4.7 abalone).

Bag limits represent a key management strategy to constrain recreational rock lobster and abalone catches. Bag limits have a limited impact on harvest rates, with only a small proportion of pot fishing days resulting in bag limits being achieved (i.e., 29% and 4% of fishing days in the eastern and western regions respectively for the 2022–23 season). By contrast, bag limits had a greater impact on constraining dive catches, with 66% of the dive days in the Eastern region and 9% of the dive days in the Western region resulting in the bag limits being achieved.

4.1.4 Regional Patterns

The recreational rock lobster and abalone fisheries are concentrated off the southeast and east coasts of Tasmania, with Areas 1–3 accounting for 82% of the lobster catch and 76% of the abalone catch the (by harvest number). Fishing intensity off the southeast and east coasts reflects a combination of factors, including sheltered and accessible waters and proximity to major population and holiday centres.

Catches from the north coast (Areas 4 & 5) were higher than off the west coast (Areas 6–8) for abalone (20% from the north coast, and 4% from the west coast), but this trend was not consistent for rock lobster (8.7% from the north coast and 9.3% from the west coast). Due to the relatively low effort in the north and west coasts compared to the east coast. Factors such as accessibility of suitable reef habitat off the north coast (apart from the Bass Strait islands), exposure to unfavourable sea conditions and limited access points off the west coast, contribute to the lower levels of recreational fishing pressure observed in those regions. Despite this, this region represents a very significant area for both commercial rock lobster and abalone fisheries (Hartmann et al., 2019, Mundy & McAllister 2019).

There is considerable regional variability in the relative importance of the various rock lobster fishing methods. Pot catches dominate the harvest off the southeast and east coasts, whereas dive collection is the dominant method off the northwest coast. Pots, dive collection, and rings are all important in the west coast areas. Such method-based regional differences are consistent with patterns observed in previous seasons (Graba-Landry et al. 2022 and references within).

4.2 Management Implications

Statewide, the 2022–23 recreational rock lobster harvest estimate of 102.6 tonnes represented 60% the TARC (170 tonnes) and was equivalent to 8.4% of the 2022-23 TAC[5] (1,220.7 tonnes). Although this survey did not cover fishing activity that may have occurred between May and August (noting that the eastern region is closed during that period), previous surveys have consistently indicated that recreational effort during the winter months is low and catches generally account for less than 5% of seasonal totals.

The east coast (Areas 1–3) catch of 77.9 tonnes exceeds estimates for the past eight years, which have ranged from 35.7 tonnes in 2015–16 to 57.4 tonnes in 2020–21. It is

[5] Total Allowable Catch: TACC plus TARC

relevant to note that the 57.4 tonnes in 2020-21 is greater than in Table 9 as it accounts for the whole of Area 1, whereas the table reflects the reduced area of the ECSRZ. In 2017 the ECSRZ was amended to exclude waters south of Bruny Island, thereby re-focusing the rebuilding strategy to where stocks were in the poorest condition (DPIPWE 2018).

In 2022-23, the total estimated catch in the ECSRZ was 71.7 tonnes, 36.7 tonnes (104%) greater than the notional catch allocation (Table 9). During the 2022–23 season, recreational fishing effort was not affected by COVID restrictions or biotoxin closures. This was coupled with an increase in available biomass within the region[6].

Recreational catches in the ECSRZ have exceeded the notional catch allocation in most years since 2014–15, except for 2015–16, 2017–18 and 2019–20. (Table 9). For these years, however, external factors resulted in marked reductions in recreational effort (and catch), suggesting that management settings alone have been insufficient to constrain east coast catches to within recreational catch targets (Graba-Landry et al. 2022).

Table 9. East Coast Stock Rebuilding Zone recreational catches relative to notional catch allocations.

Season	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Notional catch allocation	42 t	42 t	42 t	41 t	40 t	35 t	35 t	35 t	35 t
Catch estimate	55.6 t	35.7 t	50.2 t	40.4 t	48.6 t	33.6 t	51.1 t	46.5 t	71.7t
Over/under catch	+13.6 t	- 6.3 t	+ 8.2 t	- 0.6 t	+ 8.6 t	-1.4 t	+ 16.1 t	+11.5t	+36.7t
% over/under catch	+ 32%	- 15%	+ 19%	- 1%	+ 21%	- 4%	+ 46%	+ 32%	+ 104%

Since being established, the retained catch in the ECSRZ has trended upwards, with the largest increase in the 2022–23 fishing season (Figure 31). Effort (days fished) has increased slightly over the last eight seasons as has catch per unit of effort (from retained catch). The slight increase in effort and increasing catch rates are not unexpected as the stock rebuilds. In the absence of additional management restrictions, the combined effects of higher catch rates and effort were predicted to lead to an increase in the east coast catch of between 57 and 125% above 2018/19 levels by 2023 (Lyle et al. 2020a).

