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# National Recreational Fishing Bait and Berley Survey 2019-21

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[June 2023]

FRDC Project No [2018/161]

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ISBN [1447-8358]  
**2019-21 National Recreational Fishing Bait and Berley Survey**  
**2018-161**  
**2023**

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In submitting this report, the researcher has agreed to FRDC publishing this material in its edited form.



# Contents

<b>Contents</b> .....	<b>iv</b>
<b>Acknowledgments</b> .....	<b>v</b>
<b>Executive Summary</b> .....	<b>vi</b>
<b>Introduction and objectives</b> .....	<b>1</b>
<b>Method</b> .....	<b>3</b>
<b>Results and Discussion</b> .....	<b>5</b>
<b>Conclusion</b> .....	<b>14</b>
<b>Extension and Adoption</b> .....	<b>14</b>
<b>References</b> .....	<b>15</b>
<b>Appendices</b> .....	<b>16</b>

## Tables

Table 1. Proportion of fishers and the bait type used, nationally and by jurisdiction. ....	6
Table 2. Number of different types of bait, frequency and proportion used by recreational fishers. ....	7
Table 3. Proportion of Australian and imported prawns bought from a seafood retailer and used as bait by recreational fishers, by jurisdiction. ....	9
Table 4. Prawn type and amount bought from a seafood retailer and used as bait by recreational fishers, by jurisdiction.....	11

## Figures

Figure 1. Sampling approach, sample size and the proportion of respondents at relevant stages of the NRFS stage 2 survey. ....	5
Figure 2. Proportion of fishers and the bait type used in the previous 12 months, nationally.....	5
Figure 3. Proportion of prawns bought from a bait supplier or seafood retailer by respondents, by jurisdiction. ....	8
Figure 4. Source of prawns bought from a seafood retailer and used as bait by recreational fishers, nationally. ....	9
Figure 5. Proportion of prawn type bought from a seafood retailer and used as bait by recreational fishers .....	10
Figure 6. Reasons for obtaining Australian or imported prawns used as bait from a seafood retailer by recreational fishers. ....	12
Figure 7. Proportion of respondents that have seen advice to not use imported prawns as bait, nationally and by jurisdiction. ....	13

# Acknowledgments

More than 20,000 people across Australia contributed to the National Social and Economic Survey of Recreational Fishers (NRFS) between 2018 and 2021. We gratefully acknowledge the contributions of all who contributed their time and energy to this project, whether through providing guidance and direction to the project team, collecting and analysing data, or completing one of the multiple surveys conducted as part of the project.

We thank all members of the Steering Committee for the project, who provided guidance, critical review, and support throughout the project: Sean Tracey, Jeremy Lyle, Sarah Jennings, Emily Ogier, Brett Clearly, Adam Martin, Josh Fielding, Owen Li and Ian Knuckey as chair.

In addition, many others provided input through the project. We thank in particular Jo Starling for her design, communications and engagement work. The project team would like to thank Steve Starling, Scott Amon, Mark Berg, Greg Vinall for promotion of the survey and the Australian Fishing Tackle Association and Shimano Australia provided tackle for the prize draws, with a special mention to Colin Tannahill and Michael Starkey.

We thank the University of Canberra's Regional Wellbeing Survey team (particularly Helena Clayton, Melinda Mylek, Celia Maddox, and Dominic Peel) for their work collecting and processing data from multiple surveys. Helena Clayton contributed to design of key parts of this project, and to collecting and processing large amounts of data, and we acknowledge her leading role in the project during 2019 and 2020. We thank Theo Niyonsenga for provision of biostatistical advice to the project. Laurie West contributed to survey design and in collecting benchmarking data in New South Wales and the Northern Territory. Kane Dysart, James Webley, Daniella Teixeira, Jeff Murphy, Faith Ochwada-Doyle contributed to the collection and analysis of benchmarking data from the Northern Territory, Queensland and New South Wales. Karina Ryan provided technical advice and support.

Finally, we again extend our heartfelt thanks to the thousands of recreational fishers who provided their time to complete surveys conducted as part of the NRFS.

# Executive Summary

The outbreak of white spot disease, caused by white spot syndrome virus (WSSV) (*Whispovirus sp.*), in South-East Queensland (Qld) in 2016–17, the recognition of new and emerging diseases, and advances in scientific knowledge since the release of the *Generic import risk analysis report for prawns and prawn products 2009* (the Prawn IRA; Biosecurity Australia 2009) highlighted the need to review the biosecurity risks of prawns imported into Australia (the prawn review).

The Prawn IRA 2009 considered that the regular introduction of imported prawns, intended for human consumption, into the aquatic environment, through use as bait or berley presented a significant pathway for exposure of Australian crustaceans to imported prawns potentially infected with hazards. Surveys conducted in 2002 and 2007 investigating the use of prawns, intended for human consumption, as bait or berley provided significant data inputs for the Prawn IRA 2009. There had not been national surveys conducted since that time. Therefore, it was identified that the prawn review needed current data on the use of prawns as bait or berley to ensure the conclusions were based on current information. The Department of Agriculture, Fisheries and Forestry collaborated with FRDC to conduct a bait and berley use survey to provide updated information on the use of prawns as bait and berley by recreational fishers in Australia. Questions to characterise the extent of the use of prawns purchased from seafood retailers as bait and berley by recreational fishers in Australia were nested within the 2019-20 National Recreational Social and Economic Survey of Recreational Fishers (Moore et al. 2023).

There was a total of 23,747 participants in the NRFS survey. From the 23,747 participants, 17,596 responded to questions regarding their fishing participation. A subset of 11,849 participants indicated they fished within the last 12 months. A further subset of 5,514 recreational fishers indicated they had used any type of bait in the previous 12 months. Those who used prawns or shrimp as bait or berley (3,396) were asked if they had purchased those prawns or shrimp from a seafood retailer or a bait supplier. Those recreational fishers who reported using prawns purchased from a seafood retailer (822) were asked about the prawn (product) type, source (Australian origin or imported) and reasons for purchasing prawns from a seafood retailer rather than a bait supplier.

Results from this survey indicate that prawns were the most popular bait used by recreational fishers over the survey period, followed by various kinds of saltwater fish and cephalopods (octopus/squid/cuttlefish). This is consistent with the findings of previous surveys (West 2002 and West 2007). While prawns were the most popular bait type nationally, there were differences at the jurisdictional level, with recreational fishers in Western Australian, Tasmania and the Northern Territory most commonly using cephalopods, while South Australian fishers most commonly used 'other shellfish'. Use of multiple baits by recreational fishers was also common, with most people reporting that they used three different bait types.

Of the respondents who reported using prawns as bait and/or berley, 85% indicated that they had bought prawns from a bait supplier, while 20% indicated that they had bought prawns from a seafood retailer (some respondents reported purchasing prawns from both sources). Uncooked whole prawns were the most common prawn type purchased from a seafood retailer, with most respondents indicating that they had purchased a total of less than 1 kg over the previous 12 months. Most fishers reported using Australian origin prawns, but some reported using imported prawns or that they were unsure of the origin of the prawns they were using as bait.

To test whether recreational fishers are aware of the risks of using imported prawns intended for human consumption as bait, the survey also asked recreational fishers if they had seen advice regarding the use of imported seafood prawns as bait and berley. Almost half of all respondents said that they had seen advice regarding the use of imported seafood prawns as bait and berley, with the highest levels of awareness in Queensland and the lowest in Victoria.

**Keywords**

Bait, berley, national survey, prawn used as bait, purchased from seafood retailer.

# Introduction and objectives

In 2001 Biosecurity Australia, operating as part of the Department of Agriculture, Fisheries and Forestry (DAFF) identified specific information needs in relation to bait and berley (henceforth 'bait and berley' will be referred to as 'bait') usage by recreational fishers in Australia. This information was required to address a range of policy issues, including an import risk analysis for prawns (also known as shrimp, henceforth 'prawns and shrimp' will be referred to as 'prawns') and the *Generic import risk analysis report for prawns and prawn products 2009* (the Prawn IRA; Biosecurity Australia 2009).

The Prawn IRA 2009 considered that the regular introduction of imported prawns, intended for human consumption, into the aquatic environment through use as bait or berley presented a significant pathway for exposure of wild crustaceans to imported prawns potentially infected with hazards. The likelihood of prawns and prawn products being diverted to unintended end-uses in Australia (such as for recreational fishing bait or berley) is informed by national surveys of recreational fishers. Two National surveys on bait use by recreational fishers were conducted in 2002 and 2006 (Kewagama Research, 2002; Kewagama Research, 2007). These surveys underpinned the conclusions on exposure risks reported in Biosecurity Australia (2009).

The subsequent outbreak of white spot disease in South-East Qld in 2016–17, the recognition of new and emerging diseases, and advances in scientific knowledge since the release of the Prawn IRA 2009, highlighted the need for a risk review of the biosecurity risks of prawns imported for human consumption. It is also likely that there have been changes in several factors that may affect the use of imported seafood as bait since previous surveys, including changes in prices of local bait versus imported seafood, educational programs regarding bait use, fishing habits and bait preferences. The Department of Agriculture, Fisheries and Forestry (DAFF) initiated the *Review of the biosecurity risks of prawns imported from all countries for human consumption* (the prawn review) on 16 May 2017.

Since the incursion of white spot syndrome virus in late-2016, the Qld Government conducted educational campaigns (<http://www.daf.qld.gov.au/checkyourbait>) to advise fishers not to use prawns sourced from seafood retailers as bait. The Northern Territory also conducted an awareness campaign around the same time. New South Wales has conducted some awareness activities post this survey. In 2017 and 2019 the Qld Department of Agriculture and Fisheries (DAF) commissioned Kantar Public Australia (Kantar) to conduct state-wide research to understand level of awareness, attitudes, beliefs, intentions and behaviours among recreational fishers towards biosecurity recommendations and restrictions associated with white spot disease. Subsequent to the research, DAF further refined and developed communication messaging to help support and encourage recreational fishers in meeting their general biosecurity obligations towards white spot disease (Kantar Public 2017, Kantar 2019). The National Bait and Berley Survey included questions on awareness of fishers using seafood prawns as bait or berley.

In 2019, DAFF and the FRDC funded ABARES and the University of Canberra to conduct a bait use survey to provide up-to-date scientifically robust data in relation to unintended end-use of imported prawns by recreational fishers as bait or berley in Australia. As a result, an updated national bait survey was nested within the 2019–20 National Recreational Fishing Survey (NRFS; Moore et al. 2023). For the purposes of this report, we define here bait usage as any recreational fishing using aquatic animals (or parts thereof), including smoked, as an attractant (adapted from Kewagama Research, 2002; Kewagama Research, 2007).

The main objectives for questions on prawns used as bait by recreational fishers:

- 1) To determine the types and use of bait across Australia
- 2) To determine the use of prawns as bait
- 3) To determine the extent those prawns were sourced from a bait supplier or seafood retailer
- 4) To determine what form those prawns are purchased and to what extent they are Australian or imported product
- 5) To determine the drivers for purchasing seafood prawns



- 6) To determine the extent of community awareness regarding the use of imported seafood prawns as bait.

Where possible and relevant, the results from this survey are compared with the results from previous surveys investigating the use of prawns or other aquatic animal species, intended for human consumption, as bait.

The use of imported prawns as bait or berley is a major exposure pathway for the potential introduction of non-indigenous pathogens into the aquatic environment (Biosecurity Australia 2009). The data in this survey is an integral component of the exposure assessments in the prawn review. These data provide robust information for assessing the likelihood of uncooked seafood prawns used as bait or berley. This survey also provides high level information about what other aquatic animal species are used as bait or berley by recreational fishers, for example non-prawn crustaceans and finfish species. This information may also help to identify where education, community engagement or other actions may be best targeted.

# Method

The National Recreational Fishing Survey (NRFS) was conducted in three stages, each with a specific role in the broader goal of measuring the social and economic contribution of recreational fishing. Stage 1 of the NRFS was a population wide screening survey conducted at the end of 2018. Stage 2 of the NRFS was an online survey of Australian fishers and non-fishers conducted between September 2019 and May 2020, in which respondents were asked a range of effort, expenditure, social, and wellbeing questions. Questions on bait use in the previous 12-month period from the date each respondents completed the survey were nested into this stage of the NRFS. Participants in stage 2 of the survey were recruited via a range of methods deliberately biased towards avid recreational fishers. Stage 3 included an 18-month diary phase (December 2019 to June 2021) and a wash-up survey (Moore et al. 2023).

Regarding the use of bait, the NRFS asked fishers over the survey period of September 2019 to May 2020, what types of bait they had used in the last 12 months. These included prawns, non-prawn crustaceans and finfish species.

Because of a direct focus on the use of seafood prawns as bait, if respondents indicated no use of prawns, they were not asked any further specific questions on bait use. However, all respondents were asked questions regarding whether they recalled seeing or hearing anything which advised people not to use imported seafood prawns as bait or berley.

If respondents reported using prawns as bait and/or berley, they were then asked the following additional questions:

- Whether they purchased prawns from a bait supplier such as a tackle shop or service station, or a retail seafood supplier such as a supermarket
- If they used Australian prawns or prawns sourced from overseas
- What types of prawns were purchased from seafood retailers, including whether they were cooked or uncooked, shelled or unshelled, processed (e.g., on skewers, marinated, breaded/battered, part of a dumpling, spring roll or other product, or butterflied)
- Reasons for purchasing prawns from a seafood retailer rather than a bait supplier
- Recollection of seeing or hearing advice not to use imported seafood prawns as bait or berley.