Monitoring this fishery through time has revealed that recreational fishing activity is highly responsive to changing lobster abundance (refer Table 8). This relationship is more pronounced for the number of active fishers than for the number of licenced fishers and fishing activity per individual. As lobster abundance is expected to continue increasing in the ECSRZ, lobster catch rates and fishing activity are also likely to increase. This is further likely to amplify existing management challenges to constrain the recreational catch within the east coast catch share.

[6] Rock Lobster Assessment Model (tasfisheriesresearch.org) accessed 20/10/2023.

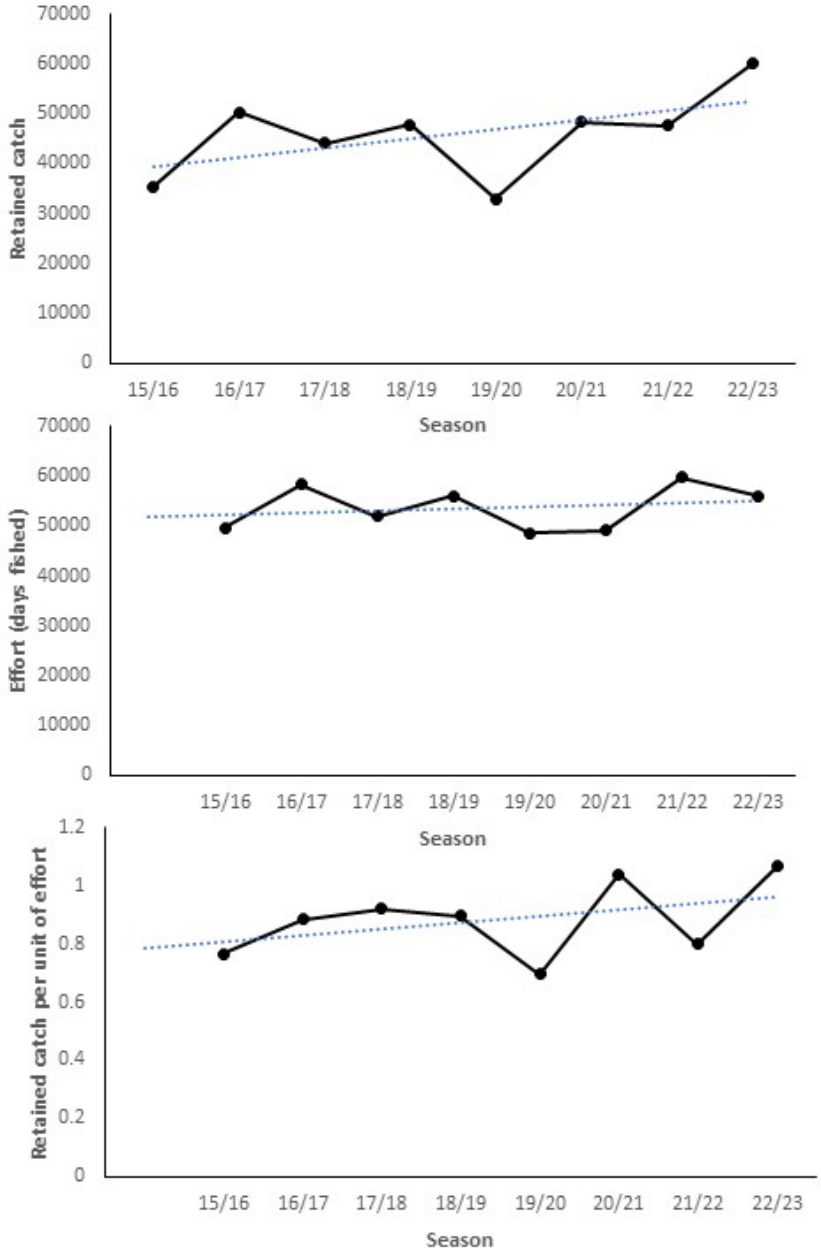

Figure 31. Catch, effort and CPUE (retained catch per day fish) for the East Coast Stock Rebuilding Zone, defined by the current spatial boundary (including assessment areas one [limited to the bottom of Bruny Island], two and three).

The recreational abalone harvest estimate of 23.8 tonnes was about 3% of the 2023 TACC (773.5 tonnes). Despite being a minor component of statewide catches, most of the recreational catch is taken from sheltered inshore areas of the east and south-east coasts where the impacts of recreational abalone fishing can be significant. While there are no management performance indicators utilised for the recreational abalone fishery, there is a need to explicitly include recreational catches into annual stock assessments and future management of the fishery. This is particularly important since recreational fishers may continue to fish areas even when abalone densities are low, risking localised depletion (Lyle et al., 2021).

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