A detailed description of the methods used to recruit participants, assess responses, and develop a superpopulation model and weighting for the Stage 2 data, is provided in Moore et al. (2023).

In non-probability sampling it is difficult to determine the relationship between the sample design and the population, making it difficult to extrapolate from the sample to the population. While weighting procedures can correct for biases in sampling to an extent, it is not appropriate to use weighted frequency data. As such, for the remainder of this report only weighted proportions are used in analyses, except for the section describing sampling results, which reports unweighted survey response frequencies. Where appropriate weighted frequency data has been reported, for completeness, but we caution against using weighted frequency data for further analyses or comparison.

## Data analyses

Microsoft Excel and the Statistical Package for Social Sciences (SPSS) Version 26 were used for all data analyses. Prior to analysis, data collected from the main survey (stage 2) was extracted, processed and assessed for validity. A total sub-sample of 5,514 respondents, who were asked specific questions about their bait use, was analysed for this report.

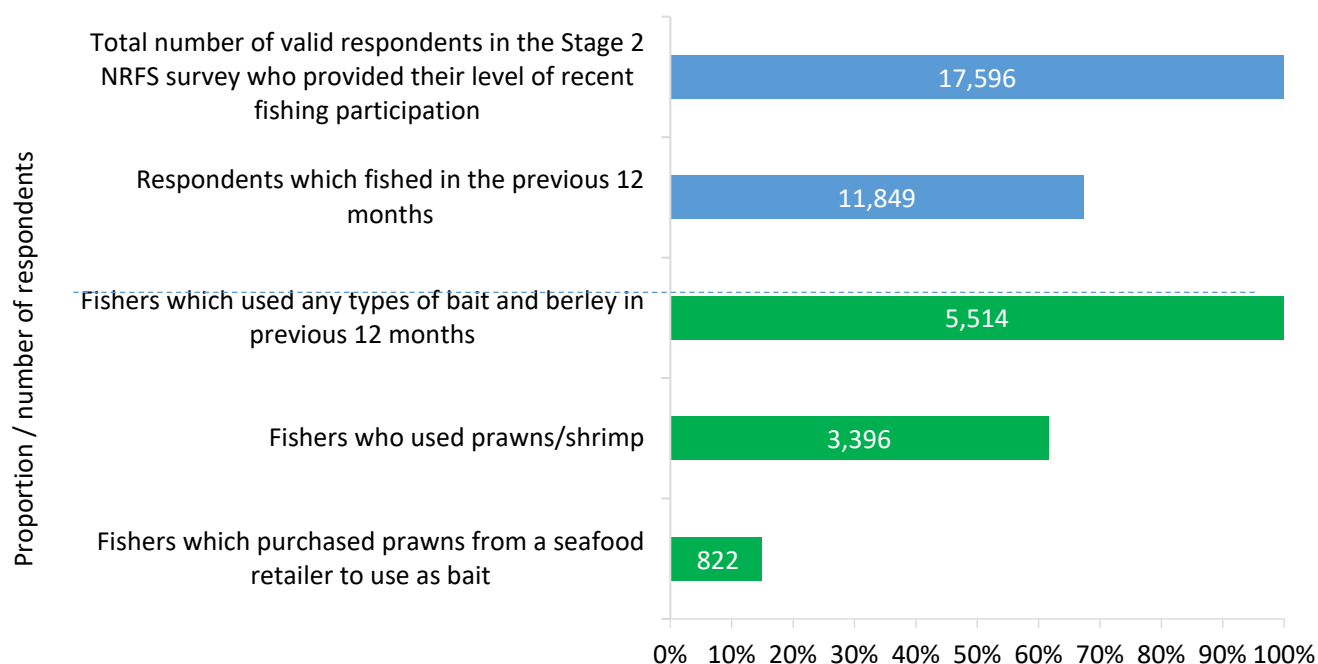
The NRFS survey used a non-probabilistic based sampling protocol, which required the development of a weighting protocol to extrapolate from the sample to the general population. Due to the weighting protocol frequency estimates cannot be provided so results are presented as proportions. While results are

presented as proportions, this should not be interpreted as a proportion of all the respondents, as respondents could select multiple responses for some questions. Rather results should be interpreted as a relative measure of the proportion of respondents that indicated they had acted in a certain way during the period of the survey, noting that for some questions, a single respondent can select multiple answers and so proportions can sum to greater than 100.

# Results and Discussion

There were a total of 23,747 participants in the NRFS Stage 2 survey, of which 17,596 responded to questions regarding their fishing participation (Figure 1). A subset of 11,849 participants indicated they fished within the last 12 months. A further subset of 5,514 recreational fishers, who indicated their willingness to participate in the long version of the NRFS survey and who indicated they had fished in the last 12 months, were asked questions about their use of bait. Those who used prawns (3,396) were also asked questions relating to the source, amount and type of prawns used as bait and recreational fishers who purchased prawns from a seafood retailer (822) were asked about the type and reasons for purchasing prawns from a seafood retailer rather than a bait supplier. Note, proportions in this section can sum to more than 100 as a result of the ability of respondents to select multiple answers to some questions.

Figure 1. Sampling approach, sample size and the proportion of respondents at relevant stages of the NRFS stage 2 survey.



Note: Blue bars indicate data related to fishing participation (unweighted) and green bars indicate data related to proportion of fishers who used bait or prawn as bait (weighted).

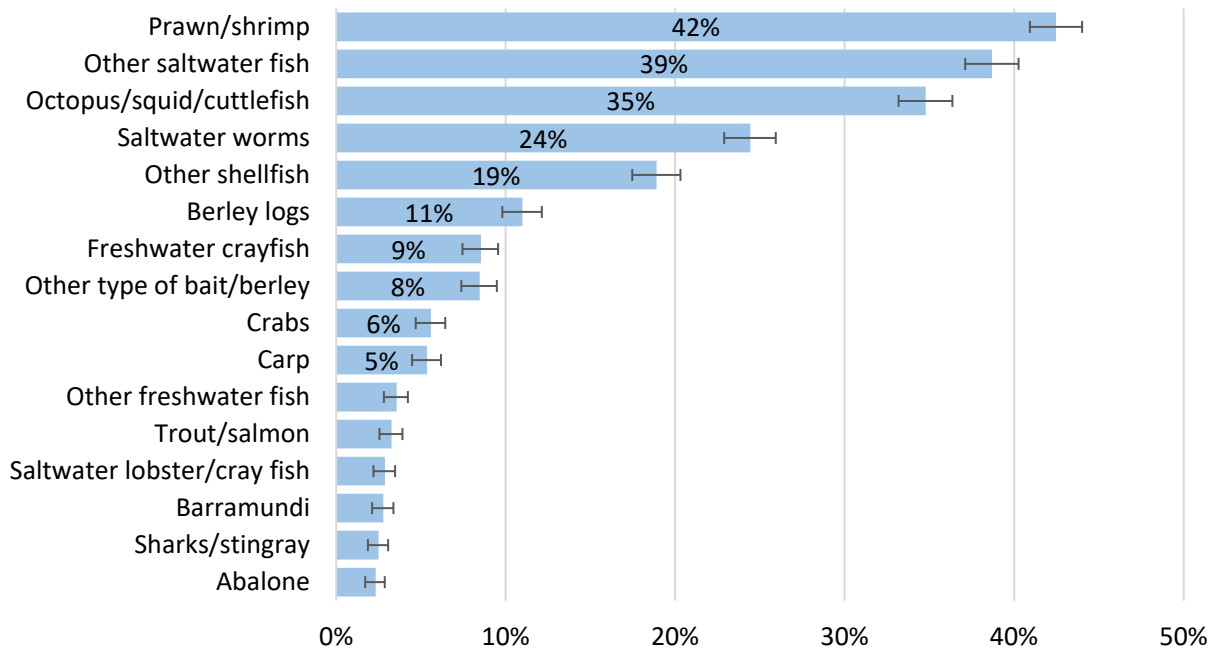
## Types of bait used by recreational fishers

Respondents were asked about their use of different types of bait or berley in the 12 months prior to them completing the survey. The proportion of fishers nationally who used each bait type are shown in Figure 2.

Nationally, the top five bait types used, in order of usage were prawns, other saltwater fish, cephalopods, saltwater worms, and other shellfish (Table 1). This compares to the 2006 survey (Kewagama Research, 2007) where the top five bait types used were other saltwater fish (61%), prawns (58%), cephalopods (55%), other shellfish (33%) and saltwater worms (29%). In the 2002 survey, the top five bait types used were prawns (62%), saltwater fish (58%), cephalopods (43%), other shellfish (29%), and saltwater worms (27%) (Kewagama Research, 2002).

While prawns were the most widely used bait type nationally, there was a high level of variation in use across jurisdictions of each bait type, (Table 1). The same mix of bait types appear broadly popular across the country and across years. Fishers frequently use multiple bait types across the year, with only 11.6% of respondents reported using a single bait type for the whole year (Table 2).

Figure 2. Proportion of fishers and the bait type used in the previous 12 months, nationally.



% Recreational fishers nation-wide who reported using this type of bait/berley in the last 12 months (n=5,566)

Note: Errors on bars represent the 95% confidence interval (CI). The values add up to greater than 100% because respondents were able to select multiple responses, i.e., many fishers used more than one bait type in the previous 12 months.

Table 1. Proportion of fishers and the bait type used, nationally and by jurisdiction.

	Australia	NSW/ACT	VIC	QLD	SA	WA	TAS	NT
<b>Prawn/shrimp</b>	42.5%	65.5%	55.7%	74.5%	45.3%	63.4%	33.1%	44.7%
<b>Other saltwater fish</b>	38.7%	52.1%	49.3%	64.5%	66.2%	58.0%	37.6%	64.3%
<b>Octopus/squid/cuttlefish</b>	34.8%	40.9%	46.0%	52.1%	60.5%	72.4%	50.9%	68.5%
<b>Saltwater worms</b>	24.4%	38.3%	32.0%	46.3%	37.6%	21.9%	5.4%	7.0%
<b>Other shellfish</b>	18.9%	17.5%	43.3%*	19.8%	72.3%	9.6%	21.7%	11.6%
<b>Berley logs</b>	11.0%	12.8%	22.2%	8.5%	31.6%	21.6%	8.3%	4.2%
<b>Freshwater crayfish</b>	8.5%	12.6%	21.1%	13.0%	10.2%	3.8%	0.5%	9.9%
<b>Other type of bait/berley</b>	8.5%	12.7%	13.7%	10.3%	18.4%	9.4%	13.0%	3.0%
<b>Crabs</b>	5.6%	8.5%	8.7%	6.2%	8.5%	10.9%	5.6%	11.1%
<b>Carp</b>	5.4%	6.8%	12.0%	3.2%	20.3%	4.4%	2.0%	4.2%
<b>Other freshwater fish</b>	3.6%	4.9%	6.6%	5.3%	3.2%	6.4%	2.2%	6.9%
<b>Trout/salmon</b>	3.3%	3.6%	8.5%	2.5%	9.8%	2.5%	3.7%	6.1%
<b>Saltwater lobster/cray fish</b>	2.9%	3.4%	7.1%	4.0%	3.6%	3.7%	2.0%	4.7%
<b>Barramundi</b>	2.8%	4.0%	8.1%	3.5%	1.0%	1.9%	0.4%	13.0%
<b>Sharks/stingray</b>	2.5%	4.3%	5.6%	1.8%	3.9%	2.9%	1.5%	4.5%
<b>Abalone</b>	2.3%	2.7%	7.6%	2.9%	2.6%	1.1%	2.1%	4.6%

Note: Weighted proportions are based on the number of respondents that indicated they used that bait type. A single respondent could give multiple responses on the bait type they used.

Table 2. Number of different types of bait, frequency and proportion used by recreational fishers.

<b>Number of different types of bait used</b>	<b>Frequency</b>	<b>Proportion</b>
1	565	11.6%
2	813	16.7%
3	948	19.5%
4	884	18.2%
5	754	15.5%
6	437	9.0%
7	244	5.0%
8	98	2.0%
9	52	1.1%
10	19	0.4%
11	16	0.3%
12	11	0.2%
13	3	0.1%
14	7	0.1%
15	8	0.2%
16	8	0.2%
Total	4867	100%

*Note: The frequencies and proportions used by recreational fishers are unweighted.*

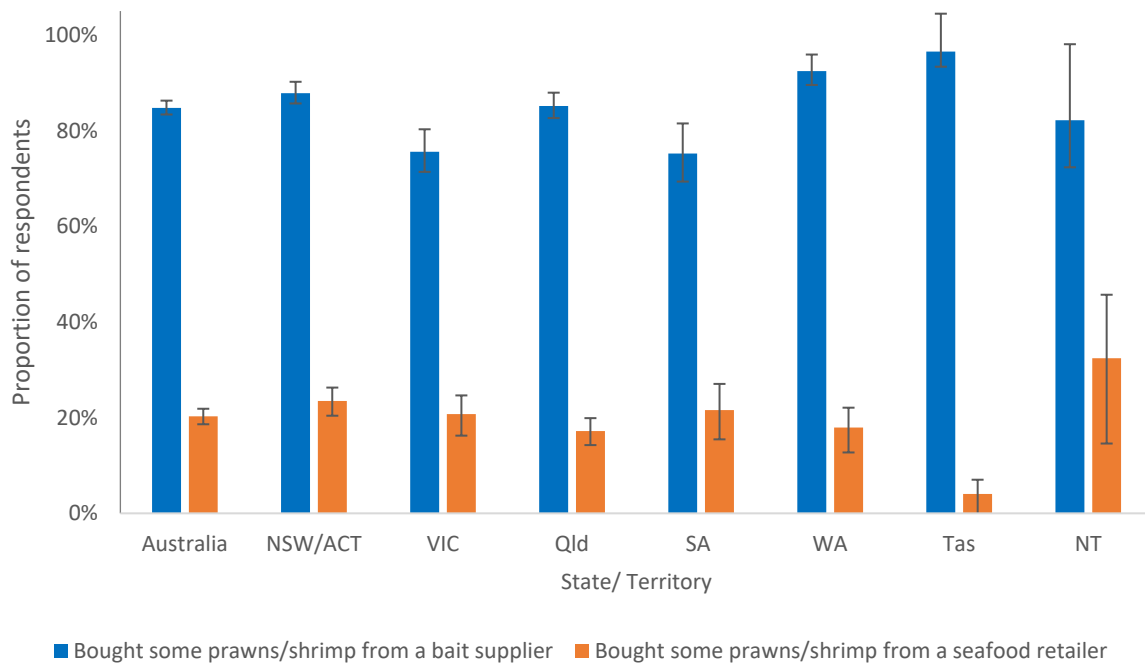
### **Sources of prawns used as bait**

Of the subsampled respondents who indicated that they used prawns as bait (n= 3,396, weighted data), 84.8% said they purchased them from a bait supplier (Figure 3). The highest proportion of prawns used as bait purchased from a bait supplier occurred in Tasmania (96.5%), and the lowest proportion occurred in South Australia (75.2%, Figure 3).

Nationally, 20.3% of respondents indicated that they had purchased bait from seafood retailers in the previous 12 months. By jurisdiction, the highest proportion of prawns purchased from seafood retailers and used as bait was in the Northern Territory (32.4%, Figure 3), and the lowest was in Tasmania (4.1%).

This pattern is consistent with previous surveys. The 2002 and 2006 bait surveys indicated that most fishers sourced prawns from a bait supplier (66 – 95%, Kewagama Research, 2002; 71- 90%, Kewagama Research, 2007). Likewise, both the 2017 and 2019 Queensland Kantar surveys indicated most respondents sourced bait from dedicated bait and tackle retailers (65% and 67% respectively). The 2019-20 Queensland state-wide survey found most respondents (82%) who used prawns as bait did not purchase them from a seafood retailer (Teixeira et al. 2021).

Figure 3. Proportion of prawns bought from a bait supplier or seafood retailer by respondents, by jurisdiction.



Note: Some respondents may have purchased from both sources. Weighted data. Errors on bars represent the CI.

### Source of prawns bought from a seafood retailer

The survey asked respondents that used prawns sourced from a seafood retailer (20.3% of the 3,396 (weighted data) who participated in this part of the NRFS) whether they had used Australian or imported prawns.

The majority of respondents (78%) said they either often used Australian prawns or sometimes used Australian prawns (45.8% and 32.7%, respectively) (Figure 4). Conversely a small proportion of respondents indicated that they didn't know if they had used Australian prawns (14.5%) and a slightly larger proportion (19.7%) indicated that they didn't know if they used imported prawns (Table 2).

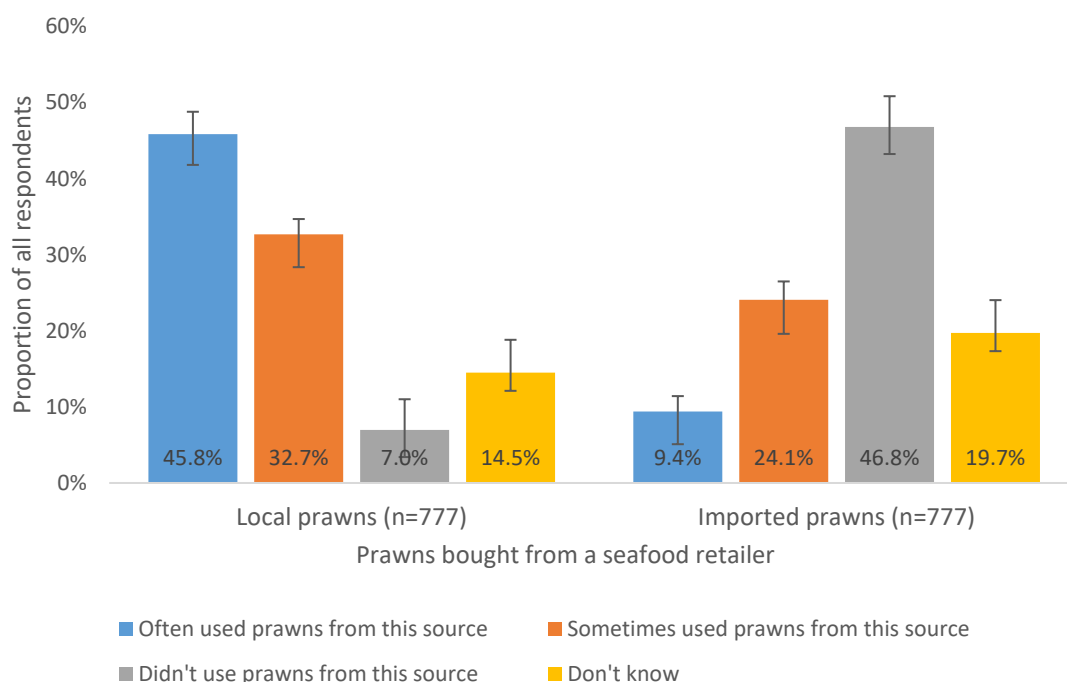
This is consistent with previous surveys with 63% of respondents from the 2006 survey reporting use of Australian prawns (34% unsure of the origin; Kewagama Research, 2007). Similarly, 67% of fishers from the 2019-20 Queensland survey stated they used Australian prawns while 28% stated they were unsure of the origin (Teixeira et al. 2021).

The questions in this survey were asked in a different way to previous bait surveys with regard to prawn provenance, however the results are broadly consistent with those surveys. The NRFS survey questions provide a more detailed breakdown of the use of Australian sourced prawns and imported prawns purchased from seafood retailers and as such is recommended as the best approach to take in future surveys.

The highest proportion of respondents by jurisdiction who often used Australian prawns sourced from a seafood retailer as bait were from Queensland (55%) followed by Victoria (40.9%, Table 3). Similarly, the highest proportion of respondents who often used imported prawns as bait were from Queensland (13%) followed by Victoria (9.7%). The highest proportion of respondents who didn't know whether they used imported prawns or whether they used Australian prawns were from NSW/ACT (22% and 18.8%, respectively).

These results indicate that there are still a proportion of recreational fishers that are either aware they are using imported prawns as bait (33%) or are unaware of where the prawns they are using as bait have come from (19%).

Figure 4. Source of prawns bought from a seafood retailer and used as bait by recreational fishers, nationally.



Note: Proportions are weighted data. The sample is derived from those respondents who purchased seafood prawns to use as bait (822) who were then asked about the provenance of those prawns, of which 777 responded. Errors on bars represent the CI.

Table 3. Proportion of Australian and imported prawns bought from a seafood retailer and used as bait by recreational fishers, by jurisdiction.

		Australia	NSW/ACT	Qld	Vic
<b>Australian prawns</b>	Don't know	14.5%	18.8%	11.5%	6.8%
	Didn't use	7.0%	7.4%	1.9%	15.2%
	Sometimes used	32.7%	35.1%	31.7%	37.0%
	Often used	45.8%	38.7%	55.0%	40.9%
<b>Imported prawns</b>	Don't know	19.7%	22.0%	13.6%	14.3%
	Didn't use	46.8%	46.1%	55.9%	28.0%
	Sometimes used	24.1%	24.2%	17.5%	48.1%
	Often used	9.4%	7.8%	13.0%	9.7%

Note: Proportions are weighted data. Tasmania, Northern Territory, Western Australia and South Australia were removed due to low sample numbers. The sample is derived from those respondents who purchased seafood prawns to use as bait (822) who were then asked about the provenance of those prawns, of which 777 responded.

### Prawn type and amount purchased from a seafood retailer

Due to import restrictions on the types of prawns imported in Australia; only certain types of prawns are permitted. The survey directly asked respondents about the types and quantities of seafood prawns used.

Respondents who purchased prawns from a seafood retailer for use as bait were asked to choose from the following five categories of prawn purchased: uncooked whole prawns (not shelled), uncooked but shelled, cooked (not shelled), cooked and shelled, or processed (e.g., on skewers, marinated, breaded/battered,

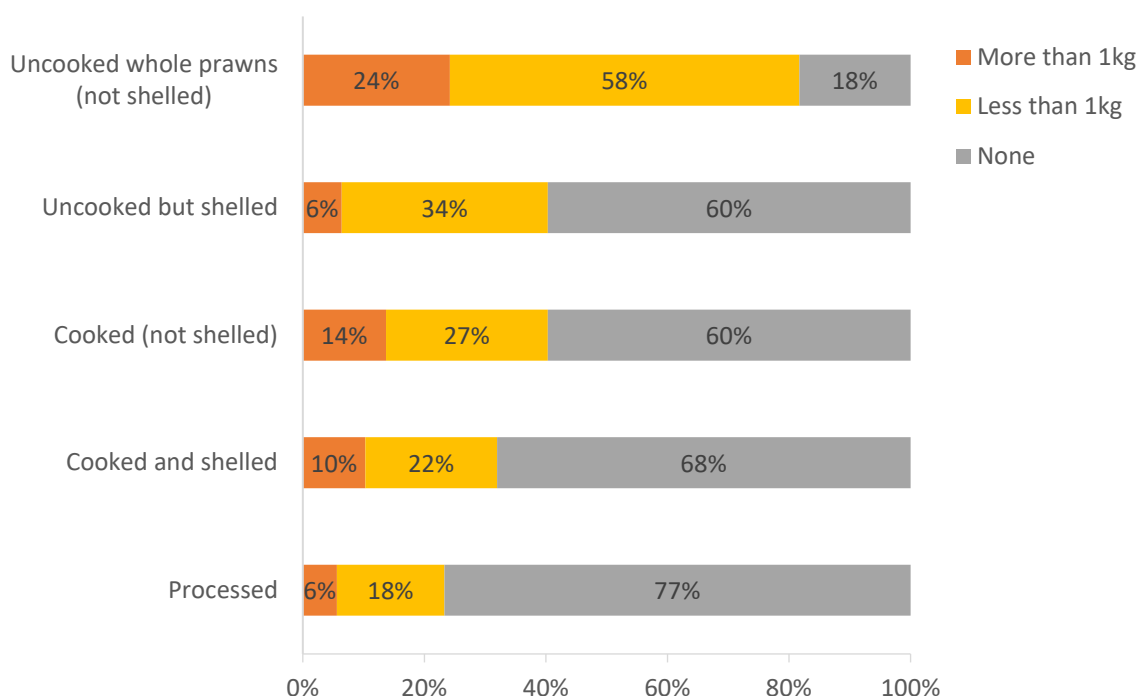


part of a dumpling, spring roll or other product, or butterflied). Respondents were also asked about the total quantity of prawns purchased in the 12 months prior to the survey, with possible answers being <1 kg and >1 kg.

Uncooked whole prawns were the most common prawn type purchased in the 12 months prior to the survey (82% of respondents), with 24% reporting using >1 kg; and 58% reporting using <1 kg) Fig. 5). The majority of respondents purchased less than 1 kg of uncooked whole prawns, and this was consistent across NSW/ACT, VIC, QLD and WA (Table 4). Uncooked but shelled prawns are the type that is most likely to be imported. Of the respondents who purchased prawns for bait in the 12 months prior to the survey, 40% reported using uncooked but shelled prawns, with 34% reporting using less than 1 kilo in the 12 months prior to the survey, compared to 6% reporting using more than 1 kilo (Fig. 5).

Whole prawns were also the main type of prawn reported in the 2002 and 2006 surveys (Kewagama Research, 2002 and 2007; 67% and 57% respectively), followed by prawns with the head removed (21% and 19% respectively). Likewise, most respondents (31-37%) from the 2019-20 Queensland survey reported using uncooked whole prawns (not shelled) either some or most of the time (Teixeira et al. 2021).

Figure 5. Proportion of prawn type bought from a seafood retailer and used as bait by recreational fishers.



Note: A total of 750 weighted respondents answered this question. Units for weights are in kilograms bought in the 12 months prior to the survey. None denotes that a category was not used.

Table 4. Prawn type and amount bought from a seafood retailer and used as bait by recreational fishers, by jurisdiction.

Prawn type		Australia	NSW/ACT	VIC	QLD	WA
Uncooked whole prawns (not shelled)						
	< 1 kg	57.5%	62.8%	65.4%	47.4%	62.3%
	> 1kg	24.2%	19.0%	16.4%	36.2%	16.7%
Uncooked but shelled						
	< 1 kg	33.9%	33.7%	47.8%	28.8%	14.1%
	> 1kg	6.4%	4.6%	11.8%	6.4%	4.9%
Cooked (not shelled)						
	< 1 kg	26.6%	29.5%	34.9%	21.7%	12.7%
	> 1kg	13.7%	10.9%	6.1%	22.8%	14.5%
Cooked and shelled						
	< 1 kg	21.7%	22.1%	31.6%	15.1%	18.8%
	> 1kg	10.3%	10.5%	9.8%	9.7%	3.7%
Processed						
	< 1 kg	17.7%	12.5%	29.5%	20.0%	10.1%
	> 1kg	5.6%	5.8%	6.8%	7.6%	0.3%

Note: Tasmania, Northern Territory and South Australia were removed due to low sample numbers. Units for weights are in kilograms. Proportions are weighted data. Percentage of people who answered the question that live in each jurisdiction.

### Reasons for obtaining prawns from a seafood retailer

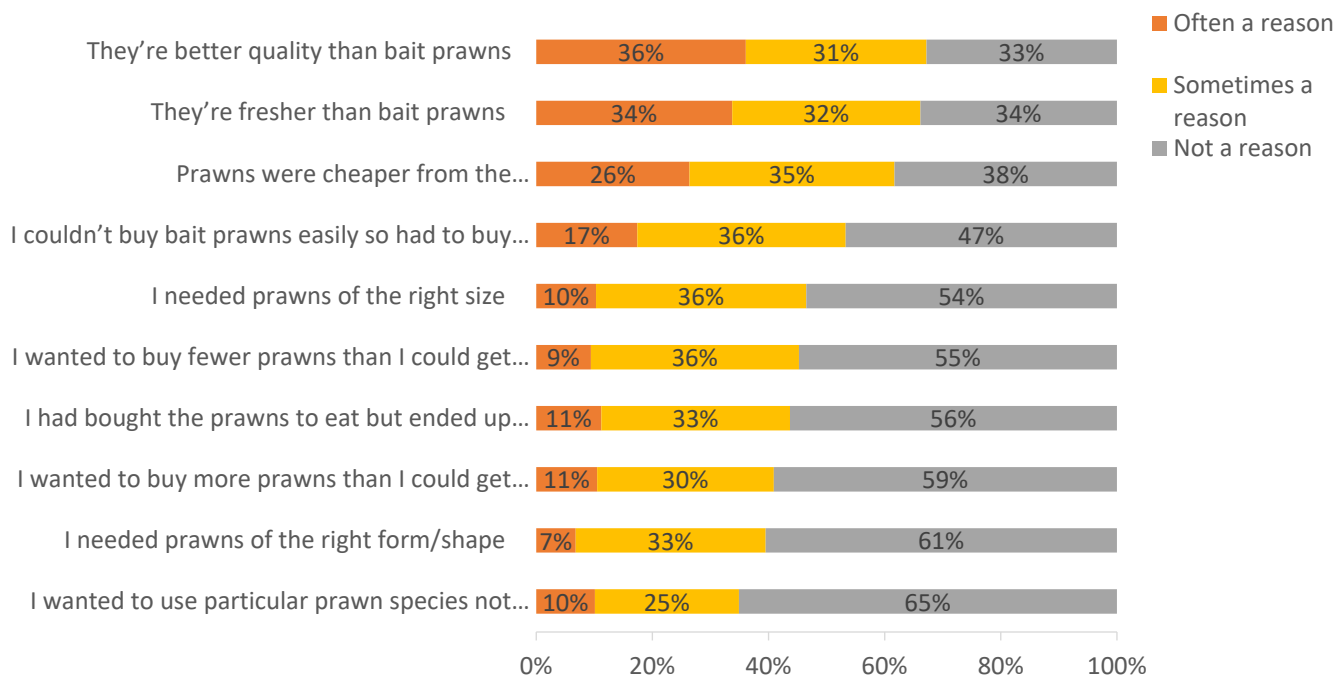
Respondents were asked to select out of 10 categories the reason for obtaining prawns from a seafood retailer rather than from a bait supplier. The options included:

- they're better quality than bait prawns
- they're fresher than bait prawns
- prawns were cheaper from the supermarket/fish shop
- I couldn't buy bait prawns easily so had to buy prawns from a supermarket or seafood supplier
- I needed prawns of the right size
- I wanted to buy fewer prawns than I could get in a bait pack
- I had bought the prawns to eat but ended up using them as bait
- I wanted to buy more prawns than I could get in a bait pack
- I needed prawns of the right form/shape
- I wanted to use particular prawn species not available as bait.

The primary reasons reported nationally for using prawns from a seafood retailer rather than prawns from a bait supplier were, better quality than bait prawns (36%), freshness (34%) and lower cost (26%) (Fig. 6). Further information on the top reasons for obtaining prawns from a seafood retailer, by jurisdiction, can be found in Appendix 1.

These findings are consistent with previous surveys. This includes the 2002 survey, with the main reason for purchasing from a seafood retailer being freshness/quality (46% of respondents), followed by convenience/access issues (23%, Kewagama Research, 2002). Similarly in 2006, convenience/access issues were the main reason for 47% of respondents, followed by freshness/quality (34%) (Kewagama Research, 2007). Additionally, convenience (64%) and price (56%) were the two main reasons for purchasing raw supermarket prawns specifically for bait by respondents from both the 2017 and 2019 Queensland Kantar surveys (Kantar Public, 2017, Kantar 2019). In the 2019-20 Queensland survey, the top three reasons for using seafood prawns were quality (44%), freshness (43%) and cost (40%) (Teixeira et al. 2021).

Figure 6. Reasons for obtaining Australian or imported prawns used as bait from a seafood retailer by recreational fishers.

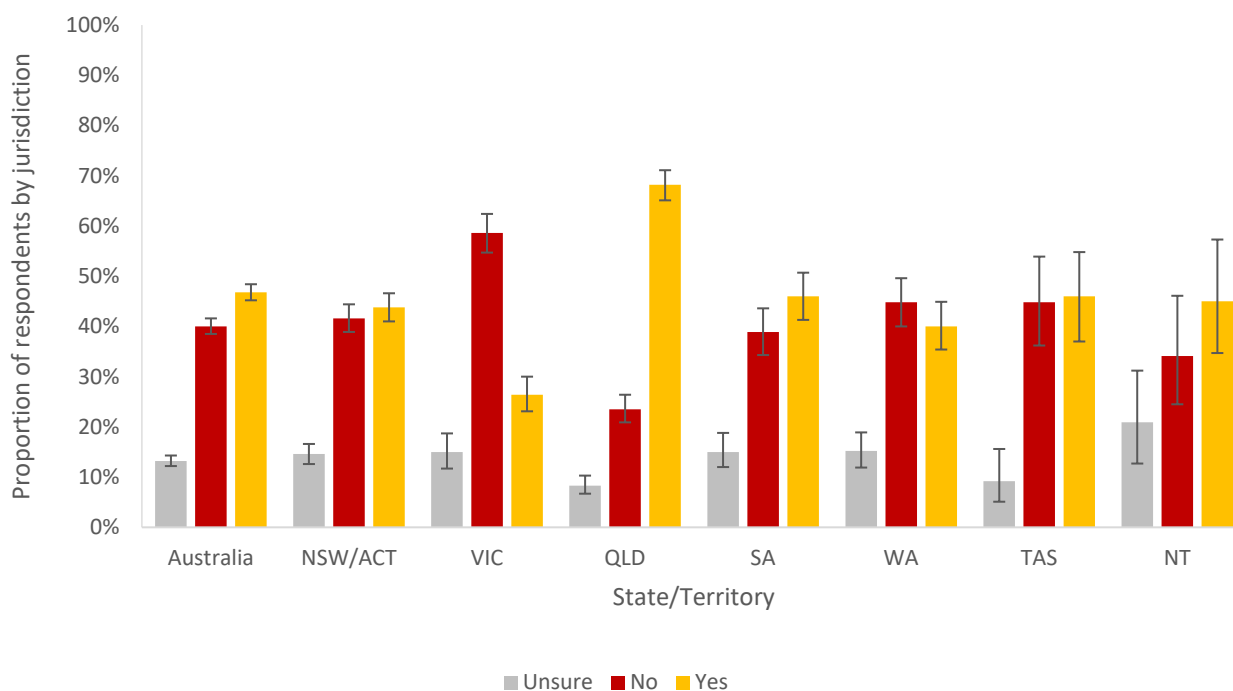


Note: Not a reason refers to not a reason for obtaining prawns from a seafood retailer. The sample size is derived from those respondents who purchased seafood prawns to use as bait (822) who were then asked about the provenance of those prawns, of which 777 responded.

### Awareness of advice on using imported prawns as bait

All respondents, regardless of whether they used prawns as bait or not, were asked if they had seen advice regarding the use of imported seafood prawns as bait. Nationally, 47% of respondents (5169 weighted respondents) who answered this question (as opposed to 5,514 who said they used bait) said that they had seen advice on not using imported prawns as bait (Figure 7). The jurisdiction with the highest proportion of respondents that had seen this advice was Queensland (68.2%), which also has had the greatest amount of community outreach on the issue. The jurisdiction with the lowest proportion of respondents that had seen this advice was Victoria (58.6%). The jurisdiction with the highest proportion of respondents that were unsure of whether they had seen any advice on the topic was the Northern Territory (20.9%).

Figure 7. Proportion of respondents that have seen advice to not use imported prawns as bait, nationally and by jurisdiction.



Note: Errors bars represent 95% CI.

The relatively high proportion of respondents from Queensland which were aware of the advice on the use of seafood prawns as bait in this survey was similar to previous surveys. For instance, 50% of all respondents from the 2019-20 Queensland survey said that they recalled seeing or hearing advice to not use supermarket prawns as bait (Teixeira et al. 2021). In the 2006 survey, only 21% of respondents from Queensland were fully aware of the advice. In this context, Queensland respondents were higher than other states and territories, which ranged from 0% to 14% (Kewagama Research, 2007). The 2017 Kantar survey also found that 64% of respondents in Queensland were aware of recommendations to not use raw supermarket prawns as bait (Kantar Public, 2017). This compares to the 2019 Kantar survey where 73% of respondents in Queensland were aware of these recommendations (Kantar, 2019).

# Conclusion

Results from this study align with those from previous surveys. This survey found that Australians use a range of bait types, but prawns remain the most popular type of bait. The majority of fishers use prawns sourced from a bait supplier, however, there is a small but not insignificant number of fishers who use prawns purchased from seafood retailers. The majority of these fishers reported using prawns from Australia, but some reported using either use imported prawns or that they were unsure of the origin of the prawns they were using. Key drivers of the use of prawns purchased from a seafood retailer as bait include, quality, freshness, cost and convenience.

# Extension and Adoption

The information in this report will be used by Animal Biosecurity to inform relevant aquatic animal risk analyses.

# References

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# Appendices

Table A1. Top 3 reasons for obtaining prawns used as bait from a seafood retailer, by jurisdiction.

Reason		Australia	NSW/ACT	VIC	QLD	WA	NT	SA
<b>Better quality than bait prawns</b>	Not a reason	32.8%	36.1%	28.4%	21.6%	66.7%	32.7%	17.9%
	Sometimes a reason	31.1%	31.6%	40.8%	31.0%	13.4%	35.0%	29.4%
	Often a reason	36.1%	32.3%	30.8%	47.4%	19.9%	32.4%	52.7%
<b>Fresher than bait prawns</b>	Not a reason	33.8%	39.0%	33.4%	20.8%	50.2%	42.2%	24.1%
	Sometimes a reason	32.4%	31.6%	36.5%	37.4%	29.0%	25.5%	21.8%
	Often a reason	33.7%	29.4%	30.1%	41.9%	20.8%	32.3%	54.1%
<b>Prawns were cheaper from supermarket/fish shop</b>	Not a reason	38.3%	41.8%	29.5%	32.4%	39.1%	36.9%	55.0%
	Sometimes a reason	35.3%	35.5%	41.3%	23.5%	49.7%	56.4%	32.4%
	Often a reason	26.4%	22.7%	29.2%	44.1%	11.1%	6.6%	12.6%

Note: Proportions are weighted data. Tasmania is not included due to low sample numbers.

Table A2. Proportion of recreational fishers that recalled seeing advice against using imported prawns as bait, by demographic.

	Major city (n=2230)	Regional area (n=3222)	Female (n=837)	Male (n=4640)
Unsure	14.0%	11.0%	19.0%	11.0%
No	41.0%	38.0%	50.0%	36.0%
Yes	44.0%	49.0%	30.0%	52.0%
	Aged 18-29 (n=552)	Aged 30 to 44 (n=1575)	Aged 45 to 59 (n=2041)	Aged 60 or older (n=1294)
Unsure	21.0%	12.0%	11.0%	11.0%
No	51.0%	45.0%	36.0%	34.0%
Yes	26.0%	41.0%	51.0%	54.0%
	Fished 1-4 days (n=661)	Fished 5-9 days (n=500)	Fished 10-19 days (n=1225)	Fished 20+ days (n=2797)
Unsure	14.0%	13.0%	9.0%	9.0%
No	43.0%	40.0%	33.0%	24.0%
Yes	41.0%	46.0%	57.0%	66.0%
	Born in Australia (n=4768)	Born overseas, English speaking country (n=494)	Born overseas, non-English speaking country (n=213)	
Unsure	12.0%	15.0%	14.0%	
No	39.0%	34.0%	52.0%	
Yes	47.0%	49.0%	33.0%	